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ABSTRACT

This guide to Indiana's academic standards in language arts, mathematics, science, and the social studies for Grade 2 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. The guide's English/Language Arts section cites the following standards: (1) Reading: Word Recognition, Fluency, and Vocabulary Development; (2) Reading: Comprehension; (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 Mathematics section lists these six standards: Number Sense, Computation, Algebra and Functions, Geometry, Measurement, and Problem Solving. The Science section enumerates these six standards: Nature of Science and Technology, Scientific Thinking, Physical Setting, Living Environment, Mathematical World, and Common Themes. The Social Studies section lists these five standards: History; Civics and Government; Geography; Economics; Individuals, Society, and Culture. (NKA)

Grade 2

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,

Governor Frank O'Bannon

Dr. Suellen Reed,
Superintendent of Public Instruction

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	Grade 2	Grade 3	Grade 4
	♦Reading	♦Reading	◗ English/Lang. Arts ◗ Mathematics	

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	Grade 6	Grade 7	Grade 8
◗ Science (begins 2003) ◗ Social Studies (begins 2004)	◗ English/Lang. Arts ◗ Mathematics	◗ Science (begins 2005) ◗ Social Studies (begins 2006)	◗ 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?

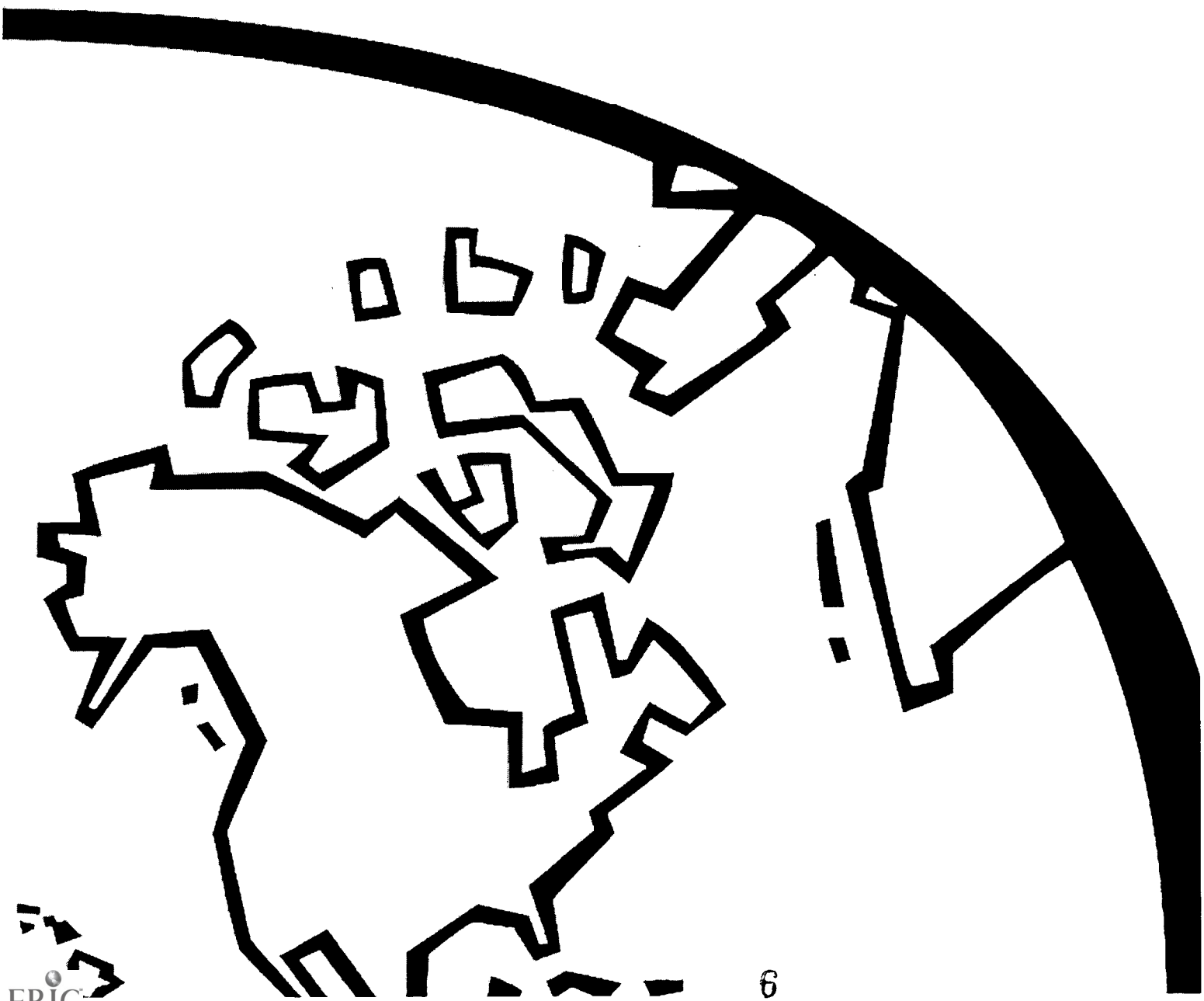
Grade 9	Grade 10 (GQE)	Grade 11	Grade 12	Graduation
◗ Science (begins 2007) ◗ Social Studies (begins 2008)	◗ English/Lang. Arts ◗ Mathematics	(two re-tests available for those who have not passed the GQE)	(two re-tests available for those who have not passed the GQE)	(or continued extra help)
♦Core 40 End-of-Course Assessments	♦Core 40 End-of-Course Assessments	♦Core 40 End-of-Course Assessments	♦Core 40 End-of-Course Assessments	

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 2

English/Language Arts



Standard 1

READING: Word Recognition, Fluency, and Vocabulary Development

Students understand the basic features of words. They see letter patterns and know how to translate them into spoken language by using phonics (an understanding of the different letters that make different sounds), syllables, and word parts (-s, -ed, -ing). *They apply this knowledge to achieve fluent (smooth and clear) oral and silent reading.*

Phonemic Awareness

2.1.1 Demonstrate an awareness of the sounds that are made by different letters by:
- distinguishing beginning, middle, and ending sounds in words.
- rhyming words.
- clearly pronouncing blends and vowel sounds.

