

PROJECT LEARNING TREE Links/English Language Arts

SECTION ONE: DIVERSITY

<i>Activity Title:</i> The Shape Of Things		<i>Activity Guide Page #:</i> 3	
Objective(s): Students will: identify common shapes appearing in the natural and built environment as a way of understanding the function of shapes.			
Overview: As humans we depend on all of our senses - touching, tasting, hearing, smelling, and seeing - to gather impressions of our environment. Our brain sorts out the diversity of sizes, colors, and shapes that we see. In this activity, students will focus their eyes on the many shapes that define both our natural and built environment.			
Subject Area(s): Visual Arts, Language Arts, Math, Science		Grade Level(s): Part A: PreK-K; Part B: K-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	Activity #3 “I spy something shaped like a ____.”	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Elementary Grades Pre-K-2 1. Tell about experiences and discoveries, both orally and in writing.	Part A #5 “I spy something shaped like a ____” Part B #7 Talk about the remaining shapes in turn, allowing students to describe what they saw and to share their drawings. Part B #3 Students need to walk to look for shapes in the natural and built environment. When they see a natural object with this shape, they should draw a picture of the object.	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades Pre-K-2 3. Record and share information gathered.	Part B #3 Part B #7 Talk about each of the remaining shapes in turn, allowing students to describe what they saw and to share their drawings. Part B #8 Have students use their drawings to create a “Shapes Around Us” bulletin board.	

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<i>Activity Title:</i> Get In Touch With Trees!		<i>Activity Guide Page #:</i> 5	
Objective(s): Students will: 1) become aware of how the bark of different trees varies in texture; 2) describe a variety of textures found in leaves and other tree parts.			
Overview: In this activity students will explore their sense of touch and discover why touch is important to animals, including themselves.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 11. Generate and evaluate the notes they have taken from course-related reading, listening, and viewing.	Part A #6 When everyone is finished, bring the students together and have them describe the different trees they examined. Have them write a description of their experiences and to use similes, ...	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Elementary Grades 3-4 2. Use various informational parts of a text (e.g., index, table of contents, glossary, appendices).	Part B #3 Older students can use field guides to try to identify which trees or plants the items in the box come from. Can these items be used to identify a particular species?	
	Elementary Grades 3-4 3. Read for a variety of purposes (e.g., to answer specific questions, to form an opinion, to skim for information).	Part B #3	
	Elementary Grades 3-4 4. Summarize informational texts (e.g., identify the main idea or concept and the supporting detail).	Part B #3	
	Middle Grades 5-8 6. Describe new knowledge presented in informational texts and how it can be used.	Part B #3	

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<p>English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.</p>	<p>Elementary Grades 3-4 1. Write pieces and make remarks that begin to use descriptive language that clarifies, enhances, and develops ideas.</p>	<p>Part A #1 Have students imagine and describe what different parts of a tree might feel like. Have each student write down his/her description.</p>	
	<p>Middle Grades 5-8 7. Write pieces and make remarks that use descriptive language to clarify, enhance, and develop ideas.</p>	<p>Part A #1, all Part A #6 Hold up each cut-out shape in turn and ask the students to recall things they saw with each shape. Have the students draw a picture of an object they spied with their shape.</p>	

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<i>Activity Title:</i> Sounds Around		<i>Activity Guide Page #:</i> 9	
Objective(s): Students will: 1) identify sounds and map their location in the environment; 2) explain how noise can be a problem in the community; 3) create and carry out a plan to lessen a local noise problem; 4) study a Greek myth about sounds in nature.			
Overview: Our ears are constantly being bombarded with sound - so much so that we automatically "tune out" a lot of it. Some sounds are "music to our ears", while others can annoy us and even damage the delicate structures in our ears. Try this activity to help your students "tune in" to the sounds in their environment and to help them identify and lessen local noise problems.			
Subject Area(s): Science, language Arts, Social Studies, Math		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Middle Grades 5-8 4. Use knowledge of the fundamental parts of speech when writing and speaking.	Enrichment #1 Students can make up their own myths to explain why things in nature sound the way they do. Why do eagles scream?...	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Elementary Grades Pre-K-2 1. Tell about experiences and discoveries, both orally and in writing.	Part B #1 Ask students to describe their concept of noise pollution and give examples. Discussion should reveal that there is no clear definition of noise pollution... Part B #3 Discuss the results with the students. If visits were made on different days and there were no variations in the noise level at a particular location... Part B #4 If they used a noise meter or a tape recorder with a noise indicator, have the students create bar graphs comparing noise levels at different sites...	
	Middle Grades 5-8 2. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Enrichment #1 Students can make up their own myths to explain why things in nature sound the way they do. Why do eagles scream?...	

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<p>English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.</p>	<p>Elementary Grades Pre-K-2 3. Record and share information gathered.</p>	<p>Part A #4 Lead the students in a discussion of their experiences What were the sources of the sounds they just heard? Which sounds did they like/dislike?...</p>	
	<p>Elementary Grades 3-4 3. Present information obtained from research in a way that combines various forms of information (e.g., maps, charts, photos).</p>	<p>Part A #3 Have students make a “sound map.”</p>	

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<i>Activity Title:</i> Poet-Tree		<i>Activity Guide Page #:</i> 13	
Objective(s): Students will: 1) express their feelings and attitudes about the environment using various forms of poetry; 2) analyze their own and other people's poetry to discover its full meaning.			
Overview: Writing and sharing poems will give your students an opportunity to express their feelings, values, and beliefs about the environment and related issues in creative and artistic ways.			
Subject Area(s): Language Arts, Science, Social Studies		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 11. Generate and evaluate the notes they have taken from course-related reading, listening, and viewing.	Activity #3 Present the poetic forms described in the background information and give examples. Activity #6 Does your poem mention the influence people have on trees or forests?	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 2. Identify useful information organizing strategies.	Activity #7 Have students review the poem or poems they wrote and choose the one they like the best.	
English/Language Arts C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Middle Grades 5-8 5. Demonstrate an understanding of the concept of propaganda.	Enrichment Identify several environmental problems or issues that students are concerned about. Create teams of 4, and have each choose one issue to discuss...	
	Middle Grades 5-8 4. Use knowledge of the fundamental parts of speech when writing and speaking.	Activity #2 Review with the students the major parts of speech. Have them generate a short list of examples...	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Elementary Grades 3-4 1. Identify strengths and weaknesses in their own writing and seek effective help from others.	Activity #5 Have students write their own poems about trees and forests. Encourage them to write more than one poetic form. Share poems with the group.	

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	Elementary Grades 3-4 2. Improve their finished product by revising content from draft to final piece.	Activity #5	
	Elementary Grades 3-4 3. Use planning, drafting, and revising to produce, on-demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Activity #5	
	Middle Grades 5-8 1. Identify specific personal strategies, strengths, and weaknesses in writing, and use direct feedback from peers and teachers to revise and polish the content of their finished pieces.	Activity #5	
	Middle Grades 5-8 2. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Activity #5	
English/Language Arts F. Standard English Conventions Students will write and speak correctly, using conventions of standard written and spoken English.	Elementary Grades 3-4 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain. . .	Activity #5	
	Middle Grades 5-8 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain: . . .	Activity #5	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Elementary Grades 3-4 7. Use a variety of media and technological resources to make creative and expository oral presentations.	Variation Finally they should take a photograph of their tree that visually captures the essence of their poem.	To fully meet this standard, students should share their poems orally.

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<i>Activity Title:</i> Habitat Pen Pals		<i>Activity Guide Page #:</i> 18	
Objective(s): Students will: 1) explain the relationship between climate conditions and habitat; 2) identify relationships between organisms within habitats; 3) distinguish between kinds of animals that can't live in a particular habitat.			
Overview: From icy tundra to scorching deserts to salty oceans, the world's habitats are diverse and fascinating. Each habitat, with its own special set of conditions, supports animals and plants adapted to living in it. By becoming "habitat pen pals", your students will learn about the diversity of habitats around the world, and will write letters from the perspective of organisms living in these habitats.			
Subject Area(s): Science, Language Arts		Grade Level(s): 3-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Elementary Grades 3-4 1. Determine the meaning of unknown words by using a dictionary, glossary, or other reference sources.	Activity #12 Give the students time to read the letters they received and to try to figure out which animal and habitat the letter is referring to.	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Elementary Grades 3-4 1. Identify strengths and weaknesses in their own writing and seek effective help from others.	Activity #10 Tell the students that they should address each of these questions and statements in their letters.	
	Elementary Grades 3-4 2. Improve their finished product by revising content from draft to final piece.	<u>Activity #10</u>	
	Elementary Grades 3-4 3. Use planning, drafting, and revising to produce, on-demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	<u>Activity #10</u>	
	Middle Grades 5-8 1. Identify specific personal strategies, strengths, and weaknesses in writing, and use direct feedback from peers and teachers to revise and polish the content	Activity #10	

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	of their finished pieces.		
	Middle Grades 5-8 2. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	<u>Activity #10</u>	
English/Language Arts F. Standard English Conventions Students will write and speak correctly, using conventions of standard written and spoken English.	Elementary Grades 3-4 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain: . . .	Activity #11 Give students time to research and write their letters.	
	Middle Grades 5-8 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain: . . .	<u>Activity #11</u>	
	Middle Grades 5-8 2. Demonstrate command of the conventions necessary to make an informal speech or presentation, effectively engaging peers and fielding responses.	Enrichment Ask each person to act out his/her animal.	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades 3-4 2. Use print and non-print resources (e.g., encyclopedias, dictionaries, people, indexes) to gather information on research topics.	Activity #11 Give the students time to research as needed, and write their letters.	
	Middle Grades 5-8 6. Use magazines, newspapers, dictionaries, journals, and other print sources to gather information for research topics.	<u>Activity #11</u>	

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<p>English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.</p>	<p>Elementary Grades 3-4 4. Write pieces that show awareness of a variety of intended audiences and identifiable purposes.</p>	<p>Activity #7 Explain that they'll be writing a letter to a "pen pal" from the point of view of this animal. Activity #10 Tell the students that they should address each of the questions and statements in their letters.</p>	
	<p>Middle Grades 5-8 7. Write pieces and make remarks that use descriptive language to clarify, enhance, and develop ideas.</p>	<p>Activity #10 Encourage the students to be imaginative in the ways they address each point.</p>	
	<p>Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).</p>	<p>Activity #12 Then have the students share the letters they received with the rest of the group.</p>	

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Activity Title: The Forest Of S.T. Shrew		Activity Guide Page #: 20	
Objective(s): Students will: 1) identify microhabitats in the forest by drawing pictures or writing a story describing a microhabitat; 2) describe some of the plants and animals that characterize several microhabitats within the forest.			
Overview: By taking a "shrew's-eyeview" of life in the woods, your students will gain an appreciation for the variety of living things that make forests their homes, and for the variety of habitats within forests.			
Subject Area(s): Science, Language Arts, Visual Arts.			Grade Level(s): 1-6
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 1. Formulate questions to be answered while reading.	Getting Ready #1 For older students make copies of the story on pages 22-23 for them to read.	
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	Getting Ready #1 Activity #5 You can check for understanding using the assessment questions in the sidebar.	
	Middle Grades 5-8 4. Use specific strategies (e.g., rereading, consultation) to clear up confusing parts of a text.	Getting Ready #1 For older students make copies of the story on pages 22-23 for them to read.	
	Middle Grades 5-8 6. Identify accurately both the author's purpose and the author's point of view.	Getting Ready #1 For older students make copies of the story on pages 22-23 for them to read.	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Getting Ready #1 For older students make copies of the story on pages 22-23 for them to read.	
	Middle Grades 5-8 10. Adjust viewing and listening strategies in order to comprehend materials viewed and heard.	Getting Ready #1 For older students make copies of the story on pages 22-23 for them to read.	

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	Middle Grades 5-8 4. Use specific strategies (e.g., rereading, consultation) to clear up confusing parts of a text.	<u>Activity #5</u>	
	Middle Grades 5-8 6. Identify accurately both the author's purpose and the author's point of view.	Activity #4 Read the story on pages 22-23. You may want to read the story in a different way depending on the age group. Possibility of breaking the story into several segments so the students don't have to...	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Activity #4	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Middle Grades 5-8 3. Identify the main and subordinate characters in literary works.	Activity #5 You can check for understanding using the assessment questions in the sidebar.	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 3. Identify both the author's purpose and the author's point of view when reading expository information.	Activity #5	
	Middle Grades 5-8 5. Produce and support generalizations acquired from informational text.	Activity #5	Advanced students.
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades 3-4 1. Ask and seek answers to questions.	Enrichment #2 Discuss different microhabitats with students, and have each student pick one and research its plant and animal life.	

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<p>English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.</p>	<p>Elementary Grades Pre-K-2 1. Dictate or write stories or essays which convey basic ideas, have sequences that make sense, and show evidence of a beginning, middle, and ending.</p>	<p>Enrichment #2 Have the students write the story of Jackie's next adventure.</p>	
	<p>Elementary Grades 3-4 2. Write stories (or other pieces) that show a definite beginning (introduction), middle (body), and ending (conclusion).</p>	<p>Enrichment #2</p>	
	<p>Middle Grades 5-8 2. Write stories that include major events, develop settings, and deal with problems and solutions.</p>	<p>Enrichment #2, all</p>	
<p>English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.</p>	<p>Elementary Grades Pre-K-2 2. Respond to stories orally and in writing.</p>	<p>Activity #5, all Activity #6 Pass out drawing paper and crayons or markers, and have the students draw pictures of the story.</p>	

PICTURE

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Activity Title: Planet Of Plenty		Activity Guide Page #: 24	
Objective(s): Students will: 1) investigate the diversity of plants and animals on a small plot of land; 2) explain the value of a diversity of life forms in a particular ecosystem.			
Overview: In this activity, students will pretend they are visitors from outer space, viewing life on Earth for the first time. By describing in minute detail, all the life they find in a small plot of land, they will become more aware of diversity of life on Earth and will better understand its importance.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	Part C #1 Hold a conference to discuss the Earth expedition.	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 2. Identify useful information organizing strategies.	Part A #4 Have team members work together to devise methods for sampling, recording, and organizing their data.	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Elementary Grades 3-4 1. Identify strengths and weaknesses in their own writing and seek effective help from others.	Part C #1 Give each team time to prepare its presentation.	
	Elementary Grades 3-4 2. Improve their finished product by revising content from draft to final piece.	Part C #1	
	Elementary Grades 3-4 3. Use planning, drafting, and revising to produce, on-demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Part C #1	

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	Elementary Grades 3-4 6. Summarize central concepts from oral presentations.	Part C #3 After considering all the data and making comparisons, teams should try to draw conclusions about what factors influence the abundance or lack of biodiversity.	
	Middle Grades 5-8 1. Identify specific personal strategies, strengths, and weaknesses in writing, and use direct feedback from peers and teachers to revise and polish the content of their finished pieces.	Part C #1 Give each team time to prepare its presentation.	
	Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.	Part C #3 After considering all the data and making comparisons, teams should try to draw conclusions about what factors influence the abundance or lack of biodiversity.	
English/Language Arts F. Standard English Conventions Students will write and speak correctly, using conventions of standard written and spoken English.	Elementary Grades 3-4 2. Use the level of language formality required in a variety of speaking situations.	Part C #1 Give each team time to prepare its presentation.	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades 3-4 3. Present information obtained from research in a way that combines various forms of information (e.g., maps, charts, photos).	Part C #1 Give each team time to prepare its presentation. Encourage the students to use posters, data charts, drawings, movements, sounds or anything else...	
	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using note-taking and other appropriate strategies.	Part C #3 Teams should try to draw conclusions about what factors influence the abundance or lack of biodiversity. What problems might be faced in areas lacking in biodiversity?...	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Elementary Grades 3-4 1. Write pieces and make remarks that begin to use descriptive language that clarifies, enhances, and develops ideas.	Enrichment Have them write a letter to their penpal describing the animal or plant they picked.	

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	Elementary Grades 3-4 7. Use a variety of media and technological resources to make creative and expository oral presentations.	Part C #1, all	
	Middle Grades 5-8 3. Write pieces and deliver oral presentations that use structures appropriate to audience and purpose.	Part C Activity #1 They should also decide on a format for their presentations.	
	Middle Grades 5-8 7. Write pieces and make remarks that use descriptive language to clarify, enhance, and develop ideas.	Enrichment	

CASE/RUBIC/PICTURE

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<i>Activity Title:</i> Can It Be Real?		<i>Activity Guide Page #:</i> 30	
Objective(s): Students will: 1) study the characteristics of unusual plants and animals; 2) describe how plants and animal species are adapted to a particular set of environmental conditions.			
Overview: A beetle that drinks fog. A flower that smells like rotting meat. A fish that "shoots down" its prey. Are these plants and animals for real? In this activity, your students will discover extraordinary plants and animals, and will gain insight on how they are uniquely adapted to environmental conditions.			
Subject Area(s): Science, Language Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 11. Apply effective strategies to the reading and use of nonfiction (e.g., reference sources, articles, histories, biographies, autobiographies, diaries, and letters) using texts with an appropriate complexity of content and sophistication of style.	Part A #2 Tell the students that you're going to read descriptions of 8 plants and animals whose pictures are on Student Page 33. They should try to decide if the plant/animal is real or fictitious...	
	Middle Grades 5-8 9. Apply effective strategies to the reading and use of moderately long nonfiction texts (e.g., reference sources, articles, editorials, histories, biographies, autobiographies, diaries, letters, and commentaries) which have an appropriate complexity of content and sophistication of style.	Part A #2	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 5. Produce and support generalizations acquired from informational text.	Part A #2	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Elementary Grades 3-4 1. Identify strengths and weaknesses in their own writing and seek effective help from others.	Part B #3 Give students plenty of time to research and create their posters. May suggest getting help from the school librarian.	

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	Elementary Grades 3-4 2. Improve their finished product by revising content from draft to final piece.	Part B #4 Have students display and explain their posters to the rest of the group. Award categories can be made and voted on.	
	Elementary Grades 3-4 3. Use planning, drafting, and revising to produce, on-demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	<u>Part B #3</u> <u>Part B #4</u>	
	Elementary Grades 3-4 4. Report orally and summarize personal discoveries they have made as a result of reading and viewing.	<u>Part B #3</u> Part B #4	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades 3-4 2. Use print and non-print resources (e.g., encyclopedias, dictionaries, people, indexes) to gather information on research topics.	Part B #3 If they're having trouble finding information, you might suggest they look in books/encyclopedias about animals.	
	Elementary Grades 3-4 3. Present information obtained from research in a way that combines various forms of information (e.g., maps, charts, photos).	Part B #2 After researching their plant/animal, the student should create a poster describing it. It should include a drawing of their subject in its habitat, explanation...	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 4. Write essays and deliver oral presentations which identify a clear topic and reliably support that topic.	Part B #4	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.	Part A #2 They should listen carefully and try to decide if the plant/animal is real or fictitious.	

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<i>Activity Title: We All Need Trees</i>		<i>Activity Guide Page #: 39</i>	
Objective(s): Students will: 1) examine various products and determine which ones are made from trees; 2) describe ways that trees are used to make products and ways that these products can be conserved; 3) explore methods for recycling and reusing products.			
Overview: It is easy to see that items made of wood come from trees. However, many tree products are not obvious. In this activity your students will discover the diversity and multitude of products that are in some way derived from trees.			
Subject Area(s): Social Studies, Science, Language Arts		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Elementary Grades 3-4 4. Report orally and summarize personal discoveries they have made as a result of reading and viewing.	Activity #6 After reading their articles, students should explain the contents to their team members.	
	Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.	Activity #6 Each person is responsible for making sure everyone else in the group understands what his/her article says.	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Elementary Grades 3-4 3. Read for a variety of purposes (e.g., to answer specific questions, to form an opinion, to skim for information).	Activity #5 Each student should read the article that corresponds to his or her number. Activity #7 The teams should then re-evaluate the list of products they came up with in Step 4.	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	Activity #6, all	
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 1. Formulate questions to be answered while reading.	<u>Activity #6</u> <u>Activity #7</u> The teams should then re-evaluate the list of products they came up with in Step 4. Are there any products they want to add to or delete from their list?	

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	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	<u>Activity #6</u> <u>Activity #7</u>	
	Middle Grades 5-8 7. Summarize whole texts by selecting and summarizing important and representative passages.	<u>Activity #6</u> <u>Activity #7</u>	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	<u>Activity #6</u> <u>Activity #7</u>	
	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	Activity #7 Remind them that everyone on the team must agree with changes and should be able to explain why each item is on their list.	
	Middle Grades 5-8 10. Adjust viewing and listening strategies in order to comprehend materials viewed and heard.	<u>Activity #7</u>	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Middle Grades 5-8 9. Apply effective strategies to the reading and use of moderately long nonfiction texts (e.g., reference sources, articles, editorials, histories, biographies, autobiographies, diaries, letters, and commentaries) which have an appropriate complexity of content and sophistication of style.	Activity #5 Each student should read the article that corresponds to his/her number.	

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Activity Title: Pass The Plants, Please		Activity Guide Page #: 50	
Objective(s): Students will: 1) identify edible plant parts and give examples of each; 2) describe how plants are used to make various kinds of foods; 3) discuss the importance of plants in people's diets.			
Overview: Chocolate candy. Apple pie. French fries with catsup. Tortilla chips with guacamole. Thanks to plants, these and many other favorite foods are ours to enjoy. Try the following activities to get your students thinking about just how big a part plants play in our daily lives.			
Subject Area(s): Science, Social Studies, Math, Language Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Enrichment #1 Take students on a field trip to the supermarket. Each group can focus on a particular aisle, reading food labels and recording information about the plant ingredients in each product... Enrichment #3 Have the students research some familiar spices used in different types of ethnic cooking. After gathering information, the teams will present them to the entire group...	
	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	Enrichment #1 Enrichment #3	
	Middle Grades 5-8 10. Adjust viewing and listening strategies in order to comprehend materials viewed and heard.	Part B #3 Discuss the data with the students. Did some plant parts show up in their lunches more often than others?...	
	Middle Grades 5-8 11. Generate and evaluate the notes they have taken from course-related reading, listening, and viewing.	Part B #5 With older students, discuss what a balanced meal is. Have students create a balanced diet of plant foods...	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	Part B #3 Then present their findings to the group.	

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<p>English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.</p>	<p>Elementary Grades 3-4 2. Use print and non-print resources (e.g., encyclopedias, dictionaries, people, indexes) to gather information on research topics.</p>	<p>Part A #5 Older students can research the vitamins and minerals provided by each of the veggies on the plate. Enrichment #3</p>	
	<p>Elementary Grades 3-4 3. Present information obtained from research in a way that combines various forms of information (e.g., maps, charts, photos).</p>	<p>Enrichment #1, all Back in the classroom, the students can create charts depicting their data. Are products healthy just because they are made from plants?</p>	
<p>English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.</p>	<p>Middle Grades 5-8 2. Identify useful information organizing strategies.</p>	<p>Enrichment #1, all</p>	

PICTURE

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Activity Title: People Of The Forest		Activity Guide Page #: 54	
Objective(s): Students will: 1) describe the lifestyles of several forest-dwelling peoples of the present or past and ways that they depend upon the forest; 2) describe some of the effects forest people have on their environment; 3) focusing on a day in the life of a member of one group of forest people.			
Overview: To the Mbuti Pygmies of Africa, the Yanomami and the Kuna of Latin America, and other people around the world, the forest is home. More than just a place to live, the forest provides for all of their needs. By comparing and contrasting different forest peoples, both past and present, your students can learn about some of the ways people have depended on forests throughout history.			
Subject Area(s): Social Studies, Language Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 1. Formulate questions to be answered while reading.	Part A #1 Pass out a copy of page 55 to each student. Allow time for the to read it.	
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	<u>Part A #1</u>	
	Middle Grades 5-8 4. Use specific strategies (e.g., rereading, consultation) to clear up confusing parts of a text.	<u>Part A #1</u>	
	Middle Grades 5-8 6. Identify accurately both the author's purpose and the author's point of view.	<u>Part A #1</u>	
	Middle Grades 5-8 5. Understand stories and expository texts from the perspective of the social and cultural context in which they were created.	<u>Part A #1</u> <u>Part A #2</u> Have a short discussion with the students about the Pygmies of the Ituri forest using the information on page 55.	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Part A #1	

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	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	Part A #1	
	Middle Grades 5-8 11. Generate and evaluate the notes they have taken from course-related reading, listening, and viewing.	Part A #5 Give students time to research and write their stories. Have them share their stories with the rest of the group.	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Middle Grades 5-8 9. Apply effective strategies to the reading and use of moderately long nonfiction texts (e.g., reference sources, articles, editorials, histories, biographies, autobiographies, diaries, letters, and commentaries) which have an appropriate complexity of content and sophistication of style.	Part A #1	
	Middle Grades 5-8 11. Read literature and view films which illustrate distinct cultures in various types of works and formulate and defend opinions gathered from the experience.	<u>Part A #1</u>	
English/Language Arts C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Middle Grades 5-8 4. Use knowledge of the fundamental parts of speech when writing and speaking.	<u>Part A #5</u> Give students time to research and write stories, then have them share with the group.	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 2. Identify useful information organizing strategies.	Part B #2 Have each team use the knowledge about their forest dwellers to develop a presentation. Each presentation can include displays, posters, and exhibits.	
	Middle Grades 5-8 4. Identify different ways in which informational texts are organized.	Part A #5, all	
	Middle Grades 5-8 5. Produce and support generalizations acquired from informational text.	Part A #5	
	Middle Grades 5-8 6. Describe new knowledge presented in informational texts and how it can be used.	<u>Part A #5</u>	

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	Middle Grades 5-8 7. Identify common technical terms used in informational texts.	<u>Part A #5</u>	
	Middle Grades 5-8 8. Use the various parts of a text (index, table of contents, glossary) to locate specific information.	<u>Part A #5</u>	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 6. Use magazines, newspapers, dictionaries, journals, and other print sources to gather information for research topics.	Part A #3 Students can use additional information from <i>The Forest People</i> or other resources they find. Part B #1 Divide the class into teams and have each team research the lifestyle of a past or present forest people.	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 1. Write stories with an identifiable beginning, middle, and ending.	<u>Part A #3</u> Explain that each person will write a story that depicts a day in the life of a forest-dwelling people such as the Pygmies of the Ituri.	
	Middle Grades 5-8 4. Write essays and deliver oral presentations which identify a clear topic and reliably support that topic.	Part B #2, all	
	Middle Grades 5-8 10. Deliver oral presentations that use a variety of strategies of address (e.g., eye contact, hand gestures, voice modulation, changes of rhythm).	<u>Enrichment #2, all</u> Groups of students could present dramatizations depicting forest cultures they have studied.	
	Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).	Part A #5, all	

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<p>English/Language Arts F. Standard English Conventions Students will write and speak correctly, using conventions of standard written and spoken English.</p>	<p>Middle Grades 5-8 2. Demonstrate command of the conventions necessary to make an informal speech or presentation, effectively engaging peers and fielding responses.</p>	<p><u>Part B #2, all</u></p>	
<p>English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.</p>	<p>Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.</p>	<p><u>Part B #3</u> Afterward, have each team use its notes and any other pertinent information to develop a booklet comparing and contrasting each group of forest...</p>	

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Activity Title: Tale Of The Sun		Activity Guide Page #: 56	
Objective(s): Students will: 1) describe how stories reveal the beliefs of the people who tell them; 2) read or listen to an American Indian story to gain insight on the vital importance of the sun.			
Overview: Every culture in the world has stories that are part of its history and tradition. These stories reveal the beliefs of the people who tell them. For example, many stories teach lessons in proper attitude and behavior. In this activity, your students can analyze a story told by the Muskogee (Creek) Indians of present-day Oklahoma. Later, students can read and discuss stories told in other cultures from around the world.			
Subject Area(s): Language Arts		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Elementary Grades Pre-K-2 1. Seek out and enjoy experiences with books and other print materials.	<u>Activity #5</u> Have students read another tale that relates to wildlife or the environment.	
	Elementary Grades Pre-K-2 4. Recognize and use rereading as an aid to developing fluency and to understanding appropriate material.	<u>Activity #5</u>	
	Elementary Grades Pre-K-2 5. Figure out unknown words using a variety of strategies including rereading, context clues, and knowledge of word structures and letter-sound relationships.	<u>Activity #5</u>	
	Elementary Grades Pre-K-2 6. Recognize and use clues within the text (sentence structure, word meanings), rereading, and other strategies as aids in developing fluency and comprehension.	<u>Activity #5</u>	
	Elementary Grades Pre-K-2 7. Ask questions and give other responses after listening to presentations by the teacher or classmates.	<u>Activity #5</u>	
	Elementary Grades 3-4 1. Determine the meaning of unknown	<u>Activity #5</u>	

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	words by using a dictionary, glossary, or other reference sources.		
	Elementary Grades 3-4 2. Adjust reading speed to suit purpose and difficulty of the material.	<u>Activity #5</u>	
	Middle Grades 5-8 1. Formulate questions to be answered while reading.	<u>Activity #5</u>	
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	<u>Activity #4</u> Discuss the story on 2 levels. One being how the story as a traditional creation story, explains why certain animals look the way they do...	
	Middle Grades 5-8 5. Understand stories and expository texts from the perspective of the social and cultural context in which they were created.	<u>Activity #4</u>	
	Middle Grades 5-8 6. Identify accurately both the author's purpose and the author's point of view.	<u>Activity #4</u>	
	Middle Grades 5-8 7. Summarize whole texts by selecting and summarizing important and representative passages.	<u>Activity #5</u>	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	<u>Activity #5</u>	
	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	<u>Activity #5</u>	
	Middle Grades 5-8 10. Adjust viewing and listening strategies in order to comprehend materials viewed and heard.	<u>Activity #5</u>	
English/Language Arts B. Literature and Culture	Middle Grades 5-8 8. Apply effective strategies to the	<u>Activity #5</u>	

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<p>Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.</p>	<p>reading and interpretation of fiction (e.g., science fiction, myths, mysteries, realistic and historical fiction, poems, adventure stories, and humorous tales), using texts that are appropriately complex in terms of character, plot, theme, structure, and dialogue and appropriately sophisticated in style, point of view, and use of literary devices.</p>		
	<p>Middle Grades 5-8 11. Read literature and view films which illustrate distinct cultures in various types of works and formulate and defend opinions gathered from the experience.</p>	<p><u>Activity #5</u></p>	
<p>English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.</p>	<p>Elementary Grades 3-4 1. Write pieces and make remarks that begin to use descriptive language that clarifies, enhances, and develops ideas.</p>	<p>Enrichment Students can write their own short folktale incorporating information about plants and/or animals along with lessons that they think are important...</p>	
	<p>Middle Grades 5-8 2. Write stories that include major events, develop settings, and deal with problems and solutions.</p>	<p><u>Enrichment</u></p>	
<p>English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.</p>	<p>Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.</p>	<p>Activity #4</p>	
<p>English/Language Arts B. Literature and Culture</p>	<p>Elementary Grades 3-4 2. Use literary pieces to better</p>	<p>Activity #5 What does the story reveal about the people who told the</p>	

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<p>Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.</p>	<p>understand and appreciate the actions of others.</p>	<p>tale?</p>	
	<p>Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).</p>	<p>Activity #3 Read aloud the story on page 57. Activity #4</p>	
	<p>Elementary Grades 3-4 4. Share responses to quality literature with peers, citing reasons and making comparisons to other reading, or viewing, or to life experiences.</p>	<p>Activity #3 Activity #4</p>	
	<p>Elementary Grades 3-4 7. Identify and explain how characters and situations found in various materials are like people or events in their own lives or in other works.</p>	<p>Activity #5 What lesson for living can people learn from the tale?</p>	

SECTION TWO: INTERRELATIONSHIPS

<i>Activity Title:</i> Adopt A Tree		<i>Activity Guide Page #:</i> 65	
Objective(s): Students will: 1) describe a chosen tree using personal observation and investigation, and organize information about the tree; 2) identify relationships between their trees and other organisms; 3) put together a book or portfolio about their tree.			
Overview: This activity will encourage students' awareness of individual trees over time, as well as incorporate various other subjects. By adopting individual trees, students will gain greater awareness and appreciation of their local environments.			
Subject Area(s): Science, Math, Language Arts, Visual Arts, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using notetaking and other appropriate strategies.	Activity #3 Provide each student with a small notebook. The students should use them to record observations and answer questions about their trees...	

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<i>Activity Title:</i> Nature's Recyclers		<i>Activity Guide Page #:</i> 75	
Objective(s): Students will: 1) understand and describe the process of decomposition; 2) explain the function of scavengers and decomposers; 3) experiment with sowbugs to determine what they eat and what their role is in the ecosystem.			
Overview: It's amazing how many organisms live off dead organic material and recycle those materials back into life. In this activity, your students will investigate the habits of one of those creatures. They will gain an understanding of how decomposition works and an appreciation for some of nature's less-heralded creatures.			
Subject Area(s): Science, Language Arts		Grade Level(s): 1-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	Activity #7 Have the teams organize and present their observations (data) to the entire group. Discuss questions like : id they have a favorite food?...	
	Middle Grades 5-8 11. Generate and evaluate the notes they have taken from course-related reading, listening, and viewing.	Activity #7	
	Elementary Grades Pre-K-2 7. Ask questions and give other responses after listening to presentations by the teacher or classmates.	Activity #7	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades Pre-K-2 3. Record and share information gathered.	Activity #3 Each team should set up a study container and record observations. Activity #5 Have the students observe the creatures inside and record how they look and what they do. Activity #6 They should record what the creatures look like, what they're doing, what the food in the container looks like, and how much is left.	
	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using notetaking and other appropriate strategies.	Activity #7 Have the teams organize and present their observations (data) to the entire group. Discuss questions like : Did they have a favorite food?...	

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<p>English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.</p>	<p>Elementary Grades Pre-K-2 1. Tell about experiences and discoveries, both orally and in writing.</p>	<p><u>Activity #7</u></p>	
	<p>Elementary Grades 3-4 4. Report orally and summarize personal discoveries they have made as a result of reading and viewing.</p>	<p><u>Activity #7</u></p>	

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<i>Activity Title: Dynamic Duos</i>		<i>Activity Guide Page #: 79</i>	
Objective(s): Students will: 1) examine close relationships that exist between different organisms; 2) explain how relationships help each other to survive.			
Overview: Organisms in an ecosystem depend on each other for food. But they may also depend on each other for protection, transportation, or shelter. A close, long-term relationship between two organisms is called symbiosis (sihm-bee-OH-sihs). In this activity, students will learn about several kinds of symbiosis.			
Subject Area(s): Science, Language Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 1. Formulate questions to be answered while reading.	Activity #2 Pass out copies of Student Page 81 titled “Classified Ads.”	
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	Activity #2	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Activity #2	

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<i>Activity Title:</i> Forest Consequences		<i>Activity Guide Page #:</i> 101	
Objective(s): Students will: 1) evaluate the options for managing or using a piece of forested land; 2) make a land-use decision and explore the consequences of that decision.			
Overview: Few issues have simple solutions- and resolving them usually involves compromise. In this activity, your students will learn about some of the effects that human activities can have on a forest. They will explore some of the trade-offs involved in working out a land-use issue.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 1. Formulate questions to be answered while reading.	Activity #5 As the teams read through each proposal, they should ask themselves the questions below. They should decide either to accept one proposal or to make a compromise/alternate proposal.	
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	<u>Activity #5</u>	
	Middle Grades 5-8 4. Use specific strategies (e.g., rereading, consultation) to clear up confusing parts of a text.	<u>Activity #5</u>	
	Middle Grades 5-8 6. Identify accurately both the author's purpose and the author's point of view.	<u>Activity #5</u>	
	Middle Grades 5-8 7. Summarize whole texts by selecting and summarizing important and representative passages.	<u>Activity #5</u>	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	<u>Activity #5</u>	
	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	Activity #6 Afterward have each team present its decision to the group. Discuss these questions: Was it difficult or easy to decide what to do? Did you have...	

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	Middle Grades 5-8 10. Adjust viewing and listening strategies in order to comprehend materials viewed and heard.	Activity #6	
	Middle Grades 5-8 11. Generate and evaluate the notes they have taken from course-related reading, listening, and viewing.	Activity #6	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.	Activity #5 As the teams read through each proposal, they should ask themselves the questions below. They should decide either to accept one proposal or to make a compromise/alternate proposal.	
English/Language Arts C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Middle Grades 5-8 5. Demonstrate an understanding of the concept of propaganda.	Variation #1 Divide students into groups of 10. 4 of the 10 become the City Council that has to decide what to do with the Morris Woods. The other 6 will work in pairs to present each land use proposal...	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Middle Grades 5-8 9. Apply effective strategies to the reading and use of moderately long nonfiction texts (e.g., reference sources, articles, editorials, histories, biographies, autobiographies, diaries, letters, and commentaries) which have an appropriate complexity of content and sophistication of style.	Activity #5	
	Middle Grades 5-8 1. Demonstrate an understanding that people respond to literature in different and individual ways.	Activity #6 What differences might exist between the way you made your decision and the way a real city council would have made a decision like this?	

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Activity Title: Loving It Too Much		Activity Guide Page #: 108	
Objective(s): Students will: 1) explain how increased numbers of park visitors and activities outside park boundaries affect ecosystems within national and local parks; 2) offer possible solutions to problems facing national and local parks.			
Overview: National parks are the treasures of any nation. Yet national parks today struggle with serious dilemmas. By looking at problems in America's national parks, students can begin grappling with some tough environmental issues that affect parks locally and globally.			
Subject Area(s): Science, Language Arts, Social Studies		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 1. Formulate questions to be answered while reading.	Activity #1 Talk about local or famous national parks using the chart on page 113. Have students share their experiences in the parks. Where did they go? What was ...	
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	Activity #4 Have students work in their groups to answer the questions.	
	Middle Grades 5-8 3. Identify specific devices an author uses to involve readers.	Activity #4 Afterward, go over the questions using the answers on this page.	
	Middle Grades 5-8 4. Use specific strategies (e.g., rereading, consultation) to clear up confusing parts of a text.	Activity #5 Have students work in their groups to discuss the reading and answer these questions: What problems have been caused by an increase of visitors to national parks? What other problems...	
	Middle Grades 5-8 6. Identify accurately both the author's purpose and the author's point of view.	Activity #5	
	Middle Grades 5-8 7. Summarize whole texts by selecting and summarizing important and representative passages.	Activity #6 What are the pros/cons of each recommendation?	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Activity #5	

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	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	<u>Activity #6</u> Discuss problems facing the Park Service. What solutions did they recommend? Do students think parks should charge entrance fees that...	
	Middle Grades 5-8 11. Generate and evaluate the notes they have taken from course-related reading, listening, and viewing.	Activity #3 Divide group into teams of 2-4 students. Have teams use the statistics to draw a bar or line graph of U.S. population growth since 1800 and a graph of park...	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Middle Grades 5-8 9. Apply effective strategies to the reading and use of moderately long nonfiction texts (e.g., reference sources, articles, editorials, histories, biographies, autobiographies, diaries, letters, and commentaries) which have an appropriate complexity of content and sophistication of style.	Activity #5, all	
English/Language Arts C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Middle Grades 5-8 5. Demonstrate an understanding of the concept of propaganda.	Activity #5, all	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 2. Write stories that include major events, develop settings, and deal with problems and solutions.	Assessment Opportunity Have students prepare written arguments stating what should be done about problems facing national/local parks. The argument should explain and show the causes of the problems...	
	Middle Grades 5-8 3. Write pieces and deliver oral presentations that use structures appropriate to audience and purpose.	<u>Assessment Opportunity</u>	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.	Activity #6	

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Activity Title: Then And Now		Activity Guide Page #: 131	
Objective(s): Students will: 1) describe the environmental changes that have occurred in their community over the course of time; 2) discuss whether those changes have been positive or negative for the community; 3) discuss ways to remedy negative changes.			
Overview: If your community is like most others, it's now quite a bit different than it was 100, 50, 25, or even five years ago. This activity will help your students to understand how we, as people, affect and alter the environment in which we live.			
Subject Area(s): Social Studies, Science, Language Arts		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Middle Grades 5-8 4. Use knowledge of the fundamental parts of speech when writing and speaking.	Part B #1 Tell students that they'll interview an older person who has lived in the community for many years. Part A #1 Ask students if they've noticed any changes in the community lately. Are there housing developments/schools?... Part A #2 Ask students how those changes make them feel. Discuss the pros/cons of how those developments affect people and communities...	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	<u>Part B #1, all</u> <u>Part B #2</u> Have each person develop a list of interview questions. How long have you lived in the community? Have the changes helped/hurt you in any way?...	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using notetaking and other appropriate strategies.	<u>Part B #1, all</u> <u>Enrichment #1</u> Have the groups research the area to find out the following information: What is the history of the area? Who lives in or uses the area (including wildlife)?...	
	Middle Grades 5-8 8. Make limited but effective use of primary sources when researching topics.	<u>Part B #1, all</u> <u>Enrichment #1</u>	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and	Middle Grades 5-8 2. Write stories that include major events, develop settings, and deal with problems and solutions.	Enrichment #2 Have them write stories about how their community might be different 25, 50 or 100 years from now.	

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<p>rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.</p>			
	<p>Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).</p>	<p>Enrichment #1 Have members of each group prepare and present a report about their natural area.</p>	
<p>English/Language Arts F. Standard English Conventions Students will write and speak correctly, using conventions of standard written and spoken English.</p>	<p>Middle Grades 5-8 2. Demonstrate command of the conventions necessary to make an informal speech or presentation, effectively engaging peers and fielding responses.</p>	<p><u>Enrichment #1</u></p>	
<p>English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.</p>	<p>Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.</p>	<p>Part A #2</p>	

SECTION THREE: SYSTEMS

<i>Activity Title:</i> Sunlight And Shades Of Green		<i>Activity Guide Page #:</i> 137	
Objective(s): Students will: 1) test the effects of lack of sunlight on plant leaves; 2) describe the process of photosynthesis and how it enables a plant to survive.			
Overview: This activity introduces students to photosynthesis, the process that enable trees and other green plants to use sunlight to manufacture their own food.			
Subject Area(s): Science, Language Arts		Grade Level(s): 2-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Elementary Grades 3-4 1. Determine the meaning of unknown words by using a dictionary, glossary, or other reference sources.	Activity #5 Ask students whether they have heard the word photosynthesis before.	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	Activity #7 To help students better understand the process of photosynthesis, lead them on an imaginary trip. Have them close their eyes. When quiet, read the passage aloud: Imagine that you see a very tall...	

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Activity Title: Water Wonders		Activity Guide Page #: 142	
Objective(s): Students will: 1) simulate the paths that water takes in the water cycle; 2) describe the importance of the water cycle to living things; 3) conduct an experiment to discover how plants affect the movement of water in a watershed; 4) describe how plants are important in maintaining water quality.			
Overview: The water cycle is the system by which Earth's fixed amount of water is collected, purified, and distributed from the environment to living things and back to the environment. Plants play a large part in the cycle by absorbing water with their roots and transpiring it as vapor from their leaves			
Subject Area(s): Science, Language Arts, Physical Education		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Elementary Grades 3-4 1. Write pieces and make remarks that begin to use descriptive language that clarifies, enhances, and develops ideas.	Part A #7 Ask students to write a brief story from a water molecule's point of view that describes the journey they just took through the water cycle... Assessment Opportunity Ask students to revise their definition of water cycle to reflect any new understanding they've gained. Give them a scenario to write about...	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	Part A #2 Use the following questions to focus their attention: Where does the water go when a puddle dries up? Where does rain come from? Why don't oceans and...	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 7. Write pieces and make remarks that use descriptive language to clarify, enhance, and develop ideas.	<u>Part A #7, all</u> <u>Assessment Opportunity, all</u>	
English/Language Arts C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Middle Grades 5-8 4. Use knowledge of the fundamental parts of speech when writing and speaking.	<u>Part A #7, all</u> Assessment Opportunity, all	

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Activity Title: Web Of Life		Activity Guide Page #: 148	
Objective(s): Students will: 1) collect information about various organisms in an ecosystem; 2) create a mural that depicts the interdependence of various organisms with other components in an ecosystem; 3) create a simulated web of life using a ball of string.			
Overview: In this activity, students will take a close look at one particular ecosystem (a forest) and will discover the ways that plants and animals are connected to each other. By substituting the appropriate information, you can also use the activity to study other ecosystems, such as oceans, deserts, marshes, or prairies.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades 3-4 1. Ask and seek answers to questions.	Activity #5 Instruct groups to collect as much information as possible about their chosen organism.	
	Middle Grades 5-8 6. Use magazines, newspapers, dictionaries, journals, and other print sources to gather information for research topics.	<u>Activity #5</u>	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.	Activity #8 When all organisms are in place, you might discuss the following questions: What did you discover about your plant/animal that surprised you the most? Why did you select the species ...	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	<u>Activity #8</u>	

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Activity Title: School Yard Safari		Activity Guide Page #: 151	
Objective(s): Students will: 1) find signs of animals living in the school yard; 2) describe ways the school environment provides those animals with what they need to live.			
Overview: Every organism requires a place to live that satisfies its basic needs for food, water, shelter, and space. Such a place is called a habitat. In this activity, students will go on a safari to explore a nearby habitat, the school yard, while looking for signs of animals living there.			
Subject Area(s): Science, Language Arts		Grade Level(s): PreK-5	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Elementary Grades Pre-K-2 4. Recognize and use rereading as an aid to developing fluency and to understanding appropriate material.	Enrichment #2 Help students learn more about the animals they found in the school yard. They could research different animals and create a class chart showing a...	
	Elementary Grades Pre-K-2 5. Figure out unknown words using a variety of strategies including rereading, context clues, and knowledge of word structures and letter-sound relationships.	<u>Enrichment #2</u>	
	Elementary Grades Pre-K-2 6. Recognize and use clues within the text (sentence structure, word meanings), rereading, and other strategies as aids in developing fluency and comprehension.	<u>Enrichment #2</u>	
	Elementary Grades Pre-K-2 7. Ask questions and give other responses after listening to presentations by the teacher or classmates.	Activity #5 Bring group together and have students share their experiences and findings. Focus on these questions: What evidence did you find of other animals? Where do those animals get water?...	
	Elementary Grades 3-4 1. Determine the meaning of unknown words by using a dictionary, glossary, or other reference sources.	<u>Activity #5</u>	
	Elementary Grades 3-4 2. Adjust reading speed to suit purpose and difficulty of the material.	Enrichment #3 Have them do some research to find out what could be done to the school yard habitat to attract those animals. They can	

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		find information in the library or get advice from experts in the field...	
	Elementary Grades 3-4 5. Read a variety of narrative and informational texts independently and fluently.	Enrichment #3	
	Middle Grades 5-8 1. Formulate questions to be answered while reading.	<u>Enrichment #2</u> They could research different animals found and create a class chart showing a picture of each animal and information about what it needs to survive.	
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	<u>Enrichment #2</u>	
	Middle Grades 5-8 4. Use specific strategies (e.g., rereading, consultation) to clear up confusing parts of a text.	<u>Enrichment #2</u>	
	Middle Grades 5-8 7. Summarize whole texts by selecting and summarizing important and representative passages.	<u>Enrichment #2</u>	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	<u>Enrichment #2</u>	
	Middle Grades 5-8 11. Generate and evaluate the notes they have taken from course-related reading, listening, and viewing.	Enrichment #2	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 3. Respond to speakers in a variety of ways (e.g., listening attentively, responding politely).	<u>Activity #5</u>	
	Elementary Grades 3-4 11. Apply effective strategies to the reading and use of nonfiction (e.g., reference sources, articles, histories, biographies, autobiographies, diaries, and letters) using texts with an appropriate complexity of content and sophistication of style.	<u>Enrichment #2, all</u> <u>Enrichment #3, all</u>	
	Middle Grades 5-8 9. Apply effective strategies to the reading and use of moderately long nonfiction texts (e.g., reference sources, articles, editorials, histories, biographies,	<u>Enrichment #2, all</u> <u>Enrichment #3, all</u>	

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	autobiographies, diaries, letters, and commentaries) which have an appropriate complexity of content and sophistication of style.		
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Elementary Grades Pre-K-2 1. Understand the main idea of simple expository information.	<u>Enrichment #2, all</u> <u>Enrichment #3, all</u>	
	Elementary Grades 3-4 3. Read for a variety of purposes (e.g., to answer specific questions, to form an opinion, to skim for information).	<u>Enrichment #2, all</u> <u>Enrichment #3, all</u>	
	Elementary Grades 3-4 4. Summarize informational texts (e.g., identify the main idea or concept and the supporting detail).	<u>Enrichment #2, all</u> <u>Enrichment #3, all</u>	
	Elementary Grades 3-4 6. Understand common technical terms used in instructional and informational texts.	<u>Enrichment #2, all</u> <u>Enrichment #3, all</u>	
	Middle Grades 5-8 1. Seek appropriate assistance when attempting to comprehend challenging text.	Activity #5, all	
	Middle Grades 5-8 2. Identify useful information organizing strategies.	<u>Enrichment #2, all</u> <u>Enrichment #3, all</u>	
	Middle Grades 5-8 6. Describe new knowledge presented in informational texts and how it can be used.	Enrichment #2	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Elementary Grades Pre-K-2 1. Tell about experiences and discoveries, both orally and in writing.	Activity #5	
	Elementary Grades 3-4 4. Report orally and summarize personal discoveries they have made as a result of reading and viewing.	Enrichment #2 & #3 (all)	
	Middle Grades 5-8 2. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	<u>Enrichment #3</u>	
English/Language Arts F. Standard English Conventions	Elementary Grades Pre-K-2 1. Edit their own written work for standard English	<u>Enrichment #2</u>	

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Students will write and speak correctly, using conventions of standard written and spoken English.	spelling and usage, as evidenced by pieces that show and contain:		
	Elementary Grades Pre-K-2 2. Use oral language appropriate to the level of formality required.	<u>Activity #5, all</u>	
	Elementary Grades 3-4 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain:	<u>Activity #5, all</u>	
	Elementary Grades 3-4 2. Use the level of language formality required in a variety of speaking situations.	Enrichment #2	
	Middle Grades 5-8 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain:	Activity #5	
	Middle Grades 5-8 2. Demonstrate command of the conventions necessary to make an informal speech or presentation, effectively engaging peers and fielding responses.	Activity #5	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Elementary Grades 3-4 4. Write pieces that show awareness of a variety of intended audiences and identifiable purposes.	<u>Enrichment #2</u>	
	Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).	<u>Activity #5</u>	
	Middle Grades 5-8 10. Deliver oral presentations that use a variety of strategies of address (e.g., eye contact, hand gestures, voice modulation, changes of rhythm).	<u>Enrichment #2</u>	
English/Language Arts H. Research-Related Writing and Speaking	Elementary Grades Pre-K-2 1. Develop a search strategy which uses appropriate and available resources.	Activity #4 Ask students to sketch the animals or signs they find. Hand lenses are good to increase	

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Students will work, write, and speak effectively when doing research in all content areas.		their powers of observation. They can set up a table and record the number of each animal they find...	
	Elementary Grades Pre-K-2 2. Formulate questions to ask when gathering information.	Activity #4	
	Elementary Grades Pre-K-2 3. Record and share information gathered.	Activity #4	
	Elementary Grades 3-4 1. Ask and seek answers to questions.	Activity #1 Ask students for ideas about where they might look. List their suggestions on the board. Have them pretend the buildings are mountains and cliffs, the lawn is a jungle...	
	Elementary Grades 3-4 2. Use print and non-print resources (e.g., encyclopedias, dictionaries, people, indexes) to gather information on research topics.	Enrichment #2	
	Elementary Grades 3-4 3. Present information obtained from research in a way that combines various forms of information (e.g., maps, charts, photos).	<u>Enrichment #2</u>	
	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using notetaking and other appropriate strategies.	Activity #4	
	Middle Grades 5-8 2. Separate information collected for research topics into major components based on relevant criteria.	<u>Enrichment #2</u> <u>Enrichment #3</u>	
	Middle Grades 5-8 6. Use magazines, newspapers, dictionaries, journals, and other print sources to gather information for research topics.	<u>Enrichment #2</u> <u>Enrichment #3</u>	
	Middle Grades 5-8 8. Make limited but effective use of primary sources when researching topics.	<u>Enrichment #2</u> <u>Enrichment #3</u>	

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Activity Title: Tropical Treehouse		Activity Guide Page #: 160	
Objective(s): Students will: 1) describe the plants and animals that live in different levels of the tropical rainforest; 2) examine and discuss a case study that involves the rights of native inhabitants of a tropical rainforest in a national park; 3) describe the sounds they might encounter when visiting a rainforest.			
Overview: In this activity, studying tropical rainforests and issues involving the use of rainforests will enable your students to make more informed decisions regarding the future of such regions. While tropical rainforests and the temperate rainforests of North America operate on many of the same ecological principles, they differ greatly in their climates, and in the types of soil, plants, and animals that make up the forest ecosystems.			
Subject Area(s): Science, Social Studies, Language Arts, Performing Arts, Visual Arts.		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 2. Separate information collected for research topics into major components based on relevant criteria.	Part A #3 Have students research and prepare a report about a particular person, animal, or plant of the rainforest. (They can choose an inhabitant from the rainforest scene or another that they think of.) They should also describe the particular type of rainforest where the person, animal or plant lives (including its continent and country).	
	Middle Grades 5-8 6. Use magazines, newspapers, dictionaries, journals, and other print sources to gather information for research topics.	Part A #3	
	Middle Grades 5-8 7. Use search engines and other Internet resources to collect information for research topics.	Part A #3	
English/Language Arts C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Middle Grades 5-8 3. Consult pertinent information sources on language use (e.g., a dictionary, a thesaurus, a handbook on style).	Part B #2 How does a dictionary define subsistence?	in order to provide opportunity to learn/demonstrate, teacher should require all students to respond somehow to these questions
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate,	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	Part B #2 Do you feel that Congress has the right to limit use to traditional methods? If you were the Park Superintendent, how would you address these issues in a written letter to Tuima'a? What would you do if the	same as above

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and appreciate what they have read.		native people continued to clear more forest that you thought they should? How would you respond to the Nation Park if you were a member to Tumia'a's family?	
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<i>Activity Title: Make Your Own Paper</i>		<i>Activity Guide Page #: 176</i>	
Objective(s): Students will: 1) make recycled paper from scrap paper; 2) describe the steps of the papermaking process and identify the elements and outputs of the process; 3) compare making paper by hand to the process used in factories.			
Overview: paper is one of many products that is manufactured from forest resources. In this activity, students investigate the papermaking process by trying it themselves. While papermaking can be rather messy, it is well worth the effort. Students are usually thrilled to find that they can make paper and that their product is practical as well as beautiful.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 3. Use discussions with peers as a way of understanding information.	<u>Getting Ready #9</u> Discuss these questions: What materials did we use in making paper? What forms of energy did you need to make the paper? (electricity and students' own energy) What types of wastes resulted from making paper? (dirty water, leftover pulp) What did we do with the waste products. . . .	all students participate in discussion or write in journal first then discuss

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<i>Activity Title:</i> I'd Like A Place To Visit Where . . .		<i>Activity Guide Page #:</i> 188	
Objective(s): Students will: 1) describe the characteristics of their favorite recreational area, explain the importance of recreational areas to people and other living things; 3) conduct a project at a local park to improve a habitat or enhance its suitability to people.			
Overview: In this activity, students will explore the concept that recreation areas are essential elements of a community. By working on a project to improve a local park, they will also learn about the community's system for managing open spaces.			
Subject Area(s): Science, Social Studies, Language Arts, Physical Education, Visual Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 7. Write pieces and make remarks that use descriptive language to clarify, enhance, and develop ideas.	Part A, #2 Have each student write a description of his/her favorite spot.	
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Middle Grades 5-8 2. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Part A, #3 Write the following questions on the chalkboard: What is your favorite recreations place? Where is it located? Why do you like to visit your place? What kinds of recreational activities do you enjoy there? What is unusual or special about your place. . . Encourage students to answer these questions as they draft their descriptions. . . .	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).	Part A, #4 Gather students into small groups and have members share their descriptions. Ask the groups to list things that are alike about all their favorite recreation areas. Have the groups share these common characteristics.	

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<i>Activity Title:</i> Planning The Ideal Community		<i>Activity Guide Page #:</i> 191	
Objective(s): Students will: 1) map the locations of services and resources in their community; 2) create a map of an "ideal" community that includes all the services and resources people need to live there.			
Overview: In this activity, students will explore the elements that compose a human community. They will survey the area around their school, looking for community systems that help them live there. Then they will plan an ideal community that meets all the needs of its members.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts			Grade Level(s): 6-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using note-taking and other appropriate strategies.	Enrichment #2 Interview residents who have lived in the community for more than 25 years. Ask them how the community has changed and whether they think the changes were for the better.	

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<i>Activity Title: We Can Work It Out</i>		<i>Activity Guide Page #: 193</i>	
Objective(s): Students will: 1) develop solutions to a land-use problem involving urban open space; 2) simulate a city council meeting to discuss and decide on a land-use issue.			
Overview: When certain people decide how to use a particular piece of land, the decision can involve and affect many people in many ways. Therefore, groups must establish processes for planning and resolving conflicts about land use. In this activity, students will develop a plan to address a land-use issue.			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 6. Make and justify conclusions about the motives of characters and the consequences of their actions.	Getting Ready #4 What four parties are involve in this conflict? What do each of them want? (List the parties' goals on the chalkboard.)	
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Getting Ready #3 Distribute copies of student page 196 and read the scenario as a class.	each student should be given an opportunity to read
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	Getting Ready #4 Ask the following questions to help students begin thinking about possible solutions as they focus on the areas of conflict. What four parties are involve in this conflict? What do each of them want? . . . Do you think any of the parties' goals are unreasonable and should be given up?	
	Middle Grades 5-8 9. Explain orally and defend opinions formed while reading and viewing.	Getting Ready #4 Do you think any of the parties' goals are unreasonable and should be given up?	all students given an opportunity to answer
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 3. Write pieces and deliver oral presentations that use structures appropriate to audience and purpose.	Getting Ready #6 Tell students they will have 20 minutes to develop a plan. Explain that they will then make a two-minute presentation to the city council, and that more than one person must help to present the plan.	

PROJECT LEARNING TREE Links/English Language Arts

<i>Activity Title:</i> There Ought To Be A Law		<i>Activity Guide Page #:</i> 201	
Objective(s): Students will: 1) describe how a group of students can make and change rules; 2) compare rulemaking in a group to the lawmaking process in local government; 3) research the steps necessary to make a proposed change in their community; 4) create a poster that shows the effects of their proposed change and that depicts the lawmaking process.			
Overview: In democratic societies, citizens have the power to influence the lawmaking process. In this activity, students will find out how local laws are made and how they can get involved in the process.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Secondary Grades 1. Develop an appropriate strategy for finding information on a particular topic.	Part B #2 Explain that each team will research what students would need to do to make their idea become a law.	teacher should provide opportunity for all team members to participate
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Secondary Grades 11. Make effective use of a variety of techniques for introducing and representing ideas and insights in written work and oral presentations.	Part B #4 After teams have collected their information, have them make posters summarizing the process for making their idea into law. Each poster should include: 1) a picture of the community “before” the proposed law, 2) a picture showing how the community would be different “after” the proposal became law (including both positive and negative effects), and 3) the people and steps that would be involved with making it a law.	same as above
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Secondary Grades 3. Record significant information from events attended and interviews conducted.	Part B #4	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 1. Seek appropriate assistance when attempting to comprehend challenging text.	Enrichment Students could work to turn one of their ideas into law. Encourage students to examine their proposed laws to determine if their law might have positive or negative impacts . . .	same as above

PROJECT LEARNING TREE Links/English Language Arts

<i>Activity Title:</i> Power Of Print		<i>Activity Guide Page #:</i> 205	
Objective(s): Students will: 1) compare different sections of a daily newspaper; 2) analyze some of the ways that ideas and opinions are expressed through word choice; 3) research opposing sides of a local environmental issue; 4) write articles on environmental issues using both objective and subjective points of view.			
Overview: Newspapers keep the community informed about current events and trends, provide a forum for discussion of public issues, and are a source of entertainment. In this activity, students will examine articles from different sections of the newspaper by comparing and contrasting the different types of words and styles they employ.			
Subject Area(s): Social Studies, Language Arts, Visual Arts, Performing Arts.		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 6. Identify accurately both the author's purpose and the author's point of view.	Part A #4 What is the purpose of the newspaper piece? Is it supposed to inform, or persuade people to take one side? Can you tell on which side of the issue each another stands?	all students should respond somehow (journals, orally...) to these questions
	Middle Grades 5-8 3. Identify specific devices an author uses to involve readers.	Part A #5 Ask students what mental picture they have if you say broke or smashed and the different connotations? Part A #6 Ask groups circle any words or phrases that bring to mind graphic images or strong emotions (strong connotations)? Part A #7 List those graph and emotional words on the chalkboard. Discuss the effect on those words in the newspaper pieces.	same as above
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 2. Distinguish between apparent fact and opinion in nonfiction texts.	Part A #7 Ask questions such as these: Which piece is more factual? Which piece is more persuasive?	same as above

PROJECT LEARNING TREE Links/English Language Arts

<i>Activity Title:</i> Publicize It!		<i>Activity Guide Page #:</i> 209	
Objective(s): Students will: 1) plan and carry out a community action project; 2) use the media to create public awareness about the event.			
Overview: The news media, including television, newspapers, and radio, provide community members with a system for getting and spreading information about environmental issues. This activity can be done in conjunction with any of the action projects in this activity guide. Students will conduct an environmental action project and use various media to inform others in the community about the project.			
Subject Area(s): Science, Social Studies, Language Arts, Visual Arts, Performing Arts			Grade Level(s): 5-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Middle Grades 5-8 2. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Doing the Activity #9 After they have written drafts of their publicity materials, encourage students in each group to read their drafts to each other. They should be sure the writing is accurate, clear, and informational. After students revise their own drafts, they may type or copy their writing onto school stationery.	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 5. Write for both public and private audiences.	Doing the Activity #9	
	Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).	Doing the Activity #9	

SECTION FOUR: STRUCTURE AND SCALE

<i>Activity Title:</i> Watch On Wetlands		<i>Activity Guide Page #:</i> 258	
Objective(s): Students will: 1) study a wetland ecosystem; 2) analyze the issues and opinions relating to the management and protection of wetlands.			
Overview: If a duck can paddle in it, it's a wetland. If a duck can waddle on it, it's not. If only wetlands could be defined as simply as this, wetlands issues and legislation would be less muddy. In this activity, students will learn more about wetlands and about how land-use decisions and legislation affect these areas.			
Subject Area(s): Science, Social Studies		Grade Level(s): 7-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using note-taking and other appropriate strategies.	Part A #4 Have students gather preliminary information from owners or managers or from local biologists or naturalists. Part A #7 They should document why there might be problems, how they might help improve the situation. Part B #3 Ask student to contact agencies or organizations to get additional information and answers to their questions.	
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 1. Formulate questions to be answered while reading.	Part B #2 They should make a list of questions they want answered.	
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 5. Write for both public and private audiences.	Part B #4 Have students draft a letter to Dr. Garcia advising her when to contact and what course to follow. Part C #6 Have each team write a letter to the property owner stating the result of the debate and their reaction to it.	

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	Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).	Part B #4 Teams should then read their letters to the rest of the class and present findings that support their advice. Part C #3 Research and write a short description of the positions of key players. What does each play stand to gain to lose by a decision concerning the property? Part C #6 Have each team write a letter to the property owner stating the result of the debate and their reaction to it.	
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Part C #1 Have students read the letter to the editor on page 263.	
	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	Part C #2 Discuss with the students the key issues presented in the letter. Who are the players and what are their positions?	teacher should provide opportunity for all students to respond individually
English/Language Arts E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Middle Grades 5-8 3. Ask questions and apply personal interpretations in class discussion following speeches and oral presentations.	Part C #5 After the debate, discuss and summarize the issues presented. Try to reach a consensus about how to address the property owner's concerns. Part B #4 After each group has presented its argument, have the panel of judges make a final decision.	

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<i>Activity Title:</i> Air We Breathe		<i>Activity Guide Page #:</i> 264	
Objective(s): Students will: 1) identify various types of indoor air pollutants and their sources; 2) understand how various pollutants can be harmful to people's health; 3) trace how radon can get into buildings and eventually into our bodies; 4) take action to improve indoor air quality.			
Overview: Did you know that sometimes the air in our homes, schools, and offices can be worse for our health than the air outside? In this activity, students will learn more about indoor air quality, and what can be done about it.			
Subject Area(s): Science, Language Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 6. Describe new knowledge presented in informational texts and how it can be used.	Part B #1 Students read "Invisible Gas Attack." Part B #5 Students read "Where will he Radon Go." Part B #6 Students trace different radon routes. Part B #7 Read "Trace the Radon Routes" and answer the questions: . . . Part C #1 Students read "Primary Pollutants." Part C #2 Using this information, have students design a checklist.	

SECTION FIVE: PATTERNS OF CHANGE

<i>Activity Title:</i> Tree Cookies		<i>Activity Guide Page #:</i> 289	
Objective(s): Students will: 1) identify heartwood, sapwood, and a tree's annual rings; 2) infer from a tree's rings what damage or stress might have occurred in its life; 3) make a timeline of human history that coincides with a tree's rings.			
Overview: One of the best ways to learn about a tree is to look at its annual rings. Tree rings show patterns			
Subject Area(s): Science, Social Studies, Visual Arts, Language Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades 3-4 2. Use print and non-print resources (e.g., encyclopedias, dictionaries, people, indexes) to gather information on research topics.	Part B #2 Have teams research different information that relates to the redwood tree cookie. Categories for research should include 1) possible significant events in the tree's lifetime, such as years of drought, flood, or fire; 2) significant world events during the life of the tree; 3) significant events in U.S. or Canadian history during the life of the tree; and 4) significant events of people in your classroom, school, or community during the life of the tree. Teams should each identify at least five dates for events in their category.	
	Middle Grades 5-8 6. Use magazines, newspapers, dictionaries, journals, and other print sources to gather information for research topics.	Part B #2	teacher provides provisions for each student to respond
	Middle Grades 5-8 7. Use search engines and other Internet resources to collect information for research topics.	Part B #2	teacher provides provisions for each student to respond

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<i>Activity Title:</i> Trees In Trouble		<i>Activity Guide Page #:</i> 293	
Objective(s): Students will: 1) cite factors that can cause trees to become unhealthy; describe symptoms of unhealthy trees; 3) compare environmental conditions that affect both human health and plant health; 4) identify people or agencies that care for trees and forests.			
Overview: Like humans, trees can become weak and unhealthy, suffer injury, and die. People have learned to read the symptoms of unhealthy trees to help them. In this activity, students will examine trees for signs of damage or poor health.			
Subject Area(s): Science, Math, Social Studies, Language Arts, Performing Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades 3-4 1. Ask and seek answers to questions.	Part A #5 Have student hypothesize about what caused the damage. Note that some problems may be more common in certain regions than in others.	
	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using note-taking and other appropriate strategies.	Part A #6 After your field trip, combine all the information the class collected and make a “Tree Damage Report.’ Then find the people or agency in your area that cares for unhealthy trees (many city, county, or state forestry and park agencies have urban foresters). Send a copy of your report tot he agency (or person) in charge of trees in your area. Follow up a couple of weeks later to find out if the agency is going to take action. Ask if you can be informed of any planned tree work so that your class can be at the location to observe. You can also visit a garden center, nursery, or tree-trimming company in your area to find out what they do to keep trees healthy.	

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<i>Activity Title: Signs Of Fall</i>		<i>Activity Guide Page #: 299</i>	
Objective(s): Students will: 1) describe some of the differences between deciduous and evergreen trees; 2) identify patterns in the changing of seasons; 3) understand why laves of deciduous trees change color in the fall.			
Overview: In temperate regions, people can observe the annual change of seasons. In autumn, leaves of many trees turn color and fall to the ground, many animals migrate or go into hibernation, the days get shorter, and the air gets colder. this pattern repeats itself every year.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Elementary Grades Pre-K-2 3. Record and share information gathered.	Part A #2 Hold a discussion outdoors in which the students share their observations and answers to the questions. Part A #3 When you return back indoors, have students draw or write answers to the questions.	teacher should provide opportunity for all students to participate in discussion
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 5. Understand stories and expository texts from the perspective of the social and cultural context in which they were created.	Enrichment #2 Tell your students the following is a Native American legend about why the leaves change color in the fall. Discuss with students how this explanation differs from the scientific one they just learned. Have them consider how this legend might reflect important elements of Native American culture.	same as above
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).	Enrichment #2 Invite the students to create their own imaginative legends explaining why leaves change color in the fall.	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 1. Demonstrate awareness of the culture and geography pertinent to the texts they read.	Enrichment #2 Invite the students to create their own imaginative legends explaining why leaves change color in the fall.	

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<i>Activity Title:</i> Nothing Succeeds Like Succession		Activity Guide Page #: 306	
Objective(s): Students will: 1) explore basic relationships between species diversity and ecosystem stability; 2) identify successional stages in ecosystems based on plant and animal species; 3) draw conclusions about the process of succession based on study test plots in different stages of succession.			
Overview: Succession is a natural pattern of change that takes place over time in a forest or ecosystem. In this activity, students will study the connection between plants, animals, and successional stages in local ecosystems.			
Subject Area(s): Science, Math, Language Arts.		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.	Part A #1 Hand out story on page 309 to each student. After reading it, discuss the changes that took place during the course of the story.	teacher should provide opportunity for all students to participate in discussion
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Elementary Grades 3-4 4. Write pieces that show awareness of a variety of intended audiences and identifiable purposes.	Enrichment Have each team write a brief story describing it. Create a large felt board, in which the bottom third is brown (for soil) and the top tow-thirds are blue (for sky). Have groups come up, in order, and place their plants and animals in appropriate places on the felt board and tell their stories (felt naturally sticks to felt). Your class can re-create the story of succession, stage by stage.	teacher should provide for active participation of all team members
	Middle Grades 5-8 6. Write and deliver oral presentations that achieve distinct purposes (e.g., to summarize, to narrate, to inform, to explain).	Enrichment	

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<i>Activity Title:</i> Our Changing World		<i>Activity Guide Page #:</i> 328	
Objective(s): Students will: 1) identify some global environmental patterns; 2) discuss issues related to global change; 3) describe actions that people can take to improve the environment and quality of life.			
Overview: Patterns of change are evident in the Earth's global systems. By exploring the issues of global change, students will gain an understanding of how we must deal with the possibility of global environmental changes today.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Middle Grades 5-8 4. Write essays and deliver oral presentations which identify a clear topic and reliably support that topic.	Enrichment Have each team prepare a short presentation to the class with background about the issue, potential effects it could have, and geographic areas likely to be affected. Record the geographic areas of potential change with map pins, shading, or overlays on a map of the world. Discuss each team's map.	teacher should provide opportunity for all team members to participate
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 6. Describe new knowledge presented in informational texts and how it can be used.	Enrichment Ask students to use information from their investigations as they write down some actions that can be taken to make positive changes with regard to these global issues.	

PROJECT LEARNING TREE Links/English Language Arts

<i>Activity Title:</i> Earth Manners		<i>Activity Guide Page #:</i> 331	
Objective(s): Students will: express appropriate ways to treat living things and to act in forests, parks, and other natural areas.			
Overview: Children are naturally curious about their environment. They should be encouraged to explore the out-of-doors, while having respect for living things and their habitats. In this activity students will develop a set of guidelines for exploring and enjoying nature.			
Subject Area(s): Science, Social Studies, Language Arts, Visual Arts			Grade Level(s): PreK-4
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Elementary Grades Pre-K-2 7. Ask questions and give other responses after listening to presentations by the teacher or classmates.	<u>Doing the Activity #2</u> After reading the story, ask the following question: How did the story make you feel? How do you think Trapper felt at different times in the story? Why did Muttok try to collect all the seals? Do you think Trapper gave Muttok good advice?	allowance for all students to answer must be made
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Elementary Grades 3-4 6. Make and justify conclusions about the motives of characters and the consequences of their actions.	Doing the Activity #2	same as above

PROJECT LEARNING TREE Links/English Language Arts

<i>Activity Title:</i> Trees For Many Reasons		<i>Activity Guide Page #:</i> 340	
Objective(s): Students will: discuss and analyze a fictional story relating to the proper and improper use of natural resources.			
Overview: By reading fables such as <i>The Lorax</i> by Dr. Seuss or <i>The Man Who Planted Trees</i> by Jean Giono, students can examine the importance of conserving natural resources.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 2-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 6. Identify accurately both the author's purpose and the author's point of view.	Part A #3 Have them think about and answer the following questions: Why do you think the Once-ler did what he did? What patterns of change in the environment did we observe? What were environmental conditions like before the company started making Thneeds? What were they like afterward? What was the author's message concerning what one person can do to save or destroy the environment? Part B #1 What was the author's message about the difference one person can make? Part A Variation #2 What seems to be Dr. Seuss's purpose in writing this fable?	
	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Part A Variation #1 Read <i>The Lorax</i> aloud or watch the movie. Part A Variation #2 How could the Once-ler have managed? Is it necessary? What kinds of things can we do today? Is this a good excuse? <u>Part A Variation #4</u> Have each group read their questions and answers to the class. Students can agree, disagree, or add to the answers given by their classmates. <u>Part B #2</u> If they agree, they should give three reasons why, and then give an example from real life of how this statement is true. If they disagree, they should state why and modify it into a statement they agree with.	

