



Alignment Document  
State of New York and Aventa Learning Algebra I

**Algebra I**  
2005-2007 Benchmark Blueprint

Strand	Goals	Bands	Standards	Unit Name	Course Topic Description		
<b>A.PS</b> Problem Solving	Students will build new mathematical knowledge through problem solving.		<b>A.PS.1</b> Use a variety of problem solving strategies to understand new mathematical content	Equations	Solving Problems		
				Equations	Equations and Problem Solving		
				Real Numbers	Problem Solving		
	Students will solve problems that arise in mathematics and in other contexts.			<b>A.PS.2</b> Recognize and understand equivalent representations of a problem situation or a mathematical concept			
					<b>A.PS.3</b> Observe and explain patterns to formulate generalizations and conjectures	Equations	Equations and Problem Solving
						Equations	Solving Problems
						Real Numbers	Problem Solving
					<b>A.PS.4</b> Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, graphically)	Equations	Equations and Problem Solving
						Equations	Solving Problems
						Real Numbers	Problem Solving
<b>A.PS.5</b> Choose an effective approach to solve a problem from a variety of strategies (numeric, graphic, algebraic)	Equations	Equations and Problem Solving					
	Equations	Solving Problems					
	Real Numbers	Problem Solving					
Students will apply and adapt a variety of appropriate strategies to solve problems.			<b>A.PS.6</b> Use a variety of strategies to extend solution methods to other	Real Numbers	Problem Solving		

			problems	Equations	Solving Problems
				Equations	Equations and Problem Solving
			<b>A.PS.7</b> Work in collaboration with others to propose, critique, evaluate, and value alternative approaches to problem solving	Real Numbers	Problem Solving
				Equations	Solving Problems
				Equations	Equations and Problem Solving
	Students will monitor and reflect on the process of mathematical problem solving.		<b>A.PS.8</b> Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions	Equations	Equations and Problem Solving
				Equations	Equations with Variables on Each Side
				Equations	Solving Problems
				Real Numbers	Problem Solving
			<b>A.PS.9</b> Interpret solutions within the given constraints of a problem	Equations	Equations with Variables on Each Side
			<b>A.PS.10</b> Evaluate the relative efficiency of different representations and solution methods of a problem	Equations	Equations with Variables on Each Side
<b>A.RP</b> Reasoning and Proof	Students will recognize reasoning and proof as fundamental aspects of mathematics.		<b>A.RP.1</b> Recognize that mathematical ideas can be supported by a variety of strategies	Variables and Expressions	Logical Reasoning
				Variables and Expressions	Deductive Reasoning
				Variables and Expressions	Inductive Reasoning
	Students will make and investigate mathematical conjectures.		<b>A.RP.2</b> Use mathematical strategies to reach a conclusion and provide supportive arguments for a conjecture		
			<b>A.RP.3</b> Recognize when an approximation is more appropriate than an exact answer	Equations	Equations with Variables on Each Side
	Students will develop and		<b>A.RP.4</b> Develop, verify, and explain an		

<p>evaluate mathematical arguments and proofs.</p>		<p>argument, using appropriate mathematical ideas and language</p>		
		<p><b>A.RP.5</b> Construct logical arguments that verify claims or counterexamples that refute them</p>		
		<p><b>A.RP.6</b> Present correct mathematical arguments in a variety of forms</p>		
		<p><b>A.RP.7</b> Evaluate written arguments for validity</p>		
<p>Students will select and use various types of reasoning and methods of proof.</p>		<p><b>A.RP.8</b> Support an argument by using a systematic approach to test more than one case</p>	<p>Variables and Expressions Variables and Expressions Variables and Expressions</p>	<p>Inductive Reasoning Deductive Reasoning Logical Reasoning</p>
		<p><b>A.RP.9</b> Devise ways to verify results or use counterexamples to refute incorrect statements</p>	<p>Variables and Expressions Variables and Expressions Variables and Expressions</p>	<p>Inductive Reasoning Logical Reasoning Deductive Reasoning</p>
		<p><b>A.RP.10</b> Extend specific results to more general cases</p>		
		<p><b>A.RP.11</b> Use a Venn diagram to support a logical argument</p>	<p>Variables and Expressions Variables and Expressions Variables and Expressions</p>	<p>Deductive Reasoning Logical Reasoning Inductive Reasoning</p>