Decoding and Word Recognition

2.1.2 Recognize and use knowledge of spelling patterns (such as *cut/cutting, slide/sliding*) when reading.

2.1.3 Decode (sound out) regular words with more than one syllable (*dinosaur, vacation*).

2.1.4 Recognize common abbreviations (*Jan., Fri.*).

2.1.5 Identify and correctly use regular plural words (*mountain/mountains*) and irregular plural words (*child/children, mouse/mice*).

2.1.6 Read aloud fluently and accurately with appropriate changes in voice and expression.

Vocabulary and Concept Development

2.1.7 Understand and explain common synonyms (words with the same meaning) and antonyms (words with opposite meanings).

2.1.8 Use knowledge of individual words to predict the meaning of unknown compound words (*lunchtime, lunchroom, daydream, raindrop*).

2.1.9 Know the meaning of simple prefixes (word parts added at the beginning of words such as *un-*) and suffixes (word parts added at the end of words such as *-ful*).

2.1.10 Identify simple multiple-meaning words (*change, duck*).

Standard 2

READING: Comprehension

Students read and understand grade-level-appropriate material. They use a variety of comprehension strategies, such as asking and responding to essential questions, making predictions, and comparing information from several sources to understand what they read. 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. In addition to their regular school reading, at Grade 2, students read a variety of grade-level-appropriate narrative (story) and expository (informational) texts (such as grade-level-appropriate classic and contemporary literature, poetry, children's magazines and newspapers, dictionaries and other reference materials, and online information).*

Structural Features of Informational and Technical Materials

2.2.1 Use titles, tables of contents, and chapter headings to locate information in text.

Comprehension and Analysis of Grade-Level-Appropriate Text

2.2.2 State the purpose for reading.

Example: Compare similar stories from different cultures, such as *Little Red Riding Hood* and *Lon Po Po* (Chinese version). Read an informational text about pets to decide what kind of animal would make the best pet.

2.2.3 Use knowledge of the author's purpose(s) to comprehend informational text.

Example: Read an informational text that compares different people, animals, or plants, such as *Gator or Croc* by Allan Fowler.

2.2.4 Ask and respond to questions to aid comprehension about important elements of informational texts.

Example: After reading a short account about the first man on the moon, ask and answer *why, what if,* and *how* questions to understand the lunar landing.

2.2.5 Restate facts and details in the text to clarify and organize ideas.

Example: Summarize information learned from a text, such as detail about ant colonies stated in *Ant Cities* by Arthur Dorros or reported about spider webs in *Spider Magic* by Dorothy Hinshaw Patent.

2.2.6 Recognize cause-and-effect relationships in a text.

Example: Read an informational book that explains some common scientific causes and effects, such as the growth of a plant from a seed or the effects of different weather patterns, such as too much snow or rain at one time causing flooding.

2.2.7 Interpret information from diagrams, charts, and graphs.

Example: Use a five-day weather chart or a weather chart on the Internet to determine the weather for the coming weekend.

2.2.8 Follow two-step written instructions.

Standard 3

READING: Literary Response and Analysis

Students read and respond to a wide variety of significant works of children's literature. They identify and discuss the characters, theme (the main idea of a story), plot (what happens in a story), and the setting (where a story takes place) of stories that they read. 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.*

Narrative Analysis of Grade-Level-Appropriate Text

2.3.1 Compare plots, settings, and characters presented by different authors.

Example: Read and compare *Strega Nona,* an old Italian folktale retold by Tomie DePaola, with *Ox-Cart Man* by Donald Hall.

2.3.2 Create different endings to stories and identify the reason and the impact of the different ending.

Example: Read a story, such as *Fin M'Coul — The Giant of Knockmany Hill*, Tomie DePaola's retelling of an Irish folktale. Then, discuss different possible endings to the story, such as how the story would change if Fin's wife had not helped him or if Fin were not a giant.

2.3.3 Compare versions of same stories from different cultures.

Example: Compare fairy tales and folktales that have been retold by different cultures, such as *The Three Little Pigs* and the southwestern/Latino version *The Three Little Javelinas* by Susan Lowell, or *Cinderella* and the African version, *Mufaro's Beautiful Daughters* by John Steptoe.

2.3.4 Identify the use of rhythm, rhyme, and alliteration (using words with repeating consonant sounds) in poetry.

Example: Listen to or read the rhymes for each letter of the alphabet in *A, My Name Is Alice* by Jane Bayer. Tell what effects the writer uses to make the poems fun to hear.

Standard 4

WRITING: Process

Students write clear sentences and paragraphs that develop a central idea. Students progress through the stages of the writing process, including prewriting, drafting, revising, and editing multiple drafts.

Organization and Focus

2.4.1 Create a list of ideas for writing.

2.4.2 Organize related ideas together to maintain a consistent focus.

Research and Technology

2.4.3 Find ideas for writing stories and descriptions in pictures or books.

2.4.4 Understand the purposes of various reference materials (such as a dictionary, a thesaurus, and an atlas).

2.4.5 Use a computer to draft, revise, and publish writing.

Evaluation and Revision

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

2.4.7 Proofread one's own writing, as well as that of others, using an editing checklist or list of rules.

2.4.8 Revise original drafts to improve sequence (the order of events) or to provide more descriptive detail.

Standard 5

WRITING: Applications

(Different Types of Writing and Their Characteristics)

At Grade 2, students are introduced to letter writing. Students continue to write compositions that describe and explain familiar objects, events, and experiences. Students continue to write simple rhymes and poems. Student writing demonstrates a command of Standard English and the drafting, research, and organizational 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, Grade 2 students use the writing strategies outlined in Standard 4 — Writing Process to:

2.5.1 Write brief narratives (stories) based on their experiences that:
- move through a logical sequence of events.
- describe the setting, characters, objects, and events in detail.

Example: Write a story about an experience that took place during a certain season in the year: spring, summer, fall, or winter. Tell the story in the order that it happened and describe it in enough detail so that the reader can picture clearly the place, people, and events.

2.5.2 Write a brief description of a familiar object, person, place, or event that:
- develops a main idea.
- uses details to support the main idea.

Example: Write a descriptive piece on a topic, such as *Houses Come in Different Shapes and Sizes*.

2.5.3 Write a friendly letter complete with the date, salutation (greeting, such as *Dear Mr. Smith*), body, closing, and signature.

Example: Write a letter to the police department in your town asking if someone can come to your classroom to talk about bicycle safety.

2.5.4 Write rhymes and simple poems.

2.5.5 Use descriptive words when writing.

2.5.6 Write for different purposes and to a specific audience or person.

Example: Write a description of your favorite book to recommend the book to a friend.