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<p>English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.</p>	<p>Elementary Grades 3-4 6. Make and justify conclusions about the motives of characters and the consequences of their actions.</p>	<p>Part A #3 Have them think about and answer the question: Why do you think the Once-ler did what he did?</p>	
<p>English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.</p>	<p>Middle Grades 5-8 2. Reflect on what has been discovered and learned while reading, and formulate additional questions.</p>	<p>Part B #1 Ask students to list what they think the major ideas are. After listing their ideas on the chalkboard, discuss the following questions; Why do you think Elzeard did what he did? What changes did the narrator notice between his visits? What were the environmental conditions like before Elzeard planted the trees? What were they like afterward? What was the author’s message about the difference one person can make? Part A Variations Reference: Pages 340-341, <i>Project Learning Tree</i>.</p>	
<p>English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.</p>	<p>Middle Grades 5-8 2. Write stories that include major events, develop settings, and deal with problems and solutions.</p>	<p>Enrichment #1 Students can write a sequel to <i>The Lorax</i> that might explain how the Truffula tree made a comeback through replanting and proper care. The sequel could say what the new managers of the Truffula Tree Company are going to do to maintain environmental quality and at the same time make Thneeds.</p>	

PROJECT LEARNING TREE Links/English Language Arts

<i>Activity Title:</i> The Native Way		Activity Guide Page #: 343	
Objective(s): Students will: describe traditional Native American lifestyles and Native Americans' use of natural resources and the land.			
Overview: Patterns of change can be observed in human uses of natural resources. In this activity, students will explore some traditional Native American attitudes and lifestyles with respect to the land and its resources and will compare those attitudes with their own.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Middle Grades 5-8 11. Read literature and view films which illustrate distinct cultures in various types of works and formulate and defend opinions gathered from the experience.	Doing the Activity #1 Have the students read the fictionalized version of Chief Seattle’s speech and the version that is believed to be closer to his actual words. Doing the Activity #2 After they’ve read both speeches, have students break into small groups to discuss how the two speeches differ. What might account for these differences? Can the roots of the environmental message in the synthesized speech be found in the authentic one?	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using note-taking and other appropriate strategies.	Enrichment #1 Have students research the historical existence of native peoples in your region. Determine what influence these peoples have had in your region. Find out if any traditions have been maintained and what the major influences are that affect the way these people live today. Have students consider the following questions: What influences have forests had on the history of Native American tribes? . . . Enrichment #2 Investigate the lifestyles of indigenous people today in other parts of the world – such as Africa, Asia, or South America. Many native cultures have systems of land management that have been sustained over thousands of years. One of the consequences of population growth and development is that some of these native peoples no longer have access to the amount of kinds of land they need to sustain their traditional systems. In many cases the cultural systems have been lost forever.	

PROJECT LEARNING TREE Links/English Language Arts

<i>Activity Title:</i> In The Good Old Days		<i>Activity Guide Page #:</i> 349	
Objective(s): Students will: 1) describe important events in the history of conservation; 2) explain how environmental problems and perceptions of environmental problems and perceptions of environmental quality have changed through history; 3) express the point of view of a famous figure in the history of conservation.			
Overview: Human Attitudes and values, and therefore behavior, with regard to the environment can change over the course of generations. In this activity, students study the writings of men and women who have shaped the way people think about the environment.			
Subject Area(s): Science, Social Studies, Visual Arts, Language Arts, Performing Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 5. Understand stories and expository texts from the perspective of the social and cultural context in which they were created.	Part A #2 The report should include an assessment of how events in that person’s lifetime might have been influenced his or her attitudes toward the environment. . . . Part B #6 Can you trace any general differences in attitudes toward forests over the course of history? How could events during each authors life have affected his or her feelings? How do these authors’ views compare with values people have today?	
	Middle Grades 5-8 7. Summarize whole texts by selecting and summarizing important and representative passages.	Part A #2 The report should a piece of that person’s writing that addresses his or her thinking on the environment.	
English/Language Arts D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Middle Grades 5-8 5. Produce and support generalizations acquired from informational text.	Part A #2	
	Middle Grades 5-8 3. Identify both the author's purpose and the author's point of view when reading expository information.	Part B #4 Expresses its author’s views about forests or a viewpoint from his or her time. give everyone enough time to read the passages. Part B #5 Gather information about events in the author’s life that might have shaped his or her views.	

PROJECT LEARNING TREE Links/English Language Arts

<p>English/Language Arts G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.</p>	<p>Middle Grades 5-8 7. Write pieces and make remarks that use descriptive language to clarify, enhance, and develop ideas.</p>	<p>Part B #2 Have students write an essay or poem to express his or her personal feelings towards forests.</p>	
<p>English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.</p>	<p>Middle Grades 5-8 8. Make limited but effective use of primary sources when researching topics.</p>	<p>Part A #2 In researching a historical figure, students will find out about the person, they should find out what life was like in the person's time, how people of the day felt about environmental quality, and how environmental concerns were communicated. Include a hand-copied piece of that person's writing, which addresses his or her thinking on the environment.</p>	
	<p>Middle Grades 5-8 6. Use magazines, newspapers, dictionaries, journals, and other print sources to gather information for research topics.</p>	<p>Part A #2 In researching a historical figure, students will find out about the person, they should find out what life was like in the person's time, how people of the day felt about environmental quality, and how environmental concerns were communicated. Include a hand-copied piece of that person's writing, which addresses his or her thinking on the environment.</p>	

PROJECT LEARNING TREE Links/English Language Arts

Activity Title: A Look At Lifestyles		Activity Guide Page #: 353	
Objective(s): Students will: 1) analyze a Native American legend and traditional Native American attitudes toward using the land; 2) identify some of the values of the Early American pioneers; 3) create a chart comparing our own environmental beliefs and behaviors with those of traditional Native Americans and early pioneers.			
Overview: By examining the historical attitudes of Native Americans and American pioneers toward the environment and natural resources, students can reflect on their own lifestyles, and identify trade-offs between simple subsistence and the modern technology-based living.			
Subject Area(s): Science, Social Studies, Language Arts, Performing Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 5. Understand stories and expository texts from the perspective of the social and cultural context in which they were created.	Part B #1 Read “The White Buffalo Calf Woman and the Sacred Pipe.” Part B #2 Discuss the following questions: What are the parts of the White Buffalo Calf Woman’s sacred pipe? What do these parts stand for? What does she mean when she tells the people to take the right direction of the Good Red Road? . . . What can we do to take care of the Earth and keep the Earth strong and healthy in the future?	teacher should provide opportunity for all students to participate in discussion
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 6. Use magazines, newspapers, dictionaries, journals, and other print sources to gather information for research topics.	Part B #3 Assign students to research the traditional lifestyle customs of a local or regional Indian tribe.	
English/Language Arts B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Middle Grades 5-8 4. Explain how the motives of characters or the causes of complex events in texts are similar to and distinct from those in their own experience.	Part C #3 Pass out a copy of “Pioneers in the Wilderness.” Part C #4 Discuss and answer the following question: How does your real-life attitude toward the forest compare with the attitude you held when you imagined yourself an early settler?	teacher should provide opportunity for all students to participate in discussion

Project Learning Tree Links/Math

<i>Activity Title:</i> Paper Civilizations		<i>Activity Guide Page #:</i> 359	
Objective(s): Students will: 1) chronicle the major events in the history of papermaking; 2) create a pictorial representation of the history of paper.			
Overview: Humans have always had a strong need to record the events of their lives. From cave painting to writing paper, humans have preserved their history in many ways. In this activity, students will discover how the development of paper revolutionized the way people communicate and record information			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Middle Grades 5-8 8. Read for a wide variety of purposes (e.g., to gain knowledge, to aid in making decisions, to receive instructions, to follow an argument, to enjoy).	Doing the Activity #2 After group members have read page 361 and reviewed and discussed their time period, have groups create a mural that depicts their time period's paper making technology.	
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using note-taking and other appropriate strategies.	Enrichment #2 Students can investigate by interviewing parents and other adult users.	

<i>Activity Title:</i> Did You Notice?		<i>Activity Guide Page #:</i> 366	
Objective(s): Students will: 1) identify changes in their local environment over the course of time; 2) create a timeline to illustrate patterns of change over time.			
Overview: In this Activity, students will study changes in their local environment over short and long periods and will identify patterns of change.			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Middle Grades 5-8 1. Collect and synthesize data for research topics from interviews and field work, using note-taking and other appropriate strategies.	Part B #1 Ask students to gather information about the history of their community by visiting a museum, listening to a group, or visiting a library. Share with students any information you've already gathered.	

Section One: Diversity

<i>Activity Title:</i> The Shape Of Things		<i>Activity Guide Page #:</i> 3	
Objective(s): Students will: identify common shapes appearing in the natural and built environment as a way of understanding the function of shapes.			
Overview: As humans we depend on all of our senses - touching, tasting, hearing, smelling, and seeing - to gather impressions of our environment. Our brain sorts out the diversity of sizes, colors, and shapes that we see. In this activity, students will focus their eyes on the many shapes that define both our natural and built environment.			
Subject Area(s): Visual Arts, Language Arts, Math, Science		Grade Level(s): Part A: Pre-K; Part B: K-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics E. Geometry Students will understand and apply concepts from geometry.	Elementary Grades Pre-K-2 1. Describe, model, and classify 2D shapes and selected 3D figures.	Part A #1 Ask if student can name something that has particular shape. Part A #3 and #4 When students see object, hold up shape and say “I spy something shaped....” Part A #6 Students recall things with each shape. Part B #3 Students draw picture of natural environment with a particular shape. Part B #6 Volunteer to discuss shape and show all the pictures that he/she created during walk.	
Mathematics I. Discrete Mathematics Students will understand and apply concepts in discrete mathematics.	Elementary Grades Pre-K-2 1. Classify sets of objects into two or more groups using their attributes.	Part A #5 Using color with shapes in the I Spy game.	

<i>Activity Title:</i> Sounds Around		<i>Activity Guide Page #:</i> 9	
Objective(s): Students will: 1) identify sounds and map their location in the environment; 2) explain how noise can be a problem in the community; 3) create and carry out a plan to lessen a local noise problem; 4) study a Greek myth about sounds in nature.			
Overview: Our ears are constantly being bombarded with sound - so much so that we automatically "tune out" a lot of it. Some sounds are "music to our ears", while others can annoy us and even damage the delicate structures in our ears. try this activity to help your students "tune in" to the sounds in their environment and to help them identify and lessen local noise problems.			
Subject Area(s): Science, language Arts, Social Studies, Math		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics J. Mathematical Reasoning Students will understand and apply concepts of mathematical reasoning.	Middle Grades 5-8 1. Support reasoning by using models, known facts, properties, and relationships.	Part B #5 Students consider option of ways to buffer noise in locations where high levels are recorded. Assessment Opportunity Evaluate students' understanding of noise pollution through their identification of noise problems in their community and the feasibility of their plan for mitigating one or more of these problems.	make this a community service project
Mathematics A. Numbers and Number Sense Students will understand and demonstrate a sense of what numbers mean and how they are used.	Middle Grades 5-8 4. Represent numerical relationships in graphs, tables, and charts.	Assessment Opportunity Examine the accuracy of converting the data to a bar graph.	in a short response in a journal, students explain the data in relation to a bar graph

<i>Activity Title:</i> Picture This!		<i>Activity Guide Page #:</i> 16	
Objective(s): Students will: 1) identify similarities and differences between organisms by collecting pictures and categorizing them; 2) comprehend the connection between diverse organisms and the diverse environments in which they live.			
Overview: In this activity, students can learn about the diversity of life on earth by looking at different plants and animals from around the world			
Subject Area(s): Science, Visual Arts, Math		Grade Level(s): PreK-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics I. Discrete Mathematics Students will understand and apply concepts in discrete mathematics.	Elementary Grades Pre-K-2 1. Classify sets of objects into two or more groups using their attributes.	Doing the Activity #6 Students organize their animal and plant pictures by some characteristic or feature in an exhibit.	Assessment Opportunity: students can place in portfolio and include an explanation of why they chose those groups

<i>Activity Title:</i> Pass The Plants, Please		<i>Activity Guide Page #:</i> 50	
Objective(s): Students will: 1) identify edible plant parts and give examples of each; 2) describe how plants are used to make various kinds of foods; 3) discuss the importance of plants in people's diets.			
Overview: Chocolate candy. Apple pie. French fries with catsup. Tortilla chips with guacamole. Thanks to plants, these and many other favorite foods are ours to enjoy. Try the following activities to get your students thinking about just how big a part plants play in our daily lives.			
Subject Area(s): Science, Social Studies, Math, Language Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Elementary Grades 3-4 2. Read and interpret displays of data.	Part B #1 Students will fill in chard with information about the plant food they eat for lunch each day. Part B #3 Discuss the data. Did some plant parts show up in their lunches; more often than others? If so, which ones?	before the discussion, have students answer this question in their math journal
	Middle Grades 5-8 2. Assemble data and use matrices to formulate and solve problems.	Part B #1 and #3	same as above
Mathematics J. Mathematical Reasoning Students will understand and apply concepts of mathematical reasoning.	Elementary Grades 3-4 1. Demonstrate an understanding that support for a claim should be based on evidence of various types (e.g., from logical processes, from measurement, or from observation and experimentation).	Part B #4 Students create bar graph showing the occurrence of different plant parts in their lunches during the week.	in math journal, students respond to the question "How might this (bar graph) change from season to season?"
	Middle Grades 5-8 1. Support reasoning by using models, known facts, properties, and relationships.	Part B #4	same as above

Project Learning Tree Links/Math

SECTION TWO: INTERRELATIONSHIPS

<i>Activity Title:</i> Adopt A Tree		<i>Activity Guide Page #:</i> 65	
Objective(s): Students will: 1) describe a chosen tree using personal observation and investigation, and organize information about the tree; 2) identify relationships between their trees and other organisms; 3) put together a book or portfolio about their tree.			
Overview: This activity will encourage students' awareness of individual trees over time, as well as incorporate various other subjects. By adopting individual trees, students will gain greater awareness and appreciation of their local environments.			
Subject Area(s): Science, Math, Language Arts, Visual Arts, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics F. Measurement Students will understand and demonstrate measurement skills.	Elementary Grades 3-4 1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	Enrichment #1 Students work in pairs to measure the height, circumference and crown of their trees.	student's respond in math journals explaining how to find the measurement for height, circumference and crown of trees
	Middle Grades 5-8 3. Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.	Enrichment #1	same as above
	Secondary Grades 1. Use measurement tools and units appropriately and recognize limitations in the precision of the measurement tools.	Enrichment #1	students respond in their journals about the limitations in the precision of measuring the tree's height, circumference and crown

Project Learning Tree Links/Math

<i>Activity Title:</i> Trees As Habitats		<i>Activity Guide Page #:</i> 70	
Objective(s): Students will: 1) take inventory of the plants and animals that live on, in, and around trees; 2) identify ways those animals and plants depend on trees for survival, and in turn, influence the trees; 3) for Variation 2 - investigate how buildings provide a habitat for plants, animals, and people.			
Overview: From their leafy branches to their tangled roots, trees provide a habitat for a host of plants and animals. In this activity, your students will discover how plants and animals depend on trees in many ways.			
Subject Area(s): Science, Math, Social Studies, Visual Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics K. Mathematical Communication Students will reflect upon and clarify their understanding of mathematical ideas and relationships.	Elementary Grades 3-4 1. Use simple tables and graphs to communicate ideas and information in presentations in a concise and clear manner.	Doing the Activity #4 and #5 Students illustrate findings in a chart, table or graph and have students present their data to the rest of the group.	Using all the data, have the students respond to the discussion questions: What did you find on tree's trunk? What did you see in tree's branches?
	Middle Grades 5-8 2. Use statistics, tables, and graphs to communicate ideas and information in convincing presentations and analyze presentations of others for bias or deceptive presentation.	Doing the Activity #4 and #5	

<i>Activity Title: Birds And Worms</i>		<i>Activity Guide Page #: 77</i>	
Objective(s): Students will: 1) simulate how predators use their vision to find prey; 2) describe some different ways animals use camouflage for survival; 3) invent a fictional animal that is camouflaged for its particular environment.			
Overview: Camouflage is an important survival strategy in the animal kingdom. In this activity, student will discover the value of protective coloration as they pretend to be birds in search of colored worms or bugs.			
Subject Area(s): Science, Math, Physical Education		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics I. Discrete Mathematics Students will understand and apply concepts in discrete mathematics.	Elementary Grades Pre-K-2 2. Create and use an organized list to determine possible outcomes or solve problems.	Doing the Activity #4 and #5 Students should place their worm or bug in the column that corresponds with their position in line. Students record which color worms or bugs found? Does this pattern have any significance? Doing the Activity #6 Students organize bugs or worms by color to see which one was easiest to find or camouflage.	before discussion, older students could respond to questions in math journals have students respond in journal to which color was easiest to find and which is difficult to find
	Elementary Grades 3-4 1. Create and use organized lists, tree diagrams, Venn diagrams, and networks.	Doing the Activity #4-#6	same as above
	Middle Grades 5-8 1. Create and use networks to explain practical situations or solve problems.	Doing the Activity #4-#6 Doing the Activity #9 Students can create bar graphs to represent information. Help students interpret the graphs.	focus on the graphs in questions

<i>Activity Title:</i> Every Tree For Itself		<i>Activity Guide Page #:</i> 83	
Objective(s): Students will: 1) simulate how trees compete for their essential needs; 2) describe how varying amounts of light, water, and nutrients affect a tree's growth.			
Overview: Try this activity to give your students an idea of the conditions that trees need to live and grow, and to help your students understand that trees must often compete for their needs.			
Subject Area(s): Science, Math		Grade Level(s): K-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics D. Probability Students will understand and apply concepts of probability.	Elementary Grades Pre-K-2 1. Use concepts of chance and record outcomes of simple events.	Doing the Activity #8 Allow students to gather requirements for one 30 second round. Have students record how many of each color.	

<i>Activity Title:</i> Air Plants		<i>Activity Guide Page #:</i> 36	
Objective(s): Students will: 1) demonstrate and describe the general process of photosynthesis; 2) explore the relationship between the amount of oxygen produced by plants and the amount of oxygen used by humans.			
Overview: Plants play a part in every breath we take. Use this activity to help your students understand how photosynthesis works and how humans depend on this process.			
Subject Area(s): Science, Math		Grade Level(s): 3-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics F. Measurement Students will understand and demonstrate measurement skills .	Elementary Grades 3-4 1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	Doing the Activity #6 Students measure plots of grass that represent their oxygen needs for a day. Students figure out on their own how long their string must be to enclose a 25 square feet.	square units would be more connected to older students
	Middle Grades 5-8 3. Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.	Doing the Activity #6	focus on square units

<i>Activity Title:</i> Rain Reasons		<i>Activity Guide Page #:</i> 88	
Objective(s): Students will: 1) explore how variations in water, light and temperature affect plant growth; 2) describe how precipitation and geography can affect the plant and animal species that are found in a particular region.			
Overview: Rainfall, sunlight, and temperature are important factors influencing where plants can grow and, in turn, where animals can live. In this activity, students will design experiments to see how these climatic factors influence the growth and lives of plants. They will use the learned principles to explore how varying climate conditions have resulted in an astounding variety of forest types in Puerto Rico.			
Subject Area(s): Science, Math Social Studies		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	Part A #6 Have students present the results of their experiments. Did any team get results it didn't expect? How did team members interpret those results?	have students respond to 2 discussion questions in math journal as a reflection of activity

PICTURE

<i>Activity Title:</i> Pollution Search		<i>Activity Guide Page #:</i> 114	
Objective(s): Students will: 1) identify forms of pollution and describe the effects that various pollutants can have on people, wildlife, and plants; 2) describe relationships between various forms of pollution and human actions.			
Overview: Here's a way for you to take a closer look at pollution; what it is, what its sources are, and what are some things people can do to reduce it.			
Subject Area(s): Science, Social Studies, Math		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Elementary Grades Pre-K-2 2. Make tallies and graphs of information gathered from immediate surroundings.	Part A #3 Students can make bar graphs depicting the number of pollutants they have recorded in each category.	
	Elementary Grades 3-4 2. Read and interpret displays of data.	Part A #6 Which examples on chart might affect people's health? Affect plants or animals? One at a time, point out several examples on the chart and ask student how each form of pollution can be prevented. Can something pollute two different things? How?	students could respond to questions in journal before discussion
	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	Part A #6	same as above

Project Learning Tree Links/Math

Activity Title: Talking Trash, Not!		Activity Guide Page #: 119	
Objective(s): Students will: 1) analyze the solid waste that they generate over a period of time; 2) describe what happens to various types of waste when it's discarded; 3) develop and implement a plan for reducing the amount of waste they generate.			
Overview: By taking a look at their own trash, your students can learn about how and why they throw things away. They can find ways to cut down on the waste they produce and to improve the way waste is managed in their community.			
Subject Area(s): Science, Social Studies, Math		Grade Level(s): 1-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics F. Measurement Students will understand and demonstrate measurement skills.	Elementary Grades Pre-K-2 1. Estimate and measure length, time, temperature, weight, and capacity.	Activity #4 Have students look at their trash. Did more or less accumulate than they'd predicted?	This could be done daily.
Mathematics B. Computation Students will understand and demonstrate computation skills.	Elementary Grades Pre-K-2 1. Use and apply estimation with quantities, measurements, computations, and problem-solving.	Activity #4	
Mathematics F. Measurement Students will understand and demonstrate measurement skills.	Elementary Grades 3-4 1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	Activity #1 Read aloud "Voyage of the Mobro" on page 120. Have students trace the boat's voyage. What warnings should we receive from this bizarre story?... Activity #2 Discuss whether it is really possible to throw something away. Where is "away"? Activity #3 Tell students that for one week they will not throw anything away while in school. Explain that everything they want to throw away during the week should go into a large container. Activity #4 Have students look at their trash. Did more/less accumulate than they'd predicted?... Activity #5 Older students can make tables, graphs or charts to show volume, weight, number of pieces, and types of trash collected... Activity #6 Use the following questions: What usually happens to classroom trash at the end of the day? What are the	

Project Learning Tree Links/Math

		pros/cons of burning trash? When people use... Activity #8 Develop an action plan to reduce the amount of trash students generate, then carry out the plan...	
	Middle Grades 5-8 3. Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.	Activity #5, all	
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Middle Grades 5-8 1. Organize and analyze data using mean, median, mode, and range.	Assessment Opportunity Students collect and weigh trash at home and calculate their family average for a year.	

Activity Title: Every Drop Counts		Activity Guide Page #: 122	
Objective(s): Students will: 1) monitor their daily actions and estimate the amount of water they use in a day; 2) describe how water is wasted and why it is important to conserve it; 3) design and implement a water conservation plan; 4) determine the amount of water and money saved through their plan.			
Overview: It's easy to waste water and even easier to take water for granted. Water pours out of our faucets as though it were endlessly available. but the truth is that fresh water supplies are dwindling. Fortunately, it's just as easy to conserve water as it is to waste! Try this activity to help your class (and maybe the whole school) cut back on water waste.			
Subject Area(s): Science, Social Studies, Math		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics A. Numbers and Number Sense Students will understand and demonstrate a sense of what numbers mean and how they are used.	Middle Grades 5-8 3. Apply concepts of ratios, proportions, percents, and number theory (e.g., primes, factors, and multiples) in practical and other mathematical situations.	Part A #2 Students work in pairs and figure the percentages of students who fell within various "prediction ranges."	
Mathematics F. Measurement Students will understand and demonstrate measurement skills.	Middle Grades 5-8 2. Develop and use concepts that can be measured directly, or indirectly (e.g., the concept of rate).	Part A #4 Have students calculate the rate at which water comes out of the fountain.	
Mathematics J. Mathematical Reasoning Students will understand and apply concepts of mathematical reasoning.	Middle Grades 5-8 1. Support reasoning by using models, known facts, properties, and relationships.	Part A #7 Students monitor water use the next school day, while practicing methods of saving water.	Students should compare Day 2 of trying to save water to Day 1 when there was no concern.
Mathematics K. Mathematical Communication Students will reflect upon and clarify their understanding of mathematical ideas and relationships.	Middle Grades 5-8 2. Use statistics, tables, and graphs to communicate ideas and information in convincing presentations and analyze presentations of others for bias or deceptive presentation.	Part B #2 Students create an action plan and inform others about it with posters.	Students use data from Part A to carry out Part B in presentations.

Project Learning Tree Links/Math

SECTION THREE: SYSTEMS

<i>Activity Title:</i> How Plants Grow		Activity Guide Page #: 135	
Objective(s): Students will: 1) set up an experiment to determine what factors are necessary for plant growth; 2) measure and compare plant growth under different environmental conditions.			
Overview: A plant is a biological system with these basic requirements for functioning and growing: sunlight, water, air, soil and space. this activity allows students to explore what happens when a plant's basic needs are not met.			
Subject Area(s): Science, Math		Grade Level(s): K-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Elementary Grades 3-4 1. Make generalizations and draw conclusions using various types of graphs, charts, and tables.	Activity #2 Create a bar graph with the data collected from measuring the plants heights. Activity #3 Discuss these questions: Which plants grew the most/least? What other differences did you observe among the plants? What does a plant need to...	Have students respond to discussion questions in their Math Journal for assessment of understanding before the discussion.
	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	<u>Activity #2</u> <u>Activity #3</u>	
Mathematics F. Measurement Students will understand and demonstrate measurement skills.	Elementary Grades Pre-K-2 1. Estimate and measure length, time, temperature, weight, and capacity.	Activity #3 Let students measure the seedlings and this is done throughout the time span of activity.	Each time a measurement is taken, have students estimate what they think the height is. This could be kept on a chart in their individual Math Journals.
	Elementary Grades 3-4 1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	Enrichment #1 Students measure their height as compared to the experimental plants. The height is measured at the beginning and the end of the experiment.	Students should compare their growth to the experimental plants and draw conclusions on the similarities and differences that they see.

<i>Activity Title:</i> Are Vacant Lots Vacant?		<i>Activity Guide Page #:</i> 153	
Objective(s): Students will: 1) describe plants and animals that live at and around the study site; 2) give examples of and describe ecological relationships between biotic and abiotic elements at the study site.			
Overview: Look closely and you will see that a vacant lot is not so vacant! Plants of all kinds thrive in vacant lots, along with a host of animals such as insects, birds and mammals. In this activity, a nearby vacant lot, overgrown strip, or a landscaped area will provide a rich laboratory for students to examine elements of an ecosystem.			
Subject Area(s): Science, Math, Visual Arts			Grade Level(s): K-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics B. Computation Students will understand and demonstrate computation skills.	Elementary Grades 3-4 4. Develop proficiency with the facts and algorithms of the four operations on whole numbers using mental math and a variety of materials, strategies, and technologies.	Activity #4 Ask students to inventory the kinds of plant life they find in the plot. Activity #5 Lead a discussion with these questions: Have the plant/animal population changed from previous times? Is there evidence that the plot is used by animals?	In their journals, using population of the plants and animals, have the students compare the differences, combine animals.
	Middle Grades 5-8 2. Create, solve, and justify the solution for multi-step, real-life problems including those with ratio and proportion.	Activity #5 Discussion question: Have their numbers and ratios to each other changed?...	In their journals, students can use the population of the plants and animals to find and compare the ratios.
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Elementary Grades Pre-K-2 1. Formulate and solve problems by collecting, arranging, and interpreting data.	Activity #4 Ask students to record their findings by sketching each type of organism and tallying the types.	

<i>Activity Title:</i> Field, Forest And Stream		<i>Activity Guide Page #:</i> 156	
Objective(s): Students will: 1) investigate and measure components in three different ecosystems; 2) describe similarities and differences they observe among three ecosystems; 3) identify ways that the abiotic components of an ecosystem affect the biotic components.			
Overview: In this activity students will examine three different environments as they focus on sunlight, soil moisture, temperature, wind, plants, and animals, in each environment. By comparing different environments, students will begin to consider how nonliving elements influence living elements in an ecosystem.			
Subject Area(s): Science, Math		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics F. Measurement Students will understand and demonstrate measurement skills .	Elementary Grades 3-4 1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	Activity #2 Team #4 will measure each site's temperature.	

Project Learning Tree Links/Math

<i>Activity Title:</i> 400-Acre Wood		<i>Activity Guide Page #:</i> 169	
Objective(s): Students will: 1) create a management plan for a hypothetical piece of public land, taking into account factors such as ecosystem stability, monetary income or costs, wildlife, water, and visitors; 2) experience the analysis and decision making that goes into managing forest land.			
Overview: In this activity, students will play the role of managers of a 400-acre (162-hectare) piece of public forest. Through these roles, students will begin to understand the complex considerations that influence management decisions about forest lands.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 7-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics A. Numbers and Number Sense Students will understand and demonstrate a sense of what numbers mean and how they are used.	Middle Grades 5-8 1. Use numbers in a variety of equivalent and interchangeable forms (e.g., integer, fraction, decimal, percent, exponential, and scientific notation) in problem-solving.	Activity #5 Give each team a copy of “What’s the Score?” Have a discussion of various strategies for managing the forest. Must have a cost/benefit analysis of their plan.	
	Middle Grades 5-8 2. Demonstrate understanding of the relationships among the basic arithmetic operations on different types of numbers.		
Mathematics B. Computation Students will understand and demonstrate computation skills.	Middle Grades 5-8 1. Compute and model all four operations with whole numbers, fractions, decimals, sets of numbers, and percents, applying the proper order of operations.	Activity #5, all	
Mathematics G. Patterns, Relations, Functions Students will understand that mathematics is the science of patterns, relationships, and functions.	Middle Grades 5-8 2. Analyze relationships to explain how a change in one quantity can result in a change in another.	Activity #8 Use these questions for discussion: What will be the long-term effects of each plan? How will costs or income change in the next year? ...	Have students respond to the questions in their journal before the discussion.
Mathematics K. Mathematical Communication Students will reflect upon and clarify their understanding of mathematical ideas and relationships.	Middle Grades 5-8 2. Use statistics, tables, and graphs to communicate ideas and information in convincing presentations and analyze presentations of others for bias or deceptive presentation.	Assessment Opportunity Students should present their proposal to the community council (made up of students).	Have the presenters use tables and other presentation aides.

Project Learning Tree Links/Math

<i>Activity Title: On The Move</i>		<i>Activity Guide Page #: 185</i>	
Objective(s): Students will: 1) compare various transportation methods for getting to and from school; 2) describe the transportation systems their community uses; 3) design or propose a practical and efficient transportation system for the future.			
Overview: In this activity, student will examine transportation systems, which are vital to their community.			
Subject Area(s): Science, Math, Social Studies, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics F. Measurement Students will understand and demonstrate measurement skills .	Elementary Grades 3-4 1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	Enrichment #3 Hold a discussion using these questions: How many miles do the buses travel daily? What is the average MPG of the buses?...	
	Middle Grades 5-8 2. Develop and use concepts that can be measured directly, or indirectly (e.g., the concept of rate).	<u>Enrichment #3</u>	

<i>Activity Title:</i> Planning The Ideal Community		Activity Guide Page #: 191	
Objective(s): Students will: 1) map the locations of services and resources in their community; 2) create a map of an "ideal" community that includes all the services and resources people need to live there.			
Overview: In this activity, students will explore the elements that compose a human community. They will survey the area around their school, looking for community systems that help them live there. Then they will plan an ideal community that meets all the needs of its members.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics J. Mathematical Reasoning Students will understand and apply concepts of mathematical reasoning.	Middle Grades 5-8 1. Support reasoning by using models, known facts, properties, and relationships.	Part B #1 Students will design an ideal community that meets the needs of its residents.	Weak math connection.

<i>Activity Title:</i> There Ought To Be A Law		<i>Activity Guide Page #:</i> 201	
Objective(s): Students will: 1) describe how a group of students can make and change rules; 2) compare rulemaking in a group to the lawmaking process in local government; 3) research the steps necessary to make a proposed change in their community; 4) create a poster that shows the effects of their proposed change and that depicts the lawmaking process.			
Overview: In democratic societies, citizens have the power to influence the lawmaking process. In this activity, students will find out how local laws are made and how they can get involved in the process.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics J. Mathematical Reasoning Students will understand and apply concepts of mathematical reasoning.	Elementary Grades 3-4 1. Demonstrate an understanding that support for a claim should be based on evidence of various types (e.g., from logical processes, from measurement, or from observation and experimentation).	Activity is problem solving.	Weak math connection.
	Middle Grades 5-8 1. Support reasoning by using models, known facts, properties, and relationships.	Activity is problem solving.	Weak math connection.

SECTION FOUR: STRUCTURE AND SCALE

<i>Activity Title:</i> Germinating Giants		<i>Activity Guide Page #:</i> 234	
Objective(s): Students will: 1) measure certain physical characteristics of at least three different trees; 2) compare various measurements from these trees and draw conclusions about the nature of each tree.			
Overview: In this activity, students can sharpen their math skills by comparing their local trees to the world's tallest tree, the coast redwood, and to the tree with the largest seeds, the coconut palm.			
Subject Area(s): Science, Math		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics B. Computation Students will understand and demonstrate computation skills.	Elementary Grades 3-4 1. Solve multi-step, real-life problems using the four operations with whole numbers.	Student Page 238 Have students do the “Giant Comparisons” worksheet.	Includes a lot of division.
	Middle Grades 5-8 1. Compute and model all four operations with whole numbers, fractions, decimals, sets of numbers, and percents, applying the proper order of operations.	<u>Student Page 238</u>	Includes a lot of division.
Mathematics F. Measurement Students will understand and demonstrate measurement skills .	Elementary Grades 3-4 1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	Activity #3 Students should collect data on the coconut palm and the redwood seeds. Have them compare the differences between the two seeds.	
	Middle Grades 5-8 3. Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.	<u>Activity #3</u>	

<i>Activity Title:</i> How Big Is Your Tree?		<i>Activity Guide Page #:</i> 239	
Objective(s): Students will: 1) measure and compare trees and tree parts; 2) discuss how and why people measure things, including trees; 3) explain the need for consistency in measuring.			
Overview: Trees come in various shapes and sizes. In this activity, students will measure trees in different ways and become familiar with the tree's structure. They will also learn the importance of standard units of measure and measuring techniques.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics B. Computation Students will understand and demonstrate computation skills.	Middle Grades 5-8 2. Create, solve, and justify the solution for multi-step, real-life problems including those with ratio and proportion.	Activity #11 Have students determine the height of the tree by measuring the length of its shadow. They must first measure their own height and length of their shadow at the same time of day...	
	Middle Grades 5-8 1. Compute and model all four operations with whole numbers, fractions, decimals, sets of numbers, and percents, applying the proper order of operations.	Enrichment #1 Find the Champions in their community. These are determined by using a tree's dimensions to calculate a total number of points...	
	Elementary Grades Pre-K-2 1. Use and apply estimation with quantities, measurements, computations, and problem-solving.	Activity #7 Students estimate the circumference of the tree's trunk and then measure it in arm/hand spans. Record and compare the measurements. Activity #9 Explain to students what the tree's crown is. Estimate the crown and help students measure and calculate the average crown spread... Variation Have students measure the height of the tree in hand spans with rulers. Record and compare their findings.	
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Elementary Grades Pre-K-2 1. Formulate and solve problems by collecting, arranging, and interpreting data.	Variation Have students use yarn to measure the circumference of trees and hang them up to compare the string to rulers or hand spans...	

Project Learning Tree Links/Math

<p>Mathematics F. Measurement Students will understand and demonstrate measurement skills.</p>	<p>Elementary Grades Pre-K-2 1. Estimate and measure length, time, temperature, weight, and capacity.</p>	<p><u>Activity #7</u> <u>Activity #9</u></p>	
	<p>Elementary Grades 3-4 1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.</p>	<p>Activity #3 Talk about the accuracy of each type of measurement. Activity #4 Have pairs of students practice using rulers. Activity #5 Share and discuss how and why foresters measure trees. Activity #6 Measure their adopted trees. Take large sheets of paper and record measurements. <u>Activity #7</u> <u>Activity #10</u> Ask each pair to measure the length and width of a tree leaf or needle using finger widths and then a ruler. Record data. Assessment Opportunity Have students write a paragraph or draw a diagram describing the steps that they would take to measure a particular tree... Enrichment #3 Have students collect samples of tree leaves, needles and flowers. Measure and compare the samples...</p>	<p>Here are some examples – this activity is a strong correlation.</p>
	<p>Middle Grades 5-8 3. Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.</p>	<p><u>Activity #3</u> <u>Activity #4</u> <u>Activity #5</u> <u>Activity #6</u> <u>Activity #7</u> <u>Activity #10</u> <u>Assessment Opportunity</u> Enrichment #3 Enrichment #4 Determine the total leaf area of a deciduous tree by measuring width or diameter of the crown. Pace the distance underneath the tree. Determine the square inches of a tree’s leaf area,... Assessment Opportunity Create a mathematics word problem that relates to measuring at tree...</p>	

<i>Activity Title:</i> Forest For The Trees		<i>Activity Guide Page #:</i> 247	
Objective(s): Students will: 1) participate in a simulation designed to teach how forest resources are managed; 2) simulate managing a piece of land for various products.			
Overview: In this activity, students will role-play managing a tree farm. by using a piece of land as a tree farm, they will begin to understand the economic factors that influence management decisions for private forest lands.			
Subject Area(s): Science, Math, Social Studies			Grade Level(s): 4-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics J. Mathematical Reasoning Students will understand and apply concepts of mathematical reasoning.	Middle Grades 5-8 1. Support reasoning by using models, known facts, properties, and relationships.	Assessment Opportunity Use “Forest Stand Puzzle” on page 251. Have them identify the logical sequence of events and state what actions were taken in each box.	
	Secondary Grades 1. Analyze situations where more than one logical conclusion can be drawn from data presented.	<u>Assessment Opportunity</u>	

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Activity Title: Soil Stories		Activity Guide Page #: 252	
Objective(s): Students will: 1) identify components of soil and how these components determine its function; 2) explain how different soil types determine the characteristics of ecosystems; 3) predict the influence of soils on water filtration and on human use of an area.			
Overview: Students often wonder why certain plants grow in some places and not in others. Climatic factors such as temperature, moisture, and sunlight keep palm trees in Florida and fir trees in Oregon, but subtle differences in soil allow an oak to compete more successfully in one area and a maple in another. In this activity, students will explore differences in soil types and what they mean to us.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Mathematics A. Numbers and Number Sense Students will understand and demonstrate a sense of what numbers mean and how they are used.	Middle Grades 5-8 3. Apply concepts of ratios, proportions, percents, and number theory (e.g., primes, factors, and multiples) in practical and other mathematical situations.	Part A #8 Have students hypothesize about the ratio of sand or silt to clay in each sample. Enrichment for Part A #1 Ask students to estimate the portion of each component in their soil sample.	
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Enrichment for Part A #1 Students should graph the results of the shake test to show their soil profile and compare it to the original estimate.	
Mathematics F. Measurement Students will understand and demonstrate measurement skills.	Middle Grades 5-8 3. Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.	Part A #6 Students will measure the air space in their sample. Part A #7 Ask students to measure the weight of the soil and water that is in their soil.	
Mathematics G. Patterns, Relations, Functions Students will understand that mathematics is the science of patterns, relationships, and functions.	Middle Grades 5-8 1. Describe and represent relationships with tables, graphs, and equations.	Enrichment for Part A #1 Compare the soil profiles of different samples and compare each soil profile to the amount of their calculations.	

<i>Activity Title:</i> THE SHAPE OF THINGS		<i>Activity Guide Page #:</i> 3	
Objective(s): Students will: identify common shapes appearing in the natural and built environment as a way of understanding the function of shapes.			
Overview: As humans we depend on all of our senses - touching, tasting, hearing, smelling, and seeing – to gather impressions of our environment. Our brain sorts out the diversity of sizes, colors, and shapes that we see. In this activity, students will focus their eyes on the many shapes that define both our natural and built environment.			
Subject Area(s): Visual Arts, Language Arts, Math, Science		Grade Level(s): Part A: PreK-K; Part B: K-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology E. Structure Of Matter Students will understand the structure of matter and the changes it can undergo.	Elementary Grades Pre-K-2 3. Group objects based on observable characteristics (e.g., color, size, texture).	Part A #5 Encourage them to look for objects in the shape of the pieces of paper they’re wearing around their necks. When someone sees that shape, he should say, “I spy!” Have the other students try to find the object the “spy” is observing. Part B #3 When the students see a natural object with this shape, they should draw a picture of the object.	Each student should have a shape – necklace and the opportunity to participate in the activity and discussion.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Part A #4 Give the students time to look for the object you’re “spying.” If they find other objects that also have that shape, acknowledge their observations and encourage them to continue looking for the object you have in mind. Part A #5 Encourage them to look for objects in the shape of the pieces of paper they’re wearing around their necks. Have the other students try to find the object the “spy” is observing. Part B #3 When the students see a natural object with this shape, they should draw a picture of this object. Part B #6 Did any of the other students with that shape observe additional objects?	

Project Learning Tree Links/ Science

<i>Activity Title:</i> GET IN TOUCH WITH TREES!			<i>Activity Guide Page #:</i> 5
Objective(s): Students will: 1) become aware of how the bark of different trees varies in texture; 2) describe a variety of textures found in leaves and other tree parts.			
Overview: In this activity students will explore their sense of touch and discover why touch is important to animals, including themselves.			
Subject Area(s): Science, Language Arts, Visual Arts			Grade Level(s): PreK-6
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Part A #4 The blindfolded student should examine the tree’s bark, and if possible, its leaves and other features. Tell them to pay close attention to the differences and similarities between the two trees. Part B #1 Feel as many of the items as possible. Then have students search for “tree parts” that match those in the mystery box.	Each student should participate as the guide and with the blindfold.

<i>Activity Title:</i> THE PEPPERMINT BEETLE			<i>Activity Guide Page #:</i> 7
Objective(s): Students will: 1) describe various ways animals use their sense of smell; 2) explain why some animals use scent marking; 3) identify the importance of the sense of smell in our daily lives.			
Overview: In this activity students will explore their sense of smell and discover why smell is important to animals, including themselves.			
Subject Area(s): Science, Social Studies			Grade Level(s): K-6
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Doing the Activity #4 Ask the students to consider why the peppermint beetle marked those trees. Could it be to attract a mate, or define a territory? Where might the peppermint beetle’s trail lead? To a food source? Its home? Or nowhere in particular?	All time for all students to reflect on these questions.

Project Learning Tree Links/ Science

<i>Activity Title:</i> SOUNDS AROUND		<i>Activity Guide Page #:</i> 9	
Objective(s): Students will: 1) identify sounds and map their location in the environment; 2) explain how noise can be a problem in the community; 3) create and carry out a plan to lessen a local noise problem; 4) study a Greek myth about sounds in nature.			
Overview: Our ears are constantly being bombarded with sound - so much so that we automatically "tune out" a lot of it. Some sounds are "music to our ears", while others can annoy us and even damage the delicate structures in our ears. try this activity to help your students "tune in" to the sounds in their environment and to help them identify and lessen local noise problems.			
Subject Area(s): Science, language Arts, Social Studies, Math		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 1. Make accurate observations using appropriate tools and units of measure.	Part B #1 Discuss the decibel level of various noises and the possible damage they can cause. Part B #2 Measure the noise level at two locations. Variables need to be controlled.	Teacher will need to obtain a noise meter in advance. All students need opportunity to use noise meter.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 5. Make and read simple graphs.	Part B #4 Have the students create bar graphs comparing noise levels at different sites and on different days.	
	Middle Grades 5-8 2. Defend problem-solving strategies and solutions.	Assessment Opportunity Evaluate the students' understanding of noise pollution through their identification of noise problems in their community and the feasibility of their plan for mitigating one or more of these problems.	Students should devise their own methods of presenting information.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades Pre-K-2 1. Describe how legends, stories, and scientific explanations are different ways in which people attempt to explain the world.	Part C The following is a Greek myth that tells the story behind the soft murmur we hear in rushing water. "What sound in nature inspired the creation of this myth?"	

Project Learning Tree Links/ Science

<i>Activity Title:</i> PICTURE THIS!		<i>Activity Guide Page #:</i> 16	
Objective(s): Students will: 1) identify similarities and differences between organisms by collecting pictures and categorizing them; 2) comprehend the connection between diverse organisms and the diverse environments in which they live.			
Overview: In this activity, students can learn about the diversity of life on earth by looking at different plants and animals from around the world			
Subject Area(s): Science, Visual Arts, Math		Grade Level(s): PreK-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades Pre-K-2 4. Design and describe a classification system for objects.	Doing the Activity #6 They need to organize them into exhibits for a new nature museum or zoo. Tell the students to think about ways they could group their animals and plants.	Have each student design and describe their own system. Allow time for student sharing.
	Elementary Grades 3-4 2. Design and describe a classification system for organisms.	Doing the Activity #7 Have students take turns explaining how they organized their museums or zoos and describing some of the plants and animals they put into each exhibit.	

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<i>Activity Title:</i> HABITAT PEN PALS		<i>Activity Guide Page #:</i> 18	
Objective(s): Students will: 1) explain the relationship between climate conditions and habitat; 2) identify relationships between organisms within habitats; 3) distinguish between kinds of animals that can't live in a particular habitat.			
Overview: From icy tundra to scorching deserts to salty oceans, the world's habitats are diverse and fascinating. Each habitat, with its own special set of conditions, supports animals and plants adapted to living in it. By becoming "habitat pen pals", your students will learn about the diversity of habitats around the world, and will write letters from the perspective of organisms living in these habitats.			
Subject Area(s): Science, Language Arts		Grade Level(s): 3-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Doing the Activity #3 Hold up each of the habitat pictures you cut out earlier. Have the students try to identify where that habitat might be found and what the climate is like there. Doing the Activity #12 Figure out which animals and habitat their letter is referring to.	
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades Pre-K-2 5. Describe a familiar local environment.	Doing the Activity #2 Ask the students to name the types of animals that they would expect to live in the local habitats they mentioned.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 5. Use various forms of simple logic.	Doing the Activity #4 Choose an appropriate animal picture to tape under the habitat picture of their choice. Offer direction, as necessary, on which animals go with which habitats. Doing the Activity #12 Read the letters they received and try to figure out which animal and habitat their letter is referring to. Enrichment Act out his/her animal. Let each person in the audience try to guess which performer he/she is.	
	Elementary Grades 3-4 6. Practice and apply simple logic, intuitive thinking, and brainstorming.	<u>Doing the Activity - #4 & #12</u>	

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<i>Activity Title:</i> THE FOREST OF S.T. SHREW		<i>Activity Guide Page #:</i> 20	
Objective(s): Students will: 1) identify microhabitats in the forest by drawing pictures or writing a story describing a microhabitat; 2) describe some of the plants and animals that characterize several microhabitats within the forest.			
Overview: By taking a "shrew's-eye-view" of life in the woods, your students will gain an appreciation for the variety of living things that make forests their homes, and for the variety of habitats within forests.			
Subject Area(s): Science, Language Arts, Visual Arts.		Grade Level(s): 1-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Doing the Activity #6 Draw pictures of the story. Create a forest scene with flip-up windows that reveal the hidden life in the forest.	Each student should complete their own pictures/flip book and share with others.

Project Learning Tree Links/ Science

Activity Title: PLANET OF PLENTY		Activity Guide Page #: 24	
Objective(s): Students will: 1) investigate the diversity of plants and animals on a small plot of land; 2) explain the value of a diversity of life forms in a particular ecosystem.			
Overview: In this activity, students will pretend they are visitors from outer space, viewing life on Earth for the first time. By describing in minute detail, all the life they find in a small plot of land, they will become more aware of diversity of life on Earth and will better understand its importance.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Part B #2 - 3 Try to arrange teams so that they are spread out and cover a variety of microhabitats. They will record, describe, and try to classify all the life forms they find. They can also draw conclusions about the diversity of life on Earth.	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Part A #3 Part A #4 Have team members work together to devise methods for sampling their data.	
	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	Part B #5 Allow students ample time to examine their plots and record their data. Part C #4 Do they think the investigation and collection methods were thorough and accurate?	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Part C #3 Teams should try to draw conclusions about what factors influence the abundance or lack of biodiversity.	
	Elementary Grades 3-4 6. Practice and apply simple logic, intuitive thinking, and brainstorming.	Part C #5 Have students brainstorm ways that biodiversity on planet Earth benefits the lives of its people. Part C #6 Ask the students to imagine a place on Earth that is teeming with plant and animal life, and have them share their reflections.	

Project Learning Tree Links/ Science

<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.</p>	<p>Part B #5 Allow students ample time to examine their plots and record their data. Part A #5 Present their findings at a scientific conference. Part C #2 Ask students to take notes on all the presentations and then compare and contrast other teams' data with their own.</p>	
	<p>Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.</p>	<p>Part C #6 Ask students to imagine a place on Earth that is teeming with plant and animal life, and have them share their reflections.</p>	
<p>Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.</p>	<p>Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.</p>	<p>Part A #4 Have team members work together to devise methods for sampling, recording, and organizing their data.</p>	
<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Elementary Grades 3-4 5. Gather and effectively present information, using a variety of media including computers (e.g., spreadsheets, word processing, programming, graphics, modeling).</p>	<p><u>Part A #3</u> They will record, describe, and try to classify all the life forms they find. <u>Part A #5</u> They will present their findings at a scientific conference. <u>Part C #1</u> Encourage the students to use posters, data charts, drawings, movements, sounds, or anything else to describe the life forms they encountered.</p>	<p>could fully align if students use computers to analyze, graph or present data. Students should devise their own methods of presentation of the information.</p>
	<p>Elementary Grades 3-4 7. Function effectively in groups within various assigned roles (e.g., reader, recorder).</p>	<p><u>Part A #4</u> One or more team members should be official recorders, or everyone can take notes. Encourage the students to make sketches as well.</p>	<p>Teacher can assign roles, i.e., recorder, drawer, presenters, etc.</p>
	<p>Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.</p>	<p><u>Part A #4</u> <u>Part C #1</u> Give each team time to prepare its presentation.</p>	<p>Students can generate necessary roles for this activity.</p>
<p>Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.</p>	<p>Elementary Grades 3-4 1. Explore how cultures have found different technological solutions to deal with similar needs or problems (e.g., construction, clothing, agricultural tools and methods).</p>	<p><u>Part C #5</u> How might the people of Deevold begin to improve their planet's biodiversity for the future? Answers will vary, but should include such ideas as decreasing pollution, increasing the abundance and variety of vegetation, and so on.</p>	

<i>Activity Title:</i> CHARTING DIVERSITY		<i>Activity Guide Page #:</i> 27	
Objective(s): Students will: 1) organize different species of plants and animals according to various characteristics; 2) determine how certain characteristics help species adapt to environmental conditions.			
Overview: By exploring the amazing <i>diversity</i> of life on Earth, your students will discover how plants and animals are <i>adapted</i> for survival. This activity provides a basis for understanding why there are so many different <i>species</i> and what is the value of biological diversity.			
Subject Area(s): Science		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Middle Grades 5-8 3. Describe some structural and behavioral adaptations that allow organisms to survive in a changing environment.	Doing the Activity #1 Ask students if the animals living in these environments have special characteristics that enable them to survive. They'll look at animals and determine how each is different and how each has a special role in the environment. <u>Activity #10</u> Have students present their findings to the rest of the group. For each species they identify, students should be prepared to say how that species is especially suited for the environment it lives in.	Variation activity allows for students to explore plant adaptations.
		<u>Activity #8</u> The students should do research to find one or more examples of an animal that has all three of these characteristics. <u>Activity #10</u> Have students present their findings to the rest of the group. For each species, students should be prepared to say how that species is especially suited for the environment it lives in.	

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<i>Activity Title:</i> CAN IT BE REAL?		<i>Activity Guide Page #:</i> 30	
Objective(s): Students will: 1) study the characteristics of unusual plants and animals; 2) describe how plants and animal species are adapted to a particular set of environmental conditions.			
Overview: A beetle that drinks fog. A flower that smells like rotting meat. A fish that "shoots down" its prey. Are these plants and animals for real? In this activity, your students will discover extraordinary plants and animals, and will gain insight on how they are uniquely adapted to environmental conditions.			
Subject Area(s): Science, Language Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Middle Grades 5-8 3. Describe some structural and behavioral adaptations that allow organisms to survive in a changing environment.	Part A #6 Ask the students to describe animals or plants they have actually seen that have unusual characteristics. <u>Part B #2</u> After researching their plant or animal, they should create a poster describing it. <u>Part B #4</u> Display and explain their posters.	

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Activity Title: TREE TREASURES		Activity Guide Page #: 35	
Objective(s): Students will: 1) identify and categorize products derived from trees; 2) find out which forest products are recyclable or reusable; 3) recommend actions for conserving forest resources.			
Overview: Students are often surprised to learn how many different products we get from trees. Use this activity to help your students learn just how much we depend on trees in our daily lives.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 4. Participate in brainstorming activities.	Activity #1 Ask students to name as many tree products as they can think of, and list them on the chalkboard.	
	Elementary Grades Pre-K-2 5. Use various forms of simple logic.	Activity #3 Tell students they must figure out the identity of the product on their back by asking each other questions. They can ask each person only 2 questions, and the questions must require a “yes” or “no” answer.	
	Elementary Grades 3-4 6. Practice and apply simple logic, intuitive thinking, and brainstorming.	Activity #1 & #3 <u>Activity #4</u> When they think they’ve identified their product, they should decide which category (wood, paper, food) it belongs to, and go to the section of the room designated for that category.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 3. Ask clarifying questions.	Activity #3	
	Elementary Grades 3-4 2. Ask clarifying and extending questions.	Activity #3	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades Pre-K-2 3. Identify commonly used resources, their sources, and where waste products go.	Activity #1 Ask students to name as many tree products they can think of. <u>Activity #6</u> Name other products that come from trees.	

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Activity Title: WE ALL NEED TREES		Activity Guide Page #: 39	
Objective(s): Students will: 1) examine various products and determine which ones are made from trees; 2) describe ways that trees are used to make products and ways that these products can be conserved; 3) explore methods for recycling and reusing products.			
Overview: It is easy to see that items made of wood come from trees. However, many tree products are not obvious. In this activity your students will discover the diversity and multitude of products that are in some way derived from trees.			
Subject Area(s): Social Studies, Science, Language Arts		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Activity #7 Reevaluate list of products they came up with. Are there any products they want to add to or delete? (based on readings in Step #5)	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 7. Function effectively in groups within various assigned roles (e.g., reader, recorder).	Activity #2 Team members will work together to determine which of the products around the room are made from trees. All team members must agree with the team's decision about each product and must be able to explain why each product is on their team's list. <u>Activity #3</u> Have the students in each team number themselves from 1 to 4. Tell all the "1's" that it's their responsibility to record the information that everyone on their team agrees on and that they'll have to report their group's findings to the rest of the class. The "2's" must make sure that all group members have the opportunity to speak as the team tries to reach decisions. The "3's" must make sure the group stays on track and gets all accomplished in the time allowed. The "4's" are the only group who may leave the group to ask you questions. <u>Activity #7</u>	
	Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.	<u>Activity #2</u> <u>Activity #3</u> <u>Activity #7</u>	

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<p>Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.</p>	<p>Elementary Grades Pre-K-2 3. Identify commonly used resources, their sources, and where waste products go.</p>	<p>Activity #8 Discuss the diversity of products we get from trees.</p>	<p>Evaluation opportunity could be modified for younger students.</p>
	<p>Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.</p>	<p>Enrichment Compare the environmental and economic factors associated with these products and their possible substitutes. Is this substitute made from a renewable or nonrenewable resource?</p>	<p>Must do enrichment activity to obtain alignment.</p>

PICTURE

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<i>Activity Title:</i> RENEWABLE OR NOT?		<i>Activity Guide Page #:</i> 43	
Objective(s): Students will: 1) identify renewable, nonrenewable, perpetual, reusable, and recyclable resources and explain the differences among them; 2) play a game that simulates society's use of renewable and nonrenewable resources.			
Overview: Students often do not know which resources are renewable and which are nonrenewable , or which are recyclable or reusable . In this activity, students will learn what these terms mean and discover why sustainable use of natural resources are so important.			
Subject Area(s): Science, Social Studies		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology H. Energy Students will understand concepts of energy.	Middle Grades 5-8 5. Categorize energy sources as renewable or non-renewable and compare how these sources are used by humans.	Part A #4 Each team should use these bits of information to synthesize a definition for “renewable,” “nonrenewable,” and “perpetual” resources. Everyone on the team should understand each of the clues and agree with their team’s definitions. <u>Student Page Question #1</u> Categorize the following as renewable, nonrenewable, or perpetual resources: a field of corn, oil in the Arctic tundra, coal in the Appalachian Mountains, . . . <u>Demonstration 1, #6</u> What are the advantages and disadvantages of using a resource in a sustainable way? . . . <u>Demonstration 2, #6</u> What parallels do the students see between what happened in the demonstration and what happens in the real world? <u>Demonstration 3, #3</u> Cookies will represent GNP. <u>Demonstration 3, #5</u> Work out the inequalities of wealth. <u>Assessment Question #1</u> If a resource is renewable, does that mean it will continue to exist no matter what people do?	Each student should categorize each item on own and then discuss as a group. Each demonstration shows this concept in a different way. Each one or all could be used.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 9. Apply analogous reasoning.	<u>Demonstration 1, #6</u> What are the advantages and disadvantages of using a resource in a sustainable way? What are the advantages and disadvantages of using a resource in a nonsustainable way? <u>Demonstration 2, #6</u> What parallels do the students see between what happened in the demonstration and what happens in the real world?	

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		<p><u>Demonstration 3, #3</u> Cookies represent GNP. Work out the inequalities of “wealth.”</p> <p><u>Demonstration 3, #6</u> What choices are available to nations that do not have enough money to buy food from other countries?</p> <p><u>Assessment #2</u> They should be able to deduce that the number of people using a resource and the amount each person uses are very important in determining how fast resources get used.</p>	
<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.</p>	<p>Part A #2 Explain that teams will be working together to come up with a 1-2 sentence definition for each of the 3 terms.</p> <p><u>Part A #5</u> Teams should then discuss the questions on student page 47, with one member designated to record their responses and one designated to report them.</p>	<p>Part A is the only section which has teams do specific tasks.</p>
<p>Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.</p>	<p>Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.</p>	<p>Part A #5 Review questions with the entire group, with each team reporting its answers.</p> <p><u>Questions & Clues #4</u> What advantages and disadvantages might there be for using renewable natural resources in place of nonrenewable ones?</p> <p><u>Questions & Clues #6</u> Which resources, if any, would continue to be available no matter how much people used them?</p> <p><u>Demonstration 1, #6</u> What are the advantages and disadvantages of using a resource in a sustainable way vs. a nonsustainable way? What would have happened if 1-3 additional people would have been added to your group?</p> <p><u>Demonstration 2, #6</u> What parallels do the students see between what happened in the demonstration and what happens in the real world?</p> <p><u>Assessment</u> Write in his/her own words what renewable and nonrenewable resources are, and 1-if a resources is renewable, does that mean it will continue to exist no matter what people do; 2 – what 2 factors would you say are most important in determining how fast natural resources are used?</p>	<p>Students should each answer these questions to evaluate each of their understanding of the concepts involved.</p>

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<i>Activity Title: A FEW OF MY FAVORITE THINGS</i>		<i>Activity Guide Page #: 48</i>	
Objective(s): Students will: 1) explain how the different materials that go into making a product all come from natural resources; 2) identify natural resources as being renewable or nonrenewable; 3) identify the steps that go into making a product; 4) describe some of the impacts from obtaining and processing natural resources for making products.			
Overview: here's a way to give your students a better appreciation for how many natural resources they depend on in their day-to-day lives. By tracing the resources that go into making one item, they will learn how the manufacturing of just one product can have an impact on the environment.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology H. Energy Students will understand concepts of energy.	Middle Grades 5-8 5. Categorize energy sources as renewable or non-renewable and compare how these sources are used by humans.	Activity #4 Ask them which of the resources they've identified are renewable and which are not. <u>Activity #8</u> Students should use poster paper and marker to create a visual representation of their favorite thing, showing the materials, resources, and energy that go into making it.	Each student should have time to think about this answer.
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 4. Design and build an invention.	Trashion Show #3 Students could only come up with new inventions or alternate uses for the items.	Aligns to this enrichment section only.

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<i>Activity Title:</i> PASS THE PLANTS, PLEASE		<i>Activity Guide Page #:</i> 50	
Objective(s): Students will: 1) identify edible plant parts and give examples of each; 2) describe how plants are used to make various kinds of foods; 3) discuss the importance of plants in people's diets.			
Overview: Chocolate candy. Apple pie. French fries with catsup. Tortilla chips with guacamole. Thanks to plants, these and many other favorite foods are ours to enjoy. Try the following activities to get your students thinking about just how big a part plants play in our daily lives.			
Subject Area(s): Science, Social Studies, Math, Language Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 4. Participate in brainstorming activities.	Part A #1 Have students brainstorm a list of foods that come from plants.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 5. Make and read simple graphs.	Part B #1 Have each student make a chart. They will fill in the chart with information about the plant foods they eat for lunch each day. <u>Part B #4</u> Have students create a bar graph showing the occurrence of different plant parts in their lunches.	Each student should make their own chart and graph.

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<i>Activity Title:</i> PEOPLE OF THE FOREST			Activity Guide Page #: 54
Objective(s): Students will: 1) describe the lifestyles of several forest-dwelling peoples of the present or past and ways that they depend upon the forest; 2) describe some of the effects forest people have on their environment; 3) focusing on a day in the life of a member of one group of forest people.			
Overview: To the Mbuti Pygmies of Africa, the Yanomami and the Kuna of Latin America, and other people around the world, the forest is home. More than just a place to live, the forest provides for all of their needs. By comparing and contrasting different forest peoples, both past and present, your students can learn about some of the ways people have depended on forests throughout history.			
Subject Area(s): Social Studies, Language Arts			Grade Level(s): 5-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Part B #3 Develop a booklet comparing and contrasting each group of forest dwellers. Compare and contrast the forest dwellers way of life with their own.	Each student should contribute to the booklet.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 5. Access information at remote sites using telecommunications.	Part A #5 Research and write their stories. <u>Part B #1</u> Research the lifestyle of a past or present forest people.	Aligns only if research is done using telecommunication.

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<i>Activity Title:</i> TALE OF THE SUN		<i>Activity Guide Page #:</i> 56	
Objective(s): Students will: 1) describe how stories reveal the beliefs of the people who tell them; 2) read or listen to an American Indian story to gain insight on the vital importance of the sun.			
Overview: Every culture in the world has stories that are part of its history and tradition. These stories reveal the beliefs of the people who tell them. For example, many stories teach lessons in proper attitude and behavior. In this activity, your students can analyze a story told by the Muskogee (Creek) Indians of present-day Oklahoma. Later, students can read and discuss stories told in other cultures from around the world.			
Subject Area(s): Language Arts		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades Pre-K-2 1. Describe how legends, stories, and scientific explanations are different ways in which people attempt to explain the world.	<u>Activity #2</u> Tell the students you are going to read them a story told by the Muskogee (Creek) Indians of present-day Oklahoma about how the sun got into the sky. <u>Activity #3</u> Discuss the story on 2 levels. On the 1 st level, ask the students how the story, as a traditional creation story, explains why certain animals look the way they do. On the 2 nd level, ask them how the story can teach people a lesson in how to work and live together. <u>Enrichment</u> Students write their own short folktale incorporating information about plants and/or animals along with lessons that they think are important. Have the students illustrate their stories.	Each student should have the opportunity to reflect on the question and discussions.

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<i>Activity Title:</i> VALUES ON THE LINE		<i>Activity Guide Page #:</i> 58	
Objective(s): Students will: 1) examine statements regarding environmental issues and determine the degree to which they agree with them; 2) share their views and opinions with others and gain awareness on the range of values related to environmental issues; 3) identify the need for balanced information when forming opinions.			
Overview: Many people never take the time to explore the underlying assumptions they have concerning the environment. They often form an opinion without understanding all the sides of an issue. This activity is designed to get students thinking about their feelings and expressing their views. You may also wish to use this activity on a regular basis to give students a chance to evaluate their opinions as they learn more about environmental issues.			
Subject Area(s): Social Studies, Science		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 2. Describe how feelings can distort reasoning.	Activity #7 Did students feel they needed additional information to judge an issue? If so, what did they need? Where do people’s values come from? What kind of experiences change or strengthen people’s values?	
	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Activity #5 Explain to his/her partner the ranking he/she chose. <u>Activity #7</u> Did any of them support their rankings using examples or specific information from real-life situations?	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 3. Discuss the ethical issues surrounding a specific scientific or technological development.	Activity #7 Discuss each value statement with the students. Where do people’s values come from? What kinds of experience change or strengthen people’s values?	Assessment Opportunities – questions can help evaluate students understanding of these issues.

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<i>Activity Title:</i> ENVIRONMENTAL EXCHANGE BOX		<i>Activity Guide Page #:</i> 61	
Objective(s): Students will: 1) discover some of the resources, products, and other characteristics of their region and ways that people in their region are trying to improve the environment; 2) describe similarities and differences between their region with respect to these characteristics.			
Overview: Preparing an environmental exchange box will give your students a chance to learn more about their own region and the things that are special about it. Then, when they receive an exchange box from another region, they can compare environments, people, and much more.			
Subject Area(s): Science, Social Studies		Grade Level(s): K-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Activity #2 Students make a collage of pictures of local ecosystem types. A field guide, prepared by the students, to all the trees in the neighborhood.	this activity could align in many more ways based on the type of research and information gathering conducted by the students.
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades Pre-K-2 5. Describe a familiar local environment.	<u>Activity #2</u>	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Activity #4 Examine the box's contents. Compare that region in the box with their own.	

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<i>Activity Title:</i> ADOPT A TREE		<i>Activity Guide Page #:</i> 65	
Objective(s): Students will: 1) describe a chosen tree using personal observation and investigation, and organize information about the tree; 2) identify relationships between their trees and other organisms; 3) put together a book or portfolio about their tree.			
Overview: This activity will encourage students' awareness of individual trees over time, as well as incorporate various other subjects. By adopting individual trees, students will gain greater awareness and appreciation of their local environments.			
Subject Area(s): Science, Math, Language Arts, Visual Arts, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades Pre-K-2 Identify the differences between living and non-living things.	Variation 1, #3 Ask students whether they think the tree is alive or not.	only aligns completely if enrichment is done.
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Make accurate observations using appropriate tools and units of measure.	Activity #3 Students should use their notebooks to record observations and answer questions about their trees.	
		<u>Enrichment #1</u> Have students measure height, circumference and crown of their trees.	
	Elementary Grades 3-4 1. Make accurate observations using appropriate tools and units of measure.	<u>Enrichment #1</u>	
	Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	<u>Enrichment #1</u>	

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Activity Title: TREES AS HABITATS		Activity Guide Page #: 70	
Objective(s): Students will: 1) take inventory of the plants and animals that live on, in, and around trees; 2) identify ways those animals and plants depend on trees for survival, and in turn, influence the trees; 3) for Variation 2 - investigate how buildings provide a habitat for plants, animals, and people.			
Overview: From their leafy branches to their tangled roots, trees provide a habitat for a host of plants and animals. In this activity, your students will discover how plants and animals depend on trees in many ways.			
Subject Area(s): Science, Math, Social Studies, Visual Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology C. Cells Students will understand that cells are the basic units of life.	Elementary Grades Pre-K-2 3. Explore magnifying devices and how they allow one to see in more detail.	Activity #3 Use hand lenses, bug boxes, or binoculars.	have enough for all students to use. Use <u>real</u> tools, not pretend telescopes.
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Elementary Grades 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Variation 1, #2 Provide hand lenses. <u>Variation 1, #3</u> Lead students to a tree and have them describe what they see living on its trunk and branches with their hand lenses or telescopes. <u>Activity #2</u> Tell the students they are going to study a tree to find out which plants and animals depend on it or use it in some way. Watch for clues and signs such as chewed leaves, holes in the bark, or carved initials.	

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Activity Title: THE FALLEN LOG		Activity Guide Page #: 72	
Objective(s): Students will: 1) identify some of the organisms that live in, on and under fallen logs and explain how those organisms depend on the dead wood for survival; 2) describe the process of decomposition.			
Overview: It's amazing how many things live in and on rotting logs. In this activity, your students will become familiar with some of those organisms. They'll gain an understanding of how <i>decomposition</i> takes place. And they'll gain a better appreciation for <i>microhabitats</i> and <i>communities</i> .			
Subject Area(s): Science, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Activity #2 Members will need to keep track of each different kinds of plants or animals found, where it was found, what it looked like, and what it was doing.	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Activity #2 Members will need to keep track of each different kinds of plants or animals found, where it was found, what it looked like, and what it was doing. Each team should develop a data sheet.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Activity #6 What similarities and differences were there between each of the logs? How do the animals you found in the log interact with it? How does the forest ecosystem benefit from a fallen log?	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.	Activity #2 Members will need to keep track of each different kinds of plants or animals found, where it was found, what it looked like, and what it was doing. Each team should develop a data sheet. Activity #5 Present their findings to the rest of the group.	

Project Learning Tree Links/ Science

Activity Title: NATURE’S RECYCLERS			Activity Guide Page #: 75
Objective(s): Students will: 1) understand and describe the process of decomposition; 2) explain the function of scavengers and decomposers; 3) experiment with sowbugs to determine what they eat and what their role is in the ecosystem.			
Overview: It's amazing how many organisms live off dead organic material and recycle those materials back into life. In this activity, your students will investigate the habits of one of those creatures. they will gain an understanding of how decomposition works and an appreciation for some of nature's less-heralded creatures.			
Subject Area(s): Science, Language Arts			Grade Level(s): 1-6
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Elementary Grades 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Activity #5 Observe the creatures inside and record how they look and what they do. Teams should also record the type of food in the container, how much was put in, and what it looks like.	each student should contribute to observations and data collections.
	Elementary Grades Pre-K-2 2. Ask questions and propose strategies and materials to use in seeking answers to questions.	Activity #3 Have each team pick one of the foods listed in step 2 to use in an investigation. Tell students that each team should set up a study container and record observations. Activity #4 Have students collect the foods (leaves, dirt, vegetables, wood, grass, and so on) that they are going to investigate.	
	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	<u>Activity #3</u> <u>Activity #4</u>	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Activity #7 Have teams organize and present their observations (data) to the rest of the group. Based on your experiments, what other foods do you think sowbugs eat in the “wild”? How might sowbugs be important to a forest ecosystem?	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.		Activity #5 Record how they look and what they do. Activity #7 Organize and present their data.	

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Activity Title: BIRDS AND WORMS		Activity Guide Page #: 77	
Objective(s): Students will: 1) simulate how predators use their vision to find prey; 2) describe some different ways animals use camouflage for survival; 3) invent a fictional animal that is camouflaged for its particular environment.			
Overview: Camouflage is an important survival strategy in the animal kingdom. In this activity, student swill discover the value of protective coloration as they pretend to be birds in search of colored worms or bugs.			
Subject Area(s): Science, Math, Physical Education		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades 3-4 4. Investigate the connection between major living and non-living components of a local ecosystem.	Activity #2 Predict what color worm or bug might have the best camouflage for this environment. Activity #6 What type of worm or bug has the best camouflage for this environment and why?	
Science and Technology D. Continuity and Change Students will understand the basis for all life and that all living things change over time.	Elementary Grades Pre-K-2 2. Identify characteristics that help organisms live in their environment.	Activity #6 What type of worm or bug has the best camouflage for this environment and why?	this activity focuses on only camouflage.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 6. Discover relationships and patterns.	Activity #5 Is there any pattern to the order in which the worms or bugs were found? Does this pattern have any significance? Activity #6	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 5. Make and read simple graphs.	Activity #4 Make a chart with as many columns as there are students on each time. The students should each place their worm or bug in the column that corresponds with their position in line. Activity #6 Have students take back their worm or bug. Turn the paper over and make columns that correspond to the different colors. Have students place their worms or bugs in the appropriate color column. Have each student record the number of each color. What color was easiest/hardest to find?	

Project Learning Tree Links/ Science

Activity Title: DYNAMIC DUOS		Activity Guide Page #: 79	
Objective(s): Students will: 1) examine close relationships that exist between different organisms; 2) explain how relationships help each other to survive.			
Overview: Organisms in an ecosystem depend on each other for food. But they may also depend on each other for protection, transportation, or shelter. A close, long-term relationship between two organisms is called symbiosis (sihm-bee-OH-sihs). In this activity, students will learn about several kinds of symbiosis.			
Subject Area(s): Science, Language Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 4. Generate examples of the variety of ways that organisms interact (e.g., competition, predator/prey, parasitism/ mutualism).	Activity #3 Describe what each partner gets from the relationship. Activity #4 Ask students to describe other symbiotic relationships they know of.	assessment opportunity allow students to research and develop this concept further.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 6. Practice and apply simple logic, intuitive thinking, and brainstorming.	Activity #2 Students should decide which animal which animal or plant described at the bottom of the page would be likely to respond to each ad. <u>Activity #3</u> <u>Activity #4</u>	

PICTURE

Project Learning Tree Links/ Science

Activity Title: EVERY TREE FOR ITSELF			Activity Guide Page #: 83
Objective(s): Students will: 1) simulate how trees compete for their essential needs; 2) describe how varying amounts of light, water, and nutrients affect a tree's growth.			
Overview: Try this activity to give your students an idea of the conditions that trees need to live and grow, and to help your students understand that trees must often compete for their needs.			
Subject Area(s): Science, Math			Grade Level(s): K-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades Pre-K-2 Identify ways that organisms depend upon their environment.	Activity #8 What might happen to a real tree that lacked one of its requirements?	
	Elementary Grades 3-4 4. Investigate the connection between major living and non-living components of a local ecosystem.	Activity #8 What might happen to a real tree that lacked one of its requirements? Is there such a thing as too much water, sunlight, or nutrients?	
	Middle Grades 5-8 2. Analyze how the finite resources in an ecosystem limit the types and populations of organisms within it.	Activity #12 Older students can record those results and later graph or chart the results of each round and draw conclusions.	Assessment opportunity allows for a more organized way to analyze data from this activity.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 6. Discover relationships and patterns.	Activity #8 What might happen to a real tree that lacked one of its requirements? Is there such a thing as too much water, sunlight, or nutrients?	

Project Learning Tree Links/ Science

Activity Title: AIR PLANTS		Activity Guide Page #: 85	
Objective(s): Students will: 1) demonstrate and describe the general process of photosynthesis; 2) explore the relationship between the amount of oxygen produced by plants and the amount of oxygen used by humans.			
Overview: Plants play a part in every breath we take. Use this activity to help your students understand how photosynthesis works and how humans depend on this process.			
Subject Area(s): Science, Math		Grade Level(s): 3-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 1. Describe in general terms the chemical processes of photosynthesis and respiration.	Activity #4 Develop/discuss with students the basic steps of photosynthesis.	have students complete assessment. There is an opportunity to fully align. Students should do the describing, not just discussing. Use variation activity to tie in respiration so the activity aligns more.
Science and Technology C. Cells Students will understand that cells are the basic units of life.	Elementary Grades Pre-K-2 1. Demonstrate that living things are made up of different parts.	Activity #2 Animals give off carbon dioxide, a gas that plants need to make food (photosynthesize).	use variation activity to tie in respiration so the activity aligns more.
		Activity #6 Measure plots of grass that represent their oxygen needs for a day.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Variation Have the students draw a diagram showing the mutual relationship they have with a street tree.	this variation activity should be done by each student to demonstrate their understanding of this concept.
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Activity #4 Discuss with students the basic steps of photosynthesis.	