				Real Numbers	Number Sets
			<b>A.RP.12</b> Apply inductive reasoning in making and supporting mathematical conjectures	Variables and Expressions	Logical Reasoning
				Variables and Expressions	Inductive Reasoning
<b>A.CM</b> Communication	Students will organize and consolidate their mathematical thinking through communication.		<b>A.CM.1</b> Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem	Equations	Equations with Variables on Each Side
				Real Numbers	Writing and Justifying Steps Using Properties
	Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.		<b>A.CM.2</b> Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, Venn diagrams, and other diagrams		
			<b>A.CM.3</b> Present organized mathematical ideas with the use of appropriate standard notations, including the use of symbols and other representations when sharing an idea in verbal and written form		
			<b>A.CM.4</b> Explain relationships among different representations of a problem		
			<b>A.CM.5</b> Communicate logical arguments clearly, showing why a result makes sense and why the reasoning is valid	Variables and Expressions	Deductive Reasoning
			Variables and Expressions	Logical Reasoning	
			Variables and Expressions	Inductive Reasoning	
			<b>A.CM.6</b> Support or reject arguments or questions raised by others about the correctness of mathematical work		

	Students will analyze and evaluate the mathematical thinking and strategies of others.		<b>A.CM.7</b> Read and listen for logical understanding of mathematical thinking shared by other students		
			<b>A.CM.8</b> Reflect on strategies of others in relation to one's own strategy		
			<b>A.CM.9</b> Formulate mathematical questions that elicit, extend, or challenge strategies, solutions, and/or conjectures of others		
	Students will use the language of mathematics to express mathematical ideas precisely.		<b>A.CM.10</b> Use correct mathematical language in developing mathematical questions that elicit, extend, or challenge other students' conjectures		
			<b>A.CM.11</b> Represent word problems using standard mathematical notation		
			<b>A.CM.12</b> Understand and use appropriate language, representations, and terminology when describing objects, relationships, mathematical solutions, and rationale		
			<b>A.CM.13</b> Draw conclusions about mathematical ideas through decoding, comprehension, and interpretation of mathematical visuals, symbols, and technical writing		
<b>A.CN</b> Connections	Students will recognize and use connections among mathematical ideas.		<b>A.CN.1</b> Understand and make connections among multiple representations of the same mathematical idea		
			<b>A.CN.2</b> Understand the corresponding procedures for similar problems or mathematical concepts		
	Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.		<b>A.CN.3</b> Model situations mathematically, using representations to draw conclusions and formulate new situations		

			<b>A.CN.4</b> Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics		
			<b>A.CN.5</b> Understand how quantitative models connect to various physical models and representations		
	Students will recognize and apply mathematics in contexts outside of mathematics.		<b>A.CN.6</b> Recognize and apply mathematics to situations in the outside world		
			<b>A.CN.7</b> Recognize and apply mathematical ideas to problem situations that develop outside of mathematics		
			<b>A.CN.8</b> Develop an appreciation for the historical development of mathematics		
<b>A.R</b> Representation	Students will create and use representations to organize, record, and communicate mathematical ideas.		<b>A.R.1</b> Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts	Functions and Linear Equations	The Coordinate System
			<b>A.R.2</b> Recognize, compare, and use an array of representational forms		
			<b>A.R.3</b> Use representation as a tool for exploring and understanding mathematical ideas		
	Students will select, apply, and translate among mathematical representations to solve problems.		<b>A.R.4</b> Select appropriate representations to solve problem situations		
			<b>A.R.5</b> Investigate relationships between different representations and their impact on a given problem		
	Students will use representations to model and interpret physical, social, and mathematical		<b>A.R.6</b> Use mathematics to show and understand physical phenomena (e.g., find the height of a building if a ladder of		

	phenomena.		a given length forms a given angle of elevation with the ground)		
			<b>A.R.7</b> Use mathematics to show and understand social phenomena (e.g., determine profit from student and adult ticket sales)		
			<b>A.R.8</b> Use mathematics to show and understand mathematical phenomena (e.g., compare the graphs of the functions represented by the equations $y = x^2$ and $y = -x^2$ )		
<b>A.N</b> Number Sense and Operations	Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.	Number Theory	<b>A.N.1</b> Identify and apply the properties of real numbers (closure, commutative, associative, distributive, identity, inverse) Note: Students do not need to identify groups and fields, but students should be engaged in the ideas.	Real Numbers Real Numbers Real Numbers Real Numbers Real Numbers Real Numbers Real Numbers Real Numbers Real Numbers Real Numbers	Multiplication of Rational Numbers Fractions Writing and Justifying Steps Using Properties Division of Rational Numbers Order of Numbers Properties of Closure and Equality Adding Fractions with Real Numbers Evaluating Division Expressions Number Sets Subtracting Fractions with Real Numbers Using the Properties

