

	English/Language Arts	Mathematics	Social Studies
<b>ACTIVITY</b>			
Sounds Around (4)		6.5.1, 6.6.2, 6.7.5	6.3.13
Poet-Tree (5)	6.5.6		6.3.12, 6.3.13, 6.3.14
The Forest of S.T. Shrew (8)	6.5.4		
Planet of Plenty (9)	6.4.5, 6.7.5		
We All Need Trees (13)			6.3.12, 6.3.13, 6.5.12
Renewable Or Not? (14)			6.3.12, 6.3.13, 6.3.16, 6.4.8
A Few Of My Favorite Things (15)			6.3.12, 6.3.13
Pass the Plants, Please (16)		6.6.1	
People of the Forest (17)	6.4.3, 6.4.5, 6.7.6, 6.7.11		6.3.4, 6.3.5, 6.3.10, 6.5.1
Tale of the Sun (18)	6.3.1, 6.3.6, 6.5.1, 6.5.7		6.5.1
Values On The Line (19)			6.3.9, 6.3.13, 6.3.14, 6.3.16
Environment Exchange Box (20)			6.3.4, 6.3.5, 6.3.6, 6.3.10, 6.3.16
Adopt a Tree (21)		6.5.4, 6.5.5, 6.5.10, 6.7.5	
Trees as Habitats (22)		6.6.1, 6.6.2, 6.7.5	6.3.14
Natures Recyclers (24)			
Bird and Worms (25)		6.6.1, 6.6.2, 6.7.5	
Every Tree for Itself (27)		6.5.1, 6.6.1, 6.6.2, 6.7.5	
Air Plants(28)		6.4.3, 6.5.1, 6.7.1, 6.7.4, 6.7.5	
Rain Reasons (29)		6.5.1	6.3.1, 6.3.4, 6.3.6, 6.3.7, 6.3.8
Three Cheers for Trees (30)			6.3.8, 6.3.12, 6.3.13, 6.3.16
Plant a Tree (31)			6.3.12, 6.3.13
A Forest of Many Uses (32)			6.3.12, 6.3.13, 6.3.16

	<b>English/Language Arts</b>	<b>Mathematics</b>	<b>Social Studies</b>
<b>ACTIVITY</b>			
Forest Consequences (33)	6.2.6, 6.2.7, 6.7.13, 6.7.14		6.3.13, 6.3.16
Who Works In The Forest (34)			6.3.12, 6.3.13
Loving It Too Much (35)			6.3.4, 6.3.12, 6.3.13, 6.3.16
Pollution Search (36)		6.6.1, 6.6.2, 6.7.5	6.3.13, 6.3.14, 6.3.16
Talking Trash, Not! (37)		6.2.2, 6.2.5, 6.3.2, 6.5.1, 6.6.1, 6.6.2, 6.7.5	6.3.12, 6.3.13, 6.3.14, 6.3.16
Every Drop Counts (38)		6.2.3, 6.2.8, 6.5.1, 6.7.1, 6.7.4, 6.7.5	6.3.12, 6.3.13, 6.3.16
Energy Sleuths (39)	6.7.5, 6.7.6, 6.7.11		6.3.3, 6.3.4, 6.3.12, 6.3.13, 6.3.16
Then And Now (40)	6.4.3, 6.4.5, 6.5.1, 6.5.4		6.3.9, 6.3.13
How Plants Grow (41)		6.5.1, 6.6.1, 6.7.5	
Water Wonders (44)			6.3.13, 6.3.16
Web Of Life (45)	6.4.7		
Field, Forest, and Stream (48)		6.5.1, 6.6.1, 6.7.5	
Tropical Treehouse (49)	6.2.3, 6.3.3, 6.4.2, 6.4.3, 6.4.5		6.3.3, 6.3.4, 6.3.8, 6.3.10, 6.3.13, 6.3.16
Make Your Own Paper (51)			6.3.12, 6.3.14
A Look At Aluminum (52)			6.3.13, 6.3.14, 6.3.16
On The Move (53)		6.2.2, 6.2.3, 6.3.2, 6.5.1, 6.5.10, 6.7.1, 6.7.3, 6.7.4, 6.7.5	6.3.12, 6.3.13, 6.3.14, 6.3.16
I'd Like to Visit A Place Where... (54)	6.5.7		6.3.4
Planning the Ideal Community (55)	6.7.14		6.3.1
We Can Work It Out (56)	6.2.4, 6.2.6, 6.2.7, 6.2.8, 6.7.5, 6.7.13, 6.7.14		6.3.13
Democracy In Action (57)			6.3.16