Project Learning Tree Links/ Science

Activity Title: RAIN REASONS		Activity Guide Page #: 88	
Objective(s): Students will: 1) explore how variations in water, light and temperature affect plant growth; 2) describe how precipitation and geography can affect the plant and animal species that are found in a particular region.			
Overview: Rainfall, sunlight, and temperature are important factors influencing where plants can grow and, in turn, where animals can live. In this activity, students will design experiments to see how these climatic factors influence the growth and lives of plants. They will use the learned principles to explore how varying climate conditions have resulted in an astounding variety of forest types in Puerto Rico.			
Subject Area(s): Science, Math Social Studies		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades 3-4 3. Compare and contrast physical and living components of different biomes - i.e., regions characterized by their climate and plant life - (e.g., tundra, rain forest, ocean, desert).	Part B #1 Consider how climatic factors have affected the development of those different forest types. Part B #2 Students should hypothesize about what types of plants and animals might be found in the different forest types of Puerto Rico.	All students should reflect on this information. Part B of this activity demonstrates alignment.
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Part A #2 Design an experiment using live plants that will demonstrate how climactic factors influence plant growth. Part A #5 Observe their plants each day, and record any changes, especially size and appearance.	Part A demonstrates alignment.
	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	<u>Part A #2</u> <u>Part A #5</u> <u>Part A #1 - Guideline Steps</u>	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 9. Apply analogous reasoning.	Part B #1 Ask students to use experiments they did in Part A as they consider how climactic factors have affected the development of those different forest types.	Both Part A & B must be done for students to make comparisons.

Project Learning Tree Links/ Science

<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.</p>	<p>Part A #5 Have students observe their plants each day, and record any changes, especially size and appearance. Part A #6 Have students present the results of their experiments to the rest of the group.</p>	<p>Part A must be completed to align with this standard.</p>
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PICTURE/CASESTUDY

Project Learning Tree Links/ Science

Activity Title: PLANT A TREE		Activity Guide Page #: 95	
Objective(s): Students will: 1) identify ways that urban trees enrich our lives; 2) determine how people care for urban trees; 3) identify areas in the community that would benefit from having more trees; 4) organize and execute a class tree-planting project in a local area.			
Overview: Never underestimate the power of a tree! Besides giving us an amazing array of paper and wood products, trees provide a host of other benefits - from shading our backyards to assisting in the maintenance of the global climate. Students can express their appreciation of trees by planning and carrying out their own tree-planting program.			
Subject Area(s): Science, Social Studies		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 5. Gather and effectively present information, using a variety of media including computers (e.g., spreadsheets, word processing, programming, graphics, modeling).	Assessment Opportunity Put together an information booklet that other groups could use to plan, execute, and publicize a community tree-planting project.	Students must produce brochures using computers, etc. for this activity to align.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.	Activity #1 List the benefits trees provide to people and wildlife in those areas. Activity #3 Identify areas in the community that would be improved by the presence of one or more trees.	Each student should think about these benefits.

Project Learning Tree Links/ Science

Activity Title: A FOREST OF MANY USES		Activity Guide Page #: 98	
Objective(s): Students will: 1) identify ways that people use forest resources; 2) explain that forests are managed to satisfy a variety of human needs; 3) explore how different forest uses can be balanced with each other.			
Overview: Privately and publicly owned forests are often managed to some degree to provide several different resources. In this activity, students will learn how forests are managed to meet a variety of human and environmental needs.			
Subject Area(s): Science, Social Studies		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 6. Practice and apply simple logic, intuitive thinking, and brainstorming.	Activity #2 Ask students to name animals. Activity #3 List recreational activities. Activity #4 List products. Activity #6 What strategies would they use to promote wildlife? Activity #9 Which activities listed can go on at the same time in the same forest?	Students will brainstorm forest uses for people, wildlife, recreation and products. They will then manage their forest to meet the needs of each user.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 6. Use objects and pictures to represent scientific and technological ideas.	Assessment Opportunity Have students create a birds-eye view of a forest that's being managed for multiple uses. They may show different activities going on in different areas of the forest or multiple activities taking place in the same area. Students should be able to explain why certain activities can or cannot co-exist in the same year.	
	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	<u>Assessment Opportunity</u>	

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Activity Title: FOREST CONSEQUENCES		Activity Guide Page #: 101	
Objective(s): Students will: 1) evaluate the options for managing or using a piece of forested land; 2) make a land-use decision and explore the consequences of that decision.			
Overview: Few issues, if any, have simple solutions- and resolving them usually involves compromise. In this activity, your students will learn about some of the effects that human activities can have on a forest. They will explore some of the trade-offs involved in working out a land-use issue.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 6. Explain how different conclusions can be derived from the same data.	Activity #6 What differences might exist between the way you made your decision and the way a real city council would have made a decision like this? Enrichment Put together a special class newspaper, or a radio/TV broadcast, that features the Morris Woods controversy. Students can write a news story, or opinion piece for the project.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 8. Construct logical arguments.	Variation #1 Work in pairs to present each land-use proposal. Have students present proposals to the City Council. Variation #2 Each team should come up with it's own proposal.	Variation 1 or 2 must be done for this activity to align.

Project Learning Tree Links/ Science

Activity Title: WHO WORKS IN THIS FOREST		Activity Guide Page #: 105	
Objective(s): Students will: 1) explore a variety of jobs that are directly related to forest resources; 2) describe how various professionals work together to care for forests.			
Overview: All kinds of people work in the forest - from foresters to loggers, from scientists to naturalists. Everyone depends on properly managed forests for recreation, essential products, and a healthy environment. this activity provides students with an overview of forest-related careers.			
Subject Area(s): Science, Social Studies		Grade Level(s): 3-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Student Worksheet Is this job necessary? Explain.	Each student should complete his/her own worksheet.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 2. Ask clarifying and extending questions.	Enrichment Have students prepare questions to ask each person about the work he/she does. Have students draw pictures or write stories about the people and their jobs.	Enrichment has excellent alignment.
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Assessment Opportunity Create a collage. Have students explain their collages to you verbally or in writing.	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades 3-4 2. Investigate and describe the role of scientists and inventors.	Activity #6 Ask students how each of those workers could benefit from having forests managed by the people they've learned about. Which workers depend on forests in some way to do their jobs? Be sure students explain how each person depends on forests.	

Activity Title: LOVING IT TOO MUCH		Activity Guide Page #: 108	
Objective(s): Students will: 1) explain how increased numbers of park visitors and activities outside park boundaries affect ecosystems within national and local parks; 2) offer possible solutions to problems facing national and local parks.			
Overview: National parks are the treasures of any nation. Yet national parks today struggle with serious dilemmas. By looking at problems in America's national parks, students can begin grappling with some tough environmental issues that affect parks locally and globally.			
Subject Area(s): Science, Language Arts, Social Studies		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Activity #5 Have students work in their groups to discuss the reading and answer these questions: What problems have been caused by an increase of visitors to national parks?, What other problems do national parks face?...	Students need to use graphs and information sheets for supporting facts.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Activity #3 Use the statistics to draw a bar or line graph of U.S. population growth since 1800 and a graph of park visitation from 1950 to 1990. Answer questions on student question sheet.	Each student should make a graph and participate in the discussion.
	Middle Grades 5-8 2. Defend problem-solving strategies and solutions.	Activity #5 Have students work in their groups to discuss the reading and answer these questions: Would your recommendations work for all parks or for only some?, What problems might your recommendations create?... Assessment Opportunity Prepare written arguments stating what should be done about problems facing national or local parks.	
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Activity #5 Work in their groups to discuss the reading and answer these questions: What solutions would you recommend to combat those problems?... Activity #6 Discuss some options presented in the background section.	

Project Learning Tree Links/ Science

Activity Title: POLLUTION SEARCH		Activity Guide Page #:114	
Objective(s): Students will: 1) identify forms of pollution and describe the effects that various pollutants can have on people, wildlife, and plants; 2) describe relationships between various forms of pollution and human actions.			
Overview: Here's a way for you to take a closer look at pollution; what it is, what its sources are, and what are some things people can do to reduce it.			
Subject Area(s): Science, Social Studies, Math		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 5. Make and read simple graphs.	Part A #5 Have students take turns placing the pictures they drew into the pollution categories. Part A #6 Review and discuss the finished chart.	Each student should complete picture and portion of graph.
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Part A #6 As a group, review and discuss the finished chart. Part B #4 After analyzing the story, discuss with students how <i>The Cat in the Hat Comes Back</i> demonstrates a common attitude people have toward pollution.	

Project Learning Tree Links/ Science

Activity Title: TALKING TRASH, NOT		Activity Guide Page #: 119	
Objective(s): Students will: 1) analyze the solid waste that they generate over a period of time; 2) describe what happens to various types of waste when it's discarded; 3) develop and implement a plan for reducing the amount of waste they generate.			
Overview: By taking a look at their own trash, your students can learn about how and why they throw things away. They can find ways to cut down on the waste they produce and to improve the way waste is managed in their community.			
Subject Area(s): Science, Social Studies, Math		Grade Level(s): 1-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 3. Use results in a purposeful way, which includes making predictions based on patterns they have observed.	Activity #8 Have students develop an action plan to reduce the amount of trash they generate, then carry out the plan. Activity #7 Think of ways they could either reduce, reuse, or recycle each item on the list. Activity #4 Did more or less accumulate than they'd predicted?	All students should contribute and participate in the action plan.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Activity #7 Have students look at the list on the chalkboard and try to think of what actions they could take to keep some items out of the trash and, out of the landfill or incinerator.	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades Pre-K-2 3. Identify commonly used resources, their sources, and where waste products go.	Activity #6 What usually happens to classroom trash at the end of each day? Where do the materials come from to make the items in their trash?	
	Elementary Grades Pre-K-2 4. Demonstrate some practices for recycling and care of resources.	Activity #8 Have students develop an action plan to reduce the amount of trash they generate, then carry out the plan.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Activity #6 Discuss what usually happens to trash.	Each student should participate in the discussion.

Project Learning Tree Links/ Science

Activity Title: EVERY DROP COUNTS			Activity Guide Page #: 122
Objective(s): Students will: 1) monitor their daily actions and estimate the amount of water they use in a day; 2) describe how water is wasted and why it is important to conserve it; 3) design and implement a water conservation plan; 4) determine the amount of water and money saved through their plan.			
Overview: It's easy to waste water and even easier to take water for granted. Water pours out of our faucets as though it were endlessly available. but the truth is that fresh water supplies are dwindling. Fortunately, it's just as easy to conserve water as it is to waste! Try this activity to help your class (and maybe the whole school) cut back on water waste.			
Subject Area(s): Science, Social Studies, Math			Grade Level(s): 4-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 1. Make accurate observations using appropriate tools and units of measure.	Part A #3 Record the ways they use water and the number of times they used water in that way. In some cases, such as when they wash their hands, they'll need to record the length of time the water was running.	Each student should record their own information and perform their own calculations.
	Elementary Grades 3-4 3. Use results in a purposeful way: design fair tests, make predictions based on observed patterns, and interpret data to make further predictions.	Part A #6 Have students brainstorm a list of ways that they can consistently cut down on water waste at school and home.	
	Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Part B #2 Have students work in small groups to create an action plan to encourage water conservation in the school.	
	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	Part B #2 Part A #3 Monitor their water use. Part A #5 Have students compare their calculations to the predictions they made earlier. Discuss the differences between the two. Part A #7 Have students monitor their water use during the school day, this time practicing methods of saving water.	Each student should record their own information and perform their own calculations.

Project Learning Tree Links/ Science

<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.</p>	<p>Part A #5 Compare calculations to the predictions they made earlier. Discuss the differences between the two.</p>	<p>Must make poster/brochure or share information with others in some way.</p>
<p>Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.</p>	<p>Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.</p>	<p>Part B #1 Have students create posters to help others learn about conservation.</p>	
	<p>Middle Grades 5-8 6. Give examples of actions which may have expected or unexpected consequences that may be positive, negative, or both.</p>	<p>Part B #2 Create an action plan to encourage water conservation in the school. Part B #3 Have students estimate the savings, of both water and money, that their water conservation action plan will produce.</p>	

Project Learning Tree Links/ Science

Activity Title: ENERGY SLEUTHS		Activity Guide Page #: 126	
Objective(s): Students will: 1) identify different energy sources; 2) discuss the pros and cons of various energy sources from economic, social, and environmental perspectives; 3) describe some of the ways people use energy in their daily lives.			
Overview: Important issues revolve around our use of energy. One issue is the growing scarcity of some energy resources. Another is the threat to our environment caused by our current energy systems. In this activity, your students will learn about different sources of energy, as well as how energy is used in their daily lives.			
Subject Area(s): Science, Social Studies		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology H. Energy Students will understand concepts of energy.	Middle Grades 5-8 5. Categorize energy sources as renewable or non-renewable and compare how these sources are used by humans.	Part A #3 Research their energy source and develop a report.	Each student should contribute to their report and energy policy.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 1. Research and evaluate the social and environmental impacts of scientific and technological developments.	Part A #3 Research their energy source and develop a report. Part A #6 Have students share their energy policies. Discuss the pros and cons of each. You may give the groups time to revise their policies after they hear all reports.	

Project Learning Tree Links/ Science

Activity Title: THEN AND NOW		Activity Guide Page #: 131	
Objective(s): Students will: 1) describe the environmental changes that have occurred in their community over the course of time; 2) discuss whether those changes have been positive or negative for the community; 3) discuss ways to remedy negative changes.			
Overview: If your community is like most others, it's now quite a bit different than it was 100, 50, 25, or even five years ago. This activity will help your students to understand how we, as people, affect and alter the environment in which we live.			
Subject Area(s): Social Studies, Science, Language Arts		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 2. Ask clarifying and extending questions.	Part B #3 Encourage them to ask other questions that they may think of during the interview.	Part B must be done by each student.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades 3-4 3. Explore how technology (e.g., transportation, irrigation) has altered human settlement.	Part A #2 Discuss the pros and cons of how those developments affect people and communities.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Part A #2 Discuss the pros and cons of how those developments affect people and communities. Talk about how such changes affect wild animals and plants in the area.	

Project Learning Tree Links/ Science

Activity Title: HOW PLANTS GROW		Activity Guide Page #: 135	
Objective(s): Students will: 1) set up an experiment to determine what factors are necessary for plant growth; 2) measure and compare plant growth under different environmental conditions.			
Overview: A plant is a biological system with these basic requirements for functioning and growing: sunlight, water, air, soil and space. This activity allows students to explore what happens when a plant's basic needs are not met.			
Subject Area(s): Science, Math		Grade Level(s): K-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Activity #1 Devise experiments to test whether or not plants really need those element to grow. Conduct their experiment.	Each student should keep track of data.
	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	Activity #1 Devise experiments to test whether or not plants really need those element to grow. Conduct their experiment.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Activity #3 What does a plant need to grow? If you were to plant a tree on the school grounds, where might you plant it? Why?	Each student should have the opportunity to reflect and respond.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Activity #3 Discuss these questions: What plants grew the most/least?, What does a plant need to grow? How do plants get those needs? What happens if a plant doesn't get enough sunlight? Water? Soil?	

Project Learning Tree Links/ Science

Activity Title: SUNLIGHT AND SHADES OF GREEN		Activity Guide Page #: 137	
Objective(s): Students will: 1) test the effects of lack of sunlight on plant leaves; 2) describe the process of photosynthesis and how it enables a plant to survive.			
Overview: This activity introduces students to photosynthesis, the process that enable trees and other green plants to use sunlight to manufacture their own food.			
Subject Area(s): Science, Language Arts		Grade Level(s): 2-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Activity #3 Have the class observe the lighter-colored spot on each leaf where the cardboard deprived the leaf of sunlight.	
	Elementary Grades 3-4 3. Draw conclusions about observations.	Activity #4 Ask students for their ideas about how important leaves are to plants and how sunlight might affect plant leaves.	

PICTURE

Project Learning Tree Links/ Science

Activity Title: HAVE SEEDS WILL TRAVEL			Activity Guide Page #: 139
Objective(s): Students will: 1) sort or classify plant seeds they have collected; 2) identify varying methods of seed dispersal; 3) model or design seeds that use varying methods of dispersal.			
Overview: A plant is a biological system. Its processes and components enable it to grow and reproduce. This activity will introduce your students to one aspect of a plant's reproductive system: its seeds.			
Subject Area(s): Science, Visual Arts			Grade Level(s): K-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 2. Design and describe a classification system for organisms.	Activity #3 Ask groups to examine their seeds and invent a system for sorting or classifying. Invite students to share their methods of sorting.	Each student should be able to explain their "system."
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 5. Describe various mechanisms found in the natural world for transporting living and non-living matter and the results of such movements.	Activity #5 Invite students to share different ways they have noticed that plants disperse their seeds.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Activity #3 Younger students may simply sort seeds into 2 groups so that those in each group are alike in some way.	

Project Learning Tree Links/ Science

Activity Title: WATER WONDERS		Activity Guide Page #: 142	
Objective(s): Students will: 1) simulate the paths that water takes in the water cycle; 2) describe the importance of the water cycle to living things; 3) conduct an experiment to discover how plants affect the movement of water in a watershed; 4) describe how plants are important in maintaining water quality.			
Overview: The water cycle is the system by which Earth's fixed amount of water is collected, purified, and distributed from the environment to living things and back to the environment. Plants play a large part in the cycle by absorbing water with their roots and transpiring it as vapor from their leaves			
Subject Area(s): Science, Language Arts, Physical Education		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology F. The Earth Students will gain knowledge about the earth and the processes that change it.	Elementary Grades Pre-K-2 3. Observe changes that are caused by water, snow, wind, and ice.	Part B #3 Have students look for the following: the plants' effect on the water's speed, the amount of run-off on each slope, the appearance of the run-off water, the water's effect on the contour of each slope.	Part B must be done to meet this standard.
	Elementary Grades 3-4 4. Use various types of evidence (e.g., logical, quantitative) to support a claim.	Part A #7 Write a brief story from a water molecule's point of view that describes the journey they just took through the water cycle.	Part A must be done. Each student should write about their "own" journey.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.	Part A #7 Write a brief story from a water molecule's point of view that describes the journey they just took through the water cycle.	
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Part A #9 Discuss the following questions: Even though individual molecules took different paths, was anything similar about the journeys they took?... <u>Part B #1</u> Discuss these questions: Is there anything people can do to control or alter the water cycle? Do you think plants have any effect on the water cycle? <u>Part B #4</u> As you lead class members in a discussion about what they observed, as questions like: What happened to the water on the bare slope? What happened to the water on the planted slope?...	

Project Learning Tree Links/ Science

Activity Title: WEB OF LIFE		Activity Guide Page #: 148	
Objective(s): Students will: 1) collect information about various organisms in an ecosystem; 2) create a mural that depicts the interdependence of various organisms with other components in an ecosystem; 3) create a simulated web of life using a ball of string.			
Overview: In this activity, students will take a close look at one particular ecosystem (a forest) and will discover the ways that plants and animals are connected to each other. By substituting the appropriate information, you can also use the activity to study other ecosystems, such as oceans, deserts, marshes, or prairies.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 1. Describe in general terms the chemical processes of photosynthesis and respiration.	Activity #10 Use yarn to connect each animal to other animals and plants with which it directly or indirectly interacts. <u>Enrichment</u> Make food web mobiles.	
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Activity #8 The student should explain the team's reasons for placing each organism in a particular spot.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Activity #8 When all organisms are in place discuss the following questions: What did you discover about your plant or animal that surprised you the most? Why did you select the species you did?... <u>Activity #12</u> Discuss these questions: What would happen if one element of the ecosystem were missing? What important elements are not included in our Web?...	

Project Learning Tree Links/ Science

Activity Title: SCHOOL YARD SAFARI		Activity Guide Page #: 151	
Objective(s): Students will: 1) find signs of animals living in the school yard; 2) describe ways the school environment provides those animals with what they need to live.			
Overview: Every organism requires a place to live that satisfies its basic needs for food, water, shelter, and space. Such a place is called a habitat. In this activity, students will go on a safari to explore a nearby habitat, the school yard, while looking for signs of animals living there.			
Subject Area(s): Science, Language Arts		Grade Level(s): PreK-5	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades Pre-K-2 1. Identify ways that organisms depend upon their environment.	Activity #5 What do these animals need to live? What kinds of food might animals find on the school grounds?	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Activity #5 What animals did you observe living in our school yard? <u>Activity #4</u> Sketch the animals or signs they find.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 5. Make and read simple graphs.	Activity #4 Record the number of each animal they find. Later they can make a graph using these numbers.	

Project Learning Tree Links/ Science

Activity Title: ARE VACANT LOTS VACANT?		Activity Guide Page #: 153	
Objective(s): Students will: 1) describe plants and animals that live at and around the study site; 2) give examples of and describe ecological relationships between biotic and abiotic elements at the study site.			
Overview: Look closely and you will see that a vacant lot is not so vacant! Plants of all kinds thrive in vacant lots, along with a host of animals such as insects, birds and mammals. In this activity, a nearby vacant lot, overgrown strip, or a landscaped area will provide a rich laboratory for students to examine elements of an ecosystem.			
Subject Area(s): Science, Math, Visual Arts		Grade Level(s): K-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Activity #6 Prepare a visual presentation of what was observed during the investigation.	Each student should contribute to the presentation and participate in the field study.
Science and Technology - B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades Pre-K-2 5. Describe a familiar local environment.	Activity #6	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 , 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Activity #4 Examine it's plot for signs of animal life such as burrows, anthills, etc. Ask students to inventory the kinds of plant life they find.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Activity #3 List the plants and animals they expect to find in their study plots.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.	Activity #3 List the plants and animals they expect to find in their study plots. Activity #6	
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Activity #7 Discuss their findings with the entire group. Were there plants or animals that you expected to find but didn't? Did another group find them? What could be the reasons those organisms weren't found?...	

Project Learning Tree Links/ Science

Activity Title: FIELD, FOREST AND STREAM			Activity Guide Page #: 156
Objective(s): Students will: 1) investigate and measure components in three different ecosystems; 2) describe similarities and differences they observe among three ecosystems; 3) identify ways that the abiotic components of an ecosystem affect the biotic components.			
Overview: In this activity students will examine three different environments as they focus on sunlight, soil moisture, temperature, wind, plants, and animals, in each environment. By comparing different environments, students will begin to consider how nonliving elements influence living elements in an ecosystem.			
Subject Area(s): Science, Math			Grade Level(s):
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades 3-4 4. Investigate the connection between major living and non-living components of a local ecosystem.	Activity #1 Students will investigate ecosystems at three different study sites.	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Elementary Grades 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Variation Explore the study area and determine which location has the most and the least of each factor.	Variation 1 is for younger students.
	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Activity #2 Investigate and record observations of a different component of 3 different study sites. Activity #5 Use this chart as a basis for discussing differences between the locations and any interactions students observed among the elements.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Activity #5 Do plants seem to affect the light intensity, air temperature, and soil temperature in an area? What relationship does light seem to have with air temperature? With plants?...	

Project Learning Tree Links/ Science

<p>Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.</p>	<p>Middle Grades 5-8 6. Give examples of actions which may have expected or unexpected consequences that may be positive, negative, or both.</p>	<p>Enrichment #2 Which human actions have harmful effects on these ecosystems? Which are beneficial? Which human actions have a positive effect on the ecosystem?</p>	
<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.</p>	<p>Activity #5 Use this chart as a basis for discussing Differences between the locations and interactions students observed among the elements.</p>	

PICTURE

Project Learning Tree Links/ Science

Activity Title: TROPICAL TREEHOUSE		Activity Guide Page #: 160	
Objective(s): Students will: 1) describe the plants and animals that live in different levels of the tropical rainforest; 2) examine and discuss a case study that involves the rights of native inhabitants of a tropical rainforest in a national park; 3) describe the sounds they might encounter when visiting a rainforest.			
Overview: In this activity, studying tropical rainforests and issues involving the use of rainforests will enable your students to make more informed decisions regarding the future of such regions. While tropical rainforests and the temperate rainforests of North America operate on many of the same ecological principles, they differ greatly in their climates, and in the types of soil, plants, and animals that make up the forest ecosystems.			
Subject Area(s): Science, Social Studies, Language Arts, Performing Arts, Visual Arts.		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Part A #4 Make a large mural depicting a cross-section of a rainforest and then draw or tape pictures of animals at appropriate levels.	
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades 3-4 3. Compare and contrast physical and living components of different biomes - i.e., regions characterized by their climate and plant life - (e.g., tundra, rain forest, ocean, desert).	Part A #5 Develop a cross-section of a forest typical to their own region and compare it with a rainforest.	Students must study both biomes.

Project Learning Tree Links/ Science

Activity Title: 400-ACRE WOOD		Activity Guide Page #: 169	
Objective(s): Students will: 1) create a management plan for a hypothetical piece of public land, taking into account factors such as ecosystem stability, monetary income or costs, wildlife, water, and visitors; 2) experience the analysis and decision making that goes into managing forest land.			
Overview: In this activity, students will play the role of managers of a 400-acre (162-hectare) piece of public forest. Through these roles, students will begin to understand the complex considerations that influence management decisions about forest lands.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 7-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Activity #7 Ask teams to present their plans to the entire group, making clear how they decided on their plans. Have them report the findings of their cost analysis worksheets. Activity #8 Have group discussion of different plans.	
	Middle Grades 5-8 8. Construct logical arguments.	Assessment Opportunity Prepare a 5 minute argument explaining why their plan should be accepted.	Must complete assessment for activity to align.
	Secondary Grades 6. Analyze situations where more than one logical conclusion can be drawn.	Activity #8 Which plan enables the most people to enjoy the forest? Which plan seems to provide the best balance of money, trees, wildlife, and visitors?	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 2. Defend problem-solving strategies and solutions.	Activity #7 Present their plans to the entire group, making clear how they decided on their plans.	
	Secondary Grades 3. Make and use appropriate symbols, pictures, diagrams, scale drawings, and models to represent and simplify real-life situations and to solve problems.	Activity #7 Activity #5 Use "What's the score?" for a cost and benefit analysis of their plan.	
	Secondary Grades 8. Engage in a debate, on a scientific issue, where both points of view are based on the same set of information.	Assessment Opportunity Prepare a 5-minute argument explaining why their plan should be accepted.	Must do assessment activity to align.

Project Learning Tree Links/ Science

<p>Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.</p>	<p>Secondary Grades 2. Demonstrate the importance of resource management, controlling environmental impacts, and maintaining natural ecosystems.</p>	<p>Activity #5 Discuss what impact their plan would have in terms of cost, income, timber, wildlife, visitors, and ecological balance.</p>	
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PICTURE/CASESTUDY

Project Learning Tree Links/ Science

Activity Title: MAKE YOUR OWN PAPER			Activity Guide Page #: 176
Objective(s): Students will: 1) make recycled paper from scrap paper; 2) describe the steps of the papermaking process and identify the elements and outputs of the process; 3) compare making paper by hand to the process used in factories.			
Overview: paper is one of many products that is manufactured from forest resources. In this activity, students investigate the papermaking process by trying it themselves. While papermaking can be rather messy, it is well worth the effort. Students are usually thrilled to find that they can make paper and that their product is practical as well as beautiful.			
Subject Area(s): Science, Social Studies, Language Arts			Grade Level(s): 1-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 2. Read and write instructions to be followed or instructions which explain procedures.	Assessment Opportunity #1 Write the directions for making paper on the piece of recycled paper that they made.	Must do the assessment.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades Pre-K-2 4. Demonstrate some practices for recycling and care of resources.	Activity #9 What materials did we use in making paper? What types of wastes resulted from making paper (dirty water)	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Activity #9 Discuss these questions: What materials did we use in making paper? What would it be like in a paper mill, where tons of paper are being made every day?...	

Project Learning Tree Links/ Science

Activity Title: A LOOK AT ALUMINUM		Activity Guide Page #: 180	
Objective(s): Students will: 1) understand how the unique properties of aluminum make it invaluable for many products and technologies on which we depend; 2) describe the steps involved in extracting bauxite and processing aluminum from bauxite; 3) explain the environmental impacts of producing new aluminum and recycling aluminum products.			
Overview: This activity will give your students a better appreciation for aluminum, a nonrenewable but recyclable natural resource they use every day. They will learn the steps that go into making aluminum products and will get a better idea of the environmental impact that using this resource has.			
Subject Area(s): Science, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Part A #6 Have teams create their own visual representation of how an aluminum beverage can is made, from bauxite in the ground to a finished can of soda.	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.	Part B #1 Create posters that teach people about the need to recycle aluminum cans.	

Project Learning Tree Links/ Science

Activity Title: ON THE MOVE		Activity Guide Page #: 185	
Objective(s): Students will: 1) compare various transportation methods for getting to and from school; 2) describe the transportation systems their community uses; 3) design or propose a practical and efficient transportation system for the future.			
Overview: In this activity, student will examine transportation systems, which are vital to their community.			
Subject Area(s): Science, Math, Social Studies, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 4. Design and build an invention.	Part B #2 Design a transportation system of the future that overcomes a problem in today's transportation and improves it in some way. Part B #3 Design a physical model.	Part B must be done. Invention must be built, not just designed.
	Middle Grades 5-8 6. Design, construct, and test a device (invention) that solves a special problem.	Part B #2 Part B #3	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Part B #2 Part B #3	
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Part A #5 Lead a discussion about students' findings. You might ask these: Which systems carry people? What advantages/disadvantages does each system have?... Part B #4 Discuss these questions: What problems did you encounter in your design?...	

Project Learning Tree Links/ Science

Activity Title: I'D LIKE TO VISIT A PLACE WHERE...			Activity Guide Page #: 188
Objective(s): Students will: 1) describe the characteristics of their favorite recreational area, explain the importance of recreational areas to people and other living things; 3) conduct a project at a local park to improve a habitat or enhance its suitability to people.			
Overview: In this activity, students will explore the concept that recreation areas are essential elements of a community. By working on a project to improve a local park, they will also learn about the community's system for managing open spaces.			
Subject Area(s): Science, Social Studies, Language Arts, Physical Education, Visual Arts			Grade Level(s): PreK-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Part A #3 Why do you like to visit your place? What is unusual or special about your place? Write their final descriptions on the cards.	Part A aligns to this standard.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Part B #4 Ask students to reflect on their designs: What things do you think people need to consider when designing a transportation system in a community?...	

Project Learning Tree Links/ Science

Activity Title: PLANNING THE IDEAL COMMUNITY		Activity Guide Page #: 191	
Objective(s): Students will: 1) map the locations of services and resources in their community; 2) create a map of an "ideal" community that includes all the services and resources people need to live there.			
Overview: In this activity, students will explore the elements that compose a human community. They will survey the area around their school, looking for community systems that help them live there. Then they will plan an ideal community that meets all the needs of its members.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 6. Practice and apply simple logic, intuitive thinking, and brainstorming.	Part B #1 Design an ideal community that meets all the needs of its residents. Ask students to brainstorm a list of the facilities, resources, and services that their community will include. Part B #4 How are your ideal communities the same as actual communities? How are they different?	Part B must be completed.
	Middle Grades 5-8 9. Apply analogous reasoning.	Part B #4 How are your ideal communities the same as actual communities? How are they different?	Part B must be completed.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Part A #5 Lead a discussion about student's findings by asking these types of questions: What did you learn from your survey? Did anything surprise you?... Part B #4	

Project Learning Tree Links/ Science

Activity Title: WE CAN WORK IT OUT		Activity Guide Page #: 193	
Objective(s): Students will: 1) develop solutions to a land-use problem involving urban open space; 2) simulate a city council meeting to discuss and decide on a land-use issue.			
Overview: When certain people decide how to use a particular piece of land, the decision can involve and affect many people in many ways. Therefore, groups must establish processes for planning and resolving conflicts about land use. In this activity, students will develop a plan to address a land-use issue.			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 5. Demonstrate an understanding that ideas are more believable when supported by good reasons.	Activity #6 Develop a plan. Make a 2-minute presentation to the City Council, and that more than one person must help to present the plan.	
	Middle Grades 5-8 8. Construct logical arguments.	Activity #6 Develop a plan. Make a 2-minute presentation to the City Council, and that more than one person must help to present the plan.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 5. Access information at remote sites using telecommunications.	Activity #6 Develop a plan. Make a 2-minute presentation to the City Council, and that more than one person must help to present the plan.	By using computers and other media, this activity would more adequately align with the standard.
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Activity #12 Discuss these questions: Do you agree with the City Council? What criteria did the City Council use to decide? What changes would you have made to the decision process?...	

Project Learning Tree Links/ Science

Activity Title: DEMOCRACY IN ACTION		Activity Guide Page #: 197	
Objective(s): Students will: 1) compare two citizen groups, special-interest groups, or government agencies involved in the same issues; 2) create visual representations of the two groups; 3) explain ways students can become involved in the civic action process through participation in such groups.			
Overview: Democratic systems depend on the involvement of citizens in policy making and decision making. This activity will help students learn about the roles and responsibilities of citizens' groups in environmental policies and decision making, and about how young people can become involved in the process.			
Subject Area(s): Social Studies, Visual Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 5. Access information at remote sites using telecommunications.	Activity #6 Allow time for students to contact and question members of their 2 groups, and to receive necessary printed materials.	Students must gather data using telecommunication resources.

Project Learning Tree Links/ Science

Activity Title: THERE OUGHT TO BE A LAW		Activity Guide Page #: 201	
Objective(s): Students will: 1) describe how a group of students can make and change rules; 2) compare rulemaking in a group to the lawmaking process in local government; 3) research the steps necessary to make a proposed change in their community; 4) create a poster that shows the effects of their proposed change and that depicts the lawmaking process.			
Overview: In democratic societies, citizens have the power to influence the lawmaking process. In this activity, students will find out how local laws are made and how they can get involved in the process.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 4. Participate in brainstorming activities.	Part A #2 Brainstorm groups to which different class members belong. Part B #1 Brainstorm a list of possible laws.	Each student should participate in brainstorming activity.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Part B #4 Make posters summarizing the process for making their idea into law.	
	Elementary Grades 3-4 5. Gather and effectively present information, using a variety of media including computers (e.g., spreadsheets, word processing, programming, graphics, modeling).	Enrichment #1 Gather evidence to support the proposed law. Invite that person to your class to see a presentation.	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 6. Give examples of actions which may have expected or unexpected consequences that may be positive, negative, or both.	Part B #4 Each poster should include a picture of the community “before” the proposed law, a picture showing how the community would be different “after” the proposal became law, and the people and steps that would be involved with making it a law.	Only aligns if Enrichment #1 is done and media is used.

Project Learning Tree Links/ Science

Activity Title: POWER OF PRINT		Activity Guide Page #: 205	
Objective(s): Students will: 1) compare different sections of a daily newspaper; 2) analyze some of the ways that ideas and opinions are expressed through word choice; 3) research opposing sides of a local environmental issue; 4) write articles on environmental issues using both objective and subjective points of view.			
Overview: Newspapers keep the community informed about current events and trends, provide a forum for discussion of public issues, and are a source of entertainment. In this activity, students will examine articles from different sections of the newspaper by comparing and contrasting the different types of words and styles they employ.			
Subject Area(s): Social Studies, Language Arts, Visual Arts, Performing Arts.		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 2. Describe how feelings can distort reasoning.	Part B #4 In which type of article are there more emotional words? Were you tempted to change the truth to persuade your readers?	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.	Part A #4 What is the purpose of this newspaper piece? Is it supposed to inform people about the whole issue or to persuade people to take one side? Part B #4 If the purpose of an article is to persuade the reader, does it matter if it is accurate? Why or why not? Why do you think it is important for newspapers to include....	

Project Learning Tree Links/ Science

Activity Title: THE CLOSER YOU LOOK			Activity Guide Page #: 217
Objective(s): Students will: 1) describe the overall structure of a tree; 2) describe the structure and function of a tree's principle parts.			
Overview: All students, no matter how young, have an idea of what a tree looks like. But many are unfamiliar with either the actual of a tree or the function of its principle parts. In activity, your students will take a closer look at trees and their parts.			
Subject Area(s): Science, Visual Arts, Language Arts			Grade Level(s): PreK-6
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology E. Structure Of Matter Students will understand the structure of matter and the changes it can undergo.	Elementary Grades Pre-K-2 1. Show that large things are made up of smaller pieces.	Activity #2 Draw a new picture of a tree. Ask them to list different features they might look for when they make their observations.	Make sure students draw their tree and include major parts.
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Elementary Grades 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Activity #2 Students can take notes or make sketches as they make their observations.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Activity #5 Compare and contrast each pair of drawings. What new details appeared in the second drawing? What characteristics were similar?	

Project Learning Tree Links/ Science

Activity Title: TO BE A TREE		Activity Guide Page #: 219	
Objective(s): Students will: create a tree costume and learn the structure and function of tree parts.			
Overview: By making a tree costume, your students will gain awareness of a tree's structure and functions.			
Subject Area(s): Science, Visual Arts, Performing Arts		Grade Level(s): K-4	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology C. Cells Students will understand that cells are the basic units of life.	Elementary Grades Pre-K-2 1. Demonstrate that living things are made up of different parts.	Activity #2 Discuss with students how the leaves in the tree's crown soak up sunshine and make food (sugar) for the tree. Activity #3 Discuss how the trunk supports the tree and holds the crown up where the sun can reach it. Activity #4 Discuss how bark protects the tree from rain, cold, insects, disease, and sometimes even fire.	Have students explain the various tree parts when the activity is done.
	Elementary Grades Pre-K-2 3. Explore magnifying devices and how they allow one to see in more detail.	Activity #7 Have students look at a cross section of a tree with magnifying glasses. Have them look for tiny holes in the sapwood.	Must do Step #7.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 6. Use objects and pictures to represent scientific and technological ideas.	Objective Students will create a tree costume and learn the structure and function of tree parts.	Activity helps students learn parts and functions of a tree.

Project Learning Tree Links/ Science

Activity Title: TRE E FACTORY		Activity Guide Page #: 223	
Objective(s): Students will: 1) describe the general structure of a tree; 2) explain how different parts of a tree help the tree function.			
Overview: By acting out the parts of a tree, your students will see how a tree works like a factory. Afterward, they can create their own "tree factories".			
Subject Area(s): Science, Physical Education, Performing Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades Pre-K-2 2. Describe characteristics of different living things.	Assessment #2 Each time a student presses a button, the partner must point to the corresponding part of the tree and explain how it helps the tree survive.	Must do variation and then complete evaluation #2.
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades Pre-K-2 1. Identify ways that organisms depend upon their environment.	Variation #1 Ask students to name things that living things need to survive.	
Science and Technology C. Cells Students will understand that cells are the basic units of life.	Elementary Grades Pre-K-2 1. Demonstrate that living things are made up of different parts.	Variation Name things that living things need to survive. Where does water come from? How does it get into a tree? Where do trees get their food that they need to survive?...	
	Elementary Grades Pre-K-2 2. Demonstrate an understanding that plants and animals need food, water, and gases to survive.		
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Assessment #1 Create a model of a tree. Explain that they should include and label all tree parts they've learned about and be able to explain what each part does.	Must do evaluation to show concept of understanding.

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Activity Title: LOOKING AT LEAVES		Activity Guide Page #: 228	
Objective(s): Students will: 1) describe how leaf shapes, sizes, and other characteristics vary from tree to tree; 2) explain how particular types of trees can be identified by their leaves.			
Overview: Are leaves hairy? Do they have teeth? In this activity, your students will take a closer look at leaves to find out more about leaf characteristics and how leaves can be used to identify trees.			
Subject Area(s): Science, Visual Arts		Grade Level(s): PreK- 8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Elementary Grades 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Activity #4 Have students compare their leaves on the tree.	May be too simplistic for 5-8 students.

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Activity Title: BURSTING BUDS		Activity Guide Page #: 232	
Objective(s): Students will: 1) explain the purpose of a tree's buds and their relationship to the leaves; 2) describe the stages that buds go through as the leaves develop throughout the year.			
Overview: In early spring, the tiny bright green leaves of many trees burst forth. Where do the leaves come from? How do they form? In this activity, your students will find answers to these questions on their own by observing tree buds throughout the year.			
Subject Area(s): Science, Visual Arts		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Elementary Grades 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Activity #4 Observe buds over a long period of time. Activity #5 Have students visit the tree and observe the twig and buds at least once in the winter. Activity #6 Have students visit their trees several times in the spring and record their observations during each visit.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 6. Use objects and pictures to represent scientific and technological ideas.	Enrichment #3 Buds can be arranged chronologically and mounted on poster board as an exhibit.	Must do Enrichment #3.
	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Activity #4 All students should draw a picture of the twig and a close-up of one or more of its buds.	

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Activity Title: GERMINATING GIANTS		Activity Guide Page #: 234	
Objective(s): Students will: 1) measure certain physical characteristics of at least three different trees; 2) compare various measurements from these trees and draw conclusions about the nature of each tree.			
Overview: In this activity, students can sharpen their math skills by comparing their local trees to the world's tallest tree, the coast redwood, and to the tree with the largest seeds, the coconut palm.			
Subject Area(s): Science, Math		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 9. Apply analogous reasoning.	Student Page How many coast redwood seeds would it take to equal the weight of one of your tree's seeds? Which is longer, your tree's leaf or the leaf of a coconut palm?...	Students need to complete the student page questions in order to make comparisons.

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Activity Title: HOW BIG IS YOUR TREE?			Activity Guide Page #: 239
Objective(s): Students will: 1) measure and compare trees and tree parts; 2) discuss how and why people measure things, including trees; 3) explain the need for consistency in measuring.			
Overview: Trees come in various shapes and sizes. In this activity, students will measure trees in different ways and become familiar with the tree's structure. They will also learn the importance of standard units of measure and measuring techniques.			
Subject Area(s): Science, Math, Social Studies			Grade Level(s): PreK-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2, 3-4 Middle Grades 5-8 , Secondary Grades 1. Make accurate observations using appropriate tools and units of measure.	Variation Have students measure various trees. Activity #6 Take students outside to measure their adopted tree.	This activity will take several class periods. It could be developed into a unit on tree measurement.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 6. Discover relationships and patterns.	Variation Have students compare the strings and measure them using a ruler or different body parts: foot, hand span, arm span, length of finger, or paces.	Use variation.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 5. Make and read simple graphs.	Variation Record findings on the chart, and ask the students to compare their measurements to their estimate.	Use variation.
	Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.	Activity #6 Take sheets of paper and pens for recording the class's measurements. Activity #9 Record findings on class chart, compare measurements.	
	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Activity #13 Older students might work in pairs or groups to make graphs or diagrams that will create a visual summary of the results.	Change "might" to "will."
	Middle Grades 5-8 4. Make and use scale drawings, maps, and three-dimensional models to represent real objects, find locations, and describe relationships.	Activity #13	Change "might" to "will."

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Activity Title: NAME THAT TREE		Activity Guide Page #: 244	
Objective(s): Students will: identify several trees using various structural characteristics.			
Overview: Tree species can be identified by looking at several different features; Leaves, bark, twigs, flowers, fruits, and seeds. Even the overall shape of a tree can give clues to the tree's identity. In this activity, your students will learn more about trees by identifying features. Afterward, they can play an active game that tests their knowledge of different types of trees.			
Subject Area(s): Science, Physical Education		Grade Level(s): 2-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology E. Structure Of Matter Students will understand the structure of matter and the changes it can undergo.	Elementary Grades Pre-K-2 3. Group objects based on observable characteristics (e.g., color, size, texture).	Part A #1 Ask how they could use these characteristics to identify trees. Part A #4 As they match tree characteristics with tree leaves and names, they should write the tree's name on the line below the clues.	Part A.
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Elementary Grades 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Part A #4 As they match tree characteristics with tree leaves and names, they should write the tree's name on the line below the clues.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 5. Use various forms of simple logic.	Part A #4 By examining the tree closely and comparing their observations with the clues on Sheet 2, they should be able to find a match. As they match tree characteristics with tree leaves and names, they should write the tree's name on the line below the clues.	
	Elementary Grades Pre-K-2 6. Discover relationships and patterns.	Part A #4	
	Elementary Grades 3-4 3. Draw conclusions about observations.	Part A #4	

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Activity Title: FOREST FOR THE TREES		Activity Guide Page #: 247	
Objective(s): Students will: 1) participate in a simulation designed to teach how forest resources are managed; 2) simulate managing a piece of land for various products.			
Overview: In this activity, students will role-play managing a tree farm. By using a piece of land as a tree farm, they will begin to understand the economic factors that influence management decisions for private forest lands.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 2. Analyze how the finite resources in an ecosystem limit the types and populations of organisms within it.	Activity #3 If they are not thinned, they will become crowded and compete for food, water, and sunlight. Such competition will stunt their growth and make them more susceptible to insects and disease.	Doing the Enrichment activity will allow students to demonstrate their knowledge of forest management practices. The activity by itself only develops knowledge.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 1. Discuss scientific and technological ideas and make conjectures and convincing arguments.	Activity #9 Discuss how the landowner could have developed this housing community with the assistance of foresters so that many of these benefits could have remained.	
	Secondary Grades 3. Make and use appropriate symbols, pictures, diagrams, scale drawings, and models to represent and simplify real-life situations and to solve problems.	Enrichment #3 Tell each team they will lead the group through the same type of simulation they did in the activity, only they will make all management decisions. Enrichment #4 Whatever they choose to do, they must explain each action they take.	

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Activity Title: SOIL STORIES		Activity Guide Page #: 252	
Objective(s): Students will: 1) identify components of soil and how these components determine its function; 2) explain how different soil types determine the characteristics of ecosystems; 3) predict the influence of soils on water filtration and on human use of an area.			
Overview: Students often wonder why certain plants grow in some places and not in others. Climatic factors such as temperature, moisture, and sunlight keep palm trees in Florida and fir trees in Oregon, but subtle differences in soil allow an oak to compete more successfully in one area and a maple in another. In this activity, students will explore differences in soil types and what they mean to us.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology F. The Earth Students will gain knowledge about the earth and the processes that change it.	Middle Grades 5-8 2. Describe how soils are formed and why soils differ from one place to another.	Student Page Part A #4 What are the components of your soil sample after they have settled in the jar? How do they compare to the other samples?	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 Middle Grades 5-8 Secondary Grades 1. Make accurate observations using appropriate tools and units of measure.	Part A #7 By weighing the container again, they can determine the weight of the water that filled up the air spaces in the soil. Part A #9 Observe the layers in each jar. Part B #2 Each team will perform a percolation test on soil from different areas.	There are 4 different sections to this activity. There are many alignments.
	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Each team will analyze a different soil sample. Enrichment for Part A #1 Set up an experiment to determine the “best” soil for young plants. Part B #2 Each team will perform a percolation test on soil from different areas.	
	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	Part A #2 Enrichment for Part A #1 <u>Part B #2</u>	
	Middle Grades 5-8 3. Verify and evaluate scientific investigations and use the results in a purposeful way.	Enrichment Part B #1 By matching their knowledge of local areas with the soil survey, students can see how land-use patterns correlate to soil classifications.	

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<p>Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.</p>	<p>Elementary Grades 3-4 3. Draw conclusions about observations.</p>	<p>Part A #10 Each group should prepare a verbal summary of its findings or create a poster that explains the components of the soil. Why did some have more organic matter?...</p>	
<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.</p>	<p>Student Page Part B #4 Present the data chart from your group. You may have students graph the results and present that data. Part A #10 Each group should prepare a verbal summary of its findings or create a poster that explains the components of the soil.</p>	<p>Groups should present data to other groups.</p>
	<p>Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.</p>	<p>Part A #10 After examining variations in these soils, discuss why vegetation might grow differently on those sites. Lead a discussion comparing the soil samples each team studied... Part B #4 When the groups finish summarizing their data, lead a class discussion about their results.</p>	
	<p>Elementary Grades 3-4 7. Function effectively in groups within various assigned roles (e.g., reader, recorder).</p>	<p>Student Page Part B #1 Choose a person for each role. . .</p>	
	<p>Middle Grades 5-8 1. Discuss scientific and technological ideas and make conjectures and convincing arguments.</p>	<p>Part A #10 After examining variations in these soils, discuss why vegetation might grow differently on those sites... Student Page Part B #5 What does the data tell you about the soil's ability to filter water, or to percolate? What assumptions can you make about the differences in soil you tested?</p>	

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Activity Title: WATCH ON WETLANDS		Activity Guide Page #: 258	
Objective(s): Students will: 1) study a wetland ecosystem; 2) analyze the issues and opinions relating to the management and protection of wetlands.			
Overview: If a duck can paddle in it, it's a wetland. If a duck can waddle on it, it's not. If only wetlands could be defined as simply as this, wetlands issues and legislation would be less muddy. In this activity, students will learn more about wetlands and about how land-use decisions and legislation affect these areas.			
Subject Area(s): Science, Social Studies		Grade Level(s): 7-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
PART A			
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades 3-4 3. Describe the different living things within a given habitat.	Part A <u>Plant Survey Team</u> – set up columns for describing each plant. <u>Animal Survey Team</u> – students should describe or sketch these creatures as best they can and should use field guides to identify them.	4 different activities in this one.
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades 3-4 4. Investigate the connection between major living and non-living components of a local ecosystem.	Part A #6 Each team should take 20 minutes to brief the group on their team's findings, lead a class discussion on the general features of each wetland, and give an impression of the area's ecological health.	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 Middle Grades 5-8 Secondary Grades 1. Make accurate observations using appropriate tools and units of measure.	Part A #5 Divide class members into study teams.	
	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Part A #5 Divide class members into study teams.	
	Elementary Grades 3-4 3. Use results in a purposeful way: design fair tests, make predictions based on observed patterns, and interpret data to make further predictions.	Part A #7 Ask students to use the data presented so they can discuss whether some environmental warning signs in this wetland need further attention. They should document why there might be problems...	

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	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	Part A #5 Divide the class into several study teams. Part A #6 Prepare data charts, reports, or maps. Each team should take 20 minutes to brief the group on their findings, lead a discussion on the general features of the wetland, and give an impression...	
	Middle Grades 5-8 3. Verify and evaluate scientific investigations and use the results in a purposeful way.	Part A #7 Document why there might be problems and then contact the owners or managers of the area to discuss ideas on how they might help improve the situation.	
	Secondary Grades 2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional questions.	Part A #7 Document.	This would need further testing and development to truly verify and evaluate the data.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Part A #7 Ask students to use the data presented so they can discuss whether some environmental warning signs in this wetland need further attention.	
	Elementary Grades 3-4 4. Use various types of evidence (e.g., logical, quantitative) to support a claim.	Part A #7 Document why there might be problems and then contact owners/managers of the area to discuss ideas on how they might help improve the situation.	
	Elementary Grades 3-4 5. Demonstrate an understanding that ideas are more believable when supported by good reasons.	Part A #7 Document.	
	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Part A #7 Document.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.	Part A #6 Prepare data charts, reports, or maps. Each team should take 20 minutes to brief the group on their findings, lead a class discussion...	

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	Elementary Grades 3-4 2. Ask clarifying and extending questions.	Part A #7 Ask students to use the data presented so they can discuss whether some environmental warning signs in this wetland need further attention.	
	Elementary Grades 3-4 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment.	Part A #7 Ask students to use the data presented so they can discuss whether some environmental warning signs in this wetland need further attention.	
	Elementary Grades 3-4 5. Gather and effectively present information, using a variety of media including computers (e.g., spreadsheets, word processing, programming, graphics, modeling).	Part A #6 Prepare data charts, reports, or maps. Each team should take 20 minutes to brief the group on their findings...	Computers and other media must be used.
	Elementary Grades 3-4 7. Function effectively in groups within various assigned roles (e.g., reader, recorder).	Part A #5 Divide class members into several study teams.	
	Middle Grades 5-8 1. Discuss scientific and technological ideas and make conjectures and convincing arguments.	Part A #7 Discuss whether some environmental warning signs in this wetland need further attention. They should document why there might be problems and then contact the owners of the area to discuss..	
	Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.	Part A #5 Divide the class into study teams.	
	Secondary Grades 4. Employ graphs, tables, and maps in making arguments and drawing conclusions.	Part A #6 Prepare data charts, reports, or maps. Each team should take 20 minutes to brief the group on their findings... Part A #7 They should document why there might be problems and then contact the owners of the area to discuss ideas on how they might help improve the situation.	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Secondary Grades 2. Demonstrate the importance of resource management, controlling environmental impacts, and maintaining natural ecosystems.	Part A #7 Discuss whether some environmental warning signs in this wetland need further attention. They should document why there might be problems and then contact the owners of the area to discuss..	

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PART B			
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Part B #4 Teams should read their letters to the rest of the class and present findings that support their advice.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 2. Ask clarifying and extending questions.	Part B #2 They should make a list of questions they want answered. Part B #4 Other teams can ask questions.	
	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Part B #5 Create a flow chart that advises Dr. Garcia of the process she should follow to build her office.	
	Middle Grades 5-8 5. Access information at remote sites using telecommunications.	Part B #3 Ask students to contact agencies or organizations to get additional information and answers to their questions.	Must use telecommunications.
PART C			
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Part C #3 Research and write a short description of the positions of key players. Part C #4 Set up a class debate between 2 teams with different interests.	
	Middle Grades 5-8 8. Construct logical arguments.	Part C #3 Part C #4	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 2. Defend problem-solving strategies and solutions.	Part C #6 Have each team write a letter to the property owner stating the result of the debate and their reaction to it.	
	Secondary Grades 8. Engage in a debate, on a scientific issue, where both points of view are based on the same set of information.	Part C #4 Set up a class debate between 2 teams with different interests.	

Project Learning Tree Links/ Science

<p>Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.</p>	<p>Elementary Grades 3-4 3. Explore how technology (e.g., transportation, irrigation) has altered human settlement.</p>	<p>Part C #5 After the debate, discuss and summarize the issues presented. Try to reach a consensus about how to address the property owner's concerns.</p>	
	<p>Middle Grades 5-8 1. Research and evaluate the social and environmental impacts of scientific and technological developments.</p>	<p>Part C #3 Research and write a short description of the positions of key players. Part C #6 Have each team write a letter to the property owner stating the result of the debate and their reaction to it.</p>	
<p>PART D</p>			
<p>Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.</p>	<p>Middle Grades 5-8 6. Support reasoning by using a variety of evidence.</p>	<p>Part D #4 Have students meet at a public hearing to decide if the building can be built and if so, how.</p>	
	<p>Middle Grades 5-8 8. Construct logical arguments.</p>	<p>Part D #4 Have students meet at a public hearing to decide if the building can be built and if so, how.</p>	
<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Elementary Grades 3-4 7. Function effectively in groups within various assigned roles (e.g., reader, recorder).</p>	<p>Part D #3 Each team taking the role of family, villagers, environmental group members, government officials, and others who are involved in the issue.</p>	
	<p>Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.</p>	<p>Part D #3 Each team taking the role of family, villagers, environmental group members, government officials, and others who are involved in the issue.</p>	
	<p>Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.</p>	<p>Part D #4 Have students meet at a public hearing to decide if the building can be built and if so, how. After each group has presented its argument, have the panel of judges make a final decision.</p>	<p>Each child should have a role in this activity.</p>

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<i>Activity Title:</i> AIR WE BREATHE		<i>Activity Guide Page #:</i> 264	
Objective(s): Students will: 1) identify various types of indoor air pollutants and their sources; 2) understand how various pollutants can be harmful to people's health; 3) trace how radon can get into buildings and eventually into our bodies; 4) take action to improve indoor air quality.			
Overview: Did you know that sometimes the air in our homes, schools, and offices can be worse for our health than the air outside? In this activity, students will learn more about indoor air quality, and what can be done about it.			
Subject Area(s): Science, Language Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
PART A			
Science and Technology C. Cells Students will understand that cells are the basic units of life.	Elementary Grades Pre-K-2 3. Explore magnifying devices and how they allow one to see in more detail.	Part A #9 Students should use a magnifying glass and a microscope to examine their slides.	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Part A #7 Have each team describe the particles they see and the relative abundance of different types of particles. Part A #12 Make notes on different shapes, colors, and smells that they notice.	
	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Part A #11 Tell students to put their slice in the same place they put their slides. The potato slice will collect particles the same way the slide did. Part A #12 Students should examine the slices every day with a magnifying glass, then make notes on different shapes, colors, and smells that they notice.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Part A #14 Students should draw conclusions as to what particles are present in the indoor air.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.	Part A #13 Have each team report on what they saw on their slice.	

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PART C			
<p>Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.</p>	<p>Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.</p>	<p>Part C #2 Have students design a checklist to look for indoor air quality hazards in their own homes. Part C #3 Have students take their checklist home to inspect for potential air quality hazards.</p>	
<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.</p>	<p>Part C #3 They should put a checkmark next to the ones they find and a star next to the ones they feel might be severe enough to warrant action. Part C #6 Have each student give a progress report to discuss any changes or difficulties in making improvements.</p>	

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Activity Title: WASTE WATCHERS		Activity Guide Page #: 274	
Objective(s): Students will: 1) identify ways to save energy in their daily lives; 2) explain how saving energy can reduce air pollution.			
Overview: Every year some 41 percent of all the energy we use in the United States is wasted needlessly. By cutting the energy waste, we can reduce our demand for sources of new energy and reduce the amount of pollution we create. In this activity, your students can take a look at how they use energy in their own homes and how they can reduce the amount of energy they waste.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Activity #5 Do an energy audit on their homes or apartments. Activity #6 Exactly one week after their first reading, students will read the meter again to determine the number of kilowatt hours of electricity their family used during the week. . . Activity #7 Share the information they collected.	
	Elementary Grades 3-4 Middle Grades 5-8 Secondary Grades 1. Make accurate observations using appropriate tools and units of measure.	Activity #7 Share the information they collected.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 1. Record results of experiments or activities (e.g., interviews, discussions, field work) and summarize and communicate what they have learned.	Activity #5 Activity #7	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.	Activity #9 Can they think of anything else they could do to reduce energy use? Activity #11 Have students take the pages home to go over with their families. They should identify things they will do to reduce the amount of CO2 they produce... Assessment Opportunity Have students write a brochure that outlines energy-saving actions people can take and explain why saving energy is important...	

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Activity Title: PEOPLE, PLACES, THINGS		Activity Guide Page #: 280	
Objective(s): Students will: 1) Explain how human communities are made up of different types of people, places, and things, and how they all fit together; 2) investigate some of the people, places, and things that make up their own community.			
Overview: By taking a closer look at their community, students can gain an appreciation for its structure and complexity. In this activity, students will develop a deeper understanding of the many people, places, and things on which they depend every day.			
Subject Area(s): Social Studies		Grade Level(s): K-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Part A #4 Have students look on their way home and in their own neighborhoods for more examples of working, living and playing places. Part C #2 Brainstorm a list of things in the community on which everyone depends.	

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Activity Title: TEPEE TALK		Activity Guide Page #: 282	
Objective(s): Students will: describe several different types of Native American shelters and the materials that were used to make them.			
Overview: Whether it's a 100-room palace or a small hut made out of branches, all human shelters serve the same basic purposes: they provide privacy, shelter from inclement weather, and protection from danger. In this activity, your students will take a close-up look at one kind of dwelling - the tepee used by Native Americans on the Plains - and will discover how homes can give clues about the lives of people who live in them.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 4. Use various types of evidence (e.g., logical, quantitative) to support a claim.	Activity #4 Have them share their answers and the evidence they used.	
	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Activity #4 Have them share their answers and the evidence they used.	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades 3-4 1. Explore how cultures have found different technological solutions to deal with similar needs or problems (e.g., construction, clothing, agricultural tools and methods).	Activity #3 Tell students they're going to learn more about a particular cultural group by studying their dwellings.	

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Activity Title: TREE COOKIES		Activity Guide Page #: 289	
Objective(s): Students will: 1) identify heartwood, sapwood, and a tree's annual rings; 2) infer from a tree's rings what damage or stress might have occurred in its life; 3) make a timeline of human history that coincides with a tree's rings.			
Overview: One of the best ways to learn about a tree is to look at its annual rings. Tree rings show patterns			
Subject Area(s): Science, Social Studies, Visual Arts, Language Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Part A #1 Try to find indications of past disturbance or events in the life of the tree, such as fire, insect damage, drought, or loss of a branch.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades Pre-K-2 6. Use objects and pictures to represent scientific and technological ideas.	Variation #3 Using white paper plates with ridges, demonstrate for students how to create a "tree cookie" using the bumpy perimeter as the bark, the smooth inside edge...	
	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Part B #1 Have students draw a life-size cross-section of a redwood tree. Part B #2 Have teams research different information that relates to the redwood tree cookie.	

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Activity Title: TREES IN TROUBLE		Activity Guide Page #: 293	
Objective(s): Students will: 1) cite factors that can cause trees to become unhealthy; describe symptoms of unhealthy trees; 3) compare environmental conditions that affect both human health and plant health; 4) identify people or agencies that care for trees and forests.			
Overview: Like humans, trees can become weak and unhealthy, suffer injury, and die. People have learned to read the symptoms of unhealthy trees to help them. In this activity, students will examine trees for signs of damage or poor health.			
Subject Area(s): Science, Math, Social Studies, Language Arts, Performing Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades Pre-K-2 Elementary Grades 3-4 1. Make accurate observations using appropriate tools and units of measure.	Part A #4 They should take additional notes and make sketches of their findings such as broken branches; unusual leaf colors/shapes...	Allow each student to take observations.
	Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Part B - Crowding Discover what happens when plants are grown too close together. Form a hypothesis. Measure the height of the plants above the soil level and record at daily intervals for several weeks... Part B – Acidic Precipitation Set up a series of plants to test if acid rain causes negative health effects on vegetation. Part B – Fertilizer Set up a series of plants to test how nutrients, vitamins and minerals affect the health of a plant.	Allow each student to conduct experiments.
	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Part B - Crowding <u>Part B – Acidic Precipitation</u> <u>Part B – Fertilizer</u>	Allow each student to conduct experiments.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Part A #4 They should take additional notes and make sketches of their findings.	

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	<p>Elementary Grades 3-4 3. Draw conclusions about observations.</p>	<p>Part B – Crowding #6 Discuss the findings. Which radishes appear to be healthier? Part B – Acidic Precipitation #5 Keep a daily log of observations and discuss changes in the health of the plants. Part B – Fertilizer #4 Show observations and results by plotting the data on a graph.</p>	<p>Allow each student to draw conclusions.</p>
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<i>Activity Title:</i> SIGNS OF FALL		<i>Activity Guide Page #:</i> 299	
Objective(s): Students will: 1) describe some of the differences between deciduous and evergreen trees; 2) identify patterns in the changing of seasons; 3) understand why laves of deciduous trees change color in the fall.			
Overview: In temperate regions, people can observe the annual change of seasons. In autumn, leaves of many trees turn color and fall to the ground, many animals migrate or go into hibernation, the days get shorter, and the air gets colder. This pattern repeats itself every year.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 2. Distinguish between important and unimportant information in simple arguments.	Part A #1 Ask them to find as many signs as possible that indicate winter is approaching and to describe their observations.	Allow each student to take and discuss their observations.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades Pre-K-2 1. Describe how legends, stories, and scientific explanations are different ways in which people attempt to explain the world.	Enrichment #2 Tell your students the following is a Native American Legend about why leaves change color in the fall...discuss how this explanation differs from the scientific one they just learned...	Allow each student to discuss and write their legend.

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<i>Activity Title:</i> TREE LIFESTYLE		<i>Activity Guide Page #:</i> 302	
Objective(s): Students will: 1) diagram the lifestyle of a tree; 2)compare a tree lifecycle to a human lifecycle; 3) explain the role each stage of a tree's life plays in the forest (or other) ecosystem.			
Overview: In this activity, students will discover that trees have a lifestyle that is similar to that of other living things. They will investigate a tree's role in the ecosystem at each stage of its life.			
Subject Area(s): Science, Language Arts, Visual Arts, Performing Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.	Elementary Grades Pre-K-2 3. Explain, draw, or otherwise demonstrate the life cycle of an organism.	Activity #2 Distribute art materials and ask students to create the lifecycle of a tree, from birth through death and decomposition. They should make at least 3 stages/events in their lifecycles... Variation Ask students if trees are alive. How do they know? Ask students to imitate your movements as you enact the life of a tree...	Allow each student to follow the lifecycle of a tree. Allow all students to participate in this activity.

<i>Activity Title:</i> NOTHING SUCCEEDS LIKE SUCCESSION			<i>Activity Guide Page #:</i> 306
Objective(s): Students will: 1) explore basic relationships between species diversity and ecosystem stability; 2) identify successional stages in ecosystems based on plant and animal species; 3) draw conclusions about the process of succession based on study test plots in different stages of succession.			
Overview: Succession is a natural pattern of change that takes place over time in a forest or ecosystem. In this activity, students will study the connection between plants, animals, and successional stages in local ecosystems.			
Subject Area(s): Science, Math, Language Arts.			Grade Level(s): 3-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology E. Structure Of Matter Students will understand the structure of matter and the changes it can undergo.	Middle Grades 5-8 3. Use the Periodic Table to group elements based on their characteristics.	Part A #3 Divide the groups into teams. Using transparent overlays and colored markers, each team will create a sequence of pictures to show succession. Part A #4 When finished, the teams can demonstrate their work to the group and describe what is happening in each scene. Part B #1 Have them try to find plant communities in different stages of succession. Part B #2 Define the stages of succession evident at your site. Discuss what factors might alter succession, including disease... Part C #2 Ask students to make written journal observations, drawing, or photographs of three areas on a regular basis (once a week). Photos can show: types of plants, plant growth, new plant species... Part C #3 After each observation period, ask the students to make a general statement about apparent succession and differences in species diversity in all 3 sites.	Allow all students to participate in this activity.
Science and Technology C. Cells Students will understand that cells are the basic units of life.	Elementary Grades 3-4 4. Describe the functions of the major human organ systems.	Part A #3 Divide the groups into teams. Using transparent overlays and colored markers, each team will create a sequence of pictures to show succession. Enrichment Assign teams for each of the stages of succession that were studied in the activity. Have teams use different colors of felt to cut out the shapes...	Allow all students to participate in these activities.

<i>Activity Title:</i> LIVING WITH FIRE		Activity Guide Page #: 311	
Objective(s): Students will: 1) describe a forest fire; how it starts, spreads, and burns out; 2) explain several approaches to forest fire management.			
Overview: The term "forest fire" may conjure up images of fear and devastation. Preventing fires is still important, but times have changed. In this activity, students will learn how fire is a natural event in forests and other ecosystems and how it helps keep plants and other parts of the ecosystems healthy.			
Subject Area(s): Science, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	Part A #2 Demonstrate how a candle burns in a glass when each of the 3 different elements are limited. For grades 6-8 the demonstration can be close by the group of students. Part B #2 Have the students develop tables and pie charts showing the actual numbers and percentages of fires from different causes for the years studied. Part B #3 Have students compare the data for at least 3 different years and determine: which cause was responsible for the most large fires in each year; and the fewest... Enrichment Divide the students into 5 numbered teams. Give each a metal bucket to fill with the following fuels... Explain that they will try to start small fires and must use a strategy to do...	Allow all students to participate in the demonstration. Have all students record the results and observations of the activities.

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<i>Activity Title:</i> REDUCE, REUSE, RECYCLE		<i>Activity Guide Page #:</i> 320	
Objective(s): Students will: 1) learn about ways to reduce solid waste in their community by reducing consumption, reusing products, recycling materials, and composting; 2) communicate to others the importance of recycling in their community.			
Overview: Patterns for reducing solid waste can be seen in community efforts to reduce consumption and recycle resources. In this activity, students will set up a program for reusing, recycling, and reducing consumption of resources at school.			
Subject Area(s): Science, Math, Social Studies, Language Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades Pre-K-2 4. Demonstrate some practices for recycling and care of resources.	Project #1 Set up a classroom program for separating items that can be reused from those that can be recycled... Project #2 Set up recycling bins for glass, paper, and aluminum in the cafeteria and faculty room. Students should create large posters with glued-on samples/pictures of the items that can be discarded in the bins...	Allow all students to participate in the recycling program.
	Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.	Project #3 Investigate the cost/benefits of various options to reduce waste. Then students can begin by conducting a survey to see what disposable/non-recyclable products used in the school cafeteria could be...	Allow all students to participate in the project.

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<i>Activity Title: A PEEK AT PACKAGING</i>			<i>Activity Guide Page #: 322</i>
Objective(s): Students will: 1) describe the different purposes for packaging; 2) identify the pros and cons of different types of packaging; 3) explore how packaging affects our decisions as consumers.			
Overview: Nearly everything we buy comes in some sort of package. Packaging, made from a variety of renewable and nonrenewable resources, is necessary to protect an item, keep it fresh, make it tamper-proof, and make the item easy to transport and store. In this activity, students will examine the pros and cons of different packaging strategies.			
Subject Area(s): Science, Social Studies, Visual Arts			Grade Level(s): 5-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 4. Design and build an invention.	Assessment Opportunity Have students create an ideal package for one of the products they evaluated. Have them draw or create packaging out of art materials or recycled home and school items...	Allow each student to create their own design.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades 3-4 3. Draw conclusions about observations.	Part A #2 Ask students why they think each product is packaged the way it is. What are the pros/cons of each package in terms of protection, bulkiness, tamper resistance...	Allow each student to participate in the discussion.

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<i>Activity Title:</i> AIR TO DRIVE		Activity Guide Page #: 325	
Objective(s): Students will: 1) gain knowledge about possible global changes resulting from the emission of greenhouse gases and other pollutants; 2) explain strategies for removing carbon dioxide from the air.			
Overview: In this activity, students will calculate the amount of automobile travel their family does and explore some of the potential environmental consequences of increasing automobile emissions and energy use, as well as ways and benefits of reducing those level.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Elementary Grades 3-4 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments.	Demonstration 1 #4 Take the sock off and compare it with the other sock. Students should see large pollutant particles from the exhaust trapped in the sock fabric turning it black... Part B #1 Students will track all family car mileage for one week, using the car's odometer. They should note the mileage from beginning to end and figure the difference. Part B #2 Students will compute the amount of CO2 produced in pounds using the following calculations. 1 mile=1.609km, 1 gallon=3.785 l, and 1 pound=.453 kg	allow all students to participate in the data gathering and analyze the data.

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<i>Activity Title:</i> OUR CHANGING WORLD		<i>Activity Guide Page #:</i> 328	
Objective(s): Students will: 1) identify some global environmental patterns; 2) discuss issues related to global change; 3) describe actions that people can take to improve the environment and quality of life.			
Overview: Patterns of change are evident in the Earth's global systems. By exploring the issues of global change, students will gain an understanding of how we must deal with the possibility of global environmental changes today.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades 3-4 4. Investigate the connection between major living and non-living components of a local ecosystem.	Activity #5 With everyone holding the string, discuss how human actions that directly affect part of the Earth system also indirectly affect many other parts... Activity #6 As you rewind the yarn, ask each person, upon letting go, to name something a person could do to make the Earth a healthier place.	Repeat this activity for a local ecosystem.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 5. Gather and effectively present information, using a variety of media including computers (e.g., spreadsheets, word processing, programming, graphics, modeling).	Enrichment Have teams of students pick a “global change” issue to investigate. You can assign issues to make sure the major ones are covered. A short presentation must be prepared.	Encourage students to use available technological resources to present their information. Allow students access to this technology when gathering their information.
	Middle Grades 5-8 5. Access information at remote sites using telecommunications.	Enrichment Discuss each team’s map. How much of the Earth could be affected by these potential changes? Are there any areas that may not be affected?...	Same as above
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.	Activity #6 As you rewind the yarn, ask each person, upon letting go, to name something a person could do to make the Earth a healthier place. Enrichment Reports, presentation, maps, and discussion can be evaluated. Ask students to use information from their investigations as they write down some actions that can be taken to make positive changes with regard to these global issues.	Allow each student to give at least one answer to the question “How can we make the Earth a healthier place?”

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	<p>Middle Grades 5-8 7. Explain the connections between industry, natural resources, population, and economic development.</p>	<p>Activity #6 & 7 As you rewind the yarn, ask each person, upon letting go, to name something a person could do to make the Earth a healthier place.</p> <p>Enrichment Discuss each team's map. How much of the Earth could be affected by these potential changes? Are there any areas that may not be affected?...</p>	<p>Allow each student to participate in the activity, and the presentation of information about the groups topic.</p>
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PICTURE

Project Learning Tree Links/ Science

<i>Activity Title:</i> EARTH MANNERS		<i>Activity Guide Page #:</i> 331	
Objective(s): Students will: express appropriate ways to treat living things and to act in forests, parks, and other natural areas.			
Overview: Children are naturally curious about their environment. They should be encouraged to explore the out-of-doors, while having respect for living things and their habitats. In this activity students will develop a set of guidelines for exploring and enjoying nature.			
Subject Area(s): Science, Social Studies, Language Arts, Visual Arts		Grade Level(s): PreK-4	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 4. Participate in brainstorming activities.	Activity #4 List short statements that express the students' ideas about environmental manners/guidelines. Ask students to offer ideas in the form of behaviors they would recommend... Assessment Opportunity #2 Have students create similar "guidelines" for their environmental behavior at school. Encourage them to word some of them positively as well as negatively.	Allow all students to participate in the brainstorming activity.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades Pre-K-2 4. Demonstrate some practices for recycling and care of resources.	Activity #4 List short statements that express the students' ideas about environmental manners/guidelines. Ask students to offer ideas in the form of behaviors they would recommend... Activity #6 For PreK, K and 1 st graders, lead an exercise in which students act out the rules they listed earlier.	

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<i>Activity Title:</i> LIFE ON THE EDGE			<i>Activity Guide Page #:</i> 335
Objective(s): Students will: 1) identify environmental factors that can cause species to become endangered; 2) research the current status of several endangered plants or animals; 3) present persuasive arguments for the protection of a particular plant or animal species.			
Overview: Patterns of change can be observed in the diversity of species on Earth. In this activity, students will become advocates for endangered species of plants or animals, and create "public relations campaigns" on behalf of these species.			
Subject Area(s): Science, Social Studies			Grade Level(s): 4-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades 3-4 4. Investigate the connection between major living and non-living components of a local ecosystem.	Part A Variation Habitat Scramble - Every species for itself. Students will simulate how animals and often entire species compete for their essential needs...	Allow all students to participate in the activity.
	Middle Grades 5-8 2. Analyze how the finite resources in an ecosystem limit the types and populations of organisms within it.	Part A Variation Students will simulate how animals and often entire species compete for their essential needs...	Allow all students to participate in the activity.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 7. Show that proving a hypothesis false is easier than proving it true, and explain why.	Part B Ask students to select a species from the list. Instruct them to gather information to put together a profile for that species. Then take on the role of an advocate for the species they selected. Teams should present their campaign to the group. Assessment Opportunity Students/teams will give a media presentation that makes a case for protecting the endangered species they researched. Explain why certain actions should be taken...	Allow all students to do research and present their information.
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 5. Gather and effectively present information, using a variety of media including computers (e.g., spreadsheets, word processing, programming, graphics, modeling).	Part B #2 Students should take the role of advocate for their particular species. They should create a campaign that might include slogans, posters, TV commercials... Part B #3 Teams should present their campaign to the entire group.	Allow all students access to available technology.