				Variables and Expressions	Addition of Integers
				Variables and Expressions	The Distributive Property
				Variables and Expressions	The Associative Property
				Variables and Expressions	The Commutative Property
				Equations	Multiplication and Division in Equations
	Students will understand meanings of operations and procedures, and how they relate to one another.	Operations	<b>A.N.2</b> Simplify radical terms (no variable in the radicand)	Quadratics and Radicals	Adding and Subtracting Radical
Quadratics and Radicals				Simplifying Radicals Containing Fractions	
Quadratics and Radicals				Simplifying Radicals with Variables	
Quadratics and Radicals				Multiplying Radical Expressions	
Quadratics and Radicals				Simplifying Radicals	
<b>A.N.3</b> Perform the four arithmetic operations using like and unlike radical terms and express the result in simplest form			Quadratics and Radicals	Simplifying Radicals Containing Fractions	
			Quadratics and Radicals	Adding and Subtracting Radical	
			Quadratics and Radicals	Simplifying Radicals with Variables	



				Quadratics and Radicals	Multiplying Radical Expressions
				Quadratics and Radicals	Simplifying Radicals
			<b>A.N.4</b> Understand and use scientific notation to compute products and quotients of numbers	Polynomials	From Scientific Notation to Standard Notation
				Polynomials	Computing with Scientific Notation
				Polynomials	Scientific Notation
			<b>A.N.5</b> Solve algebraic problems arising from situations that involve fractions, decimals, percents (decrease/increase and discount), and proportionality/direct variation	Functions and Linear Equations	Direct Variation
				Real Numbers	Adding Fractions with Real Numbers
				Real Numbers	Subtracting Fractions with Real Numbers
				Equations	Percent of Change
			<b>A.N.6</b> Evaluate expressions involving factorial(s), absolute value(s), and exponential expression(s)	Equations	Percent of a Number
				Real Numbers	Decimals
				Real Numbers	Absolute Value
				Real Numbers	Evaluating Division Expressions
				Exponentials	Growth and Decay
				Exponentials	Exponential Graphs
				Exponentials	Graphing Exponential Equations

				Exponentials Equations Inequalities	Exponential Equations Absolute Value Equations Absolute Value Inequalities		
			<b>A.N.7</b> Determine the number of possible events, using counting techniques or the Fundamental Principle of Counting				
			<b>A.N.8</b> Determine the number of possible arrangements (permutations) of a list of items	Rational Expressions Rational Expressions	More about the Multiplication Principle Permutations		
<b>A.A</b> Algebra	Students will represent and analyze algebraically a wide variety of problem solving situations.	Variables and Expressions	<b>A.A.1</b> Translate a quantitative verbal phrase into an algebraic expression	Equations Variables and Expressions Variables and Expressions	Equations Algebraic Expressions Expressions with Powers		
			<b>A.A.2</b> Write a verbal expression that matches a given mathematical expression	Variables and Expressions Variables and Expressions	Expressions with Powers Algebraic Expressions		
		Equations and Inequalities	<b>A.A.3</b> Distinguish the difference between an algebraic expression and an algebraic equation	Equations	Equations	Equations	Equations
				Equations	Equations	Equations	Distance Formula Solving Multi-Step Equations Equations with Variables on Each Side Multiplication and Division in Equations



				Equations	Mixture Problems
				Equations	Parentheses in Equations
				Equations	Equations and Problem Solving
				Equations	Rate Problems
				Equations	Solving Problems
				Exponentials	Exponential Equations
			<b>A.A.4</b> Translate verbal sentences into mathematical equations or inequalities	Inequalities	Compound Inequalities
				Inequalities	Inequalities in Two Variables
				Inequalities	Multi-Step Inequalities
				Inequalities	Solving Inequalities Using Multiplication and Division
				Inequalities	Solving Inequalities by Addition and Subtraction
				Inequalities	Graphing Inequalities in Two Variables
				Inequalities	Absolute Value Inequalities
				Exponentials	Exponential Equations
				Equations	Distance Formula
				Equations	Solving Problems
				Equations	Equations with Variables on Each Side

				Equations	Multiplication and Division in Equations
				Equations	Rate Problems
				Equations	Parentheses in Equations
				Equations	Equations
				Equations	Mixture Problems
				Equations	Solving Multi-Step Equations
				Equations	Equations and Problem Solving
				Variables and Expressions	Algebraic Expressions
				Variables and Expressions	Expressions with Powers
			<b>A.A.5</b> Write algebraic equations or inequalities that represent a situation	Inequalities	Solving Inequalities by Addition and Subtraction
				Inequalities	Multi-Step Inequalities
				Inequalities	Graphing Inequalities in Two Variables
				Inequalities	Compound Inequalities
				Inequalities	Solving Inequalities Using Multiplication and Division
				Inequalities	Inequalities in Two Variables
				Inequalities	Absolute Value Inequalities