	<b>English/Language Arts</b>	<b>Mathematics</b>	<b>Social Studies</b>
<b>ACTIVITY</b>			
The Ought To Be A Law (58)	6.4.2, 6.4.5, 6.5.7		6.3.16, 6.5.1
Power Of Print (59)	6.2.1, 6.2.4, 6.2.6, 6.2.7, 6.2.8, 6.4.1, 6.4.2, 6.4.3, 6.5.5, 6.5.6, 6.5.7, 6.7.4, 6.7.5, 6.7.9, 6.7.13		6.3.16
Publicize It! (60)	6.2.7, 6.4.2, 6.4.3, 6.4.7, 6.4.8, 6.4.10, 6.5.5, 6.5.7		6.3.13, 6.3.16
The Closer You Look (61)	6.4.5		
Germinating Giants (66)		6.2.2, 6.2.3, 6.2.6, 6.3.1, 6.3.2, 6.5.1, 6.5.2, 6.5.4, 6.5.5, 6.7.1, 6.7.4, 6.7.5, 6.6.1	
How Big is Your Tree? (67)		6.2.2, 6.2.3, 6.3.2, 6.5.1, 6.5.4, 6.5.5, 6.6.1, 6.7.1, 6.7.4, 6.7.5, 6.7.6	
Forest For The Trees (69)		6.7.1, 6.7.11	6.3.13, 6.3.14, 6.3.16
Soil Stories (70)		6.2.5, 6.2.6, 6.2.9, 6.3.2, 6.5.1, 6.6.1, 6.7.1, 6.7.5, 6.7.6, 6.7.7	6.3.1, 6.3.4, 6.3.13, 6.3.14, 6.3.16
Air We Breath (72)	6.4.5, 6.7.5, 6.7.6		
Waste Watchers (73)		6.2.2, 6.2.3, 6.2.6, 6.3.2, 6.5.1, 6.6.1, 6.7.1, 6.7.4, 6.7.5, 6.7.11	6.3.13, 6.3.14, 6.3.16
Tipi Talk (75)			6.3.4, 6.3.5, 6.3.15, 6.5.6, 6.5.7
Tree Cookies (76)	6.4.5		6.1.16, 6.3.13, 6.3.14, 6.3.15, 6.3.16
Trees In Trouble (77)	6.4.5, 6.5.5, 6.5.7	6.5.1, 6.6.1, 6.7.4	6.3.13, 6.3.14, 6.3.16
Signs of Fall (78)	6.5.1, 6.5.7		
Tree Life Cycle (79)	6.7.5		
Nothing Succeeds Like Succession (80)	6.7.5, 6.4.5	6.2.2, 6.2.3, 6.3.2, 6.5.1, 6.6.1, 6.7.1, 6.7.5	
Living With Fire (81)			6.3.12, 6.3.13, 6.3.14, 6.3.16
Resource-Go-Round (82)			6.3.3, 6.3.11, 6.3.12, 6.3.13, 6.3.14, 6.3.16, 6.4.10

	<b>English/Language Arts</b>	<b>Mathematics</b>	<b>Social Studies</b>
<b>ACTIVITY</b>			
Reduce, Reuse, Recycle (83)	6.4.5, 6.5.7, 6.7.4, 6.7.5, 6.7.13	6.2.2, 6.2.3, 6.2.5, 6.2.6, 6.3.1, 6.3.2, 6.5.10, 6.7.1, 6.7.5, 6.7.11	6.3.12, 6.3.13, 6.3.16
A Peak At Packaging (84)			6.3.12, 6.3.13, 6.3.14, 6.3.16, 6.5.5
In the Driver's Seat (85)		6.2.2, 6.2.3, 6.2.6, 6.2.9, 6.3.1, 6.3.2, 6.5.1, 6.7.1, 6.7.4, 6.7.5, 6.7.7, 6.7.11	6.3.12, 6.3.13, 6.3.14, 6.3.16, 6.5.5
Our Changing World (86)	6.4.5, 6.7.4, 6.7.5, 6.7.6, 6.7.11, 6.7.14		6.3.3, 6.3.4, 6.3.8, 6.3.11, 6.3.12, 6.3.13, 6.3.14, 6.3.15, 6.4.10
Life On The Edge (88)			6.3.4, 6.3.8, 6.3.11, 6.3.13, 6.3.14, 6.3.16
Trees For Many Reasons (89)	6.5.4, 6.5.7, 6.7.5, 6.7.12		6.3.13, 6.3.14, 6.3.16
The Native Way (90)	6.2.3, 6.2.7, 6.4.5		6.1.13, 6.1.14, 6.1.18, 6.1.19, 6.1.20, 6.1.21, 6.3.3, 6.3.4, 6.3.5, 6.3.9, 6.3.10, 6.3.11, 6.3.12, 6.3.13, 6.3.14, 6.3.15, 6.3.16, 6.5.4, 6.5.5
In the Good Old Days (91)	6.4.5, 6.5.7, 6.7.4, 6.7.5, 6.7.6, 6.7.11		6.1.21, 6.3.13, 6.3.14, 6.3.16
A Look At Lifestyles (92)	6.3.6, 6.3.7, 6.4.5, 6.5.7, 6.7.6		6.3.5, 6.3.10, 6.3.12, 6.3.13, 6.3.14, 6.3.15, 6.3.16
Paper Civilizations (93)	6.7.5		6.5.5, 6.5.7
Where Are The Cedars Of Lebanon? (94)			6.1.1, 6.1.2, 6.1.19, 6.1.13, 6.1.21, 6.3.1, 6.3.3, 6.3.4, 6.3.5, 6.3.9, 6.3.10, 6.3.11, 6.3.12, 6.3.13, 6.3.14, 6.3.15, 6.3.16, 6.4.10, 6.5.5, 6.5.8
Did You Notice? (95)	6.4.5, 6.2.4, 6.7.5		6.1.16, 6.1.17, 6.1.21, 6.3.10, 6.3.11, 6.3.12, 6.3.13, 6.3.14, 6.3.15, 6.3.16, 6.5.5, 6.5.6
Improve Your Place (96)			6.3.1, 6.3.13, 6.3.14, 6.3.16

**Standard 2****READING: Comprehension (Focus on Informational Materials)**

Students read and understand grade-level-appropriate material. They describe and connect the essential ideas, arguments, and perspectives of the text by using their knowledge of text structure, organization, and purpose. The selections in the **Indiana Reading List** (available online at [www.doe.state.in.us/standards/readinglist.html](http://www.doe.state.in.us/standards/readinglist.html)) illustrate the quality and complexity of the materials to be read by students. At Grade 6, in addition to regular classroom reading, students read a variety of grade-level-appropriate narrative (story) and expository (informational and technical) texts, including classic and contemporary literature, poetry, magazines, newspapers, reference materials, and online information.

*Structural Features of Informational and Technical Materials*

- 6.2.1 Identify the structural features of popular media (newspapers, magazines, online information) and use the features to obtain information.

Example: Do a keyword search on the Internet to find information for a research report. Use the section headers for a newspaper to locate information for a report on current world events.

**PLT Activities:** 59

*Comprehension and Analysis of Grade-Level-Appropriate Text*

- 6.2.3 Connect and clarify main ideas by identifying their relationships to multiple sources and related topics.