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	<p>Middle Grades 5-8 5. Access information at remote sites using telecommunications.</p>	<p>Part B Ask students to select a species from the list. Instruct them to gather information to put together a profile for that species. Then take on the role of an advocate for the species they selected. Teams should present their campaign to the group.</p>	
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<i>Activity Title:</i> TREES FOR MANY REASONS			Activity Guide Page #: 340
Objective(s): Students will: discuss and analyze a fictional story relating to the proper and improper use of natural resources.			
Overview: By reading fables such as <i>The Lorax</i> by Dr. Seuss or <i>The Man Who Planted Trees</i> by Jean Giono, students can examine the importance of conserving natural resources.			
Subject Area(s): Science, Social Studies, Language Arts			Grade Level(s): 2-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Elementary Grades Pre-K-2 4. Describe different ecological systems on earth.	Part A #3 What pattern of change in the environment did we observe?	Allow all students to answer the question.
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 8. Construct logical arguments.	Part A #2 Divide the class into 6 groups. Give each group a card with a question written on it. Each group should discuss the questions, write down the answers, and be prepared to read them to the entire group. Part A #4 After groups have had time for discussion, have each group read their questions and answers to the class. Students can agree, disagree, or add to the answers given by their classmates.	Allow all students to answer and discuss questions. Allow students to support claims.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Elementary Grades 3-4 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.	Part A #3 Why do you think the Oncer-ler did what he did? What patterns of change in the environment did we observe?... Part B #1 Read <i>The Lorax</i> aloud or watch the video. Part B #2 Ask students to list what they think the major ideas of the story are.	Allow all students to discuss answers to questions.

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	<p>Middle Grades 5-8 7. Explain the connections between industry, natural resources, population, and economic development.</p>	<p>Part A Variation #2 Divide the class into 6 groups. Give each a card with one question on it to discuss. Compare the Once-ler's attitude toward the environment at the beginning of the story with his attitude at the end...</p> <p>Part B #2 Divide the class into 6 groups and give them 6 statements on index cards. They must decide if they agree/disagree with the statements. They must give 3 reasons why they agree and an example of a real life situation...</p>	<p>Allow all students to answer and discuss the questions.</p>
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<i>Activity Title:</i> IN THE GOOD OLD DAYS		Activity Guide Page #: 349	
Objective(s): Students will: 1) describe important events in the history of conservation; 2) explain how environmental problems and perceptions of environmental problems and perceptions of environmental quality have changed through history; 3) express the point of view of a famous figure in the history of conservation.			
Overview: Human Attitudes and values, and therefore behavior, with regard to the environment can change over the course of generations. In this activity, students study the writings of men and women who have shaped the way people think about the environment.			
Subject Area(s): Science, Social Studies, Visual Arts, Language Arts, Performing Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 5. Gather and effectively present information, using a variety of media including computers (e.g., spreadsheets, word processing, programming, graphics, modeling).	Part A #2 Divide the students into teams and have each team select a historical figure from the list you prepared. Include what life was like in the person's time, how people of the day felt about the environment... Part A #3 Have team members prepare creative presentations that show the impact their figure had on the conservation or environmental movement...	Allow all students access to available technological resources and to research and present their information.
	Middle Grades 5-8 5. Access information at remote sites using telecommunications.	Part B #2 Have students think about how they feel about forests. Each student can write an essay or poem, sketch a drawing, or find another way to express his/her feelings toward forests. Part B #3 Discuss what students came up with, and have them share their feelings. Can they identify any specific events in their lives that have influenced their attitude?	

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<i>Activity Title:</i> A LOOK AT LIFESTYLES		Activity Guide Page #: 353	
Objective(s): Students will: 1) analyze a Native American legend and traditional Native American attitudes toward using the land; 2) identify some of the values of the Early American pioneers; 3) create a chart comparing our own environmental beliefs and behaviors with those of traditional Native Americans and early pioneers.			
Overview: By examining the historical attitudes of Native Americans and American pioneers toward the environment and natural resources, students can reflect on their own lifestyles, and identify trade-offs between simple subsistence and the modern technology-based living.			
Subject Area(s): Science, Social Studies, Language Arts, Performing Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 8. Construct logical arguments.	Part C #2 Explain that students are going to divide into groups to explore some of the attitudes toward natural resources that the pioneer settlers had... Part C #4 Each group should discuss the following questions: What are the criteria for evaluating an item's necessity? On what basis do you judge an item a luxury?... Assessment Opportunity #3 Hold a class debate among 3 groups, with each group defending their lifestyle. Ask group questions like: In what ways did you lifestyle exploit natural resources? In what ways did your lifestyle show concern for resource conservation?...	Allow all students to answer the questions and participate in the debate.
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 4. Describe an individual's biological and other impacts on an environmental system.	Part B #2 How can we affect plants, animals, people, and the rest of the Earth by the things we do? What can we do to take care of the Earth and keep the Earth strong and healthy in the future? Part C #4 What impact do you think you would have made on the environment? Assessment Opportunity #3 Hold a class debate among 3 groups, with each group defending their lifestyle. Ask group questions like: Do you believe the practices and traditions of the past are representative in present behavior of society and industry? Why/why not?	Allow all students to answer the questions and participate in the debate.

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<i>Activity Title:</i> PAPER CIVILIZATIONS		<i>Activity Guide Page #:</i> 359	
Objective(s): Students will: 1) chronicle the major events in the history of papermaking; 2) create a pictorial representation of the history of paper.			
Overview: Humans have always had a strong need to record the events of their lives. From cave painting to writing paper, humans have preserved their history in many ways. In this activity, students will discover how the development of paper revolutionized the way people communicate and record information			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 2. Describe the historical and cultural conditions at the time of an invention or discovery, and analyze the societal impacts of that invention.	Activity #1 Divide students into 10 teams. Assign each team a numbered period in the history of papermaking.	Allow students to research their time period and discover how the improvements of paper affected society.

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<i>Activity Title:</i> WHERE ARE THE CEDARS OF LEBANON?		<i>Activity Guide Page #:</i> 362	
Objective(s): Students will: 1) investigate how ancient civilizations used natural resources and affected the environment; 2) apply environmental lessons learned in the past toward solving current environmental problems.			
Overview: Throughout history, people have depended on natural resources for survival. The availability of food, water, and resources to build shelters has generally determined where humans have settled and how cultures evolved over time. In this activity, students will explore how ancient civilizations developed systems for using their natural resources.			
Subject Area(s): Social Studies, Science		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Secondary Grades 4. Analyze the impact of human and other activities on the type and pace of change in ecosystems.	Activity #1 Divide the group into 2 teams and prepare for a debate on the land-use practices of the ancient Babylonian culture. Choose a particular debate statement. Activity #2 Have students read the article, "By the Rivers of Babylon," and fill in the "Role of Land Use" section for the Babylonian Culture... Activity #3 One team is to argue that land use or abuse had a major influence on the downfall of Babylonian society, while the other should take the position... Enrichment #1 Have students research the land use practices of other ancient cultures. Enrichment #2 Students should research and discuss present-day problems related to land use. Should consider political, economic, social, and security factors involved in each situation.	Allow all students to participate in the debate and answer the questions.

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<p>Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.</p>	<p>Middle Grades 5-8 6. Support reasoning by using a variety of evidence.</p>	<p>Activity #3 In preparing arguments, both teams should consider the costs/benefits of the land use practices. Variation #2 Divide your group into teams of 3-5 students. Each group should draw 2 murals. One should depict a scene of Babylon before its decline and the other after its decline. Variation #3 Each team should present its view of decline by showing the before and then after pictures as well as explain what caused the change.</p>	<p>Allow all students to answer questions and support their point of view.</p>
	<p>Middle Grades 5-8 8. Construct logical arguments.</p>	<p>Activity #3 <u>Variation #2</u> <u>Variation #3</u></p>	
	<p>Secondary Grades 6. Analyze situations where more than one logical conclusion can be drawn.</p>	<p>Activity #3 In preparing arguments, both teams should consider the costs/benefits of the land use practices.</p>	
<p>Science and Technology L. Communication Students will communicate effectively in the application of science and technology.</p>	<p>Secondary Grades 4. Employ graphs, tables, and maps in making arguments and drawing conclusions.</p>	<p>Variation #2 Divide your group into teams of 3-5 students. Each group should draw 2 murals. One should depict a scene of Babylon before its decline and the other after its decline. Variation #3 Each team should present its view of decline by showing the before and then after pictures as well as explain what caused the change.</p>	<p>Allow all students to create tables and maps.</p>
	<p>Secondary Grades 8. Engage in a debate, on a scientific issue, where both points of view are based on the same set of information.</p>	<p>Activity #3 In preparing arguments, both teams should consider the costs/benefits of the land use practices.</p>	<p>Allow all students to debate.</p>
<p>Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.</p>	<p>Middle Grades 5-8 7. Explain the connections between industry, natural resources, population, and economic development.</p>	<p>Enrichment #2 Students should research and discuss present-day problems related to land use. Should consider political, economic, social, and security factors involved in each situation.</p>	<p>Allow all students to answer the questions.</p>

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	Secondary Grades 2. Demonstrate the importance of resource management, controlling environmental impacts, and maintaining natural ecosystems.	Enrichment #1 Have students research the land use practices of other ancient cultures. <u>Enrichment #2</u>	
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Project Learning Tree Links/ Science

<i>Activity Title:</i> DID YOU NOTICE?		Activity Guide Page #: 362	
Objective(s): Students will: 1) identify changes in their local environment over the course of time; 2) create a timeline to illustrate patterns of change over time.			
Overview: In this Activity, students will study changes in their local environment over short and long periods and will identify patterns of change.			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Elementary Grades Pre-K-2 3. Make observations.	Part A #1 Ask students what major changes happened in their lives between their birth and age 4. Encourage brainstorming of ideas. Ask how they can remember these things, i.e., from pictures?... <u>Part A #2</u> Ask students to think about how they have changed just since they woke up this morning.	Allow all students to participate in brainstorming.

Project Learning Tree Links/Social Studies

<i>Activity Title:</i> IMPROVE YOUR PLACE			<i>Activity Guide Page #:</i> 369
Objective(s): Students will: 1) identify ways they can improve their local area; 2) carry out plans to improve the area.			
Overview: Each living thing has a habitat - a place to live that suits its needs. For human beings, the community they live in is their habitat. In this activity, students are encouraged to take action to improve their community by making some positive environmental changes.			
Subject Area(s): Science, Social Studies, Visual Arts			Grade Level(s): 5-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Activity #5 An "Action Plan" should be developed by each group. Included in the plan should be a realization that they will have to persuade the PTA, school board, etc., to approve their plan... Activity #6 Evaluation of the Plan should be done by answering the following: Is there sufficient evidence to warrant action on this issue? Are there alternative actions available for use?...	Allow the students to create and defend their points of view, and arguments.
	Middle Grades 5-8 8. Construct logical arguments.	<u>Activity #5</u> <u>Activity #6</u>	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Elementary Grades 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.	Activity #2 Students should sketch a simple map of the area. Activity #3 Help students create a single, large map of the site as it currently exists.	Allow all students to participate in the making of the map.
	Middle Grades 5-8 2. Defend problem-solving strategies and solutions.	Activity #5 An "Action Plan" should be developed by each group. Included in the plan should be a realization that they will have to persuade the PTA, school board, etc., to approve their plan... Activity #6 Evaluation of the Plan should be done by answering the following: Is there sufficient evidence to warrant action on this issue? Are there alternative actions available for use?... Enrichment #1 Can hold a simulated PTA/council meeting and have students present their plan. Assessment Opportunity Have students present their maps, overlays, and action plans to a decision-making individual/group. Provide feedback to the students.	Allow all students to defend their strategies for solving this problem.

Project Learning Tree Links/Social Studies

<i>Activity Title:</i> THE PEPPERMINT BEETLE		<i>Activity Guide Page #:</i> 7	
Objective(s): Students will: 1) describe various ways animals use their sense of smell; 2) explain why some animals use scent marking; 3) identify the importance of the sense of smell in our daily lives.			
Overview: In this activity students will explore their sense of smell and discover why smell is important to animals, including themselves.			
Subject Area(s): Science, Social Studies		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	Getting Ready In preparation, flag or mark boundaries in a wooded area and “scent-mark” trees that lie roughly on the same line. Doing the Activity #5 When all the scent-marked trees have been found, have the students walk the scent trail left by the peppermint beetle. Ask the students to consider why the peppermint beetle marked those trees. Could it be to define territory? Assessment Opportunity Do people mark their territory? How? (Fences, hedges, signs.) Why? (To protect themselves and their property?)	teacher prepared area all students walk, all students draw a map of trail each student responds

Project Learning Tree Links/Social Studies

<i>Activity Title:</i> SOUNDS AROUND		<i>Activity Guide Page #:</i> 9	
Objective(s): Students will: 1) identify sounds and map their location in the environment; 2) explain how noise can be a problem in the community; 3) create and carry out a plan to lessen a local noise problem; 4) study a Greek myth about sounds in nature.			
Overview: Our ears are constantly being bombarded with sound - so much so that we automatically "tune out" a lot of it. Some sounds are "music to our ears", while others can annoy us and even damage the delicate structures in our ears. Try this activity to help your students "tune in" to the sounds in their environment and to help them identify and lessen local noise problems.			
Subject Area(s): Science, language Arts, Social Studies, Math		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Part A #3 Have students make a "sound map." They should put an X in the middle of the page to represent themselves, and then use pictures or words to show the location of the sounds around them. Part A #4 Call on students to demonstrate and explain their sound maps.	each student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Part A #4 Lead the student in a discussion of their experiences. What were the sources of the sounds they heard? . . . Call on students to demonstrate and explain their sound maps. Variation Part A Ask them what they are hearing and what is making each sound. You can have them point in the direction each sound is coming from. . .	each student
	Secondary Grades 1. Explain factors which shape places and regions over time (e.g., physical and cultural factors).	Part B #2 When visiting you selected site, ask teams of student to measure the noise level at two locations: one that is sheltered and one that is out in the open. Measure the noise in both locations. Part B #3 Discuss the results with the students. If visits were made on different days and there are noticeable variations in the noise level at a particular location, discuss possible reasons for this.	teams – each student a role on the team to answer for each student respond

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<p>Social Studies Civics and Government B. Purpose and Types of Government Students will understand the types and purposes of governments, their evolution, and their relationships with the governed.</p>	<p>Middle Grades 5-8 3. Contrast the roles of local, state, and national governments by investigating, evaluating, and debating a current civic issue.</p>	<p>Part B #5 The could contact appropriate city officials to find out if such a project is possible and then contact foresters in their municipal, county, or state offices to work with local authorities.</p>	<p>each student contacts</p>
<p>Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.</p>	<p>Middle Grades 5-8 5. Explain the functions of and relationships among local, state, and national governments.</p>	<p>Part B #5 Students contact appropriate city officials to find out if such a project is possible.</p>	<p>each student contacts</p>
<p>Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.</p>	<p>Elementary Grades Pre-K-2 2. Demonstrate an understanding of cultural origins of customs and beliefs in several places around the world.</p>	<p>Part C In many cultures throughout human history, legends and myths have arisen that explain the story behind many sounds in nature. The following is a Greek myth. Part C #1 Read the story to the students.</p>	<p>all students</p>

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<i>Activity Title:</i> POET-TREE		<i>Activity Guide Page #:</i> 13	
Objective(s): Students will: 1) express their feelings and attitudes about the environment using various forms of poetry; 2) analyze their own and other people's poetry to discover its full meaning.			
Overview: Writing and sharing poems will give your students an opportunity to express their feelings, values, and beliefs about the environment and related issues in creative and artistic ways.			
Subject Area(s): Language Arts, Science, Social Studies		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Doing the Activity #1 Ask the students to name some of the benefits they derive from trees and forests. What experiences have they and with trees and forests? How do trees and forests make them feel? Do they have any favorite neighborhood trees? Any forest issues that concern them? . . . Doing the Activity #4 Take the students to visit nearby trees in the schoolyard, park, or forest to gather "tree impressions." . . . Doing the activity #5 While you're outside or once you're back inside, have the students write their own poems about trees and forests.	Each student shares their poems
	Elementary Grades 3-4 2. Explain ways in which communities reflect the backgrounds of their inhabitants.	Doing the Activity #6 Discuss how people see trees and forests differently. Does your poem mention the influence people have on trees or forests? Does it mention the value of trees or forest products to people? Does your poem speak of people's place in nature? How?	give each student time to respond
	Secondary Grades 1. Explain factors which shape places and regions over time (e.g., physical and cultural factors).	Enrichment Through class discussion, identify several environmental problems or issues (local, national or global).	each student

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<i>Activity Title:</i> PICTURE THIS!		<i>Activity Guide Page #:</i> 16	
Objective(s): Students will: 1) identify similarities and differences between organisms by collecting pictures and categorizing them; 2) comprehend the connection between diverse organisms and the diverse environments in which they live.			
Overview: In this activity, students can learn about the diversity of life on earth by looking at different plants and animals from around the world			
Subject Area(s): Science, Visual Arts, Math		Grade Level(s): PreK-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Getting Ready #2 Gather a large supply of magazines. Doing the Activity #3 Ask students to think about the kinds of plant and animals they're familiar with – ones they've seen in books, in zoos, in gardens, on television, in their backyard, and so on. Tell students that their area many ways these can be grouped or classified. For instance, where do they live? Doing the Activity #9 Look at one plant or animal in you exhibit. Where does it live?	teacher use a map of the regions of the world each student locates where animals live

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<i>Activity Title:</i> HABITAT PEN PALS		<i>Activity Guide Page #:</i> 18	
Objective(s): Students will: 1) explain the relationship between climate conditions and habitat; 2) identify relationships between organisms within habitats; 3) distinguish between kinds of animals that can't live in a particular habitat.			
Overview: From icy tundra to scorching deserts to salty oceans, the world's habitats are diverse and fascinating. Each habitat, with its own special set of conditions, supports animals and plants adapted to living in it. By becoming "habitat pen pals", your students will learn about the diversity of habitats around the world, and will write letters from the perspective of organisms living in these habitats.			
Subject Area(s): Science, Language Arts		Grade Level(s): 3-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Getting Ready #2 Cut out a picture of each of the habitats listed under "Whose Habitat Is That?"	
	Middle Grades 5-8 1. Visualize the globe and construct maps of the world and its sub-regions to identify patterns of human settlement, major physical features, and political divisions.	Doing the Activity #3 Tell the students that there are many different kinds of habitats. Describe the habitats listed in "Whose Habitat Is That?" Have students identify where the habitat might be found. Doing the Activity #5 You explain that there are similar kinds of habitats around the world. For example, tropical rain forests are found in South America, Africa, Australia and elsewhere. . . Ask the students to explain the relationship between climate and habitat. . . .	locate on a globe or map
	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	<u>Doing the Activity #7</u> Habitat posters. Doing the Activity #9 Write the following questions: What's the climate like in your habitat? Name some other animals that live in your habitat. Describe some of the plants that grow in your habitat. Describe any special features of your habitat. What do you eat? Doing the Activity #10 Address each of these questions and statements in their letters.	Each student will write a letter

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<i>Activity Title:</i> PLANET OF PLENTY		<i>Activity Guide Page #:</i> 24	
Objective(s): Students will: 1) investigate the diversity of plants and animals on a small plot of land; 2) explain the value of a diversity of life forms in a particular ecosystem.			
Overview: In this activity, students will pretend they are visitors from outer space, viewing life on Earth for the first time. By describing in minute detail, all the life they find in a small plot of land, they will become more aware of diversity of life on Earth and will better understand its importance.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	Part B #1 Give each team a tape measuring stick. Also give them string, ribbon, or other materials for marking the boundaries of their plots. Part B #2 Assign each team an area in which to set up a 20-foot square study plot. Try to arrange teams so that they are spread out and cover a variety of microhabitats. Part A #3 Each team will set up a plot and study it for a variety of life forms.	each team member is responsible for a specific task
Social Studies - Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 1. Demonstrate an understanding of why certain areas of the world are more densely populated than others.	Part C #3 Teams should try to draw conclusions about what factors influence the abundance or lack of biodiversity. Part C #5 - 6 Brainstorm ways that biodiversity on planet Earth benefits the lives of its people. How might the people of Deevold begin to improve their planet's biodiversity for the future. . . Ask the students to imagine a place on Earth that is teeming with plant and animal life, and have them share their reflections. . .	

Project Learning Tree Links/Social Studies

<i>Activity Title:</i> CHARTING DIVERSITY		<i>Activity Guide Page #:</i> 27	
Objective(s): Students will: 1) organize different species of plants and animals according to various characteristics; 2) determine how certain characteristics help species adapt to environmental conditions.			
Overview: By exploring the amazing <i>diversity</i> of life on Earth, your students will discover how plants and animals are <i>adapted</i> for survival. This activity provides a basis for understanding why there are so many different <i>species</i> and what is the value of biological diversity.			
Subject Area(s): Science		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Doing the Activity #1 Name different types of environments in which animals live, and write these on the chalkboard (forest, ocean, desert, arctic, others). Variation #1 Refer to the different environments listed in Step 1 above.	each student locates geographic regions on map

Project Learning Tree Links/Social Studies

<i>Activity Title:</i> TREE TREASURES			Activity Guide Page #: 35
Objective(s): Students will: 1) identify and categorize products derived from trees; 2) find out which forest products are recyclable or reusable; 3) recommend actions for conserving forest resources.			
Overview: Students are often surprised to learn how many different products we get from trees. Use this activity to help your students learn just how much we depend on trees in our daily lives.			
Subject Area(s): Science, Social Studies, Visual Arts			Grade Level(s): PreK-6
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.	Elementary Grades Pre-K-2 1. Explain where products come from and how we use them.	Doing the Activity #1-5 Ask students to name as many tree products as they can think of, and list them on the chalkboard. . . Each student will gather clues about a “mystery tree product” and try to figure out what it is. Give students time to mingle and ask questions. When they think they’ve identified their product, they should decide which category it belongs to, and go to the section of the room designated for that category. Allow additional time for the students in each category to discuss with the others why they think they belong in that group. . . Allow students to change groups if they see fit. <u>Variation #2</u> Hold up a small branch and a wooden object such as block, pencil, or toy. Ask where each of these comes from. If possible, acquire a “tree cookie,” a cross-section slice of a tree trunk or branch. Have students see and feel the texture of the wood. . . . Ask students if they can think of other things that come from trees. . .	each student should participate and respond
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Doing the Activity #6 Talk about unusual tree products.	Research country of origin and locate on map (each student)

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<i>Activity Title:</i> WE ALL NEED TREES			<i>Activity Guide Page #:</i> 39
Objective(s): Students will: 1) examine various products and determine which ones are made from trees; 2) describe ways that trees are used to make products and ways that these products can be conserved; 3) explore methods for recycling and reusing products.			
Overview: It is easy to see that items made of wood come from trees. However, many tree products are not obvious. In this activity your students will discover the diversity and multitude of products that are in some way derived from trees.			
Subject Area(s): Social Studies, Science, Language Arts			Grade Level(s): 4-6
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.	Elementary Grades Pre-K-2 1. Explain where products come from and how we use them.	Doing the Activity #2 - 8 Divide the group into teams of four, and tell them that team members will work together to determine which of the products are made from trees. Have the teams move around the room and examine the products. Teams should then re-evaluate the list of products. Teams share their lists with the rest of the group. Discuss the diversity of products.	all team members must agree with the team decision
	Elementary Grades 3-4 1. Describe, with examples, how the exchange of goods and services helps to create economic interdependence between people in different places and countries.	Doing the Activity #9 How will this new awareness of forest products affect student's lifestyles?	ask each student to respond
	Middle Grades 5-8 2. Evaluate how world trade issues can affect a nation's economy and how trade can influence and transform societies.	Enrichment Compare the environmental and economic factors associated with these products and there possible substitutes by answering the following question. Would the substitute serve the same purpose as efficiently and cheaply as the tree product?	
Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Middle Grades 5-8 3. Demonstrate an understanding of selected turning points in ancient and medieval world history and the continuing influence of major civilizations of the past.	Tree Readings story #2 <u>Doing the Activity #6</u> After reading, students should explain the contents to their team members. Each person is responsible for making sure everyone else in the group understands what his or her article says.	
Social Studies	Elementary Grades Pre-K-2	Tree Readings story #2 and story #4	locate places mention on map

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Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.		or globe
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Project Learning Tree Links/Social Studies

<i>Activity Title:</i> RENEWABLE OR NOT?		<i>Activity Guide Page #:</i> 43	
Objective(s): Students will: 1) identify renewable, nonrenewable, perpetual, reusable, and recyclable resources and explain the differences among them; 2) play a game that simulates society's use of renewable and nonrenewable resources.			
Overview: Students often do not know which resources are <i>renewable</i> and which are <i>nonrenewable</i> , or which are <i>recyclable</i> or <i>reusable</i> . In this activity, students will learn what these terms mean and discover why sustainable use of natural resources are so important.			
Subject Area(s): Science, Social Studies		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Elementary Grades Pre-K-2 1. Identify goods and services, giving examples.	Part A/Question #1 (pg. 47) Categorize the following as renewable, non renewable or perpetual resource: a field of corn; oil in the Arctic tundra; coal in the Appalachian Mountains; sunshine everywhere; tides in the Bay of Fundy; trees in a forest; tuna in the ocean; gold mines in western United States; hot springs in Alaska; sand on a beach; a breeze over the Texas plains; salmon in streams; water in a river.	each student answers the questions
	Elementary Grades 3-4 2. Identify a situation in which a personal decision is made about the use of scarce resources (e.g., deciding to use allowance to go the movies instead of buying a gift for a family member).	Demonstration #1: Greed vs. Need The students will play a game in which the popcorn represents the team's supply of a renewable resource that is replenished after each round of play. . . For each round, the team resource will be replenished by half of the team's collective pile. Play four or five rounds noting if any players did not survive. Discuss the advantages and disadvantages of using a resource in a sustainable way? Non-sustainable way?	each student answers the questions and plays the game
	Middle Grades 5-8 1. Analyze how scarcity affects individuals' decisions about production and consumption of goods and services.	Demonstration #2- Popcorn Generation #5 Discuss with the students what is happening to the world's popcorn supply. What happened to the total amount of the resource? How much was left for each successive generation? Was anything left for a 4 th generation? . . . Assessment Opportunity #2 What two factors would you say are most important in determining how fast natural resources are used?	all play and discuss

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<p>Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.</p>	<p>Elementary Grades 3-4 1. Describe, with examples, how the exchange of goods and services helps to create economic interdependence between people in different places and countries.</p>	<p>Demonstration #3 – Global Cookie Jar Label different parts of the room with signs saying Africa, South America, North America, Europe and the Middle East, Russia and Asia. When the students arrive, have each pick a slip and go to the section of the room assigned to that region. Tell them that they represent the relative population of the regions and each group should appoint an “ambassador” to represent their region. Each region will receive a certain number of cookies to represent their Gross National Product . . .</p>	<p>each student involved in discussion and game</p>
	<p>Middle Grades 5-8 2. Evaluate how world trade issues can affect a nation's economy and how trade can influence and transform societies.</p>	<p>Demonstration #3 – Global Cookie Jar #6 What choices are available to nations that do not have enough money to buy food from other countries?</p>	<p>each student responds</p>
<p>Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.</p>	<p>Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.</p>	<p>Demonstration #3 – Global Cookie Jar #2 Display a large map of the world so students can see the regions they belong to.</p>	<p>each student locate on map their region they represent</p>

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<i>Activity Title:</i> A FEW OF MY FAVORITE THINGS			<i>Activity Guide Page #:</i> 48
Objective(s): Students will: 1) explain how the different materials that go into making a product all come from natural resources; 2) identify natural resources as being renewable or nonrenewable; 3) identify the steps that go into making a product; 4) describe some of the impacts from obtaining and processing natural resources for making products.			
Overview: here's a way to give your students a better appreciation for how many natural resources they depend on in their day-to-day lives. By tracing the resources that go into making one item, they will learn how the manufacturing of just one product can have an impact on the environment.			
Subject Area(s): Science, Social Studies, Visual Arts			Grade Level(s): 4-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics B. Economic Systems of the United States Students will understand the economic system of the United States, including its principles, development, and institutions.	Elementary Grades Pre-K-2 1. Explain the terms consumer and product.	Doing the Activity #3 Explain to the students that all the products we use and the material in them are derived from natural resources, resources that occur naturally on Earth.	also that students are the consumers
Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.	Middle Grades 5-8 1. Describe how changes in transportation and communication technologies have affected trade over time.	Doing the Activity #6 Ask the students which type of fuel used to make their favorite item and to transport the item to them. Doing the Activity #7 In addition, nonrenewable fossil fuels (oil, gas, coal) were used to process raw materials for manufacture, and transport the skateboard.	
	Elementary Grades 3-4 1. Describe, with examples, how the exchange of goods and services helps to create economic interdependence between people in different places and countries.	Doing the Activity #8 Students should use poster paper and markers to create a visual representation of their favorite thing, showing the materials, resources, and energy that go into making it. Assessment Opportunity Examine each student's poster from Step 8 to assess how well each understands the type of resources, materials, and energy that go into making the favorite thing.	each student do a poster presentation; all posters displayed

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<i>Activity Title:</i> PASS THE PLANTS, PLEASE			<i>Activity Guide Page #:</i> 50
Objective(s): Students will: 1) identify edible plant parts and give examples of each; 2) describe how plants are used to make various kinds of foods; 3) discuss the importance of plants in people's diets.			
Overview: Chocolate candy. Apple pie. French fries with catsup. Tortilla chips with guacamole. Thanks to plants, these and many other favorite foods are ours to enjoy. Try the following activities to get your students thinking about just how big a part plants play in our daily lives.			
Subject Area(s): Science, Social Studies, Math, Language Arts			Grade Level(s): PreK-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.	Elementary Grades Pre-K-2 1. Explain where products come from and how we use them.	Assessment Opportunity Get your students to think about where the ingredients of the food come from. . . Enrichment #1 Take the students on a field trip to the supermarket. Enrichment #2 Take students on a trip to a farm to see where their food comes from. Enrichment #3 Students research some familiar spices used in different type of ethnic cooking.	
	Elementary Grades 3-4 1. Describe, with examples, how the exchange of goods and services helps to create economic interdependence between people in different places and countries.	Part B #3 On Friday, discuss the data with the students. Did some plant parts show up in their lunches more often than others? If so, which ones?	each student talks
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	Part B #4 Create a bar graph showing the occurrence of different plant parts in their lunches. Enrichment #3 Ethnic cooking such as Mexican, Indian, Italian, Middle Eastern, etc. Individuals or small groups could discover where and what plants these ingredients come from and other information.	each make own bar graph research where food is from and locate on a map

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<i>Activity Title:</i> PEOPLE OF THE FOREST		<i>Activity Guide Page #:</i> 54	
Objective(s): Students will: 1) describe the lifestyles of several forest-dwelling peoples of the present or past and ways that they depend upon the forest; 2) describe some of the effects forest people have on their environment; 3) focusing on a day in the life of a member of one group of forest people.			
Overview: To the Mbuti Pygmies of Africa, the Yanomami and the Kuna of Latin America, and other people around the world, the forest is home. More than just a place to live, the forest provides for all of their needs. By comparing and contrasting different forest peoples, both past and present, your students can learn about some of the ways people have depended on forests throughout history.			
Subject Area(s): Social Studies, Language Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics C. Comparative Systems Students will analyze how different economic systems function and change over time.	Elementary Grades 3-4 1. Describe barter and money and how each is used in the exchange of resources, goods, and services.	<u>From <i>The Forest People</i></u> It is from the plantation that food comes. Pygmies have been in the forest for thousands of years. It is their world, and in return for their affection and trust, it supplies them with all their needs. Part A #3 Each person will write a story that depicts a day in the life of a forest-dwelling people. Part A #4 Story can focus on a day in the life, or trace the activities of the people through the seasons. Part B #1 Each team research the lifestyle of a past or present forest people.	read story to the students or have all students read each student be assigned a role to be responsible for

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<i>Activity Title:</i> TALE OF THE SUN		<i>Activity Guide Page #:</i> 56	
Objective(s): Students will: 1) describe how stories reveal the beliefs of the people who tell them; 2) read or listen to an American Indian story to gain insight on the vital importance of the sun.			
Overview: Every culture in the world has stories that are part of its history and tradition. These stories reveal the beliefs of the people who tell them. For example, many stories teach lessons in proper attitude and behavior. In this activity, your students can analyze a story told by the Muskogee (Creek) Indians of present-day Oklahoma. Later, students can read and discuss stories told in other cultures from around the world.			
Subject Area(s): Language Arts		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Elementary Grades Pre-K-2 2. Demonstrate an understanding of cultural origins of customs and beliefs in several places around the world.	Doing the Activity #1 Ask the students for a few examples of stories that reflect various cultures. Doing the Activity #2 Read them a story told by the Muskogee (Creek) Indians of present-day Oklahoma about how the sun got into the sky. Doing the Activity #5 Have the students read another tale that relates to wildlife or the environment. What lesson for living can people learn from the tale. Assessment Opportunity Check for comprehension by discussing these questions with the group: What happens to Fox and Possum when they try to carry the Sun? How does Grandmother Spider succeed in bringing the Sun to the dark side of the Earth? What does the story explain about Fox's mouth, Possum's tail, and Buzzard's head? Buzzard makes a great sacrifice to place the Sun high in the sky. . .	each student chance to respond to all students each student each student chance to respond

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<i>Activity Title:</i> VALUES ON THE LINE			<i>Activity Guide Page #:</i> 58
Objective(s): Students will: 1) examine statements regarding environmental issues and determine the degree to which they agree with them; 2) share their views and opinions with others and gain awareness on the range of values related to environmental issues; 3) identify the need for balanced information when forming opinions.			
Overview: Many people never take the time to explore the underlying assumptions they have concerning the environment. They often form an opinion without understanding all the sides of an issue. This activity is designed to get students thinking about their feelings and expressing their views. You may also wish to use this activity on a regular basis to give students a chance to evaluate their opinions as they learn more about environmental issues.			
Subject Area(s): Social Studies, Science			Grade Level(s): 6-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 4. Identify ways in which citizens in a pluralistic society manage differences of opinion on public policy issues.	Doing the Activity #1 Pass out copies of “Value Statements” and ask the students to rank how much they agree or disagree of each statement. (Follow examples #2-#7 for sharing and follow-up) Assessment Opportunity What problems, if any, might there be in forming an opinion? How can people become better informed? When people with different values end up on different sides of an issue, conflicts can arise. How can people on different sides of an issue reach a settlement?	each student participates in the activity each student responds to questions

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Activity Title: ENVIRONMENTAL EXCHANGE BOX		Activity Guide Page #: 61	
Objective(s): Students will: 1) discover some of the resources, products, and other characteristics of their region and ways that people in their region are trying to improve the environment; 2) describe similarities and differences between their region with respect to these characteristics.			
Overview: Preparing an environmental exchange box will give your students a chance to learn more about their own region and the things that are special about it. Then, when they receive an exchange box from another region, they can compare environments, people, and much more.			
Subject Area(s): Science, Social Studies		Grade Level(s): K-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Doing the Activity #3 Ask the students what they know or have heard about the region they're exchanging with. Can they name major cities, landmarks or other features of the region? What is the climate like there?	have each student locate their answers on a map
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Doing the Activity #2 Brainstorm with the students a list of items to include in the box. Then have the students divide up the responsibilities of researching, collecting, and preparing materials for the box. The students might want to consider some of the following items for their box: brief descriptions of your region written by the students; a collage of pictures of local ecosystem types; a book with drawings of some interesting plants and animals found in the region. . . Doing the Activity #4 When the box arrives from your exchange group, open it with the students and examine its contents. Then have the students compare that region to their own. Are there differences in the ways people live?	each student

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Activity Title: ADOPT A TREE		Activity Guide Page #: 65	
Objective(s): Students will: 1) describe a chosen tree using personal observation and investigation, and organize information about the tree; 2) identify relationships between their trees and other organisms; 3) put together a book or portfolio about their tree.			
Overview: This activity will encourage students' awareness of individual trees over time, as well as incorporate various other subjects. By adopting individual trees, students will gain greater awareness and appreciation of their local environments.			
Subject Area(s): Science, Math, Language Arts, Visual Arts, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Student Page "Adopt a Tree" Questions #1 Where is your tree? Draw a map to show its location.	Each student draw own map
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Doing the Activity #2 Each person will choose his or her very own special tree. With younger students, you can have the whole group adopt a particular tree. Where there's a shortage of trees, you might have teams adopt trees. Students will observe their trees throughout the school year. Doing the Activity #5 Write the answers to questions on Student page.	
Social Studies History C. Historical Inquiry, Analysis, and Interpretation Students will learn to evaluate resource material such as documents, artifacts, maps, artworks, and literature, and to make judgments about the perspectives of the authors and their credibility when interpreting current historical events.	Elementary Grades 3-4 1. Identify changes currently occurring in their daily lives and compare these to changes in daily life during a specific historic era.	Doing the Activity #2 Students will observe their trees throughout the school year or for however long you decide to conduct the activity. . . No matter which tree they pick, students should be able to say why they chose it. Doing the activity #7 Have the students visit their trees on a regular basis. Each time they visit, have them write a few sentences or make sketches in their notebooks describing any changes they notice; animal or human activity taking place on or near the tree; or any other observations. Assessment Opportunity #2	

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		Students write an essay about life from a tree's perspective. For example, a student who adopts a very old tree might write a story in which the tree "talks" about the days when small farms dotted the landscape or when horses and buggies crowded city streets.	
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<i>Activity Title:</i> TREES AS HABITATS		<i>Activity Guide Page #:</i> 70	
Objective(s): Students will: 1) take inventory of the plants and animals that live on, in, and around trees; 2) identify ways those animals and plants depend on trees for survival, and in turn, influence the trees; 3) for Variation 2 - investigate how buildings provide a habitat for plants, animals, and people.			
Overview: From their leafy branches to their tangled roots, trees provide a habitat for a host of plants and animals. In this activity, your students will discover how plants and animals depend on trees in many ways.			
Subject Area(s): Science, Math, Social Studies, Visual Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Variation 1 - #3 - 4 Lead students to a tree and have them describe what they see living on its trunk and branches with their hand lenses and telescopes. Have students look on the ground around the tree for fallen leaves, twigs, bark, seeds, fruits, or nuts that might also show signs of animals or plant life. Did students find any of the examples that you showed them earlier? Variation 2 - #1 Have student consider buildings they are familiar with. Ask them to think of all the plants that grow on the inside or outside of such buildings. Ask them to name all the animals that make their homes on the inside or outside of those buildings. Have them consider how all those living things depend on the building and how those things, in turn, affect both the buildings and the people living in them.	Each student
	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	<u>Variation 2 - #2</u> They should consider what environmental conditions in the building attract and support those organisms. Variation 2 - #1 Consider how all those living things depend on the building and how those things, in turn, affect both the buildings and the people living in them.	each student responds

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<p>Social Studies History C. Historical Inquiry, Analysis, and Interpretation Students will learn to evaluate resource material such as documents, artifacts, maps, artworks, and literature, and to make judgments about the perspectives of the authors and their credibility when interpreting current historical events.</p>	<p>Elementary Grades 3-4 1. Identify changes currently occurring in their daily lives and compare these to changes in daily life during a specific historic era.</p>	<p>Enrichment #1 Have students examine their tree or buildings at other times during the year. Then ask them to compare their findings from season to season.</p>	

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<i>Activity Title:</i> RAIN REASONS		<i>Activity Guide Page #:</i> 88	
Objective(s): Students will: 1) explore how variations in water, light and temperature affect plant growth; 2) describe how precipitation and geography can affect the plant and animal species that are found in a particular region.			
Overview: Rainfall, sunlight, and temperature are important factors influencing where plants can grow and, in turn, where animals can live. In this activity, students will design experiments to see how these climatic factors influence the growth and lives of plants. They will use the learned principles to explore how varying climate conditions have resulted in an astounding variety of forest types in Puerto Rico.			
Subject Area(s): Science, Math Social Studies		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Part B # 1 Point out the Commonwealth of Puerto Rico on a world map.	
	Elementary Grades 3-4 1. Construct and compare maps of Maine, the United States, and regions of the world to interpret geographical features and draw conclusions about physical patterns.	(Refer to pages: 90-92) Student Page #6/b How does the amount of rainfall in this region compare to the rest of Puerto Rico? Student Page #1/a Look at Maps A and B. What is the relationship between elevation and temperature in Puerto Rico? Student Page #3/a Study Maps A and C. What is the relationship between temperature and rainfall in Puerto Rico?	
	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	Part B #1 Tell students they will study the relationship between climate and forest types in Puerto Rico.	

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<i>Activity Title:</i> THREE CHEERS FOR TREES		Activity Guide Page #: 93	
Objective(s): Students will: 1) describe the ways in which trees benefit people; 2) make pictures or models depicting how trees may be used to improve the human-made environment.			
Overview: It's easy to take for granted both trees and the many benefits they provide. Here's a way to start your students thinking about how much trees add to people's lives.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): 1-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Doing the Activity #1 Write the following list where everyone can see it: playground; school grounds; city street; neighborhood; park; zoo; highway; picnic area; backyard; farm. Doing the Activity #2 - 3 Have each person or team choose and draw one of the areas on the list. They must leave trees out of the picture. When students have finished their drawings, have them draw the same scene again, but this time use as many trees as they wish.	
	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Doing the Activity #4 - 5 Display the drawings where everyone can see them. Ask students in which environment they would rather spend their time, and if trees have anything to do with their preferences. Discuss the benefits of trees in public places. Assessment Opportunity Create a "three cheers for trees" bulletin board showing the benefits of trees in public places. Have the students brainstorm a list of tree benefits.	
	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Variation #2 -3 On the piece of paper have students draw a familiar scene without its trees, bushes, grass, flowers, or plants of any kind. Then have them place the transparency over the picture and tape it to one edge.	
	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Variation #5 When they've finished, they can flip up the transparency and compare the picture with and without trees and plants.	

Project Learning Tree Links/Social Studies

<i>Activity Title:</i> PLANT A TREE		Activity Guide Page #: 95	
Objective(s): Students will: 1) identify ways that urban trees enrich our lives; 2) determine how people care for urban trees; 3) identify areas in the community that would benefit from having more trees; 4) organize and execute a class tree-planting project in a local area.			
Overview: Never underestimate the power of a tree! Besides giving us an amazing array of paper and wood products, trees provide a host of other benefits - from shading our backyards to assisting in the maintenance of the global climate. Students can express their appreciation of trees by planning and carrying out their own tree-planting program.			
Subject Area(s): Science, Social Studies		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Doing the Activity #1 Ask student to name some areas in the community where trees have been planted.	each student
	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Doing the Activity #1 & 3 Ask student to name some areas in the community where trees have been planted. Have them work in small groups to list the benefits trees provide to people and wildlife in those areas. Have them work in small groups over the next week or so to identify areas in the community that would be improved by the presence of one or more trees.	each student accountable
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 1. Identify the characteristics of an effective citizen.	Doing the Activity #4 Have students decide which site (or sites) should be the focus for their tree-planting campaign. Doing the Activity #7 Have students take care of them. Enrichment #1 Students could arrange for a special tree-planting ceremony.	
	Elementary Grades 3-4 3. Identify the functions of government at school, locally, and at the state level.	Doing the Activity #5 Working with older students, ask them whom they think they should contact to get permission to plant in the area(s) they've chosen.	
	Middle Grades 5-8 1. Identify the characteristics of an effective citizen.	Assessment Opportunity Your group could put together an information booklet.	

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<i>Activity Title:</i> A FOREST OF MANY USES		<i>Activity Guide Page #:</i> 98	
Objective(s): Students will: 1) identify ways that people use forest resources; 2) explain that forests are managed to satisfy a variety of human needs; 3) explore how different forest uses can be balanced with each other.			
Overview: Privately and publicly owned forests are often managed to some degree to provide several different resources. In this activity, students will learn how forests are managed to meet a variety of human and environmental needs.			
Subject Area(s): Science, Social Studies		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Doing the Activity #1 Ask students to think of what they use, or how they benefit, from forests. <u>Doing the Activity #2</u> Ask students to name animals that live in forests, and record their answers on a chalkboard under the heading "Wildlife." <u>Doing the Activity #3</u> Ask students in which kinds of recreational activities they or their families have participated in forest. Record their answers on the chalkboard under the heading "Recreation." Doing the Activity #4 Have students list products that people get from forests, and record their answers on the chalkboard under the heading "Products."	
	Middle Grades 5-8 3. Explain how cultures differ in their use of similar environments and resources.	Doing the Activity #5 Explain that forest may be managed with an emphasis on different needs. . . Doing the Activity #6 Divide the students into teams of four. Tell team members to pretend they are forest managers and need to manage a forest for wildlife. Doing the Activity #7 Next, have students pretend they must manage a forest for recreational use. Doing the Activity #8 Finally, have students pretend that, as forest	each student participates aligns also with Geography Standard A

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		<p>managers, they must manage a forest to provide products for people. Doing the Activity #9 Have your students look at the lists they created and ask them these questions: Which activities listed can go on at the same time in the same forest? Which activities on the list might conflict with one another if someone tried to manage both at the same time? . . . Enrichment Students put on mystery drama to show multiple use of the forest. Assessment Opportunity Have students create a bird's eye view of a forest that is being managed for multiple uses.</p>	
	<p>Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.</p>	<p>Variation #1 Show students the collected picture of forest animals and have them identify each one. Ask if they've ever seen this animal in real life. Variation #2 Show students the collected pictures of people doing recreational activities. What are people doing in each picture? Have any students done those activities? Variation #3 Show students pictures of products from forests, and have them identify what's in each picture. Ask which items they use. Variation #4 Have students look at all the pictures you've placed on the bulletin board, and explain that there are people who manage forests so that the forests can provide home for wildlife and people, recreation places for people, and products people need and want.</p>	

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<i>Activity Title:</i> FOREST CONSEQUENCES		<i>Activity Guide Page #:</i> 101	
Objective(s): Students will: 1) evaluate the options for managing or using a piece of forested land; 2) make a land-use decision and explore the consequences of that decision.			
Overview: Few issues, if any, have simple solutions- and resolving them usually involves compromise. In this activity, your students will learn about some of the effects that human activities can have on a forest. They will explore some of the trade-offs involved in working out a land-use issue.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Doing the Activity #1 Have students imagine that they have been a given a large piece of land. The can do anything they want with it. What would they do? Give students, or teams of students, time to think. Then have them share their ideas. Doing the Activity #2 Ask students what consequences their plan might have on the neighboring community and environment. Did they consider those consequences when they decided on a plan. . .	each student
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 2. Evaluate and defend positions on current issues regarding individual rights and judicial protection.	Doing the Activity #3 Read aloud the scenario written in italics on student page 104. Doing the Activity #4 Students work together to decide what the Morristown City Council should do. Each team member should agree with the team’s decision and be able to explain it to the rest of the group. Doing the Activity #5 As the team reads through each proposal, they should ask themselves the questions: What facts presented in the proposal support that land use? What opinions are presented in the proposal? What will it cost the town to adopt the proposal? . . . Doing the Activity #6 Give students plenty of time to work out a solution. Afterward, have each team present its decision tot he entire group. After all teams have presented their decisions, discuss the following questions: . . .	teacher read to students

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	<p>Secondary Grades 1. Develop and defend a position on a public policy issue within our democracy.</p>	<p>Variation #1 Four students within each group will become the City Council that has to decide what to do with Morristown Woods. The six other students will work in pairs to present each land use proposal. . . call all teams together and have the various City Councils present their decisions. Variation #2 You can set up a public hearing. Enrichment Students can put together a special class newspaper or a radio or TV broadcast, that feature the Morris Woods controversy. . . Assessment Opportunity #2 Discuss with your students the old-growth controversy in the pacific northwest using background information on page 101. . .</p>	
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<i>Activity Title:</i> LOVING IT TOO MUCH		<i>Activity Guide Page #:</i> 108	
Objective(s): Students will: 1) explain how increased numbers of park visitors and activities outside park boundaries affect ecosystems within national and local parks; 2) offer possible solutions to problems facing national and local parks.			
Overview: National parks are the treasures of any nation. Yet national parks today struggle with serious dilemmas. By looking at problems in America's national parks, students can begin grappling with some tough environmental issues that affect parks locally and globally.			
Subject Area(s): Science, Language Arts, Social Studies		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Middle Grades 5-8 4. Demonstrate an understanding of selected twentieth century issues and events in United States and in Maine history including "modern" Maine history (1945 to present).	Doing the Activity #3 Divide your group into teams, pass out copies of pages 110 and 111, graph paper, and a pencil to each student. Have teams use the statistics to draw a bar on line graph on US Population growth since 1800 and a graph of park visitation from 1950 to 1990. . . Doing the Activity #4 Have students work in their groups to answer the questions. Doing the Activity #5 Pass out copies of "Problems in Paradise" on page 112. Students work in groups to discuss the reading and answer these questions: . . . Assessment Opportunity Have students prepare written arguments stating what should be done about problems facing national or local parks. Tell students that each person's argument should explain the problems, as well as what causes the problems. Students should clearly state one or more recommendations for solving the problems and explain why their suggestions would be effective.	

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<i>Activity Title:</i> POLLUTION SEARCH		Activity Guide Page #:114	
Objective(s): Students will: 1) identify forms of pollution and describe the effects that various pollutants can have on people, wildlife, and plants; 2) describe relationships between various forms of pollution and human actions.			
Overview: Here's a way for you to take a closer look at pollution; what it is, what its sources are, and what are some things people can do to reduce it.			
Subject Area(s): Science, Social Studies, Math		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	Part A #3 Take students on a walk (outdoors or indoors) to look for pollution or pollutants. During your walk, have student identify pollution they can see, hear or smell. Part A #4 Have students draw pictures of pollution they spotted on the walk or things that might cause pollution.	
	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Part A #6 Which examples on the chart might affect people's health?	
	Middle Grades 5-8 1. Analyze how technology shapes the physical and human characteristics of places and regions, including Maine.	Part A #6 Explain that we have developed technologies to reduce the amount of pollution we generated, and people are constantly working to develop newer technologies.	have students find examples and discuss
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 1. Identify the characteristics of an effective citizen.	Enrichment #2 Now that your students are more aware of pollution, have them take action to help clean up their environment. Join forces with local clean-up operations. Adopt an area – a nearby roadway, local part, or school – and keep it litter free. Sponsor a pollution awareness week in your school. Organize a stream, beach, or neighborhood cleanup.	each student chose a project

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<i>Activity Title:</i> TALKING TRASH, NOT!			<i>Activity Guide Page #:</i> 119
Objective(s): Students will: 1) analyze the solid waste that they generate over a period of time; 2) describe what happens to various types of waste when it's discarded; 3) develop and implement a plan for reducing the amount of waste they generate.			
Overview: By taking a look at their own trash, your students can learn about how and why they throw things away. They can find ways to cut down on the waste they produce and to improve the way waste is managed in their community.			
Subject Area(s): Science, Social Studies, Math			Grade Level(s): 1-6
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Doing the Activity #1 Read aloud "Voyage of the Mobro" on pg. 120. On a map of North and Central America, have students trace the boats voyage.	
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Elementary Grades 3-4 2. Identify a situation in which a personal decision is made about the use of scarce resources (e.g., deciding to use allowance to go the movies instead of buying a gift for a family member).	Doing the Activity #5 When people use maps only once and then throw them away, what are the effects on our supply of natural resources?	
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Elementary Grades Pre-K-2 1. Identify and practice classroom rights and responsibilities.	Doing the Activity #7 Have the students look at the list on the chalkboard and try to think of what actions they could take to keep some items out of the trash and, therefore, out of the landfill or incinerator. Doing the Activity #8 Have the students develop an action plan.	
Social Studies - Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Elementary Grades 3-4 2. Identify a situation in which a personal decision is made about the use of scarce resources (e.g., deciding to use allowance to go the movies instead of buying a gift for a family member).	Variation – Don't Blow Your Allowance Let the class determine the amount of paper they think they will use in one week. Have class members manage their "allowance" in order to make the supplies last for the entire week. . .	

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<i>Activity Title:</i> EVERY DROP COUNTS		<i>Activity Guide Page #:</i> 122	
Objective(s): Students will: 1) monitor their daily actions and estimate the amount of water they use in a day; 2) describe how water is wasted and why it is important to conserve it; 3) design and implement a water conservation plan; 4) determine the amount of water and money saved through their plan.			
Overview: It's easy to waste water and even easier to take water for granted. Water pours out of our faucets as though it were endlessly available. but the truth is that fresh water supplies are dwindling. Fortunately, it's just as easy to conserve water as it is to waste! Try this activity to help your class (and maybe the whole school) cut back on water waste.			
Subject Area(s): Science, Social Studies, Math		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Elementary Grades 3-4 2. Identify a situation in which a personal decision is made about the use of scarce resources (e.g., deciding to use allowance to go the movies instead of buying a gift for a family member).	Part A #1 Have each student predict how much water he or she will use at school that day. Part A #2 Make a chart like the one below for recording the students' predictions. Part A #3 Students will monitor their water use. Part A #6 Have students brainstorm a list of ways that they can consistently cut down on water waste at school and at home. Part A #7 Once again, have students monitor their water use during the school day, this time practicing methods of saving water. The next day, have them calculate how much water they used. Have them determine their "water savings" and discuss it with the rest of the group	
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 2. Evaluate and defend positions on current issues regarding individual rights and judicial protection.	Part B #1 Students create posters to help others learn about water conservation. Present a program on water conservation to the rest of the school. Part B #2 Students work in small groups to create an action plan to encourage water conservation in the school.	

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<p>Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.</p>	<p>Middle Grades 5-8 2. Identify and analyze the factors that contribute to personal spending and savings decisions.</p>	<p>Part B #3 Have students estimate the savings of both water and money.</p>	
<p>Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.</p>	<p>Middle Grades 5-8 2. Evaluate and defend positions on current issues regarding individual rights and judicial protection.</p>	<p>Assessment Opportunity Have teams of students design a brochure for the general public, urging hem to say water in their daily lives.</p>	

CASE/RUBIC

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<i>Activity Title:</i> ENERGY SLEUTHS		<i>Activity Guide Page #:</i> 126	
Objective(s): Students will: 1) identify different energy sources; 2) discuss the pros and cons of various energy sources from economic, social, and environmental perspectives; 3) describe some of the ways people use energy in their daily lives.			
Overview: Important issues revolve around our use of energy. One issue is the growing scarcity of some energy resources. Another is the threat to our environment caused by our current energy systems. In this activity, your students will learn about different sources of energy, as well as how energy is used in their daily lives.			
Subject Area(s): Science, Social Studies		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Middle Grades 5-8 2. Identify and analyze the factors that contribute to personal spending and savings decisions.	Part A #1 - 3 Make a list of energy sources. Assign one energy source to each group. Give the groups time to research their energy source and to develop a report containing information on the following: its availability, the technologies for extracting or processing it, its economic potential and the feasibility of its small- and large-scale use . . .	
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 5. Explain the functions of and relationships among local, state, and national governments.	Part A #5 After all groups have reported, each group should briefly outline a national energy policy that they'd like to see enacted.	
Social Studies -Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Secondary Grades 1. Conduct a cost benefit analysis of a personal or business decision.	Part A #6 Have the students share their energy policies. Discuss the pros and cons of each. You may give the groups time to revise their policies after they hear all reports.	
	Middle Grades 5-8 2. Identify and analyze the factors that contribute to personal spending and savings decisions.	Part B (All) For one day, have students keep track of all the activities they do that directly or indirectly require energy. . .	

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<p>Social Studies Economics C. Comparative Systems Students will analyze how different economic systems function and change over time.</p>	<p>Elementary Grades 3-4 1. Explain how selected cultures or countries meet basic human needs.</p>	<p>Enrichment Assign each student group to examine particular provinces, states, regions, or foreign countries. Students can then research what main energy sources those areas produce and what types of energy the people consume. As an alternative, have students find out which areas produce and consume the energy source assigned to their student group in Part A. Students can begin by researching the state or country, or by researching the energy sources themselves.</p>	
<p>Social Studies -Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.</p>	<p>Middle Grades 5-8 2. Identify and analyze the factors that contribute to personal spending and savings decisions.</p>	<p>Assessment Opportunity Have the groups design posters or other visual displays portraying the information they found in Step 4.</p>	

PICTURE

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<i>Activity Title:</i> THEN AND NOW			<i>Activity Guide Page #:</i> 131
Objective(s): Students will: 1) describe the environmental changes that have occurred in their community over the course of time; 2) discuss whether those changes have been positive or negative for the community; 3) discuss ways to remedy negative changes.			
Overview: If your community is like most others, it's now quite a bit different than it was 100, 50, 25, or even five years ago. This activity will help your students to understand how we, as people, affect and alter the environment in which we live.			
Subject Area(s): Social Studies, Science, Language Arts			Grade Level(s): 3-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Elementary Grades 3-4 1. Make connections between and among events in their personal lives and those occurring in the community.	Getting Ready Obtain pictures or drawings of your community, township, or city from various stages in its past. Part A #1 - 3 Ask students if they've noticed any changes in their community recently. Ask students how those changes made them feel. Show students the old pictures of your community. If possible, identify each photo's location and have students describe what the site looks like now. Variation for Part A Take your students back in time through an imaginary time machine.	
Social Studies History C. Historical Inquiry, Analysis, and Interpretation Students will learn to evaluate resource material such as documents, artifacts, maps, artworks, and literature, and to make judgments about the perspectives of the authors and their credibility when interpreting current historical events.	Middle Grades 5-8 5. Formulate historical questions based on examination of primary and secondary sources including documents, eyewitness accounts, letters and diaries, artifacts, real or simulated historical sites, charts, graphs, diagrams, and written texts.	Part B #1 Tell students that they'll interview an older person who has lived in the community for many years. This person could be a parent, grandparent, neighbor, or anyone who has lived in the area long enough to see many changes. Part B #2 Have each person develop a list of interview questions. Part B #3 Give students time to conduct their interviews. Assessment Opportunity Have them write stories about their community's past by using the information they gained from Parts A and B, the variation, and any additional research. They can tell the story from the perspective of having their present-day selves go back in time.	

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<i>Activity Title:</i> WATER WONDERS		<i>Activity Guide Page #:</i> 142	
Objective(s): Students will: 1) simulate the paths that water takes in the water cycle; 2) describe the importance of the water cycle to living things; 3) conduct an experiment to discover how plants affect the movement of water in a watershed; 4) describe how plants are important in maintaining water quality.			
Overview: The water cycle is the system by which Earth's fixed amount of water is collected, purified, and distributed from the environment to living things and back to the environment. Plants play a large part in the cycle by absorbing water with their roots and transpiring it as vapor from their leaves			
Subject Area(s): Science, Language Arts, Physical Education		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	Part A #3 Explain that the water cycle is really a simplified model for looking at the “journey” of a water molecule. . . Part A #4 Divide students into seven approximately equal groups, and have each group begin at one of the stations. Part A #5 - 6 Have students each remove a strip from the envelope at their station. They should read the strip and write on their water cycle scorecard, their current station stop, what happens to them, and their destination. Repeat Step 5 about ten times or until most students have cycled through the Cloud station a couple of time. Part A #7 Ask students to write a brief story that describes the journey through the water cycle.	each student makes a chart showing their journey
Social Studies - Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Part B #1 Ask students, “Have you ever wished water didn’t act the way it does? For example, you might have wished that it didn’t rain on a day when your family was going to the zoo, or that snow didn’t melt because you wanted to ski.” Is there anything people can do to control or alter the water cycle? (build dams, cover reservoirs, seed clouds, make snow)	each student responds

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<i>Activity Title: ARE VACANT LOTS VACANT?</i>		Activity Guide Page #: 153	
Objective(s): Students will: 1) describe plants and animals that live at and around the study site; 2) give examples of and describe ecological relationships between biotic and abiotic elements at the study site.			
Overview: Look closely and you will see that a vacant lot is not so vacant! Plants of all kinds thrive in vacant lots, along with a host of animals such as insects, birds and mammals. In this activity, a nearby vacant lot, overgrown strip, or a landscaped area will provide a rich laboratory for students to examine elements of an ecosystem.			
Subject Area(s): Science, Math, Visual Arts		Grade Level(s): K-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Getting Ready Locate a study site for conducting the activity, such as a vacant lot, a landscaped area of the school, or a nearby park. Enrichment #1 Ask each group to use the collected data to draw a map that indicates the location of plants and animals on its plot. These group maps could be combined to create a map of the entire vacant lot or site. Doing the Activity #5 - 7 In what ways have people used this site before? What are the positive and negative aspects of this site for people? Doing the Activity #7 What do you think would happen if people decided to erect a building on this site? Variation #4 Consider what might be done to the site to make it a better place for plants, animals, and people to live. Have students draw pictures of what the site might look like if all of their suggested improvements were carried out.	

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<i>Activity Title:</i> FIELD, FOREST AND STREAM			<i>Activity Guide Page #:</i> 156
Objective(s): Students will: 1) investigate and measure components in three different ecosystems; 2) describe similarities and differences they observe among three ecosystems; 3) identify ways that the abiotic components of an ecosystem affect the biotic components.			
Overview: In this activity students will examine three different environments as they focus on sunlight, soil moisture, temperature, wind, plants, and animals, in each environment. By comparing different environments, students will begin to consider how nonliving elements influence living elements in an ecosystem.			
Subject Area(s): Science, Math			Grade Level(s): 1-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Doing the Activity #1 Ask students to think of a place they enjoy visiting. What did you particularly enjoy about the place? Was it the people? The physical space? What did you do? Name any nonliving things that made your place enjoyable. (water, mountains, climate) Enrichment #2 Revisit each location to look for ways humans have affected it. Which human actions have harmful effects on these ecosystems? Are these short-term or long-term effects? Which human actions have a positive effect on the ecosystems? What might we do to encourage more of these kinds of actions?	

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<i>Activity Title:</i> TROPICAL TREEHOUSE			<i>Activity Guide Page #:</i> 160
Objective(s): Students will: 1) describe the plants and animals that live in different levels of the tropical rainforest; 2) examine and discuss a case study that involves the rights of native inhabitants of a tropical rainforest in a national park; 3) describe the sounds they might encounter when visiting a rainforest.			
Overview: In this activity, studying tropical rainforests and issues involving the use of rainforests will enable your students to make more informed decisions regarding the future of such regions. While tropical rainforests and the temperate rainforests of North America operate on many of the same ecological principles, they differ greatly in their climates, and in the types of soil, plants, and animals that make up the forest ecosystems.			
Subject Area(s): Science, Social Studies, Language Arts, Performing Arts, Visual Arts.			Grade Level(s): PreK-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Part A #2 Explain that the inhabitants on the sheet come from different rainforests around the world and would not be found all together in the same forest. Part A #3 Have students research and prepare a report about a particular person, animal, or plant of the rainforest. Describe the particular type of rainforest where the person, animal, or plant lives.	find rainforests of the world on a map; identify them locate on a map
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Middle Grades 5-8 3. Explain how cultures differ in their use of similar environments and resources.	Enrichment #4 Research the historic and economic importance of a tropical forest product. Compare it with a major North American crop, such as corn. Compare agricultural practices, derivatives and efforts at hybridization to develop more desirable qualities. Investigate the extent to which these practices affect the local environment.	
Social Studies Civics and Government D. International Relations Students will understand the political relationships among the United States and other nations.	Elementary Grades Pre-K-2 1. Recognize that there are other nations with different traditions and practices.	Case Study Tuma'a and his extended family have farmed and fished for many years in a rainforest that has now been designated part of the a U.S. National Park. His family comprises people from many villages in the different islands that make up American Samoa.	
	Elementary Grades 3-4 1. Identify examples of how the United States interacts with other countries (e.g., trade, treaties).	Part B #1 Read the following excerpt about Public Law 100-571 to your students. You may need to explain difficult terms that appear. The students can also read the actual bill on page 167.	

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<p>Social Studies Civics and Government C. Fundamental Principles of Government and Constitutions Students will understand the constitutional principles and the democratic foundations of the political institutions of the United States.</p>	<p>Middle Grades 5-8 2. Examine civil rights, liberties, and responsibilities established in the United States Constitution and Bill of Rights.</p>	<p>Part B #2 Each team should discuss the following questions and write down student's responses.</p>	
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<i>Activity Title: 400-ACRE WOOD</i>		<i>Activity Guide Page #: 169</i>	
Objective(s): Students will: 1) create a management plan for a hypothetical piece of public land, taking into account factors such as ecosystem stability, monetary income or costs, wildlife, water, and visitors; 2) experience the analysis and decision making that goes into managing forest land.			
Overview: In this activity, students will play the role of managers of a 400-acre (162-hectare) piece of public forest. Through these roles, students will begin to understand the complex considerations that influence management decisions about forestlands.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 7-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies -Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	Getting Ready Then using a light-colored marker, draw a 20” x 20” grid map of 400-Acre wood.	
Social Studies -Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Doing the Activity #1 Students should brainstorm a list of activities that take place on forest land. Doing the Activity #2 Discuss these questions: Which activities would cost the most to provide on the forest land? Which would bring the most visitors? Which would have the greatest impact on the forest ecosystem? . . .	
Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Secondary Grades 1. Use mapping to answer complex geographic and environmental problems.	Doing the Activity #3 Divide the group into teams of four or five, and explain that each team will decide the best use (or uses) of 400-Acre Wood, which has been donated to the community. Doing the Activity #4 Ask these questions: Which forest uses in “If You Were the Boss” are compatible with other uses? Which might be incompatible with each other? . . . Doing the Activity #5 Give each team a map (grid) of 400-Acre Wood. Also give each team a copy of “What’s The Score?” Doing the Activity #6 When the teams have completed their management plan,	

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		<p>they should use crayons or colored markers to illustrate their plans on the grids. Remind them to include a key showing what different colors and symbols mean.</p> <p><u>Doing the Activity #7</u> Ask the teams to present their plans to the entire group, making clear how they decided on their plans. . . .</p> <p><u>Doing the Activity #8</u> Use the large grid map to lead a group discussion. Ask these questions: Which plan enables the most people to enjoy the forest? What is the monetary cost in attracting the most visitors? . . .</p>	
<p>Social Studies - Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.</p>	<p>Secondary Grades 1. Explain factors which shape places and regions over time (e.g., physical and cultural factors).</p>	<p>Enrichment #2 Contact the local Forest Service office or forestry agency, and invite a forest manager to talk to your class about how his or her organization makes land-use decisions. Encourage students to ask questions based on what they learned in the activity.</p>	
<p>Social Studies - Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.</p>	<p>Secondary Grades 1. Develop and defend a position on a public policy issue within our democracy.</p>	<p>Assessment Opportunity Imagine that 400 acres of forest land has been given to the community to use however people please. Several different groups are competing to have their proposals accepted. Each team should prepare a five-minute argument explaining why their plan should be accepted.</p>	

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<i>Activity Title:</i> MAKE YOUR OWN PAPER		Activity Guide Page #: 176	
Objective(s): Students will: 1) make recycled paper from scrap paper; 2) describe the steps of the papermaking process and identify the elements and outputs of the process; 3) compare making paper by hand to the process used in factories.			
Overview: paper is one of many products that is manufactured from forest resources. In this activity, students investigate the papermaking process by trying it themselves. While papermaking can be rather messy, it is well worth the effort. Students are usually thrilled to find that they can make paper and that their product is practical as well as beautiful.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.	Elementary Grades Pre-K-2 1. Explain where products come from and how we use them.	Doing the Activity #1 Introduce the activity by ask students what they think paper is made of and how it is made. Doing the Activity #9 Discuss these questions: What materials did we use in making paper? What forms of energy did you need to make the paper? What types of wastes resulted from making paper? Doing the Activity #10 Help students investigate the process used in modern paper factories.	

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<i>Activity Title:</i> A LOOK AT ALUMINUM		<i>Activity Guide Page #:</i> 180	
Objective(s): Students will: 1) understand how the unique properties of aluminum make it invaluable for many products and technologies on which we depend; 2) describe the steps involved in extracting bauxite and processing aluminum from bauxite; 3) explain the environmental impacts of producing new aluminum and recycling aluminum products.			
Overview: This activity will give your students a better appreciation for aluminum, a nonrenewable but recyclable natural resource they use every day. they will learn the steps that go into making aluminum products and will get a better idea of the environmental impact that using this resource has.			
Subject Area(s): Science, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.	Elementary Grades Pre-K-2 1. Explain where products come from and how we use them.	Part A #1 Divide the group into teams of four and give each team an aluminum can. Students should examine the can for a few minutes. Which parts of the can are more rigid and which are more flexible? What material is it made of? Is it made of more than one material? How is the can manufactured? Part A #2 Student page (How aluminum cans are made.)	
	Middle Grades 5-8 2. Evaluate how world trade issues can affect a nation's economy and how trade can influence and transform societies.	Part A #4 Ask students if they know where aluminum comes from. Do they know how it is made? Review the information in the background section.	
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Secondary Grades 1. Conduct a cost benefit analysis of a personal or business decision.	Part B – Doing the Activity One of the most important things students can do to reduce the negative environmental effects is to cut down on the amount of energy need to process aluminum and manufacture products. One way is to have students create a plan that makes sure aluminum cans get recycled in your area. Ask students what action they should take. Part B #1 Create posters that teach people about the need to recycle aluminum cans. . . Part B #6 Have a group meeting to talk about multiple benefits of aluminum recycling such as fund-raising, solid waste reduction, or energy savings. . .	

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<i>Activity Title:</i> ON THE MOVE		<i>Activity Guide Page #:</i> 185	
Objective(s): Students will: 1) compare various transportation methods for getting to and from school; 2) describe the transportation systems their community uses; 3) design or propose a practical and efficient transportation system for the future.			
Overview: In this activity, student will examine transportation systems, which are vital to their community.			
Subject Area(s): Science, Math, Social Studies, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Getting Ready Find a map of your community that shows as many different transporting systems as possible: streets, toll roads or freeways, railways, subways bus routes, bicycle paths, hiking trails, ferry routes, and airports. Each group should have a map.	
	Middle Grades 5-8 3. Understand United States social, political, and economic divisions and the more significant social and political divisions in world geography.	Part A #2 Brainstorm a class list of things, living or nonliving, that are found in or around school. Select a few items and ask pairs of students to write on scratch paper how each item got to where it is. Discuss transportation systems used in getting the items to school and the kinds of energy used.	
	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Part A #4 Give each group a map and a copy of student page 187. Challenge groups to find their maps several types of transportation systems. Look at a map of your community and find all the different transportation systems you can. What kinds of transportation systems does your community have?	

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<p>Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.</p>	<p>Middle Grades 5-8 1. Describe how changes in transportation and communication technologies have affected trade over time.</p>	<p>Part A #5 Lead a discussion about students' findings. Which system carries people? (Automobiles, subways, buses.) Which carry products? Which carry both? What advantages does each system have? What disadvantages does each have? How would your life be different if there were no cars in your community? Part B #1 Ask the class to name one problem they observed in their community's transportation system.</p>	
	<p>Middle Grades 5-8 2. Evaluate how world trade issues can affect a nation's economy and how trade can influence and transform societies.</p>	<p>Part B #2 Challenge the student's to design a transportation system of the future that overcomes a problem in today's transportation or improves it in some way. Part B #4 Have groups present their designs to the class. Discuss these questions: What problems did you encounter? To solve the transportation problem, did you have to sacrifice efficiency, convenience, or appearance in your design? . . .</p>	
<p>Social Studies- History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.</p>	<p>Middle Grades 5-8 1. Describe the effects of historical changes on daily life.</p>	<p>Enrichment #1 Have students write a story comparing taking a 50-mile trip in your area 100 years ago with the same trip today. Discuss the two trips. What were the major modes of transportation 100 years ago?</p>	
<p>Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.</p>	<p>Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.</p>	<p>Assessment Opportunity Part A: Students' ability to identify and compare transportation systems in their community.</p>	
	<p>Middle Grades 5-8 3. Understand United States social, political, and economic divisions and the more significant social and political divisions in world geography.</p>	<p>Assessment Opportunity</p>	

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<p>Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.</p>	<p>Middle Grades 5-8 1. Describe how changes in transportation and communication technologies have affected trade over time.</p>	<p>Assessment Opportunity Use student designs to evaluate understanding of transportation systems. How well did students identify a transportation problem and work to design a solution?</p>	
	<p>Middle Grades 5-8 2. Evaluate how world trade issues can affect a nation's economy and how trade can influence and transform societies.</p>	<p>Assessment Opportunity Use student designs to evaluate understanding of transportation systems. How well did students identify a transportation problem and work to design a solution.</p>	

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<i>Activity Title:</i> I'D LIKE A PLACE TO VISIT WHERE . . .			Activity Guide Page #: 188
Objective(s): Students will: 1) describe the characteristics of their favorite recreational area, explain the importance of recreational areas to people and other living things; 3) conduct a project at a local park to improve a habitat or enhance its suitability to people.			
Overview: In this activity, students will explore the concept that recreation areas are essential elements of a community. By working on a project to improve a local park, they will also learn about the community's system for managing open spaces.			
Subject Area(s): Science, Social Studies, Language Arts, Physical Education, Visual Arts			Grade Level(s): PreK-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	Part A #2 Have each student choose a place, write a description, and draw a map. Part A #3 Write the following questions: Where is it located? They should include a drawing or map of the area. Enrichment #3 Have students design their own ideal parks. . . .	
Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Elementary Grades 3-4 1. Make connections between and among events in their personal lives and those occurring in the community.	Part B #2 Help students develop a list of question in advance about the project and the park. . . . <u>Part B #4</u> After the project is completed, ask students to reflect on their experience. Discuss these questions: How did it feel to work in the park? How might our work improve the park for people or the organisms? What would happen if people didn't do this work?	
	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Enrichment #2 Help students list recreational activities that use forest products. Ask students to imagine what would happen if forest products were removed from their favorite recreation or sport. . . .	