Standard 6

WRITING: English Language Conventions

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

Handwriting

2.6.1 Form letters correctly and space words and sentences properly so that writing can be read easily by another person.

Sentence Structure

2.6.2 Distinguish between complete (*When Tom hit the ball, he was proud.*) and incomplete sentences (*When Tom hit the ball*).

2.6.3 Use the correct word order in written sentences.

Grammar

2.6.4 Identify and correctly write various parts of speech, including nouns (words that name people, places, or things) and verbs (words that express action or help make a statement).

Example: Identify the noun and verb in a sentence, such as *Maria* (noun) *and a friend* (noun) *played* (verb) *for a long time.*

Punctuation

2.6.5 Use commas in the greeting (*Dear Sam,*) and closure of a letter (*Love, or Your friend,*) and with dates (*March 22, 2000*) and items in a series (*Tony, Steve, and Bill*).

2.6.6 Use quotation marks correctly to show that someone is speaking.
- Correct: "You may go home now," she said.
- Incorrect: "You may go home now she said."

Capitalization

2.6.7 Capitalize all proper nouns (names of specific people or things, such as *Mike, Indiana, Jeep*), words at the beginning of sentences and greetings, months and days of the week, and titles (*Dr., Mr., Mrs., Miss*) and initials of people.

Spelling

2.6.8 Spell correctly words like *was, were, says, said, who, what,* and *why,* which are used frequently but do not fit common spelling patterns.

2.6.9 Spell correctly words with short and long vowel sounds (*a, e, i, o, u*), r-controlled vowels (*ar, er, ir, or, ur*), and consonant-blend patterns (*bl, dr, st*).

- short vowels: actor, effort, ink, chop, unless
- long vowels: ace, equal, bind, hoe, use
- *r*-controlled: park, supper, bird, corn, further
- consonant blends: blue, crash, desk, speak, coast

Standard 7

LISTENING AND SPEAKING: Skills, Strategies, and Applications

Students listen critically and respond appropriately to oral communication. They speak in a manner that guides the listener to understand important ideas by using proper phrasing, pitch, and modulation (raising and lowering voice). Students deliver brief oral presentations about familiar experiences or interests that are organized around a coherent thesis statement (a statement of topic). Students use the same Standard English conventions for oral speech that they use in their writing.

Comprehension

2.7.1 Determine the purpose or purposes of listening (such as to obtain information, to solve problems, or to enjoy).

2.7.2 Ask for clarification and explanation of stories and ideas.

2.7.3 Paraphrase (restate in own words) information that has been shared orally by others.

2.7.4 Give and follow three- and four-step oral directions.

Organization and Delivery of Oral Communication

2.7.5 Organize presentations to maintain a clear focus.

2.7.6 Speak clearly and at an appropriate pace for the type of communication (such as an informal discussion or a report to class).

2.7.7 Tell experiences in a logical order.

2.7.8 Retell stories, including characters, setting, and plot.

2.7.9 Report on a topic with supportive facts and details.

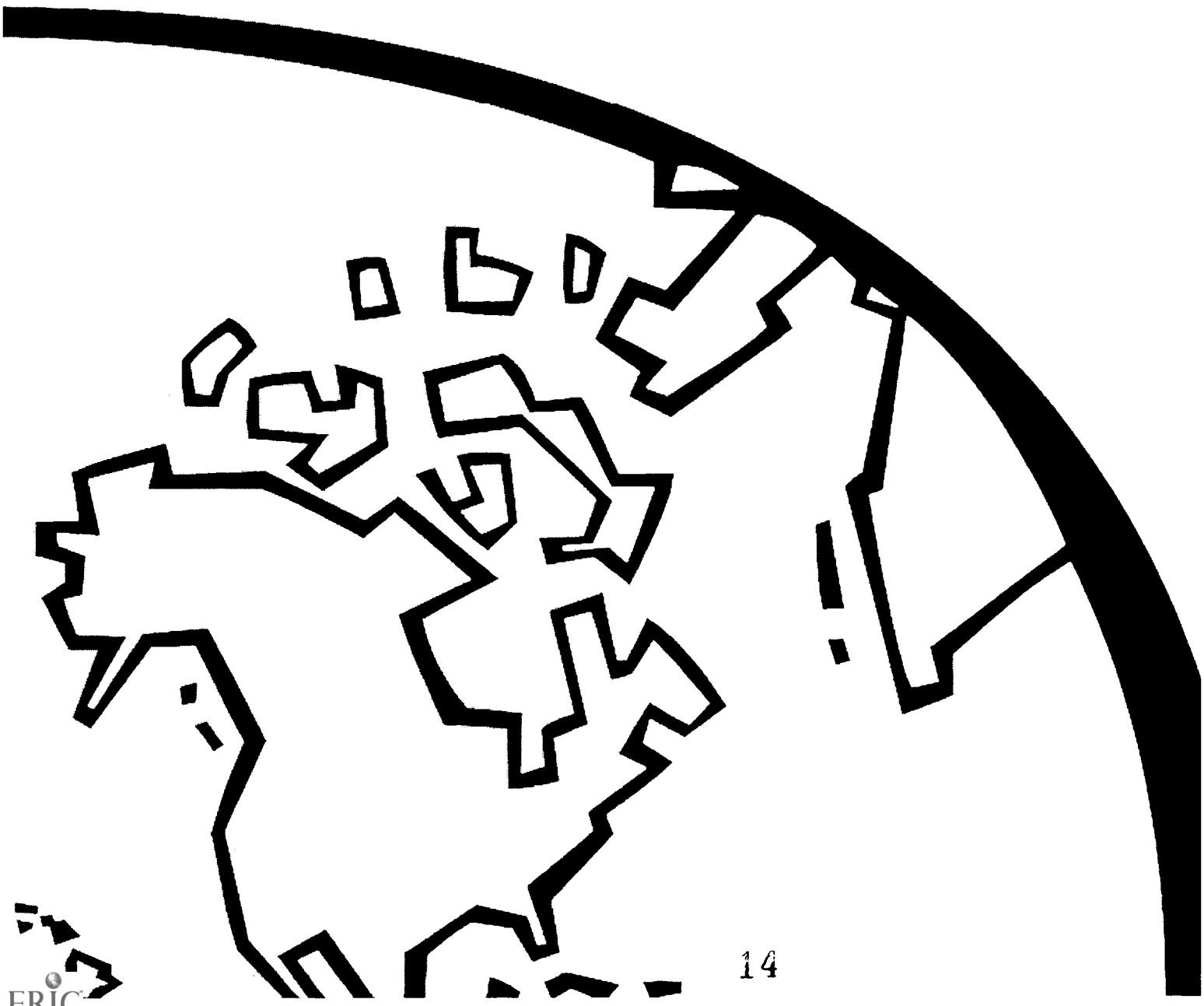
Speaking Applications

2.7.10 Recount experiences or present stories that:
- move through a logical sequence of events.
- describe story elements, including characters, plot, and setting.