Example: Read about another culture in a magazine such as *Cricket* or *National Geographic*. Then, compare what was learned to descriptions of other peoples and cultures in other reading sources.

**PLT Activities:** 49, 90

- 6.2.4 Clarify an understanding of texts by creating outlines, notes, diagrams, summaries, or reports.

Example: Take notes while reading to create an outline or graphic organizer, such as a concept map, flow chart, or diagram, of the main ideas and supporting details from what is read. Read an informational book and summarize the main ideas.

**PLT Activities:** 56, 59, 95

*Expository (Informational) Critique*

- 6.2.6 Determine the adequacy and appropriateness of the evidence presented for an author's conclusions and evaluate whether the author adequately supports inferences.

Example: In reading *Amelia Earhart: Courage in the Sky* by Mona Kerby, note the author's opinions and conclusions. Decide if they are adequately supported by the facts that she presents.

**PLT Activities:** 33, 56, 59

- 6.2.7 Make reasonable statements and conclusions about a text, supporting them with accurate examples.  
Example: Read some of the 28 poems in Lee Bennett Hopkins' *Been to Yesterdays: Poems of Life*, and draw conclusions about what the poet is saying about his experiences in the middle school years. Describe Leonardo da Vinci's greatest achievements, after reading *Leonardo da Vinci: Artist, Inventor, and Scientist of the Renaissance* by Francesca Romei.  
**PLT Activities:** 33, 56, 59, 60, 90
- 6.2.8 Note instances of persuasion, propaganda, and faulty reasoning in text.  
Example: After reading an article by one author on the reasons for repopulating western national parks with wolves and another article by a different author reporting ranchers' opposition to the program, describe the ways each author tries to persuade the reader.  
**PLT Activities:** 56, 59

### **Standard 3**

#### **READING: Literary Response and Analysis**

*Students read and respond to grade-level-appropriate historically or culturally significant works of literature that reflect and enhance their study of history and social science. They clarify the ideas and connect them to other literary works. The selections in the **Indiana Reading List** (available online at [www.doe.state.in.us/standards/readinglist.html](http://www.doe.state.in.us/standards/readinglist.html)) illustrate the quality and complexity of the materials to be read by students.*

#### *Structural Features of Literature*

- 6.3.1 Identify different types (genres) of fiction and describe the major characteristics of each form.  
Example: Describe the common characteristics of different types of fiction, such as folklore, mystery, science fiction, adventure, fantasy, or biography, and provide examples of each type from books read by students in the class. Use a graphic organizer to show comparisons.  
**PLT Activities:** 18

#### *Narrative Analysis of Grade-Level-Appropriate Text*

- 6.3.3 Analyze the influence of the setting on the problem and its resolution.  
Example: Recognize the influence of the settings in a book, such as the role of the North and South in the book *The Watsons Go to Birmingham — 1963* by Christopher Paul Curtis, in which an African-American family from Michigan goes to visit relatives in Alabama in the summer of 1963.  
**PLT Activities:** 49
- 6.3.6 Identify and analyze features of themes conveyed through characters, actions, and images.  
Example: Analyze the way a theme is developed throughout a book, such as the themes of

prejudice and criticism of others shown throughout the events and characters in *Summer of My German Soldier* by Bette Greene.

**PLT Activities:** 18, 92

6.3.7 Explain the effects of common literary devices, such as symbolism, imagery, or metaphor, in a variety of fictional and nonfictional texts.

- Symbolism: the use of an object to represent something else; for example, a dove might symbolize peace
- Imagery: the use of language to create vivid pictures in the reader's mind
- Metaphor: an implied comparison in which a word or phrase is used in place of another, such as *He was drowning in money*.

Example: Select a variety of examples of sportswriting from a local or national newspaper. Explain the use of metaphors and symbolism throughout sportswriting.

**PLT Activities:** 92

## Standard 4

### WRITING: Process

*Students discuss and keep a list of writing ideas and use graphic organizers to plan writing. They write clear, coherent, and focused essays. Students progress through the stages of the writing process and proofread, edit, and revise writing.*

#### *Organization and Focus*

6.4.1 Discuss ideas for writing, keep a list or notebook of ideas, and use graphic organizers to plan writing.

**PLT Activities:** 59

6.4.2 Choose the form of writing that best suits the intended purpose.

**PLT Activities:** 49, 58, 59, 60

6.4.3 Write informational pieces of several paragraphs that:

- engage the interest of the reader.
- state a clear purpose.
- develop the topic with supporting details and precise language.
- conclude with a detailed summary linked to the purpose of the composition.

**PLT Activities:** 17, 40, 49, 59, 60

#### *Research and Technology*

6.4.5 Use note-taking skills.

**PLT Activities:** 9, 17, 40, 49, 58, 61, 72, 76, 77, 80, 83, 86, 90, 91, 92, 95

6.4.7 Use a computer to compose documents with appropriate formatting by using word-processing skills and principles of design, including margins, tabs, spacing, columns, and page orientation.

**PLT Activities:** 45, 60

#### *Evaluation and Revision*

6.4.8 Review, evaluate, and revise writing for meaning and clarity.

**PLT Activities:** 60

6.4.10 Revise writing to improve the organization and consistency of ideas within and between paragraphs.

**PLT Activities:** 60

### **Standard 5**

#### **WRITING: Applications (Different Types of Writing and Their Characteristics)**

*At Grade 6, students write narrative (story), expository (informational), persuasive, and descriptive texts (of at least 500 to 700 words). Student writing demonstrates a command of Standard English and the research, organizational, and drafting strategies outlined in Standard 4 — Writing Process. Writing demonstrates an awareness of the audience (intended reader) and purpose for writing.*

*In addition to producing the different writing forms introduced in earlier grades, such as letters, Grade 6 students use the writing strategies outlined in Standard 4 — Writing Process to:*

6.5.1 Write narratives that:

- establish and develop a plot and setting and present a point of view that is appropriate to the stories.
- include sensory details and clear language to develop plot and character.
- use a range of narrative devices, such as dialogue or suspense.

