DOCUMENT RESUME

ED 477 626 CS 512 263

TITLE	Indiana's Academic Standards: Grade 7 English/Language Arts, Mathematics, Science, Social Studies.
INSTITUTION	Indiana State Dept. of Public Instruction, Indianapolis.; Indiana State Dept. of Education, Indianapolis.; Indiana State Commission for Higher Education, Indianapolis.
PUB DATE	2002-08-00
NOTE	50p.; Adopted by the Indiana State Board of Education, 2000-2001.
AVAILABLE FROM	For full text: http://www.indianastandards.org/ .
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	EDRS Price MF01/PC03 Plus Postage.
DESCRIPTORS	*Academic Standards; Grade 7; *Language Arts; *Mathematics; Middle Schools; Parent Role; Reading Achievement; *Sciences; *Social Studies; *State Standards; Student Educational Objectives; Student Evaluation; Writing Achievement
IDENTIFIERS	*Indiana

ABSTRACT

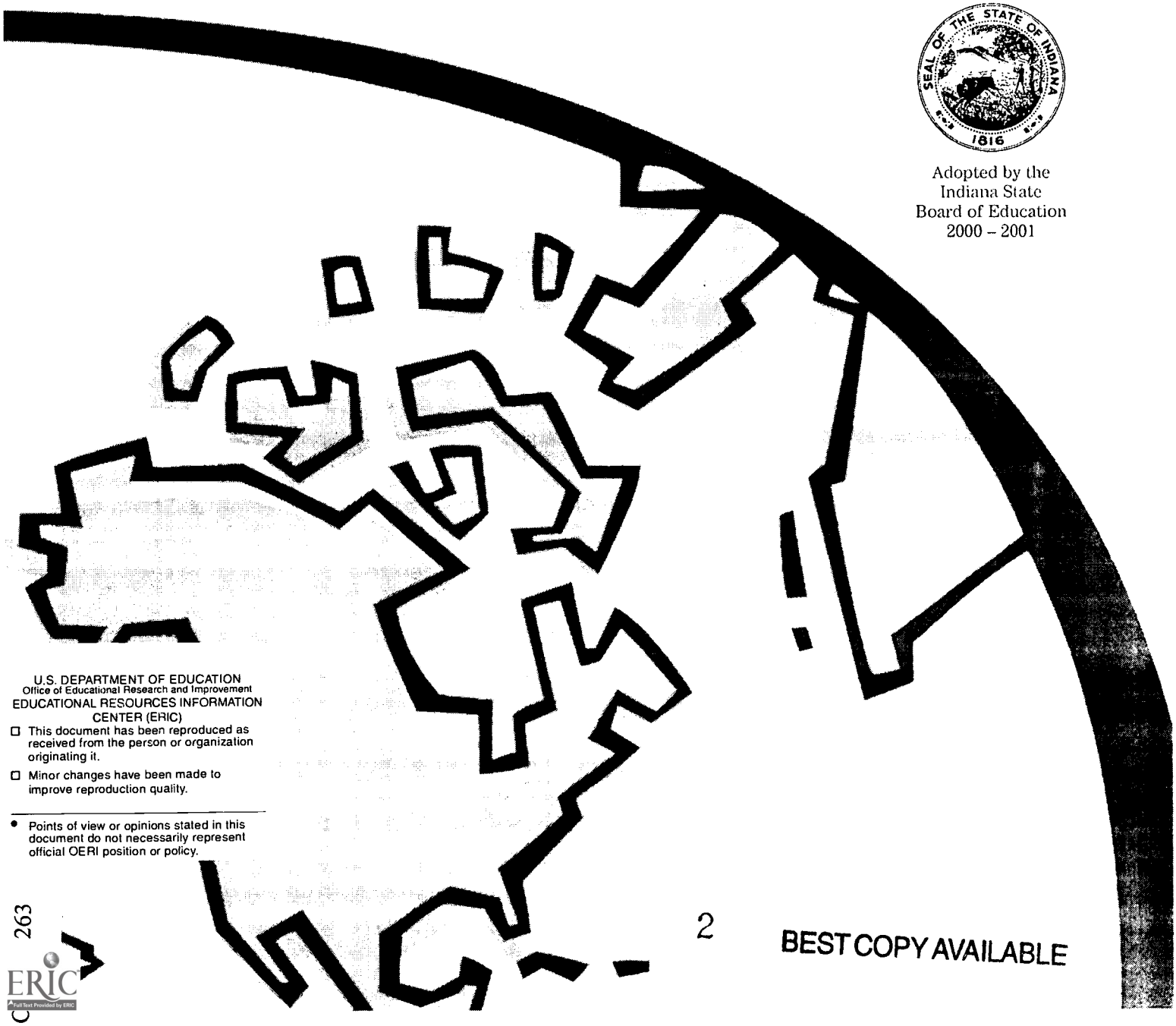
This guide to Indiana's academic standards in English/Language Arts, Mathematics, Science, and the Social Studies for Grade 7 students begins with a note to students and another note to parents. The guide spells out what students should know and be able to do in each subject, at each grade level. The guide also lists 10 things parents can do to help students succeed and includes information on assessments or measures of student learning. It cites the following seven standards for English/Language Arts: (1) Reading: Word Recognition, Fluency, and Vocabulary Development; (2) Reading: Comprehension (Focus on Informational Materials); (3) Reading: Literary Response and Analysis; (4) Writing: Process; (5) Writing: Applications (Different Types of Writing and Their Characteristics); (6) Writing: English Language Conventions; and (7) Listening and Speaking: Skills, Strategies, and Applications. The guide lists these seven standards for Mathematics: Number Sense, Computation, Algebra and Functions, Geometry, Measurement, Data Analysis and Probability, and Problem Solving. It enumerates the following seven standards for Science: Nature of Science and Technology, Scientific Thinking, Physical Setting, Living Environment, Mathematical World, Historical Perspectives, and Common Themes. The guide lists these five standards for the Social Studies: History; Civics and Government; Geography; Economics; and Individuals, Society, and Culture. Attached are sheets for notes. (NKA)

Grade 7

Indiana's Academic Standards

English/Language Arts
Mathematics
Science
Social Studies

Adopted by the
Indiana State
Board of Education
2000 – 2001



Dear Student,

The world is changing fast. In order for you to succeed in school, at work, and in the community, you will need more skills and knowledge than ever before.

Getting in shape academically is the single most important thing you can do to prepare for a successful future.

This booklet of Academic Standards clearly spells out what you should know and be able to do in each subject, at your grade level. Examples are given to help you understand what is required to meet the Standards. **Please review this guide with your teachers and share it with your parents and family.**

Whether you go on to be a surgeon, computer technician, teacher, or airplane mechanic, learning never stops. There will always be a more demanding computer application, a new invention, or a more complex project awaiting you.

To be ready for tomorrow — get in top academic shape today. Use this guide year round to check your progress.

Dear Parent,

The demand is greater than ever for people who can read, write, speak effectively, analyze problems and set priorities, learn new things quickly, take initiative, and work in teams. Technology has already transported us into a time where the next e-commerce opportunity is limited only by our imagination.

That's why Indiana has established new Academic Standards in English/language arts, mathematics, science, and social studies. These world-class Standards outline what your student should know and be able to do in each subject, at each grade level.

Indiana's new Academic Standards were recommended by Indiana's Education Roundtable and adopted by the State Board of Education. According to Achieve, Inc. and other respected education experts, these Standards are among the best in the nation.

Higher academic standards pose a challenge, but Indiana students have shown that they can measure up. Our students know that higher expectations lead to greater rewards — and they're prepared to work harder. We know that by setting specific goals, everyone wins. Teachers have clear targets, students know what's expected, and you have detailed information about your child's strengths and weaknesses.

How can you be sure that your student will be ready to meet these challenges? First, keep in mind that learning does not take place only in the classroom. Students spend far more time at home than they do in school. How they spend their time can make a real difference. That is where your help is the most important.

On the next page is a list of 10 things you can do to help your student get a good education. **Nothing will have a bigger impact on your student's success than your involvement in his or her education.** We hope you use this guide as a tool to help your child succeed today and in the future.

Sincerely,

Frank O'Bannon
Governor Frank O'Bannon

Dr. Suellen Reed
Dr. Suellen Reed,
Superintendent of Public Instruction

Stan Jones
Stan Jones,
Commissioner for Higher Education

10 things parents can do to help students succeed

1. **Build relationships with your child's teachers.** Find out what each teacher expects of your child and how you can help your child prepare to meet those expectations.

2. **Read.** Reading is the foundation for all learning. Read to your young child, encourage your older child to read to you, or spend time together as a family reading. All this helps your child develop strong reading habits and skills from the beginning and reinforces these habits and skills as your child grows. Reading is one of the most important contributions you can make to your child's education.

3. **Practice writing at home.** Letters, journal entries, e-mail messages, and grocery lists are all writing opportunities. Show that writing is an effective form of communication and that you write for a variety of purposes.

4. **Make math part of everyday life.** Cooking, gardening, paying bills, and even shopping are all good ways to help your child understand and use mathematics skills. Show that there may be many ways to get to the right answer and encourage your child to explain his or her method.

5. **Ask your child to explain his or her thinking.** Ask lots of "why" questions. Children should be able to explain their reasoning, how they came up with the right answer, and why they chose one answer over another.

6. **Expect that homework will be done.** Keep track of your child's homework assignments and regularly look at his or her completed work. Some teachers now give parents a number to call for a recorded message of that day's homework assignments; others put the information on the Internet. If your school doesn't offer these features, talk to the teacher about how you can get this important information. Even if there aren't specific assignments, find out how you can stay informed about what your child is working on so that you can help at home.

7. **Use the community as a classroom.** Feed your child's curiosity about the world 365 days a year. Use the library to learn more about the history of your town. A visit to a farmer's market can help your child picture our state's rich agricultural tradition. Take your young child to zoos and parks and your older child to museums and workplaces to show how learning connects to the real world.

8. **Encourage group study.** Open your home to your child's friends for informal study sessions. Promote outside formal study groups through church or school organizations or other groups. Study groups will be especially important as your child becomes older and more independent. The study habits your child learns now will carry over into college and beyond.

9. **Help other parents understand academic expectations.** Use your school and employee newsletters, athletic associations, booster clubs, a PTA or PTO meeting, or just a casual conversation to help other parents understand what academic standards mean for them, their children, and their school and how they can help their children learn at home.