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<i>Activity Title:</i> PLANNING THE IDEAL COMMUNITY			<i>Activity Guide Page #:</i> 191
Objective(s): Students will: 1) map the locations of services and resources in their community; 2) create a map of an "ideal" community that includes all the services and resources people need to live there.			
Overview: In this activity, students will explore the elements that compose a human community. They will survey the area around their school, looking for community systems that help them live there. Then they will plan an ideal community that meets all the needs of its members.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts			Grade Level(s): 6-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies -Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 1. Visualize the globe and construct maps of the world and its sub-regions to identify patterns of human settlement, major physical features, and political divisions.	Getting Ready For Part A, decide on the size of the area that students will survey. Obtain or draw a simple map of the survey area. Make a copy for each student.	
Social Studies -Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 2. Explain ways in which communities reflect the backgrounds of their inhabitants.	<u>Part A #1</u> Ask students what they think a community is. Ask pairs of students to list five places or services they use in their community. <u>Part A #2</u> Ask students whether anything that people in the community need to live there is missing.	
Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 1. Visualize the globe and construct maps of the world and its sub-regions to identify patterns of human settlement, major physical features, and political divisions.	<u>Part A #3</u> Distribute the maps to each student. Explain that groups will survey the area around the school to find the community resources and services they listed. When students find one of the items on their list, they should record on their map the name and location of the item. <u>Part A #4</u> Take students for a walk around the survey area, allowing time for students to look for and record their findings. <u>Part A #5</u> Help students compile their findings on the class map. Using that map as a focal point, lead a discussion about students' findings.	

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<p>Social Studies -Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.</p>	<p>Middle Grades 5-8 4. Demonstrate an understanding of how society changes as a consequence of concentrated settlement.</p>	<p>Part B #1 Students will have an opportunity to be community planners and to design an ideal community that meets all the needs of its residents.</p>	
	<p>Middle Grades 5-8 1. Analyze how technology shapes the physical and human characteristics of places and regions, including Maine.</p>	<p>Part B #4 Use these questions to lead a discussion about the maps and the planning process: How did your group decide what features to include and where to place them? How are your ideal communities the same as actual communities. In what ways are they different? . . . Enrichment #1 Invite a representative from an urban planning office or firm to visit your class. Students can ask the planner about the process in which land-use decisions are made, about the community's goals for the future, or about changes the community anticipates making as it grows.</p>	
	<p>Middle Grades 5-8 4. Demonstrate an understanding of how society changes as a consequence of concentrated settlement.</p>	<p>Part B #2 Using the same groups as in Part A, allow students two or four class periods to plan and map their communities. Part B #3 Ask groups to share their maps with the rest of the class and to describe the features of their design.</p>	
<p>Social Studies -History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.</p>	<p>Middle Grades 5-8 1. Describe the effects of historical changes on daily life.</p>	<p>Enrichment #2 Interview residents who have lived in the community for more then 25 years. Ask them how the community has changed and whether they think the changes were for the better.</p>	

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<i>Activity Title:</i> WE CAN WORK IT OUT		<i>Activity Guide Page #:</i> 193	
Objective(s): Students will: 1) develop solutions to a land-use problem involving urban open space; 2) simulate a city council meeting to discuss and decide on a land-use issue.			
Overview: When certain people decide how to use a particular piece of land, the decision can involve and affect many people in many ways. Therefore, groups must establish processes for planning and resolving conflicts about land use. In this activity, students will develop a plan to address a land-use issue.			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 3. Describe and analyze the process by which a proposed law is adopted, including the role of governmental and non-governmental influences.	Doing the Activity #1-#12 If you follow steps 1-12, it walks you through the legislative model for decision-making. Doing the Activity #2 In the simulation, “citizen groups” of students will present their solutions to a problem and the “city council” will vote to reach a final decision.	the scenario is secondary here to the process evaluate your students’ understanding of the decision-making process

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<i>Activity Title:</i> DEMOCRACY IN ACTION		<i>Activity Guide Page #:</i> 197	
Objective(s): Students will: 1) compare two citizen groups, special-interest groups, or government agencies involved in the same issues; 2) create visual representations of the two groups; 3) explain ways students can become involved in the civic action process through participation in such groups.			
Overview: democratic systems depend on the involvement of citizens in policy making and decision making. This activity will help students learn about the roles and responsibilities of citizens' groups in environmental policies and decision-making, and about how young people can become involved in the process.			
Subject Area(s): Social Studies, Visual Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 4. Identify ways in which citizens in a pluralistic society manage differences of opinion on public policy issues.	Doing the Activity #1-#8 If you follow this activity step by step, you understand about interest groups, organizations or agencies and how they are formed. Doing the Activity #4 Each team to find two interest groups, organizations, or agencies that are involved in making decisions about that team's topic. After teams have located two groups, students are to contact each group's offices to get written information and to ask questions on student page 200. Doing the Activity #8 Lead a discussion on the value of civic action. . . Variation – Meet The Experts Instead of having teams conduct their own research, invite a local representative from each of several organizations with different perspective on an environmental issue to speak with your class. <u>Enrichment</u> Help class members choose an environmental issue or topic about which they would like to learn more. Invite representatives or groups with different views to speak to the class about their group's positions on a topic and to answer student questions.	awareness of process more important than issue here

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<i>Activity Title:</i> THERE OUGHT TO BE A LAW			<i>Activity Guide Page #:</i> 201
Objective(s): Students will: 1) describe how a group of students can make and change rules; 2) compare rulemaking in a group to the lawmaking process in local government; 3) research the steps necessary to make a proposed change in their community; 4) create a poster that shows the effects of their proposed change and that depicts the lawmaking process.			
Overview: In democratic societies, citizens have the power to influence the lawmaking process. In this activity, students will find out how local laws are made and how they can get involved in the process.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts			Grade Level(s): 3-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Elementary Grades Pre-K-2 1. Identify and practice classroom rights and responsibilities.	Part A #1 -3 Point out to students that every person belongs to many groups. Invite students to help brainstorm groups to which different class members belong. Ask student which groups have rules or expectations for group behavior.	
	Middle Grades 5-8 2. Evaluate and defend positions on current issues regarding individual rights and judicial protection.	Part A #4 Discuss these questions: Why do groups have rules? Why are rules important? What would happen if (choose one group) had no rules? . . . Part A #5 Ask students to find out how they could add or change a rule in a group they belong to. How would it affect the other people in the group if your rule were added or changed?	

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<p>Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.</p>	<p>Middle Grades 5-8 3. Describe and analyze the process by which a proposed law is adopted, including the role of governmental and non-governmental influences.</p>	<p>Part A #6 Use the overhead transparency of page 204 to show students the steps usually needed to make or change a local law. Discuss these questions: What is the importance of each step? What might happen if there were no public discussion, for example? . . . <u>Part B #1-#4</u> Take students through process of making a law. Enrichment #1 Students could work to turn one of their ideas into law. Assessment Opportunity Use the team posters from Part B to assess student's understanding of the legal process. Let each team explain its poster to the rest of the group.</p>	<p>all steps important</p>
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<i>Activity Title:</i> POWER OF PRINT		<i>Activity Guide Page #:</i> 205	
Objective(s): Students will: 1) compare different sections of a daily newspaper; 2) analyze some of the ways that ideas and opinions are expressed through word choice; 3) research opposing sides of a local environmental issue; 4) write articles on environmental issues using both objective and subjective points of view.			
Overview: Newspapers keep the community informed about current events and trends, provide a forum for discussion of public issues, and are a source of entertainment. In this activity, students will examine articles from different sections of the newspaper by comparing and contrasting the different types of words and styles they employ.			
Subject Area(s): Social Studies, Language Arts, Visual Arts, Performing Arts.		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Civics and Government B. Purpose and Types of Government Students will understand the types and purposes of governments, their evolution, and their relationships with the governed.	Secondary Grades 5. Evaluate the role of the media and public opinion in United States politics, including ways the government and media influence public opinion.	Part A #3 - 4 Have students guess what they think the article is about and whether they think it is a news story, opinion piece, or another kind of article. Give each team a set of articles. Have each team read each piece aloud. Ask these questions: What is the purpose of this newspaper piece? Is it supposed to inform people about the whole issue or to persuade people to take one side? . . . Part B #1-#5 Allows them to try their own making of a written piece. Variation #1-#4 Describes the process of making an advertisement. Enrichment #1 - 2 Have students find out the effectiveness of the newspaper they made in Part B. Have students listen to National Public Radio or watch the national television news to compare those news sources to the newspaper. Consider these questions: . . . Enrichment #3 Locate billboards in your community and have students decide what is the billboard's purpose, who its intended audience is, if it is effective, and if it is compatible with its surroundings. Enrichment #4 Play popular recordings from any era that have environmental messages.	

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<i>Activity Title:</i> PUBLICIZE IT!		<i>Activity Guide Page #:</i> 209	
Objective(s): Students will: 1) plan and carry out a community action project; 2) use the media to create public awareness about the event.			
Overview: The news media, including television, newspapers, and radio, provide community members with a system for getting and spreading information about environmental issues. This activity can be done in conjunction with any of the action projects in this activity guide. Students will conduct an environmental action project and use various media to inform others in the community about the project.			
Subject Area(s): Science, Social Studies, Language Arts, Visual Arts, Performing Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 1. Identify the characteristics of an effective citizen.	Doing the Activity #1 Ask the students for their ideas on how radio, television, and newspaper reporters get information about things to include in news stories. Explain to students that groups or individuals planning an event or project often tell the media about how people can get media coverage as they conduct their community action project. Doing the Activity #3 Let students develop their own action project, help them to think of a problem they would like to work on. To get them thinking about how they can take action, pass out copies of student page 212, and have them read “Reclaiming a State Park,” which is about a successful student project. Enrichment Watch for media coverage of your class’ project. If possible, clip out newspaper articles and letters to the editor, and record any television and radio stories or announcements. Compare the actual media stories to students’ publicity materials. How close did the media keep to what students wrote? Were the changes an improvement? Assessment Opportunity Look at students’ written pieces, list of media contacts, and overall publicity efforts to assess their understanding of how the media can publicize messages. How well do their written pieces communicate the importance of the students’ project?	steps #4-#11 explain how to walk through the process

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<i>Activity Title:</i> TREE FACTORY		<i>Activity Guide Page #:</i> 223	
Objective(s): Students will: 1) describe the general structure of a tree; 2) explain how different parts of a tree help the tree function.			
Overview: By acting out the parts of a tree, your students will see how a tree works like a factory. Afterward, they can create their own "tree factories".			
Subject Area(s): Science, Physical Education, Performing Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	<u>Enrichment #3</u> After exploring how a tree works, have your students consider how they benefit from trees. Give each student a blank piece of paper; have each draw a small tree in the center. Have students draw eight lines radiating from the tree like the spokes of a wheel. On each line, have them write the name of something the tree gives to them.	

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<i>Activity Title:</i> GERMINATING GIANTS		<i>Activity Guide Page #:</i> 234	
Objective(s): Students will: 1) measure certain physical characteristics of at least three different trees; 2) compare various measurements from these trees and draw conclusions about the nature of each tree.			
Overview: In this activity, students can sharpen their math skills by comparing their local trees to the world's tallest tree, the coast redwood, and to the tree with the largest seeds, the coconut palm.			
Subject Area(s): Science, Math		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies -Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.		teacher should have students locate where redwoods and coconut trees grow to get an understanding of their size students locate on map where redwood trees and palm trees grow

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<i>Activity Title:</i> HOW BIG IS YOUR TREE?		<i>Activity Guide Page #:</i> 239	
Objective(s): Students will: 1) measure and compare trees and tree parts; 2) discuss how and why people measure things, including trees; 3) explain the need for consistency in measuring.			
Overview: Trees come in various shapes and sizes. In this activity, students will measure trees in different ways and become familiar with the tree's structure. They will also learn the importance of standard units of measure and measuring techniques.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Elementary Grades Pre-K-2 1. Demonstrate an understanding of the similarities between families now and in the past, including daily life today and in other times.	<u>Doing the Activity #2</u> Explain to the students that people in early times used their bodies (hand spans, for instance) to measure things.	
Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	<u>Enrichment #1</u> Help your class find the champions in your local community or neighborhood and compare these with the national or state champion.	find and locate maps
	Elementary Grades 3-4 1. Construct and compare maps of Maine, the United States, and regions of the world to interpret geographical features and draw conclusions about physical patterns.	<u>Enrichment #1 - 2</u> The giant Sequoia is the largest living thing (organism) on Earth. To help students picture how large one of these trees is, help them make a life size drawing on the playground using tape, string, or chalk for the outline.	Locate on maps

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<i>Activity Title:</i> FOREST FOR THE TREES		<i>Activity Guide Page #:</i> 247	
Objective(s): Students will: 1) participate in a simulation designed to teach how forest resources are managed; 2) simulate managing a piece of land for various products.			
Overview: In this activity, students will role-play managing a tree farm. by using a piece of land as a tree farm, they will begin to understand the economic factors that influence management decisions for private forestlands.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Elementary Grades 3-4 1. Describe barter and money and how each is used in the exchange of resources, goods, and services.	<u>Doing the Activity #1-#6</u> Is a simulation of using trees as a resource (economic) and making decisions how to best use the resource for firewood, pulp or lumber. <u>Enrichment #1-#5</u>	all steps done in sequence enrichment simulation with students making the decisions, not the teacher
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	<u>Doing the Activity #7</u> Ask them what natural events could drastically change the forest. Discuss students' answers. Pretend you are a wildfire roaring through the forest and destroying the "trees." Discuss the results. . .	
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Middle Grades 5-8 2. Identify and analyze the factors that contribute to personal spending and savings decisions.	<u>Doing the Activity #8</u> You have decided to retire and move away. Before you leave, you must sell the land. You sell to someone who isn't interested in forest management. This person has decided to develop the property for housing without consulting forest managers. <u>Doing the Activity #9</u> Discuss how the landowner could have developed this housing community with the assistance of foresters so that many of these benefits could have remained.	

<i>Activity Title: SOIL STORIES</i>		<i>Activity Guide Page #: 252</i>	
Objective(s): Students will: 1) identify components of soil and how these components determine its function; 2) explain how different soil types determine the characteristics of ecosystems; 3) predict the influence of soils on water filtration and on human use of an area.			
Overview: Students often wonder why certain plants grow in some places and not in others. Climatic factors such as temperature, moisture, and sunlight keep palm trees in Florida and fir trees in Oregon, but subtle differences in soil allow an oak to compete more successfully in one area and a maple in another. In this activity, students will explore differences in soil types and what they mean to us.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	<u>Part B #1-#6</u> By doing the whole activity, be aware of the effects of physical environment on human ideas. <u>Assessment Opportunity</u> Have students imagine they are inspectors for your county’s soil Conservation Service. They must write a letter to Sam and Laticia explaining what the results of the perk test indicate. They should explain the reasons Sam and Laticia cannot build a house on their property because of its present soil conditions. . .	
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 1. Visualize the globe and construct maps of the world and its sub-regions to identify patterns of human settlement, major physical features, and political divisions.	<u>Enrichment #1</u> Ask your state Natural resources Conservation Service for a copy of your county’s soil survey. By matching their knowledge of local areas with the soil survey, students can see how land-use patterns correlate to soil classifications. <u>Enrichment #2</u> Here are additional soil mysteries for students to investigate: A mudslide destroys homes. What soil conditions caused this to happen ?; A buildings foundation cracks as soil subsides. What soil type would cause this to happen?	

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<i>Activity Title:</i> WATCH ON WETLANDS		<i>Activity Guide Page #:</i> 258	
Objective(s): Students will: 1) study a wetland ecosystem; 2) analyze the issues and opinions relating to the management and protection of wetlands.			
Overview: If a duck can paddle in it, it's a wetland. If a duck can waddle on it, it's not. If only wetlands could be defined as simply as this, wetlands issues and legislation would be less muddy. In this activity, students will learn more about wetlands and about how land-use decisions and legislation affect these areas.			
Subject Area(s): Science, Social Studies		Grade Level(s): 7-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Part A #2 Display a large country map and try to locate several wetlands.	
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 1. Identify the characteristics of an effective citizen.	Part A #3, #4 and #5 Are all steps to adopting a wetland. Shows process from deciding to research to preparing. Part C #1 - 6 Letter to the editor. Discuss with students the key issues presented in the letter. Who are the players and what are their positions? Research and write a short description of the positions of key players. Set up debate; discuss and summarize; write a letter stating the research of the debate.	
Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	Photo Survey Team Discuss what features of the wetland they should capture on film. Map Survey Team Students decide how to design their map of the area and which features they should highlight on the map. Afterward, with colored markers and symbols, the team should use the pairs' rough maps to create a large, detailed map of the wetland on a piece of poster paper. Planet Survey Team Decide how they will categorize and record the plants they observe. They will set up a chart that has columns for	

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		<p>describing each plant, its immediate environment and its location.</p> <p><u>Animal Survey Team</u> Decide how they will locate and record animals. They should make up a chart that has columns for description, immediate environment and location.</p> <p><u>Water Quality Team</u> To perform tests at different locations to gather info about water quality. Transfer their data to a chart that has columns for various water quality factors and for the location where factors were tested.</p>	
<p>Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.</p>	<p>Secondary Grades 1. Use mapping to answer complex geographic and environmental problems.</p>	<p><u>Part A #6</u> Each team should take 20 minutes to brief the group on their team’s findings, lead a class discussion on the general features of each wetland, and give an impression of the area’s ecological health.</p> <p><u>Part A #7</u> Ask students to use the data presented so they can discuss whether some environmental warning signs in this wetland need further attention.</p>	
<p>Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.</p>	<p>Middle Grades 5-8 2. Evaluate and defend positions on current issues regarding individual rights and judicial protection.</p>	<p><u>Part B #1 - 5</u> Describe the following scenario: Dr. Aliza Garcia wants to build a dental office on property she owns in Slidell, Louisiana. Although dry most of the time, her property and the surrounding are have been designated a wetland by the parish (county) government. She has heard that she must get a permit to build on her land. Have students put themselves in Dr. Garcia’s position. What classifies land as wetland? What are the threats to the environment from building on wetlands . . . The process of how one can get a permit. Entire class uses these reports to create a flow chart that advises Dr. Garcia of the process she should follow to build (if possible) her office.</p> <p><u>Part C #1 - 6</u> Have students read the letter to the editor on page 263. Discuss with students the key issues presented in the letter. Who are the players and what are their position? Research and write a short description of the positions of the key players. Set up, debate, discuss and summarize. Write a letter to the property owner stating the result of the debate and their reaction to it.</p>	

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		<u>Part D #1-#4</u> Have students read the Pala Lagoon case study on page 264. Have students meet at a public hearing to decide if the building can be built . . .	
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PICTURE

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<i>Activity Title:</i> AIR WE BREATHE		<i>Activity Guide Page #:</i> 264	
Objective(s): Students will: 1) identify various types of indoor air pollutants and their sources; 2) understand how various pollutants can be harmful to people's health; 3) trace how radon can get into buildings and eventually into our bodies; 4) take action to improve indoor air quality.			
Overview: Did you know that sometimes the air in our homes, schools, and offices can be worse for our health than the air outside? In this activity, students will learn more about indoor air quality, and what can be done about it.			
Subject Area(s): Science, Language Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	<u>Part B #5 -7</u> Distribute “Where will the Radon Go” on page 270. Allow students to trace radon’s route from the ground into the atmosphere or into people’s homes. Ask students to come forward one at a time to trace different radon routes, until all routes traced. Distribute copies of “Trace the Radon Routes” on page 271 and repeat the same exercise as in step 5 to see how radon might travel within a building. Home Radon Exposure Survey #1 Check geologic and soil maps of your area. Determine the type of bedrock and soil underneath your home.	each student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	<u>Part B #7</u> Discuss how many different ways can radon enter a home? <u>Assessment Opportunity</u> Have students list ways radon could potentially contaminate their homes. The students can make a cut-away drawing similar to the handout on page 271, to help them identify possible radon routes in their own homes.	each student

Activity Title: WASTE WATCHERS *Activity Guide Page #:* 274

Objective(s): Students will: 1) identify ways to save energy in their daily lives; 2) explain how saving energy can reduce air pollution.

Overview: Every year some 41 percent of all the energy we use in the United States is wasted needlessly. By cutting the energy waste, we can reduce our demand for sources of new energy and reduce the amount of pollution we create. In this activity, your students can take a look at how they use energy in their own homes and how they can reduce the amount of energy they waste.

Subject Area(s): Science, Math, Social Studies **Grade Level(s):** 5-8

Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
<p>Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.</p>	<p>Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.</p>	<p><u>Doing the Activity #1 - 4</u> Ask students to brainstorm a list of ways they use energy in a day. Supports thinking about human and physical environment. <u>Doing the Activity #5-#9</u> Support doing “Home Audit.” Have students look back at the list of energy-using activities they generated earlier. Which ones do they think use the most energy? Can they think of anything they could do to reduce the energy they use? <u>Enrichment #1</u> Have students read their electric meter or look at their electric bill. Over a longer period of time, what might account for increases or decreases in energy use during the year? <u>Enrichment #2</u> Do an energy audit at your school. <u>Enrichment #3</u> Ask a landscape architect to visit and recommend ways to save energy. <u>Assessment Opportunity</u> Have students write a brochure that outlines energy-saving actions people can take and explain why saving energy is important.</p>	

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<p>Social Studies - Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.</p>	<p>Middle Grades 5-8 1. Analyze how technology shapes the physical and human characteristics of places and regions, including Maine.</p>	<p><u>Enrichment #5</u> Have students research energy efficient home designs such as active or passive solar and earth sheltered homes, or examine other energy saving technologies and report on them to the rest of the group.</p>	
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PICTURE

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<i>Activity Title:</i> PEOPLE, PLACES, THINGS		<i>Activity Guide Page #:</i> 280	
Objective(s): Students will: 1) Explain how human communities are made up of different types of people, places, and things, and how they all fit together; 2) investigate some of the people, places, and things that make up their own community.			
Overview: By taking a closer look at their community, students can gain an appreciation for its structure and complexity. In this activity, students will develop a deeper understanding of the many people, places, and things on which they depend every day.			
Subject Area(s): Social Studies		Grade Level(s): K-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	<u>Part A #1</u> Ask the students what kind of places they think are in the neighborhood. <u>Part A #2</u> Take the students outside for a walk around the block or through the neighborhood. Have them point out places around you school where people live, work and play.	
	Elementary Grades 3-4 2. Explain ways in which communities reflect the backgrounds of their inhabitants.	<u>Part A #3</u> Write the words “Living Places,” Working Places,” and “Playing Places” where everyone can see them. then have students recall the places they spotted on their walk and put each place in one of the three categories. (Note: create additional categories) <u>Part A #4</u> Students think about other places in their community and add these places to the lists. <u>Part B #1</u> Students, our communities also have people on whom we rely. Have the students think about, and then draw a picture of someone in their community on whom they depend. <u>Part C #1 - 3</u> Students describe thing in their community they’ve already learned about. Then ask them to describe how they got to school that day. Brainstorm a list of things in the community on which everyone depends. Post this list where it can be seen by all students. Have the students look at the lists and think about the purposes	

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		<p>of these things.</p> <p><u>Enrichment #2</u> Students write an imaginary story about what would happen if something important disappeared, such as “The Day the Sidewalks Disappeared.”</p> <p><u>Enrichment #3</u> Ask students to think about what would make their community better.</p> <p><u>Assessment Opportunity</u> Have teams of students put together creative presentations that make up their community. Possible presentations could be a poster, a collage, a mobile, a photo essay, a song or rap, a model or sculpture, or a video. . .</p>	
<p>Social Studies - Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.</p>	<p>Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.</p>	<p><u>Enrichment #1</u> Have them make maps of their neighborhood. Maps should include people; places; and things. They may also include a map key and a scale indicator.</p> <p><u>Assessment Opportunity</u> A more simple option is for groups of students to make maps of neighborhoods they visited.</p>	
	<p>Elementary Grades 3-4 2. Explain ways in which communities reflect the backgrounds of their inhabitants.</p>	<p>Have teams of students put together creative presentations that show the different people, places, and things that make up their community. . .</p>	

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<i>Activity Title:</i> TEPEE TALK		<i>Activity Guide Page #:</i> 282	
Objective(s): Students will: describe several different types of Native American shelters and the materials that were used to make them.			
Overview: Whether it' a 100-room palace or a small hut made out of branches, all human shelters serve the same basic purposes: they provide privacy, shelter for inclement weather, and protection from danger. In this activity, your students will take a close-up look at one kind of dwelling - the tepee used by Native Americans on the Plains - and will discover how homes can give clues about the lives of people who live in them.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 2. Explain ways in which communities reflect the backgrounds of their inhabitants.	<u>Doing the Activity #1</u> Begin by asking students what houses are for. Ask if all people build or live in the same type of house. <u>Doing the Activity #2</u> Students look over list of dwellings they created in step1. Have them list similarities and differences among dwellings and compare them to the types of homes where they live.	
	Middle Grades 5-8 3. Explain how cultures differ in their use of similar environments and resources.	<u>Doing the Activity #3</u> Students are going to learn about a particular cultural group by studying their dwellings. <u>Doing the Activity #4, #5 and #6</u> All support doing this. <u>Enrichment #1</u> Have students research other types of homes. They can choose other traditional Native American dwellings from more than a century ago. Have students research and make models of these structures. . . <u>Assessment Opportunity</u> Have students imagine that archaeologists of the distant future have unearthed ancient homes – their own! Have students produce an archaeologists report about their own home. . .	

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<i>Activity Title:</i> TREE COOKIES			<i>Activity Guide Page #:</i> 289
Objective(s): Students will: 1) identify heartwood, sapwood, and a tree's annual rings; 2) infer from a tree's rings what damage or stress might have occurred in its life; 3) make a timeline of human history that coincides with a tree's rings.			
Overview: One of the best ways to learn about a tree is to look at its annual rings. Tree rings show patterns			
Subject Area(s): Science, Social Studies, Visual Arts, Language Arts			Grade Level(s): 1-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.	Middle Grades 5-8 2. Identify the sequence of major events and people in the history of Maine, the United States, and selected world civilizations. (See suggested list below in "Secondary Grades".)	<u>Part B #2</u> Have teams research different information that relates to the redwood tree cookie. Categories for research should include 1) possible significant events in the tree's lifetime, such as years of drought, flood, or fire; 2) significant world events during the life of the tree; 3) significant events in U.S. or Canadian history during the life of the tree; and 4) significant events of people in your classroom, school, or community during the life of the tree. Tams should each identify at least five dates for events in their category.	
	Elementary Grades Pre-K-2 1. Place individual and family experiences in historical time and place.	<u>Variation #4</u> Have students each use a paper plate and crayons to create a tree cookie the same age as themselves. They can then use sticky labels to identify when important events in their lives took place such as when they were born, when they started school, and so on.	

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<i>Activity Title:</i> TREES IN TROUBLE		<i>Activity Guide Page #:</i> 293	
Objective(s): Students will: 1) cite factors that can cause trees to become unhealthy; describe symptoms of unhealthy trees; 3) compare environmental conditions that affect both human health and plant health; 4) identify people or agencies that care for trees and forests.			
Overview: Like humans, trees can become weak and unhealthy, suffer injury, and die. People have learned to read the symptoms of unhealthy trees to help them. In this activity, students will examine trees for signs of damage or poor health.			
Subject Area(s): Science, Math, Social Studies, Language Arts, Performing Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Middle Grades 5-8 3. Explain how cultures differ in their use of similar environments and resources.	<u>Enrichment #3</u> Consider the story attributed to the ancient Chinese philosopher, Chuang Tzu. (page 295) Have each student write his or her own story about the many values of trees, both healthy and unhealthy.	
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 1. Identify the characteristics of an effective citizen.	<u>Enrichment #1</u> Perhaps on your field trip you found a “tree in trouble” that could use some help. Maybe it had been damaged; or, maybe it appeared to be healthy and you want to help it stay that way. Have the class adopt the tree. If you choose a tree close to the school, you can report on the progress of its health. Contact the appropriate municipal agencies.	

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<i>Activity Title:</i> SIGNS OF FALL		<i>Activity Guide Page #:</i> 299	
Objective(s): Students will: 1) describe some of the differences between deciduous and evergreen trees; 2) identify patterns in the changing of seasons; 3) understand why leaves of deciduous trees change color in the fall.			
Overview: In temperate regions, people can observe the annual change of seasons. In autumn, leaves of many trees turn color and fall to the ground, many animals migrate or go into hibernation, the days get shorter, and the air gets colder. this pattern repeats itself every year.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Elementary Grades Pre-K-2 2. Demonstrate an understanding of cultural origins of customs and beliefs in several places around the world.	Enrichment #2 Tell you students the following is a Native American legend about why leaves change color in the fall: <i>Celestial hunters killed the Great Bear (a constellation) in the fall, causing his blood to drip on the forest and turn many of the trees red. Other trees turned yellow from the fat that dripped out of the kettle as the celestial hunter cooked the bear meat.</i> Have them consider how this legend might reflect important elements of Native American culture. Invite the students to create their own imaginative legends explaining why leaves change color in the fall.	each student respond each student create a legend

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<i>Activity Title:</i> TREE LIFESTYLE		<i>Activity Guide Page #:</i> 302	
Objective(s): Students will: 1) diagram the lifestyle of a tree; 2)compare a tree lifecycle to a human lifecycle; 3) explain the role each stage of a tree's life plays in the forest (or other) ecosystem.			
Overview: In this activity, students will discover that trees have a lifestyle that is similar to that of other living things. they will investigate a tree's role in the ecosystem at each stage of its life.			
Subject Area(s): Science, Language Arts, Visual Arts, Performing Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.	Elementary Grades Pre-K-2 1. Place individual and family experiences in historical time and place.	<u>Doing the Activity #1</u> Discuss the idea of lifecycles by asking students to describe the lifecycle, or history of a person. Make sure students include childhood, teenage years, young adulthood, and so forth, in the discussion. Write these stages on the chalkboard. Ask students to identify the different jobs, roles, or things that a person might do in each stage of the lifecycle. Next, ask them to describe the lifecycle of a tree in similar terms.	each student describes or makes a chart showing chronology of life cycle of a person

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<i>Activity Title:</i> NOTHING SUCCEEDS LIKE SUCCESSION		<i>Activity Guide Page #:</i> 306	
Objective(s): Students will: 1) explore basic relationships between species diversity and ecosystem stability; 2) identify successional stages in ecosystems based on plant and animal species; 3) draw conclusions about the process of succession based on study test plots in different stages of succession.			
Overview: Succession is a natural pattern of change that takes place over time in a forest or ecosystem. In this activity, students will study the connection between plants, animals, and successional stages in local ecosystems.			
Subject Area(s): Science, Math, Language Arts.		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - \Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	Part B #3 Have students draw a general map of the study area, including major landmarks (such as major trees, trail junctions, parking lots, benches, creeks, etc.), and then identify and draw areas on the map that fall into the different categories of succession identified in the preceding step.	each student

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Activity Title: LIVING WITH FIRE		Activity Guide Page #: 311	
Objective(s): Students will: 1) describe a forest fire; how it starts, spreads, and burns out; 2) explain several approaches to forest fire management.			
Overview: The term "forest fire" may conjure up images of fear and devastation. Preventing fires is still important, but times have changed. In this activity, students will learn how fire is a natural event in forests and other ecosystems and how it helps keep plants and other parts of the ecosystems healthy.			
Subject Area(s): Science, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Part A #4 Try to have a local firefighter visit your group to talk about the equipment and techniques that are used to suppress fires. . . You can also have a forester visit your group to talk about wildfires. Prepare students to ask questions about how forest fires are managed in their region, and how they can best be prevented. Part B #4 Have students research the effects of fire on the economy and the environment, both detrimental and beneficial. They could find out about: financial costs involved in the loss of natural resources and in fire management; . . .	
Social Studies History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.	Elementary Grades Pre-K-2 2. Distinguish similarities and differences among historical events.	Part B #1 Students should contact their state forestry agency or a state office for the U.S.D.A. Forest Service. They can ask for information concerning the causes of all large forest or range fires in the state over the past several years. . . Part B #2 Using this information, have the students develop tables and pie charts showing the actual numbers and percentages of fires from different causes for the years studied.	
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	Part B #3 Have students compare the data for at least three different years and determine: which cause was responsible for the most large fires in each year. And the fewest? The number of fires caused by each category in each year, nothing increases or decreases. Reasons why increases or decreases might have occurred. The average yearly number of fires from each cause for all the years studied.	

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<i>Activity Title:</i> RESOURCE-GO-ROUND		<i>Activity Guide Page #:</i> 316	
Objective(s): Students will: 1) identify the natural resources from which products are derived; 2) trace the lifecycle of a product from natural resources, to the raw materials, to the finished product; 3) describe how energy is consumed in the manufacturing and transportation of products and how it might be conserved.			
Overview: This activity gives students the opportunity to explore a variety of natural resources and products that people depend on every day. In addition, students will gain insight into the processes by which these natural resources are turned into products and, when possible, recycled into new products.			
Subject Area(s): Science, Social Studies		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Elementary Grades Pre-K-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.	<u>Getting Ready</u> Display a large map. Copy pages 318 and 319. <u>Part A #1</u> Begin the activity by having each student handle and observe a pencil. Challenge students to identify all the materials that make up the pencil, along with the natural resources from which they are derived. Ask where these natural resources might have come from. Using the Background information, discuss possible origins of these resources and locate these areas on a world map.	
Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.	Elementary Grades 3-4 1. Describe, with examples, how the exchange of goods and services helps to create economic interdependence between people in different places and countries.	<u>Part A #1-#5</u> Understanding pathways of products introduced with walk through steps. Discuss the pathways of natural resources and materials that go into a finished pencil. Trace the lifecycle of one or more of the pencil's new materials. <u>Part B #2</u> Ask each student to think of an item that is in some way a product of a forest ecosystem. You may instead provide a box of various items and have the students choose one. . . For the item they choose, each student should identify the steps necessary to produce the finished product from its natural resources, and the steps necessary to recycle it back to nature or into a new product. . .	

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<i>Activity Title:</i> REDUCE, REUSE, RECYCLE			Activity Guide Page #: 320
Objective(s): Students will: 1) learn about ways to reduce solid waste in their community by reducing consumption, reusing products, recycling materials, and composting; 2) communicate to others the importance of recycling in their community.			
Overview: Patterns for reducing solid waste can be seen in community efforts to reduce consumption and recycle resources. In this activity, students will set up a program for reusing, recycling, and reducing consumption of resources at school.			
Subject Area(s): Science, Math, Social Studies, Language Arts			Grade Level(s): 1-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 1. Identify the characteristics of an effective citizen.	<u>Project #2</u> Set up recycling in the cafeteria and faculty room. Students should determine where these items can be recycled in their community.	
	Elementary Grades Pre-K-2 1. Identify and practice classroom rights and responsibilities.	<u>Project #1</u> Set up a classroom program for separating items that can be reused from those that can be recycled. Separate recyclables by paper, glass, aluminum cans, and so on. Once the program is in place, the team should create a pamphlet showing how to set up a classroom recycling program. . .	
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Secondary Grades 1. Conduct a cost benefit analysis of a personal or business decision.	<u>Project #3</u> Investigate the costs/benefits of various options to reduce waste. . . Then, students can begin by conducting a survey to see what disposable or nonrecyclable products used in the school cafeteria could be replaced with recycled products or glassware – and at what savings or cost. . . <u>Assessment Opportunity</u> Have teams from Step 2 present their results and findings to the rest of the class or have the entire class present its results to another class or a group of administrators. Assess how each project was designed, planned, and executed.	

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<i>Activity Title: A PEEK AT PACKAGING</i>		<i>Activity Guide Page #: 322</i>	
Objective(s): Students will: 1) describe the different purposes for packaging; 2) identify the pros and cons of different types of packaging; 3) explore how packaging affects our decisions as consumers.			
Overview: Nearly everything we buy comes in some sort of package. Packaging, made from a variety of renewable and nonrenewable resources, is necessary to protect an item, keep it fresh, make it tamper-proof, and make the item easy to transport and store. In this activity, students will examine the pros and cons of different packaging strategies.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Economics B. Economic Systems of the United States Students will understand the economic system of the United States, including its principles, development, and institutions.	Elementary Grades 3-4 1. Identify the three basic economic questions all economic systems must answer: What to produce? how? and for whom?	<u>Getting Ready</u> Bring in examples of different kinds of packaging used for different purposes, such as advertising, freshness, tamper prevention, and convenience. <u>Part A #1 - 2</u> Set out the examples of packaging that you brought in. Discuss each package and the product it contains with the entire group. Use the questions on “Consumer Choices,” page 324. Ask students why they think each product is packaged the way it is. Ask them what the pros and cons are of each package in terms of protection, bulkiness, tamper resistance, recycled materials, and so forth. <u>Part B #1 - 4</u> Ask students to bring in two packages that they feel are properly packaged, and two that they feel are improperly or insufficiently packaged. Have students work in teams and select three to five items to evaluate. Give each team a copy of “Consumer Choices” (on page 324) for each item they will evaluate. Have each team share its analysis of one product with the rest of the group. . . <u>Enrichment</u> Take a trip to a local supermarket for a “Supermarket Safari” in which students try to find at least one item that fits into each category of packaging: 1) packaged well; 2) packaged poorly; 3) packaged primarily to attract the consumer; 4) packaged in bulk. . <u>Assessment Opportunity</u> Have students create an ideal package for one of the products they evaluated. . . Then have them make a presentation on why their package suits their product.	

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<i>Activity Title:</i> AIR TO DRIVE		<i>Activity Guide Page #:</i> 325	
Objective(s): Students will: 1) gain knowledge about possible global changes resulting from the emission of greenhouse gases and other pollutants; 2) explain strategies for removing carbon dioxide from the air.			
Overview: In this activity, students will calculate the amount of automobile travel their family does and explore some of the potential environmental consequences of increasing automobile emissions and energy use, as well as ways and benefits of reducing those level.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Middle Grades 5-8 1. Analyze how technology shapes the physical and human characteristics of places and regions, including Maine.	<u>Part A – Demonstration #1 - #1</u> To demonstrate the effect of car exhaust on air quality, have students try this experiment with a parent or other responsible adult. <u>Part B #1</u> Students will track all family car mileage for one week, using the car’s odometer. They should note the car’s beginning and end mileage and should figure the difference. <u>Extra Credit #2</u> Students can plan a strategy to reduce their family’s auto mileage. <u>Enrichment</u> Set up a friendly competition between classes or groups to see who can keep the most CO2 out of the atmosphere by walking, biking, or carpooling to school. <u>Assessment Opportunity #2</u> Have students diagram the carbon cycle showing how cars and animals use oxygen and release CO2 while green plant use CO2 and release oxygen. Plants also use a small portion of the oxygen they release for their own energy cycle.	

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<i>Activity Title:</i> OUR CHANGING WORLD		<i>Activity Guide Page #:</i> 328	
Objective(s): Students will: 1) identify some global environmental patterns; 2) discuss issues related to global change; 3) describe actions that people can take to improve the environment and quality of life.			
Overview: Patterns of change are evident in the Earth's global systems. By exploring the issues of global change, students will gain an understanding of how we must deal with the possibility of global environmental changes today.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Secondary Grades 1. Use mapping to answer complex geographic and environmental problems.	Enrichment Have teams of students pick a “global change” issue to investigate. You may want to assign issues to make sure the major ones are covered; examples include effects of climate change, coastal erosion, ozone depletion, ocean pollution, deforestation, desertification, population growth, hunger, communicable diseases, air pollution, energy shortages, soil erosion, fresh-water pollution, loss of biodiversity, etc. Have each team prepare a short presentation to the class with background about the issue, potential effects it could have, and geographic areas likely to be affected. Record the geographic areas of potential change with map pins, shading, or overlays on a map of the world. Discuss each team’s map. How much of the Earth could be affected by these potential changes? Are there any areas that may not be affected? Are there areas that are likely to be affected by more than one aspect of global change? Are all countries on Earth equally ready to cope with these changes? If these predictions come true, how could cities, states, and countries prepare for such changes .	

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<i>Activity Title:</i> EARTH MANNERS		<i>Activity Guide Page #:</i> 331	
Objective(s): Students will: express appropriate ways to treat living things and to act in forests, parks, and other natural areas.			
Overview: Children are naturally curious about their environment. They should be encouraged to explore the out-of-doors, while having respect for living things and their habitats. In this activity students will develop a set of guidelines for exploring and enjoying nature.			
Subject Area(s): Science, Social Studies, Language Arts, Visual Arts			Grade Level(s): PreK-4
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Elementary Grades Pre-K-2 1. Identify and practice classroom rights and responsibilities.	<u>Doing the Activity #4 - 6</u> On the chalkboard or poster paper, list short statements that express the students' ideas about environmental manners – you can call them rules or guidelines. Ask students to offer ideas in the form of behaviors they would recommend. They can make positive or negative statements. Ask students each to choose one of the rules they made in Step 4 and to draw a picture that illustrates it, along with a slogan at the bottom. Lead an exercise in which the students act out the rules they listed in Step 4.	
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	<u>Doing the Activity #1</u> Initiate a discussion with your students on the effects humans can have on plants, animals and the environment. Begin by reading the story <i>Trapper</i> by Stephen Cosgrove and Robin James. Read it slowly, showing them the pictures in the book. If you use the text on pages 333-334, stop at intervals to summarize the story and to have students draw pictures of what they imagine	
	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	<u>Doing the Activity #2-#4</u> Follow through with these ideas.	

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<i>Activity Title:</i> LIFE ON THE EDGE		<i>Activity Guide Page #:</i> 335	
Objective(s): Students will: 1) identify environmental factors that can cause species to become endangered; 2) research the current status of several endangered plants or animals; 3) present persuasive arguments for the protection of a particular plant or animal species.			
Overview: Patterns of change can be observed in the diversity of species on Earth. In this activity, students will become advocates for endangered species of plants or animals, and create "public relations campaigns" on behalf of these species.			
Subject Area(s): Science, Social Studies		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Secondary Grades 1. Explain factors which shape places and regions over time (e.g., physical and cultural factors).	<u>Part A #1 - 4</u> Place large pieces of paper or mats on the found and label them to represent different habitats – rainforest, deciduous, forest, field, pond, tundra, ocean, etc. Have students choose an appropriate habitat. When everyone is in place, tell a brief story describing the destruction or alteration of a particular habitat. After the story, pull away the colored mat representing that habitat. The animals that were standing there must scramble to find a new habitat that is suitable and stand with one foot on it. If they cannot adapt to another habitat, they do not survive and are out of the game. . . .	
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Secondary Grades 1. Develop and defend a position on a public policy issue within our democracy.	<u>Part B #2</u> Students should take the role of an advocate for the species they selected. They should imagine that they work for a public relations or advertising firm that has been hired to communicate to the public that the species is endangered and that the public needs to take action. <u>Part B #3</u> Teams should present their campaign to the rest of the group.	

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<i>Activity Title:</i> TREES FOR MANY REASONS			Activity Guide Page #: 340
Objective(s): Students will: discuss and analyze a fictional story relating to the proper and improper use of natural resources.			
Overview: By reading fables such as <i>The Lorax</i> by Dr. Seuss or <i>The Man Who Planted Trees</i> by Jean Giono, students can examine the importance of conserving natural resources.			
Subject Area(s): Science, Social Studies, Language Arts			Grade Level(s): 2-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies - Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Secondary Grades 1. Explain factors which shape places and regions over time (e.g., physical and cultural factors).	<u>Part A #1-#3</u> Why do you think the Once-ler did what he did? What patterns of change in the environment did we observe? What were environmental conditions like before the company started making Thneeds? What were they like afterward? What was the author’s message concerning what one person can do to save or destroy the environment. <u>Part B #1</u> Make copies of the story for students to read, or show the video. Ask students to list what they think the major ideas are. . .	
	Elementary Grades Pre-K-2 1. Describe the human and physical characteristics of the immediate environment.	<u>Part A #1-#3</u>	
	Elementary Grades 3-4 3. Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.	<u>Part A #1-#3</u>	
	Middle Grades 5-8 1. Analyze how technology shapes the physical and human characteristics of places and regions, including Maine.	<u>Part A #1-#3</u>	

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<p>Social Studies - Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.</p>	<p>Middle Grades 5-8 1. Analyze how scarcity affects individuals' decisions about production and consumption of goods and services.</p>	<p><u>Variation for Grades 5-8, #2</u> Each group should process one of the following questions: How could the Once-ler have managed his company to protect natural resources and not run out of trees to manufacture “Thneeds”? Is it necessary to protect all trees “from axes that hack”? <u>Part B #2</u> Give each group an index card with one of the following six statement on it: The balance of nature is important to all life on Earth and can easily be destroyed. Humans cannot place themselves apart from nature in making decisions about natural resources. Actions taken without thought or planning can have disastrous consequences. Natural resources can be used up if they are not managed carefully for the long run. Each person has a responsibility to help conserve resources and protect the environment. Consumers should demand that manufacturers produce products in an environmentally sound manner. <u>Part B #3</u> After students have had time for discussion, have each group read its statement and then present the results of its discussion. the group leading the discussion should encourage classmates to say whether they agree, disagree, or have ideas to add. <u>Enrichment #1</u> Either alone or in small groups, students can write and illustrate a sequel to <i>The Lorax</i>. . . <u>Enrichment #2</u> Have students prepare a sequence the key events in <i>The Lorax</i>. Then, have them draw a diagram or flow chart showing the connections between characters in the story and the natural resources.</p>	
	<p>Middle Grades 5-8 2. Identify and analyze the factors that contribute to personal spending and savings decisions.</p>	<p><u>Variation for Grades 5-8, #2</u> What did Once-ler mean by “UNLESS”? What responsibility does he seem to think “someone like you” needs to take? What kinds of things can we do today to ensure that trees will be available for all different purposes in the future? Compare the Once-ler’s attitude toward the environment at the beginning of the story with his attitude at the end. The Once-ler explains his actions by saying, “If I didn’t do it, someone else would.” Is this a good excuse for doing what he did? The Lorax Says he speaks for the trees. What does this mean to you? What is the Lorax’s attitude at the end of the story? What seems to be Dr. Seuss’s purpose in writing this fable?</p>	

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<p>Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.</p>	<p>Secondary Grades 1. Explain factors which shape places and regions over time (e.g., physical and cultural factors).</p>	<p><u>Part B #1</u> <u>The Man Who Planted Trees</u> make copies of the story for students to read, or show the video. Ask students to list what they think the major ideas are. After listing their ideas on the chalkboard, discuss the following questions with the entire group: Why do you think Elzeard did what he did? What changes did the narrator notice between his visits? What were the environmental conditions like before Elzeard planted the trees? What were they like afterward? What was the author's message about the difference one person can make?</p>	
<p>Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.</p>	<p>Middle Grades 5-8 1. Analyze how scarcity affects individuals' decisions about production and consumption of goods and services.</p>	<p><u>Part B #2</u> <u>The Man Who Planted Trees</u> Give each group an index card with one of the following statements on it. Each group should decide if students agree or disagree with the statement. 1) Humans cannot place themselves apart from nature in making decisions about natural resources. 2) Actions taken without thought or planning can have disastrous consequences. 3) Natural resources are not limitless and can be used up if they are not managed carefully for the long run. 4) Each person has a responsibility to help conserve resources and protect the environment. 5) consumers should demand that manufacturers produce products in an environmentally sound manner. <u>Part B #3</u> After students have had time for discussion, have each group read its statement and then present the results of its discussion.</p>	
<p>Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.</p>	<p>Middle Grades 5-8 1. Analyze how scarcity affects individuals' decisions about production and consumption of goods and services.</p>	<p><u>Enrichment # 1</u> Either alone or in small groups, students can write and illustrate a sequel to <i>The Lorax</i>. Consider the following questions: Does either the original Lorax story or your sequel accurately portray industry? Which version appears to best describe people's attitudes in the region you live? What social and economic implications will the actions suggested in your sequel have for ensuring a quality environment? For example, who will pay for the environmental protection? Who will pay for the damage to the environment if these actions prove unsuccessful? What does the Truffula Tree Company provide to the local economy? Who will provide the needs if the Truffula Company does not?</p>	

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		<p><u>Enrichment #2</u> Have students prepare a sequence to the key events in <i>The Lorax</i>. then, have them draw a diagram or flow chart showing the connections between characters in the story (Swomee_Swans, bar-Bar-ba-loots, Lorax) and the natural resources (Truffula trees, clean air, clean water).</p>	
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Activity Title: The Native Way		Activity Guide Page #: 343	
Objective(s): Students will: describe traditional Native American lifestyles and Native Americans' use of natural resources and the land.			
Overview: Patterns of change can be observed in human uses of natural resources. In this activity, students will explore some traditional Native American attitudes and lifestyles with respect to the land and its resources and will compare those attitudes with their own.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Middle Grades 5-8 3. Explain how cultures differ in their use of similar environments and resources.	<u>Doing the Activity #3</u> Explain that you are about to share a Native American message. Clear a space so the entire class can sit in a circle. Light a single candle in the center of the circle. Read aloud the “Message from Chief Luther Standing Bear” on student page 348. Have the students answer the questions on page 348. <u>Enrichment #1</u> How have Native American affected, and been affected by, population growth and development in the United States? <u>Enrichment #2</u> Investigate the lifestyles of indigenous people today in other parts of the world – such as Africa, Asia, or South America. Many native cultures have systems of land management that have been sustained over thousands of years. One of the consequences of population growth and development is that some of these native peoples no longer have access to the amount or kinds of land they need to sustain their traditional systems. In many cases the cultural systems have been lost forever.	
Social Studies History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.	Middle Grades 5-8 1. Describe the effects of historical changes on daily life.	<u>Enrichment #1</u> Have students research the historical existences of native peoples in your region. Determine what influence these peoples have had in your region. Find out if any traditions have been maintained and what the major influences are that affect the way these people live today. Have students consider the following questions. What influences have forests had on the history of Native American tribes? What have been the influences of	

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		grasslands? Of Wildlife? Is there a consistent philosophy about humans and their relationship to nature that you can identify in Native American cultures you studied? How have Native American affected, and been affected by, population growth and development in the United States?	
<p>Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.</p>	<p>Secondary Grades 7. Explain the benefits and conflicts resulting from encounters among cultures.</p>	<p><u>Enrichment #2</u> One of the consequences of population growth and development is that some of these native peoples no longer have access to the amount or kinds of land they need to sustain their traditional systems. In many cases the cultural systems have been lost forever.</p>	

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Activity Title: In The Good Old Days		Activity Guide Page #: 349	
Objective(s): Students will: 1) describe important events in the history of conservation; 2) explain how environmental problems and perceptions of environmental problems and perceptions of environmental quality have changed through history; 3) express the point of view of a famous figure in the history of conservation.			
Overview: Human Attitudes and values, and therefore behavior, with regard to the environment can change over the course of generations. In this activity, students study the writings of men and women who have shaped the way people think about the environment.			
Subject Area(s): Science, Social Studies, Visual Arts, Language Arts, Performing Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Secondary Grades 3. Demonstrate an understanding of the lives of selected individuals who have had a major influence on history.	Part A #2 Divide the students into teams and have each team select a historical figure from the list you prepared. In addition to finding out about the person, they should find out what life was like in the person's time, how people of the day felt about environmental quality, and how environmental concerns were communicated. The report should include: Biography of the person, a hand-copied piece of that person's writing, which addresses his or her thinking on the environment, an assessment of how events in that person's lifetime might have influenced his or her attitudes toward the environment, an assessment of general public attitudes toward the environment in that time, and a description of how the person communicated his or her message about the environment. Part A #3 Using their research, have team members prepare creative presentations that show the impact their historical figure had on the conservation or environmental movement. They can use role-playing to portray how the person felt about the environment. They can use the communications media of their historical figure's time to show how the person communicated his or her point of view and raised public awareness on environmental issues.	

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<p>Social Studies History C. Historical Inquiry, Analysis, and Interpretation Students will learn to evaluate resource material such as documents, artifacts, maps, artworks, and literature, and to make judgments about the perspectives of the authors and their credibility when interpreting current historical events.</p>	<p>Secondary Grades 1. Evaluate and use historical materials to formulate historical hypotheses regarding a specific issue (e.g., space travel), and to make predictions about the future of the issue.</p>	<p><u>Part B #1</u> Discuss with students how the writings of authors from different periods may reflect the views of their time period, as well as the authors' personal feelings. <u>Part B #4</u> Pass out a copy of "Tales of the Forest" on page 352 to each student. Explain that each of the passages expresses its author's views about forests or a viewpoint from his or her time. Give everyone enough time to read the passages. <u>Part B #5</u> Divide the group into small teams. Explain that team members should work together to find when each author lived, and to gather information about events in the author's life that might have shaped his or her view about forests. They can consult encyclopedias, periodicals, anthologies, Who' Who, or other literary references, or can look for a biographical sketch in the author's works.</p>	
	<p>Middle Grades 5-8 3. Use information from a variety of primary and secondary sources to identify and support a point of view on a controversial historical topic.</p>	<p><u>Part B #6</u> As a group, discuss how attitudes toward forests differed among the authors. You might want to use the following questions in your discussion: Can you trace any general differences in attitudes toward forests over the course of history? How could events during each author's life have affected his or her feelings toward forests? Compare certain passages to see how writing styles have changed over the course of time. How do these authors' view compare with values people have today about forests?</p>	

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Activity Title: A Look At Lifestyles		Activity Guide Page #: 353	
Objective(s): Students will: 1) analyze a Native American legend and traditional Native American attitudes toward using the land; 2) identify some of the values of the Early American pioneers; 3) create a chart comparing our own environmental beliefs and behaviors with those of traditional Native Americans and early pioneers.			
Overview: By examining the historical attitudes of Native Americans and American pioneers toward the environment and natural resources, students can reflect on their own lifestyles, and identify trade-offs between simple subsistence and the modern technology-based living.			
Subject Area(s): Science, Social Studies, Language Arts, Performing Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.	Secondary Grades 5. Explain how different ways of knowing and believing have influenced human history and culture.	Part B #1 Read to the students the version of this legend titled “The White Buffalo Calf Woman and The Sacred Pipe” on student page 356, or distribute copies for the students to read themselves. After reading the legend aloud, give students their own copies to refer to. Part B #2 Discuss these questions: What are the parts of the White Buffalo Calf Woman’s sacred pipe? What do these parts stand for? What does she mean when she tells the people to talk the right direction of the Good Red Road? What do you think these places represent? Why do you think these places are important? What does it mean when the story says the people lived happily and well when they remembered that all things around them are connected like the parts of a pipe? How can we affect plants, animals, people, and the rest of the Earth by the things we do? What can we do to take care of the Earth and keep the Earth strong and healthy in the future? Part B #3 Assign students to research the traditional lifestyle customs of a local or regional Indian tribe. How did they get their food? How did they prepare their food? Where did they live? What kinds of homes did they have? What kinds of transportation did they use? What was their clothing like? What was it made from? What artifacts did they leave?	

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		<p><u>Part C #1</u> In a class discussion, ask your students to describe a pioneer. What role did pioneers have in building America? Discuss the following questions: Did pioneers settle in the forest? If so, what were the first things they probably did when they got there? Did they use the same forest resources as traditional Native Americans? What do you think pioneers learned from Native Americans? Did Native Americans learn anything from pioneers? Do you think pioneers harvested forest products for their own use? Did they sell or trade them? If so, which ones?</p> <p><u>Part C #2</u> Explain that students are going to divide into groups to explore some of the attitudes toward natural resources that the pioneer settlers had. Each group will assume the role of a pioneer family.</p> <p><u>Part C #3 and #4</u> Pass out a copy of “Pioneers in the Wilderness,” student page 357, to each group. Ask each group to assign one person to each role listed on the sheet. Each group should discuss and answer the following questions: In your role as pioneer, how would you describe your attitude toward the forest when you began establishing your homestead? What impact do you think you would have made on the environment? How does your real-life attitude toward the forest compare with the attitude you help when you imagined yourself an early settler? What factors do you think have contributed to changes in Americans’ attitudes toward the environment since the 1840’s? can we criticize early American pioneers or industrialists for exploiting the environment? Why or why not? Do you believe the practices and traditions of the past are representative in present behavior of society and industry? Why or why not? How can we more effectively judge how our actions affect the environment today?</p> <p><u>Assessment Opportunity #1</u> Have students refer to their research and class discussion as they fill out the work sheet titled “Beliefs and Behaviors” on page 358.</p>	
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		<p><u>Assessment Opportunity #2</u> Divide the class into three groups: Traditional Native American, Early Pioneer, and Modern Industrial. Have the groups discuss and combine their “Belief and Behavior” statement down to the three to five most important they can agree on.</p> <p><u>Assessment Opportunity #3</u> Hold a class debate among the three groups, with each group defending their lifestyle. As a moderator, ask each group to answer the following questions: In your lifestyle, how did you use the forest and other natural resources? In what ways did your lifestyle exploit natural resources? In what ways did your lifestyle show concern for resource conservation? In what ways did the time period in which you lived and your circumstances affect the way you used your forests and other natural resources? Did events happening outside your region influence the decisions you made about using natural resources? How did tools and technology develop during your time in history help you to conserve or to exploit natural resources?</p>	
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Activity Title: Paper Civilizations		Activity Guide Page #: 359	
Objective(s): Students will: 1) chronicle the major events in the history of papermaking; 2) create a pictorial representation of the history of paper.			
Overview: Humans have always had a strong need to record the events of their lives. From cave painting to writing paper, humans have preserved their history in many ways. In this activity, students will discover how the development of paper revolutionized the way people communicate and record information			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.	Middle Grades 5-8 2. Identify the sequence of major events and people in the history of Maine, the United States, and selected world civilizations. (See suggested list in "Secondary Grades".)	<u>Doing the Activity #1</u> Divide students into ten teams. Assign each team a numbered period in the history of papermaking. <u>Doing the Activity #2</u> After groups have read, reviewed and discussed their time period, create a mural that depicts their time period's paper making technology. <u>Doing the Activity #3</u> Each group describe it's mural to the other groups. Teams should mount their murals on the wall in chronological order. <u>Enrichment #1</u> Using different kinds of paper, representing different historical periods, have students in their groups create a collage or mosaic of paper representing those different periods in paper-making history.	
Social Studies Economics B. Economic Systems of the United States Students will understand the economic system of the United States, including its principles, development, and institutions.	Middle Grades 5-8 4. Explain the impact that major events and technological advancements have had on the Maine economy and predict future economic trends and career opportunities.	<u>Enrichment #2</u> Students can investigate current trends in the way humans record information. By interviewing parents and other adult users of computers and other electronic equipment, students will discover what kinds of information are stored in new electronic ways and what kinds still must be stored on paper. Do these systems really cut down on our paper use? What are the pros and cons for the storage of information on paper versus electronic storage?	

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Activity Title: Where Are The Cedars Of Lebanon?		Activity Guide Page #: 362	
Objective(s): Students will: 1) investigate how ancient civilizations used natural resources and affected the environment; 2) apply environmental lessons learned in the past toward solving current environmental problems.			
Overview: Throughout history, people have depended on natural resources for survival. The availability of food, water, and resources to build shelters has generally determined where humans have settled and how cultures evolved over time. In this activity, students will explore how ancient civilizations developed systems for using their natural resources.			
Subject Area(s): Social Studies, Science		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.	Secondary Grades 1. Identify and analyze major events and people that characterize each of the significant eras in the United States and world history	<u>Doing the Activity #1</u> Divide your group into two teams, and prepare for a debate on the land-use practices of the Ancient Babylonian Culture. “The downfall of the Babylonian society was primarily caused by its use and abuse of natural resources, particularly, the soil.” <u>Doing the Activity #2</u> Have students read the article on student page 364, “By the Rivers of Babylon,” and fill in the “Role of Land Use” section for the Babylonian Culture. <u>Variation #1 -4</u> Have students read page 364. Each team draw two murals one depicts a scene of Babylon before its decline and the other after its decline. Each team should present its view of Babylon’s decline. They should explain what caused each change. As a wrap-up, fill out “The Role of Land Use” on page 365 for Babylonian culture. <u>Enrichment #1</u> Have students research the land use practices of other ancient cultures. <u>Enrichment #2</u> Have students research and discuss present day problems related to land-use. <u>Assessment Opportunity</u> Examine the students’ work on the student page to see whether they identified both side of an issue, not just the side they were assigned to debate. Look for evidence that they understand that there are different approached to analyzing and interpreting historical events.	

Activity Title: Did You Notice?

Objective(s): Students will: 1) identify changes in their local environment over the course of time; 2) create a timeline to illustrate patterns of change over time.

Overview: In this Activity, students will study changes in their local environment over short and long periods and will identify patterns of change.

Subject Area(s): Social Studies, Language Arts, Visual Arts

Grade Level(s): 6-8

Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
<p>Social Studies History A. Chronology Students will use the chronology of history and major eras to demonstrate the relationships of events and people.</p>	<p>Elementary Grades Pre-K-2 1. Place individual and family experiences in historical time and place.</p>	<p>Part A #1 Ask students what major changes happened in their lives between their birth and age four. Part A #2 Brainstorm about how many have changed since they started school. Part A #3 Think about how many have changed since they woke up this morning. Part A #4 Demonstrate how students can make a timeline of their life changes from birth to present.</p>	
	<p>Elementary Grades 3-4 2. Place in chronological order, significant events, groups, and people in the history of Maine.</p>	<p>Part B #1 Ask students to gather information about the history of their community. Part B #2 Tell students that they are going to create a timeline of the history of the local community. Part B #3 Before beginning their timeline, each group should complete a "Timeline Plan" on student page 368. Part B #4 They should then draw or paint the events on the timeline mural. Enrichment #1 Get permission to paint your timeline mural on a blank outdoor or indoor wall – making a permanent artistic expression of the local history.</p>	

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<p>Social Studies History C. Historical Inquiry, Analysis, and Interpretation Students will learn to evaluate resource material such as documents, artifacts, maps, artworks, and literature, and to make judgments about the perspectives of the authors and their credibility when interpreting current historical events.</p>	<p>Elementary Grades Pre-K-2 1. Use artifacts and documents to gather information about the past.</p>	<p><u>Enrichment #2</u> Have students become cultural archaeologists and go searching with a parent for “really old stuff.”</p>	
	<p>Elementary Grades 3-4 1. Identify changes currently occurring in their daily lives and compare these to changes in daily life during a specific historic era.</p>	<p><u>Assessment Opportunity</u> Ask each team to explain the history of the changes they recorded in their section of the mural. After reviewing the entire mural, discuss the following: What are changes in the environment, wildlife, and human lifestyle? What caused some of these changes? Do you think these changes have made your community a better or worse place to live, or have they made no difference? Did any changes that were considered good at some time turn out to be bad? Can you identify any trends and what implications they might have for the future?</p>	

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Activity Title: Improve Your Place		Activity Guide Page #: 369	
Objective(s): Students will: 1) identify ways they can improve their local area; 2) carry out plans to improve the area.			
Overview: Each living thing has a habitat - a place to live that suits its needs. For human beings, the community they live in is their habitat. In this activity, students are encouraged to take action to improve their community by making some positive environmental changes.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Middle Grades 5-8 2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.	<u>Doing the Activity #1</u> Survey the local area. <u>Doing the Activity #2</u> Students sketch a simple map of the area. <u>Doing the Activity #3</u> Students create a single, large map of the site as it currently exists. <u>Doing the Activity #4</u> Have teams of students brainstorm ideas on how they might improve the area.	
	Secondary Grades 1. Use mapping to answer complex geographic and environmental problems.	<u>Doing the Activity #5</u> Your group should develop an “Action Plan” to achieve these improvements. Your group can divide into five teams, each with responsibility to prepare one of the following pieces of the plan: Background information – Who uses it? What is the need for this project? Method of study. What students found out. Recommendations. Details of the priority projects.	
	Secondary Grades 2. Appraise the ways in which maps reflect economic, social, and political policy decision making.	<u>Doing the Activity #6</u> When students have finished a draft of their plan, they should evaluate the following questions: Is there sufficient evidence to warrant action on this issue? Are there alternative actions available for use? What are they? Is the action chosen the most effective one available? What are the ecological consequences of this action? Are there legal consequences of this action? If so, what are they? Well there be social consequences of this action? If so, what are they? Will there be economic consequences of this action? If so, what are they? Do our personal values support this action? Do we	

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		<p>understand the procedures necessary to take this action? If not, who can help? Do we have the skill needed to take this action? If not, who can help? Do we have the time needed to talk this action? If not, who can help? Do we have all the other resources needed to make this action effective?</p> <p>Assessment Opportunity</p> <p>Have students present their maps, overlays, and action plans to a decision-making individual or group. Have that person or group provide feedback on the thoroughness and clarity of their plan and presentation.</p>	
<p>Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.</p>	<p>Secondary Grades 1. Develop and defend a position on a public policy issue within our democracy.</p>	<p>Enrichment #1 Hold a simulated PTA or council meeting and have students present their plans.</p>	

SECTION ONE: DIVERSITY

<i>Activity Title:</i> The Shape Of Things		<i>Activity Guide Page #:</i> 3	
Objective(s): Students will: identify common shapes appearing in the natural and built environment as a way of understanding the function of shapes.			
Overview: As humans we depend on all of our senses - touching, tasting, hearing, smelling, and seeing - to gather impressions of our environment. Our brain sorts out the diversity of sizes, colors, and shapes that we see. In this activity, students will focus their eyes on the many shapes that define both our natural and built environment.			
Subject Area(s): Visual Arts, Language Arts, Math, Science		Grade Level(s): Part A: PreK-K; Part B: K-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
<p>Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.</p>	<p>Elementary Grades Pre-K-2 9. Identify the use of the arts in daily experiences.</p>	<p>Part A #2 Go for a walk with students. Part A #4 Give them time to look for the object you're "spying." If they find other objects that also have that shape, acknowledge their observations and encourage them to</p>	<p>Students and teacher must complete the necklace in "Getting Ready."</p>

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		<p>continue looking for the object...</p> <p>Part A #6</p> <p>Ask students to recall things they saw with each shape.</p> <p>Have the students draw a picture of an object they spied with their shape.</p>	
	<p>Elementary Grades Pre-K-2</p> <p>10. Demonstrate ways in which the arts can be used in interdisciplinary activities.</p>	<p>Part B #3</p> <p>Tell the students they'll take a walk to look for shapes in the natural and built environment.</p>	<p>Allow each student to share with the group the shape they found in the environment.</p>

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<i>Activity Title:</i> The Forest Of S.T. Shrew		<i>Activity Guide Page #:</i> 20	
Objective(s): Students will: 1) identify microhabitats in the forest by drawing pictures or writing a story describing a microhabitat; 2) describe some of the plants and animals that characterize several microhabitats within the forest.			
Overview: By taking a "shrew's-eyeview" of life in the woods, your students will gain an appreciation for the variety of living things that make forests their homes, and for the variety of habitats within forests.			
Subject Area(s): Science, Language Arts, Visual Arts.		Grade Level(s): 1-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 2. Experiment with art forms.	Activity #6 Have students draw pictures of the story using crayons and markers.	
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Activity #6 Have older students create a forest scene with flip-up windows that reveal the hidden life of the forest. (Explanation on how-to follows in book).	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.		

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<i>Activity Title:</i> Planet Of Plenty		<i>Activity Guide Page #:</i> 24	
Objective(s): Students will: 1) investigate the diversity of plants and animals on a small plot of land; 2) explain the value of a diversity of life forms in a particular ecosystem.			
Overview: In this activity, students will pretend they are visitors from outer space, viewing life on Earth for the first time. By describing in minute detail, all the life they find in a small plot of land, they will become more aware of diversity of life on Earth and will better understand its importance.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): 4-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Part C #1</u> Give each team time to prepare its presentation. Encourage them to use posters, data charts, drawings, movements, sounds, or anything else to describe the life forms they encountered.	Each student must participate in the preparation of the visual or oral presentation.

PICTURE

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<i>Activity Title:</i> Can It Be Real?		<i>Activity Guide Page #:</i> 30	
Objective(s): Students will: 1) study the characteristics of unusual plants and animals; 2) describe how plants and animal species are adapted to a particular set of environmental conditions.			
Overview: A beetle that drinks fog. A flower that smells like rotting meat. A fish that "shoots down" its prey. Are these plants and animals for real? In this activity, your students will discover extraordinary plants and animals, and will gain insight on how they are uniquely adapted to environmental conditions.			
Subject Area(s): Science, Language Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Part B #2</u> After researching their plant or animal, they should create a poster describing it. The poster should include a drawing of their plant/animal in its habitat and an explanation of how it's adapted to its environment.	This standard will emphasize the use of art to communicate meaning.
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).		This standard will emphasize the use of art to communicate meaning.
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.		Teacher needs to encourage the use of a variety of materials.

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<i>Activity Title: A Few Of My Favorite Things</i>		Activity Guide Page #: 48	
Objective(s): Students will: 1) explain how the different materials that go into making a product all come from natural resources; 2) identify natural resources as being renewable or nonrenewable; 3) identify the steps that go into making a product; 4) describe some of the impacts from obtaining and processing natural resources for making products.			
Overview: here's a way to give your students a better appreciation for how many natural resources they depend on in their day-to-day lives. By tracing the resources that go into making one item, they will learn how the manufacturing of just one product can have an impact on the environment.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Activity #8 Students must create a poster that visually represents the materials, resources and energy that go into making it.	A sample/model poster would be advisable. This indicator helps develop #4 to communicate ideas.
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Activity #8</u>	Enhances the meaning in social studies and science.

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<i>Activity Title:</i> People Of The Forest		<i>Activity Guide Page #:</i> 54	
Objective(s): Students will: 1) describe the lifestyles of several forest-dwelling peoples of the present or past and ways that they depend upon the forest; 2) describe some of the effects forest people have on their environment; 3) focusing on a day in the life of a member of one group of forest people.			
Overview: To the Mbuti Pygmies of Africa, the Yanomami and the Kuna of Latin America, and other people around the world, the forest is home. More than just a place to live, the forest provides for all of their needs. By comparing and contrasting different forest peoples, both past and present, your students can learn about some of the ways people have depended on forests throughout history.			
Subject Area(s): Social Studies, Language Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Part B #2 Create a poster, display or exhibit that represents forest dwellers.	Sample/model poster or exhibit would be advisable.
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Part B #2</u>	Enhances the meaning in social studies and science.
	Middle Grades 5-8 8. Perform a variety of styles and types of music, dance, and theatre.	Enrichment #2 Perform a dramatization depicting the forest cultures studied.	This indicator is for theatre.
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	Enrichment #2	This indicator is a performance piece to communicate meaning.
Visual and Performing Arts B. Cultural Heritage Students will understand the cultural contributions (social, ethical, political, religious dimensions) of the arts, how the arts shape and are shaped by prevailing cultural and social beliefs and values, and recognize exemplary works from a variety of cultures and historical periods.	Secondary Grades 5. Develop visual and/or performing art work in response to a historical, social or cultural condition using a variety of forms.	Enrichment #2	Indicator helps develop the performing art work in response to social and cultural conditions.

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<i>Activity Title:</i> Tale Of The Sun		<i>Activity Guide Page #:</i> 56	
Objective(s): Students will: 1) describe how stories reveal the beliefs of the people who tell them; 2) read or listen to an American Indian story to gain insight on the vital importance of the sun.			
Overview: Every culture in the world has stories that are part of its history and tradition. These stories reveal the beliefs of the people who tell them. For example, many stories teach lessons in proper attitude and behavior. In this activity, your students can analyze a story told by the Muskogee (Creek) Indians of present-day Oklahoma. Later, students can read and discuss stories told in other cultures from around the world.			
Subject Area(s): Language Arts		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 1. Investigate the characteristics and purposes of each of the arts to communicate ideas, feelings, and meaning.	Enrichment Students can write their own short folktale incorporating information about plants/animals along with lessons they think are important. May illustrate the story also.	
	Elementary Grades Pre-K-2 2. Experiment with art forms.	<u>Enrichment</u>	
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Enrichment</u>	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Enrichment</u>	
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Enrichment</u>	Teacher may want to add a component for student reflection and self-evaluation as it is not inclusive with this PLT activity.
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Enrichment</u>	

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SECTION TWO: INTERRELATIONSHIPS

<i>Activity Title:</i> Adopt A Tree		<i>Activity Guide Page #:</i> 65	
Objective(s): Students will: 1) describe a chosen tree using personal observation and investigation, and organize information about the tree; 2) identify relationships between their trees and other organisms; 3) put together a book or portfolio about their tree.			
Overview: This activity will encourage students' awareness of individual trees over time, as well as incorporate various other subjects. By adopting individual trees, students will gain greater awareness and appreciation of their local environments.			
Subject Area(s): Science, Math, Language Arts, Visual Arts, Social Studies		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	<u>Enrichment #2</u> Students should create a picture of a tree with flip-up windows portraying life on, in or around their tree.	Diagram of flip-up windows is included on page 67. This indicator is for visual arts 3-D.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Enrichment #2</u>	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Enrichment #2</u>	This activity primarily allows for practice in a new technique.
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Enrichment #2</u>	
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Enrichment #2</u>	

Project Learning Tree Links/Visual and Performing Arts

Adopt a Tree Questions			Activity Guide Page #: 68
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 2. Apply previously learned principles to perform, create, revise, and/or refine works.	Adopt a Tree Questions Worksheet #3 Draw a picture of a chose tree from several perspectives.	prospective drawing knowledge is a prerequisite for the activity's success.
	Middle Grades 5-8 2. Use the expressive qualities of the elements and principles of each art form to explore a variety of styles in their work.	<u>Adopt a Tree Questions Worksheet #3</u>	this indicator primarily deals with the use of one principle of an art form; perspective drawing.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Adopt a Tree Questions Worksheet #3</u>	
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Adopt a Tree Questions Worksheet #3</u>	enhances the meaning in the science discipline.

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> Trees As Habitats		<i>Activity Guide Page #:</i> 70	
Objective(s): Students will: 1) take inventory of the plants and animals that live on, in, and around trees; 2) identify ways those animals and plants depend on trees for survival, and in turn, influence the trees; 3) for Variation 2 - investigate how buildings provide a habitat for plants, animals, and people.			
Overview: From their leafy branches to their tangled roots, trees provide a habitat for a host of plants and animals. In this activity, your students will discover how plants and animals depend on trees in many ways.			
Subject Area(s): Science, Math, Social Studies, Visual Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Activity #4 Have students organize their collected information into a booklet/portfolio. Ask students to identify how each plant/animal benefits from the tree, and how it affects the tree...	In order to meet this indicator, students must be required to illustrate their findings in Step 4 of the activity.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Enrichment #2 Have students draw pictures depicting ways that trees provide a habitat to animals and other plants or the entire group can work on a tree habitat mural.	When doing a mural each student must participate in the creation and execution of a component of the mural.
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	Enrichment #2	Same as above
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	Enrichment #2	Same as above.