Example: Write a short play that could be presented to the class. Rewrite a short story that was read in class, telling the story from another point of view.

**PLT Activities:** 18, 40, 78

6.5.4 Write responses to literature that:

- develop an interpretation that shows careful reading, understanding, and insight.
- organize the interpretation around several clear ideas.
- develop and justify the interpretation through the use of examples and evidence from the text.

Example: After reading some Grimm fairy tales and folktales from other countries, such as Japan, Russia, India, and the United States, write a response to the stories. Identify the beliefs and values that are highlighted in each of these folktales and develop a theory to explain why similar tales appear in many different cultures.

**PLT Activities:** 8, 40, 89

- 6.5.5 Write persuasive compositions that:
- state a clear position on a proposition or proposal.
  - support the position with organized and relevant evidence and effective emotional appeals.
  - anticipate and address reader concerns and counterarguments.

Example: Write a persuasive essay on how the class should celebrate the end of the school year, including adequate reasons for why the class should participate in the activity described. Create an advertisement for a product to try to convince readers to buy the product.

**PLT Activities:** 59, 60, 77

- 6.5.6 Use varied word choices to make writing interesting.
- Example: Write stories, reports, and letters showing a variety of word choices. (Use *delicious* instead of *good*; *overcoat* or *parka* instead of *coat*.)

**PLT Activities:** 5, 59

- 6.5.7 Write for different purposes and to a specific audience or person, adjusting tone and style as necessary.

Example: Write a review of a favorite book or film for a classroom writers' workshop. Use clear organization and careful word choices to help the readers of the review decide if they might be interested in reading the book or viewing the film.

**PLT Activities:** 18, 54, 58, 59, 60, 77, 78, 83, 89, 91, 92

## Standard 7

### LISTENING AND SPEAKING: Skills, Strategies, and Applications

*Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. They evaluate the content of oral communication. Students deliver well-organized formal presentations using traditional speech strategies, including narration, exposition, persuasion, and description. Students use the same Standard English conventions for oral speech that they use in their writing.*

#### *Organization and Delivery of Oral Communication*

- 6.7.4 Select a focus, an organizational structure, and a point of view, matching the purpose, message, and vocal modulation (changes in tone) to the audience.

**PLT Activities:** 59, 83, 86, 91

- 6.7.5 Emphasize important points to assist the listener in following the main ideas and concepts.

**PLT Activities:** 9, 39, 56, 59, 72, 79, 80, 83, 86, 89, 91, 93, 95

6.7.6 Support opinions with researched, documented evidence and with visual or media displays that use appropriate technology.

**PLT Activities:** 17, 39, 72, 86, 91, 92

### *Analysis and Evaluation of Oral and Media Communications*

6.7.9 Identify persuasive and propaganda techniques used in electronic media (television, radio, online sources) and identify false and misleading information.

**PLT Activities:** 59

### *Speaking Applications*

6.7.11 Deliver informative presentations that:

- pose relevant questions sufficiently limited in scope to be completely and thoroughly answered.
- develop the topic with facts, details, examples, and explanations from multiple authoritative sources, including speakers, periodicals, and online information.

**PLT Activities:** 17, 39, 86, 91

6.7.12 Deliver oral responses to literature that:

- develop an interpretation that shows careful reading, understanding, and insight.
- organize the presentation around several clear ideas, premises, or images.
- develop and justify the interpretation through the use of examples from the text.

**PLT Activities:** 89

6.7.13 Deliver persuasive presentations that:

- provide a clear statement of the position.
- include relevant evidence.
- offer a logical sequence of information.
- engage the listener and try to gain acceptance of the proposition or proposal.

**PLT Activities:** 33, 56, 59, 83

6.7.14 Deliver presentations on problems and solutions that:

- theorize on the causes and effects of each problem.
- establish connections between the defined problem and at least one solution.
- offer persuasive evidence to support the definition of the problem and the proposed solutions.

**PLT Activities:** 33, 56, 86

## Grade 6

*In this technological age, mathematics is more important than ever. When students leave school, they are more and more likely to use mathematics in their work and everyday lives — operating computer equipment, planning timelines and schedules, reading and interpreting data, comparing prices, managing personal finances, and completing other problem-solving tasks. What they learn in mathematics and how they learn it will provide an excellent preparation for a challenging and ever-changing future.*

*The state of Indiana has established the following mathematics standards to make clear to teachers, students, and parents what knowledge, understanding, and skills students should acquire in Grade 6:*

### **Standard 1 — Number Sense**

Understanding the number system is the basis of mathematics. Students continue to develop their understanding of the relationship between fractions and decimals. They extend the number system to include negative numbers. They also relate percentages to fractions and decimals and begin learning how to use ratios. They find multiples and factors of whole numbers, using the multiples and factors to solve problems involving fractions.

### **Standard 2 — Computation**

Fluency in computation is essential. Students add, subtract, multiply, and divide fractions, decimals, and both positive and negative integers. They solve problems using ratios, proportions, and percentages, including calculating discount and interest. They use mental arithmetic to add or subtract simple fractions and decimals.

### **Standard 3 — Algebra and Functions**

Algebra is a language of patterns, rules, and symbols. Students at this level write and solve simple equations and inequalities, and write and use formulas to solve problems. They use parentheses in more complex expressions to show the order of operations. They also extend graphs of straight lines to include negative values.

### **Standard 4 — Geometry**

Students learn about geometric shapes and develop a sense of space. They draw special types of angles and use them to solve problems. They find and use the sum of the angles of a triangle and of a quadrilateral. They identify shapes that are similar (the same shape but not necessarily the same size). They draw reflections and translations of shapes, and they also draw two-dimensional views of three-dimensional shapes.