10. **Spend time at school.** The best way to know what goes on in your child's school is to spend time there. If you're a working parent, this isn't easy, and you may not be able to do it very often. But "once in awhile" is better than "never."

Remember: *You are the most important influence on your child. Indiana's Academic Standards give you an important tool to ensure that your child gets the best education possible.*

Measuring Student Learning

Children develop at different rates. Some take longer and need more help to learn certain skills. Assessments, like ISTEP+, help teachers understand how students are progressing and assist in identifying academic areas where students may need additional attention.

Assessments also provide a measure of school accountability – assisting schools in their efforts to align curriculum and instruction with the state's Academic Standards and reporting progress to parents and the public. Students in designated grades take ISTEP+ in the fall of each school year – with the assessment based on what the child should have learned and retained from the previous year.

Core 40 End-of-Course Assessments are given at the end of specific high school classes and are a cumulative assessment of what students should have learned during that course. End-of-Course Assessments also provide a means to ensure the quality and rigor of high school courses across the state. Voluntary for schools at this time, a selection of these assessments will be phased in over the next five years.

◗ Indicates mandatory ISTEP+ testing ◆ Indicates voluntary assessments

Kindergarten

Grade 1
◆Reading

Grade 2
◆Reading

Grade 3
◗ English/Lang. Arts
◗ Mathematics

Grade 4

What's the Goal? By Grade 4, have students moved beyond learning to read toward "reading to learn" other subjects? Can each student write a short, organized essay? Can each student use math skills to solve everyday, real-world problems?

Grade 5
◗ Science (begins 2003)
◗ Social Studies (begins 2004)

Grade 6
◗ English/Lang. Arts
◗ Mathematics

Grade 7
◗ Science (begins 2005)
◗ Social Studies (begins 2006)

Grade 8
◗ English/Lang. Arts
◗ Mathematics

What's the Goal? By Grades 7 and 8, have students developed strong enough study habits in English and math skills to be ready for high school?

Grade 9
◗ Science (begins 2007)
◗ Social Studies (begins 2008)

◆Core 40 End-of-Course Assessments

Grade 10 (GQE)
◗ English/Lang. Arts
◗ Mathematics

◆Core 40 End-of-Course Assessments

Grade 11
(two re-tests available for those who have not passed the GQE)

◆Core 40 End-of-Course Assessments

Grade 12
(two re-tests available for those who have not passed the GQE)

◆Core 40 End-of-Course Assessments

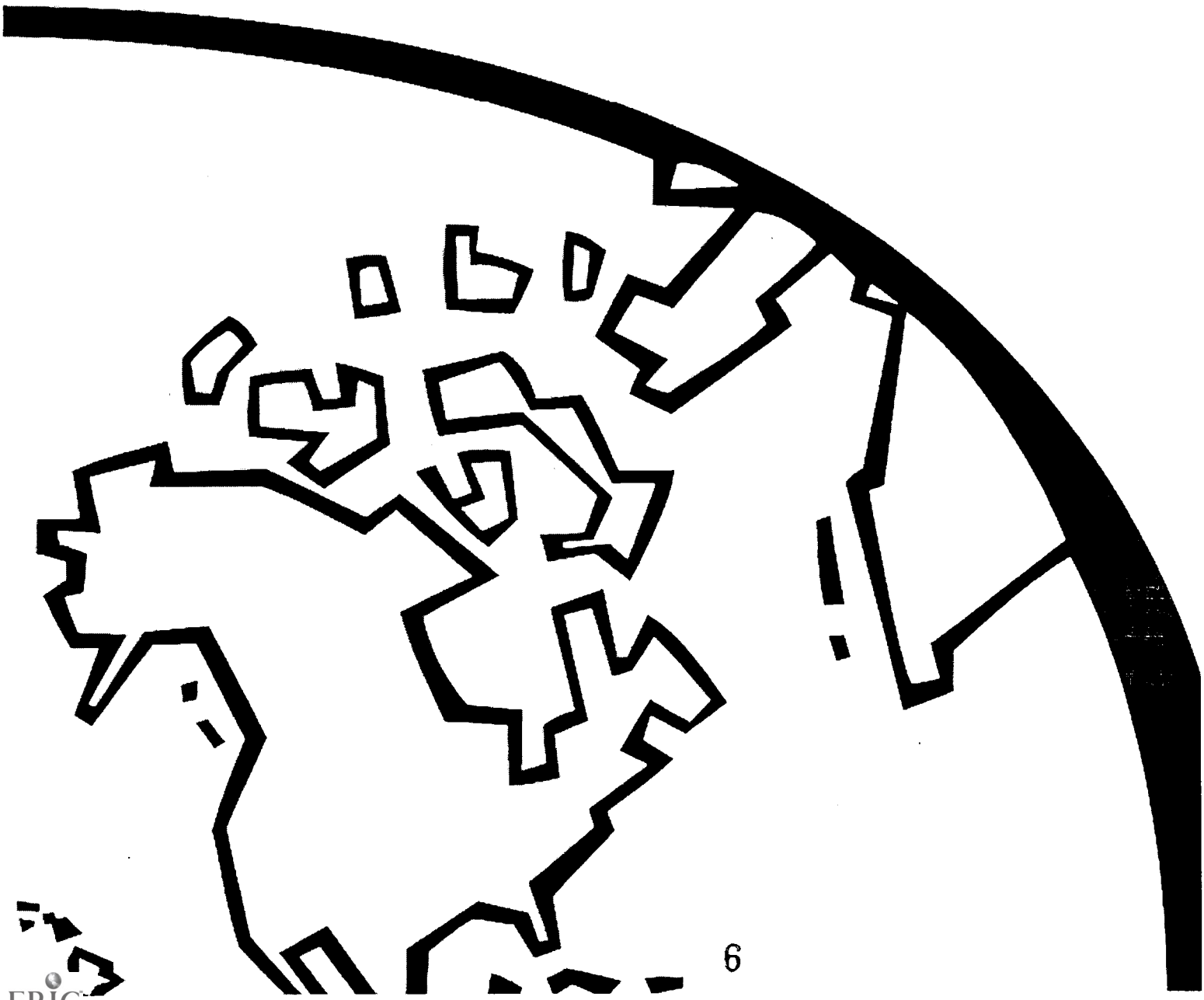
Graduation
(or continued extra help)

What's the Goal?
By Grade 12, can students read well enough to pass a driver's exam, understand an appliance manual, or compare two opposing newspaper editorials? Could students write an effective job application letter? By testing skills like these in Grade 10, teachers know whether – and in which skill area – students need more attention before it's time to graduate.

For more information visit www.doe.state.in.us/standards and click on Assessment or call 1-800-54-ISTEP (1-888-544-7837).

Grade 7

English/Language Arts



Standard 1

READING: Word Recognition, Fluency, and Vocabulary Development

Students use their knowledge of word parts and word relationships, as well as context clues (the meaning of the text around a word), to determine the meaning of specialized vocabulary and to understand the precise meaning of grade-level-appropriate words.

Vocabulary and Concept Development

7.1.1 Identify and understand idioms and comparisons — such as analogies, metaphors, and similes — in prose and poetry.

- Idioms: expressions that cannot be understood just by knowing the meanings of the words in the expression, such as *to be an old hand at something* or *to get one's feet wet.*
- Analogies: comparisons of the similar aspects of two different things.
- Metaphors: implied comparisons, such as *The stars were brilliant diamonds in the night sky.*
- Similes: comparisons that use like or as, such as *The stars were like a million diamonds in the sky.*

7.1.2 Use knowledge of Greek, Latin, and Anglo-Saxon roots and word parts to understand subject-area vocabulary (science, social studies, and mathematics).

Example: Analyze the roots, prefixes, and suffixes to understand words, such as *microscope, microphone,* and *microbe.*

7.1.3 Clarify word meanings through the use of definition, example, restatement, or through the use of contrast stated in the text.

Example: Use the text to clarify the meaning of the word *pickle* in the sentence *Apply the pickle, an acid solution, to the metal surface.*

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) illustrate the quality and complexity of the materials to be read by students. At Grade 7, 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

7.2.1 Understand and analyze the differences in structure and purpose between various categories of informational materials (such as textbooks, newspapers, and instructional or technical manuals).

7.2.2 Locate information by using a variety of consumer and public documents.

Example: Choose a radio or watch to purchase, based on a *Consumer Reports* review of different radios or watches. Then, compare advertisements from different stores to decide which store is offering the best price.

7.2.3 Analyze text that uses the cause-and-effect organizational pattern.

Example: Use a comparison chart, such as a T-chart, to illustrate causes and effects.

Comprehension and Analysis of Grade-Level-Appropriate Text

7.2.4 Identify and trace the development of an author's argument, point of view, or perspective in text.

Example: After reading a piece of historical nonfiction, such as *When Justice Failed: The Fred Korematsu Story* by Steven A. Chin about the internment of Japanese Americans during World War II, describe the author's perspective on the events described and how the author demonstrates this point of view throughout the text.

7.2.5 Understand and explain the use of a simple mechanical device by following directions in a technical manual.

Example: Follow the directions for setting a digital watch or clock.

Expository (Informational) Critique

7.2.6 Assess the adequacy, accuracy, and appropriateness of the author's evidence to support claims and assertions, noting instances of bias and stereotyping.

Example: React to a persuasive, nonfiction text, such as a letter to the editor, by asking questions that the text leaves unanswered and challenging the author's unsupported opinions. Evaluate the accuracy and appropriateness of the evidence presented in a book, such as *Lives of the Writers* by Kathleen Krull.

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) illustrate the quality and complexity of the materials to be read by students.*

Structural Features of Literature

7.3.1 Discuss the purposes and characteristics of different forms of written text, such as the short story, the novel, the novella, and the essay.

Example: Describe a short story as a piece of prose fiction usually under 10,000 words and provide an example, such as "The Night the Bed Fell" by James Thurber. Describe a novel as a prose narrative of considerable length and provide an example, such as *The Westing Game* by Ellen Raskin. Describe a novella as a short novel and provide an example, such as *The Gold Cadillac* by Mildred Taylor. Describe an essay as a short piece of writing on one subject or theme and provide an example, such as an essay by Ralph Waldo Emerson.

Narrative Analysis of Grade-Level-Appropriate Text

7.3.2 Identify events that advance the plot and determine how each event explains past or present action or foreshadows (provides clues to) future action.