Project Learning Tree Links/Visual and Performing Arts

Activity Title: Birds And Worms		Activity Guide Page #: 77	
Objective(s): Students will: 1) simulate how predators use their vision to find prey; 2) describe some different ways animals use camouflage for survival; 3) invent a fictional animal that is camouflaged for its particular environment.			
Overview: Camouflage is an important survival strategy in the animal kingdom. In this activity, student swill discover the value of protective coloration as they pretend to be birds in search of colored worms or bugs.			
Subject Area(s): Science, Math, Physical Education		Grade Level(s): K-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	Enrichment #2 Ask students to use an assorted art supply to create a make-believe camouflaged creature. Have students suggest advantages of their creatures camouflage and the environment that suits it best.	Can be used for a visual 3-D sample in indicator #1.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Enrichment #2</u>	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Enrichment #2</u>	
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Enrichment #2</u>	
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Enrichment #2</u>	
Visual and Performing Arts C. Criticism and Aesthetics Students will reflect upon and assess the characteristics and merits of art works.	Elementary Grades 3-4 3. Listen to and/or view a dramatic, musical, dance, or visual art work and provide feedback to the artist (peer).	<u>Enrichment #2</u>	should view a visual art piece and provide feedback on peer's choices.
	Elementary Grades 3-4 6. Examine the effect of artistic choices on others and on the environment.	<u>Enrichment #2</u>	

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> Three Cheers For Trees		Activity Guide Page #: 93	
Objective(s): Students will: 1) describe the ways in which trees benefit people; 2) make pictures or models depicting how trees may be used to improve the human-made environment.			
Overview: It's easy to take for granted both trees and the many benefits they provide. Here's a way to start your students thinking about how much trees add to people's lives.			
Subject Area(s): Science, Social Studies, Visual Arts		Grade Level(s): 1-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 2. Experiment with art forms.	Activity #2 Ask students to draw an area where trees are commonly found without the trees in the picture.	To meet this standard, each student must draw an area; an extended list could be developed by the teacher.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Activity #2</u>	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Activity #3 Students redraw the area from Activity #2, except adding trees and bushes.	This can also be done on a transparency film as an overlay.
	Secondary Grades 4. Use the elements and principles of design to demonstrate multiple solutions to specific visual or performing arts problems.	<u>Activity #3</u>	Students may be required to complete more than one overlay to make the indicator.
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Activity #3</u>	
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Activity #3</u>	

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> Every Drop Counts		<i>Activity Guide Page #:</i> 122	
Objective(s): Students will: 1) monitor their daily actions and estimate the amount of water they use in a day; 2) describe how water is wasted and why it is important to conserve it; 3) design and implement a water conservation plan; 4) determine the amount of water and money saved through their plan.			
Overview: It's easy to waste water and even easier to take water for granted. Water pours out of our faucets as though it were endlessly available. but the truth is that fresh water supplies are dwindling. Fortunately, it's just as easy to conserve water as it is to waste! Try this activity to help your class (and maybe the whole school) cut back on water waste.			
Subject Area(s): Science, Social Studies, Math		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Part B #1</u> Students can create posters to teach others about water conservation.	Must include art work or information displayed during the graphic art principles.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Part B #1</u>	
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Part B #1</u>	
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Part B #1</u>	

SECTION THREE: SYSTEMS

<i>Activity Title:</i> Web Of Life		<i>Activity Guide Page #:</i> 148	
Objective(s): Students will: 1) collect information about various organisms in an ecosystem; 2) create a mural that depicts the interdependence of various organisms with other components in an ecosystem; 3) create a simulated web of life using a ball of string.			
Overview: In this activity, students will take a close look at one particular ecosystem (a forest) and will discover the ways that plants and animals are connected to each other. By substituting the appropriate information, you can also use the activity to study other ecosystems, such as oceans, deserts, marshes, or prairies.			
Subject Area(s): Science, Language Arts, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Activity #7 Create a forest mural using magazine pictures or student drawings.	To encourage a new technique teachers may encourage the use of magazines for the mural and/or use of photography done by the students of the organism studied.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Activity #6 Students are to find pictures, create drawings or take photographs of the organism that is being studied.	To meet the performance indicator, the student must draw or photograph the organism studied.
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Activity #6</u>	
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Activity #6</u>	

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> Are Vacant Lots Vacant?		<i>Activity Guide Page #:</i> 153	
Objective(s): Students will: 1) describe plants and animals that live at and around the study site; 2) give examples of and describe ecological relationships between biotic and abiotic elements at the study site.			
Overview: Look closely and you will see that a vacant lot is not so vacant! Plants of all kinds thrive in vacant lots, along with a host of animals such as insects, birds and mammals. In this activity, a nearby vacant lot, overgrown strip, or a landscaped area will provide a rich laboratory for students to examine elements of an ecosystem.			
Subject Area(s): Science, Math, Visual Arts		Grade Level(s): K-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Activity #6 Have students make a visual presentation of a study site (12" square) using a variety of media equipment and materials.	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Activity #6</u>	
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	Enrichment #1 Have students draw a map that shows the location of the plants and animals from their study site.	Enrichment #1 could also be used as a presentation option for #6 in the original activity. The map would best fulfill the performance indicator if it was illustrated.

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Activity Title: Tropical Treehouse		Activity Guide Page #: 160	
Objective(s): Students will: 1) describe the plants and animals that live in different levels of the tropical rainforest; 2) examine and discuss a case study that involves the rights of native inhabitants of a tropical rainforest in a national park; 3) describe the sounds they might encounter when visiting a rainforest.			
Overview: In this activity, studying tropical rainforests and issues involving the use of rainforests will enable your students to make more informed decisions regarding the future of such regions. While tropical rainforests and the temperate rainforests of North America operate on many of the same ecological principles, they differ greatly in their climates, and in the types of soil, plants, and animals that make up the forest ecosystems.			
Subject Area(s): Science, Social Studies, Language Arts, Performing Arts, Visual Arts.		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 2. Experiment with art forms.	Inside the Rainforest Part A #4 Let students develop a classroom or hall display on the rainforest.	
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Part A #4</u>	Each student must create a part of the mural themselves to meet indicator criteria.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Part A #4</u>	Each student must create a part of the mural themselves to meet indicator criteria.
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Part A #4</u>	
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Part A #4</u>	Secondary students would enhance their knowledge in science and social studies.

Project Learning Tree Links/Visual and Performing Arts

	Elementary Grades Pre-K-2 15. Understand that the success of musical, theatrical, and dance groups depends on collaboration.	Jungle Tunes Variation Students must recreate a rainforest of sound by making sounds of different inhabitants during a rainstorm. The “symphony” should be under the direction of an “orchestra leader.”	This activity develops expression in theater.
	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	Variation	
	Middle Grades 5-8 8. Perform a variety of styles and types of music, dance, and theatre.	<u>Variation</u>	

<i>Activity Title: 400-Acre Wood</i>		<i>Activity Guide Page #: 169</i>	
Objective(s): Students will: 1) create a management plan for a hypothetical piece of public land, taking into account factors such as ecosystem stability, monetary income or costs, wildlife, water, and visitors; 2) experience the analysis and decision making that goes into managing forest land.			
Overview: In this activity, students will play the role of managers of a 400-acre (162-hectare) piece of public forest. Through these roles, students will begin to understand the complex considerations that influence management decisions about forest lands.			
Subject Area(s): Science, Math, Social Studies		Grade Level(s): 7-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Activity #6 Students must illustrate a 400-acre piece of land that will be used on a map.	The use of colors and symbols for illustration may be a new technique.

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<i>Activity Title:</i> Make Your Own Paper		<i>Activity Guide Page #:</i> 176	
Objective(s): Students will: 1) make recycled paper from scrap paper; 2) describe the steps of the papermaking process and identify the elements and outputs of the process; 3) compare making paper by hand to the process used in factories.			
Overview: paper is one of many products that is manufactured from forest resources. In this activity, students investigate the papermaking process by trying it themselves. While papermaking can be rather messy, it is well worth the effort. Students are usually thrilled to find that they can make paper and that their product is practical as well as beautiful.			
Subject Area(s): Science, Social Studies, Language Arts		Grade Level(s): 1-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 2. Experiment with art forms.	Variation Students can create pictures by layering pulp made of different colors and materials.	This develop personal expression in 2-D or 3-D visual art.
	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	<u>Variation</u>	
	Middle Grades 5-8 3. Discriminate among the qualities and characteristics of art media, techniques, and processes for the purposes of selecting appropriate media to communicate artistic ideas.	<u>Variation</u>	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Variation</u>	

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> A Look At Aluminum		<i>Activity Guide Page #:</i> 180	
Objective(s): Students will: 1) understand how the unique properties of aluminum make it invaluable for many products and technologies on which we depend; 2) describe the steps involved in extracting bauxite and processing aluminum from bauxite; 3) explain the environmental impacts of producing new aluminum and recycling aluminum products.			
Overview: This activity will give your students a better appreciation for aluminum, a nonrenewable but recyclable natural resource they use every day. they will learn the steps that go into making aluminum products and will get a better idea of the environmental impact that using this resource has.			
Subject Area(s): Science, Social Studies		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Part B #1</u> Students will create posters that teach people about recycling aluminum cans.	Posters must contain illustrations and/or utilize graphic art principles
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Part B #1</u>	Poster is used to communicate ideas and meanings.
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.	<u>Part B #1</u>	This activity enhances meaning in social studies and science.

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> On The Move		<i>Activity Guide Page #:</i> 185	
Objective(s): Students will: 1) compare various transportation methods for getting to and from school; 2) describe the transportation systems their community uses; 3) design or propose a practical and efficient transportation system for the future.			
Overview: In this activity, student will examine transportation systems, which are vital to their community.			
Subject Area(s): Science, Math, Social Studies, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	Part B #3 Students must design a physical model or illustration of a new system for transporting materials.	This develops personal expression in d-D visual art if a model is made; 2-D if an illustration is made.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Part B #3</u>	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Part B #3</u>	
Visual and Performing Arts C. Criticism and Aesthetics Students will reflect upon and assess the characteristics and merits of art works.	Middle Grades 5-8 3. Demonstrate an understanding of the difference between a personal opinion and an educated judgment about the meaning of various works.	<u>Part B #3</u>	Students must be given the opportunity to choose an art medium.
	Middle Grades 5-8 6. Critique their own work and the work of others based upon an aesthetic criterion.	<u>Part B #3</u>	

Project Learning Tree Links/Visual and Performing Arts

Activity Title: I'd Like A Place To Visit Where . . .		Activity Guide Page #: 188	
Objective(s): Students will: 1) describe the characteristics of their favorite recreational area, explain the importance of recreational areas to people and other living things; 3) conduct a project at a local park to improve a habitat or enhance its suitability to people.			
Overview: In this activity, students will explore the concept that recreation areas are essential elements of a community. By working on a project to improve a local park, they will also learn about the community's system for managing open spaces.			
Subject Area(s): Science, Social Studies, Language Arts, Physical Education, Visual Arts		Grade Level(s): PreK-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	Part A #2 Students can draw a picture or map to go with the fun place that was described to visit.	
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Part A #2	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Part A #2</u>	
	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	<u>Part B #3</u> Students can design their own ideal park in a large foil roasting pan.	Students must do this individually to meet the standards. This provides an opportunity for personal expression in e-D visual art.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Part B #3</u>	
	Middle Grades 5-8 3. Discriminate among the qualities and characteristics of art media, techniques, and processes for the purposes of selecting appropriate media to communicate artistic ideas.	<u>Part B #3</u>	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Part B #3</u>	

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> Planning The Ideal Community		<i>Activity Guide Page #:</i> 191	
Objective(s): Students will: 1) map the locations of services and resources in their community; 2) create a map of an "ideal" community that includes all the services and resources people need to live there.			
Overview: In this activity, students will explore the elements that compose a human community. They will survey the area around their school, looking for community systems that help them live there. Then they will plan an ideal community that meets all the needs of its members.			
Subject Area(s): Math, Social Studies, Language Arts, Visual Arts		Grade Level(s): 6-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Part B #2 In groups, students plan and draw a map of their ideal community.	Part A must be completed to assure success of Part B. This includes a student survey of their community resources. To meet this alignment the students must each be responsible for the art work on the map.
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).		This activity is a visual piece to communicate ideas, feelings and meaning.

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> Democracy In Action		<i>Activity Guide Page #:</i> 197	
Objective(s): Students will: 1) compare two citizen groups, special-interest groups, or government agencies involved in the same issues; 2) create visual representations of the two groups; 3) explain ways students can become involved in the civic action process through participation in such groups.			
Overview: democratic systems depend on the involvement of citizens in policy making and decision making. This activity will help students learn about the roles and responsibilities of citizens' groups in environmental policies and decision making, and about how young people can become involved in the process.			
Subject Area(s): Social Studies, Visual Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Activity #7 Have them draw a coat of arms representative of a special interest group, organization or agency that is involved in making decisions about a topic the student is interested or concerned about.	The coat of arms pictured on page 198 is divided into 6 parts. To meet this standard groups should be sized to allow each student to complete a section individually.
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.		This activity enhances meaning in Language Arts (research) and social studies.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Part B #4 Students will make posters summarizing the process for making their idea into a law. The posters will include a picture of the community before and after the law.	
	Secondary Grades 9. Use skills and knowledge of arts elements and principles, whenever applicable, to solve problems or enhance meaning in other disciplines.		This activity enhances skills in language arts and social studies.

Project Learning Tree Links/Visual and Performing Arts

<i>Activity Title:</i> Power Of Print		<i>Activity Guide Page #:</i> 205	
Objective(s): Students will: 1) compare different sections of a daily newspaper; 2) analyze some of the ways that ideas and opinions are expressed through word choice; 3) research opposing sides of a local environmental issue; 4) write articles on environmental issues using both objective and subjective points of view.			
Overview: Newspapers keep the community informed about current events and trends, provide a forum for discussion of public issues, and are a source of entertainment. In this activity, students will examine articles from different sections of the newspaper by comparing and contrasting the different types of words and styles they employ.			
Subject Area(s): Social Studies, Language Arts, Visual Arts, Performing Arts.		Grade Level(s): 3-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Middle Grades 5-8 2. Use the expressive qualities of the elements and principles of each art form to explore a variety of styles in their work.	Part B - Issues in Print -Variation Research the facts about the issue by interviewing people, requesting information from groups or by finding information from the library. Oral presentations performed after research is completed. Variation #4 After studying advertising, persuasive writing, and class discussions, students create their own advertisement by creating posters. Create a commercial involving a variety of art forms or a combination of them.	This activity must be completed individually to meet the standard. Posters meet visual arts requirements.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Part B Variation #4 Enrichment #4 Students must compose songs or rap expressing their concerns about the environment.	This activity must be completed individually to meet the standard. Posters meet visual arts requirements.
	Middle Grades 5-8 8. Perform a variety of styles and types of music, dance, and theatre.		Commercials involving drama, music & dance would meet different components of performance indicators #2, and #8.
Visual and Performing Arts B. Cultural Heritage Students will understand the cultural contributions (social, ethical, political, religious dimensions) of the arts, how the arts shape and are shaped by prevailing cultural and social	Middle Grades 5-8 2. Compare and contrast the characteristics and purposes of the arts from various cultures, historical periods, and social groups.	Enrichment #2 Students will examine editorial cartoons on an environmental issue. Enrichment #3 Students will examine billboards for effectiveness of relaying a message. Enrichment #4 Students listen to popular music and will	This activity compares characteristics of different social groups. The students can compare cartoons, billboards and music that share similar subject matter or ethics. Billboards are not legal in Maine so another public advertising media would need to be substituted.

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beliefs and values, and recognize exemplary works from a variety of cultures and historical periods.		compare the music for artists intentions of meanings. How does the song effect you?...	
	Middle Grades 5-8 4. Compare the characteristics and purposes of works, in two or more arts forms, that share similar subject matter, historical periods, ethics, or cultural context.	<u>Enrichment #2</u> <u>Enrichment #2</u> <u>Enrichment #4</u>	Same as above.
Visual and Performing Arts C. Criticism and Aesthetics Students will reflect upon and assess the characteristics and merits of art works.	Middle Grades 5-8 3. Demonstrate an understanding of the difference between a personal opinion and an educated judgment about the meaning of various works.	Part A #4 Students will read cartoons and discuss the purpose, effectiveness and the authors views on issues.	To meet this performance indicator, the teacher should use cartoons that show a point of view on an issue that the students can understand.
	Middle Grades 5-8 4. Compare and contrast the effectiveness of selected media, techniques, and processes in communicating ideas.	Part B #2 Students will compare and contrast the effectiveness of various advertisements.	

SECTION FOUR: STRUCTURE AND SCALE

<i>Activity Title:</i> The Closer You Look		<i>Activity Guide Page #:</i> 217	
Objective(s): Students will: 1) describe the overall structure of a tree; 2) describe the structure and function of a tree's principle parts.			
Overview: All students, no matter how young, have an idea of what a tree looks like. But many are unfamiliar with either the actual of a tree or the function of its principle parts. In activity, your students will take a closer look at trees and their parts.			
Subject Area(s): Science, Visual Arts, Language Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 2. Experiment with art forms.	Activity #1 Students will draw a picture of a tree from memory. Activity #4 After discussing and viewing the pictures, students will draw a picture of a tree again. Activity #5 The students will compare and contrast their original and second drawing, as well as their tree drawings with peers.	
	Elementary Grades Pre-K-2 10. Demonstrate ways in which the arts can be used in interdisciplinary activities.	<u>Activity #1</u> Activity #4 Activity #5	
	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	<u>Activity #1</u> Activity #4 Activity #5	Develops expression in 2-D visual art.
	Elementary Grades 3-4 2. Apply previously learned principles to perform, create, revise, and/or refine works.	<u>Activity #1</u> Activity #4 <u>Activity #5</u>	Previously learned principles will be used to create, revise, and refine visual art.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Activity #1</u> Activity #4 <u>Activity #5</u>	Students must complete the entire activity as described to assure alignment.
	Elementary Grades 3-4 7. Listen to and/or view a dramatic, musical, dance, or visual art work and provide feedback to the artist (peer).	<u>Activity #1</u> Activity #4 Activity #5	
	Middle Grades 5-8	<u>Activity #1</u>	

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	4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Activity #4</u> <u>Activity #5</u>	
	Secondary Grades 1. Create a visual or performance piece to communicate an idea, feeling, or meaning using: a distinct style; imagination and technical skill; and the creative process, reflection, and self-evaluation (problem-solving skills).	<u>Activity #1</u> <u>Activity #4</u> <u>Activity #5</u>	
Visual and Performing Arts B. Cultural Heritage Students will understand the cultural contributions (social, ethical, political, religious dimensions) of the arts, how the arts shape and are shaped by prevailing cultural and social beliefs and values, and recognize exemplary works from a variety of cultures and historical periods.	Elementary Grades 3-4 4. Compare the characteristics of works in two or more visual and performing art forms that share a similar subject matter, historical period, or cultural context.	<u>Activity #5</u> Students compare first and second drawing of trees.	First, students will compare the work of 2 visual pieces that share a similar subject; they will then compare more visual pieces.
Visual and Performing Arts C. Criticism and Aesthetics Students will reflect upon and assess the characteristics and merits of art works.	Elementary Grades Pre-K-2 1. Explain likes and dislikes of a work of art, music, dance, drama.	<u>Activity #5</u>	
	Elementary Grades 3-4 3. Listen to and/or view a dramatic, musical, dance, or visual art work and provide feedback to the artist (peer).	<u>Activity #5</u>	Students will be explaining their likes and dislikes of the works of arts.
	Middle Grades 5-8 6. Critique their own work and the work of others based upon an aesthetic criterion.	<u>Activity #5</u>	

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<i>Activity Title:</i> To Be A Tree		<i>Activity Guide Page #:</i> 219	
Objective(s): Students will: create a tree costume and learn the structure and function of tree parts.			
Overview: By making a tree costume, your students will gain awareness of a tree's structure and functions.			
Subject Area(s): Science, Visual Arts, Performing Arts		Grade Level(s): K-4	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 2. Experiment with art forms.	Activity #3 Students must make a vest that is representative of the layers of a tree.	Because students are using many tools and materials to construct the vests, Standard A indicators 2 and 14 are easily met.
	Elementary Grades Pre-K-2 14. Use materials and tools in a safe and responsible manner.	<u>Activity #3</u>	
	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	<u>Activity #3</u>	Are working on 3-D visual art for indicator 1 Standard A.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	<u>Activity #3</u>	Are working on 3-D visual art for indicator 1 Standard A.
	Elementary Grades 3-4 8. Begin to develop skill in playing a musical instrument and/or singing and performing simple compositions.	Students learn and sing "Oh Learning Tree" found in the guide.	Music is in the book and needs to be taught to the students.

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<i>Activity Title:</i> Tree Factory		<i>Activity Guide Page #:</i> 223	
Objective(s): Students will: 1) describe the general structure of a tree; 2) explain how different parts of a tree help the tree function.			
Overview: By acting out the parts of a tree, your students will see how a tree works like a factory. Afterward, they can create their own "tree factories".			
Subject Area(s): Science, Physical Education, Performing Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 1. Investigate the characteristics and purposes of each of the arts to communicate ideas, feelings, and meaning.	Variation #2 Students act out answers to the questions in regard to a tree's parts and what it needs to survive.	This activity is a performing art activity used to teach a science concept.
	Elementary Grades Pre-K-2 10. Demonstrate ways in which the arts can be used in interdisciplinary activities.	<u>Variation #2</u>	
	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	Activity #10-11 Students will act out movements and sounds of different parts of a tree. Each student is assigned a part to act out as the students build a tree made of people.	Develops personal expression in the performing arts (theatre).
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.		
	Middle Grades 5-8 2. Use the expressive qualities of the elements and principles of each art form to explore a variety of styles in their work.		
	Middle Grades 5-8 8. Perform a variety of styles and types of music, dance, and theatre.		Students perform theatre using individual styles.

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<i>Activity Title:</i> Looking At Leaves		<i>Activity Guide Page #:</i> 228	
Objective(s): Students will: 1) describe how leave shapes, sizes, and other characteristics vary from tree to tree; 2) explain how particular types of trees can be identified by their leaves.			
Overview: Are leaves hairy? Do they have teeth? In this activity, your students will take a closer look at leaves to find out more about leaf characteristics and how leaves can be used to identify trees.			
Subject Area(s): Science, Visual Arts		Grade Level(s): PreK- 8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 2. Experiment with art forms.	Enrichment Students use leaves to create a variety of art projects including leaf rubbing, pressed leaves, spotter prints, leaf print t-shirts, Cherokee leaf prints, and Leaf Batik.	Develops personal expression in 2-D/3-D visual arts.
	Elementary Grades Pre-K-2 14. Use materials and tools in a safe and responsible manner.		
	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).		
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.		
Visual and Performing Arts B. Cultural Heritage Students will understand the cultural contributions (social, ethical, political, religious dimensions) of the arts, how the arts shape and are shaped by prevailing cultural and social beliefs and values, and recognize exemplary works from a variety of cultures and historical periods.	Elementary Grades Pre-K-2 4. Experiment with works exhibiting variety in style/technique, trends, and culture.		Standard B alignment #4 for grades 3-4 and grades 5-8 can be met if the students completed 2 or more leaf activities and followed up with a comparison evaluation of projects.

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<i>Activity Title:</i> Watch On Wetlands		<i>Activity Guide Page #:</i> 258	
Objective(s): Students will: 1) study a wetland ecosystem; 2) analyze the issues and opinions relating to the management and protection of wetlands.			
Overview: If a duck can paddle in it, it's a wetland. If a duck can waddle on it, it's not. If only wetlands could be defined as simply as this, wetlands issues and legislation would be less muddy. In this activity, students will learn more about wetlands and about how land-use decisions and legislation affect these areas.			
Subject Area(s): Science, Social Studies		Grade Level(s): 7-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Part A #5 Students on the photo survey team will photograph different components of a chosen wetland and prepare a presentation in Step #6. Students on the map survey team will prepare a map using symbols of survey wetlands.	Part A is an opportunity to use a variety of techniques in the visual arts.
	Middle Grades 5-8 2. Use the expressive qualities of the elements and principles of each art form to explore a variety of styles in their work.	Part D #3 Students role play characters faced with a decision about development on a wetland.	Part D gives students the opportunity to express their artistic ability in drama.

<i>Activity Title:</i> People, Places, Things		<i>Activity Guide Page #:</i> 280	
Objective(s): Students will: 1) Explain how human communities are made up of different types of people, places, and things, and how they all fit together; 2) investigate some of the people, places, and things that make up their own community.			
Overview: By taking a closer look at their community, students can gain an appreciation for its structure and complexity. In this activity, students will develop a deeper understanding of the many people, places, and things on which they depend every day.			
Subject Area(s): Social Studies		Grade Level(s): K-3	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Enrichment #1 Students make maps of their neighborhoods that include people, places and things. A map key and scale indicator can be used.	Each student must complete their own map.

SECTION FIVE: PATTERNS OF CHANGE

<i>Activity Title:</i> Tree Lifestyle		<i>Activity Guide Page #:</i> 302	
Objective(s): Students will: 1) diagram the lifestyle of a tree; 2)compare a tree lifecycle to a human lifecycle; 3) explain the role each stage of a tree's life plays in the forest (or other) ecosystem.			
Overview: In this activity, students will discover that trees have a lifestyle that is similar to that of other living things. they will investigate a tree's role in the ecosystem at each stage of its life.			
Subject Area(s): Science, Language Arts, Visual Arts, Performing Arts		Grade Level(s): PreK-6	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 13. Demonstrate ability to recreate an existing work alone and with others.	Variation #2 Students imitate your movements as you enact the stages of a tree's life.	
	Elementary Grades 3-4 2. Apply previously learned principles to perform, create, revise, and/or refine works.	Activity #2 Students create a tree's lifecycle on paper, including illustrations of events in a trees life.	The activity sets up a minimum of 3 events in a tree's lifecycle to be illustrated.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.		
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.		

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<i>Activity Title:</i> Nothing Succeeds Like Succession		Activity Guide Page #: 306	
Objective(s): Students will: 1) explore basic relationships between species diversity and ecosystem stability; 2) identify successional stages in ecosystems based on plant and animal species; 3) draw conclusions about the process of succession based on study test plots in different stages of succession.			
Overview: Succession is a natural pattern of change that takes place over time in a forest or ecosystem. In this activity, students will study the connection between plants, animals, and successional stages in local ecosystems.			
Subject Area(s): Science, Math, Language Arts.			Grade Level(s): 3-8
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Part A Students draw a picture of a forest with overlays to show succession as described in the story provided in the guide.	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Part B Teams of students draw an illustrated map of a study site. On the map students identify and draw areas that show different succession categories.	Students must each work on a team project map.

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Activity Title: Earth Manners		Activity Guide Page #: 331	
Objective(s): Students will: express appropriate ways to treat living things and to act in forests, parks, and other natural areas.			
Overview: Children are naturally curious about their environment. They should be encouraged to explore the out-of-doors, while having respect for living things and their habitats. In this activity students will develop a set of guidelines for exploring and enjoying nature.			
Subject Area(s): Science, Social Studies, Language Arts, Visual Arts		Grade Level(s): PreK-4	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades Pre-K-2 2. Experiment with art forms.	Activity #5 Students draw a picture that illustrates a manner (rule) derived in Step #4. The line drawings will be photocopied for a coloring book.	Although Activity #5 is for 2-4 graders it may be more appropriate for older students. This is because it involves line drawings for a coloring book.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Activity #5	Same as above.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Activity #5</u>	Same as above.
	Elementary Grades Pre-K-2 5. Use improvisation to solve problems in the performing arts.	Activity #6 Students act out the manners (rules) they listed in Step #4.	This activity is suggest for grades PreK-4, but may be better suited for older students. In grades 3-4 it develops personal expression in the performing arts.
	Elementary Grades Pre-K-2 6. Perform and/or listen to a number of pieces on a given theme and create a variation.	Activity #6	Same as above.
	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	<u>Activity #6</u>	Same as above.

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<i>Activity Title:</i> Life On The Edge		<i>Activity Guide Page #:</i> 335	
Objective(s): Students will: 1) identify environmental factors that can cause species to become endangered; 2) research the current status of several endangered plants or animals; 3) present persuasive arguments for the protection of a particular plant or animal species.			
Overview: Patterns of change can be observed in the diversity of species on Earth. In this activity, students will become advocates for endangered species of plants or animals, and create "public relations campaigns" on behalf of these species.			
Subject Area(s): Science, Social Studies		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	Part B Students act as an advocate for a threatened, rare or endangered species. Students can create a public educational campaign that might include posters or TV commercials.	This activity is flexible in that it includes the potential alignment of many indicators. Posters TV Commercials
	Elementary Grades 3-4 2. Apply previously learned principles to perform, create, revise, and/or refine works.	Part B	Posters TV Commercials
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Part B	Posters TV Commercials
	Middle Grades 5-8 2. Use the expressive qualities of the elements and principles of each art form to explore a variety of styles in their work.	Part B	TV Commercials
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Part B	Posters

Exploring Environmental Issues: Focus On Forests

Activity Title: Case Study: Old Growth Forests			Page: 17
Objective(s): Students will: 1) analyze popular press articles written from different perspectives in order to learn about forest-resource issues; 2) create a special edition of a newspaper containing articles that explore the different viewpoints on old-growth forests.			
Overview: Do we have to choose between preserving an ecosystem and maintaining jobs and a supply of forest products? Is it possible to do both? The controversy over old-growth forests reflects many of the questions we currently face about the use of our public forests. Investigating old-growth issues can introduce your students to many of these tough questions and varying viewpoints. After completing this activity, your students will be able to use the skills they have developed to explore other complex environmental issues. They will also discover that there are no simple answers to such complex situations.			
Subject Area(s): Social Studies, Science, Journalism			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Secondary Grades 2. Demonstrate an understanding that a single text will elicit a wide variety of responses, each of which may be the point of view of the individual reader or listener.	Activity #2	
	Secondary Grades 3. Identify the author's purpose and analyze the effects of that purpose on the text.	Activity #8	
	Secondary Grades 4. Identify the author's point of view and analyze the effects of that point of view on the text.	Activity #2	
C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Secondary Grades 1. Demonstrate an understanding of the relationship among perception, thought, and language.	Extra, Extra #1... compare the tones and styles of different newspapers and different articles.	
	Secondary Grades 8. Identify propaganda techniques used by writers and speakers.	Activity #8	
	Secondary Grades 3. Compare the ways various	Activity #2	

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	social, occupational, and cultural groups use language, and comment on the impact of language use on the way people are viewed and treated.		
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 1. Scan a passage to determine whether a text contains relevant information.	Activity #6	
	Secondary Grades 2. Distinguish between apparent fact and opinion in nonfiction texts.	Extra Extra #1	
E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Secondary Grades 2. Reflect on, evaluate, revise, and edit a sequence of drafts to improve and polish finished work.	Extra, Extra #3	
	Secondary Grades 3. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Activity #3 & 4	
	Secondary Grades 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain: . . .	Activity #5	
	Secondary Grades 2. Demonstrate how language usage may depend on the situation.	Variations ... they can set up and videotape interviews, debates or panel discussions in which students portray different players in the issue.	
G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human	Secondary Grades 7. Write pieces and deliver oral presentations in which the organization of the work follows from the purpose.	Variations ... students can present their reports in the form of a video.	

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experience, and to communicate feelings, knowledge, and opinions.			
H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Secondary Grades 1. Develop an appropriate strategy for finding information on a particular topic.	Activity #6	
	Secondary Grades 7. Identify and use a variety of news sources (e.g., newspapers, magazines, broadcast and recorded media, artifacts), informants, and other likely sources for research purposes.	Activity #6	
	Secondary Grades 10. Analyze the validity and weigh the reliability of primary information sources and make appropriate use of such information for research purposes.	Activity #8	
	Secondary Grades 12. Report orally, using a variety of technological resources to present the results of a research.		

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Activity Title: Tough Choices			Page: 22
Objective(s): Students will: 1) learn how to analyze and resolve an environmental issue; 2) write an article that describes the competing demands people put on forests.			
Overview: We ask a lot of our forests. We expect them to provide beautiful surroundings for hiking and recreation, wildlife habitats, and steady supplies of wood and other products. As populations grow and more people use forests and wood products, it's getting tougher to meet all of their demands. In this activity, your students will read and discuss several short articles on issues related to the demands we put on our forests. Students will propose solutions to some real-life dilemmas about forests.			
Subject Area(s): Social Studies, Science, Language Arts			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Secondary Grades 1. Demonstrate an understanding that reading is a gradual process of constructing meaning and revising initial understandings.	Activity #5	
	Secondary Grades 2. Demonstrate an understanding that a single text will elicit a wide variety of responses, each of which may be the point of view of the individual reader or listener.	Activity #5	
	Secondary Grades 3. Identify the author's purpose and analyze the effects of that purpose on the text.	Activity #5	
	Secondary Grades 4. Identify the author's point of view and analyze the effects of that point of view on the text.	Activity #5	
	Secondary Grades 5. Identify the devices an author uses to persuade readers and critique the effectiveness of the use of those devices.	Activity #5	
	Secondary Grades	Activity #5	

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	8. Find the meaning of relatively uncommon technical terms used in informational texts.		
	Secondary Grades 9. Identify the philosophical assumptions and basic beliefs underlying a particular text.	Activity #5	
	Secondary Grades 11. Represent key ideas and supporting details in various written forms (e.g., outline, paraphrase, concise summary).	Activity #6	
B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Secondary Grades 3. Make abstract connections (e.g., connections about thoughts, ideas, values) between their own lives and the characters, events, and circumstances represented in various works.	Activity #6	
	Secondary Grades 8. Apply mature strategies to the reading and interpretation of lengthy adult level nonfiction texts with appropriate complexity of content and sophistication of style.	Activity #6 & 7	
C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Secondary Grades 1. Demonstrate an understanding of the relationship among perception, thought, and language.	Activity #3, 5 & 6	
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 1. Scan a passage to determine whether a text contains relevant information.	Activity #3, 5 & 6	
	Secondary Grades 2. Distinguish between apparent fact and opinion in nonfiction texts.	Activity #3, 5 & 6	
	Secondary Grades	Activity #7	

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	3. Use discussions with peers as a way of understanding information.		
	Secondary Grades 5. Analyze and synthesize the concepts and details in informational texts.	Activity #3, 5 & 6	
	Secondary Grades 6. Explain how new information from a text changes personal knowledge.	Activity #2, 3, 5, 6 & 7	
E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Secondary Grades 1. Ask pertinent questions during writing conferences and when working alone, using knowledge of personal writing strategies, strengths, and weaknesses to improve one's own writing.	Enrichment	
	Secondary Grades 2. Reflect on, evaluate, revise, and edit a sequence of drafts to improve and polish finished work.	Enrichment	
	Secondary Grades 3. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Enrichment	
	Secondary Grades 4. Evaluate the remarks and oral presentations of others to find the key ideas, and explain the ways in which these ideas were developed.	Activity #7 & 8	
F. Standard English Conventions Students will write and speak correctly, using conventions of standard written and spoken English.	Secondary Grades 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain . . .	Enrichment	

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	<p>Secondary Grades 3. Demonstrate command of the conventions involved in a formal speech, effectively engaging peers during presentation and fielding responses afterwards.</p>	<p>Activity #7</p>	
<p>G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.</p>	<p>Secondary Grades 2. Write pieces and deliver oral presentations that effectively use descriptive language to clarify, enhance, and develop ideas.</p>	<p>Enrichment</p>	
	<p>Secondary Grades 10. Make effective use of a variety of techniques to provide supporting detail (e.g., analogies, anecdotes, illustrations, detailed descriptions, restatements, paraphrases, examples, comparisons) in written work and oral presentations.</p>	<p>Enrichment</p>	
<p>H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.</p>	<p>Secondary Grades 1. Develop an appropriate strategy for finding information on a particular topic.</p>	<p>Enrichment</p>	
	<p>Secondary Grades 2. Use referencing while doing research.</p>	<p>Enrichment</p>	
	<p>Secondary Grades 3. Record significant information from events attended and interviews conducted.</p>	<p>Enrichment</p>	
	<p>Secondary Grades 4. Identify and use library</p>	<p>Enrichment</p>	

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	information services.		
	Secondary Grades 5. Use government publications, in-depth field studies, and almanacs for research.	Enrichment	
	Secondary Grades 6. Use CD-ROM, microfiche, and similar resource media for research.	Enrichment	
	Secondary Grades 7. Identify and use a variety of news sources (e.g., newspapers, magazines, broadcast and recorded media, artifacts), informants, and other likely sources for research purposes.	Enrichment	
	Secondary Grades 8. Use search engines and other Internet resources to do research.	Enrichment	
	Secondary Grades 9. Make extensive use of primary sources when researching a topic and carefully evaluate the motives and perspectives of the authors.	Enrichment	
	Secondary Grades 10. Analyze the validity and weigh the reliability of primary information sources and make appropriate use of such information for research purposes.	Enrichment	
	Secondary Grades 11. Evaluate information for accuracy, currency, and possible bias.	Activity #5, 6 & 7 Enrichment	

Activity Title: Words to Live By		Page: 42	
Objective(s): Students will: 1) learn how people's personal experiences affect their attitudes toward forests; 2) describe how people's views toward forests have changed over time; 3) express their own views about forests.			
Overview: Throughout history people have seen forests in different ways, for example, as obstacles to agricultural progress, as havens for recreation and wildlife, and as a source of income from wood products. The writings of different authors reflect the views of their time periods, as well as their own personal feelings toward forests. In this activity, your students can express their own views about forests, and then can explore different perspectives by reading excerpts from the writings of different authors.			
Subject Area(s): Social Studies, Language Arts		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Secondary Grades 3. Make abstract connections (e.g., connections about thoughts, ideas, values) between their own lives and the characters, events, and circumstances represented in various works.	Pg.43 Activity #6	
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 3. Use discussions with peers as a way of understanding information.	Pg. 43 Activity #6	
G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Secondary Grades 2. Write pieces and deliver oral presentations that effectively use descriptive language to clarify, enhance, and develop ideas.	Pg. 42 Activity #1 & 2	
H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all	Secondary Grades 9. Make extensive use of primary sources when researching a topic and carefully evaluate the motives and perspectives of	Pg. 42 Activity #4	

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content areas.	the authors.		
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<i>Activity Title:</i> In The Good Old Days		Activity Guide Page #: 349	
Objective(s): Students will: 1) describe important events in the history of conservation; 2) explain how environmental problems and perceptions of environmental problems and perceptions of environmental quality have changed through history; 3) express the point of view of a famous figure in the history of conservation.			
Overview: Human Attitudes and values, and therefore behavior, with regard to the environment can change over the course of generations. In this activity, students study the writings of men and women who have shaped the way people think about the environment.			
Subject Area(s): Science, Social Studies, Visual Arts, Language Arts, Performing Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	Activity #3 Students will research a historical figure who palyed a role in the conservation of the U.S. Will use media to communicate the historical figures points of view...	aligns with the visual 2-D art if a poster is chosen and/or performing arts theater if the radio is selected.
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	Activity #3	
	Middle Grades 5-8 8. Perform a variety of styles and types of music, dance, and theatre.	<u>Activity #3</u>	depending on the students choice of media to express their characters views, alignment may include theatre and/or music for #8A, Grades 5-8.

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<i>Activity Title:</i> A Look At Lifestyles		<i>Activity Guide Page #:</i> 353	
Objective(s): Students will: 1) analyze a Native American legend and traditional Native American attitudes toward using the land; 2) identify some of the values of the Early American pioneers; 3) create a chart comparing our own environmental beliefs and behaviors with those of traditional Native Americans and early pioneers.			
Overview: By examining the historical attitudes of Native Americans and American pioneers toward the environment and natural resources, students can reflect on their own lifestyles, and identify trade-offs between simple subsistence and the modern technology-based living.			
Subject Area(s): Science, Social Studies, Language Arts, Performing Arts		Grade Level(s): 5-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts B. Cultural Heritage Students will understand the cultural contributions (social, ethical, political, religious dimensions) of the arts, how the arts shape and are shaped by prevailing cultural and social beliefs and values, and recognize exemplary works from a variety of cultures and historical periods.	Middle Grades 5-8 2. Compare and contrast the characteristics and purposes of the arts from various cultures, historical periods, and social groups.	Enrichment Students will view movies listed in the PLT guide and using Part C questions and 4 of their own to discuss the messages that the films convey.	Students must complete Part C and the entire “Enrichment” activity to meet alignment activities.
	Middle Grades 5-8 3. Compare and contrast cultural values as expressed in works and explain how these values may differ from those of their own daily experience.	Enrichment	
Visual and Performing Arts C. Criticism and Aesthetics Students will reflect upon and assess the characteristics and merits of art works.	Middle Grades 5-8 1. Articulate and justify personal perceptions of meaning in works of visual art, music, dance, and drama.		Alignment of #1 C will be through the use of drama (movies).

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<i>Activity Title:</i> Paper Civilizations		<i>Activity Guide Page #:</i> 359	
Objective(s): Students will: 1) chronicle the major events in the history of papermaking; 2) create a pictorial representation of the history of paper.			
Overview: Humans have always had a strong need to record the events of their lives. From cave painting to writing paper, humans have preserved their history in many ways. In this activity, students will discover how the development of paper revolutionized the way people communicate and record information			
Subject Area(s): Social Studies, Language Arts, Visual Arts		Grade Level(s): 4-8	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Visual and Performing Arts A. Creative Expression Students will create and/or perform to express ideas and feelings.	Elementary Grades 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).	Activity #2 Students make a mural of the paper-making time periods.	aligns with the visual art (2-D) component.
	Elementary Grades 3-4 4. Create original works using different media, techniques, and processes to communicate ideas, feelings, and meaning.	Activity #2	
	Middle Grades 5-8 4. Use a variety of resources, materials, and techniques to design and execute art works.	<u>Activity #2</u>	Each individual student must participate in the illustrating of the mural.

Exploring Environmental Issues: Focus on Risk

<i>Activity Title:</i> What Is Risk?		<i>Page:</i> 13	
Objective(s): Students will: 1) develop a definition of risk and risk assessment; 2) become familiar with the concept of probability; 3) begin to explore the idea that there are different kinds of risks and that risk is perceived differently by different people; 4) understand that hazards and risks exist in our daily lives.			
Overview: We encounter many types of risks every day. What is meant by the term risk? What types of risks do we encounter daily? Are all risks equally likely to occur/ Are they all harmful? Why are we willing to take some risks but not others? Is anything 100 percent risk free? In this activity, students will work together to explore these and other questions as they discuss, develop, and refine their definition and concept of risk and risk assessment.			
Subject Area(s): Biology, Chemistry, Civics, Communications, Debate, Earth Sciences, Ecology, Environmental Science, Geography, Health, Language Arts, Physics, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators	Evidence of alignment (text from	Notes to ensure high alignment for every

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	(by grade clusters)	description of activity)	student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Secondary Grades 2. Demonstrate an understanding that a single text will elicit a wide variety of responses, each of which may be the point of view of the individual reader or listener.	Part A, #1	
B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	1. Distinguish between.....reader	Part A, #4	
C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Secondary Grades 1. Demonstrate an understanding of the relationship among perception, thought, and language.	Part A, #4	
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 2. Distinguish between apparent fact and opinion in nonfiction texts.	Part A, #4	
G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Secondary Grades 2. Write pieces and deliver oral presentations that effectively use descriptive language to clarify, enhance, and develop ideas.	Enrichment #1	
	Secondary Grades 5. Write pieces and deliver oral presentations that achieve distinct purposes (e.g., to persuade, evaluate, analyze, defend).	Enrichment #1 or Assessment Opportunity #1	

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Activity Title: Things Aren't Always What They Seem		Page: 21	
Objective(s): Students will: 1) develop an understanding of the differences in risk perception between lay people and experts (as well as among their classmates); 2) identify what characteristics influence people's perceptions of risk; 3) learn about different environmental risks.			
Overview: Students will identify their perception of the relative degree of risk associated with technologies, environmental hazards, and everyday activities. They will also have the opportunity to share their ideas as they compare and contrast their perceptions with those of others, including experts and lay people.			
Subject Area(s): Chemistry, Civics, Communications, Debate, Ecology, Environmental Science, Health, Human Anatomy & Physiology, Language Arts, Physics, Social Studies			
Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Secondary Grades 3. Make abstract connections (e.g., connections about thoughts, ideas, values) between their own lives and the characters, events, and circumstances represented in various works.	Part A, #10	
C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Secondary Grades 1. Demonstrate an understanding of the relationship among perception, thought, and language.	Part A, #6	
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 3. Use discussions with peers as a way of understanding information.	Part B, #2, 4, 5 & 6	
E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Secondary Grades 4. Evaluate the remarks and oral presentations of others to find the key ideas, and explain the ways in which these ideas were developed.	Part C, #6	
F. Standard English Conventions Students will write and speak correctly, using conventions of standard written and spoken English.	Secondary Grades 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain . . .	Assessment	
	2. Demonstrate command of the	Enrichment #2	

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	conventions necessary to make an informal speech or presentation, effectively engaging peers and fielding responses.		
	Secondary Grades 3. Demonstrate command of the conventions involved in a formal speech, effectively engaging peers during presentation and fielding responses afterwards.	Assessment	
G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Secondary Grades 2. Write pieces and deliver oral presentations that effectively use descriptive language to clarify, enhance, and develop ideas.	Part B, #4	
	Secondary Grades 3. Write pieces and deliver oral presentations that include a variety of sentence structures and lengths.	Part B, #4	
	Secondary Grades 4. Write pieces and deliver oral presentations that are targeted for various audiences (e.g., informed or uninformed, sympathetic or hostile).	Part C, #3	
	Secondary Grades 5. Write pieces and deliver oral presentations that achieve distinct purposes (e.g., to persuade, evaluate, analyze, defend).	Enrichment #2	
	Secondary Grades 6. Write pieces and deliver oral presentations that effectively employ explicit transitional devices in order to change a situation or to move the reader/listener through the piece.	Assessment	
	Secondary Grades 7. Write pieces and deliver oral	Assessment	

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	presentations in which the organization of the work follows from the purpose.		
	Secondary Grades 8. Write pieces and deliver oral presentations in a personal style, with a discernible voice and effective wording.	Assessment	
	Secondary Grades 9. Write essays and deliver oral presentations that reliably support and provide details for the explicitly stated generalizations.	Assessment	
	Secondary Grades 10. Make effective use of a variety of techniques to provide supporting detail (e.g., analogies, anecdotes, illustrations, detailed descriptions, restatements, paraphrases, examples, comparisons) in written work and oral presentations.	Assessment	
	Secondary Grades 11. Make effective use of a variety of techniques for introducing and representing ideas and insights in written work and oral presentations.	Assessment	
H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Secondary Grades 1. Develop an appropriate strategy for finding information on a particular topic.	Assessment	
	Secondary Grades 3. Record significant information from events attended and interviews conducted.	Extension	
	Secondary Grades 6. Use CD-ROM, microfiche, and similar resource media for research.	Enrichment #2	
	Secondary Grades 7. Identify and use a variety of news sources (e.g., newspapers, magazines, broadcast and recorded media, artifacts),	Enrichment #2	

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	informants, and other likely sources for research purposes.		
	Secondary Grades 8. Use search engines and other Internet resources to do research.	Enrichment #2	
	Secondary Grades 11. Evaluate information for accuracy, currency, and possible bias.	Assessment	

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Activity Title: Risk Assessment: Tools Of The Trade		Page: 46	
Objective(s): Students will: 1) investigate four different ways to assess risk; 2) explore the use of fault trees to assess a risk; 3) understand how toxicological and epidemiological research is used when studying risk; 4) communicate and defend a debate position.			
Overview: When attempting to determine the degree of risk associated with an event, experts conducting risk assessments rely on a variety of <i>tools of the trade</i> to generate a risk estimate. In this activity, students will learn about the applications of some of these tools, interpret information generated from using different tools, and understand how the information can be used to set priorities and make decisions.			
Subject Area(s): Biology, Chemistry, Debate, Environmental Science, Health, Human Anatomy & Physiology, Language Arts, Visual Arts		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Secondary Grades 8. Identify propaganda techniques used by writers and speakers.	Assessment Opportunity #1	
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 3. Use discussions with peers as a way of understanding information.	Part A, #4 or Part C, #7	
E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Secondary Grades 4. Evaluate the remarks and oral presentations of others to find the key ideas, and explain the ways in which these ideas were developed.	Part A, #5	
G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Secondary Grades 5. Write pieces and deliver oral presentations that achieve distinct purposes (e.g., to persuade, evaluate, analyze, defend).	Assessment Opportunity #1	
	Secondary Grades 10. Make effective use of a variety of	Assessment Opportunity #1	

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	techniques to provide supporting detail (e.g., analogies, anecdotes, illustrations, detailed descriptions, restatements, paraphrases, examples, comparisons) in written work and oral presentations.		
H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Secondary Grades 1. Develop an appropriate strategy for finding information on a particular topic.	Assessment Opportunity #1	
	Secondary Grades 7. Identify and use a variety of news sources (e.g., newspapers, magazines, broadcast and recorded media, artifacts), informants, and other likely sources for research purposes.	Assessment Opportunity #1	

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Activity Title: Communicating Risk		Page: 61	
Objective(s): Students will: 1) investigate the importance of communication in risk assessment and risk management; 2) identify guidelines for effective risk communication; 3) acquire a sense of scale using concentration analogies; 4) communicate a local risk to their community.			
Overview: Understanding risk is an integral part of the risk management process. It is critical that risk information is communicated effectively to all concerned parties. this activity allows students to explore how timely and responsible communication among experts, the media, and lay people can lead to improved decisions about risk management.			
Subject Area(s): Chemistry, Communications, Earth Sciences, Environmental Science, Health, Language Arts, Math, Social Studies, Visual Arts. Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 3. Use discussions with peers as a way of understanding information.	Pg. 64 Activity #1	
E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Secondary Grades 2. Reflect on, evaluate, revise, and edit a sequence of drafts to improve and polish finished work.	Pg. 68 Activity #4&5	
H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Secondary Grades 1. Develop an appropriate strategy for finding information on a particular topic.	Pg. 64 Activity #1	
	Secondary Grades 8. Use search engines and other Internet resources to do research.	Pg. 69 Enrichment	

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Activity Title: Decision Making: Ecological Risk, Wildfires, and Natural Hazards		Page: 92	
Objective(s): Students will: 1) develop an understanding of ecological risk; 2) apply various decision-making methods to environmental risk reduction options; 3) try making decisions under conditions of uncertainty.			
Overview: In this activity students will develop and apply decision-making skills to various environmental risk scenarios including wildland fires, natural hazards, and threats to coral reefs and mangrove swamps.			
Subject Area(s): Biology, Communications, Earth Sciences, Ecology, Economics, Environmental Science, Geography, Language Arts, Math, Social Studies. Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 3. Use discussions with peers as a way of understanding information.	Pg. 94 Activity #4	
	Secondary Grades 6. Explain how new information from a text changes personal knowledge.	Pg. 95	
G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Secondary Grades 4. Write pieces and deliver oral presentations that are targeted for various audiences (e.g., informed or uninformed, sympathetic or hostile).	Pg. 101 Extension	
	Secondary Grades 5. Write pieces and deliver oral presentations that achieve distinct purposes (e.g., to persuade, evaluate, analyze, defend).	Pg. 102 Activity #4	
	Secondary Grades 9. Write essays and deliver oral presentations that reliably support and provide details for the explicitly stated generalizations.	Pg. 102 Activity #3	
	Secondary Grades 11. Make effective use of a variety of	Pg. 95 Activity #7	

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	techniques for introducing and representing ideas and insights in written work and oral presentations.		
H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Secondary Grades 1. Develop an appropriate strategy for finding information on a particular topic.	Pg. 64 Activity #5	

Exploring Environmental Issues: Municipal Solid Waste

Activity Title: Introduction to Municipal Solid Waste: The Waste System		Page: 16	
Objective(s): Students will: 1) develop an understanding of the role MSW plays in all of our lives; 2) analyze current and historical accounts of waste management; 3) discover some of the similarities and differences in MSW management by cultures around the world and through time; 4) discover the different types of materials that make up the waste stream; 5) learn about the waste stream in their school.			
Overview: Students will develop an understanding of municipal solid waste (MSW) management and its importance to community health. Through historical examples, students will learn how people have managed waste throughout time and how it affected their lives. Students will discover connections between what types of natural resources are found in products and what is thrown away. They will also investigate the waste stream in their school by collecting, analyzing, and graphing data.			
Subject Area(s): Environmental Science, History, Language Arts, Math, Science, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
English/Language Arts A. Process of Reading Students will use the skills and strategies of the reading process to comprehend, interpret, evaluate, and appreciate what they have read.	Secondary Grades 1. Demonstrate an understanding that reading is a gradual process of constructing meaning and revising initial understandings.	Part D, #2	
	Secondary Grades 2. Demonstrate an understanding that a single text will elicit a wide variety of responses, each of which may be the point of view of the individual reader or listener.	Part D, #2	
	Secondary Grades 3. Identify the author's purpose and	Part D, #2	

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	analyze the effects of that purpose on the text.		
	Secondary Grades 4. Identify the author's point of view and analyze the effects of that point of view on the text.	Part D, #2	
	Secondary Grades 5. Identify the devices an author uses to persuade readers and critique the effectiveness of the use of those devices.	Part D, #2	
	Secondary Grades 8. Find the meaning of relatively uncommon technical terms used in informational texts.	Part D, #2	
	Secondary Grades 9. Identify the philosophical assumptions and basic beliefs underlying a particular text.	Part D, #2	
	Secondary Grades 11. Represent key ideas and supporting details in various written forms (e.g., outline, paraphrase, concise summary).	Part D, #2	
B. Literature and Culture Students will use reading, listening, and viewing strategies to experience, understand, and appreciate literature and culture.	Secondary Grades 8. Apply mature strategies to the reading and interpretation of lengthy adult level nonfiction texts with appropriate complexity of content and sophistication of style.	Part D, #2	
C. Language and Images Students will demonstrate an understanding of how words and images communicate.	Secondary Grades 1. Demonstrate an understanding of the relationship among perception, thought, and language.	Part D, #5	
	Secondary Grades 6. Use dictionaries, handbooks, and other language-related resources to evaluate the accuracy of their use of	Part A, #6	

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	English.		
D. Informational Texts Students will apply reading, listening, and viewing strategies to informational texts across all areas of curriculum.	Secondary Grades 1. Scan a passage to determine whether a text contains relevant information.	Part D, #2	
	Secondary Grades 2. Distinguish between apparent fact and opinion in nonfiction texts.	Part D, #2	
	Secondary Grades 3. Use discussions with peers as a way of understanding information.	Part D, #5	
	Secondary Grades 5. Analyze and synthesize the concepts and details in informational texts.	Part D, #4&5	
	Secondary Grades 6. Explain how new information from a text changes personal knowledge.	Enrichment #3 & 4	
E. Processes of Writing and Speaking Students will demonstrate the ability to use the skills and strategies of the writing process.	Secondary Grades 1. Ask pertinent questions during writing conferences and when working alone, using knowledge of personal writing strategies, strengths, and weaknesses to improve one's own writing.	Part D, #2	
	Secondary Grades 2. Reflect on, evaluate, revise, and edit a sequence of drafts to improve and polish finished work.	Part D, #2	
	Secondary Grades 3. Use planning, drafting, and revising to produce, on demand, a well-developed, organized piece that demonstrates effective language use, voice, and command of mechanics.	Part C, #2	
	Secondary Grades 4. Evaluate the remarks and oral presentations of others to find the key ideas, and explain the ways in	Part D, #5	

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	which these ideas were developed.		
F. Standard English Conventions Students will write and speak correctly, using conventions of standard written and spoken English.	Secondary Grades 1. Edit written work for standard English spelling and usage, evidenced by pieces that show and contain: . . .	Enrichment #4	
G. Stylistic and Rhetorical Aspects of Writing and Speaking Students will use stylistic and rhetorical aspects of writing and speaking to explore ideas, to present lines of thought, to represent and reflect on human experience, and to communicate feelings, knowledge, and opinions.	Secondary Grades 2. Write pieces and deliver oral presentations that effectively use descriptive language to clarify, enhance, and develop ideas.	Enrichment #3	
	Secondary Grades 3. Write pieces and deliver oral presentations that include a variety of sentence structures and lengths.	Part D, #2	
	Secondary Grades 4. Write pieces and deliver oral presentations that are targeted for various audiences (e.g., informed or uninformed, sympathetic or hostile).	Part D, #2	
	Secondary Grades 5. Write pieces and deliver oral presentations that achieve distinct purposes (e.g., to persuade, evaluate, analyze, defend).	Part D, #4	
	Secondary Grades 6. Write pieces and deliver oral presentations that effectively employ explicit transitional devices in order to change a situation or to move the reader/listener through the piece.	Part D, #4	
	Secondary Grades 7. Write pieces and deliver oral presentations in which the	Part D, #4	

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	organization of the work follows from the purpose.		
	Secondary Grades 8. Write pieces and deliver oral presentations in a personal style, with a discernible voice and effective wording.	Part D, #4	
	Secondary Grades 9. Write essays and deliver oral presentations that reliably support and provide details for the explicitly stated generalizations.	Enrichment #3 & 4	
	Secondary Grades 10. Make effective use of a variety of techniques to provide supporting detail (e.g., analogies, anecdotes, illustrations, detailed descriptions, restatements, paraphrases, examples, comparisons) in written work and oral presentations.	Enrichment #3 & 4	
	Secondary Grades 11. Make effective use of a variety of techniques for introducing and representing ideas and insights in written work and oral presentations.	Enrichment #3 & 4 Part C, #4	
H. Research-Related Writing and Speaking Students will work, write, and speak effectively when doing research in all content areas.	Secondary Grades 1. Develop an appropriate strategy for finding information on a particular topic.	Part D, #2	
	Secondary Grades 3. Record significant information from events attended and interviews conducted.	Enrichment #3	
	Secondary Grades 4. Identify and use library information services.	Part D, #2	
	Secondary Grades 5. Use government publications, in-depth field studies, and almanacs for research.	Part D, #2	

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	Secondary Grades 6. Use CD-ROM, microfiche, and similar resource media for research.	Part D, #2	
	Secondary Grades 7. Identify and use a variety of news sources (e.g., newspapers, magazines, broadcast and recorded media, artifacts), informants, and other likely sources for research purposes.	Part D, #2	
	Secondary Grades 8. Use search engines and other Internet resources to do research.	Part D, #2	
	Secondary Grades 11. Evaluate information for accuracy, currency, and possible bias.	Part D, #2	
	Secondary Grades 12. Report orally, using a variety of technological resources to present the results of a research.	Part D, #2	

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Activity Title: Waste-to-Energy		Page: 75	
Objective(s): Students will: 1) explain how a WTE facility works; 2) list the positive and negative merits of WTE technology; 3) research, develop, and communicate an argumant to represent a specific point of view regarding and issue; 4) participate in a democratic decision-making process.			
Overview: In this activity, students will learn how a waste-to-energy (WTE) facility functions. Through a role-playing activity, they will participate in a democratic decision-making process and will discover the many factors involved when a community makes decisions regarding the development of new solid waste management facilities. After having considered the research, students will defend specific positions and learn from other class members who advocate different positions.			
Subject Area(s): Environmental Science, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
D. Informational Texts	Grades 9-12 #3 Use discussions with peers as a way to understanding information.	p.77 Part B. #3 After students have read the cse study, discuss the major points...make sure that students have an understanding	
G. Stylistic and Rhetorical Aspects of writing and speaking.	#11 Make effective use of a variety of techniques for introducing and representing ideas and insights in oral presentations.	p.78 Each group is responsible for developing a 5-10 minute class presentation. Encourage students to develop visual aids in the presentation.	

e Changing Forest: Forest Ecology

Activity Title: Cast of Thousands		Page: 27	
Objective(s): Students will: 1) make scientific measurements of their forest; 2) examine the relationships of organisms to their environment; 3) deterine the extent to which humans have an impact on forests in their region.			
Overview: Students will further explore the variety of life in their adopted forest and will discover the importance of this biological diversity. They will take measurements, in much the same way as a forester does, to draw conclusions about the overall health of their forest. As an extension, students will compare the information they have collected with that of another class in a different region.			

Project Learning Tree Links – Secondary Modules/English Language Arts

Subject Area(s): Biology, Environmental Science, Language Arts, Geography, Math, Social Studies			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
D.	#3 Use discussions for information.	Enrichment #3 Have them all come together to share what they have learned.	
D.	#5 Analyze texts.	Measuring the Forest #5 In the forest ... dead or dying trees...	
H.	#12 Report orally on the project.	Discussion #1 Ask students to share data with each other. Ask students for most appropriate method.	
H.	#1 Develop topic.	Extension #3 Have students research the other group's region.	

Project Learning Tree Links – Secondary Modules/Math

Activity Title: Saga of The Gypsy Moth		Page: 63	
Objective(s): Students will: 1) explore ecological and social issues related to the gypsy moth; 2) consider strategies for management of the gypsy moth.			
Overview: In this activity, students will become more aware of the effects of the gypsy moth. they will formulate management plans that deal with large-scale disturbances like the gypsy moth. students will have the responsibility of advocating their specific management perspective.			
Subject Area(s): Biology, Environmental Science, History, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
G. Stylistic and Rhetorical Aspects of writing and speaking.	Grades 9-12 #5. Deliver oral presentations that achieve distinct purpose (to persuade).	p.64 Activity #4 Each team will be advocating a particular method...Each team's job is to insist for all students to learn this standard, activity should include an opportunity for all students to speak.	
	#10 Deliver oral presentations that use a variety of strategies of address.	p.64 #5. Hand out copies of "Power of Persuasion".	
D. Informational Texts	#5. Analyze and synthesize the details in informational texts.	p.65 Enrichment 1. Read the article 2. Solicit responses to the following questions.	
G. Stylistic and Rhetorical Aspects of writing and speaking.	Grades 9-12 #5 Write pieces and deliver oral presentations.	p.65 Assessment Write a report or give a presentation. What social, political aesthetic,	

Exploring Environmental Issues: Focus On Forests

Activity Title: Who Owns America's Forests?		Page: 30	
Objective(s): Students will: 1) understand the variety of management practices on forestland; 2) analyze and make inferences about information on forestlands presented in charts and graphics.			
Overview: Did you know that the American public owns 331 million acres (134 million ha) of forests, almost half (45 percent) of the 737 million acres (298 million ha) of forests in the United States? (The American Forest Council, 1991 - pamphlet). In this activity, students will read maps and will figure out where forested lands are located around the nation and whether they are publicly or privately owned.			

Project Learning Tree Links – Secondary Modules/Math

Subject Area(s): Social Studies, Geography, Math, Art		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
B. Computation	<p>Secondary #1 Use various techniques to approximate solutions, determine the reasonableness of answers and justify the results.</p> <p>Secondary #1 Create a graph to represent a real-life situation and draw inferences from it.</p>	<p>Activity Part A</p> <p>#2 Students convert some of the information presented in tables into pie figures.</p> <p>Activity Part B</p> <p>#4 Students create tables, figures in the process of presenting their gathered information about forestry issues in a certain state.</p>	

Exploring Environmental Issues: Focus on Risk

Activity Title: Chances Are . . . Understanding Probability and Risk		Page: 33	
Objective(s): Students will: 1) learn how to calculate simple probabilities; 2) develop definitions for discrete random variable, continuous random variable, binomial distribution and normal distributions; 4) develop an understanding of the relationship among probability calculations, uncertainty, and estimation of risk.			
Overview: The concept of probability, or chance, plays an important role in risk assessment. In this activity, students will conduct a series of experiments, such as tossing coins, to develop and understanding of probability. They will then apply their knowledge of probability to a scenario about the potential risk of using cellular phones.			
Subject Area(s): Environmental Science, Health, Math (Statistics and Graphing), Physics		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics D. Probability Students will understand and apply concepts of probability.	Middle Grades 5-8 1. Find the probability of simple events and make predictions by applying the theories of probability.	Part A (1) #3 Ask several students to make a prediction. Part A (1) #4 Ask for a volunteer to toss a coin 10 times. Have other students record.	Have students write in journals so that all students have a chance to predict

Project Learning Tree Links – Secondary Modules/Math

		Part A (1) #6 Ask each student in the class to flip a coin keeping track of their own results.	
	Middle Grades 5-8 3. Use simulations to estimate probabilities.	Part A (1) #3, #4 and #6	Same as above
	Middle Grades 5-8 4. Find all possible combinations and arrangements involving a limited number of variables.	Part A (1) #4 and #6	Same as above
	Secondary Grades 1. Find the probability of compound events and make predictions by applying probability theory.	Part A (2) #1 Ask the students to predict what would happen if two students each flipped a coin. Part A (2) #2 Ask students to predict how many heads, tails and mixed results they will get after 20 times. Part A (2) #3 Have each pair flip two coins simultaneously, recording the results. Part A (2) #5 Predict the results using 3, 4 or 5 coins. Part A (2) #7 Using the “Data Sheet for Coin Toss Predictions” page have students toss and record 3, 4 and 5 coins.	Have students respond individually in journals
	Middle Grades 5-8 3. Use simulations to estimate probabilities.	Part A (2) #1-#3, #5, and #7	Same as above
	Middle Grades 5-8 4. Find all possible combinations and arrangements involving a limited number of variables.	Part A (2) #3 and #5	Make sure each student has a chance to record tosses
	Middle Grades 5-8 1. Find the probability of simple events and make predictions by applying the theories of probability.	Part A (3) #2 Ask students what they think the outcome would be if they flipped a coin five times in a row. Have students work in pairs and toss a coin five times each and then record it. Were their predictions correct? <u>Part (3) #5</u> Compare the class results to the predicted results.	Have students record predictions in individual journals
	Middle Grades 5-8 2. Explain the idea that probability	Part A (3) #4 Have students calculate the fraction of total flips.	Have each student show calculations

Project Learning Tree Links – Secondary Modules/Math

	can be represented as a fraction between and including zero and one.		
	Middle Grades 5-8 3. Use simulations to estimate probabilities.	Part A (3) #2 and #5 Part A (3) #3 Display the Student Page “Data Sheet for Actual Coin Tosses” on an overhead. Record the results of each student’s coin flips on the chart in the column labeled “Actual Frequency.”	Have each student show calculations
	Middle Grades 5-8 4. Find all possible combinations and arrangements involving a limited number of variables.	Part A (3) #1 Write the word <i>variable</i> on the board and have students offer definitions. Part A (3) #2 <u>Part A (3) #3</u> Part A (3) #6 Explain to students that certain variables follow known distributions and that we can use that knowledge to predict a particular outcome.	Have students write possible definitions in journals Have students write results of coin tosses on student pages
	Middle Grades 5-8 1. Find the probability of simple events and make predictions by applying the theories of probability.	Part B #1 Ask students probability of a head after one coin flip, after 1000 flips, and how sure you would you be that you would get the predicted number of heads.	Same as above

Project Learning Tree Links – Secondary Modules/Math

Activity Title: Communicating Risk		Page: 61	
Objective(s): Students will: 1) investigate the importance of communication in risk assessment and risk management; 2) identify guidelines for effective risk communication; 3) acquire a sense of scale using concentration analogies; 4) communicate a local risk to their community.			
Overview: Understanding risk is an integral part of the risk management process. It is critical that risk information is communicated effectively to all concerned parties. this activity allows students to explore how timely and responsible communication among experts, the media, and lay people can lead to improved decisions about risk management.			
Subject Area(s): Chemistry, Communications, Earth Sciences, Environmental Science, Health, Language Arts, Math, Social Studies, Visual Arts. Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Part B #3 Have students compare chart A to chart B.	Have each student respond in journals

Project Learning Tree Links – Secondary Modules/Math

Activity Title: Weighing The Options: A Look at Tradeoffs		Page: 81	
Objective(s): Students will: 1) investigate their own ability to balance costs and benefits when making decisions; 2) understand that making decisions depends on multiple factors; 3) debate the use of cost/benefit analysis for making decisions regarding the management of environmental risks.			
Overview: Managing risk includes deciding which option is best at reducing risks. The process requires incorporating the data obtained from risk assessments plus the social, ethical, cultural, economic and political values of the time. In this activity, students will explore the risk management process for personal choices while "grocery shopping". They will also debate the use of cost/benefit			
Subject Area(s): Biology, Debate, Ecology, Economics, Environmental Science, Health, Language Arts, math, Social Studies.		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics B. Computation Students will understand and demonstrate computation skills.	Secondary Grades 1. Use various techniques to approximate solutions, determine the reasonableness of answers, and justify the results.	Part A #2 Hand out the Student Page "Grocery List" to each member of the class. Instruct the students to complete their shopping list with these goals in mind: (a) they have a budget of \$20 for 7 days of groceries for one person (they can spend less but can't spend more than their budget); (b) they must maximize nutrition; and (c) they must maximize satisfaction with the products purchased. Students should use the last column on the Student Page to record why they added a product to their list and how it helped achieve the stated goals.	Each student should do calculations in their journals

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Activity Title: Decision Making: Ecological Risk, Wildfires, and Natural Hazards			Page: 92
Objective(s): Students will: 1) develop an understanding of ecological risk; 2) apply various decision-making methods to environmental risk reduction options; 3) try making decisions under conditions of uncertainty.			
Overview: In this activity students will develop and apply decision-making skills to various environmental risk scenarios including wildland fires, natural hazards, and threats to coral reefs and mangrove swamps.			
Subject Area(s): Biology, Communications, Earth Sciences, Ecology, Economics, Environmental Science, Geography, Language Arts, Math, Social Studies.			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics B. Computation Students will understand and demonstrate computation skills.	Secondary Grades 1. Use various techniques to approximate solutions, determine the reasonableness of answers, and justify the results.	<u>Part B #11 (e)</u> To assign each criterion a weighting factor, divide the rank by the sum of the ranks. <u>Part B #11 (g)</u> Multiply the rating factor (rf) by the weighting factor (w) for each combination. Write the answer in the appropriate cell of the decision matrix. <u>Part B #11 (h)</u> Add the products [rating factor (rf) x weight (w)] for each risk reduction option and enter the total.	Have each student do calculations on their own

Exploring Environmental Issues: Municipal Solid Waste

Activity Title: Introduction to Municipal Solid Waste: The Waste System			Page: 16
Objective(s): Students will: 1) develop an understanding of the role MSW plays in all of our lives; 2) analyze current and historical accounts of waste management; 3) discover some of the similarities and differences in MSW management by cultures around the world and through time; 4) discover the different types of materials that make up the waste stream; 5) learn about the waste stream in their school.			
Overview: Students will develop an understanding of municipal solid waste (MSW) management and its importance to community health. Through historical examples, students will learn how people have managed waste throughout time and how it affected their lives. Students will discover connections between what types of natural resources are found in products and what is thrown away. They will also investigate the waste stream in their school by collecting, analyzing, and graphing data.			
Subject Area(s): Environmental Science, History, Language Arts, Math, Science, Social Studies			Grade Level(s): 9-12
	Performance Indicators	Evidence of alignment (text from description of activity)	Notes to ensure high

Project Learning Tree Links – Secondary Modules/Math

Standard	(by grade clusters)		alignment for every student
<p>Mathematics B. Computation Students will understand and demonstrate computation skills.</p>	<p>Middle Grades 5-8 2. Create, solve, and justify the solution for multi-step, real-life problems including those with ratio and proportion.</p>	<p>Part A, #2 Have students make a chart showing the various categories and the waste items in each category. They should then calculate the percentage of waste by type . Part A, #4 How did the amount of waste the class determined to be discards differ fro the total amount in the bag? How does the volume of waste generated by category differ from the weight by category? Is the difference between weight and volume important? Why or why not? Part B #1 Ask students how much solid waste they think the average American produces in a day. Next, provide one student with a garbage bag filled with 4.4 pounds of “garbage” or inflated with air. Explain to students that this “garbage” bag represents the amount of garbage produced per person per day in 1994. Part B #2-#7 See book <i>Project Learning Tree: Municipal Solid Waste</i> pages 19-20.</p>	
	<p>Secondary Grades 1. Use various techniques to approximate solutions, determine the reasonableness of answers, and justify the results.</p>	<p>Part A #2 and #4, Part B #1-#7</p>	
<p>Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.</p>	<p>Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.</p>	<p>Part C #2 Have students create a plan to inventory waste in the school. Students should (a) determine what is in the school’s waste stream, (b) find out how the school currently handles its waste, and (c) determine if the amount and components of waste differ from one location in the school to another. Have students use graphs, charts, and other visual aids to display data and the types and flow of waste in the school. These visuals can be done using graph paper, flip charts, overheads, computer printouts, and so forth. If a variety of rooms are available to be sampled, students can choose rooms through random selection. Have students work in groups to sample different rooms or areas. Part C #3 Have students compare the amount of waste produced in various rooms of the school and present their findings.</p>	<p>Have student make inferences charts, tables, etc. in their journals</p>

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		<p>Part C #4</p> <p>Using the graphs or charts students created in their inventory of school waste, compare the types and amounts of waste found in each type of room. If students worked in groups, have them combine the data from each group into a single graph or chart.</p>	
	<p>Secondary Grades</p> <p>2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.</p>	<p>Part C #2-#4</p>	<p>Same as above</p>
<p>Mathematics</p> <p>F. Measurement</p> <p>Students will understand and demonstrate measurement skills .</p>	<p>Middle Grades 5-8</p> <p>2. Develop and use concepts that can be measured directly, or indirectly (e.g., the concept of rate).</p>	<p>Enrichment #2 – Garbage Collection</p> <p>Have students weigh their classroom waste and their cafeteria waste to determine how much waste is generated by your class. Estimates could be calculated to expand this analysis to include the entire school. Debrief by discussing ways that students could decrease the amount of waste generated at school.</p>	<p>Have students do calculations in their journals</p>
	<p>Secondary Grades</p> <p>1. Use measurement tools and units appropriately and recognize limitations in the precision of the measurement tools.</p>	<p>Enrichment #2 – Garbage Collection</p>	<p>Same as above</p>

