

Indiana • English Language Arts

DOCUMENTS REVIEWED

Indiana Core Standards. Summer 2008.

Accessed from: <http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/english.shtml>

Indiana Academic Standards. June 2006.

Accessed from: <http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/english.shtml>

Overview

Indiana’s ELA standards are clear, specific, and rigorous, and include nearly all of the critical content expected in a demanding, college-prep curriculum.



Clarity and Specificity: 3/3

Content and Rigor: 7/7

Total State Score: 10/10

(Common Core Grade: B+)

General Organization

The standards are grouped into seven “academic standards,” which are common to all grade levels. They are:

1. Reading: Word Recognition, Fluency, and Vocabulary Development
2. Reading: Comprehension
3. Reading: Literary Response and Analysis
4. Writing: Process
5. Writing: Applications
6. Writing: English Language Conventions
7. Listening and Speaking: Skills, Strategies, and Applications

Each of these standards is divided into topics that vary by grade level and finally into grade-specific performance indicators.

In addition to the academic standards, Indiana provides eight “core standards,” which are also common across all grade levels and which describe, in broad terms, what students should know and be able to do at each grade level. The purpose of these core standards is to highlight and prioritize “the most important concepts presented [in the academic standards] in each grade level.”

Clarity and Specificity

Indiana’s standards are exceptionally clear and detailed. Many grade-specific standards include helpful examples that clarify purpose and intent. Take, for example, the following Kindergarten phonics standard:

Listen to two or three phonemes (sounds) when they are read aloud, and tell the number of sounds heard, whether they are the same or different, and the order.

Example: Listen to the sounds /f/, /m/, /s/ or /l/, /n/, /v/. Tell how many sounds were heard and whether any sounds were the same (Kindergarten)

Across almost all content areas and grade levels, progressions from one grade to the next are clear: Each successive grade expects the student to possess background knowledge delineated in the previous grade’s standards.

Still, Indiana could further clarify the writing standards by providing additional grade-specific writing rubrics and sample student work.

Despite that minor caveat, teachers, curriculum developers, and assessment writers will find the standards accessible and easy to understand. Consequently, Indiana’s standards easily merit three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Strengths

The Indiana standards are outstanding with respect to content and rigor. The expectations for grammar, spelling, mechanics, and usage are clear and rigorous. Take, for example, the following grammar standards for seventh and twelfth grade, respectively:

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 (grade 7)

Identify and correctly use clauses, both main and subordinate; phrases, including gerund, infinitive, and participial; and the mechanics of punctuation, such as semicolons, colons, ellipses, and hyphens (grade 12)

These standards also present a clear progression of skills from grade to grade.

The vocabulary standards are equally detailed and attend to etymology and morphology across grade levels, as in the following middle school standards:

Know less common roots (graph = writing, logos = the study of) and word parts (auto = self, bio = life) from Greek and Latin and use this knowledge to analyze the meaning of complex words (autograph, autobiography, biography, biology) (grade 5)

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 (grade 7)

In addition to providing helpful lists of exemplar texts, the standards make numerous references to outstanding works of literature. What’s more, these are almost always related to a particular grade-specific expectation, and often in the context of an interesting question or idea. Take the following twelfth-grade literature standard:

Analyze recognized works of world literature from a variety of authors that:

- Contrast the major literary forms, techniques, and characteristics from different major literary periods, such as Homeric Greece, Medieval, Romantic, Neoclassic, or the Modern Period
- Relate literary works and authors to the major themes and issues of their literary period
- Evaluate the influences (philosophical, political, religious, ethical, and social) of the historical period for a given novel that shaped the characters, plot, and setting

Example: Read and evaluate works of world literature, such as *The Inferno* of Dante by Dante Alighieri (translated by Robert Pinsky), *Candide* by Voltaire, *I Have Visited Again* by Alexander Pushkin, *Question and Answer Among the Mountains* by Li Po, *Anna Karenina* or *War and Peace* by Leo Tolstoy, *Night* by Elie Wiesel, and *The Ring* by Isak Dinesen (grade 12)

Similar examples provided throughout are not only vivid but inspiring. They set high expectations and outline rigorous works of literature to be read across grade levels.

The writing standards are equally clear and rigorous. They do not provide rubrics or student work, but the standards include exceptional detail, especially pertaining to specific genres.

Content Weaknesses

Indiana’s ELA standards rarely fall short of exceptional, but two minor weaknesses persist. First, students are not expected to present in multimedia until high school. (This absence is somewhat offset by elementary standards that require students to evaluate electronic media and include electronic sources in research.) Second, no standards outline what is expected of students in group discussions.

These very minor failings could easily be remedied. Overall, Indiana’s strong standards merit seven points out of seven for Content and Rigor. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

Indiana’s standards are clearer, more thorough, and easier to read than the Common Core standards. Essential content is grouped more logically, so that standards addressing inextricably linked characteristics, such as themes in literary texts, can be found together rather than spread across strands. Indiana also frequently uses standard-specific examples to clarify expectations. Furthermore, Indiana’s standards treat both literary and non-literary texts in systematic detail throughout the document, addressing the specific genres, sub-genres, and characteristics of both text types. Both Indiana and Common Core include reading lists with exemplar texts, but Indiana’s is much more comprehensive.

On the other hand, Common Core includes samples of student writing to clarify grade- and genre-specific writing expectations. In addition, it includes standards explicitly addressing foundational U.S. documents. Such enhancements would benefit Indiana’s already-strong standards.

Indiana • Mathematics

DOCUMENTS REVIEWED

Indiana's Academic Standards: Mathematics. 2005.