Example: While reading *The True Confessions of Charlotte Doyle* by Avi, recognize the foreshadowing of events to come when Charlotte Doyle boards the boat for her 1832 transatlantic voyage and the ship's cook slips her a knife.

7.3.3 Analyze characterization as shown through a character's thoughts, words, speech patterns, and actions; the narrator's description; and the thoughts, words, and actions of other characters.

Example: Describe the main character in *Out of the Dust* by Karen Hesse, using examples of her thoughts, words, and actions to support this description.

7.3.4 Identify and analyze themes — such as bravery, loyalty, friendship, and loneliness — which appear in many different works.

Example: Analyze the theme of loneliness that is present throughout *The Islander* by Cynthia Rylant. Relate the theme to other works that have been read in class and for pleasure.

7.3.5 Contrast points of view — such as first person, third person, limited and omniscient, and subjective and objective — in narrative text and explain how they affect the overall theme of the work.

- First person: the narrator tells the story from the "I" perspective
- Third person: the narrator tells the story from an outside perspective
- Limited narration: the narrator does not know all thoughts of all characters
- Omniscient narration: the narrator knows all thoughts of all characters
- Subjective: the point of view involves a personal perspective
- Objective: the point of view is from a distanced, informational perspective, as in a news report

Example: Understand that the point from which the writer has chosen to tell a story affects the impact of the story on the reader. Discuss how the point of view of a book read in class affects the theme of the book, and explain how this might have been changed had the story been told from the point of view of another character or from an all-knowing narrator.

Literary Criticism

7.3.6 Compare reviews of literary works and determine what influenced the reviewer.

Example: Compare multiple reviews of the same book, such as *The Yearling* by Marjorie Kinnan Rawlings, *Sounder* by William Armstrong, *The Monsters Are Due on Maple Street* by Rod Serling, or *And Then There Were None* by Agatha Christie. Decide what, in each book, seemed to influence the reviewer.

Standard 4

WRITING: Process

Students discuss, list, and graphically organize writing ideas. 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

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

7.4.2 Create an organizational structure that balances all aspects of the composition and uses effective transitions between sentences to unify important ideas.

7.4.3 Support all statements and claims with anecdotes (first-person accounts), descriptions, facts and statistics, and specific examples.

7.4.4 Use strategies of note-taking, outlining, and summarizing to impose structure on composition drafts.

Research and Technology

7.4.5 Identify topics; ask and evaluate questions; and develop ideas leading to inquiry, investigation, and research.

7.4.6 Give credit for both quoted and paraphrased information in a bibliography by using a consistent format for citations.

7.4.7 Use a computer to create documents by using word-processing skills and publishing programs; develop simple databases and spreadsheets to manage information and prepare reports.

Evaluation and Revision

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

7.4.9 Edit and proofread one's own writing, as well as that of others, using an editing checklist or set of rules, with specific examples of corrections of frequent errors.

7.4.10 Revise writing to improve organization and word choice after checking the logic of the ideas and the precision of the vocabulary.

Standard 5

WRITING: Applications

(Different Types of Writing and Their Characteristics)

At Grade 7, students continue to write narrative (story), expository (informational), persuasive, and descriptive texts of at least 500 to 700 words. Students are introduced to biographical and autobiographical narratives and to writing summaries of grade-level-appropriate reading materials. The 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 7 students use the writing strategies outlined in Standard 4 — Writing Process to:

7.5.1 Write biographical or autobiographical narratives (stories) that:

- develop a standard plot line — including a beginning, conflict, rising action, climax, and denouement (resolution) — and point of view.
- develop complex major and minor characters and a definite setting.
- use a range of appropriate strategies, such as dialogue; suspense; and the naming of specific narrative action, including movement, gestures, and expressions.

Example: Write successive drafts of a two- or three-page humorous story about *Something Fishy Is Cooking in the Kitchen*, including an engaging opening; dialogue between characters; and descriptive details about the setting, plot, and characters.

7.5.2 Write responses to literature that:

- develop interpretations that show careful reading, understanding, and insight.
- organize interpretations around several clear ideas, premises, or images from the literary work.
- justify interpretations through sustained use of examples and evidence from the text.

Example: After reading Mark Twain's *Adventures of Tom Sawyer* and Theodore Taylor's *The Cay*, write an essay describing the different ways that the characters in these novels speak (using slang words and regional dialects) and analyzing how this enhances or detracts from the book overall.

7.5.3 Write research reports that:

- pose relevant and focused questions about the topic.
- communicate clear and accurate perspectives on the subject.
- include evidence and supporting details compiled through the formal research process, including use of a card catalog, *Reader's Guide to Periodical Literature,* a computer catalog, magazines, newspapers, dictionaries, and other reference books.
- document sources with reference notes and a bibliography.

Example: Write a research report on the impact that television has had on American society. Take a position on the topic, whether positive or negative, and support this view by citing a variety of reference sources. Prepare a report on a man or woman who contributed significantly to science and technology, such as Marie Curie (medicine), Alexander Graham Bell (telephone), Thomas Edison (electricity), Nikola Tesla (electrical engineering), or Rosalyn Yalow (medicine).

7.5.4 Write persuasive compositions that:
- state a clear position or perspective in support of a proposition or proposal.
- describe the points in support of the proposition, employing well-articulated evidence and effective emotional appeals.
- anticipate and address reader concerns and counter-arguments.

Example: In preparation for an upcoming student council election, choose a candidate and write speeches and make posters that will make this candidate especially appealing to the other students (the voters).

7.5.5 Write summaries of reading materials that:
- include the main ideas and most significant details.
- use the student's own words, except for quotations.
- reflect underlying meaning, not just the superficial details.

Example: To demonstrate comprehension of the main ideas and details of a subject-specific text, write a summary of a text read for a science, math, or social studies class. Make the summary clear enough that it would provide another student with the important information from the chapter or text.

7.5.6 Use varied word choices to make writing interesting and more precise.

Example: Write stories, reports, and letters using a variety of word choices. (Use *conversed* or *conferred* instead of *talked*.)

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

Example: Write a letter inviting a local artist to visit the classroom to talk and demonstrate certain skills. Use words and phrases that demonstrate a serious interest in what the speaker would have to say.

Standard 6

WRITING: English Language Conventions

Students write using Standard English conventions appropriate to the grade level.

Sentence Structure

7.6.1 Properly place modifiers (words or phrases that describe, limit, or qualify another word) and use the active voice (sentences in which the subject is doing the action) when wishing to convey a livelier effect.
- Clear: *She left the book, which she bought at the bookstore, on the table.*
- Unclear: *She left the book on the table, which she bought at the bookstore.*
- Active voice: *The man called the dog.*
- Passive voice: *The dog was called by the man.*

Grammar

7.6.2 Identify and use infinitives (the word *to* followed by the base form of a verb, such as *to understand* or *to learn*) and participles (made by adding *-ing, -d, -ed, -n, -en,* or *-t* to the base form of the verb, such as *dreaming, chosen, built,* and *grown*).

7.6.3 Make clear references between pronouns and antecedents by placing the pronoun where it shows to what word it refers.

- Clear: *Chris said to Jacob, "You will become a great musician."*
- Confusing: *Chris told Jacob that he would become a great musician.*

7.6.4 Identify all parts of speech (verbs, nouns, pronouns, adjectives, adverbs, prepositions, conjunctions, and interjections) and types and structure of sentences.

7.6.5 Demonstrate appropriate English usage (such as pronoun reference).

Punctuation

7.6.6 Identify and correctly use hyphens (-), dashes (—), brackets ([ ]), and semicolons (;).

7.6.7 Demonstrate the correct use of quotation marks and the use of commas with subordinate clauses.

Capitalization

7.6.8 Use correct capitalization.

Spelling

7.6.9 Spell correctly derivatives (words that come from a common base or root word) by applying the spellings of bases and affixes (prefixes and suffixes).

Standard 7

LISTENING AND SPEAKING: Skills, Strategies, and Applications

Deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. Students 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.

Comprehension

7.7.1 Ask questions to elicit information, including evidence to support the speaker's claims and conclusions.

7.7.2 Determine the speaker's attitude toward the subject.

Organization and Delivery of Oral Communication

7.7.3 Organize information to achieve particular purposes and to appeal to the background and interests of the audience.

7.7.4 Arrange supporting details, reasons, descriptions, and examples effectively.

7.7.5 Use speaking techniques — including adjustments of tone, volume, and timing of speech; enunciation (clear speech); and eye contact — for effective presentations.

Analysis and Evaluation of Oral and Media Communications

7.7.6 Provide helpful feedback to speakers concerning the coherence and logic of a speech's content and delivery and its overall impact upon the listener.

7.7.7 Analyze the effect on the viewer of images, text, and sound in electronic journalism; identify the techniques used to achieve the effects.

Speaking Applications

7.7.8 Deliver narrative (story) presentations that:
- establish a context, standard plot line (with a beginning, conflict, rising action, climax, and resolution of the conflict), and point of view.
- describe major and minor characters and a definite setting.
- use a range of appropriate strategies to make the story engaging to the audience, including using dialogue and suspense and showing narrative action with movement, gestures, and expressions.

7.7.9 Deliver oral summaries of articles and books that:
- include the main ideas and the most significant details.
- state ideas in own words, except for when quoted directly from sources.
- demonstrate a complete understanding of sources, not just superficial details.

7.7.10 Deliver research presentations that:
- pose relevant and concise questions about the topic.
- provide accurate information on the topic.
- include evidence generated through the formal research process, including the use of a card catalog, *Reader's Guide to Periodical Literature*, computer databases, magazines, newspapers, and dictionaries.
- cite reference sources appropriately.

7.7.11 Deliver persuasive presentations that:
- state a clear position in support of an argument or proposal.
- describe the points in support of the proposal and include supporting evidence.

Grade 7

Mathematics

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 7:

Standard 1 — Number Sense

Understanding the number system is the basis of mathematics. Students extend this understanding to include irrational numbers, such as π and the square root of 2. They compare and order rational and irrational numbers and convert terminating decimals into fractions. They also use exponents to write whole numbers in scientific notation and to write the prime factorizations of numbers.

Standard 2 — Computation

Fluency in computation is essential. Students add, subtract, multiply, and divide integers, fractions, and decimals. They solve problems using percentages, including calculating discounts, markups, and commissions. They use mental arithmetic to compute with simple fractions, decimals, and powers.