Activity Title: Recycling and Economics		Page: 42	
Objective(s): Students will: 1) learn how to conduct a survey; 2) compute, graph, and analyze data gathered in the survey; 3) learn the concepts relating to supply and demand; 4) learn how markets affect recycling of various materials; 5) discover the important role their individual actions make in conserving natural resources.			
Overview: The activity is designed to familiarize students with recycling and the various economic factors that influences municipal solid waste (MSW) management. Students will conduct field research to determine the extent of recycled and recyclable products in their community. They will learn how supply and demand affects the recycling market.			
Subject Area(s): Economics, Environmental Science, Math, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	Part A #4 Have students take a random sampling at a grocery store. Ask how they can randomly select products. Part A #5 After students have gathered the data, have them perform the calculations in class for each of the four categories. Part A #6 Ask students questions” On average, in each category, were recycled products more or less abundant than nonrecycled items? Why? Were recyclable products more prevalent than nonrecyclable products? Were recyclable products more prevalent than recycled products? Among the four categories, which category had the most recycled items? Why do you think these items are more prevalent than those categories with less recycled or recyclable items? Do you think a random sampling in an accurate assessment of recycled product availability? Why or why not?	Make sure each student responds in a journal for questions
	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Part A #4-#6	
	Secondary Grades 4. Demonstrate an understanding of	Part A #4	

Project Learning Tree Links – Secondary Modules/Math

	the idea of random sampling and recognition of its role in statistical claims and designs for data collection.		
	Secondary Grades 5. Revise studies to improve their validity (e.g., in terms of better sampling, better controls, or better data analysis techniques).	Part A #6 Do you think a random sampling in an accurate assessment of recycled product availability? Why or why not?	Have students respond in journals
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	Part B #1 Ask them to predict which materials by weight generate the most weight and why. Part B #4 Have students create bar, line, pie or scatter graphs using the data provided in Table 3.1. Part B #6 Have students predict recovery rates from 1994 to the year 2000 and then compare them. Part B #7 Pass out copies of the Student Page “MSW Characteristics.” By reviewing Table 3.2, students can observe the trends and predictions in recycling and composting from 1980 through 2000. Did their projections meet the actual rates? Ask students why recovery rates have increased	Predictions should be made in journals
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	<u>Part A #4 and #5</u> Part B #1 Ask them to predict which materials by weight generate the most weight and why. Part B #2-#9 See book <i>Project Learning Tree: Municipal Solid Waste</i> pages 46-48. Part C #3 Using the Supply and Demand Curves for Recycled Newspaper,” ask students questions listed in the book.	Have each student show their work for each activity each student should interpret graph in a journal

Project Learning Tree Links – Secondary Modules/Math

		<p>Part C #4 What recyclables already have established markets?</p> <p>Part D #2 Using Table 3.3, plot this information on a graph.</p> <p>Part D #4 Table 3.5, “Recovered Recyclable Materials” on the Student Page “Costs and Revenues” gives relative prices for different recyclable products. Have students calculate the missing numbers in the chart.</p> <p>Part D #5 Student can learn about MSW management costs for their own community. Provide them with Table 3.6, MSW Management Costs from the Student Page “Costs and Revenues.” For students to complete the table, they will need to obtain a detailed budget form the local office of public works or the MSW management office. You may want to invite an employee from the office to explain the details of the budget. Sometimes the local library will have information regarding the budget for the community’s MSW.</p> <p>Part D #7 a, b and c See book <i>Project Learning Tree: Municipal Solid Waste</i> pages 51 and 52.</p>	
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Activity Title: Composting		Page: 61	
Objective(s): Students will: 1) identify organic items that can potentially be composted; 2) learn about the chemical processes involved in composting; 3) identify the different factors that influence the chemical reactions in composting; 4) create their own compost pile, collect data, record data, and make observations; 5) learn about the different uses of compost.			
Overview: This lesson will help students understand the chemical processes that occur in the decomposition process. By creating their own compost containers, collecting compostable organic waste, and creating actual compost, students will apply their knowledge in hands-on, practical experiments. They will record data and make observations pertaining to the decomposition process, thereby helping them understand the process and value of composting.			
Subject Area(s): Agriculture, Biology, Chemistry, Environmental Science, Industrial Arts		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics F. Measurement Students will understand and demonstrate measurement skills.	Secondary Grades 1. Use measurement tools and units appropriately and recognize limitations in the precision of the measurement tools.	Part B #3 The container should be at least 3 ft high, 3 ft wide and 3 ft deep. Part B #5 Give students time to make any modifications to their designs on the basis of their comparisons and observations in Step 4. The sketches should include dimensions and a list of materials needed. Students can create scale drawings of their compost container on a piece of graph paper. Math or technical drawing teachers may want to help students create scales of measurement for their drawings.	Have each student measure and record data
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Part C #4 Record the initial temperature and pH of the compost on the composting data form. Part C #5 Record for 4-8 weeks. Part C #6 After students have collected data for 4-8 weeks, have them create graphs of it. Part C #7 As a class, compare the data from the different compost groups. Ask students what caused the elevated temperatures. Have the student identify differences in the data and consider the reasons for such differences.	Have each student measure and record data have each student record conclusions in journals

Project Learning Tree Links – Secondary Modules/Math

	<p>Secondary Grades 1. Determine and evaluate the effect of variables on the results of data collection.</p>	<p>Variation #1 Develop experimental compost piles to test for different variables. For example, have one student group create a compost pile that has poor air circulation and have another group create a pile that is made up of just one type of organic material such as grass, food scraps, or leaves. Compare the data derived from these different piles.</p>	
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Project Learning Tree Links – Secondary Modules/Math

Activity Title: Where Does Your Garbage Go?		Page: 98	
Objective(s): Students will: 1) discover how their community manages its solid waste; 2) collect and analyze data pertaining to the amount and type of garbage their community processes; 3) exchange and compare data with students in other community's waste stream.			
Overview: The activity will familiarize students with the practical terminology and issues of municipal solid waste (MSW) at the community level. Students will consider the solid waste program of a municipality, then will study their own community's program. Through exchanging data with students in another community, they will gain additional insight into the management of MSW.			
Subject Area(s): Earth Science, Environmental Science, Math		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	Part B #5 Next, have students compare the data of your community to that of other community. Go through each statistic, and ask students to compare those statistics and offer possible reasons to explain differences or similarities in the data. To help guide this discussion and interpret the data, you might want to invite a person from the MSW office as a class guest. Part B #6 The data can be compared by graphing it in a number of ways. Bar graphs, line graphs, pie charts, and three-dimensional graphs can be drawn by hand or with computers to show numerical data. Graphs can serve as the focal point of a bulletin board display that explains differences in MSW programs in different communities.	Each student should record data and comparisons in journals
	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Part B #5 and #6	Each student should record data and comparisons in journals

Project Learning Tree Links – Secondary Modules/Math

Activity Title: Take Action: Success Stories and Personal Choices		Page: 106	
Objective(s): Students will: 1) learn about the great strides made in MSW management and explore success stories in this area; 2) discuss ways their school can improve its reduction, reuse and recycling of waste; 3) develop and implement a plan of action to reduce waste.			
Overview: Students will develop an understanding of the great strides municipal solid waste (MSW) management has made through source reduction, recycling, and composting programs. In addition to finding ways to improve waste management in their school, students will analyze and try to improve their own waste generation habits.			
Subject Area(s): Environmental Science, Math, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	Part C #8 Now put the pilot plan into action and record the amount of waste or specific waste items found in various waste cans throughout the target areas for at least 2 weeks. If the plan included recycling or composting, record the amount of material collected for recycling or composting. After the 2 week period, have students analyze their data and compare it to the data recorded before experiment. Does the data support the hypothesis? Did a change occur in waste production? Did you notice a trend in the amount of waste before and after the experiment? In the conclusion, students should consider whether the plan was effective, whether the effectiveness would increase if more people were involved, who needs to be involved, whether the plan would work long-term or school wide, and what changes could improve the plan.	Have students analyze data individually in their journals
	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Part C #8	have students analyze data individually in their journals

The Changing Forest: Forest Ecology

Activity Title: Adopt-a-Forest	Page: 16
Objective(s): Students will: 1) select an area of forest and develop a scientific methodology study; 2) learn about the ecological relationships in their adopted forest; 3) explore	

Project Learning Tree Links – Secondary Modules/Math

the biological and structural diversity of their forest.			
Overview: Forests support a diversity of plants and animals that vary according to the geographic location of the forest. In this activity, students will identify a section of a local forest or wooded area to study and investigate the types of plants and animals that live there. Through this investigation, students will identify the biological and structural diversity within a forest ecosystem.			
Subject Area(s): Biology, Chemistry, Environmental Science, Math, Vocational Agriculture			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Assessment Opportunity At the end of this activity, each student should prepare a final report based on the input of all teams and team members. This presentation may be an actual report or a newsletter or publication with diagrams, charts, illustrations, and graphs.	Can be used as long as report is graph type for all students
	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Assessment Opportunity	Can be used as long as report is graph type for all students
	Secondary Grades 3. Demonstrate an understanding of concepts of standard deviation and correlation and how they relate to data analysis.	Assessment Opportunity	Can be used as long as report is graph type for all students

Project Learning Tree Links – Secondary Modules/Math

Activity Title: Cast of Thousands		Page: 27	
Objective(s): Students will: 1) make scientific measurements of their forest; 2) examine the relationships of organisms to their environment; 3) determine the extent to which humans have an impact on forests in their region.			
Overview: Students will further explore the variety of life in their adopted forest and will discover the importance of this biological diversity. They will take measurements, in much the same way as a forester does, to draw conclusions about the overall health of their forest. As an extension, students will compare the information they have collected with that of another class in a different region.			
Subject Area(s): Biology, Environmental Science, Language Arts, Geography, Math, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics B. Computation Students will understand and demonstrate computation skills.	Secondary Grades 1. Use various techniques to approximate solutions, determine the reasonableness of answers, and justify the results.	Doing the Activity #4 Break the group into teams of four to eight students. Explain to students that after they have roped off sections of the forest into plots, they will take different measurements of those areas. These measurements include: tree species by number, diameter of trees at breast height, height of trees and crown spread, tree regeneration, or the relative abundance by species, tree damage and signs of disturbance, shrubs and density, or the number of shrub species in the understory, their abundance, and their height, herbaceous layer and ground cover, or the grasses, wildflowers, mosses, and ferns, and soils including litter or organic layer. Measuring the Forest A Have each team define a circle in the forest with a radius of 372 feet. Measuring the Forest B Have teams define 2 squares with sides 66 feet long.	Record number of trees in each plot Record diameter of tree at breast height Record height of tree and down spread Have students record information individually

Project Learning Tree Links – Secondary Modules/Math

Activity Title: The Nature of Plants		Page: 50	
Objective(s): Students will: 1) test for the effects of lack of sunlight on plant leaves; 2) understand and articulate the process of photosynthesis; 3) determine the factors necessary for plant growth; 4) measure and compare plant growth under a variety of environmental stresses.			
Overview: Through a series of experiments, students will learn the importance of photosynthesis and the elements needed for photosynthesis to take place. They will also discover the factors necessary for healthy plant growth and the detrimental effects of a variety of environmental stresses			
Subject Area(s): Biology, Chemistry, Environmental Science		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics F. Measurement Students will understand and demonstrate measurement skills .	Middle Grades 5-8 3. Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.	Part C #2 As the plants begin to grow, have the students measure the growth of their team’s plants. Which plants grew the most, and which grew the least? What were the most noticeable differences among the plants?	Have each student record observations
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Middle Grades 5-8 2. Assemble data and use matrices to formulate and solve problems.	Part C #2 Information about height and weight can be shown on a bar or line graph.	Have each student record observations
	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	Part C #2 Which plants grew the most, and which grew the least? What were the most noticeable differences among the plants?	Have each student record observations
Mathematics F. Measurement Students will understand and demonstrate measurement skills .	Secondary Grades 1. Use measurement tools and units appropriately and recognize limitations in the precision of the measurement tools.	Part C #2 Which plants grew the most, and which grew the least? What were the most noticeable differences among the plants?	Have each student record observations
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Part C #2 Which plants grew the most, and which grew the least? What were the most noticeable differences among the plants?	Have each student record observations

Project Learning Tree Links – Secondary Modules/Math

Activity Title: Story of Succession		Page: 71	
Objective(s): Students will: 1) identify successional stages in various ecosystems on the basis of vegetation types; 2) draw conclusions about the process of succession on the basis of observing three test pilots; 3) recognize basic relationships between species diversity and ecosystem stability.			
Overview: By using their adopted forest as a guide, students will be able to identify the various stages of forest succession. Students will observe successional growth as it happens in three experimental test plots. In this activity, they will learn the ways succession is affected by wind, fire, disease, and human intervention.			
Subject Area(s): Ecology, Environmental Science, Math		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Middle Grades 5-8 1. Organize and analyze data using mean, median, mode, and range.	Part B #3 Suggest students gather information such as plant growth and changes in plant density. Part B #4 Create a wall chart to graph observations and measurements. Assessment Analyze and draw conclusions from plant growth data.	Have all students participate in creating wall graph All students should respond in journals
	Middle Grades 5-8 3. Construct inferences and convincing arguments based on data.	Part B #3 and #4, and Assessment	Same as above
	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Part B #3 Record plant growth rate.	
Mathematics F. Measurement Students will understand and demonstrate measurement skills.	Middle Grades 5-8 1. Demonstrate the structure and use of systems of measurement.	Part B #1 Measure one meter square areas on playground.	
	Secondary Grades 1. Use measurement tools and units appropriately and recognize limitations in the precision of the measurement tools.	Part B #1	Have each student measure their own plot

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Understanding Fire		Page: 82	
Objective(s): Students will: 1) investigate the ecological significance of fire; 2) study the frequency and scope of fires and their influence on patterns of forest succession; 3) examine the controversial issues influencing decisions about controlling wildfires.			
Overview: In this activity, students will explore the patterns of change brought by fires in a forest ecosystem. They will also examine the environmental, social, and political factors that influence forest-use decisions. Students will develop a broad perspective on the nature of forest fires and how public and private sectors of society are affected by them.			
Subject Area(s): Ecology, Environmental Science, Math, Science		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Mathematics C. Data Analysis and Statistics Students will understand and apply concepts of data analysis.	Secondary Grades 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	Part A #2 Discuss the acreage burned in each fire. They could develop a chart comparing the areas burned.	Have each student create a chart

Exploring Environmental Issues: Focus On Forests

Activity Title: What's a Forest to You?		Page: 14	
Objective(s): Students will: 1) describe several ways in which people spend on forests; 2) design a survey to compare how their family members and classmates view the importance of forests; 3) analyze and interpret the survey results.			
Overview: Forests provide us with wood, food, rubber, medicines, paper, and many other products. They also contribute to our recreational, aesthetic, and spiritual needs. Forests help purify water, prevent erosion, and modify climate. In this activity, your students will have an opportunity to explore the role that forests play in their lives and to compare their thoughts to those of their classmates, friends, and family members.			
Subject Area(s): Social Studies, Environmental Science, Economics		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Middle Grades 5-8 3. Verify and evaluate scientific investigations and use the results in a purposeful way.	Doing the Activity #6 Have students evaluate the results from their survey and write a report on what they found out after surveying their friends and family members. Did students find any differences in answers	

Project Learning Tree Links – Secondary Modules/Science

		on the basis of age group, gender, where people live, or what they do for a living?	
	<p>Secondary Grades 2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional questions.</p>	<p>Doing the Activity #6 Reference: Standard J, Mid. Grades 5-8, #3.</p>	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Case Study: Old Growth Forests		Page: 17	
Objective(s): Students will: 1) analyze popular press articles written from different perspectives in order to learn about forest-resource issues; 2) create a special edition of a newspaper containing articles that explore the different viewpoints on old-growth forests.			
Overview: Do we have to choose between preserving an ecosystem and maintaining jobs and a supply of forest products? Is it possible to do both? The controversy over old-growth forests reflects many of the questions we currently face about the use of our public forests. Investigating old-growth issues can introduce your students to many of these tough questions and varying viewpoints. After completing this activity, your students will be able to use the skills they have developed to explore other complex environmental issues. They will also discover that there are no simple answers to such complex situations.			
Subject Area(s): Social Studies, Science, Journalism		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 4. Analyze means of slanting information.	Part B Doing the Activity #5 Have students compare the publications that different interest groups produce. Are the articles biased or fair? Are the overall accounts balanced or fair?	
	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Part B Doing the Activity #1 Explain that all students will work together to produce a special edition of a newspaper that presents a range of views on the old-growth forest issue.	See arrows below Part B #3; all articles written by students should include evidence from credible sources
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 7. Explain the connections between industry, natural resources, population, and economic development.	Part B Doing the Activity #4 What is the significance of the forest products industry to the towns of the Pacific Northwest? What other industries are important in that region? How has this importance changed over time? (The forest products industry provides many jobs for people in the region. Tax revenues from timber sales support schools, roads and other public services. Tourism and fishing are other important industries.) What industries are important in your community? How are the industries similar to those in the Pacific Northwest? How are they different?	Discuss relationship to uses of old-growth forest in the forest products industry

Project Learning Tree Links – Secondary Modules/Science

	<p>Secondary Grades 2. Demonstrate the importance of resource management, controlling environmental impacts, and maintaining natural ecosystems.</p>	<p>Background pg. 19 To many, the debate boils down to the issue of management versus non-management of old-growth forests, not the issue over the environment versus jobs and timbers. Some people feel that leaving old-growth forests alone to follow their natural course and that keeping humans out combine as the only way to protect forests. To others, humans are an integral part of nature, and the long-term health of the old-growth forests requires the involvement of people who will then apply scientific forestry.</p>	<p>Students will be exposed to this concept through all facets of this activity, particularly in the articles, and through research; ensure that all students reflect on this issue</p>
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Project Learning Tree Links – Secondary Modules/Science

Activity Title: Tough Choices		Page: 22	
Objective(s): Students will: 1) learn how to analyze and resolve an environmental issue; 2) write an article that describes the competing demands people put on forests.			
Overview: We ask a lot of our forests. We expect them to provide beautiful surroundings for hiking and recreation, wildlife habitats, and steady supplies of wood and other products. As populations grow and more people use forests and wood products, it's getting tougher to meet all of their demands. In this activity, your students will read and discuss several short articles on issues related to the demands we put on our forests. Students will propose solutions to some real-life dilemmas about forests.			
Subject Area(s): Social Studies, Science, Language Arts		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 6. Support reasoning by using a variety of evidence.	Doing the Activity #6 Explain that each team should identify the components of the issue described in its article and should propose a solutions for it. Each team should designate a spokesperson who will identify the components of the issue and will describe the group's solution to the rest of the class. Students should be ready to explain what criteria they used to come up with their solution.	
	Secondary Grades 6. Analyze situations where more than one logical conclusion can be drawn.	<u>Doing the Activity #6</u> Students should be ready to explain what criteria they used to come up with their solution. Point out to your students that there are no right or wrong answers and that compromise is sometimes the only solution.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Who Owns America's Forests?		Page: 30	
Objective(s): Students will: 1) understand the variety of management practices on forestland; 2) analyze and make inferences about information on forestlands presented in charts and graphics.			
Overview: Did you know that the American public owns 331 million acres (134 million ha) of forests, almost half (45 percent) of the 737 million acres (298 million ha) of forests in the United States? (The American Forest Council, 1991 - pamphlet). In this activity, students will read maps and will figure out where forested lands are located around the nation and whether they are publicly or privately owned.			
Subject Area(s): Social Studies, Geography, Math, Art		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.	Part B Doing the Activity #3 Explain that each team will research its region to answer the questions in Part 2 of "Sizing Up Forests" on Student Page 32. Students should work as a cooperative learning team, with each member responsible for a specific task or state.	
	Secondary Grades 4. Employ graphs, tables, and maps in making arguments and drawing conclusions.	Part B Doing the Activity #4 Once they've gathered the information, the teams should decide how to present their information to the rest of the group. They can create tables, figures, or maps; can make up travel guides; and so on.	Students must use visuals in presenting their research; part A also provides and opportunity to use table and graphs

Activity Title: <i>Balancing America's Forests</i>		Page: 34	
Objective(s): Students will: 1) explore the functions of the federal agencies that are highlighted in this activity and that have responsibility for managing the nation's public forests; 2) describe each agency's goals; 3) compare and contrast the activities allowed in national parks, national forests, and wilderness areas, and then determine how well these areas serve the public.			
Overview: What's the difference between a national forest and a national park? Are park rangers and foresters the same? What guidelines exist for managing the nation's public forests is no easy task. The way that a forest manager tackles a problem may depend on what federal agency he or she works for. In this activity, your students will learn more about the people and agencies that manage our public forests, and will invite a panel of local experts to address them.			
Subject Area(s): Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Secondary Grades 1. Examine the impact of political decisions on science and technology.	Doing the Activity #2 Discuss with your students the role that the public has in influencing what happens to national forests. Point out that federal, state, and local governments make policy decisions about how forests should be managed. For example, congress sets the harvest levels that regulate the rate at which the national forests are cut. By electing certain representatives to Congress, citizens can influence forest policy.	
	Secondary Grades 2. Demonstrate the importance of resource management, controlling environmental impacts, and maintaining natural ecosystems.	Doing the Activity #3 By inviting a panel of local experts to talk about forest resources and management, have your students find out who's taking care of the forests in their area. For example, your panel could include representatives from a paper or lumber company, a city or state park, a state forestry agency, a national forest, and a tree farm. The panel members could discuss how they manage forests and what types of concerns they must consider.	Students must create and ask questions about resource management, etc.

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Squirrels vs. Scopes		Page: 37	
Objective(s): Students will: 1) compare and contrast editorials on the same forest-use issue and look for bias; 2) describe how biased information can influence public opinion; 3) discuss the pros and cons of coming to a compromise decision.			
Overview: In Arizona's Coronado National Forest, groups are at odds over the placement of an observatory in the habitat of an endangered species, the Mount Graham red squirrel. During the heart of the controversy, the local and national newspapers published editorials, articles, and letters to the editor expressing different views about the so-called "squirrels vs. scopes" issue, students can learn how to interpret biased information and how to frame an effective argument. This knowledge will help them to better express their own views on other forest-related issues.			
Subject Area(s): Social Studies, Language Arts, Journalism		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 4. Analyze means of slanting information.	Doing the Activity #3 As a group, discuss why it can be difficult for people to find out and interpret all the facts about a volatile issue such as the Mount Graham controversy. One reason is that information is sometimes presented in a biased way. Ask the group to define the work biased; then ask them to explain whether either editorial is biased.	Each student must reflect on the ways in which each article neglected certain information
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Secondary Grades 2. Demonstrate the importance of resource management, controlling environmental impacts, and maintaining natural ecosystems.	<u>Discussion Questions (arrow #7)</u> Do you think that compromise is always the best way to solve and environmental issue? Describe the potential benefits and costs of the Mount Graham compromise.	Discussion should explore the relationship between the telescopes (impact) and squirrel populations (natural ecosystem)

Exploring Environmental Issues: Focus on Risk

Activity Title: What Is Risk?		Page: 13	
Objective(s): Students will: 1) develop a definition of risk and risk assessment; 2) become familiar with the concept of probability; 3) begin to explore the idea that there are different kinds of risks and that risk is perceived differently by different people; 4) understand that hazards and risks exist in our daily lives.			
Overview: We encounter many types of risks every day. What is meant by the term risk? What types of risks do we encounter daily? Are all risks equally likely to occur/ Are they all harmful? Why are we willing to take some risks but not others? Is anything 100 percent risk free? In this activity, students will work together to explore these and other questions as they discuss, develop, and refine their definition and concept of risk and risk assessment.			
Subject Area(s): Biology, Chemistry, Civics, Communications, Debate, Earth Sciences, Ecology, Environmental Science, Geography, Health, Language Arts, Physics, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 6. Identify and perform roles necessary to accomplish group tasks.	Part C Doing the Activity After ensuring that all students have recorded 10-15 risks they encountered in a day, organize the class into cooperative learning groups of 4-5 students. Appoint a team facilitator, a recorder, and a reporter for each group. Hand out one copy of the Student Page “Group Responsibilities” to each group and review the tasks with your class.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Chances Are . . . Understanding Probability and Risk		Page: 33	
Objective(s): Students will: 1) learn how to calculate simple probabilities; 2) develop definitions for discrete random variable, continuous random variable, binomial distribution and normal distributions; 4) develop an understanding of the relationship among probability calculations, uncertainty, and estimation of risk.			
Overview: The concept of probability, or chance, plays an important role in risk assessment. In this activity, students will conduct a series of experiments, such as tossing coins, to develop and understanding of probability. They will then apply their knowledge of probability to a scenario about the potential risk of using cellular phones.			
Subject Area(s): Environmental Science, Health, Math (Statistics and Graphing), Physics		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Secondary Grades 3. Make and use appropriate symbols, pictures, diagrams, scale drawings, and models to represent and simplify real-life situations and to solve problems.	Part A(2) Doing the Activity #7 Using the Student Page “Data Sheet for Coin Toss Predictions,” have students tally and then graph the expected results from flipping three, four, and five coins simultaneously according to their tree diagrams generated in step #6.	
	Secondary Grades 4. Employ graphs, tables, and maps in making arguments and drawing conclusions.	Part A(2) Doing the Activity #7 Reference: Standard L, Secondary Grades, #3.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Risk Assessment: Tools Of The Trade		Page: 46	
Objective(s): Students will: 1) investigate four different ways to assess risk; 2) explore the use of fault trees to assess a risk; 3) understand how toxicological and epidemiological research is used when studying risk; 4) communicate and defend a debate position.			
Overview: When attempting to determine the degree of risk associated with an event, experts conducting risk assessments rely on a variety of <i>tools of the trade</i> to generate a risk estimate. In this activity, students will learn about the applications of some of these tools, interpret information generated from using different tools, and understand how the information can be used to set priorities and make decisions.			
Subject Area(s): Biology, Chemistry, Debate, Environmental Science, Health, Human Anatomy & Physiology, Language Arts, Visual Arts			
Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Secondary Grades 3. Make and use appropriate symbols, pictures, diagrams, scale drawings, and models to represent and simplify real-life situations and to solve problems.	Part B Doing the Activity #3 After they have developed their fault trees, ask several students to share their fault trees with the rest of the class. How did creating a fault tree help you think about this problem?	
	Secondary Grades 8. Engage in a debate, on a scientific issue, where both points of view are based on the same set of information.	Part C Doing the Activity #6 Conduct the debate following the instructions for a formal or informal debate as found in Appendix 5, "Suggestions for Conducting a Debate."	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Weighing The Options: A Look at Tradeoffs		Page: 81	
Objective(s): Students will: 1) investigate their own ability to balance costs and benefits when making decisions; 2) understand that making decisions depends on multiple factors; 3) debate the use of cost/benefit analysis for making decisions regarding the management of environmental risks.			
Overview: Managing risk includes deciding which option is best at reducing risks. The process requires incorporating the data obtained from risk assessments plus the social, ethical, cultural, economic and political values of the time. In this activity, students will explore the risk management process for personal choices while "grocery shopping". They will also debate the use of cost/benefit			
Subject Area(s): Biology, Debate, Ecology, Economics, Environmental Science, Health, Language Arts, math, Social Studies.		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Secondary Grades 8. Engage in a debate, on a scientific issue, where both points of view are based on the same set of information.	Part B Doing the Activity #4 Divide the class into two groups – A and B. Assign each group one of the following debate questions: a) should cost be considered when listing a species as endangered or threatened? B) Should cost be considered when determining the critical habitat of the species? Next, divide groups A and B into two positions – either supporting or opposing their debate question. Using the directions for wither a formal or informal debate, as described in Appendix 5, "Suggestions for Conducting a Debate," have the students conduct their debates. While group a debates its question, the students in group B should acts as judges, and vice versa.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Decision Making: Ecological Risk, Wildfires, and Natural Hazards		Page: 92	
Objective(s): Students will: 1) develop an understanding of ecological risk; 2) apply various decision-making methods to environmental risk reduction options; 3) try making decisions under conditions of uncertainty.			
Overview: In this activity students will develop and apply decision-making skills to various environmental risk scenarios including wildland fires, natural hazards, and threats to coral reefs and mangrove swamps.			
Subject Area(s): Biology, Communications, Earth Sciences, Ecology, Economics, Environmental Science, Geography, Language Arts, Math, Social Studies. Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Secondary Grades 2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional questions.	Student Page “Wildfire Decision Tree (pg. 111) #5 Identify the best solution by multiplying the weight of the outcome by its probability and then adding the products for each option. The option with the lowest value is your best option.	This page is used in Part B of the activity
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Secondary Grades 4. Employ graphs, tables, and maps in making arguments and drawing conclusions.	Part B Doing the Activity #2 Put up the overhead of the Student Page “Aerial Map.” Ask students to look carefully at the map and then indicate where, in the defined area, they would want to live and to build a home. As the students each give their answer, mark the area on the map. Be sure they explain why they chose that spot. Then write their responses on the chalkboard. Part B Doing the Activity #4 Have one or two student identify where they think the wildland/urban interface is on the map. Circle any “houses” that they suggested to be built in that area.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Electromagnetic Fields		Page: 125	
Objective(s): Students will: 1) learn about electromagnetic fields (EMFs) and their potential risk to human health; 2) measure various sources of EMFs, 3) evaluate the advantages and disadvantages of EMF legislation.			
Overview: This activity is designed to help students understand how electric and magnetic fields (also called electromagnetic fields, or EMFs) are produced, the potential effects of EMFs on human health, and the controversy surrounding those potential effects. Students will conduct a survey, learn how to measure the strength of EMFs, and discuss EMF legislation through a role-playing exercise.			
Subject Area(s): Civics, Communications, Environmental Science, Health, Language Arts, Physics, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Part A Doing the Activity #6 Obtain one or more gauss meters so that the members of the class can measure and compare both the various sources of EMFs and the change in field intensity caused by varying distances from the source.	
	Secondary Grades 1. Make accurate observations using appropriate tools and units of measure.	Part A Doing the Activity #6 Reference: Standard J, Mid. Grades 5-8, #1.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 8. Construct logical arguments.	Part B Doing the Activity #5 Explain to the class that each interest group will make a formal presentation regarding EMF legislation to the senators. Part B Doing the Activity #6 Hand out the Student Pages “Simulation Procedures” and “Interest Group Positions” to each group. Hand out the Student Pages “Interest Group Fact Sheet” and Senator’s Worksheet” to the appropriate groups. Provide ample time for the students to study their role’s position. Through careful review of the readings, they can identify the major arguments associated with the position they will portray.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Chlorine: Looking at Tradeoffs		Page: 145	
Objective(s): Students will: 1) understand the physical and the chemical properties of the element chlorine; 2) explore the risks and benefits of using chlorine vs. not using chlorine for specific uses; 3) learn to identify tradeoffs when making decisions about various risks.			
Overview: Many of the risks we take are "Balanced" by the benefits they offer. Chlorine, used in many ways around the world, is an example of a substance whose use presents potential benefits and risks to human health and the environment			
Subject Area(s): Chemistry, Communications, Environmental Science, Health, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 1. Research and evaluate the social and environmental impacts of scientific and technological developments.	Part B Doing the Activity #5 After the presentations have been given, lead a class discussion exploring the following question: What are some of the tradeoffs society faces when dealing with these chlorine related issues? (Some answers may include potential long- and short-term health and environmental impacts, acute vs. chronic effects, and so forth.)	Students will specifically be looking at chlorine as a pesticide (DDT), chlorinated drinking water, industrial use of chlorinated solvents, and CFC-ozone depletion connection
	Secondary Grades 4. Analyze the impacts of various scientific and technological developments.	Part B Doing the Activity #5 Reference: Standard M, Mid. Grades 5-8, #1.	Same as above

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Plastics, Risk/Benefit Analysis, and Environmental Legislation			Page: 163
Objective(s): Students will: 1) conduct a simplified risk/benefit analysis; 2) investigate the influence of personal decisions on the environment; 3) research and learn about environmental legislation that is designed to reduce risks to human health and the environment.			
Overview: In Part A, students explore their personal use of plastic products and try to conduct a simplified risk/benefit for a plastic product they commonly use. they also explore the use of risk/benefit analysis for making both personal and societal decisions. In Part B, students learn about various national and international regulatory efforts that address the improper disposal of plastic and other items in the aquatic environment. Students then research other legislation that has been enacted to reduce various risks to human health and the environment.			
Subject Area(s): Chemistry, Civics, Communications, Ecology, Environmental Science, Health, Social Studies			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 1. Research and evaluate the social and environmental impacts of scientific and technological developments.	Part A Doing the Activity #3 Have each student pick one of the items marked as essential to further investigate. Then ask students to conduct a simplified risk/benefit analysis of that item. Guide them by using the following questions: What are the potential risks (disadvantages) with the production, use, and improper disposal of this item? What are the benefits (advantages) of their item to them personally, as well as to society?	Student will be analyzing items made of plastic for this part of the activity
	Secondary Grades 1. Examine the impact of political decisions on science and technology.	Part B Doing the Activity #8 In cooperative groups or individually, have students choose an environmental issue to research. The focus of their research should be determined if any legislation has been enacted to address that issue. They can look at legislation at the local, state, national, or international levels. Examples of issues to research include municipal solid waste, hazardous waste, clean water, clean air, endangered species, and pesticides. Students should research when the legislation was enacted and the purpose of the	

Project Learning Tree Links – Secondary Modules/Science

		legislation. They should also try to determine if the legislation has been a success or a failure.	
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Project Learning Tree Links – Secondary Modules/Science

Activity Title: Taking Action: Reducing Your Risk in Your School or Community		Page: 174	
Objective(s): Students will: 1) identify and discuss ways their school or community can reduce a risk; 2) identify and analyze alternative options for reducing a risk; 3) learn how to develop and implement a plan of action to reduce the risk they have identified.			
Overview: Students will apply the knowledge and skills they have acquired from the activities and special topics as they identify a risk in their school or community. Once the risk is identified, they will develop a plan to assess the risk, decide the best way to reduce the risk, educate others, and, if feasible, implement their plan.			
Subject Area(s): Civics, Communication, Environmental Science, Health, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Secondary Grades 3. Demonstrate the ability to use scientific inquiry and technological method with short term and long term investigations, recognizing that there is more than one way to solve a problem. Demonstrate knowledge of when to try different strategies.	Part A Doing the Activity #3 Next have the class numbers choose ONE of the risks to explore in depth. Explain to your students that they will be analyzing the situation, characterizing the risk, brainstorming risk reduction options, developing a management plan, and, if feasible, implementing the plan for reducing the risk.	

Exploring Environmental Issues: Municipal Solid Waste

Activity Title: Introduction to Municipal Solid Waste: The Waste System		Page: 16	
Objective(s): Students will: 1) develop an understanding of the role MSW plays in all of our lives; 2) analyze current and historical accounts of waste management; 3) discover some of the similarities and differences in MSW management by cultures around the world and through time; 4) discover the different types of materials that make up the waste stream; 5) learn about the waste stream in their school.			
Overview: Students will develop an understanding of municipal solid waste (MSW) management and its importance to community health. Through historical examples, students will learn how people have managed waste throughout time and how it affected their lives. Students will discover connections between what types of natural resources are found in products and what is thrown away. They will also investigate the waste stream in their school by collecting, analyzing, and graphing data.			
Subject Area(s): Environmental Science, History, Language Arts, Math, Science, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving	Middle Grades 5-8 2. Design and conduct scientific	Part C Doing the Activity #2 Have students create a plan to inventory	

Project Learning Tree Links – Secondary Modules/Science

<p>Students will apply inquiry and problem-solving approaches in science and technology.</p>	<p>investigations which include controlled experiments and systematic observations.</p>	<p>waste in the school. Record the types and relative amounts of items found in various bins. If recycling bins or compost bins are available, record the amounts and types of items found in the bins and whether those items are also found in waste bins. Part C Doing the Activity #3 Was the amount and type of waste found in the room what had been predicted? Were students surprised by any item(s) found in the waste?</p>	
	<p>Secondary Grades 2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional questions.</p>	<p>Part C Doing the Activity #2 and #3 Reference: Standard J, Mid. Grades 5-8, #2.</p>	

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Activity Title: Source Reduction		Page: 29	
Objective(s): Students will: 1) learn the terms "source reduction" and "waste prevention"; 2) determine how waste and toxicity can be diverted from a landfill through source reduction; 3) identify factors involved in a life-cycle analysis.			
Overview: Students will look at ways to prevent and reduce waste and will learn the connection between reducing waste and conserving natural resources. They will learn some of the factors used to determine the environmental impact of a product over its lifespan. They also will look at household hazardous waste (HHW) and ways to reduce the use of toxic products at home.			
Subject Area(s): Art, Computer Science, Science, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Secondary Grades 3. Make and use appropriate symbols, pictures, diagrams, scale drawings, and models to represent and simplify real-life situations and to solve problems.	Part C Doing the Activity #3 After reviewing the Student Pages, have the students each pick a product and develop a diagram of their product's life cycle. The diagram should include the factors found on the Student Pages and any others they think are appropriate to include. This diagram can be a drawing or a collage of pictures from a magazine and should track the impact their product has during its life.	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 1. Research and evaluate the social and environmental impacts of scientific and technological developments.	Part A Doing the Activity #4 Have the groups share their answers to the questions for each product they have chosen. For those products that they believe have unnecessary packaging, can only be thrown away, or contain toxic materials, ask students what effects such products have on our environment.	in this case, the scientific and technological developments are modern packaging, the materials used, and the process of packaging

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Activity Title: Recycling and Economics		Page: 42	
Objective(s): Students will: 1) learn how to conduct a survey; 2) compute, graph, and analyze data gathered in the survey; 3) learn the concepts relating to supply and demand; 4) learn how markets affect recycling of various materials; 5) discover the important role their individual actions make in conserving natural resources.			
Overview: The activity is designed to familiarize students with recycling and the various economic factors that influences municipal solid waste (MSW) management. Students will conduct field research to determine the extent of recycled and recyclable products in their community. They will learn how supply and demand affects the recycling market.			
Subject Area(s): Economics, Environmental Science, Math, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	<u>Part A Doing the Activity #2</u> To illustrate the amount of recycled products in the current marketplace, have students conduct a survey of recycled products. The Student Page “Recycling Data Form” will serve as a data collection sheet for the survey. <u>Part A Doing the Activity #6</u> Among the four categories, which category had the most recycled items? The most recyclable items? Why do you think these items are more prevalent than those categories with less recycled or recyclable items?	
	Secondary Grades 2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional questions.	Part A Doing the Activity #2 and #6 Reference: Standard J, Mid. Grades 5-8, #2.	

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Activity Title: Composting		Page: 61	
Objective(s): Students will: 1) identify organic items that can potentially be composted; 2) learn about the chemical processes involved in composting; 3) identify the different factors that influence the chemical reactions in composting; 4) create their own compost pile, collect data, record data, and make observations; 5) learn about the different uses of compost.			
Overview: This lesson will help students understand the chemical processes that occur in the decomposition process. By creating their own compost containers, collecting compostable organic waste, and creating actual compost, students will apply their knowledge in hands-on, practical experiments. They will record data and make observations pertaining to the decomposition process, thereby helping them understand the process and value of composting.			
Subject Area(s): Agriculture, Biology, Chemistry, Environmental Science, Industrial Arts		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Secondary Grades 1. Illustrate the cycles of matter in the environment and explain their interrelationships.	Part A Doing the Activity #3 Pass out copies of the Student Page “Nutrient Cycling.” Have students identify the different stages within the cycle. Ask student why nutrient cycling in relation to decomposition is important.	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Middle Grades 5-8 1. Make accurate observations using appropriate tools and units of measure.	Part C Doing the Activity #5 Every week for 4-8 weeks, have students record the temperature and pH of the interior of the pile. Make sure students take the temperature from the same location and depth at approximately the same time each week. Also look for any visual changes in the pile. Check the moisture level and check for signs of various organisms. Have students record these observations on the composting data form.	
	Secondary Grades 1. Make accurate observations using appropriate tools and units of measure.	Part C Doing the Activity #5 Reference: Standard J, Mid. Grades 5-8, #1.	

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Activity Title: Waste-to-Energy		Page: 75	
Objective(s): Students will: 1) explain how a WTE facility works; 2) list the positive and negative merits of WTE technology; 3) research, develop, and communicate an argument to represent a specific point of view regarding and issue; 4) participate in a democratic decision-making process.			
Overview: In this activity, students will learn how a waste-to-energy (WTE) facility functions. Through a role-playing activity, they will participate in a democratic decision-making process and will discover the many factors involved when a community makes decisions regarding the development of new solid waste management facilities. After having considered the research, students will defend specific positions and learn from other class members who advocate different positions.			
Subject Area(s): Environmental Science, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 8. Construct logical arguments.	Part B Doing the Activity #5 The student groups should each be given only the information on the Student Page “WTE Interest Groups” that pertains to their assigned role. Each group is responsible for a 5- to 10-minute class presentation that will reflect the information and views of the group they represent.	in this role playing activity, students must use logical arguments to support their position
	Secondary Grades 6. Analyze situations where more than one logical conclusion can be drawn.	Part B Doing the Activity #7 Does good scientific and economic information always lead to the same conclusion? Why or why not?	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Secondary Grades 4. Employ graphs, tables, and maps in making arguments and drawing conclusions.	Part B Doing the Activity #5 Reference: Standard K, Mid. Grades 5-8, #8. Encourage students to develop visual aids such as graphs, diagrams, and charts to support their information.	ONLY ALIGNS if students create visual aids to support their information/position

Activity Title: Landfills		Page: 87	
Objective(s): Students will: 1) learn the importance of liners in landfills for pollution prevention; 2) discover the various social and environmental factors involved with the siting of a landfill.			
Overview: Students will create "miniature landfills" to simulate the movement of leachate in a landfill and to demonstrate the importance of liners. Students will experiment with different soil types and liners to discover the most effective barrier. In addition, students will learn about the many considerations that must be taken into account when identifying a landfill site.			
Subject Area(s): Biology, Earth Science, Environmental Science, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology F. The Earth Students will gain knowledge about the earth and the processes that change it.	Middle Grades 5-8 7. Demonstrate factors effecting the flow of groundwater.	Part A Doing the Activity #2 To illustrate the concept of leaching and to show how liners can be used to minimize leaching, have students experiment with different soil type and liner conditions in model landfills.	
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 8. Construct logical arguments.	Part B Doing the Activity #4 Have members of each group present their proposal to the class, with the class acting as a planning committee. The groups should each discuss the benefits of their site and should address how the proposed landfill would affect the six factors outlined above.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Where Does Your Garbage Go?		Page: 98	
Objective(s): Students will: 1) discover how their community manages its solid waste; 2) collect and analyze data pertaining to the amount and type of garbage their community processes; 3) exchange and compare data with students in other community's waste stream.			
Overview: The activity will familiarize students with the practical terminology and issues of municipal solid waste (MSW) at the community level. Students will consider the solid waste program of a municipality, then will study their own community's program. Through exchanging data with students in another community, they will gain additional insight into the management of MSW.			
Subject Area(s): Earth Science, Environmental Science, Math		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Secondary Grades 2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional questions.	Part B Doing the Activity #5 Next, have students compare the data of your community to that of the other community. Go through each statistic, and ask students to compare those statistics and offer possible reasons to explain differences or similarities in the data. To help guide this discussion and interpret the data, you might want to invite a person from the MSW office as a class guest.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Secondary Grades 2. Use journals and self-assessment to describe and analyze scientific and technological experiences and to reflect on problem-solving processes.	Part A Doing the Activity #3 Have students research questions such as those found on the Student Page "Community Municipal Solid Waste." Students can work in small groups to answer the questions of divide the research into sections, assigning each student a sections. Students should keep a portfolio, journal, or log of information obtained while researching their community's MSW program.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Take Action: Success Stories and Personal Choices		Page: 106	
Objective(s): Students will: 1) learn about the great strides made in MSW management and explore success stories in this area; 2) discuss ways their school can improve its reduction, reuse and recycling of waste; 3) develop and implement a plan of action to reduce waste.			
Overview: Students will develop an understanding of the great strides municipal solid waste (MSW) management has made through source reduction, recycling, and composting programs. In addition to finding ways to improve waste management in their school, students will analyze and try to improve their own waste generation habits.			
Subject Area(s): Environmental Science, Math, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Middle Grades 5-8 2. Design and conduct scientific investigations which include controlled experiments and systematic observations.	Part C Doing the Activity #8 Now put the pilot plan into action and record the amount of waste or specific waste items found in various waste cans throughout the target areas for at least 2 weeks. If the plan includes recycling or composting, record the amount of material collected for recycling or composting. After the 2-week period, have students analyze their data and compare it to the data recorded before the experiment. Does the data support the hypothesis? Did a change occur in waste production? Did you notice a trend in the amount of waste before and after the experiment? In the conclusion, students should consider whether the plan was effective, whether the effectiveness would increase if more people were involved, who needs to be involved, whether the plan would work long-term or school wide, and what changes could improve the plan.	
	Secondary Grades 2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional	Part C Doing the Activity #8 Reference: Standard J, Mid. Grades 5-8, #2.	

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	questions.		
	<p>Secondary Grades 3. Demonstrate the ability to use scientific inquiry and technological method with short term and long term investigations, recognizing that there is more than one way to solve a problem. Demonstrate knowledge of when to try different strategies.</p>	<p>Part C Doing the Activity #8 Reference: Standard J, Mid. Grades 5-8, #2.</p>	

The Changing Forest: Forest Ecology

Activity Title: Adopt-a-Forest		Page: 16	
Objective(s): Students will: 1) select an area of forest and develop a scientific methodology study; 2) learn about the ecological relationships in their adopted forest; 3) explore the biological and structural diversity of their forest.			
Overview: Forests support a diversity of plants and animals that vary according to the geographic location of the forest. In this activity, students will identify a section of a local forest or wooded area to study and investigate the types of plants and animals that live there. Through this investigation, students will identify the biological and structural diversity within a forest ecosystem.			
Subject Area(s): Biology, Chemistry, Environmental Science, Math, Vocational Agriculture		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
<p>Science and Technology A. Classifying Life Forms Students will understand that there are similarities within the diversity of all living things.</p>	<p>Secondary Grades 2. Describe similarities and differences among organisms within each level of the taxonomic system for classifying organisms (kingdom through species).</p>	<p><u>Part A Doing the Activity #6</u> Now have students tailor their original list to their adopted forest. You might ask them to do some background research by consulting field guides or contacting city or state foresters to determine the types of trees and plants typically found in the area. They can gather information on wildlife from nature centers, conservation groups, or birding clubs. Local landowners who are familiar with the flora and fauna of your site are also good resources. Using the “Forest Inventory Chart,” students should</p>	

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		list as many species as their research indicates may be there. As students develop their list, have them reclassify it using the following groups: woody plants such as trees, shrubs and vines; herbaceous plants such as grasses, ferns, wildflowers, and mosses; lichen or fungi, mammals, birds, reptiles and amphibians, and invertebrates. Ask students to compare these classifications with their original categories.	
<p>Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.</p>	<p>Secondary Grades 4. Analyze the impact of human and other activities on the type and pace of change in ecosystems.</p>	<p>Part C #2 Were there signs of natural or human-caused disturbance? What are the interrelationships of the organisms within the forest system? How do humans fit into these interrelationships?</p>	

Activity Title: Cast of Thousands		Page: 27	
Objective(s): Students will: 1) make scientific measurements of their forest; 2) examine the relationships of organisms to their environment; 3) determine the extent to which humans have an impact on forests in their region.			
Overview: Students will further explore the variety of life in their adopted forest and will discover the importance of this biological diversity. They will take measurements, in much the same way as a forester does, to draw conclusions about the overall health of their forest. As an extension, students will compare the information they have collected with that of another class in a different region.			
Subject Area(s): Biology, Environmental Science, Language Arts, Geography, Math, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Secondary Grades 1. Make accurate observations using appropriate tools and units of measure.	Measuring the Forest The following directions will guide your students through the measurements and observations of their forest. Before you take your students in the field, review the terms and measurement techniques highlighted in the steps below. Student teams will gather data for their measured plots of the forest. A professional forester familiar with the forest you are studying would be an excellent resource at the site. He or she may be interested in receiving a report of your students' findings.	Numbers 1-11 under Measuring the Forest give specific directions on making observations and collecting data using appropriate tools
	Secondary Grades 1. Make accurate observations using appropriate tools and units of measure.	Discussion and Follow Up Survey students about the kinds and prevalence of tree damage, insects, diseases, and tree mortality they observed. Write these observations on the board. What conclusions do the students draw from their observations? Do they think the forest is healthy? Why? Do they think there is a major problem caused by insects, disease, people, or other factors? Have students explain and encourage them to develop cause-and-effect relationships.	Follow-up questions 1-9 all demand that students make conclusions based on observations

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Activity Title: The Nature of Plants		Page: 50	
Objective(s): Students will: 1) test for the effects of lack of sunlight on plant leaves; 2) understand and articulate the process of photosynthesis; 3) determine the factors necessary for plant growth; 4) measure and compare plant growth under a variety of environmental stresses.			
Overview: Through a series of experiments, students will learn the importance of photosynthesis and the elements needed for photosynthesis to take place. They will also discover the factors necessary for healthy plant growth and the detrimental effects of a variety of environmental stresses			
Subject Area(s): Biology, Chemistry, Environmental Science		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 1. Describe in general terms the chemical processes of photosynthesis and respiration.	Part A #5 As a class, summarize the elements necessary for photosynthesis. Augment this discussion by reviewing basic information about photosynthesis, stressing that it is a chlorophyll-based, sunlight-energized, food manufacturing process for green plants. It is also a key source of oxygen production and food for animal life.	
	Secondary Grades 2. Compare the process of photosynthesis and respiration, and describe the factors that effect them.	Part A #5 Reference: Standard B, Mid. Grades 5-8, #1.	
Science and Technology J. Inquiry and Problem Solving Students will apply inquiry and problem-solving approaches in science and technology.	Secondary Grades 2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional questions.	Assessment Opportunity At the end of all the experiments, ask teams to prepare final reports on their findings. Teams should draw on their beginning hypotheses and supporting research, and should include their actual observations and measurements. Encourage teams to collaborate on a single final report creating a general theory of plant health needs and environmental conditions supportive of good growth.	Students should complete ass parts of this activity A-D

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Activity Title: Home Sweet Home		Page: 59	
Objective(s): Students will: 1) discuss the ways in which exotic species are introduced; 2) understand the harmful and beneficial ecological effects that occur when exotics are introduced; 2) research and then discuss possible remedies to some of the harmful effects of various exotic species; 4) determine natural growing ranges for certain plants and animals in their adopted forest.			
Overview: Species that are introduced into nonnative environments can be beneficial or detrimental to the ecosystem. In this activity, students will identify "exotics" that have already been introduced into the North American environment and will determine their effect. Students will also gather information about a selected plant or animal species within their adopted forest and determine its natural range.			
Subject Area(s): Ecology, Geography, Science		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 4. Generate examples of the variety of ways that organisms interact (e.g., competition, predator/prey, parasitism/ mutualism).	Part A Doing the Activity #3 What part of the local ecosystem has benefited from the exotic species? What part has been harmed?	Competition of native vs. Non-native species should be stressed
	Secondary Grades 4. Analyze the impacts of various scientific and technological developments.	Part A Doing the Activity #3 Why or how was the plant or animal brought here? What part of the local ecosystem has benefited from the exotic species? What part has been harmed?	Human responsibility for introduction of exotic species must be explored
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Middle Grades 5-8 6. Give examples of actions which may have expected or unexpected consequences that may be positive, negative, or both.	Part A Doing the Activity #3 Reference: Standard B, Secondary Grades #4.	

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Activity Title: Saga of The Gypsy Moth		Page: 63	
Objective(s): Students will: 1) explore ecological and social issues related to the gypsy moth; 2) consider strategies for management of the gypsy moth.			
Overview: In this activity, students will become more aware of the effects of the gypsy moth. they will formulate management plans that deal with large-scale disturbances like the gypsy moth. students will have the responsibility of advocating their specific management perspective.			
Subject Area(s): Biology, Environmental Science, History, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 8. Construct logical arguments.	Part A #4 Explain to the class that at a monthly staff meeting, each team will be advocating a particular method of controlling gypsy moths. Each team's job is to insist that its method of management is the best and to convince others at the staff meeting that it is.	
	Secondary Grades 1. Judge the accuracy of alternative explanations by identifying the evidence necessary to support them.	Part A #7 Give the class approximately 10 minutes to decide which method should be adopted. Students should discuss this among themselves.	By choosing a method of management, students are judging alternative explanations based on supporting evidence

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Story of Succession		Page: 71	
Objective(s): Students will: 1) identify successional stages in various ecosystems on the basis of vegetation types; 2) draw conclusions about the process of succession on the basis of observing three test pilots; 3) recognize basic relationships between species diversity and ecosystem stability.			
Overview: By using their adopted forest as a guide, students will be able to identify the various stages of forest succession. Students will observe successional growth as it happens in three experimental test plots. In this activity, they will learn the ways succession is affected by wind, fire, disease, and human intervention.			
Subject Area(s): Ecology, Environmental Science, Math		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 3. Describe succession and other ways that ecosystems can change over time.	Part A Doing the Activity #2 Form three to four student teams, and ask students to describe the typical stages of forest succession using examples from their adopted forest or another ecosystem.	This activity strongly aligns with this learning result; however, consideration must be made to tailor the activity to the appropriate level
	Secondary Grades 4. Analyze the impact of human and other activities on the type and pace of change in ecosystems.	Part C Doing the Activity #1 Student should look for evidence of natural or human intervention that might have altered the natural succession of the forest.	
Science and Technology L. Communication Students will communicate effectively in the application of science and technology.	Middle Grades 5-8 4. Make and use scale drawings, maps, and three-dimensional models to represent real objects, find locations, and describe relationships.	Part A Doing the Activity #6 Give each team a piece of white paper and five transparent overlays. Using the story of “Tree Tops Valley,” have each team draw a sequence of pictures to show forest succession on the overlays.	
	Secondary Grades 3. Make and use appropriate symbols, pictures, diagrams, scale drawings, and models to represent and simplify real-life situations and to solve problems.	Part A Doing the Activity #6 Reference: Standard L, Mid. Grades 5-8, #4.	

Project Learning Tree Links – Secondary Modules/Science

Activity Title: Understanding Fire			Page: 82
Objective(s): Students will: 1) investigate the ecological significance of fire; 2) study the frequency and scope of fires and their influence on patterns of forest succession; 3) examine the controversial issues influencing decisions about controlling wildfires.			
Overview: In this activity, students will explore the patterns of change brought by fires in a forest ecosystem. They will also examine the environmental, social, and political factors that influence forest-use decisions. Students will develop a broad perspective on the nature of forest fires and how public and private sectors of society are affected by them.			
Subject Area(s): Ecology, Environmental Science, Math, Science			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Middle Grades 5-8 3. Describe succession and other ways that ecosystems can change over time.	Part A Doing the Activity #3 What does Yellowstone Park look like now? What might it look like in 5 years? In 15? In 50? In 100? Why?	
	Secondary Grades 4. Analyze the impact of human and other activities on the type and pace of change in ecosystems.	Part A Doing the Activity #3 How would Yellowstone Park be different with or without fire? Was Yellowstone Park ruined by the fire? Why or why not?	Human aspect of fire ecologies covered in part B of the activity
Science and Technology K. Scientific Reasoning Students will learn to formulate and justify ideas and to make informed decisions.	Middle Grades 5-8 8. Construct logical arguments.	Part A Doing the Activity #4 Give students the option of arguing “for” or “against” using fire as a management tool for their adopted forest ecosystem. They should support their point of view with examples covered in this activity or from library research.	

Project Learning Tree Links – Secondary Modules/Social Studies

Activity Title: Fire Management		Page: 96	
Objective(s): Students will: 1) research plant and animal species that depend on forest fire and will determine interrelationships; 2) examine controversial issues influencing decisions about controlling wildfires near the wildland-urban interface.			
Overview: Students will learn about the many interdependencies of forests and fire in healthy ecosystems. They will research plant and animal species that depend on fire, and will determine some of their relationships. They will also look at problems that occur when humans live in or near forested areas.			
Subject Area(s): Environmental Science, Ecology, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Science and Technology B. Ecology Students will understand how living things depend on one another and on non-living aspects of the environment.	Secondary Grades 4. Analyze the impact of human and other activities on the type and pace of change in ecosystems.	Part A Doing the Activity #1 Ask student if they know of any examples of the relationship between fire and healthy forest ecosystems. Discuss student responses; then explain that during this exercise they will learn more about the role of fire in healthy forests and about the dependence of certain plant and animal species on forest fire.	
Science and Technology M. Implications of Science and Technology Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.	Secondary Grades 2. Demonstrate the importance of resource management, controlling environmental impacts, and maintaining natural ecosystems.	Part A Doing the Activity #4 Have your students create a forest management plan to change the unhealthy forest into a healthy forest, using the information discussed in the “The Crisis in Our Forests” article. The plan should include a discussion of forest management issues.	

Exploring Environmental Issues: Focus On Forests

Activity Title: WHAT'S A FOREST TO YOU?	Page: 14
Objective(s): Students will: 1) describe several ways in which people spend on forests; 2) design a survey to compare how their family members and classmates view the importance of forests; 3) analyze and interpret the survey results.	
Overview: Forests provide us with wood, food, rubber, medicines, paper, and many other products. They also contribute to our recreational, aesthetic, and spiritual needs. Forests help purify water, prevent erosion, and modify climate. In this activity, your students will have an opportunity to explore the role that forests play in their lives and to compare their thoughts to those of their classmates, friends, and family members.	

Project Learning Tree Links – Secondary Modules/Social Studies

Subject Area(s): Social Studies, Environmental Science, Economics		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
<p>Geography</p> <p>Elementary Grades 3-4</p>	<p>B. Human Interaction with Environments.</p> <p>#3 Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.</p>	<p><u>Activity #2</u></p> <p>Pass out copies of the survey on Student Page 16, “What do you think?” Do you agree/disagree... Forests and trees enhance the quality of my life...</p> <p><u>Activity #3</u></p> <p>Divide the class into groups to discuss their responses.</p> <p><u>Activity #4</u></p> <p>Hold a large group discussion and discuss how often students visit forests and what types of activities they most commonly engage in.</p> <p><u>Activity #5</u></p> <p>Have each group create its own survey to investigate what family and friends think about forests.</p> <p><u>Activity #6</u></p> <p>Help students identify forest issues that relate to the topics they rated as being most interesting in the survey. Have the students evaluate the results from the survey and write a report on what they found out after survey their friends and family members. Did students find any difference in answer on the basis of age group, gender, where people live.</p> <p><u>Enrichment</u></p> <p>To help students appreciate the many ways we depend on forests, generate a list of food and products that come from trees. They should imagine what their physical surrounds and lifestyles would be like without these forest products.</p>	<p>The survey is the tool to gather information.</p>
<p>Geography</p> <p>Elementary Grades 3-4</p>	<p>B. Human Interaction with Environments.</p> <p>#3 Use a variety of materials and geographic tools to explain how the physical environment supports and constrains human activities.</p>	<p><u>Activity #2</u></p> <p>Pass out copies of the survey on Student Page 16, “What do you think?” Do you agree/disagree... Forests and trees enhance the quality of my life...</p> <p><u>Activity #3</u></p> <p>Divide the class into groups to discuss their responses.</p> <p><u>Activity #4</u></p> <p>Hold a large group discussion and discuss how often students visit forests and what types of activities they most commonly engage in.</p> <p><u>Activity #5</u></p> <p>Have each group create its own survey to investigate what family and friends think about forests.</p> <p><u>Activity #6</u></p> <p>Help students identify forest issues that relate to the topics they rated as being most interesting in the survey. Have the students evaluate the results from the survey and write a report on what they found out after survey their friends and family members. Did students find any difference in answer on the basis of age group, gender, where people live.</p> <p><u>Enrichment</u></p> <p>To help students appreciate the many ways we depend on forests, generate a list of food and products that come from trees. They should imagine what their physical surrounds and lifestyles would be like without these forest products.</p>	<p>The survey is the tool to gather information.</p>

Project Learning Tree Links – Secondary Modules/Social Studies

Activity Title: CASE STUDY: OLD GROWTH FORESTS			Page: 17
Objective(s): Students will: 1) analyze popular press articles written from different perspectives in order to learn about forest-resource issues; 2) create a special edition of a newspaper containing articles that explore the different viewpoints on old-growth forests.			
Overview: Do we have to choose between preserving an ecosystem and maintaining jobs and a supply of forest products? Is it possible to do both? The controversy over old-growth forests reflects many of the questions we currently face about the use of our public forests. Investigating old-growth issues can introduce your students to many of these tough questions and varying viewpoints. After completing this activity, your students will be able to use the skills they have developed to explore other complex environmental issues. They will also discover that there are no simple answers to such complex situations.			
Subject Area(s): Social Studies, Science, Journalism			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Geography Elementary Grades 3-4	B. Human Interaction with Environments. #3 Use a variety of materials & geographic tools to explain how the physical environment supports and constrains human activities.	<u>Part A</u> Tell students they are going to investigate old-growth and learn about different viewpoints. Pass out copies of the 3 old growth articles in the Appendix.	The articles are a variety of materials.
Geography Middle Grades 5-8	A. Skills & Tools #2 Develop maps, globes, charts, models and databases to analyze geographical patterns in the earth.	<u>Part B Questions</u> Where are old-growth forests found in the U.S.? How much land is covered by forests?	
Geography Elementary Grades 3-4	A. Skills & Tools Construct and compare maps of Maine, the U.S. & regions of the world to interpret geographical features and draw conclusions about physical patterns.	<u>Part B Questions</u> What are the characteristics of old-growth forests in the Pacific Northwest? Do old-growth forests in other parts of the U.S. and Canada share the same characteristics?...	Use maps to help answer the questions.
Geography Middle Grades 5-8	B. Human Interaction with Environments. #3 Explain how cultures differ in their use of similar environments and resources.	Part B Questions What is the significance of the forest products industry to towns in the Pacific Northwest? What other industries...	
Geography	B. Human Interaction with Environments.	Part B Questions Currently, how important are forest	

Project Learning Tree Links – Secondary Modules/Social Studies

<p>Secondary Grades</p>	<p>#1 Explain factors which shape places and regions over time (e.g. physical & cultural factors).</p>	<p>products to people in the U.S.? How is the U.S. demand for forest products ...</p>	
<p>Geography Middle Grades 5-8</p>	<p>A. Skills & Tools #2 Develop maps, globes, charts, models and databases to analyze geographical patterns on earth.</p>	<p>Activity #7 Have the students read an article that describes the current status of old-growth forests in the U.S. Students should use charts, diagrams, or other geographic representations of the total numbers of acres of old growth. The graphics should show how much old growth there is in relation to the total amount of US forestland, and how much land is set aside or preserved in wilderness areas or national parks.</p>	

Project Learning Tree Links – Secondary Modules/Social Studies

Activity Title: TOUGH CHOICES		Page: 22	
Objective(s): Students will: 1) learn how to analyze and resolve an environmental issue; 2) write an article that describes the competing demands people put on forests.			
Overview: We ask a lot of our forests. We expect them to provide beautiful surroundings for hiking and recreation, wildlife habitats, and steady supplies of wood and other products. As populations grow and more people use forests and wood products, it's getting tougher to meet all of their demands. In this activity, your students will read and discuss several short articles on issues related to the demands we put on our forests. Students will propose solutions to some real-life dilemmas about forests.			
Subject Area(s): Social Studies, Science, Language Arts		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Geography Middle Grades 5-8	B. Human Interaction with Environments. #3 Explain how cultures differ in their use of similar environments and resources.	<u>Activity #1</u> Find a newspaper article that deals with a forest or land use issue. <u>Activity #2</u> Give students the time to read it. <u>Activity #3</u> Explain that one way to better understand an issue is to identify its components. <u>Activity #4</u> Give students copies of the Issue Articles on the Student Pages. <u>Activity #6</u> Each team should identify the components of the issues described in its article and should propose a solution for it...	I see in each article and each group of people as a separate culture. Mining industries vs. preservationists, cancer patients, hikers, forest managers, horseback riding...
Geography Secondary Grades	B. Human Interaction with Environments. #1 Explain factors which shape places and regions over time (e.g. physical & cultural factors).	<u>Activity #8</u> Ask some of the following questions: What additional information do you need to resolve the issues discussed in these articles? Can students identify additional competing demands that people place...	
Civics & Government Middle Grades 5-8	A. Rights, Responsibilities & Participation. #4 Identify ways in which citizens in a pluralistic society manage differences of opinion on public policy issues.	<u>Activity #7</u> After each team makes its presentations, give the rest of the group an opportunity to comment on the pros/cons of the proposed solutions...	

Project Learning Tree Links – Secondary Modules/Social Studies

Activity Title: WHO OWNS AMERICA'S FORESTS?		Page: 30	
Objective(s): Students will: 1) understand the variety of management practices on forestland; 2) analyze and make inferences about information on forestlands presented in charts and graphics.			
Overview: Did you know that the American public owns 331 million acres (134 million ha) of forests, almost half (45 percent) of the 737 million acres (298 million ha) of forests in the United States? (The American Forest Council, 1991 - pamphlet). In this activity, students will read maps and will figure out where forested lands are located around the nation and whether they are publicly or privately owned.			
Subject Area(s): Social Studies, Geography, Math, Art		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Geography Secondary Grades	A. Skills & Tools #1 Use mapping to answer complex geographic and environmental problems.	<u>Part B #3</u> Explain that each team will research its region to answer the questions in Part 2 of “Sizing up Forests” on Student Page 22. Work as a cooperative learning team, each member responsible for a specific task or state... <u>Part B #4</u> Once they’ve gathered information, the teams should decide how to present their information to the entire group. They can create tables, figures, maps... <u>Part B #5</u> Discuss some general trends that the students’ presentations bring out. Where are more public forests located – East...	Use and look at maps and charts they’ve made.
Geography Secondary Grades	#1 Use mapping to answer complex geographic and environmental problems.	<u>Assessment Opportunity</u> Each student’s progress can be evaluated by assessing the graphics they produce and the report they present about the researched region.	
Geography Secondary Grades	B. Human Interaction with Environments. #1 Explain factors which shapes places & regions over time (e.g. physical & cultural factors).	<u>Enrichment</u> Students should write a brief report about how forest ownership affects their own lives.	

<i>Activity Title:</i> BALANCING AMERICA'S FORESTS		Page: 34	
Objective(s): Students will: 1) explore the functions of the federal agencies that are highlighted in this activity and that have responsibility for managing the nation's public forests; 2) describe each agency's goals; 3) compare and contrast the activities allowed in national parks, national forests, and wilderness areas, and then determine how well these areas serve the public.			
Overview: What's the difference between a national forest and a national park? Are park rangers and foresters the same? What guidelines exist for managing the nation's public forests is no easy task. The way that a forest manager tackles a problem may depend on what federal agency he or she works for. In this activity, your students will learn more about the people and agencies that manage our public forests, and will invite a panel of local experts to address them.			
Subject Area(s): Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Civics & Government Secondary Grades	B. Purpose and Types of Governments #2 Assess the different jurisdictions and roles of local, state & federal governments in relation to an important public policy issue.	<u>Activity #1</u> Pass out copies of the Student Page 36 (A Description of the Main Federal Forest Managers). Discuss the different mandates for each agency... <u>Activity #3</u> By inviting a panel of local experts to talk about forest resources and management have your students find out who's taking care of the forests in their area... <u>Activity #4</u> Have the students come up with questions to ask the panel.	
Secondary Grades	#2 Assess the different jurisdictions and roles of local, state & federal governments in relation to an important public policy issue.	<u>Variation</u> Have students go back to the issue on which they reported in Activity #2 and discuss how different agencies might deal with that issue.	
Middle Grades 5-8	A. Rights, Responsibilities & Participation #4 Identify ways in which citizens in a pluralistic society manage differences of opinion on public policy issues.	<u>Activity #2</u> Discuss with your students the role that the public has in influencing what happens to national forests...	

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<i>Activity Title:</i> SQUIRRELS VS. SCOPES		<i>Page:</i> 37	
Objective(s): Students will: 1) compare and contrast editorials on the same forest-use issue and look for bias; 2) describe how biased information can influence public opinion; 3) discuss the pros and cons of coming to a compromise decision.			
Overview: In Arizona's Coronado National Forest, groups are at odds over the placement of an observatory in the habitat of an endangered species, the Mount Graham red squirrel. During the heart of the controversy, the local and national newspapers published editorials, articles, and letters to the editor expressing different views about the so-called "squirrels vs. scopes" issue, students can learn how to interpret biased information and how to frame an effective argument. This knowledge will help them to better express their own views on other forest-related issues.			
Subject Area(s): Social Studies, Language Arts, Journalism		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Civics & Government Secondary Grades	A. Rights, Responsibilities & Participation. #2 Assess the reasons why participation of an attentive knowledgeable and competent citizenry is important to constitutional democracy, using examples from personal or historical experience.	<u>Discussion Questions</u> How would you describe the CHICAGO TRIBUNE'S position or attitude toward protecting the Mount Graham red squirrel!? Which article's viewpoint do you agree with more? Why?... Point out that although it may be difficult to get all the information about an issue it is important for citizens to know about all sides of an issue before they make a decision.	All questions relevant to understanding of performance indicators.

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<i>Activity Title:</i> WORDS TO LIVE BY		Page: 42	
Objective(s): Students will: 1) learn how people's personal experiences affect their attitudes toward forests; 2) describe how people's views toward forests have changed over time; 3) express their own views about forests.			
Overview: Throughout history people have seen forests in different ways, for example, as obstacles to agricultural progress, as havens for recreation and wildlife, and as a source of income from wood products. The writings of different authors reflect the views of their time periods, as well as their own personal feelings toward forests. In this activity, your students can express their own views about forests, and then can explore different perspectives by reading excerpts from the writings of different authors.			
Subject Area(s): Social Studies, Language Arts		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
History Middle Grades 5-8	Historical Inquiry, Analyses & Interpretion. #3 Use information from a variety of primary and secondary sources to identify and support a point of view on a controversial historical topic.	<u>Activity #1</u> Have students think about how they view forests in general. <u>Activity #2</u> Discuss what students came up with. Can they identify any specific events in their lives that have influenced their attitude? <u>Activity #3</u> Pass out copies of the Student Pages 45-46. Explain that each passage expresses its author's views about forests...from his/her time period. <u>Activity #4</u> Team members should work together to research where and when each author lived and gather information about the events in the author's life that may have shaped their views about forests...	Topic views of the forests.
History Middle Grades 5-8	Historical Inquiry, Analyses & Interpretion. #3 Use information from a variety of primary and secondary sources to identify and support a point of view on a controversial historical topic.	<u>Activity #5</u> Once the information is gathered, the teams should put passages in order, using the date of each author's birth. Include a short bibliographical description of the author...	

