

1.0

ALGEBRA I CONTENT STANDARDS

Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic properties when applicable.

1.1

ALGEBRA I CONTENT STANDARDS

Students use properties
of numbers to demonstrate
whether assertions are true or false.

2.0

ALGEBRA I CONTENT STANDARDS

Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power.

They understand and use the rules of exponents.

3.0

ALGEBRA I CONTENT STANDARDS

Students solve equations and inequalities involving absolute values.

4.0

ALGEBRA I CONTENT STANDARDS

Students simplify expressions before solving linear equations and linear inequalities in one variable, such as

$$3(2x-5) + 4(x-2) = 12$$

5.0

ALGEBRA I CONTENT STANDARDS

Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.

6.0

ALGEBRA I CONTENT STANDARDS

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 linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).

7.0

ALGEBRA I CONTENT STANDARDS

Students verify that a point lies on a line, given an equation of the line.

Students are able to derive linear equations by using the point-slope formula.

8.0

ALGEBRA I CONTENT STANDARDS

Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.

9.0

ALGEBRA I CONTENT STANDARDS

Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically.

Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.

10.0

ALGEBRA I CONTENT STANDARDS

Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.

11.0

ALGEBRA I CONTENT STANDARDS

Students apply basic factoring techniques to second – and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.

12.0

ALGEBRA I CONTENT STANDARDS

Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.

13.0

ALGEBRA I CONTENT STANDARDS

Students add, subtract, multiply,
and divide rational
expressions and functions.

Students solve both computationally
and conceptually challenging problems
by using these techniques.

14.0

ALGEBRA I CONTENT STANDARDS

Students solve a quadratic equation by factoring or completing the square.

15.0

ALGEBRA I CONTENT STANDARDS

Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.

16.0

ALGEBRA I CONTENT STANDARDS

Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

17.0

ALGEBRA I CONTENT STANDARDS

Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.

18.0

ALGEBRA I CONTENT STANDARDS

Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.

19.0

ALGEBRA I CONTENT STANDARDS

Students know the quadratic formula and are familiar with its proof by completing the square.

20.0

ALGEBRA I CONTENT STANDARDS

Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.

21.0

ALGEBRA I CONTENT STANDARDS

Students graph quadratic functions and know that their roots are the x-intercepts.

22.0

ALGEBRA I CONTENT STANDARDS

Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.

23.0

ALGEBRA I CONTENT STANDARDS

Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.

24.0

ALGEBRA I CONTENT STANDARDS

Students use and know
simple aspects of a logical argument:

24.1

ALGEBRA I CONTENT STANDARDS

Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.

24.2

ALGEBRA I CONTENT STANDARDS

Students identify the hypothesis and conclusion in logical deduction.

24.3

ALGEBRA I CONTENT STANDARDS

Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.

25.0

ALGEBRA I CONTENT STANDARDS

Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements:

25.1

ALGEBRA I CONTENT STANDARDS

Students use properties of numbers to construct simple, valid arguments (direct and indirect) for,
Or formulate counterexamples to, claimed assertions.

25.2

ALGEBRA I CONTENT STANDARDS

Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.

25.3

ALGEBRA I CONTENT STANDARDS

Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.