Standard 3 — Algebra and Functions

Algebra is a language of patterns, rules, and symbols. Students at this level use variables and other symbols to translate verbal descriptions into equations and formulas. They write and solve linear equations and inequalities, and write and use formulas to solve problems. They also use properties of the rational numbers to evaluate and simplify algebraic expressions, and they further extend their understanding of graphs by investigating rates of change for linear and nonlinear functions and by developing and using the concept of the slope of a straight line.

Standard 4 — Geometry

Students learn about geometric shapes and develop a sense of space. They link geometry to coordinate graphs, using them to plot shapes, calculate lengths and areas, and find images under transformations. They understand the Pythagorean Theorem and use it to find lengths in right triangles. They also construct nets (two-dimensional patterns) for three-dimensional objects, such as prisms, pyramids, cylinders, and cones.

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 develop the concept of similarity and use it to make scale drawings and scale models and to solve problems relating to these drawings and models. They find areas and perimeters of two-dimensional shapes and volumes and surface areas of three-dimensional shapes, including irregular shapes made up of more basic shapes.

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 bar, line, and circle graphs and in stem-and-leaf plots. They analyze data displays to find whether they are misleading and analyze the wording of survey questions to tell whether these could influence the results. They find the probability of disjoint events. They also find the number of arrangements of objects using a tree diagram.

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 irrational numbers, analyzing graphs, or finding surface areas, for example, students move from simple ideas to more complex ones 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, π, 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 1

Number Sense

Students understand and use scientific notation and square roots. They convert between fractions and decimals.*

7.1.1 Read, write, compare, and solve problems using whole numbers in scientific notation.

Example: Write 300,000 in scientific notation.

7.1.2 Compare and order rational* and common irrational* numbers and place them on a number line.

Example: Place in order: -2, $\frac{5}{8}$, -2.45, 0.9, π, $-1\frac{3}{4}$.

7.1.3 Identify rational and common irrational numbers from a list.

Example: Name all the irrational numbers in the list: -2, $\frac{5}{8}$, -2.45, 0.9, π, $-1\frac{3}{4}$.

7.1.4 Understand and compute whole number powers of whole numbers.

Example: $3^5 = 3 \times 3 \times 3 \times 3 \times 3 = ?$

7.1.5 Find the prime factorization* of whole numbers and write the results using exponents.

Example: $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3$.

7.1.6 Understand and apply the concept of square root.

Example: Explain how you can find the length of the hypotenuse of a right triangle with legs that measure 5 cm and 12 cm.

7.1.7 Convert terminating decimals* into reduced fractions.

Example: Write 0.95 as a fraction.

* scientific notation: a shorthand way of writing numbers using powers of ten (e.g., $300{,}000 = 3 \times 10^5$)

* rational number: any number that can be written as a ratio of two integers* (e.g., $\frac{1}{2}$, $\frac{5}{6}$, $\frac{23}{9}$)

* integers: ..., -3, -2, -1, 0, 1, 2, 3, ...

* irrational number: any number that cannot be written as a ratio of two integers (e.g., π, $\sqrt{3}$, 7π)

* prime factors: e.g., prime factors of 12 are 2 and 3, the two prime numbers that divide 12

* terminating decimals: decimals that do not continue indefinitely (e.g., 0.362, 34.1857)

Standard 2

Computation

Students solve problems involving integers, fractions, decimals, ratios, and percentages.*

7.2.1 Solve addition, subtraction, multiplication, and division problems that use integers, fractions, decimals, and combinations of the four operations.

Example: The temperature one day is 5°. It then falls by 3° each day for 4 days and, after that, rises by 2° each day for 3 days. What is the temperature on the last day? Explain your method.

7.2.2 Calculate the percentage increase and decrease of a quantity.

Example: The population of a country was 36 million in 1990 and it rose to 41.4 million during the 1990s. What was the percentage increase in the population?

7.2.3 Solve problems that involve discounts, markups, and commissions.

Example: A merchant buys CDs for $11 wholesale and marks up the price by 35%. What is the retail price?

7.2.4 Use estimation to decide whether answers are reasonable in problems involving fractions and decimals.

Example: Your friend says that $3\frac{3}{8} \times 2\frac{2}{9} = 10$. Without solving, explain why you think the answer is wrong.

7.2.5 Use mental arithmetic to compute with simple fractions, decimals, and powers.

Example: Find 3^4 without using pencil and paper.

* integers: ..., -3, -2, -1, 0, 1, 2, 3, ...

Mathematics

Standard 3

Algebra and Functions

Students express quantitative relationships using algebraic terminology, expressions, equations, inequalities, and graphs.

7.3.1 Use variables and appropriate operations to write an expression, a formula, an equation, or an inequality that represents a verbal description.

Example: Write in symbols the inequality: 5 less than twice the number is greater than 42.

7.3.2 Write and solve two-step linear equations and inequalities in one variable and check the answers.

Example: Solve the equation $4x - 7 = 12$ and check your answer in the original equation.

7.3.3 Use correct algebraic terminology, such as variable, equation, term, coefficient*, inequality, expression, and constant.

Example: Name the variable, terms, and coefficient in this equation: $7x + 4 = 67$.

7.3.4 Evaluate numerical expressions and simplify algebraic expressions by applying the correct order of operations and the properties of rational numbers* (e.g., identity, inverse, commutative*, associative*, distributive*). Justify each step in the process.

Example: Simplify $3(4x + 5x - 1) + 2(x + 3)$ by removing the parentheses and rearranging. Explain each step you take.

7.3.5 Solve an equation or formula with two variables for a particular variable.

Example: Solve the formula $C = 2\pi r$ for r.

7.3.6 Define slope as vertical change per unit of horizontal change and recognize that a straight line has constant slope or rate of change.

Example: Examine a table of values and make a conjecture about whether the table represents a linear function.

7.3.7 Find the slope of a line from its graph.

Example: Draw the graph of $y = 2x - 1$. Choose two points on the graph and divide the change in y-value by the change in x-value. Repeat this for other pairs of points on the graph. What do you notice?

7.3.8 Draw the graph of a line given the slope and one point on the line, or two points on the line.

Example: Draw the graph of the equation with slope of 3 and passing through the point with coordinates (0, -2).

7.3.9 Identify functions as linear or nonlinear and examine their characteristics in tables, graphs, and equations.

Example: A plant is growing taller according to the formula $H = 2d + 3$, where H is the height after d days. Draw the graph of this function and explain what the point where it meets the vertical axis represents. Is this graph linear or nonlinear?

7.3.10 Identify and describe situations with constant or varying rates of change and know that a constant rate of change describes a linear function.

Example: In the last example, how will the graph be different if the plant's speed of growth changes?

* coefficient: e.g., 7 is the coefficient in 7x

* rational number: any number that can be written as a ratio of two integers* (e.g., $\frac{1}{2}$, $\frac{5}{6}$, $2\frac{3}{9}$)

* integers: ..., -3, -2, -1, 0, 1, 2, 3, ...

* commutative property : the order when adding or multiplying numbers makes no difference (e.g., 5 + 3 = 3 + 5), but note that this is not true for subtraction or division

* associative: the grouping when adding or multiplying numbers makes no difference (e.g., in 5 + 3 + 2, adding 5 and 3 and then adding 2 is the same as 5 added to 3 + 2), but note that this is not true for subtraction or division

* distributive: e.g., 3(5 + 2) = 3(5) + 3(2)

Standard 4

Geometry

Students deepen their understanding of plane and solid geometric shapes by constructing shapes that meet given conditions and by identifying attributes of shapes.

7.4.1 Understand coordinate graphs and use them to plot simple shapes, find lengths and areas related to the shapes and find images under translations (slides), rotations (turns), and reflections (flips).

Example: Draw the triangle with vertices (0, 0), (3, 0), and (0, 4). Find the lengths of the sides and the area of the triangle. Translate (slide) the triangle 2 units to the right. What are the coordinates of the new triangle?

7.4.2 Understand that transformations such as slides, turns, and flips preserve the length of segments, and that figures resulting from slides, turns, and flips are congruent* to the original figures.

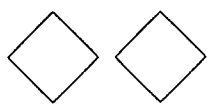
Example: In the last example, find the lengths of the sides and the area of the new triangle. Discuss your results.

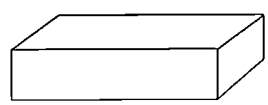
7.4.3 Know and understand the Pythagorean Theorem and use it to find the length of the missing side of a right triangle and the lengths of other line segments. Use direct measurement to test conjectures about triangles.

Example: Use the length and width of your classroom to calculate the distance across the room diagonally. Check by measuring.

7.4.4 Construct two-dimensional patterns (nets) for three-dimensional objects, such as right prisms*, pyramids, cylinders, and cones.

Example: Draw a rectangle and two circles that will fit together to make a cylinder.

* congruent: same shape and size 

* right prism: a three-dimensional shape with two congruent ends that are polygons and all other sides are rectangles 

Standard 5

Measurement

Students compare units of measure and use similarity to solve problems. They compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less regular objects.*

7.5.1 Compare lengths, areas, volumes, weights, capacities, times, and temperatures within measurement systems.

Example: The area of the school field is 3 acres. How many square yards is that? Explain your method.

7.5.2 Use experimentation and modeling to visualize similarity problems. Solve problems using similarity.

Example: At a certain time, the shadow of your school building is 36 feet long. At the same time, the shadow of a yardstick held vertically is 4 feet long. How high is the school building?

7.5.3 Read and create drawings made to scale, construct scale models, and solve problems related to scale.

Example: On a plan of your school, your classroom is 5 cm long and 3 cm wide. The actual classroom is 10 m long. How wide is it? Explain your answer.

7.5.4 Use formulas for finding the perimeter and area of basic two-dimensional shapes and the surface area and volume of basic three-dimensional shapes, including rectangles, parallelograms*, trapezoids*, triangles, circles, right prisms*, and cylinders.

Example: Find the surface area of a cylindrical can 15 cm high and with a diameter of 8 cm.

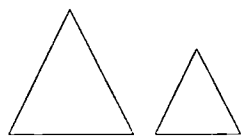
7.5.5 Estimate and compute the area of more complex or irregular two-dimensional shapes by dividing them into more basic shapes.

Example: A room to be carpeted is a rectangle 5 m × 4 m. A semicircular fireplace of diameter 1.5 m takes up some of the floor space. Find the area to be carpeted.