### **Standard 5 — Measurement**

The study of measurement is essential because of its uses in many aspects of everyday life. Students measure in order to compare lengths, areas, volumes, weights, times, temperatures, etc. They learn about the number  $\pi$  and use it to calculate the circumference and area of circles. They construct models, find the volume and surface area of prisms and cylinders, and they convert temperatures between Celsius and Fahrenheit.

### **Standard 6 — Data Analysis and Probability**

Data are all around us — in newspapers and magazines, in television news and commercials, in quality control for manufacturing — and students need to learn how to understand data. At this level, they learn how to display data in frequency tables and in stem-and-leaf plots. They compare the mean, median, and

mode. They find probabilities for compound events and write them as fractions, decimals, and percentages. They also estimate the probabilities of future events.

## **Standard 7 — Problem Solving**

In a general sense, mathematics is problem solving. In all mathematics, students use problem-solving skills: they choose how to approach a problem, they explain their reasoning, and they check their results. As they develop their skills with negative numbers, calculating angles, or finding areas, for example, students move from simple to more complex ideas by taking logical steps that build a better understanding of mathematics.

*As part of their instruction and assessment, students should also develop the following learning skills by Grade 12 that are woven throughout the mathematics standards:*

### **Communication**

The ability to read, write, listen, ask questions, think, and communicate about math will develop and deepen students' understanding of mathematical concepts. Students should read text, data, tables, and graphs with comprehension and understanding. Their writing should be detailed and coherent, and they should use correct mathematical vocabulary. Students should write to explain answers, justify mathematical reasoning, and describe problem-solving strategies.

### **Reasoning and Proof**

Mathematics is developed by using known ideas and concepts to develop others. Repeated addition becomes multiplication. Multiplication of numbers less than ten can be extended to numbers less than one hundred and then to the entire number system. Knowing how to find the area of a right triangle extends to all right triangles. Extending patterns, finding even numbers, developing formulas, and proving the Pythagorean Theorem are all examples of mathematical reasoning. Students should learn to observe, generalize, make assumptions from known information, and test their assumptions.

### **Representation**

The language of mathematics is expressed in words, symbols, formulas, equations, graphs, and data displays. The concept of one-fourth may be described as a quarter,  $\frac{1}{4}$ , one divided by four, 0.25,  $\frac{1}{8} + \frac{1}{8}$ , 25 percent, or an appropriately shaded portion of a pie graph. Higher-level mathematics involves the use of more powerful representations: exponents, logarithms,  $\pi$ , unknowns, statistical representation, algebraic and geometric expressions. Mathematical operations are expressed as representations: +, =, divide, square. Representations are dynamic tools for solving problems and communicating and expressing mathematical ideas and concepts.

### **Connections**

Connecting mathematical concepts includes linking new ideas to related ideas learned previously, helping students to see mathematics as a unified body of knowledge whose concepts build upon each other. Major emphasis should be given to ideas and concepts across mathematical content areas that help students see that mathematics is a web of closely connected ideas (algebra, geometry, the entire number system). Mathematics is also the common language of many other disciplines (science, technology, finance, social science, geography) and students should learn mathematical concepts used in those disciplines. Finally, students should connect their mathematical learning to appropriate real-world contexts.

## Standard 2 Computation

*Students solve problems involving addition, subtraction, multiplication, and division of integers. They solve problems involving fractions, decimals, ratios, proportions, and percentages.*

6.2.2 Multiply and divide positive and negative integers.

Example: Continue the pattern:  $3 \times 2 = ?$ ,  $2 \times 2 = ?$ ,  $1 \times 2 = ?$ ,  $0 \times 2 = ?$ ,  $-1 \times 2 = ?$ ,  $-2 \times 2 = ?$ , etc.

**PLT Activities:** 37, 53, 66, 67, 80, 83, 85

6.2.3 Multiply and divide decimals.

Example:  $3.265 \times 0.96 = ?$ ,  $56.79 \div 2.4 = ?$ .

**PLT Activities:** 38, 53, 66, 67, 80, 83, 85

6.2.5 Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation.

Example: You want to place a towel bar  $9\frac{3}{4}$  inches long in the center of a door  $27\frac{1}{2}$  inches wide. How far from each edge should you place the bar? Explain your method.

**PLT Activities:** 37, 70, 83

6.2.6 Interpret and use ratios to show the relative sizes of two quantities. Use the notations:  $a/b$ ,  $a$  to  $b$ ,  $a:b$ .

Example: A car moving at a constant speed travels 130 miles in 2 hours. Write the ratio of distance to time and use it to find how far the car will travel in 5 hours.

**PLT Activities:** 66, 70, 83, 85

6.2.8 Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips.

Example: In a sale, everything is reduced by 20%. Find the sale price of a shirt whose pre-sale price was \$30.

**PLT Activities:** 38

6.2.9 Use estimation to decide whether answers are reasonable in decimal problems.

Example: Your friend says that  $56.79 \div 2.4 = 2.36625$ . Without solving, explain why you think the answer is wrong.

**PLT Activities:** 70, 85

## Standard 3

### Algebra and Functions

*Students write verbal expressions and sentences as algebraic expressions and equations. They evaluate algebraic expressions, solve simple linear equations, and graph and interpret their results. They investigate geometric relationships and describe them algebraically.*

- 6.3.1 Write and solve one-step linear equations and inequalities in one variable and check the answers.  
Example: The area of a rectangle is  $143 \text{ cm}^2$  and the length is 11 cm. Write an equation to find the width of the rectangle and use it to solve the problem. Describe how you will check to be sure that your answer is correct.

**PLT Activities:** 66, 83, 85

- 6.3.2 Write and use formulas with up to three variables to solve problems.  
Example: You have  $P$  dollars in a bank that gives  $r\%$  simple interest per year. Write a formula for the amount of interest you will receive in one year. Use the formula to find the amount of interest on \$80 at 6% per year for one year.