				Exponentials	Exponential Equations
				Equations	Parentheses in Equations
				Equations	Equations and Problem Solving
				Equations	Mixture Problems
				Equations	Solving Multi-Step Equations
				Equations	Distance Formula
				Equations	Rate Problems
				Equations	Solving Problems
				Equations	Equations with Variables on Each Side
				Equations	Multiplication and Division in Equations
			<b>A.A.6</b> Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable	Inequalities	Solving Inequalities Using Multiplication and Division
				Inequalities	Solving Inequalities by Addition and Subtraction
				Inequalities	Graphing Inequalities in Two Variables
				Inequalities	Compound Inequalities
				Inequalities	Inequalities in Two Variables
				Inequalities	Multi-Step Inequalities



				Exponentials	Exponential Equations
				Polynomials	Solving Equations Using Factoring
				Quadratics and Radicals	Solving by Using Square Roots
				Functions and Linear Equations	Writing Linear Equations
				Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Functions and Linear Equations	Linear Patterns
				Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and Linear Equations	Slope-Intercept Form
				Variables and Expressions	Algebraic Expressions
				Variables and Expressions	Expressions with Powers
				Equations	Solving Problems
				Equations	Formulas as Equations
				Equations	Multiplication and Division in Equations
				Equations	Rate Problems



				Equations	Equations with Variables on Each Side
				Equations	Addition and Subtraction in Equations
				Equations	Mixture Problems
				Equations	Parentheses in Equations
				Equations	Equations
				Equations	Solving Multi-Step Equations
			<b>A.A.7</b> Analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables	Equations	Equations
				Equations	Rate Problems
				Variables and Expressions	Algebraic Expressions
				Variables and Expressions	Expressions with Powers
				Solving Systems	Solving with Elimination
				Solving Systems	Problem Solving
				Solving Systems	Problem Solving with Systems
			Solving Systems	Solving with Substitution	
			Solving Systems	Systems of equations	
			<b>A.A.8</b> Analyze and solve verbal problems that involve quadratic equations	Quadratics and Radicals	Solving Quadratic Equations with Graphs
				Quadratics and	The Quadratic Formula

				Radicals	
				Quadratics and Radicals	Solving by Using Square Roots
				Polynomials	Factoring Other Trinomials
				Polynomials	Solving Equations by Factoring Trinomials
			<b>A.A.9</b> Analyze and solve verbal problems that involve exponential growth and decay	Exponentials	Graphing Exponential Equations
				Exponentials	Exponential Graphs
				Exponentials	Growth and Decay
				Variables and Expressions	Algebraic Expressions
				Variables and Expressions	Expressions with Powers
				Equations	Equations
			<b>A.A.10</b> Solve systems of two linear equations in two variables algebraically (See A.G.7)	Solving Systems	Solving with Substitution
				Solving Systems	Systems of equations
				Solving Systems	Problem Solving with Systems
				Solving Systems	Problem Solving
				Solving Systems	Solving with Elimination
				Equations	Equations with Variables on Each Side
				Equations	Rate Problems

			<p><b>A.A.11</b> Solve a system of one linear and one quadratic equation in two variables, where only factoring is required Note: The quadratic equation should represent a parabola and the solution(s) should be integers.</p>	<p>Solving Systems</p> <p>Solving Systems</p> <p>Solving Systems</p> <p>Solving Systems</p> <p>Functions and Linear Equations</p>	<p>Solving with Substitution</p> <p>Systems of equations</p> <p>Problem Solving with Systems</p> <p>Solving with Elimination</p> <p>Linear Patterns</p>
	Students will perform algebraic procedures accurately.	Variables and Expressions	<p><b>A.A.12</b> Multiply and divide monomial expressions with a common base, using the properties of exponents Note: Use integral exponents only</p>	<p>Variables and Expressions</p> <p>Variables and Expressions</p> <p>Variables and Expressions</p> <p>Variables and Expressions</p> <p>Polynomials</p>	<p>Fractional Exponents</p> <p>Dividing Monomials</p> <p>Multiplying Monomials</p> <p>Problem Solving using Exponents and Roots</p> <p>Multiplying Monomials Review</p>
			<p><b>A.A.13</b> Add, subtract, and multiply monomials and polynomials</p>	<p>Variables and Expressions</p> <p>Polynomials</p> <p>Polynomials</p> <p>Polynomials</p> <p>Polynomials</p> <p>Polynomials</p>	<p>Multiplying Monomials</p> <p>Multiplying Using FOIL</p> <p>Multiplying Monomials Review</p> <p>Special Products</p> <p>Multiplying Polynomials</p> <p>Addition and Subtraction of Polynomials</p>

