

Math 8

Strand	Common Curriculum Goal	Standard	Lesson Name
<p>AI.1.0 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 operations where applicable:</p>	<p>AI.1.0 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 operations where applicable:</p>	<p>AI.1.1 Students use properties of numbers to demonstrate whether assertions are true or false.</p>	<p>Lesson 3 Properties of Numbers, Lesson 33 Square Roots and Irrational Numbers</p>
<p>AI.2.0 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.</p>	<p>AI.1.0 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 operations where applicable:</p>	<p>AI.2.0 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.</p>	<p>Lesson 3 Properties of Numbers, Lesson 4 Equations, Lesson 6 Exponents, Lesson 8 Fractions, Lesson 33 Square Roots and Irrational Numbers</p>
<p>AI.3.0 Students solve equations and inequalities involving absolute values.</p>		<p>AI.3.0 Students solve equations and inequalities involving absolute values.</p>	<p>Lesson 1 Number Sense, Lesson 4 Equations, Lesson 5 Inequalities</p>



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AI.4.0 Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x - 5) + 4(x - 2) = 12$.		AI.4.0 Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x - 5) + 4(x - 2) = 12$.	Lesson 4 Equations, Lesson 13 Solving Multi-Step Equations, Lesson 14 Solving Multi-Step Inequalities
AI.5.0 Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.		AI.5.0 Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.	Lesson 9 Equations with Fractions and Decimals, Lesson 12 Percent and Equations, Lesson 13 Solving Multi-Step Equations, Lesson 14 Solving Multi-Step Inequalities, Lesson 15 Interest, Lesson 18 Transforming Formulas
AI.6.0 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 $2x + 6y < 4$).		AI.6.0 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 $2x + 6y < 4$).	Lesson 23 Graphing Linear Equations



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AI.7.0 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.		AI.7.0 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.	Lesson 23 Graphing Linear Equations
AI.8.0 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.		AI.8.0 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.	Lesson 23 Graphing Linear Equations (through a link)



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AI.9.0 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.		AI.9.0 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.	
AI.10.0 Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.		AI.10.0 Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.	Lesson 1 Number Sense, Lesson 6 Exponents, Lesson 29 Measurement Systems



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AI.11.0 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.		AI.11.0 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.	Lesson 33 Square Roots and Irrational Numbers
AI.12.0 Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.		AI.12.0 Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.	Lesson 8 Fractions



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AI.13.0 Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.		AI.13.0 Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.	Lesson 2 Variables and Expressions, Lesson 13 Solving Multi-Step Equations, Lesson 14 Solving Multi-Step Inequalities
AI.14.0 Students solve a quadratic equation by factoring or completing the square.		AI.14.0 Students solve a quadratic equation by factoring or completing the square.	
AI.15.0 Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.		AI.15.0 Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.	Lesson 10 Ratios, Proportions and Percents, Lesson 18 Transforming Formulas

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<p>AI.16.0 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.</p>		<p>AI.16.0 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.</p>	<p>Lesson 22 Functions</p>
<p>AI.17.0 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.</p>		<p>AI.17.0 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.</p>	<p>Lesson 21 Coordinate Plane, Lesson 22 Functions</p>
<p>AI.18.0 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.</p>		<p>AI.18.0 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.</p>	<p>Lesson 22 Functions</p>



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AI.19.0 Students know the quadratic formula and are familiar with its proof by completing the square.		AI.19.0 Students know the quadratic formula and are familiar with its proof by completing the square.	
AI.20.0 Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.		AI.20.0 Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.	
AI.21.0 Students graph quadratic functions and know that their roots are the x-intercepts.		AI.21.0 Students graph quadratic functions and know that their roots are the x-intercepts.	
AI.22.0 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.		AI.22.0 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.	



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AI.23.0 Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.		AI.23.0 Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.	
AI.24.0 Students use and know simple aspects of a logical argument:	AI.24.0 Students use and know simple aspects of a logical argument:	AI.24.1 Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.	Lesson 19 Probability, Lesson 20 Counting Theory, Lesson 35 Descriptive Statistics, Lesson 36 Inferential Statistics
		AI.24.2 Students identify the hypothesis and conclusion in logical deduction.	Lesson 16 Arithmetic and Geometric Sequences, Lesson 22 Functions
		AI.24.3 Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.	Lesson 35 Descriptive Statistics, Lesson 36 Inferential Statistics
AI.25.0 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:	AI.25.0 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:	AI.25.1 Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.	Lesson 24 Polygons, Lesson 25 Angles



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		AI.25.2 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.	Integers and order of operations: Lesson 1 Number Sense, Lesson 2 Variables and Expressions
		AI.25.3 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.	Lesson 4 Equations, Lesson 5 Inequalities, Lesson 13 Solving Multi-Step Equations, Lesson 14 Solving Multi-Step Inequalities, Lesson 18 Transforming Formulas,