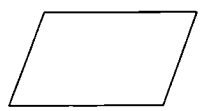
7.5.6 Use objects and geometry modeling tools to compute the surface area of the faces and the volume of a three-dimensional object built from rectangular solids.

Example: Build a model of an apartment building with blocks. Find its volume and total surface area.

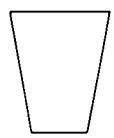
* similarity: figures that have the same shape but may not have the same size



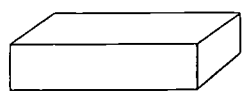
* parallelogram: a four-sided figure with both pairs of opposite sides parallel



* trapezoid: a four-sided figure with one pair of opposite sides parallel



* right prism: a three-dimensional shape with two congruent ends that are polygons and all other sides are rectangles



Standard 6

Data Analysis and Probability

Students collect, organize, and represent data sets and identify relationships among variables within a data set. They determine probabilities and use them to make predictions about events.

7.6.1 Analyze, interpret, and display data in appropriate bar, line, and circle graphs and stem-and-leaf plots,* and justify the choice of display.

Example: You survey the students in your school to find which of three designs for a magazine cover they prefer. To display the results, which would be more appropriate: a bar chart or a circle graph? Explain your answer.

7.6.2 Make predictions from statistical data.

Example: Record the temperature and weather conditions (sunny, cloudy, or rainy) at 1 p.m. each day for two weeks. In the third week, use your results to predict the temperature from the weather conditions.

7.6.3 Describe how additional data, particularly outliers, added to a data set may affect the mean*, median*, and mode*.

Example: You measure the heights of the students in your grade on a day when the basketball team is playing an away game. Later you measure the players on the team and include them in your data. What kind of effect will including the team have on the mean, median, and mode? Explain your answer.

7.6.4 Analyze data displays, including ways that they can be misleading. Analyze ways in which the wording of questions can influence survey results.

Example: On a bar graph of a company's sales, it appears that sales have more than doubled since last year. Then you notice that the vertical axis starts at $5 million and can see that sales have in fact increased from $5.5 million to $6.2 million.

7.6.5 Know that if P is the probability of an event occurring, then $1 - P$ is the probability of that event not occurring.

Example: The weather forecast says that the probability of rain today is 0.3. What is the probability that it won't rain?

7.6.6 Understand that the probability of either one or the other of two disjoint events* occurring is the sum of the two individual probabilities.

Example: Find the probability of rolling 9 with two number cubes. Also find the probability of rolling 10. What is the probability of rolling 9 or 10?

7.6.7 Find the number of possible arrangements of several objects using a tree diagram.

Example: A state's license plates contain 6 digits and one letter. How many different license plates can be made if the letter must always be in the third position and the first digit cannot be a zero?

* stem-and-leaf plot: e.g., this one shows 62, 63, 67, 71, 75, 75, 76, etc.

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

* mean: the average obtained by adding the values and dividing by the number of values

* median: the value that divides a set of data written in order of size into two equal parts

* mode: the most common value

* disjoint events: events that cannot happen at the same time

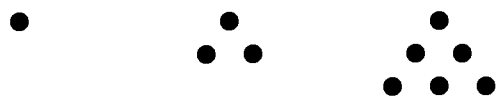
Standard 7

Problem Solving

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

7.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.

Example: Solve the problem: "The first three triangular numbers are shown in the diagram below. Find an expression to calculate the nth triangular number."



1 3 6

Decide to look for patterns.

7.7.2 Make and justify mathematical conjectures based on a general description of a mathematical question or problem.

Example: In the first example, notice that three dots make an equilateral triangle for the number 3 and six dots make the next equilateral triangle.

7.7.3 Decide when and how to divide a problem into simpler parts.

Example: In the first example, decide to make a diagram for the fourth and fifth triangular numbers.

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

7.7.4 Apply strategies and results from simpler problems to solve more complex problems.

Example: In the first example, list the differences between any two triangular numbers.

7.7.5 Make and test conjectures by using inductive reasoning.

Example: In the first example, predict the difference between the fifth and sixth numbers and use this to predict the sixth triangular number. Make a diagram to test your conjecture.

7.7.6 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 words, numbers, and tables to summarize your work with triangular numbers.

7.7.7 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.

Example: Calculate the amount of aluminum needed to make a can with diameter 10 cm that is 15 cm high and 1 mm thick. Take π as 3.14 and give your answer to appropriate accuracy.

7.7.8 Select and apply appropriate methods for estimating results of rational-number computations.

Example: Measure the dimensions of a swimming pool to find its volume. Estimate an answer by working with an average depth.

7.7.9 Use graphing to estimate solutions and check the estimates with analytic approaches.

Example: Use a graphing calculator to find the crossing point of the straight lines $y = 2x + 3$ and $x + y = 10$. Confirm your answer by checking it in the equations.

7.7.10 Make precise calculations and check the validity of the results in the context of the problem.

Example: In the first example, check that your later results fit with your earlier ones. If they do not, repeat the calculations to make sure.

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

7.7.11 Decide whether a solution is reasonable in the context of the original situation.

Example: In the first example, calculate the 10^{th} triangular number and draw the triangle of dots that goes with it.

7.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.

Example: Use your method from the first example to investigate pentagonal numbers.

NOTES

Grade 7

Science

Beginning with Grade 6, the Indiana Academic Standards for science contain seven Standards, with the addition of Historical Perspectives. Each Standard is described below. On the pages that follow, age-appropriate concepts are listed underneath each Standard. These ideas build a foundation for understanding the intent of each Standard.

Standard 1 — The Nature of Science and Technology

It is the union of science and technology that forms the scientific endeavor and that makes it so successful. Although each of these human enterprises has a character and history of its own, each is dependent on and reinforces the other. This first Standard draws portraits of science and technology that emphasize their roles in the scientific endeavor and reveal some of the similarities and connections between them. In order for students to truly understand the nature of science and technology, they must model the process of scientific investigation through inquiries, fieldwork, lab work, etc. Through these experiences, students will practice designing investigations and experiments, making observations, and formulating theories based on evidence.

Standard 2 — Scientific Thinking

There are certain thinking skills associated with science, mathematics, and technology that young people need to develop during their school years. These are mostly, but not exclusively, mathematical and logical skills that are essential tools for both formal and informal learning and for a lifetime of participation in society as a whole. Good communication is also essential in order to both receive and disseminate information and to understand others' ideas as well as have one's own ideas understood. Writing, in the form of journals, essays, lab reports, procedural summaries, etc., should be an integral component of students' experiences in science.

Standard 3 — The Physical Setting

One of the grand success stories of science is the unification of the physical universe. It turns out that all natural objects, events, and processes are connected to each other. This Standard contains recommendations for basic knowledge about the overall structure of the universe and the physical principles on which it seems to run, with emphasis on Earth and the solar system. This Standard focuses on two principle subjects: the structure of the universe and the major processes that have shaped planet Earth, and the concepts with which science describes the physical world in general – organized under the headings of *Matter and Energy* and *Forces of Nature*. In Grade 7, students continue to learn about the relationships between physical objects, events, and processes in the universe.

Standard 4 — The Living Environment

People have long been curious about living things – how many different species there are, what they are like, how they relate to each other, and how they behave. Living organisms are made of the same components as all other matter, involve the same kinds of transformations of energy, and move using the same basic kinds of forces. Thus, all of the physical principles discussed in Standard 3 – The Physical Setting, apply to life as well as to stars, raindrops, and television sets. This Standard offers recommendations on basic knowledge about how living things function and how they interact with one another and their environment. In Grade 7, students trace the flow of matter and energy through ecosystems.

Standard 5 — The Mathematical World

Mathematics is essentially a process of thinking that involves building and applying abstract, logically connected networks of ideas. These ideas often arise from the need to solve problems in science, technology, and everyday life – problems ranging from how to model certain aspects of a complex scientific problem to how to balance a checkbook.

Standard 6 — Historical Perspectives

Examples of historical events provide a context for understanding how the scientific enterprise operates. By studying these events, one understands that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators. The historical events listed in Grade 7 are certainly not the only events that could be used to illustrate this Standard, but they provide an array of examples. Through these examples, students will gain insight into germ theory.

Standard 7 — Common Themes

Some important themes pervade science, mathematics, and technology and appear over and over again, whether we are looking at ancient civilization, the human body, or a comet. These ideas transcend disciplinary boundaries and prove fruitful in explanation, in theory, in observation, and in design. A focus on *Constancy and Change* within this Standard provides students opportunities to engage in long-term and on-going laboratory and fieldwork, and thus understand the role of change over time in studying The Physical Setting and The Living Environment.

Standard 1

The Nature of Science and Technology

Students further their scientific understanding of the natural world through investigations, experiences, and readings. They design solutions to practical problems by using a variety of scientific methodologies.

The Scientific View of the World

7.1.1 Recognize and explain that when similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often takes further studies to decide.

Scientific Inquiry

7.1.2 Explain that what people expect to observe often affects what they actually do observe and provide an example of a solution to this problem.

7.1.3 Explain why it is important in science to keep honest, clear, and accurate records.

7.1.4 Describe that different explanations can be given for the same evidence, and it is not always possible to tell which one is correct without further inquiry.

The Scientific Enterprise

7.1.5 Identify some important contributions to the advancement of science, mathematics, and technology that have been made by different kinds of people, in different cultures, at different times.

7.1.6 Provide examples of people who overcame bias and/or limited opportunities in education and employment to excel in the fields of science.

Technology and Science

7.1.7 Explain how engineers, architects, and others who engage in design and technology use scientific knowledge to solve practical problems.

7.1.8 Explain that technologies often have drawbacks as well as benefits. Consider a technology, such as the use of pesticides, which helps some organisms but may hurt others, either deliberately or inadvertently.

7.1.9 Explain how societies influence what types of technology are developed and used in fields such as agriculture, manufacturing, sanitation, medicine, warfare, transportation, information processing, and communication.

7.1.10 Identify ways that technology has strongly influenced the course of history and continues to do so.

7.1.11 Illustrate how numbers can be represented by using sequences of only two symbols, such as 1 and 0 or on and off, and how that affects the storage of information in our society.

Standard 2

Scientific Thinking

Students use instruments and tools to measure, calculate, and organize data. They frame arguments in quantitative terms when possible. They question claims and understand that findings may be interpreted in more than one acceptable way.