				Polynomials	Multiplying Polynomials by a Monomial
			<b>A.A.14</b> Divide a polynomial by a monomial or binomial, where the quotient has no remainder	Variables and Expressions	Dividing Monomials
			<b>A.A.15</b> Find values of a variable for which an algebraic fraction is undefined	Rational Expressions	Adding with Like Denominators
				Rational Expressions	Multiplying Rational Expressions
				Rational Expressions	Dividing Polynomials by a Monomial
				Rational Expressions	Dividing Rational Expressions
				Rational Expressions	Unlike Denominators
				Rational Expressions	Polynomial Long Division
				Rational Expressions	Simplifying Rational Expressions
				Variables and Expressions	Algebraic Expressions
			<b>A.A.16</b> Simplify fractions with polynomials in the numerator and denominator by factoring both and renaming them to lowest terms	Variables and Expressions	Expressions with Powers
				Rational Expressions	Simplifying Rational Expressions
				Rational Expressions	Unlike Denominators



			Rational Expressions	Dividing Rational Expressions
			Rational Expressions	Polynomial Long Division
			Rational Expressions	Dividing Polynomials by a Monomial
			Rational Expressions	Adding with Like Denominators
			Rational Expressions	Multiplying Rational Expressions
			Real Numbers	Decimals
			Variables and Expressions	Multiplying and Dividing Integers
			Variables and Expressions	Order of Operations
			Polynomials	Factoring Simple Trinomials
			Polynomials	Difference of Two Squares
			Polynomials	Factoring with the GCF
			Polynomials	Factoring Other Trinomials
			Polynomials	Factoring Perfect Square Trinomials
		<b>A.A.17</b> Add or subtract fractional expressions with monomial or like binomial denominators	Rational Expressions	Adding with Like Denominators
			Rational	Unlike Denominators

				Expressions	
			<b>A.A.18</b> Multiply and divide algebraic fractions and express the product or quotient in simplest form	Rational Expressions	Dividing Polynomials by a Monomial
		Rational Expressions		Multiplying Rational Expressions	
		Rational Expressions		Polynomial Long Division	
		Rational Expressions		Dividing Rational Expressions	
			<b>A.A.19</b> Identify and factor the difference of two perfect squares	Polynomials	Difference of Two Squares
			<b>A.A.20</b> Factor algebraic expressions completely, including trinomials with a lead coefficient of one (after factoring a GCF)	Polynomials	Difference of Two Squares
		Polynomials		Factoring Perfect Square Trinomials	
		Polynomials		Factoring Other Trinomials	
		Polynomials		Factoring Simple Trinomials	
		Polynomials		Factoring with the GCF	
	Equations and Inequalities		<b>A.A.21</b> Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable	Functions and Linear Equations	Graphing an Equation Using Intercepts
		Functions and Linear Equations		Writing Linear Equations	
		Functions and Linear Equations		Slope-Intercept Form	
		Functions and Linear Equations		Linear Patterns	



				Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Inequalities	Graphing Inequalities in Two Variables
				Inequalities	Solving Inequalities Using Multiplication and Division
				Inequalities	Inequalities in Two Variables
				Equations	Solving Problems
				Equations	Mixture Problems
				Equations	Equations with Variables on Each Side
				Equations	Multiplication and Division in Equations
				Equations	Rate Problems
				Equations	Parentheses in Equations
			<b>A.A.22</b> Solve all types of linear equations in one variable	Functions and Linear Equations	Slope-Intercept Form
				Functions and Linear Equations	Linear Patterns
				Functions and Linear Equations	Writing Linear Equations
				Equations	Formulas as Equations
				Equations	Solving Problems

				Equations	Equations with Variables on Each Side
				Equations	Multiplication and Division in Equations
				Equations	Solving Multi-Step Equations
				Equations	Addition and Subtraction in Equations
				Equations	Mixture Problems
				Equations	Parentheses in Equations
			<b>A.A.23</b> Solve literal equations for a given variable	Variables and Expressions	Algebraic Expressions
				Variables and Expressions	Expressions with Powers
			<b>A.A.24</b> Solve linear inequalities in one variable	Inequalities	Multi-Step Inequalities
				Inequalities	Solving Inequalities by Addition and Subtraction
				Inequalities	Compound Inequalities
				Inequalities	Graphing Inequalities in Two Variables
				Inequalities	Solving Inequalities Using Multiplication and Division
				Inequalities	Inequalities in Two Variables
			<b>A.A.25</b> Solve equations involving fractional expressions Note: Expressions which result in linear equations in one variable.	Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and	Slope-Intercept Form