**PLT Activities:** 37, 53, 66, 67, 70, 80, 83, 85

## Standard 4

### Geometry

*Students identify, describe, and classify the properties of plane and solid geometric shapes and the relationships between them.*

- 6.4.3 Draw quadrilaterals\* and triangles from given information about them.  
Example: Draw a quadrilateral with equal sides but no right angles.

**PLT Activities:** 28

## Standard 5

### Measurement

*Students deepen their understanding of the measurement of plane and solid shapes and use this understanding to solve problems. They calculate with temperature and money, and choose appropriate units of measure in other areas.*

- 6.5.1 Select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of angles.  
Example: A triangular sheet of metal is about 1 foot across. Describe the units and tools you would use to measure its weight, its angles, and the lengths of its sides.

**PLT Activities:** 4, 27, 28, 29, 37, 38, 41, 48, 53, 66, 67, 70, 77, 80, 85

6.5.2 Understand and use larger units for measuring length by comparing miles to yards and kilometers to meters.

Example: How many meters are in a kilometer?

**PLT Activities:** 66

6.5.4 Understand the concept of the constant  $\pi$  as the ratio of the circumference to the diameter of a circle. Develop and use the formulas for the circumference and area of a circle.

Example: Measure the diameter and circumference of several circular objects. (Use string to find the circumference.) With a calculator, divide each circumference by its diameter. What do you notice about the results?

**PLT Activities:** 21, 66, 67

6.5.5 Know common estimates of  $\pi$  ( $3.14$ ,  $\frac{22}{7}$ ) and use these values to estimate and calculate the circumference and the area of circles. Compare with actual measurements.

Example: Find the area of a circle of radius 15 cm.

**PLT Activities:** 21, 66, 67

6.5.10 Add, subtract, multiply, and divide with money in decimal notation.

Example: Share \$7.25 among five people.

**PLT Activities:** 21, 53, 83

## Standard 6

### Data Analysis and Probability

*Students compute and analyze statistical measures for data sets. They determine theoretical and experimental probabilities and use them to make predictions about events.*

6.6.1 Organize and display single-variable data in appropriate graphs and stem-and-leaf plots\*, and explain which types of graphs are appropriate for various data sets.

Example: This stem-and-leaf diagram shows a set of test scores for your class:

Stem	Leaf
6	2 3 7
7	1 5 5 6 8 9
8	0 1 1 2 3 3 5 7 8 8
9	1 2 2 3 3 4

Find your score of 85 in this diagram. Are you closer to the top or the bottom of the class on this test?

**PLT Activities:** 16, 22, 25, 27, 36, 37, 41, 48, 66, 67, 70, 77, 80

6.6.2 Make frequency tables for numerical data, grouping the data in different ways to investigate how different groupings describe the data. Understand and find relative and cumulative frequency for a data set. Use histograms of the data and of the relative frequency distribution, and a broken line graph for cumulative frequency, to interpret the data.

Example: A bag contains pens in three colors. Nine students each draw a pen from the bag

without looking, then record the results in the frequency table shown. Complete the column showing relative frequency.

Color	Frequency	Relative Frequency
Red	2	$\frac{2}{9}$
Green	4	
Purple	3	

**PLT Activities:** 4, 22, 25, 27, 36, 37

## Standard 7 Problem Solving

*Students make decisions about how to approach problems and communicate their ideas.*

- 6.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.  
Example: Solve the problem: “Develop a method for finding all the prime numbers up to 100.” Notice that any numbers that 4, 6, 8, ... divide into also divide exactly by 2, and so you do not need to test 4, 6, 8, ... .

**PLT Activities:** 28, 38, 53, 66, 67, 69, 70, 80, 83, 85

- 6.7.3 Decide when and how to break a problem into simpler parts.  
Example: In the first example, decide to find first those numbers not divisible by 2.

**PLT Activities:** 53

*Students use strategies, skills, and concepts in finding and communicating solutions to problems.*

- 6.7.4 Apply strategies and results from simpler problems to solve more complex problems.  
Example: In the first example, begin by finding all the prime numbers up to 10.

**PLT Activities:** 28, 38, 53, 66, 67, 77, 85

- 6.7.5 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.  
Example: In the first example, use a hundreds chart to cross off all multiples of 2 (except 2), then all multiples of 3 (except 3), then all multiples of 5 (except 5), etc. Explain why you are doing this.

**PLT Activities:** 4, 21, 22, 25, 27, 28, 36, 37, 38, 41, 48, 53, 66, 67, 70, 80, 83, 85

6.7.6 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.  
Example: Calculate the perimeter of a rectangular field that needs to be fenced. How accurate should you be: to the nearest kilometer, meter, centimeter, or millimeter? Explain your answer.

**PLT Activities:** 67, 70

6.7.7 Select and apply appropriate methods for estimating results of rational-number computations.  
Example: Measure the length and height of the walls of a room to find the total area. Estimate an answer by imagining meter squares covering the walls.

**PLT Activities:** 70, 85

*Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.*

6.7.10 Decide whether a solution is reasonable in the context of the original situation.  
Example: In the first example, decide whether your method was a good one — did it find all the prime numbers efficiently?

**PLT Activities:** 48

6.7.11 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.  
Example: Use a hundreds chart to find all the numbers that are multiples of both 2 and 3.

**PLT Activities:** 69, 83, 85

## GRADE 6

### *Peoples, Places, and Cultures in Europe and the Americas*

*Students in Grade 6 study the regions and countries of Europe and the Americas, including geographical, historical, economic, political, and cultural relationships. The areas emphasized are Europe and North and South America, including Central America and the Caribbean.*

*The Indiana's K – 8 academic standards for social studies are organized around five content areas. The content area standards and the types of learning experiences they provide to students in Grade 6 are described below. On the pages that follow, age-appropriate concepts are listed underneath each standard. Skills for thinking, inquiry, and participation in a democratic society are integrated throughout. Specific terms are defined and examples are provided when necessary.*

#### **Standard 1 — History**

Students will examine the key historic movements, events, and figures that contributed to the development of the modern European and American nations from early civilizations to early modern times.

