

LANGUAGE ARTS CONTENT STANDARDS FOR GRADE EIGHT

Reading

1. Word Analysis, Fluency, and Systematic Vocabulary Development

Students use their knowledge of word origins and word relationships, as well as historical and literary context clues, to determine the meaning of specialized vocabulary and to understand the precise meaning of grade-level-appropriate words.

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 *Recommended Readings in Literature, Kindergarten Through Grade Eight* illustrate the quality and complexity of the materials to be read by students. In addition, students read one million words annually on their own, including a good representation of narrative and expository text (e.g., classic and contemporary literature, magazines, newspapers, online information).

3. Literary Response and Analysis

Students read and respond to historically or culturally significant works of literature that reflect and enhance their studies of history and social science. They clarify the ideas and connect them to other literary works. The selections in *Recommended Readings in Literature, Kindergarten Through Grade Eight* illustrate the quality and complexity of the materials to be read by students.

Writing

1. Writing Strategies

Students write clear, coherent, and focused essays. The writing exhibits students' awareness of audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed.

2. Writing Applications (Genres and Their Characteristics)

Students write narrative, expository, persuasive, and descriptive essays in each genre. Student writing demonstrates a command of standard American English and the research, organizational, and drafting strategies outlined in Writing Standard 1.0.

Written and Oral English Language Conventions

The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills.

1. Written and Oral English Language Conventions

Students write and speak with a command of standard English conventions appropriate to this grade level.

Listening and Speaking

1. Listening and Speaking Strategies

Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. They evaluate the content of oral communication.

2. Speaking Applications (Genres and Their Characteristics)

Students deliver well-organized formal presentations employing traditional rhetorical strategies (e.g., narration, exposition, persuasion, description). Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

MATHEMATICS CONTENT STANDARDS FOR GRADE EIGHT

Algebra

- Standard 1: Students identify and use the arithmetic properties of subsets of integers, rational, irrational, and real numbers.
- Standard 2: Students understand and use operations such as taking the opposite, reciprocal, raising to a power, and taking a root. This includes the understanding and use of the rules of exponents.
- Standard 3: Students solve equations and inequalities involving absolute value.
- Standard 4: Students simplify expressions prior to solving linear equations and inequalities in one variable, such as $3(2x - 5) + 4(x - 2) = 12$.
- Standard 5: Students solve multi-step problems, including word problems involving linear equations and linear inequalities in one variable, with justification.
- Standard 6: Students graph a linear equation and compute the x and y intercepts (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by a linear inequality (e.g., sketch the region defined by $2x + 6y < 4$).
- Standard 7: Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations using the point-slope formula.
- Standard 8: Students understand the concepts of parallel and perpendicular lines and how their slopes are related. Students are able to find the equation of a line parallel to a given line that passes through a given point.
- Standard 9: Students solve a system of two linear equations in two variables, algebraically, and are able to interpret the answer graphically. Students are able to use this to solve a system of two linear inequalities in two variables, and to sketch the solution sets.
- Standard 10: Students add, subtract, multiply, and divide monomials and polynomials. Students solve multi-step problems, including word problems, using these techniques.
- Standard 11: Students apply basic factoring techniques to second and simple third degree polynomials. These techniques include finding a common factor to all of the terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.

- Standard 12: Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing to lowest terms.
- Standard 13: Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems using these techniques.
- Standard 14: Students solve a quadratic equation by factoring or completing the square.
- Standard 15: Students apply algebraic techniques to rate problems, work problems, and percent mixture problems.
- Standard 16: Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about relations and functions.
- Standard 17: Students determine the domain of independent variables, and range of dependent variables defined by a graph, a set of ordered pairs, or symbolic expression.
- Standard 18: Students determine whether a relation defined by a graph, a set of ordered pairs, or symbolic expression is a function and justify the conclusion.
- Standard 19: Students know the quadratic formula and are familiar with its proof by completing the square.
- Standard 20: Students use the quadratic formula to find the roots of a second degree polynomial and to solve quadratic equations.
- Standard 21: Students graph quadratic functions and know that their roots are the x-intercept.
- Standard 22: Students use the quadratic formula and/or factoring techniques to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.
- Standard 23: Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.
- Standard 24: Students use and know simple aspects of a logical argument.
- Standard 25: Students use properties of the number system to judge the validity of results, to justify steps of a procedure, and to prove or disprove statements.

SCIENCE CONTENT STANDARDS FOR GRADE EIGHT

Focus on Physical Science

Motion

1. The velocity of an object is the rate of change of its position.

Forces

2. Unbalanced forces cause changes in velocity.

Structure of Matter

3. Each of the more than 100 elements of matter has distinct properties and a distinct atomic structure. All forms of matter are composed of one or more of the elements.

Earth in the Solar System (Earth Science)

4. The structure and composition of the universe can be learned from studying stars and galaxies and their evolution.

Reactions

5. Chemical reactions are processes in which atoms are rearranged into different combinations of molecules.

Chemistry of Living Systems (Life Science)

6. Principles of chemistry underlie the functioning of biological systems.

Periodic Table

7. The organization of the periodic table is based on the properties of the elements and reflects the structure of atoms.

Density and Buoyancy

8. All objects experience a buoyant force when immersed in a fluid.

Investigation and Experimentation

9. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations.

SOCIAL STUDIES CONTENT STANDARDS FOR GRADE EIGHT

United States History and Geography: Growth and Conflict

Students in grade eight study the ideas, issues, and events from the framing of the Constitution up to World War I, with an emphasis on America's role in the war. After reviewing the development of America's democratic institutions founded on the Judeo-Christian heritage and English parliamentary traditions, particularly the shaping of the Constitution, students trace the development of American politics, society, culture, and economy and relate them to the emergence of major regional differences. They learn about the challenges facing the new nation, with an emphasis on the causes, course, and consequences of the Civil War. They make connections between the rise of industrialization and contemporary social and economic conditions.

1. Students understand the major events preceding the founding of the nation and relate their significance to the development of American constitutional democracy.
2. Students analyze the political principles underlying the U.S. Constitution and compare the enumerated and implied powers of the federal government.
3. Students understand the foundation of the American political system and the ways in which citizens participate in it.
4. Students analyze the aspirations and ideals of the people of the new nation.
5. Students analyze U.S. foreign policy in the early Republic.
6. Students analyze the divergent paths of the American people from 1800 to the mid-1800s and the challenges they faced, with emphasis on the Northeast.
7. Students analyze the divergent paths of the American people in the South from 1800 to the mid-1800s and the challenges they faced.
8. Students analyze the divergent paths of the American people in the West from 1800 to the mid-1800s and the challenges they faced.
9. Students analyze the early and steady attempts to abolish slavery and to realize the ideals of the Declaration of Independence.
10. Students analyze the multiple causes, key events, and complex consequences of the Civil War.
11. Students analyze the character and lasting consequences of Reconstruction.
12. Students analyze the transformation of the American economy and the changing social and political conditions in the United States in response to the Industrial Revolution.