



# Alignment Document

## State of Alabama And Aventa Learning Algebra I

### **Algebra I** 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
0	Algebra I		
0	Number and Operations		
1	Simplify numerical expressions using properties of real numbers and order of operations, including those involving square roots, radical form, or decimal approximations.		
1.1	Applying laws of exponents to simplify expressions, including those containing zero and negative integral exponents	Real Numbers	Decimals
		Variables and Expressions	Order of Operations
		Variables and Expressions	Exponents
		Variables and Expressions	Fractional Exponents
		Variables and Expressions	Multiplying and Dividing Integers
		Variables and Expressions	Problem Solving using Exponents and Roots
		Quadratics and Radicals	Radicals
		Quadratics and Radicals	Operations on Radicals



0	Algebra		
2	Analyze linear functions from their equations, slopes, and intercepts.		
2.1	Finding the slope of a line from its equation or by applying the slope formula	Functions and Linear Equations	More about Slope
2.2	Determining the equations of linear functions given two points, a point and the slope, tables of values, graphs, or ordered pairs	Functions and Linear Equations	Linear Patterns
		Functions and Linear Equations	Forms of Non-Vertical Linear Equations
		Functions and Linear Equations	Writing Linear Equations
		Functions and Linear Equations	More about Slope
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point-Slope Form
2.3	Graphing two-variable linear equations and inequalities on the Cartesian plane	Functions and Linear Equations	Graphing an Equation Using Points
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Graphing an Equation Using Intercepts
		Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
		Functions and Linear Equations	Linear Patterns
		Inequalities	Inequalities in Two Variables
		Inequalities	Graphing Inequalities in Two Variables
		Solving Systems	Review of Graphing Linear Equations
		Solving Systems	Review of Graphing Inequalities
3	Determine characteristics of a relation, including its domain, range, and whether it is a function, when given graphs, tables of values, mappings, or sets of ordered pairs.		
	Finding the range of a function when given its domain	Functions and Linear Equations	Functions

3.1	Finding the range of a function when given its domain	Functions and Linear Equations	Relations
4	Represent graphically common relations, including $x = \text{constant}$ , $y = \text{constant}$ , $y = x$ , $y = \text{square root of } x$ , $y = x^2$ , and $y =  x $ .		
4.1	Identifying situations that are modeled by common relations, including $x = \text{constant}$ , $y = \text{constant}$ , $y = x$ , $y = \text{square root of } x$ , $y = x^2$ , and $y =  x $	Quadratics and Radicals	Graphing Quadratic Functions
		Functions and Linear Equations	Graphing Linear Equations
5	Perform operations of addition, subtraction, and multiplication on polynomial expressions.	Polynomials	Add and Subtract Polynomials
		Polynomials	Multiply Polynomials
5.1	Dividing by a monomial	Variables and Expressions	Dividing Monomials
6	Factor binomials, trinomials, and other polynomials using GCF, difference of squares, perfect square trinomials, and grouping.	Polynomials	Factoring Simple Trinomials
		Polynomials	Difference of Two Squares
		Polynomials	Factoring Perfect Square Trinomials
		Polynomials	Factors and GCF
		Polynomials	Factoring Trinomials
7	Solve multistep equations and inequalities including linear, radical, absolute value, and literal equations.		
7.1	Writing the solution of an equation or inequality in set notation	Equations	Equations and Problem Solving
		Equations	Parentheses in Equations
		Equations	Mixture Problems
		Equations	Multiplication and Division in Equations
		Equations	Equations with Variables on Each Side
		Equations	Solving Problems
		Equations	Distance Formula
		Equations	Solving Multi-Step Equations
		Equations	Rate Problems
		Equations	Absolute Value Equations