2.7.11 Report on a topic with facts and details, drawing from several sources of information.

Grade 2

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 2:

Standard 1 — Number Sense

Understanding the number system is the basis of mathematics. Students develop this understanding by first using sets of objects and then moving on to writing numbers in figures. They learn how we group numbers in tens and ones, which allows them to write numbers up to 100. They count by ones, twos, fives, and tens. They find the number ten more or ten less than a given number. They identify odd and even numbers and put numbers in order of size. They use the terms first, second, third, etc. Students also extend their knowledge of fractions, including learning how to compare the sizes of simple fractions.

Standard 2 — Computation

Fluency in computation is essential. As students learn about the whole numbers up to 100, they also learn how to add and subtract them. They use objects to join sets together (for addition) and to remove objects from sets (for subtraction). They also learn to add and subtract with figures using mental arithmetic.

Standard 3 — Algebra and Functions

Algebra is a language of patterns, rules, and symbols. Students at this level make simple patterns with numbers and continue these number patterns using addition and subtraction. They also relate word problems to number sentences such as $28 - 15 = 13$ and use rules for addition to check results.

Standard 4 — Geometry

Students learn about geometric shapes and develop a sense of space. They identify and describe simple shapes, such as circles, triangles, squares, rectangles, and cubes. Students construct simple two- and three-dimensional shapes and describe and sort them using their faces, edges, and corners. They identify shapes that are congruent (i.e., the same shape and size). They also investigate how shapes are made from other shapes and recognize geometric shapes in the world around them.

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 objects' length, area, weight, temperature, etc. They learn why we use standard units of length (inch, foot, yard, centimeter, and meter) and measure objects using these units. In a similar way, they learn how to measure weight, capacity, and temperature in standard units. They also learn about time (hours in a day, months in a year, etc.) and how to tell the time on a clock to the nearest five minutes. They learn about money: the values of the coins and the value of a collection of coins and dollars.

Standard 6 — 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 numbers, geometry, or measurement, 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, ¼, one divided by four, 0.25, ⅛ + ⅛, 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.

Number Sense

Students understand the relationships among numbers, quantities, and place value in whole numbers up to 100. They understand that fractions may refer to parts of a set* and parts of a whole.*

2.1.1 Count by ones, twos, fives, and tens to 100.

Example: Count 74 pencils by groups of tens and twos.

2.1.2 Identify the pattern of numbers in each group of ten, from tens through nineties.

Example: Where on a hundreds chart are the numbers 12, 22, 32, etc.?

2.1.3 Identify numbers up to 100 in various combinations of tens and ones.

Example: 32 = 3 tens + 2 ones = 2 tens + 12 ones, etc.

2.1.4 Name the number that is ten more or ten less than any number 10 through 90.

Example: Name the number ten more than 54.

2.1.5 Compare whole numbers up to 100 and arrange them in numerical order.

Example: Put the numbers in order of size: 95, 28, 42, 31.

2.1.6 Match the number names (*first*, *second*, *third*, etc.) with an ordered set of up to 100 items.

Example: Identify the seventeenth letter of the alphabet.

2.1.7 Identify odd and even numbers up to 100.

Example: Find the odd numbers in this set: 44, 31, 100, 57, 28.

2.1.8 Recognize fractions as parts of a whole or parts of a group (up to 12 parts).

Example: Divide a cardboard rectangle into 8 equal pieces. Shade 5 pieces and write the fraction for the shaded part.

2.1.9 Recognize, name, and compare the unit fractions: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{10}$, and $\frac{1}{12}$.

Example: Which is larger, $\frac{1}{3}$ or $\frac{1}{6}$? Explain your answer.

2.1.10 Know that, when all fractional parts are included, the result is equal to the whole and to one.

Example: What is another way of saying six sixths? Explain your answer.

2.1.11 Collect and record numerical data in systematic ways.

Example: Measure the hand span in whole centimeters of each student in your class. Keep a record of the answers they give you.

2.1.12 Represent, compare, and interpret data using tables, tally charts, and bar graphs.

Example: Make a tally of your classmates' favorite colors and draw a bar graph. Name the color that is most popular and the color that is the favorite of the fewest people.

* whole numbers: 0, 1, 2, 3, etc.

* set: collection of objects, numbers, etc.

Standard 2

Computation

Students solve simple problems involving addition and subtraction of numbers up to 100.

2.2.1 Model addition of numbers less than 100 with objects and pictures.

Example: Use blocks to find the sum of 26 and 15.

2.2.2 Add two whole numbers less than 100 with and without regrouping.

Example: 36 + 45 = ?

2.2.3 Subtract two whole numbers less than 100 without regrouping.

Example: 86 − 55 = ?

2.2.4 Understand and use the inverse relationship between addition and subtraction.

Example: Understand that 89 − 17 = 72 means that 72 + 17 = 89.

2.2.5 Use estimation to decide whether answers are reasonable in addition problems.

Example: Your friend says that 13 + 24 = 57. Without solving, explain why you think the answer is wrong.

2.2.6 Use mental arithmetic to add or subtract 0, 1, 2, 3, 4, 5, or 10 with numbers less than 100.

Example: In a game, Mia and Noah are making addition problems. They make two two-digit numbers out of the four given numbers 1, 2, 3, and 4. Each number is used exactly once. The winner is the one who makes two numbers whose sum is the largest. Mia had 24 and 31; Noah had 21 and 43. Who won the game? How do you know? Show a way to beat both of them.

Standard 3

Algebra and Functions

Students model, represent, and interpret number relationships to create and solve problems involving addition and subtraction.

2.3.1 Relate problem situations to number sentences involving addition and subtraction.

Example: You have 13 pencils and your friend has 12 pencils. You want to know how many pencils you have altogether. Write a number sentence for this problem and use it to find the total number of pencils.