Computation and Estimation

7.2.1 Find what percentage one number is of another and figure any percentage of any number.

7.2.2 Use formulas to calculate the circumferences and areas* of rectangles, triangles, and circles, and the volumes* of rectangular solids.

7.2.3 Decide what degree of precision is adequate, based on the degree of precision of the original data, and round off the result of calculator operations to significant figures* that reasonably reflect those of the inputs.

7.2.4 Express numbers like 100, 1,000, and 1,000,000 as powers of 10.

7.2.5 Estimate probabilities of outcomes in familiar situations, on the basis of history or the number of possible outcomes.

* area: a measure of the size of a two-dimensional region
* volume: a measure of the size of a three-dimensional object
* significant figures: digits that appropriately express the precision of a measurement or quantity derived mathematically from one or more measurements

Manipulation and Observation

7.2.6 Read analog and digital meters on instruments used to make direct measurements of length, volume, weight, elapsed time, rates, or temperatures, and choose appropriate units.

Communication Skills

7.2.7 Incorporate circle charts, bar and line graphs, diagrams, scatter plots*, and symbols into writing, such as lab or research reports, to serve as evidence for claims and/or conclusions.

* scatter plot: a coordinate graph showing ordered pairs of data

Critical Response Skills

7.2.8 Question claims based on vague attributes, such as "Leading doctors say ...," or on statements made by celebrities or others outside the area of their particular expertise.

Standard 3

The Physical Setting

Students collect and organize data to identify relationships between physical objects, events, and processes. They use logical reasoning to question their own ideas as new information challenges their conceptions of the natural world.

The Universe

7.3.1 Recognize and describe that the sun is a medium-sized star located near the edge of a disk-shaped galaxy of stars and that the universe contains many billions of galaxies and each galaxy contains many billions of stars.

7.3.2 Recognize and describe that the sun is many thousands of times closer to Earth than any other star, allowing light from the sun to reach Earth in a few minutes. Note that this may be compared to time spans of longer than a year for all other stars.

The Earth and the Processes That Shape It

7.3.3 Describe how climates sometimes have changed abruptly in the past as a result of changes in Earth's crust, such as volcanic eruptions or impacts of huge rocks from space.

7.3.4 Explain how heat flow and movement of material within Earth causes earthquakes and volcanic eruptions and creates mountains and ocean basins.

7.3.5 Recognize and explain that heat energy carried by ocean currents has a strong influence on climate around the world.

7.3.6 Describe how gas and dust from large volcanoes can change the atmosphere.

7.3.7 Give examples of some changes in Earth's surface that are abrupt, such as earthquakes and volcanic eruptions, and some changes that happen very slowly, such as uplift and wearing down of mountains and the action of glaciers.

7.3.8 Describe how sediments of sand and smaller particles, sometimes containing the remains of organisms, are gradually buried and are cemented together by dissolved minerals to form solid rock again.

7.3.9 Explain that sedimentary rock*, when buried deep enough, may be reformed by pressure and heat, perhaps melting and recrystallizing into different kinds of rock. Describe that these reformed rock layers may be forced up again to become land surface and even mountains, and subsequently erode.

7.3.10 Explain how the thousands of layers of sedimentary rock can confirm the long history of the changing surface of Earth and the changing life forms whose remains are found in successive layers, although the youngest layers are not always found on top, because of folding, breaking, and uplifting of layers.

* sedimentary rock: rock formed by compression of successive layers of silt or other small particles

Matter* and Energy*

7.3.11 Explain that the sun loses energy by emitting light. Note that only a tiny fraction of that light reaches Earth. Understand that the sun's energy arrives as light with a wide range of wavelengths*, consisting of visible light, infrared*, and ultraviolet radiation*.

7.3.12 Investigate how the temperature* and acidity* of a solution influences reaction rates, such as those resulting in food spoilage.

7.3.13 Explain that many substances dissolve in water. Understand that the presence of these substances often affects the rates of reactions that are occurring in the water as compared to the same reactions occurring in the water in the absence of the substances.

7.3.14 Explain that energy in the form of heat is almost always one of the products of an energy transformation, such as in the examples of exploding stars, biological growth, the operation of machines, and the motion of people.

7.3.15 Describe how electrical energy can be produced from a variety of energy sources and can be transformed into almost any other form of energy, such as light or heat.

7.3.16 Recognize and explain that different ways of obtaining, transforming, and distributing energy have different environmental consequences.

* matter: anything that has mass* and takes up space
* mass: the amount of matter in an object
* energy: what is needed to do work*
* work: a force* acting over a distance to move an object
* force: a push or a pull that can cause a change in the motion* of an object
* motion: a change in position of an object in a certain amount of time
* wavelength: the distance between two consecutive, similar points on a wave*
* wave: traveling disturbance that carries energy from one place to another
* infrared radiation: electromagnetic radiation having wavelengths longer than those of red light but shorter than microwaves
* ultraviolet radiation: electromagnetic radiation having wavelengths shorter than those of visible light but longer than those of x-rays
* temperature: a measure of average heat energy that can be measured with a thermometer
* acidity: a measure of the hydrogen ion concentration in a chemical system

Forces of Nature

7.3.17 Investigate that an unbalanced force, acting on an object, changes its speed* or path of motion or both, and know that if the force always acts toward the same center as the object moves, the object's path may curve into an orbit around the center.

7.3.18 Describe that light waves, sound waves, and other waves move at different speeds in different materials.

7.3.19 Explain that human eyes respond to a narrow range of wavelengths of the electromagnetic spectrum*.

7.3.20 Describe that something can be "seen" when light waves emitted or reflected by it enter the eye just as something can be "heard" when sound waves from it enter the ear.

* speed: the rate per unit time at which an object moves
* electromagnetic spectrum: the arrangement of electromagnetic waves* in order of wavelength and frequency*
* electromagnetic waves: a combination of electric and magnetic fields, each regenerating the other, that carry energy through space – light and radio waves are examples
* frequency: the number of waves that pass a certain point per unit time

Standard 4

The Living Environment

Students begin to trace the flow of matter and energy through ecosystems. They recognize the fundamental difference between plants and animals and understand its basis at the cellular level. Students distinguish species, particularly through an examination of internal structures and functions. They use microscopes to observe cells and recognize that cells function in similar ways in all organisms.

Diversity of Life

7.4.1 Explain that similarities among organisms are found in external and internal anatomical features, including specific characteristics at the cellular level, such as the number of chromosomes*. Understand that these similarities are used to classify organisms since they may be used to infer the degree of relatedness among organisms.

7.4.2 Describe that all organisms, including the human species*, are part of and depend on two main interconnected global food webs*, the ocean food web and the land food web.

7.4.3 Explain how, in sexual reproduction, a single specialized cell from a female merges with a specialized cell from a male and this fertilized egg carries genetic information from each parent and multiplies to form the complete organism.

7.4.4 Explain that cells continually divide to make more cells for growth and repair and that various organs and tissues function to serve the needs of cells for food, air, and waste removal.

7.4.5 Explain that the basic functions of organisms, such as extracting energy from food and getting rid of wastes, are carried out within the cell and understand that the way in which cells function is similar in all organisms.

* chromosomes: a cell structure that contains DNA, a chemical which directs the activities of a cell and passes on the traits of a cell to new cells
* species: a category of biological classification that is comprised of organisms sufficiently and closely related as to be potentially able to mate with one another
* food web: all food chains* in an ecosystem that are connected

* food chain: food and energy links between different plants, animals, and other organisms in an ecosystem*
* ecosystem: a group of organisms in an area that interact with one another, together with their non-living environment

Interdependence of Life and Evolution

7.4.6 Explain how food provides the fuel and the building material for all organisms.

7.4.7 Describe how plants use the energy from light to make sugars from carbon dioxide and water to produce food that can be used immediately or stored for later use.

7.4.8 Describe how organisms that eat plants break down the plant structures to produce the materials and energy that they need to survive, and in turn, how they are consumed by other organisms.

7.4.9 Understand and explain that as any population of organisms grows, it is held in check by one or more environmental factors. These factors could result in depletion of food or nesting sites and/or increase loss to increased numbers of predators or parasites. Give examples of some consequences of this.

Human Identity

7.4.10 Describe how technologies having to do with food production, sanitation, and disease prevention have dramatically changed how people live and work and have resulted in changes in factors that affect the growth of human population.

7.4.11 Explain that the amount of food energy (calories) a person requires varies with body weight, age, sex, activity level, and natural body efficiency. Understand that regular exercise is important to maintain a healthy heart/lung system, good muscle tone, and strong bone structure.

7.4.12 Explain that viruses, bacteria, fungi, and parasites may infect the human body and interfere with normal body functions. Recognize that a person can catch a cold many times because there are many varieties of cold viruses that cause similar symptoms.

7.4.13 Explain that white blood cells engulf invaders or produce antibodies that attack invaders or mark the invaders for killing by other white blood cells. Know that the antibodies produced will remain and can fight off subsequent invaders of the same kind.

7.4.14 Explain that the environment may contain dangerous levels of substances that are harmful to human beings. Understand, therefore, that the good health of individuals requires monitoring the soil, air, and water as well as taking steps to keep them safe.

Standard 5

The Mathematical World

Students apply mathematics in scientific contexts. They use mathematical ideas, such as relations between operations, symbols, statistical relationships, and the use of logical reasoning, in the representation and synthesis of data.

Numbers

7.5.1 Demonstrate how a number line can be extended on the other side of zero to represent negative numbers and give examples of instances where this is useful.

Shapes and Symbolic Relationships

7.5.2 Illustrate how lines can be parallel, perpendicular, or oblique.

7.5.3 Demonstrate how the scale chosen for a graph or drawing determines its interpretation.

Reasoning and Uncertainty

7.5.4 Describe that the larger the sample, the more accurately it represents the whole. Understand, however, that any sample can be poorly chosen and this will make it unrepresentative of the whole.

Standard 6

Historical Perspectives

Students gain understanding of how the scientific enterprise operates through examples of historical events. Through the study of these events, they understand that new ideas are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and grow or transform slowly through the contributions of many different investigators.

7.6.1 Understand and explain that throughout history, people have created explanations for disease. Note that some held that disease had spiritual causes, but that the most persistent biological theory over the centuries was that illness resulted from an imbalance in the body fluids. Realize that the introduction of germ theory by Louis Pasteur and others in the 19th century led to the modern understanding of how many diseases are caused by microorganisms, such as bacteria, viruses, yeasts, and parasites.