#### **Standard 2 — Civics and Government**

Students will compare and contrast forms of government in different historical periods with contemporary political structures of Europe and the Americas and examine the rights and responsibilities of individuals in different political systems.

#### **Standard 3 — Geography**

Students will identify the characteristics of climate regions in Europe and the Americas and describe major physical features, countries, and cities of Europe and the Western Hemisphere.

#### **Standard 4 — Economics**

Students will examine the influence of physical and cultural factors upon the economic systems of countries in Europe and the Americas.

#### **Standard 5 — Individuals, Society, and Culture**

Students will examine the role of individuals and groups in societies of Europe and the Americas, identify connections among cultures, and trace the influence of cultures of the past on present societies. They will also analyze patterns of change, including the impact of scientific and technological innovations, and examine the role of artistic expression in selected cultures of Europe and the Americas.

#### **Standard 1**

##### **History**

*Students will examine the key historic movements, events, and figures that contributed to the development of the modern European and American nations from early civilizations to early modern times.*

##### **Historical Knowledge**

6.1.1 Describe the development of ancient Aegean civilizations and the Greek city-based republics, including the cultural achievements of Athens.

**PLT Activities:** 94

6.1.2 Trace the major developments and achievements of the Roman Republic and the rise and expansion of the Roman Empire.

**PLT Activities:** 94

6.1.13 Describe the development of Mesoamerican\* civilizations — such as the Mayas, Toltecs, and Aztecs in Mexico and the Incas in South America — prior to contact with Europeans.  
Example: Agricultural, scientific, and artistic achievements.

**PLT Activities:** 90, 94

6.1.14 Examine the causes and outcomes of the defeat of the Aztec and Incan empires by the Spanish.

**PLT Activities:** 90

\* Mesoamerica: the area of Mexico and Central America where early civilizations were located

### **Chronological Thinking, Comprehension, Analysis, and Interpretation**

6.1.16 Develop and compare timelines that identify major people, events, and developments in the history of individual civilizations and/or countries that comprise Europe and the Americas.

**PLT Activities:** 76, 95

6.1.17 Use the terms *decade*, *century*, and *millennium* and compare alternative ways that historical periods and eras are designated by identifying the organizing principles upon which each is based.

**PLT Activities:** 95

6.1.18 Recognize historical perspectives in fiction and nonfiction stories by identifying the historical context in which events unfolded and by avoiding evaluation of the past solely in terms of present-day norms.

Example: Read accounts of the travels of Marco Polo considering perspectives on the geography of the world during his time.

**PLT Activities:** 90

6.1.19 Analyze cause-and-effect relationships, keeping in mind multiple causation, including the importance of individuals, ideas, human interests, beliefs, and chance in history.

**PLT Activities:** 90, 94

- 6.1.20 Differentiate between factual and fictional historical accounts; explain the meaning of historical passages by identifying who was involved, what happened, where it happened, what events led to these developments, and what consequences or outcomes followed.

**PLT Activities:** 90

### Research Capabilities

- 6.1.21 Form research questions and use a variety of information resources\* to obtain, evaluate, and present historical data on the people, places, events, and developments in the history of Europe and the Americas.

Example: Collect data and develop maps, graphs, or spread sheets showing the impact of the Black Death on the population of Europe.

**PLT Activities:** 90, 91, 94, 95

\* information resources: print media, such as books, magazines, and newspapers; electronic media, such as radio, television, Web sites, and databases; and community resources, such as individuals and organizations

## Standard 3 Geography

*Students will identify the characteristics of climate regions in Europe and the Americas and describe major physical features, countries and cities of Europe and the Western Hemisphere.*

### The World in Spatial Terms

- 6.3.1 Explain the components of most maps (title, scale, legend, grid, and projection). Compare different map types (topographic, thematic, etc.) and different map projections, and explain the appropriate use for each.

**PLT Activities:** 29, 55, 70, 94, 96

### Places and Regions

- 6.3.3 Identify the names and locations of countries and major cities in Europe and the Western Hemisphere. Identify the states of Mexico and the provinces of Canada.

**PLT Activities:** 39, 49, 82, 86, 90, 94

- 6.3.4 Describe major physical characteristics\* of regions in Europe and the Americas.

**PLT Activities:** 17, 20, 29, 35, 39, 49, 54, 70, 75, 86, 88, 90

- 6.3.5 Describe major cultural characteristics\* of regions in Europe and the Western Hemisphere.

**PLT Activities:** 17, 20, 75, 90, 92, 94

\* physical characteristics: natural features, such as land and water forms, climate, natural vegetation, and native wildlife

- \* cultural characteristics: human features, such as population characteristics, communication and transportation networks, religion and customs, and how people make a living or build homes and other structures

## Physical Systems

- 6.3.6 Explain how Earth/sun relationships\*, ocean currents, and winds influence climate differences on Earth.

**PLT Activities:** 20, 29

- 6.3.7 Locate and map the climate regions of Europe and the Western Hemisphere. Describe the characteristics of each and explain how they differ.

**PLT Activities:** 29

- 6.3.8 Identify major biomes\* and explain ways in which the natural environment of places in Europe and the Americas relates to their climate, which is influenced by Earth/sun relationships.

**PLT Activities:** 29, 30, 49, 86, 88

- \* Earth/sun relationships: the rotation and tilt of Earth on its axis and the revolution of Earth around the sun influence climate variation on Earth; Indiana has major seasonal differences in climate relating to changes in the position of the sun and the amount of sunlight received

- \* biomes: major ecological communities, such as rainforest, desert, grassland

## Human Systems

- 6.3.9 Identify patterns of population distribution and growth in Europe and the Americas and explain changes in these patterns, which have occurred over time.