2.3.2 Use the commutative* and associative* rules for addition to simplify mental calculations and to check results.

Example: Add the numbers 5, 17, and 13 in this order. Now add them in the order 17, 13, and 5. Which was easier? Why?

2.3.3 Recognize and extend a linear pattern by its rules.

Example: One horse has 4 legs, two horses have 8 legs, and so on. Continue the pattern to find how many legs five horses have.

2.3.4 Create, describe, and extend number patterns using addition and subtraction.

Example: What is the next number: 23, 21, 19, 17, ...? How did you find your answer?

* commutative rule: the order when adding numbers makes no difference (e.g., $5 + 3 = 3 + 5$). Note that this rule is not true for subtraction.

* associative rule: the grouping when adding 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 $3 + 2$). Note that this rule is not true for subtraction.

Standard 4

Geometry

Students identify and describe the attributes of common shapes in the plane and of common objects in space.

2.4.1 Construct squares, rectangles, triangles, cubes, and rectangular prisms* with appropriate materials.

Example: Use blocks to make a rectangular prism.

2.4.2 Describe, classify, and sort plane and solid geometric shapes (triangle, square, rectangle, cube, rectangular prism) according to the number and shape of faces*, and the number of edges and vertices*.

Example: How many vertices does a cube have?

2.4.3 Investigate and predict the result of putting together and taking apart two- and three-dimensional shapes.

Example: Use objects or a drawing program to find other shapes that can be made from a rectangle and a triangle. Use sketches or a drawing program to show several ways that a rectangle can be divided into three triangles.

2.4.4 Identify congruent* two-dimensional shapes in any position.

Example: In a collection of rectangles, pick out those that are the same shape and size.

2.4.5 Recognize geometric shapes and structures in the environment and specify their locations.

Example: Look for combinations of shapes in the buildings around you.

* rectangular prism: box with 6 rectangles for sides, like a cereal box

* face: flat side, like the front of the cereal box

* vertices: corners (vertex: corner)

* congruent: same shape and size, like the front and back of the cereal box

Standard 5

Measurement

Students understand how to measure length, temperature, capacity, weight, and time in standard units.

2.5.1 Measure and estimate length to the nearest inch, foot, yard, centimeter, and meter.

Example: Measure the length of your classroom to the nearest foot.

2.5.2 Describe the relationships among inch, foot, and yard. Describe the relationship between centimeter and meter.

Example: How many inches are in a yard?

2.5.3 Decide which unit of length is most appropriate in a given situation.

Example: Would you use yards or inches to measure the length of your school books? Explain your answer.

2.5.4 Estimate area and use a given object to measure the area of other objects.

Example: Make a class estimate of the number of sheets of notebook paper that would be needed to cover the classroom door. Then use measurements to compute the area of the door.

2.5.5 Estimate and measure capacity using cups and pints.

Example: Make a reasonable estimate of the number of pints a juice pitcher holds.

2.5.6 Estimate weight and use a given object to measure the weight of other objects.

Example: About how many jellybeans will you need to put on one side of a balance scale to balance with a box of chalk? Count out the number of jellybeans that you guessed would be needed and see whether your estimate was close. Explain the results of your estimation and weighing.

2.5.7 Recognize the need for a fixed unit of weight.

Example: Estimate the number of paperclips needed to balance with a box of chalk. Will it be the same as the number of jellybeans? Explain your answer.

2.5.8 Estimate temperature. Read a thermometer in Celsius and Fahrenheit.

Example: What do you think the temperature is today? Look at the thermometer to check.

2.5.9 Tell time to the nearest quarter hour, be able to tell five-minute intervals, and know the difference between a.m. and p.m.

Example: When does your favorite TV program start?

2.5.10 Know relationships of time: seconds in a minute, minutes in an hour, hours in a day, days in a week, and days, weeks, and months in a year.

Example: How many days are in a year?

2.5.11 Find the duration of intervals of time in hours.

Example: Your trip began at 9:00 a.m. and ended at 3:00 p.m. How long were you traveling?

2.5.12 Find the value of a collection of pennies, nickels, dimes, quarters, half-dollars, and dollars.

Example: You have 3 pennies, 4 nickels, and 2 dimes. How much money do you have? Explain your answer.

Standard 6

Problem Solving

Students make decisions about how to set up a problem.

2.6.1 Choose the approach, materials, and strategies to use in solving problems.

Example: Solve the problem: "Count the number of squares on the surface of a cube. Put two cubes together and count the number of visible squares. Repeat this step with 3, 4, 5, ... cubes in a line. Find a rule for the number of squares." Use blocks to set up the problem.

2.6.2 Use tools such as objects or drawings to model problems.

Example: In the first example, place blocks together. Each time you add a block, count the number of squares and record it.

Students solve problems and justify their reasoning.

2.6.3 Explain the reasoning used and justify the procedures selected in solving a problem.

Example: In the first example, notice that the number goes up by 4 each time a block is added. Observe that, as you add each cube, you gain 6 squares but lose 2 where the blocks are joined.

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

Example: In the first example, check your results by setting out 10 blocks and counting the number of squares on each long side and then the two at the ends. See how this fits with your rule of adding 4 each time.

2.6.5 Understand and use connections between two problems.

Example: Use the method of the problem you have just solved to find what happens when the cubes are not all in a line.

Grade 2

Science

The Indiana Academic Standards for science contain six Standards. 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 other's 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' experience 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. 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 2, students learn that change is a continual process.

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 2, students learn that although diverse, living things are dependent on one another and the environment.

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 — 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 field work, 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 are actively engaged in exploring how the world works. They explore, observe, count, collect, measure, compare, and ask questions. They discuss observations and use tools to seek answers and solve problems. They share their findings.*

Scientific Inquiry

2.1.1 Manipulate an object to gain additional information about it.

2.1.2 Use tools, such as thermometers, magnifiers, rulers, or balances, to gain more information about objects.

2.1.3 Describe, both in writing and verbally, objects as accurately as possible and compare observations with those of other people.

2.1.4 Make new observations when there is disagreement among initial observations.

The Scientific Enterprise

2.1.5 Demonstrate the ability to work with a team but still reach and communicate one's own conclusions about findings.

Technology and Science

2.1.6 Use tools to investigate, observe, measure, design, and build things.

2.1.7 Recognize and describe ways that some materials, such as recycled paper, cans, and plastic jugs, can be used over again.