7.6.2 Understand and explain that Louis Pasteur wanted to find out what caused milk and wine to spoil. Note that he demonstrated that spoilage and fermentation* occur when microorganisms enter from the air, multiply rapidly, and produce waste products, with some desirable results, such as carbon dioxide in bread dough, and some undesirable, such as acetic acid in wine. Understand that after showing that spoilage could be avoided by keeping germs out or by destroying them with heat, Pasteur investigated animal diseases and showed that microorganisms were involved in many of them. Also note that other investigators later showed that specific kinds of germs caused specific diseases.

7.6.3 Understand and explain that Louis Pasteur found that infection by disease organisms (germs) caused the body to build up an immunity against subsequent infection by the same organisms. Realize that Pasteur then demonstrated more widely what Edward Jenner had shown for smallpox without understanding the underlying mechanism: that it was possible to produce vaccines that would induce the body to build immunity to a disease without actually causing the disease itself.

7.6.4 Understand and describe that changes in health practices have resulted from the acceptance of the germ theory of disease. Realize that before germ theory, illness was treated by appeals to supernatural powers or by attempts to adjust body fluids through induced vomiting or bleeding. Note that the modern approach emphasizes sanitation, the safe handling of food and water, the pasteurization of milk, quarantine, and aseptic surgical techniques to keep germs out of the body; vaccinations to strengthen the body's immune system against subsequent infection by the same kind of microorganisms; and antibiotics and other chemicals and processes to destroy microorganisms.

* fermentation: chemical decomposition of an organic substance

Standard 7

Common Themes

Students analyze the relationships within systems. They investigate how different models can represent the same data, rates of change, cyclic changes, and changes that counterbalance one another.

Systems

7.7.1 Explain that the output from one part of a system, which can include material, energy, or information, can become the input to other parts and this feedback can serve to control what goes on in the system as a whole.

Models and Scale

7.7.2 Use different models to represent the same thing, noting that the kind of model and its complexity should depend on its purpose.

Constancy and Change

7.7.3 Describe how physical and biological systems tend to change until they reach equilibrium and remain that way unless their surroundings change.

7.7.4 Use symbolic equations to show how the quantity of something changes over time or in response to changes in other quantities.

NOTES

Grade 7

Social Studies

Peoples, Places, And Cultures in Africa, Asia, and the Southwest Pacific

Students in Grade 7 study the regions and nations of Africa, Asia, and the Southwest Pacific, including historical, geographical, economic, political, and cultural relationships. This study includes the following regions: Africa, Southwest and Central Asia, South Asia, Southeast Asia, East Asia, and the Southwest Pacific (Australia, New Zealand, and Oceania).

The K – 8 Indiana 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 7 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 major movements, events, and figures that contributed to the development of nations in modern Africa, Asia, and the Southwest Pacific from ancient civilizations to early modern times.

Standard 2 — Civics and Government

Students will trace the historic development of different forms of government and compare various contemporary governments in Africa, Asia, and the Southwest Pacific.

Standard 3 — Geography

Students will explain how Earth/sun relationships affect the atmospheric and oceanic circulation systems, the seasons, and climate, and explain global time zones and their relation to longitude. They will identify and categorize the major geographic characteristics and regions of Africa, Asia, and the Southwest Pacific. They will also name and locate major physical features, countries, and major cities, and use geographic skills and technology to examine geographic relationships within and between these regions and the rest of the world.

Standard 4 — Economics

Students will examine the influence of physical and cultural factors upon the economic systems found in countries of Africa, Asia, and the Southwest Pacific.

Standard 5 — Individuals, Society, and Culture

Students will examine the role of individuals and groups in societies of Africa, Asia, and the Southwest Pacific, 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.

Standard 1

History

Students will examine the major movements, events, and figures that contributed to the development of nations in modern Africa, Asia, and the Southwest Pacific from ancient civilizations to early modern times.

Historical Knowledge

7.1.1 Explain the rise of early civilizations in the river valleys of the Tigris and Euphrates in Mesopotamia and along the Nile in Northeastern Africa, including Egypt and Kush.

7.1.2 Describe the achievements of ancient Egypt in art, architecture, religion, and government and the development of the concept of theocracy*.

7.1.3 Compare the early civilizations of the Indus River Valley in South Asia with the Huang-He of China.

7.1.4 Describe the historical origins, central beliefs, and spread of major religions, including Judaism, Christianity, Islam, Hinduism, Buddhism, and Confucianism.

7.1.5 Explain the importance of early trade routes in the eastern Mediterranean, India, and China, including the early "Silk Road."

7.1.6 Describe the extent and influence of Muslim civilization, including political organization, the growth of cities, the development of trans-Saharan and other trade routes, and scientific and cultural contributions to other cultures of the time.

7.1.7 Describe the development of sub-Saharan civilizations in Africa, including the kingdoms of Ghana, Mali, and Songhai and the importance of historic political and trading centers, such as Timbuktu.

7.1.8 Describe developments in agriculture, technology, and commerce during the Tang and Song Dynasties in China.

7.1.9 Explain how Mongol rulers of China extended the Empire and both adapted to and changed Chinese culture.

7.1.10 Describe advances in Chinese society under the Ming Dynasty, including agriculture, art, architecture, navigation, and public administration through the scholar-official class.

7.1.11 Explain how Japan became more independent of earlier Chinese influences, developing its own political, religious, social, and artistic traditions.

7.1.12 Describe the development of Japanese court life, the shogunate and warrior class system, feudalism, and the rise of military society.

7.1.13 Trace the voyages of exploration from Europe that resulted in colonization of parts of Asia and the Southwest Pacific.

Example: Imperial rule of Indonesia by the Dutch, of the Philippines by the Spanish, colonization and settlement in Australia and New Zealand by the British, and of islands in Oceania by the British and French.

7.1.14 Identify European nations that colonized Asia and Africa.

Example: The Portuguese in Africa and Southern Asia, the British in India, the Russians in Central Asia, and the French in Northern and Western Africa.

* theocracy: government by priests or a monarch presumed to be divine

Chronological Thinking, Comprehension, Analysis, and Interpretation

7.1.15 Develop and compare timelines that identify major people, events, and developments in the history of the individual civilizations and/or countries that comprise Africa, Asia, and the Southwest Pacific.

7.1.16 Recognize the interconnection of historical people, places, events, and developments that have taken place in civilizations of Africa, Asia, and the Southwest Pacific.

7.1.17 Recognize historical perspective by identifying the historical context in which events occurred, and avoid evaluating the past solely in terms of present-day norms.

7.1.18 Analyze cause-and-effect relationships, bearing in mind multiple causation, including the importance of individuals, ideas, human interests, beliefs, and chance in history. Keep in mind that there may be more than one cause for an event or movement.

7.1.19 Analyze multiple perspectives on a current event relating to Africa, Asia, or the Southwest Pacific. Read and examine more than one account of the event and distinguish between statements of opinion, and those that are statements of fact.

Research Capabilities

7.1.20 Form and respond to historical questions, and use a variety of information resources* to find and evaluate historical data on the people, places, events, and developments that have played a part in the history of Africa, Asia, and the Southwest Pacific.

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

Issues-Analysis, Decision-Making, Planning, and Problem Solving

7.1.21 Identify and evaluate solutions and alternative courses of action chosen by people to resolve problems confronting people in Africa, Asia, and the Southwest Pacific. Consider the information available, interests of those affected by the decision, and consequences of each course of action.

Standard 2

Civics and Government

Students will trace the historic development of different forms of government and compare various contemporary governments in Africa, Asia, and the Southwest Pacific.

Foundations of Government

7.2.1 Give examples of the different routes to independence from colonial rule taken by countries in Asia, Africa, and the Southwest Pacific.

Example: Australia, India, South Africa.

7.2.2 Identify principles and practices of democracy in current governments of Africa, Asia, and the Southwest Pacific by such countries as India, Japan, the Republic of South Africa, and New Zealand.

Functions of Government

7.2.3 Compare the parliamentary democracies of Australia and New Zealand with government in the United States in terms of distribution of powers, limited government, the rule of law, and individual rights.

7.2.4 Identify different forms of government in Africa, Asia, and the Southwest Pacific, which include examples of limited/unlimited government.

Example: Representative democracy, parliamentary democracy, republic, dictatorship, monarchy.

Roles of Citizens

7.2.5 Define and compare citizenship and the citizen's role in selected countries of Africa, Asia, and the Southwest Pacific.

Example: Compare methods of voting, participation in voluntary organizations of civil society, and participation in government.

International Relations

7.2.6 Explain how African, Asian, and Southwest Pacific nations interact with each other.

Example: Trade, diplomacy, treaties and agreements, humanitarian aid, economic incentives and sanctions, and the threat and use of military force.

7.2.7 Describe different sources of authority and power of government in African, Asian, and Southwest Pacific countries.

Example: Tradition, religion, force, constitution, consent of the governed.

7.2.8 Assess the extent of democracy and observance of human rights in various African, Asian, and Southwest Pacific countries.

7.2.9 Use data gathered from a variety of information resources* to research current political trends and events in African, Asian, and Southwest Pacific countries.

* information resources: print media, including 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 explain how Earth/sun relationships affect the atmospheric and oceanic circulation systems, the seasons, and climate, and explain global time zones and their relation to longitude. They will identify and categorize the major geographic characteristics and regions of Africa, Asia, and the Southwest Pacific. They will also name and locate major physical features, countries, and major cities, and use geographic skills and technology to examine geographic relationships within and between these regions and the rest of the world.

The World in Spatial Terms

7.3.1 Explain the role of Earth/sun relationships in influencing the climate and ecosystems of Asia, Africa, and the Southwest Pacific.

7.3.2 Use different map projections and compare the way they represent the Eastern Hemisphere.

7.3.3 Use four spatial map elements (point, line, area, and volume) to interpret information on maps, globes, and Geographic Information Systems (GIS)*.

* Geographic Information Systems (GIS): information technology systems used to store, analyze, manipulate, and display a wide range of geographic information

Places and Regions

7.3.4 Name and locate major regions, mountain ranges, river systems, countries, and cities in Africa, Asia, and the Southwest Pacific.

7.3.5 Identify and compare physical and cultural sub-regions of Africa, Asia, and the Southwest Pacific.

Physical Systems

7.3.6 Locate and map the climate regions of the Eastern Hemisphere, and explain how and why they differ.

7.3.7 Explain how physical processes have shaped the Earth's surface. Classify these processes according to those that have built up the Earth's surface (mountain-building and alluvial deposition*) and those that wear away at the Earth's surface (erosion).