				Linear Equations	
				Functions and Linear Equations	Writing Linear Equations
				Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Functions and Linear Equations	Linear Patterns
				Rational Expressions	Solving More Complicated Rational Equations
				Rational Expressions	Solving Simple Rational Equations
				Equations	Parentheses in Equations
				Equations	Multiplication and Division in Equations
				Equations	Equations with Variables on Each Side
				Equations	Mixture Problems
				Equations	Solving Problems
				Equations	Rate Problems
			<b>A.A.26</b> Solve algebraic proportions in one variable which result in linear or quadratic equations	Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and	Slope-Intercept Form



				Linear Equations	
				Functions and Linear Equations	Writing Linear Equations
				Functions and Linear Equations	Linear Patterns
				Polynomials	Solving Equations by Factoring Trinomials
				Polynomials	Factoring Other Trinomials
				Equations	Rate Problems
				Equations	Parentheses in Equations
				Equations	Solving Problems
				Equations	Multiplication and Division in Equations
				Equations	Equations with Variables on Each Side
				Equations	Mixture Problems
				Quadratics and Radicals	Solving by Using Square Roots
				Quadratics and Radicals	Solving Quadratic Equations with Graphs
				Quadratics and Radicals	The Quadratic Formula
				Quadratics and	Graphing Quadratics

				Radicals	
				Quadratics and Radicals	Completing the Square
				Quadratics and Radicals	Graphing Quadratic Functions
				Rational Expressions	Solving Simple Rational Equations
				Rational Expressions	Solving More Complicated Rational Equations
			<b>A.A.27</b> Understand and apply the multiplication property of zero to solve quadratic equations with integral coefficients and integral roots	Polynomials	Solving Equations by Factoring Trinomials
				Polynomials	Factoring Other Trinomials
				Real Numbers	Writing and Justifying Steps Using Properties
				Quadratics and Radicals	Solving by Using Square Roots
				Quadratics and Radicals	Solving Quadratic Equations with Graphs
				Quadratics and Radicals	The Quadratic Formula
			<b>A.A.28</b> Understand the difference and connection between roots of a quadratic equation and factors of a quadratic expression	Polynomials	Factoring Other Trinomials
				Polynomials	Solving Equations by Factoring Trinomials
				Quadratics and Radicals	Solving Quadratic Equations with Graphs

Students will recognize, use, and represent algebraically patterns, relations, and functions.	Patterns, Relations, and Functions	<b>A.A.29</b> Use set-builder notation and/or interval notation to illustrate the elements of a set, given the elements in roster form		
		<b>A.A.30</b> Find the complement of a subset of a given set, within a given universe		
		<b>A.A.31</b> Find the intersection of sets (no more than three sets) and/or union of sets (no more than three sets)		
	Coordinate Geometry	<b>A.A.32</b> Explain slope as a rate of change between dependent and independent variables	Functions and Linear Equations	Replacement Sets and Variables
		<b>A.A.33</b> Determine the slope of a line, given the coordinates of two points on the line	Functions and Linear Equations	More about Slope
		<b>A.A.34</b> Write the equation of a line, given its slope and the coordinates of a point on the line		
		<b>A.A.35</b> Write the equation of a line, given the coordinates of two points on the line		
		<b>A.A.36</b> Write the equation of a line parallel to the x- or y-axis	Functions and Linear Equations	Point-Slope Form
			Functions and Linear Equations	Forms of Non-Vertical Linear Equations
		<b>A.A.37</b> Determine the slope of a line, given its equation in any form	Functions and Linear Equations	More about Slope
<b>A.A.38</b> Determine if two lines are parallel, given their equations in any form	Functions and Linear Equations	Parallel Lines		
	Functions and Linear Equations	Perpendicular Lines		
<b>A.A.39</b> Determine whether a given point is on a line, given the equation of the line				