* observation: gaining information through the use of one or more of the senses, such as sight, smell, etc.

Standard 2

Scientific Thinking

Students begin to find answers to their questions about the world by using measurement, estimation, and observation as well as working with materials. They communicate with others through numbers, words, and drawings.

Computation and Estimation

2.2.1 Give estimates of numerical answers to problems before doing them formally.

2.2.2 Make quantitative estimates of familiar lengths, weights, and time intervals and check them by measurements.

2.2.3 Estimate and measure capacity using cups and pints.

Manipulation and Observation

2.2.4 Assemble, describe, take apart, and/or reassemble constructions using such things as interlocking blocks and erector sets. Sometimes pictures or words may be used as a reference.

Communication Skills

2.2.5 Draw pictures and write brief descriptions that correctly portray key features of an object.

Standard 3

The Physical Setting

Students investigate, describe, and discuss their natural surroundings. They wonder why things move and change.

The Earth and the Processes That Shape It

2.3.1 Investigate by observing and then describe that some events in nature have a repeating pattern, such as seasons, day and night, and migrations.

2.3.2 Investigate, compare, and describe weather changes from day to day but recognize, describe, and chart that the temperature and amounts of rain or snow tend to be high, medium, or low in the same months every year.

2.3.3 Investigate by observing and then describe chunks of rocks and their many sizes and shapes, from boulders to grains of sand and even smaller.

2.3.4 Investigate by observing and then describe how animals and plants sometimes cause changes in their surroundings.

Matter and Energy

2.3.5 Investigate that things can be done to materials, such as freezing, mixing, cutting, heating, wetting, etc., to change some of their properties and observe that not all materials respond in the same way.

2.3.6 Discuss how people use electricity or burn fuels, such as wood, oil, coal, or natural gas, to cook their food and warm their houses.

Forces of Nature

2.3.7 Investigate and observe that the way to change how something is moving is to give it a push or a pull.

2.3.8 Demonstrate and observe that magnets can be used to make some things move without being touched.

Standard 4

The Living Environment

Students ask questions about a variety of living things and everyday events that can be answered through observations. They consider things and processes that plants and animals need to stay alive. Students begin to understand plant and animal interaction.

Diversity of Life

2.4.1 Observe and identify different external features of plants and animals and describe how these features help them live in different environments.

Interdependence of Life

2.4.2 Observe that and describe how animals may use plants, or even other animals, for shelter and nesting.

2.4.3 Observe and explain that plants and animals both need to take in water, animals need to take in food, and plants need light.

2.4.4 Recognize and explain that living things are found almost everywhere in the world and that there are somewhat different kinds in different places.

2.4.5 Recognize and explain that materials in nature, such as grass, twigs, sticks, and leaves, can be recycled and used again, sometimes in different forms, such as in birds' nests.

Human Identity

2.4.6 Observe and describe the different external features of people, such as their size, shape, and color of hair, skin, and eyes.

2.4.7 Recognize and discuss that people are more like one another than they are like other animals.

2.4.8 Give examples of different roles people have in families and communities.

Standard 5

The Mathematical World

Students apply mathematics in scientific contexts. They use numbers for computing, estimating, naming, measuring, and communicating specific information. They make picture and bar graphs. They recognize and describe shapes and patterns. They use evidence to explain how or why something happens.

Numbers

2.5.1 Recognize and explain that, in measuring, there is a need to use numbers between whole numbers*, such as 2½ centimeters.

2.5.2 Recognize and explain that it is often useful to estimate quantities.

* whole numbers: 0, 1, 2, 3, etc.

Shapes and Symbolic Relationships

2.5.3 Observe that and describe how changing one thing can cause changes in something else, such as exercise and its effect on heart rate.

Reasoning and Uncertainty

2.5.4 Begin to recognize and explain that people are more likely to believe ideas if good reasons are given for them.

2.5.5 Explain that some events can be predicted with certainty, such as sunrise and sunset, and some cannot, such as storms. Understand that people aren't always sure what will happen since they do not know everything that might have an effect.

2.5.6 Explain that sometimes a person can find out a lot (but not everything) about a group of things, such as insects, plants, or rocks, by studying just a few of them.

Standard 6

Common Themes

Students begin to observe how objects are similar and how they are different. They begin to identify parts of an object and recognize how these parts interact with the whole. They look for what changes and what does not change and make comparisons.

Systems

2.6.1 Investigate that most objects are made of parts.

Models and Scale

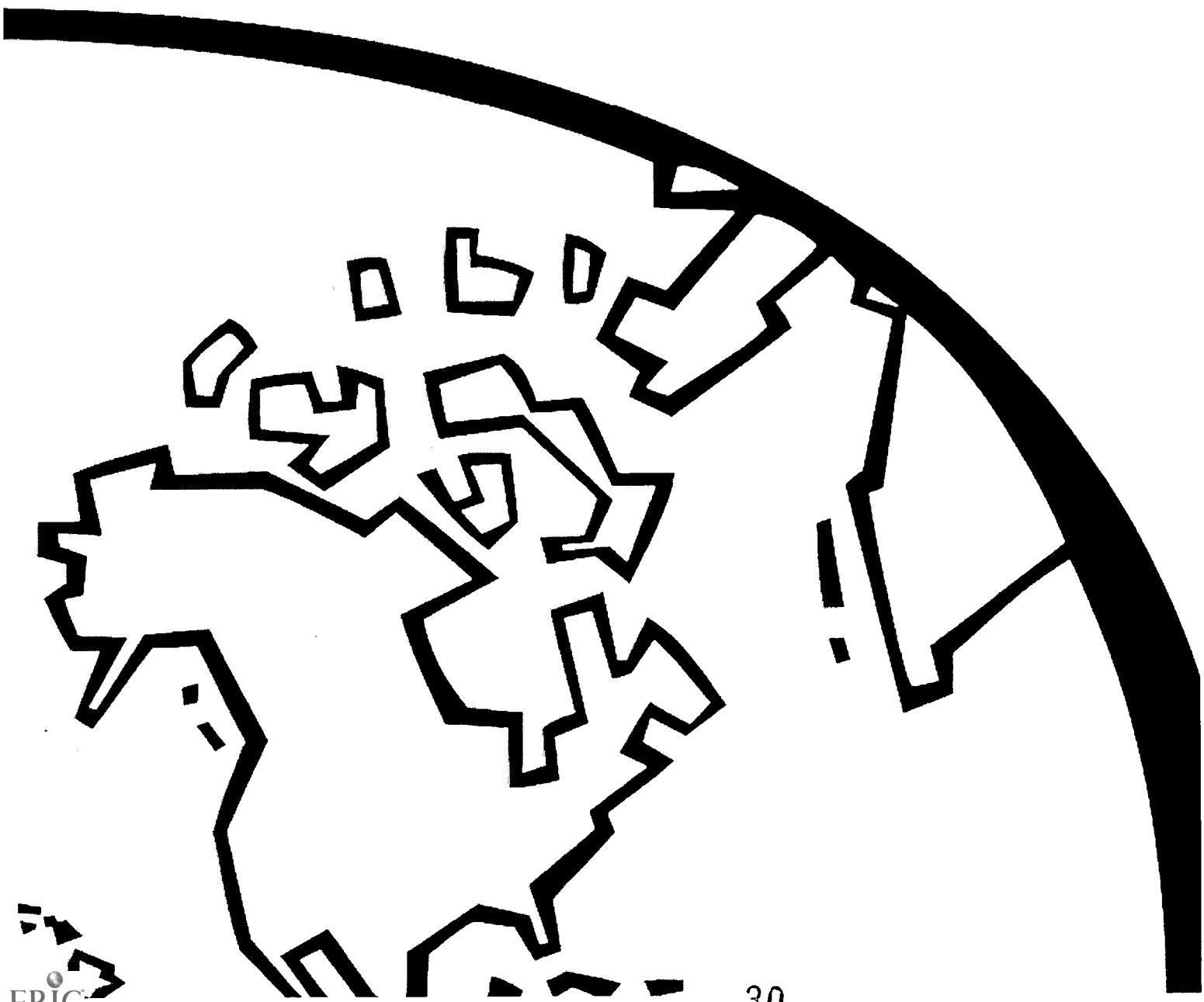
2.6.2 Observe and explain that models may not be the same size, may be missing some details, or may not be able to do all of the same things as the real things.