7.3.8 Identify and explain the distribution of ecosystems in Africa, Asia, and the Southwest Pacific in terms of climate and land form patterns.

7.3.9 Explain why specific areas of Africa, Asia, and the Southwest Pacific have major petroleum and mineral deposits and describe the physical processes that resulted in deposits in these locations.

Example: The central plateau of Africa has a large part of the world's industrial minerals, such as copper, cobalt, and diamonds.

7.3.10 Describe the restrictions that climate and land forms place on land use in regions of Africa, Asia, and the Southwest Pacific, and be able to discern how patterns of population distribution reflect these restrictions.

* alluvial deposition: the deposit of dirt and debris caused by the flow of water

Human Systems

7.3.11 Give reasons why rates of population growth and life expectancy vary among countries in Africa, Asia, and the Southwest Pacific.

7.3.12 Investigate how physical geography, productive resources, specialization, and trade have influenced the way people earn income in Africa, Asia, and the Southwest Pacific.

7.3.13 Use maps, charts, and graphs to compare rural and urban populations in selected countries.

Environment and Society

7.3.14 Analyze historical maps, and give examples of how land and water forms, climate, and natural vegetation have influenced historical trends and developments in Asia, Africa, and the Southwest Pacific.

7.3.15 Use a variety of information resources* to identify current issues related to natural resources in selected countries in Africa, Asia, and the Southwest Pacific, and examine contrasting perspectives on these issues.

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

Uses of Geography

7.3.16 Develop maps of Africa, Asia, and the Southwest Pacific in different historical periods showing political divisions and major physical and cultural features.

Standard 4

Economics

Students will examine the influence of physical and cultural factors upon the economic systems found in countries of Africa, Asia, and the Southwest Pacific.

7.4.1 Give examples of trade between countries in Africa, Asia, and the Southwest Pacific. Explain how voluntary trade benefits countries and results in higher standards of living.

Example: Voluntary trade results in increased production, increased consumption of goods and services, and lower prices for consumers.

7.4.2 Identify economic connections between the local community and the countries of Africa, Asia, or the Southwest Pacific.

7.4.3 Illustrate how international trade requires a system for exchanging currency between and among nations.

7.4.4 Describe why and how different economic systems* (traditional*, command*, market*, mixed*) in countries of Africa, Asia, and the Southwest Pacific answer the basic economic questions of what to produce, how to produce, and for whom to produce.

7.4.5 Explain how banks and other financial institutions channel funds from savers to borrowers and investors in Africa, Asia, and the Southwest Pacific.

7.4.6 Compare and contrast the standard of living of various countries in Africa, Asia, and the Southwest Pacific using Gross Domestic Product (GDP)* per capita as an indicator.

7.4.7 Describe ways that people can increase individual human capital.

Example: Acquiring knowledge and skills through education or training.

7.4.8 Identify situations in which the actions of consumers and producers in Asia, Africa, and the Southwest Pacific are helpful "spillovers" or harmful "spillovers" to people inside and outside a country who are not directly involved in the consumption or production of a product.

Example: A helpful "spillover" might be education. We all are better off if we have an educated workforce. A harmful "spillover" might be air or water pollution from production of a product. Even those who do not consume the product are hurt by pollution.

7.4.9 Research how individuals save and invest in different countries of Asia, Africa, and the Southwest Pacific compared to the United States.

* economic systems: ways that people allocate economic resources, goods, and services
* traditional economy: resources are allocated based on custom and tradition
* command economy: resources are allocated by the government or other central authority
* market economy: resources are allocated by individuals
* mixed economy: resources are allocated by some combination of traditional, command, or market systems
* Gross Domestic Product (GDP): the value of all final goods and services produced in a country in a year

Standard 5

Individuals, Society, and Culture

Students will examine the role of individuals and groups in societies of Africa, Asia, and the Southwest Pacific, 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.

7.5.1 Compare and contrast how social institutions, including the family, religion, education, government, and the economic system influence individual behavior in different societies in Africa, Asia, and the Southwest Pacific in the past and present.

Example: Compare ideas regarding individual responsibility in Confucianism and Buddhism, or compare the role of the individual in family life in selected cultures.

7.5.2 Explain the term social status*, describe how this concept helped to determine individual roles in African, Asian, and Southwest Pacific societies in the past, and compare with ideas about social status today.

Example: Identify the various levels of society in ancient Egypt, and compare them with levels of Egyptian society today.

7.5.3 Give examples of specific changes in societies in Africa, Asia, and the Southwest Pacific as a result of cultural diffusion* in the past and present.

Example: Trace the spread of Islam to areas of Africa and Asia during the Middle Ages or the spread of European languages to the Southwest Pacific and parts of Asia and Africa during the period of European exploration and colonization.

7.5.4 Examine the impact of cultural change brought about by technological inventions and innovations in the past and present.

Example: Trace the technology of paper making from its origins in China in about 100 C.E., to its spread to the Middle East, Africa, and Europe in the Middle Ages, and speculate about its possible impact.

7.5.5 Trace steps in the development of written language, including the evolution of Sumerian cuneiform, Egyptian hieroglyphics, and Chinese calligraphy.

7.5.6 Identify major languages spoken in areas of Asia, Africa, and the Southwest Pacific, and give examples of how language, literature, and the arts have contributed to the development and transmission of culture.

7.5.7 Define the term ethnocentrism*, and give examples of how this attitude can lead to cultural misunderstandings.

Example: Traders and explorers in the past tended to consider the cultures they encountered as inferior. They may, in turn, have been considered inferior by the people they encountered.

7.5.8 Use a variety of information resources* to identify examples of present conflicts between cultural groups or nations, and analyze the historical and geographical background of such conflicts.

Example: Use newspapers, magazines, CD-ROMs, and Web sites to gather information about the historical, religious, and territorial origins of the conflict between Israelis and Palestinians.

7.5.9 Give examples of the benefits of connections among cultures, such as developing opportunities for trade, cooperating in seeking solutions to mutual problems, learning from technological advances, acquiring new perspectives, and benefiting from developments in architecture, music, and the arts.

* social status: the position a person has in a society

* cultural diffusion: the spread of ideas from one culture to another

* ethnocentrism: the attitude that one's own culture is superior to any other culture

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

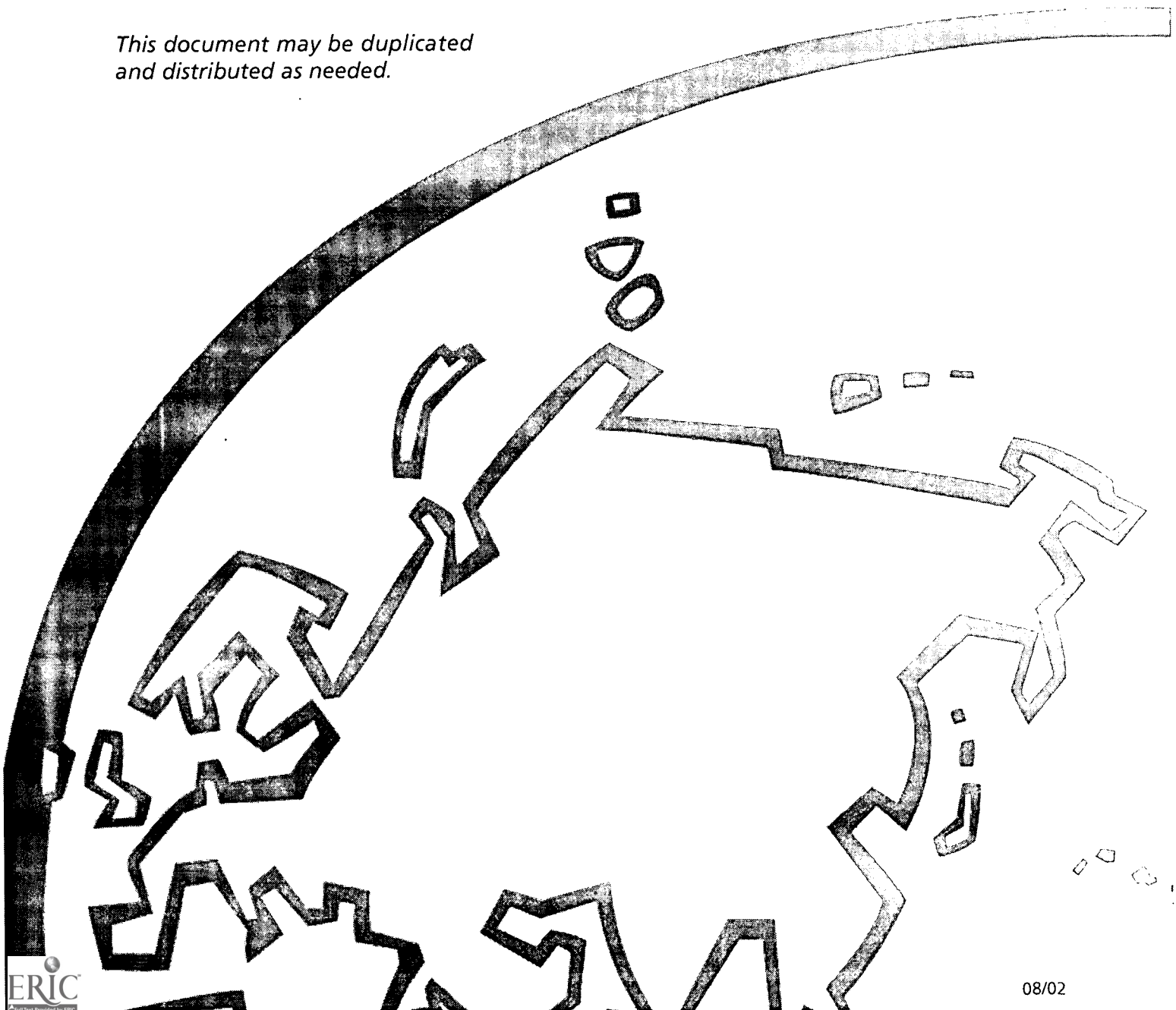
NOTES

Questions?

If you have contacted your child's school and still need additional information, call: **1.888.544.7837**.

www.doe.state.in.us/standards

This document may be duplicated and distributed as needed.



08/02

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

	This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.
X	This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").