			<b>A.A.40</b> Determine whether a given point is in the solution set of a system of linear inequalities	Inequalities	Solving Inequalities Using Multiplication and Division
				Solving Systems	Graphing Systems of Inequalities
			<b>A.A.41</b> Determine the vertex and axis of symmetry of a parabola, given its equation (See A.G.10)		
		Trigonometric Functions	<b>A.A.42</b> Find the sine, cosine, and tangent ratios of an angle of a right triangle, given the lengths of the sides		
			<b>A.A.43</b> Determine the measure of an angle of a right triangle, given the length of any two sides of the triangle		
			<b>A.A.44</b> Find the measure of a side of a right triangle, given an acute angle and the length of another side		
			<b>A.A.45</b> Determine the measure of a third side of a right triangle using the Pythagorean theorem, given the lengths of any two sides	Quadratics and Radicals	Pythagorean Theorem
<b>A.G</b> Geometry	Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.	Shapes	<b>A.G.1</b> Find the area and/or perimeter of figures composed of polygons and circles or sectors of a circle Note: Figures may include triangles, rectangles, squares, parallelograms, rhombuses, trapezoids, circles, semi-circles, quarter-circles, and regular polygons (perimeter only).		
			<b>A.G.2</b> Use formulas to calculate volume and surface area of rectangular solids and cylinders	Real Numbers	Estimation with Real Numbers
	Students will apply coordinate geometry to analyze problem solving situations.	Coordinate Geometry	<b>A.G.3</b> Determine when a relation is a function, by examining ordered pairs and inspecting graphs of relations	Functions and Linear Equations	Graphing an Equation Using Points
				Functions and	Functions

				Linear Equations	
				Functions and Linear Equations	Graphs of Inverses
				Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Functions and Linear Equations	Relations
				Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and Linear Equations	The Coordinate System
				Solving Systems	Review of Graphing Linear Equations
			<b>A.G.4</b> Identify and graph linear, quadratic (parabolic), absolute value, and exponential functions	Quadratics and Radicals	Graphing Quadratics
				Quadratics and Radicals	Graphing Quadratic Functions
				Solving Systems	Review of Graphing Linear Equations
				Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and Linear Equations	Graphing an Equation Using Points
			<b>A.G.5</b> Investigate and generalize how changing the coefficients of a function affects its graph	Functions and Linear Equations	Graphing an Equation Using Points
				Functions and	Graphing an Equation Using



				Linear Equations	Intercepts
				Solving Systems	Review of Graphing Linear Equations
			<b>A.G.6</b> Graph linear inequalities	Solving Systems	Review of Graphing Inequalities
				Inequalities	Inequalities in Two Variables
				Inequalities	Graphing Inequalities in Two Variables
				Inequalities	Solving Inequalities Using Multiplication and Division
			<b>A.G.7</b> Graph and solve systems of linear equations and inequalities with rational coefficients in two variables (See A.A.10)	Inequalities	Multi-Step Inequalities
				Inequalities	Graphing Inequalities in Two Variables
				Inequalities	Solving Inequalities by Addition and Subtraction
				Inequalities	Solving Inequalities Using Multiplication and Division
				Inequalities	Inequalities in Two Variables
				Inequalities	Compound Inequalities
				Equations	Rate Problems
				Solving Systems	Solving with Elimination
				Solving Systems	Graphing Systems of Inequalities
				Solving Systems	Systems of equations

				Solving Systems	Problem Solving with Systems
				Solving Systems	Review of Graphing Linear Equations
				Solving Systems	Solving with Substitution
				Solving Systems	Problem Solving
				Functions and Linear Equations	Slope-Intercept Form
				Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Functions and Linear Equations	Graphing an Equation Using Points
				Functions and Linear Equations	Graphing an Equation Using Intercepts
			<b>A.G.8</b> Find the roots of a parabolic function graphically Note: Only quadratic equations with integral solutions.	Quadratics and Radicals	Solving Quadratic Equations with Graphs
				Polynomials	Solving Equations by Factoring Trinomials
			<b>A.G.9</b> Solve systems of linear and quadratic equations graphically Note: Only use systems of linear and quadratic equations that lead to solutions whose coordinates are integers.	Solving Systems	Solving with Elimination
				Solving Systems	Solving with Substitution
				Solving Systems	Problem Solving with Systems
				Solving Systems	Systems of equations
				Functions and Linear Equations	Linear Patterns
			<b>A.G.10</b> Determine the vertex and axis of symmetry of a parabola, given its graph	Quadratics and Radicals	Solving Quadratic Equations with Graphs