Constancy and Change

2.6.3 Describe that things can change in different ways, such as in size, weight, color, age, and movement. Investigate that some small changes can be detected by taking measurements.

Grade 2

Social Studies



The Local and Regional Community

Students in Grade 2 will describe their basic rights and responsibilities as citizens as they examine local and regional communities in the present and past and how these communities meet people's needs.

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 2 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 differentiate between events that happened long ago and recently, recognize examples of continuity and change in local and regional communities, and consider ways people and events of the past and present influence their lives.

Standard 2 — Civics and Government

Students will explain why communities have government and laws, demonstrate that people in the United States have both rights and responsibilities, and identify ways that people work together to promote civic ideals.

Standard 3 — Geography

Students will locate their community, state, and nation on maps and globes, identify major geographic characteristics of their local community, and explore geographic relationships between their community and other places.

Standard 4 — Economics

Students will describe how people in a community use productive resources, specialize in different types of jobs, and depend on each other to supply goods and services.

Standard 5 — Individuals, Society, and Culture

Students will explain how local communities are made up of a variety of individuals and groups, identify cultural traditions in their own locality, and use a variety of information resources to learn about their own community and other cultures.

Standard 1

History

Students will differentiate between events that happened long ago and recently, recognize examples of continuity and change in local and regional communities, and consider ways that people and events of the past and present influence their lives.

Historical Knowledge

2.1.1 Listen to historical stories and compare daily life in the past and present.

2.1.2 Identify changes that have occurred in the local or regional community.

Example: Use maps, photographs, or stories to examine changes in architecture, business, industry, farming, transportation, work, or use of leisure time.

2.1.3 Identify individuals who had an impact on the local or regional communities.

Example: Some communities are named for important individuals, such as Abraham Lincoln (Lincoln City).

2.1.4 Explain the meaning of community celebrations and traditions.

Example: School celebrations, such as "Grandparents Day" or "Red, White, and Blue Day."

Chronological Thinking, Comprehension

2.1.5 Develop a simple timeline of important events in each student's life.

Standard 2

Civics and Government

Students will explain why communities have government and laws, demonstrate that people in the United States have both rights and responsibilities, and identify ways that people work together to promote civic ideals.

Foundations of Government

2.2.1 Discuss the rights and responsibilities of citizens in the school and the community.

Example: Students have the right to feel and be safe at school, but they have the responsibility to follow school safety rules.

Functions of Government

2.2.2 Explain why it is necessary for the community to have government.

Example: Without government, people who are strong might take advantage of people who are weak. Government provides order, protects rights, and helps people feel secure.

2.2.3 Identify community leaders, such as the city council or town board.

Roles of Citizens

2.2.4 Identify real people and fictional characters who were good leaders and good citizens, and explain the qualities that make them admirable, such as honesty and trustworthiness.

2.2.5 Explain the roles people in the community have in making and changing laws.

Example: People in the community vote in elections, run for office, attend community meetings, and voice their opinions.

Standard 3

Geography

Students will locate their community, state, and nation on maps and globes; identify major geographic characteristics of their local community; and explore geographic relationships between their community and other places.

The World in Spatial Terms

2.3.1 Use cardinal* and intermediate directions* to locate places on maps and places in the classroom, school, and community.

Example: Make a compass rose on the classroom floor with masking tape and use it to locate things in the classroom.

2.3.2 Identify the absolute* and relative location* of places in the school and community setting using a simple grid map.

Example: The street address of the school is a type of absolute location. Its relative location might be described as "across the road from the fire station," or "near the river."

2.3.3 Locate the local community and the United States on maps and globes.

* cardinal directions: north, south, east, and west
* intermediate directions: northeast, southeast, northwest, and southwest
* absolute location: the exact location of a place or object
* relative location: the location of something in relationship to other places and things

Places and Regions

2.3.4 Identify places that are nearby or related to the local community.

Example: Communities in parts of northern Indiana may be near Lake Michigan. Communities in southeastern Indiana may be across the Ohio River from Louisville or Cincinnati.

Physical Systems

2.3.5 Identify map symbols for land and water forms, and give examples of these physical features in the local community.

Human Systems

2.3.6 Identify map symbols of cultural or human features, such as roads, highways, and cities, and give examples from the local region.

Environment and Society

2.3.7 Use a variety of information resources* to identify ways that the physical environment influences human activities in the community.

Example: Picture books, magazines, and Internet maps can be used to show availability of water, fertility of soils, hilly or flat land, and types of climate.