**PLT Activities:** 19, 40, 90, 94

- 6.3.10 Compare and contrast cultural patterns — such as language, religion, and ethnicity — in various parts of Europe; the Caribbean; and North, South, and Central America.

**PLT Activities:** 17, 20, 49, 90, 92, 94, 95

- 6.3.11 Research the reasons for the locations of the major manufacturing and agricultural regions of Europe and the Americas, using a variety of information resources\*.

**PLT Activities:** 82, 86, 88, 90, 94, 95

- \* information resources: print media, such as books, magazines, and newspapers; electronic media, such as radio, television, Web sites, and databases; and community resources, such as individuals and organizations

## Environment and Society

- 6.3.12 Analyze the distribution of natural resources in Europe and the Western Hemisphere.  
**PLT Activities:** 5, 13, 14, 15, 30, 31, 32, 34, 35, 37, 38, 39, 51, 53, 81, 82, 83, 84, 85, 86, 90, 92, 94, 95
- 6.3.13 Analyze and give examples of the consequences of human impact on the physical environment and evaluate ways in which technology influences human capacity to modify the physical environment.  
**PLT Activities:** 4, 5, 13, 14, 15, 19, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 44, 49, 52, 53, 56, 60, 69, 70, 73, 76, 77, 81, 82, 83, 84, 85, 86, 88, 89, 90, 91, 92, 94, 95, 96
- 6.3.14 Give examples of how both natural and technological hazards have impacted the physical environment and human populations in specific areas of Europe and the Americas.  
**PLT Activities:** 5, 19, 22, 36, 37, 51, 52, 53, 69, 70, 73, 76, 77, 81, 82, 84, 85, 86, 88, 89, 90, 91, 92, 94, 95, 96

## Uses of Geography

- 6.3.15 Give examples of how land and water forms, climate, and natural vegetation have influenced historical trends and developments in Europe and the Western Hemisphere.  
**PLT Activities:** 75, 76, 86, 90, 92, 94, 95
- 6.3.16 Identify environmental issues that affect Europe and the Americas. Examine contrasting perspectives on these problems and explain how human-induced changes in the physical environment in one place cause changes in another place.  
Example: Acid rain, air and water pollution, deforestation.  
**PLT Activities:** 14, 19, 20, 30, 32, 33, 35, 36, 37, 38, 39, 44, 49, 52, 53, 57, 58, 59, 60, 69, 70, 73, 76, 77, 81, 82, 83, 84, 85, 88, 89, 90, 91, 92, 94, 95, 96

## Standard 4 Economics

*Students will examine the influence of physical and cultural factors upon the economic systems of countries in Europe and the Americas.*

- 6.4.8 Analyze current economic issues in the countries of Europe or the Americas using a variety of information resources\*.  
Example: Use information search methods and the Internet to examine changes in energy prices and consumption.  
**PLT Activities:** 14

- 6.4.10 Identify situations in which the actions of consumers and producers in Europe or the Americas help or harm other individuals who are not directly involved in the consumption or production of a product.

**PLT Activities:** 82, 86, 94

\* information resources: print media, such as books, magazines, and newspapers; electronic media, such as radio, television, Web sites, and databases; and community resources, such as individuals and organizations

## **Standard 5**

### **Individuals, Society, and Culture**

*Students will examine the role of individuals and groups in societies of Europe and the Americas, identify connections among cultures, and trace the influence of cultures of the past on present societies. They will also analyze patterns of change, including the impact of scientific and technological innovations, and examine the role of artistic expression in selected cultures of Europe and the Americas.*

- 6.5.1 Explain the term socialization\*, and compare the way people learn the rules and their roles in the groups to which they belong in different cultures and times.

Example: Compare the different types of schooling that people have received in different times and places, such as in ancient Greece and Rome, in medieval Europe, and early America. Compare schools in specific countries in Europe with those in the United States in the present.

**PLT Activities:** 17, 18, 58

- 6.5.2 Distinguish between material\* and nonmaterial\* aspects of culture.

**PLT Activities:** 13

- 6.5.4 Give examples of how religious beliefs and philosophical ideas have spread from one culture to another among societies of Europe and the Americas.

Example: The spread of Christianity from Europe to the Americas during the colonial period and the exchange of ideas about democratic government between Europe and the Americas in the past and the present are examples of the diffusion of ideas.

**PLT Activities:** 90

- 6.5.5 Identify examples of inventions and technological innovations that have brought about cultural change in Europe and the Americas and examine their impact.

Example: Innovations in communications, such as computer technology, help to spread information and ideas very rapidly. One result may be an increase in the rate of cultural change.

**PLT Activities:** 84, 85, 90, 93, 94, 95

6.5.6 Define the terms anthropology\* and archeology\* and explain how these fields contribute to our understanding of societies in the present and the past.

**PLT Activities:** 75, 95

6.5.7 Examine art, music, literature, and architecture in Europe and the Americas; explain their relationship to the societies that created them; and give examples of how artistic ideas have spread from one culture to another.

**PLT Activities:** 75, 93

6.5.8 Use a variety of resources, including newspapers, magazines, Web sites, and databases, to collect and analyze data on cultural factors in countries of Europe and the Americas. Use charts, graphs, and other data to compare and hypothesize the relation of these factors to a nation's development.

**PLT Activities:** 94

- \* socialization: the process through which people learn the rules of society
- \* material culture: the things that a society makes or uses, such as clothing, shelter, food, tools, and other things needed for both survival and enjoyment
- \* nonmaterial culture: behavior, such as customs, traditions, beliefs, values, interactions among people, and ways of going about daily activities
- \* anthropology: the study of human beings; there are four major fields of anthropology: cultural anthropology, forensic anthropology, linguistics, and archeology
- \* archeology: a branch of anthropology which studies past cultures through the things that remain, such as buildings, tools, or pottery