Accessed from: <http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/math.shtml>

Indiana's Core Standards: Mathematics. 2005.

Accessed from: <http://dc.doe.in.gov/Standards/AcademicStandards/PrintLibrary/math.shtml>

Overview

Indiana's standards are well organized and easy to read. They cover nearly all of the essential content in both elementary and high school with depth and rigor. They include examples throughout and offer excellent guidance to learning mathematics.



Clarity and Specificity: 3/3

Content and Rigor: 7/7

Total State Score: 10/10

(Common Core Grade: A-)

General Organization

The K-8 standards are organized by five content strands such as Number Sense and Measurement, and one process strand that is focused on problem-solving. In addition, a sixth content strand on “data analysis and probability” is added in grade 4.

Finally, at each grade level, the state introduces each strand with a paragraph that broadly describes what students should know and be able to do.

High school is organized by courses such as Algebra I and Integrated Mathematics III. Each course is organized by topics.

In addition, the *Core Standards* document provides explicit guidance as to which content is the most important for each grade and course.

Clarity and Specificity

The standards are well organized and easy to read and interpret. Statements are generally clear and concise and many include examples, such as:

Plot and label whole numbers on a number line up to 10 (grade 3)

Rename and rewrite whole numbers as fractions

Example: $3 = 6/2 = 9/3 = ?/4 = ?/5$ (grade 4)

The examples are excellent and serve to clarify the intent of many of the standards, as in:

Understand and use the commutative and associative properties of multiplication

Example: Multiply the numbers 7, 2, and 5 in this order. Now multiply them in the order 2, 5, and 7. Which was easier? Why? (grade 3)

Summarize and display the results of probability experiments in a clear and organized way

Example: Roll a number cube 36 times and keep a tally of the number of times that 1, 2, 3, 4, 5, and 6 appear. Draw a bar graph to show your results (grade 4)

Indiana’s standards are well presented and easy to read and understand. The statements are generally clear and concise and examples are often provided. Indiana easily earns three points out of three for Clarity and Specificity. (See *Common Grading Metric*, Appendix A.)

Content and Rigor

Content Priorities

Indiana’s *Core Standards* document specifies which content is most important at each grade level. Importantly, the state explicitly prioritizes mastery of arithmetic in the crucial elementary grades.

Content Strengths

Indiana covers fundamental arithmetic well. Memorization of the multiplication tables is explicit:

Demonstrate mastery of the multiplication tables for numbers between 1 and 10 and of the corresponding division facts
 Example: Know the answers to 9×4 and $35 \div 7$ (grade 4)

The standard algorithms for addition and subtraction are also explicit:

Understand and use standard algorithms for addition and subtraction (grade 4)

This is carried through to decimals as well:

Use a standard algorithm to add and subtract decimals (to hundredths) (grade 4)

The structure of arithmetic is well covered.

The high school content is generally beautifully presented and quite rigorous. For example, the following sequence of standards on quadratics from Algebra I outlines a coherent and rigorous approach:

Graph quadratic, cubic, and radical equations
 Solve quadratic equations by factoring
 Solve quadratic equations in which a perfect square equals a constant
 Complete the square to solve quadratic equations
 Derive the quadratic formula by completing the square
 Solve quadratic equations using the quadratic formula
 Use quadratic equations to solve word problems (Algebra I)

High school geometry covers many of the standard theorems and includes the expectation of proofs:

Prove that triangles are congruent or similar and use the concept of corresponding parts of congruent triangles (Geometry)

In addition, STEM-ready material is nicely covered, including a thorough coverage of trigonometry.

Content Weaknesses

The development of arithmetic shows a few weaknesses. For example, standards addressing addition and subtraction never explicitly require students to memorize the basic addition and subtraction facts.

Also, the standard algorithms for multiplication and division are only specified for numbers up to 100. When computing numbers larger than 100, the standard algorithms are dropped:

Solve problems involving multiplication and division of any whole numbers (grade 5)

The basic development of quadratic equations is excellent, but the vertex form of a quadratic function is not mentioned. This is important for solving max/min problems. A max/min problem is given as an example in the following Algebra II standard, but it does not adequately specify that students be able to solve max/min problems in general:

Solve word problems using quadratic equations

Example: You have 100 feet of fencing to make three sides of a rectangular area using an existing straight fence as the fourth side. Construct a formula in a spreadsheet to determine the area you can enclose and use the spreadsheet to make a conjecture about the maximum area possible. Prove (or disprove) your conjecture by solving an appropriate quadratic equation (Algebra II)

Although high school geometry has good coverage and requires proofs, the foundation for geometry is not made explicit enough, as axioms are mentioned only in the process standards making their role in the required proofs unclear.

Indiana's standards cover nearly all the essential content with both depth and rigor. Arithmetic is prioritized and generally well developed. The high school content is excellent, including STEM-ready material. The standards receive a Content and Rigor score of seven points out of seven. (See *Common Grading Metric*, Appendix A.)

The Bottom Line

With some minor differences, Common Core and Indiana both cover the essential content for a rigorous, K-12 mathematics program. That said, Indiana's standards are exceptionally clear and well presented. Standards are briefly stated and often further clarified with the use of examples, so they are considerably easier to read and follow than Common Core. In addition, the high school content is organized so that the standards addressing specific topics, such as quadratic functions, are grouped together in a mathematically coherent way. By contrast, the organization of the Common Core is more difficult to navigate, in part because standards on related topics sometimes appear separately rather than together.

On the other hand, Common Core excels in the coverage of arithmetic, and includes some details, particularly those that address the development of fractions, that are missing in Indiana.