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		<p><u>Activity #6</u> As a group, discuss how attitudes expressed toward forests differed among the authors. Ask these questions: How could events during the author’s lifetime have affected his view of the forests?...</p>	
History Secondary Grades	<p>B. Historical Knowledge, Concepts and Patterns</p> <p>#3 Demonstrate an understanding of the lives of selected individuals who have had a major influence on history.</p>	<p><u>Enrichment</u> Have students learn about the dispute between Gifford Pinchot and John Muir over the construction of the Hetch Hetchy Dam in Yosemite...</p>	
History Secondary Grades	<p>C. Historical, Inquiry, Analysis & Interpretation</p> <p>#1 Evaluate and use historical materials to formulate historical hypothesis regarding a specific issue.</p>	<p><u>Discussion Questions</u> Has the quality of the environment in the U.S. changed in the past 100 years? How, why, where?...</p>	

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Activity Title: Take Action!		Page: 47	
Objective(s): Students will: 1) learn about problems and issues facing forests in and around their community; 2) find out how to become involved in forest-related issues3) develop and carry out an action plan to help understand and resolve a local forest-use issue or problem.			
Overview: Your students will learn about what one group of students in New Mexico did to help reclaim a state park, and then they will take part in a project to help forests in their own community.			
Subject Area(s): Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Civics & Government Middle Grades 5-8	A. Rights, Responsibilities & Participation #1 Identify the characteristics of an effective citizen.	<u>Activity #1</u> To get your students thinking about how they can take action, pass out copies of the student page “Reclaiming a State Park” and have them read about the Sugarite State Park project. You can use these questions to discuss the Future Farmers of America (FFA) chapter’s efforts.	
Secondary Grades	A. Rights, Responsibilities & Participation #1 Develop & defend a position on a public policy issue within out democracy.	<u>Activity #2</u> As a group, brainstorm some issues affecting your local forests. Choose one issue to focus on and give the group some time to research it more thoroughly. If possible, arrange for some students to interview the people involved in the issue and to find out more about their positions, beliefs, and biases. You might also want to visit the site. <u>Activity #3</u> Once your group has a good grasp of the issue, your next step is to come up with a plan to address it. Be sure to have the group work with local natural resource professionals, foresters, and other experts in your area. Here are ideas for action projects that your group might want to start.	
Secondary Grades	A. Rights, Responsibilities & Participation	<u>Activity #4</u> After your students have finished their	

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	#2 Assess the reasons why participation of an attentive, knowledgeable & competent citizenry is important to constitutional democracy.	action project, have them evaluate it. For example, you can ask these questions:	
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Exploring Environmental Issues: Focus on Risk

Activity Title : What Is Risk?		Activity Guide Page #: 13	
Objective(s): Students will: 1) develop a definition of risk and risk assessment; 2) become familiar with the concept of probability; 3) begin to explore the idea that there are different kinds of risks and that risk is perceived differently by different people; 4) understand that hazards and risks exist in our daily lives.			
Overview: We encounter many types of risks every day. What is meant by the term risk? What types of risks do we encounter daily? Are all risks equally likely to occur/ Are they all harmful? Why are we willing to take some risks but not others? Is anything 100 percent risk free? In this activity, students will work together to explore these and other questions as they discuss, develop, and refine their definition and concept of risk and risk assessment.			
Subject Area(s): Biology, Chemistry, Civics, Communications, Debate, Earth Sciences, Ecology, Environmental Science, Geography, Health, Language Arts, Physics, Social Studies			
Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Civics and Government Middle grades 5-8	A. Rights, Responsibilities & Participation. #4 Identify ways in which citizens in a pluralistic society manage differences of opinion on public policy issues.	Activity #1 Begin the activity by explaining to your students that you have recently read an interesting article that you would like to share with them. Read to the class the paragraph you have selected from the above story lines, and be prepared to answer questions the students may have. Ask the students what they think about this information and how (or if) the problem should be handled. Have them write down their thoughts and then share the ideas with the rest of the class. #2 Observe students' responses, paying close attention to – whether or not they accepted what you told them, - whether one student's opinion influenced the way other students reacted, - whether they were outraged (if yes, why?), - if they thought that they had the ability to do	

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		<p>something about the risk (why? why not?)</p> <p>#3 After you have had a few minutes to discuss the story line and assess the class reaction, inform the students that the article was made up. Tell them that similar, real-like risks are often reported in newspapers and on TV, and that their reactions-all of them- are common.</p> <p>#4 Share your observations of the class members' responses to the story line and explain to your students that they will be addressing many of the elements of their reactions in future classes. For example, why did they perceive the information as they did? How did their perceptions influence their reactions? How can they learn to evaluate information, data, and warnings presented by the media or government? Inform your students that perceptions, evaluations, communication, and solutions are all part of analyzing risks.</p>	
<p>Civics & Government</p> <p>Secondary</p>	<p>B. Purpose & Types of Government</p> <p>#5 Evaluate the role of media</p>	<p>Activity #7 Have the students suggest several key points or ideas that were generated during the discussion. Emphasize the two factors the students rated when assessed their risk examples: probability and extent of harm. Also provide the following definitions for the class.</p>	
		<p>Activity #1 After ensuring that all students have recorded 10-15 risks they encountered in a day, organize the class into cooperative learning groups of 4-5 students. Appoint a team facilitator, a recorder, and a reporter for each group. Hand out one copy of the Student Page "Group responsibilities" to each group and review the tasks with your class.</p>	

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Activity Title: Things Aren't Always What They Seem		Activity Guide Page #: 21	
Objective(s): Students will: 1) develop an understanding of the differences in risk perception between lay people and experts (as well as among their classmates); 2) identify what characteristics influence people's perceptions of risk; 3) learn about different environmental risks.			
Overview: Students will identify their perception of the relative degree of risk associated with technologies, environmental hazards, and everyday activities. They will also have the opportunity to share their ideas as they compare and contrast their perceptions with those of others, including experts and lay people.			
Subject Area(s): Chemistry, Civics, Communications, Debate, Ecology, Environmental Science, Health, Human Anatomy & Physiology, Language Arts, Physics, Social Studies			
Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Civics and Government Middle grades 5-8	A. Rights, Responsibilities & Participation. #4 Identify ways in which citizens in a pluralistic society manage differences of opinion on public policy issues.	Activity #6 Lead a class discussion on what might account for the differences in the rankings. Refer to key concepts that were presented in Activity 1 (such as risk and probability). Use the concept of personal perceptions and values to account for some of the differences in rankings. For further discussion, put the Student Page "Risk Perception Factors" on an overhead. Have students identify the factors they considered while ranking the risks. ✓ #7 Distribute copies of the Student Page "Ordering of Perceived Risk for 30 Activities and Technologies," which shows the rankings of the League of Women Voters, college students, and a group of experts. ✓ #8 Ask the students to compare their results with the rankings of the league of Women Voters, college students, and experts. ✓ #9 Discuss several of the students' responses. Then ask the class to carefully compare their results with those of the experts. ✓ #10 Summarize the major ideas of this part of the activity by asking class members to explain what the ranking	

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		<p>exercise taught them about risk perception. (The students' responses should indicate that experts and lay people generally have different perceptions about risk, and that different people perceive risks differently.)</p>	
		<p>on In class, have the students compare the adult rankings with their own rankings and to the rankings of the League of Women Voters, college students, and experts. Ask students these questions.</p> <p>Activity #1 Ask students if they agree with the Surgeon General's warning on cigarette packages. Why? Why not?</p> <p>#2 Ask the students if they think experts and lay people evaluate risks in different ways? If yes, how? (Record their responses in the appropriate column.) Their responses should suggest that experts focus on injuries and mortalities (quantifiable scientific information) and that lay people rely on personal perceptions and values and on media reports of the scientific information.</p> <p>#3 Divide the class into cooperative learning groups of 4-5 students. Assign to each group one set of questions from the Student Page "Experts vs. Lay People: Discussing the Differences" (more than one group may end up having the same set of questions). Ask the students to use the lists they generated as they think about their questions and to prepare and answer they can present to the class.</p> <p>#4 Debrief this part of the activity by doing the following: - Ask the class members to summarize the major ideas for this activity by discussing the purpose of the exercise. They should recognize that the intent was to understand why there are differences between the risk perceptions of experts and lay people. - Ask students if they think differences in risk perception will have an impact on risk communication and risk management. If yes, how?</p>	

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		<p>Activity #1 Ask students if they have heard of any environmental risk issues in the news lately (such as water pollution, air quality, global warming, and so forth). Spend a few minutes discussing these issues. Do they think more research should be done on those risk issues? Why or why not?</p> <p>✓ #2 Distribute copies of the Student Page “Environmental Research Needs” to the students, and go over the list to make sure students understand what all of the issues mean and how each issue relates to a human health or ecological risk.</p> <p>✓ #3 Ask the students to identify what they think should be the top six environmental research priorities. Tell the students that they should be prepared to explain why they made their particular selections.</p> <p>✓ #4 After the students have made their choices of the top six environmental research priorities, ask them to rank order their list from the most important to the least important with respect to research needs. When this rearrangement is completed, ask several students to share their choices and rankings with the rest of the class. Then have students explain their rankings by answering the following questions.</p> <p>✓ #5 Survey the class to determine if any other students selected the same six risks as those you’ve written. Did any students rank them the same? Before ending this phase of the activity, you might put that information on a separate overhead transparency.</p> <p>✓ #6 Using the results from the steps above, discuss what might account for the differences in perception among class members. Include the key concepts that were introduced in Activity 1, “What is Risk?,” and in Part A above (concepts such as probability or chance; values’ quantitative vs. qualitative analysis; voluntary vs. involuntary risks; and experts vs. lay people.</p> <p>✓ #7 Distribute copies of the Student Page “Environmental</p>	
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		<p>Risks: Research Priorities” or put the information on an overhead. Have the students compare their results with those of the ORD. (Note that the list representing the ORD is unranked.) Then determine (1) how many students got results similar to the ORD, and (2) how the class might account for the similarities and differences between their lists and the scientists’ list.</p> <p>Activity #8 Have students summarize the major ideas for this part of the activity. Possible questions for discussion include the following.</p>	
<p>History Middle grades 5-8</p>	<p>#3 Use information from a variety of primary or secondary sources to identify and support a point of view on a controversial historical topic.</p>	<p>ment #2 Have students make a list of any songs that they know deal with a risk, either personal or societal. If possible, ask them to bring to class the lyrics of one of those songs. Have students share their list of songs. If they were able to bring the lyrics to class, ask a few students to share thy lyrics with the rest of the class (you may want to collect the lyrics first and review them before reading them aloud.) Alternately, you could play several songs in class and have students interpret the lyrics (screen the lyrics first for their appropriateness for use in class).</p>	

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Activity Title: Risk Assessment: Tools Of The Trade		Activity Guide Page #: 46	
Objective(s): Students will: 1) investigate four different ways to assess risk; 2) explore the use of fault trees to assess a risk; 3) understand how toxicological and epidemiological research is used when studying risk; 4) communicate and defend a debate position.			
Overview: When attempting to determine the degree of risk associated with an event, experts conducting risk assessments rely on a variety of <i>tools of the trade</i> to generate a risk estimate. In this activity, students will learn about the applications of some of these tools, interpret information generated from using different tools, and understand how the information can be used to set priorities and make decisions.			
Subject Area(s): Biology, Chemistry, Debate, Environmental Science, Health, Human Anatomy & Physiology, Language Arts, Visual Arts Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Civics and Government Elementary Pre K-2	A. Rights, Responsibilities & Participation #1 Identify and practice classroom rights & responsibilities.	Activity #2 Divide the class into cooperative learning groups of 4-5 students. Give each group one scenario from the Student Page “What’s Going On???” Each group should assign the following tasks within the group: two student recorders (one for Step 3 and one for Step 4 below), one student to keep the discussion moving, and one reporter. All group members are expected to participate in the brainstorming session.	

Project Learning Tree Links – Secondary Modules/Social Studies

Activity Title: Communicating Risk		Activity Guide Page #: 61	
Objective(s): Students will: 1) investigate the importance of communication in risk assessment and risk management; 2) identify guidelines for effective risk communication; 3) acquire a sense of scale using concentration analogies; 4) communicate a local risk to their community.			
Overview: Understanding risk is an integral part of the risk management process. It is critical that risk information is communicated effectively to all concerned parties. this activity allows students to explore how timely and responsible communication among experts, the media, and lay people can lead to improved decisions about risk management.			
Subject Area(s): Chemistry, Communications, Earth Sciences, Environmental Science, Health, Language Arts, Math, Social Studies, Visual Arts. Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
		<p>Communicating Risks: The case of sybron chemicals</p> <p>Communicating the risk associated with radon</p> <p>Evaluating the professionals</p> <p>Numbers, big and small-what do they really mean?</p>	<ul style="list-style-type: none"> All these are showing different ways of communicating risk ... etc. More language arts but still an introduction. (awareness of what different formats can do to inform the public)
		<p>Part E, Activity #6</p> <p>Debrief this activity with a discussion about the different styles that the groups used to communicate risk. Which fliers for they think would be more effective at increasing public awareness of the risk? Which ones do they think would be more effective at motivating action to reduce risk?</p>	

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Activity Title: Weighing The Options: A Look at Tradeoffs		Activity Guide Page #: 81	
Objective(s): Students will: 1) investigate their own ability to balance costs and benefits when making decisions; 2) understand that making decisions depends on multiple factors; 3) debate the use of cost/benefit analysis for making decisions regarding the management of environmental risks.			
Overview: Managing risk includes deciding which option is best at reducing risks. The process requires incorporating the data obtained from risk assessments plus the social, ethical, cultural, economic and political values of the time. In this activity, students will explore the risk management process for personal choices while "grocery shopping". They will also debate the use of cost/benefit			
Subject Area(s): Biology, Debate, Ecology, Economics, Environmental Science, Health, Language Arts, math, Social Studies.		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Economics Middle grades 5-8	A. Personal and Consumer Economics	<p>Activity #1 Ask the class to think about how they choose between alternatives when making a decision (for example, whether to go to school by bus, car, bicycle, or foot). How do they decide if something is worth doing? Record their answers on the board. Guide the students to think about both costs and benefits of each option as deciding factors.</p> <p>Activity #2 Hand out the Student Page "Grocery List" to each member of the class. Instruct the students to complete their shopping list with these goals in mind: (a) they have a budget of \$20 for 7 days of groceries for one person (they can spend less but can't spend more than their budget); (b) they must maximize nutrition; and (c) they must maximize satisfaction with the products purchased.</p> <p>Activity #3 After each student has completed his or her shopping list, divide the class into cooperative learning groups of 4-5 students. Have students discuss their lists within their groups. Are they similar or different? What tradeoffs did they make in selecting the items? Did anyone</p>	

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		choose a product purely because of nutritional value? Taste? Price? Personal preference?	
		<p>Activity #4 Instruct students in each group to choose a list that they think best meets the goals stated in Step 2. Have the groups present their decisions to the rest of the class, explaining how they came to consensus and how they evaluated the costs and benefits of their items.</p> <p>Activity #5 To debrief this part of the activity, have the students discuss how they compared things such as nutritional value and satisfaction with the price of a product. Would anyone be in favor of using only price? Using only personal preferences? Ask if it was easier for them to make their lists as individuals or in their group. For what issues (such as human health, ecosystems, endangered species, social welfare) do they think weighing tradeoffs becomes more complex? Why?</p>	
Secondary	#1 Conduct a cost benefit analysis of a personal or business decision.	<p>Part B, Activity #1 After your students have read “Cost/Benefit Analysis and Ethical Considerations” for homework, spend a few minute addressing any questions or comments about the reading. Then discuss the three questions posed in the Student Page.</p>	
Secondary		<p>Part B, Activity #2 Next, explain that the process of weighing the costs and benefits of various options, similar to the supermarket exercise from part A, is often used by public policy makers. However, there are debates over when and how cost/benefit analysis should be used, as described in the student page “Cost/Benefit Analysis and Ethical</p>	

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		<p>Considerations.”</p> <p>Activity #3 Hand out or put up an overhead of the Student page “Endangered Species.” Review the information with your students, and make sure they understand the debate questions a and b written in bold on their Student Page.</p> <p>Activity #5 After the debates, share with your students the information on the Student Page “Economic Considerations Within the Endangered Species Act.” Then discuss the questions at the end of that reading.</p>	
		<p>Activity #6 To debrief this activity, have the students offer their thoughts on why using cost/benefit analysis to make decisions about reducing risk is an issue for debate. Guide the students to think about the following:</p>	
<p>Economics</p> <p>Middle grades 5-8</p>		<p>Assessment Opportunity #1 Have students write about an example of how they use cost/benefit analysis in their daily lives (for example, deciding to do or not to do their homework). To further explore the issue, have them write about the pros and cons of using cost/benefit analysis on a local environmental or health problem.</p>	

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Activity Title: Decision Making: Ecological Risk, Wildfires, and Natural Hazards		Activity Guide Page #: 92	
Objective(s): Students will: 1) develop an understanding of ecological risk; 2) apply various decision-making methods to environmental risk reduction options; 3) try making decisions under conditions of uncertainty.			
Overview: In this activity students will develop and apply decision-making skills to various environmental risk scenarios including wildland fires, natural hazards, and threats to coral reefs and mangrove swamps.			
Subject Area(s): Biology, Communications, Earth Sciences, Ecology, Economics, Environmental Science, Geography, Language Arts, Math, Social Studies. Grade Level(s): 9-12			
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Geography Secondary	B. Human Interaction with Environments #1 Explain factors which shape places and regions over time (e.g. physical & cultural factors).	Activity #7 Next, have the class read the Student Page “Wildfire Events.” Explain that the students are residents of a wildland/urban interface area, and they need to decide whether or not to take action to protect their home from the risk of a fire. Explain that they will first use a decision tree to help them decide. #8 Hand out the Student Page “Wildfire Decision Tree,” and have students follow the directions to complete the page. You may want to go through the directions with the class and give examples as needed from the teacher sample that follows (see Table 2). #9 Discuss the students’ answers as well as the decision-making process. Did any of the students discuss the uncertainty in their decisions? If not, make sure students are aware that the probabilities they assign to the outcomes are estimates and, therefore, there is a degree of uncertainty in the final decision. #11 Divide the class into cooperative learning groups of 4-5 students, and pass out two copies of the Student Page “Wildfire	

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		Decision Matrix” to each group. Explain that each group’s task is to decide, given multiple options, which course of action should be taken to reduce the risk of wildfire damage. Provide the following instruction for the groups:	
Geography Secondary	A. Skills and Tools #1 Use mapping to answer complex geographic and environmental problems.	Activity #2 Put up the overhead of the Student Page “Aerial Map.” Ask students to look carefully at the map and then indicate where, in the defined area, they would want to live and to build a home. As the students each give their answer, mark the area on the map. Be sure they explain why they chose that spot. Then write their responses on the chalkboard. #4 Have one or two students identify where they think the wildland/urban interface is on the map. Circle any of the “houses” that they suggested be built in that area. <u>Activity #5</u> Lead into a discussion about the risks those individuals might face while living along the wildland/urban interface. Keep the discussion’s focus on wildfires. Discuss the options those individuals have for reducing the risk of damage to their home from wildfires. Record the students’ responses on the chalkboard. Use the background information of this activity as a reference. You may also want to share with your class the headlines reporting various wildfire risks from the background information for this part of the activity.	
Civics and Government Secondary	A. Rights, Responsibilities & Participation #1 Develop and defend a position on a public policy issue within our democracy.	Extension Keep students in their cooperative learning groups, and have them develop a public service announcement (PSA) regarding the potential risks of living along the wildland/urban interface. Have	

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		<p>students begin by discussing, in their groups, the goals of the PSA, the intended audience (no all groups have to “speak” to the same audience), and the communication device they will use, such as a brochure, flier, radio/TV announcement, and so forth. Allow time for the groups to put together their PSA. (Review with students the background section of Activity 5, “Communicating Risk,” and go over the Activity 5 Student Page “Risk Communication Guidelines” before students generate their PSAs.)</p>	
<p>Geography Secondary</p>	<p>A. Skills and Tools #1 Use mapping to answer complex geographic and environmental problems.</p>	<p>Activity #1 Begin the class by posting the following scenario to your students. “You have recently graduated from school and you are ready to look for a job. You have decided that you want to live and work in a new geographical location but you are not sure where. What criteria will you use to help make the decision?” List their responses on the chalkboard under the heading “criteria.” If the consideration of natural hazards is not on the list, suggest to the class that this potential problem might also be part of their decision. As you lead into a discussion on natural hazards, you may want to use the following items as a guide. #2 Divide the class into cooperative learning groups of- students. Distribute one copy of the Student Page “Map of the United States” to each group. Ask students to locate and mark on their map each of the locations listed on the chalkboard to familiarize themselves with the larger context of the location options. #3 Next, distribute a copy of the Student</p>	<ul style="list-style-type: none"> • Assessment opportunity activity 1 part b: requires a map as part of the presentation.

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		<p>Pages “Natural Hazards” and “Location Option Details” to each group (If you have your students conduct additional research, also pass out the Student Page “Natural Hazard References.”) Each group member should read about one of the hazards and one of the locations. The students will then be responsible for briefly describing to the other group members what they have learned. Tell students to use the information on the Student Pages to choose, as a group, a location to live. Have the students take into consideration the estimated probabilities, uncertainty, and mitigation options, as well as any other criteria (such as those listed on the board), to make their group decision.</p> <p>#4</p> <p>During the next class period, after the groups have decided on a location, one member of each group should present the group’s decision to the class. Students should be prepared to (a) explain how they came to their decision, (b) describe what their main criteria were, and (c) talk about how the risks associated with lining in the chosen location played into their decision.</p> <p>on</p> <p>Students can do further research on the natural disasters associated with the location they have chosen, or they can choose a different location. Have them report on the natural hazards faced by those who choose to live there.</p> <p><u>Assessment Opportunity Activity 1 part b</u></p> <p>Your school has just acquired the vacant lot across from the school. What should the school do with the land? Possible options include building a new athletic field, building a swimming pool, building an outdoor classroom, paving it over for</p>	
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		a parking lot, and so forth. Possible criteria include cost, ecological impact, need, and so forth.	

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Activity Title: Electromagnetic Fields		Activity Guide Page #: 125	
Objective(s): Students will: 1) learn about electromagnetic fields (EMFs) and their potential risk to human health; 2) measure various sources of EMFs, 3) evaluate the advantages and disadvantages of EMF legislation.			
Overview: This activity is designed to help students understand how electric and magnetic fields (also called electromagnetic fields, or EMFs) are produced, the potential effects of EMFs on human health, and the controversy surrounding those potential effects. Students will conduct a survey, learn how to measure the strength of EMFs, and discuss EMF legislation through a role-playing exercise.			
Subject Area(s): Civics, Communications, Environmental Science, Health, Language Arts, Physics, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Civics and Government Middle grades 5-8	A. Rights, Responsibilities & participation #3 Describe and analyze the process by which a proposed law is adopted, including the role of governmental and non-governmental influences.	Activity #1 Ask students if they think there is legislation restricting the proximity of certain structures to power line in your state. Do they think there should be? Explain that they will be simulating the legislative process to determine the necessity of legislation. #2 Introduce the activity using the following information: During the past tow decades, numerous epidemiological and biological studies have examined the association between electromagnetic field and human health. The overall results have been mixed. Some studies show a correlation between EMF exposure and cancer, while others do not. In addition, the biological mechanisms that produce health effects from EMF exposure are still unknown (Gregory and Winterfeldt 1996, B). #3 Hand out the Student Pages “EMFs and Health Effects-The Word is Out” and “EMF Exposure and Childhood Leukemia-No Link Found: for each student to read. #4	

		<p>Assign seven students the role of Senator, each representing one of the following states: New Jersey, California, Florida, Minnesota, Montana, New Hampshire, and Texas. Then, have the rest of the students represent the interest groups as indicated on the Student Page “Simulation Procedures.”</p> <p>y #5 Explain to the class that each interest group will make a formal presentation regarding EMF legislation to the Senators. When the presentations are completed, the Senators will cast their votes on whether or not to enact legislation to control EMFs and will announce the results. The Senators should be prepared to explain why they voted as they did.</p> <p>y #6 Hand out the Student Pages “Simulation Procedures” and Interest Group Positions” to each group. (see the instructions for the hearing on the Student Page.) Hand out the Student Pages “Interest Group Fact Sheet” and “Senator’s Worksheet” to the appropriate groups. Provide ample time for the students to study their role’s position. Through careful review of the readings, they can identify the major arguments associated with the position they will portray.</p> <p>y #7 Instruct the members of the interest groups to use the “Interest Group Fact Sheet” to aid in developing their presentation. The Senators should use the “Senator’s Worksheet” at the hearing to help them organize their notes and comments on each group.</p> <p>y #8 Debrief the simulation with the following</p>	
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		<p>questions: -What do you think are the most critical issues regarding EMF exposure? -Is there any additional information you would like to obtain on EMFs? -What were the strengths and weaknesses of the presentations?</p> <p>ment Opportunity #2</p> <p>After the simulation, ask the students to write a brief essay on whether or not they would pass legislation that would help deal with the potential risk of EMFs. (This essay should be their personal opinion based on what they have learned and not necessarily on the position of their assigned simulation role.) Be sure they support their position.</p>	
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Activity Title: Chlorine: Looking at Tradeoffs		Activity Guide Page #: 145	
Objective(s): Students will: 1) understand the physical and the chemical properties of the element chlorine; 2) explore the risks and benefits of using chlorine vs. not using chlorine for specific uses; 3) learn to identify tradeoffs when making decisions about various risks.			
Overview: Many of the risks we take are "Balanced" by the benefits they offer. Chlorine, used in many ways around the world, is an example of a substance whose use presents potential benefits and risks to human health and the environment			
Subject Area(s): Chemistry, Communications, Environmental Science, Health, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Economics Secondary	A. Personal and Consumer Economics #1 Conduct a cost benefit analysis of a personal or business decision.	Activity #3 Ask the class to define and to give examples of the term "tradeoff." (examples of different categories of tradeoffs include risk vs. benefit, cost vs. benefit, one risk vs. another risk, and so forth.) Then ask class members what they think the connection is between tradeoffs and risks (for example, when making decisions about risks, we often weigh the consequences associated with taking or not taking a risk, or reducing or not reducing a risk). After you have had a chance to briefly discuss the concept of tradeoffs and risk, explain to your students that they will be examining some of the tradeoffs associated with the various uses of chlorine. #6 Using the lists the students have generated and the information on the Student Page "Introduction to Chlorine," ask them if they can identify (in general terms) tradeoffs with the use of chlorine. (At this point student may not have enough information to identify specific tradeoffs; however, they should be able to identify that there are tradeoffs between the potentially hazardous characteristics and the wide use of	

		<p>chlorine.)</p> <p>Activity #1</p> <p>The Student Pages “DDT: An Organochlorine Pesticide,” “Chlorinated Solvents,” “Use of Chlorine as a Drinking Water Disinfectant,” and “Chlorine and Ozone-CFCs” introduce for chlorine risk/benefit issues (a) the continued use of DDT in developing countries, (b) the industrial use of chlorinated solvents, (c) the chlorination of drinking water, and (d) the CFC-ozone depletion connection.</p> <p>#2</p> <p>Ask each group to explore and generate a list of risks and a list of benefits associated with the group’s chlorine issue. (Lists should be based on the Student Pages, and on any other research students have conducted.) While students work on their lists, you can circulate around the room, making sure the groups are compiling sufficient information to proceed with the activity.</p> <p>#3</p> <p>Using these lists, ask each group to prepare a short presentation (5-7 minutes) that will explain to the rest of the class why both using and not using chlorine in this manner (in other words, as a pesticide, as a solvent, as a disinfectant, or in the production of CFCs) can be a controversial issue.</p> <p>#4</p> <p>Reconvene the class, and have the groups give their presentations. As each group presents its issue, instruct the rest of the class members to pay close attention and to write down any questions they might have in preparation for a class discussion.</p> <p>#5</p> <p>After the presentations have been given, lead a class discussion exploring the</p>	
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		<p>following questions: #6 Debrief this activity with a discussion of the difficulties one faces when trying to analyze the benefits and risks of many products we use in our daily lives (such as insect repellents, sugar substitutes, plastics, and so forth)</p>	
<p>Economics Secondary</p>	<p>A. Personal and Consumer Economics</p>	<p>ment #1 Activity #1 Provide information to the class from page 148 as it relates to a real issue- positive and negative results of chlorination. ment #1 Activity #2 In cooperative learning groups of 4-5 students, students should determine if they, as a group, think that the benefits of adding chlorine to drinking water outweigh the potential risks. Why? Why not? Would they be in favor of supplying the people in developing countries of the world with chlorine tablets to add to their drinking water? ment Opportunity #2 Assign students to write an essay that discusses a risk for which they personally have had to consider the tradeoffs. Their essay should demonstrate their knowledge of tradeoffs as applied to the broader context of making decisions about risk situations.</p>	

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Activity Title: Plastics, Risk/Benefit Analysis, and Environmental Legislation		Activity Guide Page #: 163	
Objective(s): Students will: 1) conduct a simplified risk/benefit analysis; 2) investigate the influence of personal decisions on the environment; 3) research and learn about environmental legislation that is designed to reduce risks to human health and the environment.			
Overview: In Part A, students explore their personal use of plastic products and try to conduct a simplified risk/benefit for a plastic product they commonly use. They also explore the use of risk/benefit analysis for making both personal and societal decisions. In Part B, students learn about various national and international regulatory efforts that address the improper disposal of plastic and other items in the aquatic environment. Students then research other legislation that has been enacted to reduce various risks to human health and the environment.			
Subject Area(s): Chemistry, Civics, Communications, Ecology, Environmental Science, Health, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Economics Secondary	A. Personal and Consumer Economics #1 Conduct a cost benefit analysis of a personal or business decision.	Activity #1 Have students brainstorm ways that they personally use plastics. Their list should include plastic products they use at school as well as at home. Make sure that the list includes a diversity of products, such as alarm clocks, athletic shoes, bicycle helmets, cameras, cars, cellular phones, clothes washers and dryers, compact discs, compact disc players, computers, credit cards, electric heaters, electric ranges, eye glasses, first aid and medical supplies, etc. #3 Have each student pick one of the items marked as essential to further investigate. Then ask students to conduct a simplified risk/benefit analysis of that item. Guide them by using the following questions. #4 Using the students' analyses, go back to the list of essential items and mark for each one whether or not the benefits of having the item outweighed the risks. Have students explain how they came up with their analysis. #5 Looking back at their list of essential items, ask if there are any non-plastic	

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		<p>alternatives to the products identified. List them on the chalkboard, Are they acceptable substitutes? Why or why not? What are the risks and benefits of the alternative product? What are the tradeoffs of using the plastic item versus the alternative product? Would students be willing to use the alternative product on a long-term basis?</p> <p>y #6 Ask students if using the alternatives identified above would require any changes in their behavior or require any personal sacrifices.</p> <p>y #7 Ask students if they think a risk/benefit analysis could be used to make better personal decisions. For what types of decisions could this technique help?</p>	
		<p>Activity #2 Divide the class into cooperative learning groups of 4-5 students. Assign each group an area to survey for litter: a vacant lot, the school grounds, the students' neighborhood, a community park, and so forth. Before students begin their survey, have each group predict the type and amounts of litter each student think they might find in their area.</p>	
		<p>y #4 Ask students to suggest possible ways of influencing behavior and of preventing the improper disposal of waste, and list them on the chalkboard. If they found minimal litter, have them speculate why this is so.</p>	
<p>Civics & Government Secondary</p>	<p>B. Purpose & types of Government #2 Asses the different jurisdictions and roles of local, state and federal governments in relation to an important public policy issue.</p>	<p>y #7 Hand out the Student Page “Regulatory Framework for Controlling Aquatic Pollution” to each group as an example of legislation intended to reduce a risk. Explain that when plastics are improperly</p>	

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		<p>disposed of, they can enter nearby water ways or sewers that eventually empty into the ocean.</p> <p>#8 In cooperative groups or individually, have students choose an environmental issue to research. The focus of their research should be to determine if any legislation has been enacted to address that issue. They can look at legislation at the local, state, national, or international levels.</p> <p>#9 After students conduct their research, have them present their findings.</p> <p>#10 To debrief this part of the activity, ask students the following questions (page 169)</p>	
<p>Civics & Government</p> <p>Secondary</p>	<p>A. Rights, Responsibilities & Participation</p> <p>#2 Assess the reasons why participation is important</p>	<p>ment #1 Environmental clubs and student action organizations are often initiated because of the identification of a local problem. If the above activity generates such interest, your class can contact local and state natural resource agencies or nonprofit organizations to get ideas for local projects that are targeted at reducing risk in your community and to get support.</p>	
	<p>C. International Relations</p> <p>#1 Analyze the process used to develop foreign policy.</p>	<p>ment #2 Have students research what other countries are doing to prevent improper disposal of materials into their waterways. Do these countries have recycling programs? Are these programs economically sustainable? They can present their research as posters. Then allow some time for students to view what their classmates have found out.</p>	
		ment Opportunity #1	

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		<p>Ask students to write about whether or not they think their purchase, use, and disposal of plastic items is environmentally responsible? Why or why not? Students could write a report or give a presentation.</p>	
		<p>ment Opportunity #2 Have students write a newspaper article that discusses individual responsibility with respect to the proper disposal of materials.</p>	

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Activity Title: Taking Action: Reducing Your Risk in Your School or Community		Activity Guide Page #: 174	
Objective(s): Students will: 1) identify and discuss ways their school or community can reduce a risk; 2) identify and analyze alternative options for reducing a risk; 3) learn how to develop and implement a plan of action to reduce the risk they have identified.			
Overview: Students will apply the knowledge and skills they have acquired from the activities and special topics as they identify a risk in their school or community. Once the risk is identified, they will develop a plan to assess the risk, decide the best way to reduce the risk, educate others, and, if feasible, implement their plan.			
Subject Area(s): Civics, Communication, Environmental Science, Health, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Economics Secondary	A. Personal & Consumer Economics #1 Conduct a cost benefit analysis of a personal or business decision	Activity #1 Ask students if they are aware of risks in their home, school, or community. List their responses on the chalkboard. #2 As a class, continue to brainstorm risks that are present in your school or community. These risks may vary from structural hazards (a loose step) to health hazards (poor air circulation) to environmental hazards (habitat destruction). Add the risks that the students have identified to the list on the chalkboard. (If you have completed Activity 5, “Communicating Risk,” you may want to use the list of local risks generated in Part E of that activity. Then ask your students if they have any risks to add.) #3 Next, have the class members choose one of the risks to explore in depth. Explain to your students that they will be analyzing the situation, Characterizing the risk, brainstorming risk reduction options, developing a management plan, and, if feasible, implementing the plan for reducing the risk.	
		#5 Have students brainstorm the different	

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		<p>actions they and the other members of their school or community could take to reduce the risk. Write the ideas on the board or on an overhead transparency. (To generate additional ideas and to analyze the feasibility of their ideas, you may want students to conduct research, interview local officials or administrators who would need to approve their plan, contact local experts, and so forth.)</p> <p>y #6 Have each student copy the suggestions generated in Step 5. For homework, have the students review the list of suggestions and develop an outline for an action plan. You may want to provide an example to assist the students.</p> <p>y #7 During the next class period, divide your class into cooperative learning groups of 4-5 students. Instruct the students to discuss each other's plans and to come up with a group plan.</p> <p>y #8 Reconvene the class and put the Student Page "Plan Evaluation Criteria" on the overhead. Go over the different criteria for evaluating the group action plans.</p> <p>y #9 As a class, analyze the different action plans the groups have developed, according to the Student Page "Plan Evaluation Criteria."</p> <p>y #10 Have the students select one of the plans, using the analysis completed above, for the class to organize and implement.</p> <p>Activity #1 Put a copy of the Student Page "Plan Implementation" on an overhead. As a class, fill in the chart to develop a detailed implementation plan.</p>	
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		<p>y #2 If feasible, follow the implementation plan. As the students go through the steps, have them record the successful aspects of the plan, any problems encountered, and any other observations or comments they may have.</p>	
		<p>ment Opportunity #2 Students could summarize their experience of developing a plan, including what they learned about the planning process, what went well, what did not go well, and what suggestions could be used for future group plans or projects.</p>	

EXPLORING ENVIRONMENTAL ISSUES: MUNICIPAL SOLID WASTE

<i>Activity Title:</i> Introduction to Municipal Solid Waste: THE WASTE SYSTEM			<i>Activity Guide Page #:</i> 16
<p>Objective(s): Students will: 1) develop an understanding of the role MSW plays in all of our lives; 2) analyze current and historical accounts of waste management; 3) discover some of the similarities and differences in MSW management by cultures around the world and through time; 4) discover the different types of materials that make up the waste stream; 5) learn about the waste stream in their school.</p>			
<p>Overview: Students will develop an understanding of municipal solid waste (MSW) management and its importance to community health. Through historical examples, students will learn how people have managed waste throughout time and how it affected their lives. Students will discover connections between what types of natural resources are found in products and what is thrown away. They will also investigate the waste stream in their school by collecting, analyzing, and graphing data.</p>			
Subject Area(s): Environmental Science, History, Language Arts, Math, Science, Social Studies			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Social Studies Economics D. International Trade and Global Interdependence Students will understand the patterns and results of international trade.	Elementary Grades Pre-K-2 1. Explain where products come from and how we use them.	y #5 Ask the class to define and give an example of a natural resource. Are any of the waste items made from natural resources? Explain to the class members that the waste items they were sorting are made from natural resources.	
Social Studies History	Middle Grades 5-8 1. Demonstrate an understanding of the	Activity #1 To get students thinking about how garbage was	

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<p>B. Historical Knowledge, Concepts, and Patterns Students will develop historical knowledge of major events, people, and enduring themes in the United States, in Maine, and throughout world history.</p>	<p>causes and effects of major events in United States history and the connections to Maine history with an emphasis on events up to 1877, including but not limited to: Declaration of Independence The Constitution Westward Expansion Industrialization Civil War</p>	<p>handled throughout time, ask them the following questions and record their responses. #2 Provide students with a copy of the Student Page titled “Garbage through the Ages.” Divide the class into groups with each reading about a different time period. Have members of each group work together to identify additional historical accounts of MSW for their time period. #3 As a class, discuss the various methods used to handle waste in the past. What methods were most effective? What method was used the longest? What method was short-lived? Can you trace the development of our current waste management system from past practices? Compare the methods used in the past to how students would deal with their waste if it were no longer collected.</p>	
	<p>Middle Grade 5-8 2. Demonstrate an understanding of selected themes in Maine, United States and World History (e.g., revolution, technological innovation, migration).</p>	<p>ment #4 Have students research how recycling, reusing, composting, and disposing of solid waste have changed over the years. Have them focus on the period during World War II when rationing and recycling were prevalent. Can students determine from the information gathered how the generation of waste has changed since World War II? Has it increased or decreased? Do any articles or information prove the students’ theories?</p>	

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<i>Activity Title:</i> SOURCE REDUCTION		<i>Activity Guide Page #:</i> 29	
Objective(s): Students will: 1) learn the terms "source reduction" and "waste prevention"; 2) determine how waste and toxicity can be diverted from a landfill through source reduction; 3) identify factors involved in a life-cycle analysis.			
Overview: Students will look at ways to prevent and reduce waste and will learn the connection between reducing waste and conserving natural resources. They will learn some of the factors used to determine the environmental impact of a product over its lifespan. They also will look at household hazardous waste (HHW) and ways to reduce the use of toxic products at home.			
Subject Area(s): Art, Computer Science, Science, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Middle Grades 5-8 2. Identify and analyze the factors that contribute to personal spending and savings decisions.	✓ #3 Break the students into small groups and have them “buy” two or three items form the group of products, as if the students were in the store. Pass out copies of , or put on an overhead, the Student Page “Packaging Profile.” Then have each group answer the questions about the products the members have chosen. ✓ #6 Have the groups review their answers to the Student Page “Packaging Profile” and have them determine which items they would buy if they were concentrating on reducing and preventing waste. Stress to students that reducing and preventing waste includes buying products that do not generate waste (such as items that are completely used or reused), that are not toxic, or that can be recycled or composted. Students can reread their “profiles” to the class and can vote on the best packaging for each comparison group. Students should state the reasons why they chose that particular item.	
	Secondary Grades 1. Conduct a cost benefit analysis of a personal or business decision.	✓ # 9 Now that students have developed this new packaging, ask them what the incentive would be for companies to want to adopt it. Do students think their designs will be more expensive or less expensive to produce? Have students taken cost into consideration with their design? Do the design modifications that take any possible toxicity and the company’s needs into consideration. How does this new packaging design differ form the original product and the original design modifications?	

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<p>Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.</p>	<p>Secondary Grades 1. Develop and defend a position on a public policy issue within our democracy.</p>	<p># 10 Have students write letters to the actual product manufacturing company expressing their concerns about product packaging and what they have learned about waste prevention and reduction. Students can include in this letter their new packaging designs. Have them explain the benefits their new product packaging would have for the company, the consumer, and the environment. Have them use the same campaign they used to initially sell the product to the class.</p>	
<p>Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.</p>	<p>Secondary Grades 1. Conduct a cost benefit analysis of a personal or business decision.</p>	<p>Enrichment #1 Have students research a company that produces less-toxic products, products made with recycled materials, or products with reduced packaging. The Body Shop, Tom’s of Maine, Patagonia, and Huffy Bikes are a few examples of such companies. Students should write reports and present them to the class. Students can research other companies that voluntarily change their manufacturing processes to reduce waste and toxic emissions. Enrichment #2 (This activity can be used as an extension to part A and can coincide with a field trip to the local grocery store for Activity #3.) Have students choose a dozen products and prices. Then, have students select 12 similar types of products that have reduced packaging and list their names and prices. Next, have students compare prices between the two different types of items. As a class, discuss the outcome. In general, are the over packaged items more expensive or less? Did the students come up with a standard outcome or does it vary?</p>	

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<i>Activity Title:</i> RECYCLING AND ECONOMICS		<i>Activity Guide Page #:</i> 42	
Objective(s): Students will: 1) learn how to conduct a survey; 2) compute, graph, and analyze data gathered in the survey; 3) learn the concepts relating to supply and demand; 4) learn how markets affect recycling of various materials; 5) discover the important role their individual actions make in conserving natural resources.			
Overview: The activity is designed to familiarize students with recycling and the various economic factors that influences municipal solid waste (MSW) management. Students will conduct field research to determine the extent of recycled and recyclable products in their community. They will learn how supply and demand affects the recycling market.			
Subject Area(s): Economics, Environmental Science, Math, Social Studies			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Social Studies Economics A. Personal and Consumer Economics Students will understand that economic decisions are based on the availability of resources and the costs and benefits of choices.	Middle Grades 5-8 2. Identify and analyze the factors that contribute to personal spending and savings decisions.	Activity #1 To get the students thinking about recycling, ask them if they can think of any items they or their families have ever purchased that were made form recycled materials. Record their responses. To add to this list, brain-storm additional products that are made form recycled materials. √ #2 To illustrate the amount of recycles products in the current marketplace, have students conduct a survey of recycled products. The Student Page “Recycling Data Form” will serve as a data collection sheet for the survey. The survey can be completed several ways: . . . √ #3 Before students begin the survey, review with them the instruction for the “Recycling Data Form.” Explain that students should choose at least 10 items in each of the four categories and record whether the item is made of recycled materials, is recyclable, and can be recycled in your community. √ #4 If students are participating in a grocery store survey, have them take a random sampling of products among each category. √ #5 After students have gathered the data, have them perform the calculations in class for each of the four categories. <u>Activity #6</u> Go over the following questions of your students and record your answers. . .	

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<p>Social Studies Economics B. Economic Systems of the United States Students will understand the economic system of the United States, including its principles, development, and institutions.</p>	<p>Middle Grades 5-8 1. Demonstrate knowledge of economic concepts of supply, demand, price, the role of money, and profit and loss.</p>	<p>Activity #1 Ask students what “supply and demand” is and why they think the concept is important to economic markets. How does “supply and demand” apply to recycling? Have students describe what they think the supply and demand are for the following materials: #2 Draw simple supply and demand curves on the black-board, or use the sample “Supply and Demand Curves for Recycled Newspaper” that is provided as figure 3.3. Explain the concept of market supply and demand as it relates to recycled materials. #3 Using the “Supply and Demand Curves for Recycled Newspaper” ask students the following questions. Activity #4 Review with students the Student Page titled Table 3.4, “Classification of Recyclable and Compostable Material, 1992.” Ask students the following questions #5 Ask students how supply and demand can be influenced by the government (through legislation), by consumers (through their purchasing decisions), and by home recyclers (through their reuse and recycling practices). Have students give examples of each.</p>	
	<p>Middle Grades 5-8 1. Demonstrate knowledge of economic concepts of supply, demand, price, the role of money, and profit and loss.</p>	<p>Part D, Activity #1 To help students understand the costs associated with MSW disposal, have them brainstorm a list of factors that add to the rising cost of waste disposal. Spend a few minutes with the class discussing these costs. Activity #2 Part of the disposal cost increase is the fact that we have more waste to dispose of. Ask students what factors contribute to the increasing generation of MSW in the United States? Activity #3 The cost of disposal can be quite high in some areas, yet some ways exist to gain income from waste. Have students develop a list of what communities might do to generate revenue from their waste. Explain to students that incorporating MSW management practices such as recycling and composting within a community can lead to increased revenue. Activity #4 Table 3.5, “Recovered Recyclable Materials” on the Student Page “Costs and Revenues” gives relative prices for different recyclable products. Have students calculate the missing numbers in the</p>	

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		<p>chart and answer the following questions.</p> <p>Activity #5 Students can learn about MSW management costs for their own community. Provide them with Table 3.6, MSW management costs from the Student Page “Costs and Revenues.” For students to complete the table, they will need to obtain a detailed budget from the local office of public works or the MSW management office.</p>	
<p>Social Studies Economics B. Economic Systems of the United States Students will understand the economic system of the United States, including its principles, development, and institutions.</p>	<p>Secondary Grades 1. Describe the factors (i.e., physical, capital, technology, monetary resources) that impact the development and the distribution of a product.</p>	<p>Enrichment Have students research the types of products made from recycled materials. For instance, recycled aluminum cans can be used in new automobile bumpers and car doors, as well as carpet and other products; and glass can be used in road construction.</p> <p>Assessment Opportunity Review students’ surveys, graphs, and computations for understanding. Collected data, computation, and analysis can become part of a portfolio students put together on recycling and economics. In addition, the following questions can be used to assess students’ learning.</p>	

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<i>Activity Title:</i> COMPOSTING		<i>Activity Guide Page #:</i> 61	
Objective(s): Students will: 1) identify organic items that can potentially be composted; 2) learn about the chemical processes involved in composting; 3) identify the different factors that influence the chemical reactions in composting; 4) create their own compost pile, collect data, record data, and make observations; 5) learn about the different uses of compost.			
Overview: This lesson will help students understand the chemical processes that occur in the decomposition process. By creating their own compost containers, collecting compostable organic waste, and creating actual compost, students will apply their knowledge in hands-on, practical experiments. They will record data and make observations pertaining to the decomposition process, thereby helping them understand the process and value of composting.			
Subject Area(s): Agriculture, Biology, Chemistry, Environmental Science, Industrial Arts		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Middle Grades 5-8 3. Explain how cultures differ in their use of similar environments and resources.	Part A, Activity #6 Pass out copies of the Student Page “Composting Case Studies.” This page provides students with a brief description of municipal composting programs in different areas in the United States and abroad. Have students read “Composting Case Studies.” After considering these case studies, have students generate a list of the advantages and disadvantages of community composting. Then discuss the following questions.	

<i>Activity Title:</i> WASTE-TO-ENERGY		<i>Activity Guide Page #:</i> 75	
Objective(s): Students will: 1) explain how a WTE facility works; 2) list the positive and negative merits of WTE technology; 3) research, develop, and communicate an argumant to represent a specific point of view regarding and issue; 4) participate in a democratic decision-making process.			
Overview: In this activity, students will learn how a waste-to-energy (WTE) facility functions. Through a role-playing activity, they will participate in a democratic decision-making process and will discover the many factors involved when a community makes decisions regarding the development of new solid waste management facilities. After having considered the research, students will defend specific positions and learn from other class members who advocate different positions.			
Subject Area(s): Environmental Science, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Secondary Grades 1. Develop and defend a position on a public policy issue within our democracy.	Part B Activity #1 In this activity, students will explore various sides of the issue of using WTE facilities. Begin by having students read the Student Page “Building a Waste-to-Energy Facility in Branfield.” The case study portrays a town that is faced with the dilemma of whether or not to build a WTE facility Activity #2 After students have read the case study, discuss the major points of the dilemma with the class. Emphasize htat there are many viewpoints about the issue. Numerous groups have an influence on the final outcome. Make sure that students have an understanding of the problem the community must deal with, that is, deriding whether or not they want to build a WTE facility. Activity #3 Next, explain to the class that they are going to play the roles of the Branfield community citizens who must make the decision of whether or not to build a WTE facility.	

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<i>Activity Title:</i> LANDFILLS		<i>Activity Guide Page #:</i> 87	
Objective(s): Students will: 1) learn the importance of liners in landfills for pollution prevention; 2) discover the various social and environmental factors involved with the siting of a landfill.			
Overview: Students will create "miniature landfills" to simulate the movement of leachate in a landfill and to demonstrate the importance of liners. Students will experiment with different soil types and liners to discover the most effective barrier. In addition, students will learn about the many considerations that must be taken into account when identifying a landfill site.			
Subject Area(s): Biology, Earth Science, Environmental Science, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Social Studies Geography A. Skills And Tools Students will know how to construct and interpret maps and use globes and other geographic tools to locate and derive information about people, places, regions, and environments.	Secondary Grades 1. Use mapping to answer complex geographic and environmental problems.	Part B, Activity #2 After completing the experiment in Part A, students should understand that soil type is a major factor to be considered when siting a landfill. Ask students what other factors should be considered when proposing a site for a landfill. Record their comments. Review with the class the Student Page "EPA Federal Regulations for Municipal Solid Waste Landfills," which is an overview of important regulations to consider when planning a landfill.	

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<i>Activity Title: WHERE DOES YOUR GARBAGE GO?</i>		Activity Guide Page #: 98	
Objective(s): Students will: 1) discover how their community manages its solid waste; 2) collect and analyze data pertaining to the amount and type of garbage their community processes; 3) exchange and compare data with students in other community's waste stream.			
Overview: The activity will familiarize students with the practical terminology and issues of municipal solid waste (MSW) at the community level. Students will consider the solid waste program of a municipality, then will study their own community's program. Through exchanging data with students in another community, they will gain additional insight into the management of MSW.			
Subject Area(s): Earth Science, Environmental Science, Math			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Social Studies Geography B. Human Interaction with Environments Students will understand and analyze the relationships among people and their physical environment.	Middle Grades 5-8 3. Explain how cultures differ in their use of similar environments and resources.	Part B, Activity #1 To get students thinking about solid waste practices in other communities, ask them how they think other communities would differ from their community. For example, compare your community to one or more of the following: Activity #2 Now students can try to find out about the MSW practices in other communities. This exploration can be done by contacting another school that is outside your community and that is interested in exchanging information from the Student Page "Community Municipal Solid Waste." To obtain the address of another class in the United States with which you can exchange data, copy and fill out the "Community Municipal Solid Waste Exchange Box" form found on this page.	

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Activity Title: TAKE ACTION: SUCCESS STORIES AND PERSONAL CHOICES		Activity Guide Page #: 106	
Objective(s): Students will: 1) learn about the great strides made in MSW management and explore success stories in this area; 2) discuss ways their school can improve its reduction, reuse and recycling of waste; 3) develop and implement a plan of action to reduce waste.			
Overview: Students will develop an understanding of the great strides municipal solid waste (MSW) management has made through source reduction, recycling, and composting programs. In addition to finding ways to improve waste management in their school, students will analyze and try to improve their own waste generation habits.			
Subject Area(s): Environmental Science, Math, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from description of activity)	Notes to ensure high alignment for every student
Social Studies Civics and Government B. Purpose and Types of Government Students will understand the types and purposes of governments, their evolution, and their relationships with the governed.	Secondary Grades 2. Assess the different jurisdictions and roles of local, state, and federal governments in relation to an important public policy issue.	Part A, Activity #1 Begin the lesson by asking students how they have observed positive strides taken in their community county, or state to manage MSW. Examples might include development of recycling programs, efforts to reuse certain products, and steps taken to implement safe waste disposal facilities. Activity #2 Explain to students that while we still have a long way to go in dealing with MSW, we have made great progress. This progress is revealed through success stories such as the one discussed on the Student Page titled “Success in Seattle.” Have students read “Success in Seattle.” Then discuss the following issues:	
Social Studies Civics and Government A. Rights, Responsibilities, and Participation Students will understand the rights and responsibilities of civic life and will employ the skills of effective civic participation.	Middle Grades 5-8 2. Evaluate and defend positions on current issues regarding individual rights and judicial protection.	Part B, Activity #1 Now that they have investigated some or all of the waste management activities, have your students return to the 4.4-pound bag of garbage in Activity 1. (Or create a bag according to the suggestions in that activity.) Have them decide what should be done with each piece of waste from the bag. Activity #5 After students have looked at what they could have done with their trash, have them decide what is feasible. For example, if the community does not have a recycling plan, recycling may not be feasible. However, students may want to try and create a recycling program.	

	<p>Secondary Grades 1. Develop and defend a position on a public policy issue within our democracy.</p>	<p>Part C, Activity #1 Hold a class brainstorming session that focuses on ways to reduce waste in your school.</p> <p>Activity #2 After brainstorming for 15-20 minutes, share with students the information on the Student Page titled “Waste Reduction Tips for Schools.” Review the suggestions and see if students have additional ideas.</p> <p>Activity #3 Next, share with students the Student Page titles “School Waste Reduction and Recycling Case Studies,” which highlights various schools that have implemented programs to reduce the amount of waste discarded.</p> <p>Activity #4 Have students invite an administrator or another school official to class for a discussion of that person’s ideas. This presentation will give students an opportunity to find out what actions are feasible and what limitations exist.</p> <p>Activity #5 Now that students know what is feasible, divide them into groups and have them develop a 2-week pilot strategy to reduce waste for their school. (Depending on the size of the school, the pilot plan could be for one classroom, several classrooms, or the entire school.) Groups can base their ideas on the information from the Student Pages or can develop a new plan.</p> <p>Activity #6 Have students propose their plans in experimental form with a hypothesis (that is, if I do ____, then waste should be reduced by x amount). The plan can focus on a reduction in a particular waste item or on overall reduction. Each group should present its plan to the class.</p> <p>Activity #7 Before students begin their experiment, have them record the amount of waste discarded at school for a week. Determine what items are the major components of the waste (the information from the school waste inventory in Activity 1 can be used) and whether any items can be reduced, reused, recycled, or composted.</p> <p>Activity #8 Now put the pilot plan into action and record the amount of</p>	
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		<p>waste or specific waste items found in various waste cans throughout the target areas for at least 2 weeks. If the plan includes recycling or composting, record the amount of material collected for recycling or composting. After the 2 week period, have students analyze their data and compare it to the date recorded before the experiment.</p> <p>Activity #9 As a class or school project, students may want to implement the plan on a wider basis and involve additional people or groups. Invite key school personnel identified in Step 4 to come to your class for the presentation of a school-wide plan that they want to implement.</p>	
<p>Social Studies Civics and Government B. Purpose and Types of Government Students will understand the types and purposes of governments, their evolution, and their relationships with the governed.</p>	<p>Middle Grades 5-8 3. Contrast the roles of local, state, and national governments by investigating, evaluating, and debating a current civic issue.</p>	<p>Enrichment #1 In small groups or individually, students can research MSW practices in other countries and present their findings to the class. The presentations may be conducted in the form of a roundtable discussion, allowing time for questions and comparisons. (To maximize diversity, you may want to assign each group or individual to a specific region form which each may choose a country of interest.)</p>	

e Changing Forest: Forest Ecology

Activity Title: Adopt-a-Forest		Page: 16	
Objective(s): Students will: 1) select an area of forest and develop a scientific methodology study; 2) learn about the ecological relationships in their adopted forest; 3) explore the biological and structural diversity of their forest.			
Overview: Forests support a diversity of plants and animals that vary according to the geographic location of the forest. In this activity, students will identify a section of a local forest or wooded area to study and investigate the types of plants and animals that live there. Through this investigation, students will identify the biological and structural diversity within a forest ecosystem.			
Subject Area(s): Biology, Chemistry, Environmental Science, Math, Vocational Agriculture		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Geography	Skills and Tools	Enrichment #2 As the students begin to form a detailed	

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	<p>#1 Use and construct maps to describe geographic location.</p>	<p>picture of their adopted forest, encourage them to bring the information together in the form of an interpretive “guide” that will be useful to people who might visit the forest. It is important to keep in mind that the area studied does not necessarily have to be a “forest” in the sense of the deep woods. A park, a university campus, a downtown greenway with trees, or even an abandoned lot in which shrubs and trees have taken root can be a place of interest to a community with the help of a brief guide describing the features of the site.</p>	
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Activity Title: Cast of Thousands		Page: 27	
Objective(s): Students will: 1) make scientific measurements of their forest; 2) examine the relationships of organisms to their environment; 3) determine the extent to which humans have an impact on forests in their region.			
Overview: Students will further explore the variety of life in their adopted forest and will discover the importance of this biological diversity. They will take measurements, in much the same way as a forester does, to draw conclusions about the overall health of their forest. As an extension, students will compare the information they have collected with that of another class in a different region.			
Subject Area(s): Biology, Environmental Science, Language Arts, Geography, Math, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Geography	Human Interaction of Environments. #1 Explain factors which shapes places & regions over time (e.g. physical & actual).	Activity #3 Be sure the list includes recording measurements and observations of trees, shrubs, herbaceous plants, wildlife, and the site’s physical characteristics and soils. In addition to these features, students will attempt to measure the less obvious components of the forest, such as the insects, other invertebrates, and microorganisms that make up the “cast of thousands.” If you plan to do the Forest Exchange Box Extension Activity, you may want to share this with your students to motivate them to collect the data. Activity #4 Break the group into teams of four to eight students. Explain to students that after they have roped off sections of the forest into plots, they will take different measurements of those areas. Measuring the Forest Activity #10 On the “Inventory Recording Form,” have students mark “F” for flat, “S” for sloping, and “H” for hilly. Although this analysis can be approximated at the local level, a topographic map from the U.S. Geological Survey will give your	

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		<p>students an accurate and graphic picture of the topography around their chosen site and will help them better understand the effects of regional topography on a small area.</p> <p>Activity #11 To enable students to determine the soil type have them take soil samples down to examine and measure the depth of organic litter and humus. Students will determine soil moisture using these samples.</p> <p>Discussion and Follow-up activity #2 Come to a consensus on the topography and physical characteristics of the forest. Consider whether the site is rolling, flat, hilly, or mountainous and whether the soil was dry, mesic, or hydric. Record this decision on the board.</p> <p>Activity #8 Ask students what type of soil was found in the forest at different depths? Is there a class consensus? What is the pH at different depths? Do the students think that the soil of the area helps to determine the plants and animals at the site? Were there any signs or remnants of human activity in the soil? Have students hypothesize about how they got there.</p>	
		<p>Extension Activity #4 When the box arrives form your exchange group, open it with the students and examine the contents. If your site study teams are still in place, distribute the contents of the box according to team specialties, and have the teams prepare a comparative analysis report of their materials. The following are some questions you might have them consider.</p>	

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<p>Geography</p> <p>Elementary grades 3-4</p>	<p>Human Interest of Environment.</p> <p>#3 Use a variety of materials & geographic tools to explain how the physical environment supports and constrains human activities.</p>	<p>Assessment Opportunity Activity #1</p> <p><u>Question #2.</u> How is your adopted forest used by people?</p> <p><u>Question #3.</u> What might we do to keep further damage from occurring? Which human actions might have a positive effect on the ecosystems?</p>	
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Activity Title: Home Sweet Home		Page: 59	
Objective(s): Students will: 1) discuss the ways in which exotic species are introduced; 2) understand the harmful and beneficial ecological effects that occur when exotics are introduced; 2) research and then discuss possible remedies to some of the harmful effects of various exotic species; 4) determine natural growing ranges for certain plants and animals in their adopted forest.			
Overview: Species that are introduced into nonnative environments can be beneficial or detrimental to the ecosystem. In this activity, students will identify "exotics" that have already been introduced into the North American environment and will determine their effect. Students will also gather information about a selected plant or animal species within their adopted forest and determine its natural range.			
Subject Area(s): Ecology, Geography, Science		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Geography Secondary	Human Interaction with Environments. #1 Explain factors which shape places & regions over time (e.g. physical & cultural factors).	Part A, Activity #4 Have students, as teams, determine what issues about their exotic plant or animal world be subject to public debate concerning how to deal with the presence of that plant or animal in the local ecosystem.	
Civics & Government Secondary	Rights, Responsibilities & Participation. #1 Develop and defend a position on a public policy issue with our democracy.	Assessment Opportunity Each team will make a PSA (public service announcement-either TV or radio), poster, display, or pamphlet that will educate the public about an exotic, tell how to discourage (or encourage) its introduction, and explain what effect the "visitor" has on the environment.	

Activity Title: Saga of The Gypsy Moth		Page: 63	
Objective(s): Students will: 1) explore ecological and social issues related to the gypsy moth; 2) consider strategies for management of the gypsy moth.			
Overview: In this activity, students will become more aware of the effects of the gypsy moth. they will formulate management plans that deal with large-scale disturbances like the gypsy moth. students will have the responsibility of advocating their specific management perspective.			
Subject Area(s): Biology, Environmental Science, History, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Civics & Government Secondary Grades	Rights, Responsibilities & Participation #1 Develop and defend a position on a public policy issue with our democracy.	Part A, Activity #3 Divide students into six “gypsy moth management teams” under the following headings: Activity #4 Explain to the class that, at a monthly staff meeting, each team will be advocating a particular method of controlling gypsy moths. Each team’s job is to insist that its method of management is the best and to convince others at the staff meeting that it is. Activity #6 Bring the teams together to start the staff meeting. Activity #7 Give the class approximately 10 minutes to decide which method should be adopted Activity #8 After the class has decided which management method to adopt, have the leader from each team summarize why his or her team favors or opposes the method that was chosen. Activity #9 Have the students answer the following questions:	

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Middle Grades 5-8	#4 Identify ways in which citizens in a pluralistic society manage differences of opinions on public discussion.	Part B, Activity #1 Have each team present its individual goals, and then all the teams must find a common goal at the end. Give students a few minutes in small groups to discuss strategies.	
Geography Middle Grades 5-8	Human Interaction of Enviroments. #1 Analyze how technology shapes the physical & human characteristics of places & regions including Maine.	Enrichment, Activity #1 Pass out copies of the Student Page “The Insecticide Predicament.” Give students a few minutes to read the article.	
Economics Secondary	Personal and Consumer Economics #1 Conduct a cost benefit analysis of a personal or business decision.	Enrichment, Activity #2 Solicit responses to the following questions, and discuss student responses and viewpoints.	
Economics Secondary	A. Personal and Consumer Economics #1 Conduct a cost benefit analysis of a personal or business decision.	Assessment Opportunity Have students write a report or give a presentation that addresses the following questions about gypsy moths.	

Project Learning Tree Links – Secondary Modules/Social Studies

Activity Title: Story of Succession		Page: 71	
Objective(s): Students will: 1) identify successional stages in various ecosystems on the basis of vegetation types; 2) draw conclusions about the process of succession on the basis of observing three test pilots; 3) recognize basic relationships between species diversity and ecosystem stability.			
Overview: By using their adopted forest as a guide, students will be able to identify the various stages of forest succession. Students will observe successional growth as it happens in three experimental test plots. In this activity, they will learn the ways succession is affected by wind, fire, disease, and human intervention.			
Subject Area(s): Ecology, Environmental Science, Math		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
		Part A, Activity #6 Give each team a piece of white paper and five transparent overlays. Using the story of “Tree Tops Valley,” have each team draw a sequence of pictures to show forest succession on the overlays.	
Geography Secondary	Skills or Tools #1 Use mapping to answer complex & geographic & environmental problems.	#4 Include topographic characteristics of your forests.	

Project Learning Tree Links – Secondary Modules/Social Studies

Activity Title: Understanding Fire		Page: 82	
Objective(s): Students will: 1) investigate the ecological significance of fire; 2) study the frequency and scope of fires and their influence on patterns of forest succession; 3) examine the controversial issues influencing decisions about controlling wildfires.			
Overview: In this activity, students will explore the patterns of change brought by fires in a forest ecosystem. They will also examine the environmental, social, and political factors that influence forest-use decisions. Students will develop a broad perspective on the nature of forest fires and how public and private sectors of society are affected by them.			
Subject Area(s): Ecology, Environmental Science, Math, Science		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Economics Secondary Grades	Personal & Consumer Economics #1 Conduct a cost benefit analysis of a personal or business decision.	Part A, Activity #1 Ask the students to list what they think are the benefits and drawbacks of using fire to manage a forest. Then ask them to discuss their reasons for the pros and cons they have listed.	
Geography Middle Grades 5-8	Skills or Tools #2 Develop maps, globes, charts, models, & databases to analyze geographical patterns on the earth.	Activity #2 Have students use the information on the Student Page “Fire in the 1980s” to discuss the acreage burned in each fire. They could develop a chart comparing the areas burned.	
History Middle Grades 5-8	C. Historical Inquiry, Analyses & Interpretation. #3 Use information from a variety of primary and secondary sources to identify and support a point of view on a controversial historical topic.	Activity #3 Pass out copies of the Student Pages: “The Season of Fire-Yellowstone National Park, 1988” and “Biologists Add Fuel to Yellowstone Fire.” Give students time to read the information; then discuss the following questions. Activity #4 Give students the option of arguing “for” or “against” using fire as a management tool for their adopted forest ecosystem.	
Geography Secondary Grades	Skills and Tools #1 Use mapping to answer complex geographic and environmental problems.	Part B, Activity #1 Share the following scenario with your students: page 87 Activity #2	

Project Learning Tree Links – Secondary Modules/Social Studies

		<p>Divide you students into several groups and have each team draw a rough map of Lotsatrees National Forest, indicating the bordering features.</p> <p>Activity #3</p> <p>Have students create a number of scenarios to show fire management decisions</p>	
<p>Civics & Government</p> <p>Secondary</p>	<p>Rights, Responsibilities & Participation.</p> <p>#1 Develop and defend a position on a public policy issue. Let them debate pros & cons of prescribed burn.</p>	<p>Scenario A</p> <p>Managers of Lotsatrees National Forest want to use a prescribed burn to reduce the amount of fuel, or underbrush and dead wood, in one section of the forest. They suggest doing this because so much fuel has built up in that area that they fear a disastrous fire could occur if drought conditions continue.</p>	

Project Learning Tree Links – Secondary Modules/Visual & Performing Arts

Activity Title: Fire Management		Page: 96	
Objective(s): Students will: 1) research plant and animal species that depend on forest fire and will determine interrelationships; 2) examine controversial issues influencing decisions about controlling wildfires near the wildland-urban interface.			
Overview: Students will learn about the many interdependencies of forests and fire in healthy ecosystems. They will research plant and animal species that depend on fire, and will determine some of their relationships. They will also look at problems that occur when humans live in or near forested areas.			
Subject Area(s): Environmental Science, Ecology, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
Geography Secondary	Human Interactions with Environments. #1 Explain factors which shape places & regions over time (e.g. physical & cultural).	<u>Part A</u> Forest Health & Fire. Doing one activity. #1 Ask students if they know examples of the relationships between fire and healthy forest ecosystems.	
		#2 Pass out copies of “One Crisis in Our Forests” and “Fire Suppression Equals Bigger, Hotter and More Restructure Wildfires” All one questions!	
Civics & Government Secondary Grades	A. Skills and Tools	<u>Scenario B.</u> Have students set up a town debate. Should debate pros & cons of the proposed commercial development.	
		Enrichment The people speak out.	
		#2, #3 & #4: Support how to set up one role-play.	
		Assessment Opportunity Evaluate students performances in the activity by observing their presentations and arguments during the debate.	
Geography Secondary Grades	B. Human Interactions with Environments	#3 To identify and evaluate problems, students may include a written report, maps of the terrain and “field reports”. Information should include fire history of the forest. Are people living in the forest?	

Project Learning Tree Links – Secondary Modules/Visual & Performing Arts

Civics & Government Secondary Grades	Rights, Responsibilities & Participation. #1 Develop and defend a position on a public policy issue within our democracy.	#4 Have your students create a forest management plan to change the unhealthy forest to a healthy forest.	
Civics & Government Middle Grades 5-8	Rights, Responsibilities & Participation #2 Evaluate and defend positions on current issues regarding individual rights and judicial protection.	Part B. The Wildland Urban Interface. Doing the Activity. #1 Have students use the “Protecting Your Home From Wildfire” graphic to discuss. Students discuss steps they can take in living responsibly in and around the forest.	
Civics & Government Middle Grades 5-8	Rights, Responsibilities & Participation #2 Evaluate and defend positions on current issues regarding individual rights and judicial protection.	#3 Using information provided in the graphic have students design a home or resort community that would exemplify “living responsibly” in the wildlands.	

Exploring Environmental Issues: Focus On Forests

Activity Title : Who Owns America's Forests?		Page: 30	
Objective(s): Students will: 1) understand the variety of management practices on forestland; 2) analyze and make inferences about information on forestlands presented in charts and graphics.			
Overview: Did you know that the American public owns 331 million acres (134 million ha) of forests, almost half (45 percent) of the 737 million acres (298 million ha) of forests in the United States? (The American Forest Council, 1991 - pamphlet). In this activity, students will read maps and will figure out where forested lands are located around the nation and whether they are publicly or privately owned.			
Subject Area(s): Social Studies, Geography, Math, Art		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary #1 Create a visual to communicate an idea. #9 Use skills and knowledge of arts,	Part B, Activity #4 Once they've gathered the information, the teams should decide how to present their information to the rest of the group. They can create tables, figures, or maps;	The assessment component suggest self evaluation; the last step of indicator #1. This activity enhances meaning in Social Studies, Geography, and Science. To meet the requirements for both #1A and

Project Learning Tree Links – Secondary Modules/Visual & Performing Arts

	enhance meaning in other disciplines.	can make up travel guides; and so on.	#9A students project must include art work.
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Project Learning Tree Links – Secondary Modules/Visual & Performing Arts

Activity Title: Take Action!			Page: 47
Objective(s): Students will: 1) learn about problems and issues facing forests in and around their community; 2) find out how to become involved in forest-related issues3) develop and carry out an action plan to help understand and resolve a local forest-use issue or problem.			
Overview: Your students will learn about what one group of students in New Mexico did to help reclaim a state park, and then they will take part in a project to help forests in their own community.			
Subject Area(s): Social Studies			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary #1 Create a visual to communicate an idea.	Activity #2 After researching issues in step #2 of the activity students take action by doing several activities including the option to produce a brochure or poster to educate. * Issues effecting local forests.	This performance indicator can only be met if students choose to make an <u>illustrated</u> poster and/or brochure.

Exploring Environmental Issues: Focus on Risk

Activity Title: Communicating Risk			Page: 61
Objective(s): Students will: 1) investigate the importance of communication in risk assessment and risk management; 2) identify guidelines for effective risk communication; 3) acquire a sense of scale using concentration analogies; 4) communicate a local risk to their community.			
Overview: Understanding risk is an integral part of the risk management process. It is critical that risk information is communicated effectively to all concerned parties. this activity allows students to explore how timely and responsible communication among experts, the media, and lay people can lead to improved decisions about risk management.			
Subject Area(s): Chemistry, Communications, Earth Sciences, Environmental Science, Health, Language Arts, Math, Social Studies, Visual Arts.			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary #3 Analyze interpret and evaluate meaning in visual arts intended to persuade.	Part C Students compare pamphlets and brochures produced by various public and government agencies for effectiveness. Students share their critiques.	This activity will be more successful meeting the performance indicator if Part B is done first. Part B has students set criteria for an effective brochure. The brochures compared must utilize graphic art principles and/or contain illustrations to meet the performance indicator description.

Project Learning Tree Links – Secondary Modules/Visual & Performing Arts

Activity Title: Decision Making: Ecological Risk, Wildfires, and Natural Hazards			Page: 92
Objective(s): Students will: 1) develop an understanding of ecological risk; 2) apply various decision-making methods to environmental risk reduction options; 3) try making decisions under conditions of uncertainty.			
Overview: In this activity students will develop and apply decision-making skills to various environmental risk scenarios including wildland fires, natural hazards, and threats to coral reefs and mangrove swamps.			
Subject Area(s): Biology, Communications, Earth Sciences, Ecology, Economics, Environmental Science, Geography, Language Arts, Math, Social Studies.			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary #9 Use skills of arts elements to enhance meaning in other disciplines.	Part A Extension Students create a poster after researching a species or ecosystem that is currently in danger.	The poster must utilize graphic arts principles and/or illustrations to meet the performance indicator.

Exploring Environmental Issues: Municipal Solid Waste

Activity Title: Source Reduction			Page: 29
Objective(s): Students will: 1) learn the terms "source reduction" and "waste prevention"; 2) determine how waste and toxicity can be diverted from a landfill through source reduction; 3) identify factors involved in a life-cycle analysis.			
Overview: Students will look at ways to prevent and reduce waste and will learn the connection between reducing waste and conserving natural resources. They will learn some of the factors used to determine the environmental impact of a product over its lifespan. They also will look at household hazardous waste (HHW) and ways to reduce the use of toxic products at home.			
Subject Area(s): Art, Computer Science, Science, Social Studies			Grade Level(s): 9-12
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Demonstrate an understanding that the arts are a means of renewal and recreation, as well as an occupational opportunity.	Part A, Activity #6 and #7 Students select a product they think is over packaged to design new packaging for students then create the package to present to the class.	This activity allows the student to demonstrate an understanding of the arts as an occupational opportunity.

Project Learning Tree Links – Secondary Modules/Visual & Performing Arts

Activity Title: Waste-to-Energy		Page: 75	
Objective(s): Students will: 1) explain how a WTE facility works; 2) list the positive and negative merits of WTE technology; 3) research, develop, and communicate an argument to represent a specific point of view regarding and issue; 4) participate in a democratic decision-making process.			
Overview: In this activity, students will learn how a waste-to-energy (WTE) facility functions. Through a role-playing activity, they will participate in a democratic decision-making process and will discover the many factors involved when a community makes decisions regarding the development of new solid waste management facilities. After having considered the research, students will defend specific positions and learn from other class members who advocate different positions.			
Subject Area(s): Environmental Science, Language Arts, Social Studies		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary Grades #1	Part B, Activity #3 Students will take on the roles of various town members who are deciding whether or not a waste-to-energy should be built in their town.	This activity includes the creation of a performing arts piece. Reflection and self evaluation requirement would need to be added by the teacher.

le Changing Forest: Forest Ecology

Activity Title: Adopt-a-Forest		Page: 16	
Objective(s): Students will: 1) select an area of forest and develop a scientific methodology study; 2) learn about the ecological relationships in their adopted forest; 3) explore the biological and structural diversity of their forest.			
Overview: Forests support a diversity of plants and animals that vary according to the geographic location of the forest. In this activity, students will identify a section of a local forest or wooded area to study and investigate the types of plants and animals that live there. Through this investigation, students will identify the biological and structural diversity within a forest ecosystem.			
Subject Area(s): Biology, Chemistry, Environmental Science, Math, Vocational Agriculture		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary #9 Use skills of arts elements to enhance meaning in other disciplines.	Part C, Enrichment #2 After completing a scientific study of a given area, students make a nature guide to the area. The guide includes illustrations of fauna and flora, a map and information.	This activity enhances biology, chemistry and social studies.

Project Learning Tree Links – Secondary Modules/Visual & Performing Arts

Activity Title: Home Sweet Home		Page: 59	
Objective(s): Students will: 1) discuss the ways in which exotic species are introduced; 2) understand the harmful and beneficial ecological effects that occur when exotics are introduced; 2) research and then discuss possible remedies to some of the harmful effects of various exotic species; 4) determine natural growing ranges for certain plants and animals in their adopted forest.			
Overview: Species that are introduced into nonnative environments can be beneficial or detrimental to the ecosystem. In this activity, students will identify "exotics" that have already been introduced into the North American environment and will determine their effect. Students will also gather information about a selected plant or animal species within their adopted forest and determine its natural range.			
Subject Area(s): Ecology, Geography, Science		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary #9 Use skills of arts elements to enhance meaning in other disciplines.	Assessment Opportunity In teams students will make a public service announcement for TV or radio, a pamphlet, display, or poster on how to encourage or discourage the introduction of an exotic plant or animal to a habitat.	Research is necessary for activity success. While working in teams each individual student must have a performing role or hands-on role in visual presentation to meet alignment requirements. This activity enhances meaning in science and geography.

Project Learning Tree Links – Secondary Modules/Visual & Performing Arts

Activity Title: Story of Succession		Page: 71	
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Overview: By using their adopted forest as a guide, students will be able to identify the various stages of forest succession. Students will observe successional growth as it happens in three experimental test plots. In this activity, they will learn the ways succession is affected by wind, fire, disease, and human intervention.			
Subject Area(s): Ecology, Environmental Science, Math		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary #9 Use skills of arts elements to enhance meaning in other disciplines.	Part A, Activity #6 Students draw a sequence of pictures to show succession; the first on paper the others on transparent film to use as overlays.	Each student on the team must participate in the illustrating of the succession story. This enhances meaning in the areas of biology and social studies.

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Activity Title: Understanding Fire		Page: 82	
Objective(s): Students will: 1) investigate the ecological significance of fire; 2) study the frequency and scope of fires and their influence on patterns of forest succession; 3) examine the controversial issues influencing decisions about controlling wildfires.			
Overview: In this activity, students will explore the patterns of change brought by fires in a forest ecosystem. They will also examine the environmental, social, and political factors that influence forest-use decisions. Students will develop a broad perspective on the nature of forest fires and how public and private sectors of society are affected by them.			
Subject Area(s): Ecology, Environmental Science, Math, Science		Grade Level(s): 9-12	
Standard	Performance Indicators (by grade clusters)	Evidence of alignment (text from activity description)	Notes to ensure high alignment for every student
	Secondary #1 Create a performance piece to communicate an idea.	Enrichment #1 Students role-play a public hearing after the Yellowstone fires to debate management of the forests. Assessment Opportunity Students assess how well they support the role they were assigned.	Each student must have a role-playing part and participate in the assessment component to complete the performance indicator.