* 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 4

Economics

Students will describe how people in a community use productive resources, specialize in different types of jobs, and depend on each other to supply goods and services.

2.4.1 Define the three types of productive resources (human resources*, natural resources*, capital resources*) and identify productive resources used to produce goods and services in the community.

2.4.2 Identify community workers who provide goods* and services* for the rest of the community, and explain how their jobs benefit people in the community.

2.4.3 Explain that a price is what people pay when they buy a good or service and what people receive when they sell a good or service.

2.4.4 Research goods and services produced in the local community and describe how people may be both producers* and consumers*.

2.4.5 Explain that because of scarcity*, people must make choices and incur opportunity costs*.

2.4.6 Define specialization* and identify specialized jobs in the school and community.

Example: Teachers, school nurses, and firefighters specialize in particular kinds of jobs.

2.4.7 Explain why people trade* for goods and services and explain how money makes trade easier.

* human resource: any human effort used in production
* natural resources: resources that occur in nature that are used in production
* capital resources: goods, such as tools, buildings, and machines, used in production
* goods: objects, such as food or a toy, that can satisfy people's wants
* services: actions that someone does for someone else, such as dental care or trash removal
* producers: people who use productive resources to provide goods or services
* consumers: people who use goods or services
* scarcity: the idea that resources are limited in relation to people's wants
* opportunity costs: in making choices, opportunity costs is the next best alternative you do not choose
* specialization: performance of specific tasks or jobs
* trade: the voluntary exchange of goods and services

Standard 5

Individuals, Society, and Culture

Students will explain how local communities are made up of a variety of individuals and groups, identify cultural traditions in their own locality, and use a variety of information resources to learn about their own community and other cultures.

2.5.1 Identify some of the responsibilities that individuals have to themselves and others.

Example: Students have responsibilities as learners, such as completing work, trying to improve, and helping others to learn.

2.5.2 Explain how individuals are members of many different groups, and compare and contrast the expectations of behavior in different groups.

2.5.3 Compare the ways people learn traditions* in different cultures.

Example: A child in Japan might attend a special class to learn the tea ceremony. Another child might learn a tradition from a family member.

2.5.4 Explain how changes in technology have influenced various traditions.

Example: In the past, people entertained themselves and others with storytelling. Today, people entertain themselves by watching television and discussing with others what they have seen.

2.5.5 Identify people of different ages, cultural backgrounds, traditions, and careers, and explain how they contribute to the community.

* tradition: a practice that is handed down from one generation to another

NOTES

Questions?

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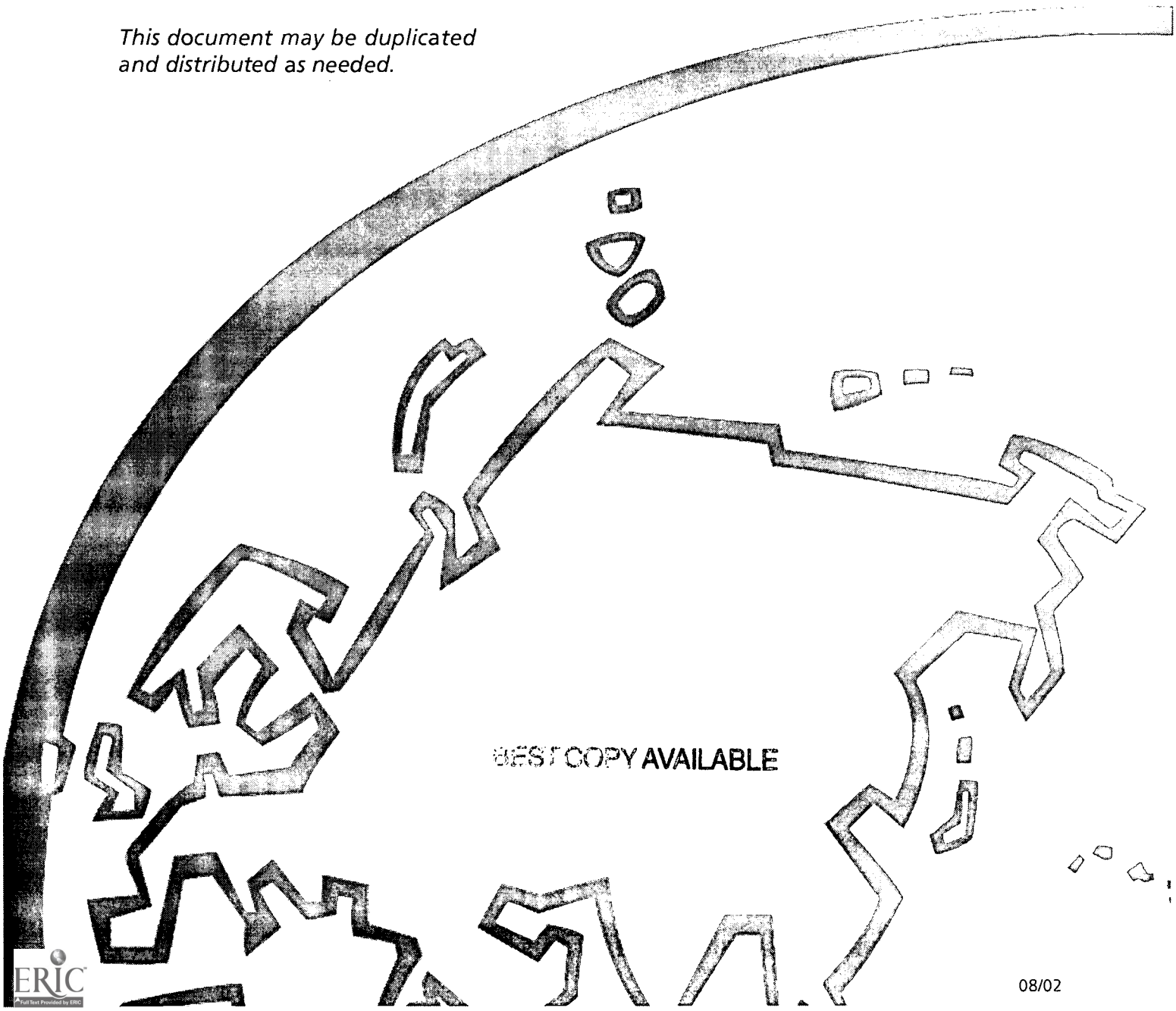

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