		Inequalities	Solving Inequalities Using Multiplication and Division
		Inequalities	Inequalities in Two Variables
		Inequalities	Compound Inequalities
		Inequalities	Absolute Value Inequalities
		Inequalities	Multi-Step Inequalities
		Inequalities	Graphing Inequalities in Two Variables
		Inequalities	Solving Inequalities by Addition and Subtraction
		Exponentials	Exponential Equations
		Quadratics and Radicals	Solving Quadratic Equations
		Quadratics and Radicals	Solving Radical Equations
		Rational Expressions	Solving Rational Equations
		Polynomial Equations	Solving Equations by Factoring
7.2	Graphing the solution of an equation or inequality	Quadratics and Radicals	Graphing Quadratic Functions
		Functions and Linear Equations	Graphing an Equation Using Intercepts
		Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
		Inequalities	Multi-Step Inequalities
		Inequalities	Graphing Inequalities in Two Variables
		Inequalities	Compound Inequalities
		Inequalities	Solving Inequalities by Addition and Subtraction
		Inequalities	Absolute Value Inequalities
		Exponentials	Exponential Equations
		Solving Systems	Review of Graphing Linear Equations
		Solving Systems	Review of Graphing Inequalities



7.3	Modeling real-world problems by developing and solving equations and inequalities, including those involving direct and inverse variation	Functions and Linear Equations	Direct Variation
		Inequalities	Compound Inequalities
		Inequalities	Solving Inequalities by Addition and Subtraction
		Inequalities	Solving Inequalities Using Multiplication and Division
		Inequalities	Inequalities in Two Variables
		Inequalities	Graphing Inequalities in Two Variables
		Inequalities	Multi-Step Inequalities
		Rational Expressions	Inverse Variation
		Equations	Addition and Subtraction in Equations
		Equations	Multiplication and Division in Equations
		Equations	Formulas as Equations
		Equations	Equations with Variables on Each Side
		Equations	Solving Problems
		Equations	Mixture Problems
		Exponentials	Exponential Equations
		Rational Expressions	Problem Solving
		Polynomials	Solving Equations Using Factoring
		Quadratics and Radicals	Solving by Using Square Roots
8	Solve systems of linear equations and inequalities in two variables graphically or algebraically.		

8.1	Modeling real-world problems by developing and solving systems of linear equations and inequalities	Solving Systems	Problem Solving with Systems
		Solving Systems	Graphing Systems of Inequalities
		Solving Systems	Solving with Elimination
		Solving Systems	Solving with Substitution
		Inequalities	Graphing Inequalities in Two Variables
		Inequalities	Inequalities in Two Variables
9	Solve quadratic equations using the zero product property.		
9.1	Approximating solutions graphically and numerically	Quadratics and Radicals	Solving Quadratic Equations with Graphs
		Quadratics and Radicals	The Quadratic Formula
		Polynomials	Solving Equations by Factoring Trinomials
0	Geometry		
10	Calculate length, midpoint, and slope of a line segment when given coordinates of its endpoints on the Cartesian plane.		
10.1	Deriving the distance, midpoint, and slope formulas		
0	Measurement		
11	Solve problems algebraically that involve area and perimeter of a polygon, area and circumference of a circle, and volume and surface area of right circular cylinders or right rectangular prisms.		
11.1	Applying formulas to solve word problems	Equations	Formulas as Equations
		Variables and Expressions	Problem Solving
0	Data Analysis and Probability		
12	Compare various methods of data reporting, including scatterplots, stem-and-leaf plots, histograms, box-and-whisker plots, and line graphs, to make inferences or predictions.		
12.1	Determining effects of linear transformations of data	Solving Systems	Analyzing Statistical Data
		Functions and Linear Equations	Correlation and Line of Fit



12.2	Determining effects of outliers	Solving Systems	Identifying Outliers
12.3	Evaluating the appropriateness of the design of a survey		
13	Identify characteristics of a data set, including measurement or categorical and univariate or bivariate.	Functions and Linear Equations	Scatter Plots and Correlation
		Functions and Linear Equations	Line of Fit
		Solving Systems	Histograms
		Solving Systems	Analyzing Statistical Data
14	Use a scatterplot and its line of best fit or a specific line graph to determine the relationship existing between two sets of data, including positive, negative, or no relationship.	Functions and Linear Equations	Line of Fit
15	Estimate probabilities given data in lists or graphs.		
15.1	Comparing theoretical and experimental probabilities	Rational Expressions	More about the Multiplication Principle
		Rational Expressions	The Basics of Probability
		Rational Expressions	Using Data to Make Predictions