			(See A.A.41) Note: The vertex will have an ordered pair of integers and the axis of symmetry will have an integral value.		
<b>A.M</b> Measurement	Students will determine what can be measured and how, using appropriate methods and formulas.	Units of Measurement	<b>A.M.1</b> Calculate rates using appropriate units (e.g., rate of a space ship versus the rate of a snail) <b>A.M.2</b> Solve problems involving conversions within measurement systems, given the relationship between the units	Equations	Mixture Problems
	Students will understand that all measurement contains error and be able to determine its significance.	Error and Magnitude	<b>A.M.3</b> Calculate the relative error in measuring square and cubic units, when there is an error in the linear measure		
<b>A.S</b> Statistics and Probability	Students will collect, organize, display, and analyze data.	Organization and Display of Data	<b>A.S.1</b> Categorize data as qualitative or quantitative	Solving Systems	Analyzing Statistical Data
			<b>A.S.2</b> Determine whether the data to be analyzed is univariate or bivariate	Functions and Linear Equations	Line of Fit
			<b>A.S.3</b> Determine when collected data or display of data may be biased	Functions and Linear Equations	Scatter Plots and Correlation
			<b>A.S.4</b> Compare and contrast the appropriateness of different measures of central tendency for a given data set	Solving Systems	Analyzing Statistical Data
			<b>A.S.5</b> Construct a histogram, cumulative frequency histogram, and a box-and-whisker plot, given a set of data	Solving Systems	Histograms
				Solving Systems	Histograms

			<b>A.S.6</b> Understand how the five statistical summary (minimum, maximum, and the three quartiles) is used to construct a box-and-whisker plot	Solving Systems	Box Plots
			<b>A.S.7</b> Create a scatter plot of bivariate data	Functions and Linear Equations	Line of Fit
			<b>A.S.8</b> Construct manually a reasonable line of best fit for a scatter plot and determine the equation of that line	Functions and Linear Equations	Scatter Plots and Correlation
		Analysis of Data	<b>A.S.9</b> Analyze and interpret a frequency distribution table or histogram, a cumulative frequency distribution table or histogram, or a box-and-whisker plot	Solving Systems	Analyzing Statistical Data
			<b>A.S.10</b> Evaluate published reports and graphs that are based on data by considering: experimental design, appropriateness of the data analysis, and the soundness of the conclusions	Solving Systems	Box Plots
			<b>A.S.11</b> Find the percentile rank of an item in a data set and identify the point values for first, second, and third quartiles	Solving Systems	Histograms
			<b>A.S.12</b> Identify the relationship between the independent and dependent variables from a scatter plot (positive, negative, or none)		
			<b>A.S.13</b> Understand the difference between correlation and causation	Solving Systems	Analyzing Statistical Data
			<b>A.S.14</b> Identify variables that might have a correlation but not a causal relationship	Functions and Linear Equations	Replacement Sets and Variables
			<b>A.S.15</b> Identify and describe sources of	Functions and Linear Equations	Scatter Plots and Correlation
	Students will make predictions		Predictions from		Functions and Linear Equations
				Functions and Linear Equations	Line of Fit

that are based upon data analysis.	Data	bias and its effect, drawing conclusions from data	Linear Equations	Analyzing Statistical Data
			Solving Systems	
			Solving Systems	Histograms
		<b>A.S.16</b> Recognize how linear transformations of one-variable data affect the data's mean, median, mode, and range	Solving Systems	Statistics
Students will understand and apply concepts of probability.	Probability		Solving Systems	Analyzing Statistical Data
			Variables and Expressions	Mean, Median and Mode
			Variables and Expressions	Stem and Leaf Plots
		<b>A.S.17</b> Use a reasonable line of best fit to make a prediction involving interpolation or extrapolation		
		<b>A.S.18</b> Know the definition of conditional probability and use it to solve for probabilities in finite sample spaces		
		<b>A.S.19</b> Determine the number of elements in a sample space and the number of favorable events		
		<b>A.S.20</b> Calculate the probability of an event and its complement	Rational Expressions	Using Data to Make Predictions
		<b>A.S.21</b> Determine empirical probabilities based on specific sample data	Rational Expressions	More about the Multiplication Principle
	Rational Expressions	Using Data to Make Predictions		
	Rational Expressions	The Basics of Probability		
<b>A.S.22</b> Determine, based on calculated probability of a set of events, if:				
<b>A.S.22.a</b> some or all are equally likely to				



			occur		
			<b>A.S.22.b</b> one is more likely to occur than another		
			<b>A.S.22.c</b> whether or not an event is certain to happen or not to happen		
			<b>A.S.23</b> Calculate the probability of:		
			<b>A.S.23.a</b> a series of independent events		
			<b>A.S.23.b</b> a series of dependent events		
			<b>A.S.23.c</b> two mutually exclusive events		
			<b>A.S.23.d</b> two events that are not mutually exclusive	Rational Expressions	The Basics of Probability
				Rational Expressions	More about the Multiplication Principle
				Rational Expressions	Using Data to Make Predictions