



Alignment Document

State of West Virginia And Aventa Learning Algebra 1

Algebra 1 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
M.S.A1.2	Through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics, students will demonstrate understanding of patterns, relations and functions, represent and analyze mathematical situations and structures using algebraic symbols, use mathematical models to represent and understand quantitative relationships, and analyze change in various contexts.		
M.O.A1.2.1	formulate algebraic expressions for use in equations and inequalities that require planning to accurately model real-world 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	Equations and Problem Solving
		Equations	Parentheses in Equations
		Equations	Mixture Problems

		Inequalities	Solving Inequalities by Addition and Subtraction
		Inequalities	Absolute Value Inequalities
		Inequalities	Solving Inequalities Using Multiplication and Division
		Inequalities	Multi-Step Inequalities
		Inequalities	Graphing Inequalities in Two Variables
		Inequalities	Compound Inequalities
M.O.A1.2.2	create and solve multi-step linear equations, absolute value equations, and linear inequalities in one variable, (with and without technology); apply skills toward solving practical problems such as distance, mixtures or motion and judge the reasonableness of solutions.	Equations	Solving Multi-Step Equations
		Equations	Mixture Problems
		Equations	Equations with Variables on Each Side
		Equations	Absolute Value Equations
		Equations	Rate Problems
		Equations	Work Problems
		Inequalities	Solving Inequalities Using Multiplication and Division
M.O.A1.2.3	evaluate data provided, given a real-world situation, select an appropriate literal equation and solve for a needed variable.	Solving Systems	Problem Solving
		Functions and Linear Equations	Linear Patterns
		Equations	Formulas
		Equations	Work Problems
		Equations	Mixture Problems
		Equations	Rate Problems

M.O.A1.2.4	develop and test hypotheses to derive the laws of exponents and use them to perform operations on expressions with integral exponents.	Variables and Expressions	Expressions with Powers
		Variables and Expressions	Exponents
		Variables and Expressions	Fractional Exponents
		Variables and Expressions	Problem Solving using Exponents and Roots
		Variables and Expressions	Multiplying Monomials
		Variables and Expressions	Dividing Monomials
M.O.A1.2.5	analyze a given set of data and prove the existence of a pattern numerically, algebraically and graphically, write equations from the patterns and make inferences and predictions based on observing the pattern.	Functions and Linear Equations	Writing and Graphing Linear Equations
		Functions and Linear Equations	Arithmetic Sequences
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point Slope Form
		Functions and Linear Equations	Functions
		Functions and Linear Equations	Line of Fit
		Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Linear Patterns
		Exponentials	Geometric Sequences
		Exponentials	Growth and Decay
		Quadratics and Radicals	Quadratic Graphs



M.O.A.1.2.6	determine the slope of a line through a variety of strategies (e.g. given an equation or graph).	Functions and Linear Equations	Writing and Graphing Linear Equations
		Functions and Linear Equations	More about Slope
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point-Slope Form
		Functions and Linear Equations	Forms of Non-Vertical Linear Equations
		Solving Systems	Review of Writing Linear Equations
M.O.A1.2.7	analyze situations and solve problems by determining the equation of a line given a graph of a line, two points on the line, the slope and a point, or the slope and y intercept.	Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point-Slope Form
		Functions and Linear Equations	The Coordinate System
		Functions and Linear Equations	Forms of Non-Vertical Linear Equations
		Functions and Linear Equations	More about Slope
		Solving Systems	Review of Writing Linear Equations
M.O.A1.2.8	extrapolate data represented by graphs, tables and formulas to make inferences and predictions on rate of change (slope) and justify when communicating results within a project based investigation.	Functions and Linear Equations	The Coordinate System
		Solving Systems	Problem Solving

M.O.A1.2.9	create and solve systems of linear equations graphically and numerically using the elimination method and the substitution method, given a real-world situation.	Solving Systems	Problem Solving
		Solving Systems	Solving with Substitution
		Solving Systems	Solving with Elimination
		Solving Systems	Systems of equations
		Solving Systems	Elimination and Multiplication
M.O.A1.2.10	simplify and evaluate algebraic expressions		
M.O.A1.2.10.a	add and subtract polynomials	Polynomials	Addition and Subtraction of Polynomials
M.O.A1.2.10.b	multiply and divide binomials by binomials or monomials	Variables and Expressions	Dividing Monomials
		Variables and Expressions	Multiplying Monomials
		Polynomials	Special Products
		Polynomials	Multiplying Polynomials by a Monomial
		Polynomials	Multiplying Polynomials
		Polynomials	Multiplying Using FOIL
		Rational Expressions	Long Division
M.O.A1.2.11	create polynomials to represent and solve problems from real-world situations while focusing on symbolic and graphical patterns.	Polynomials	Addition and Subtraction of Polynomials
		Polynomials	Polynomials
		Variables and Expressions	Multiplying Monomials
M.O.A1.2.12	use area models and graphical representations to develop and explain appropriate methods of factoring.		
M.O.A1.2.13	simplify radical expressions		

M.O.A1.2.13.a	through adding, subtracting, multiplying and dividing	Quadratics and Radicals	Adding and Subtracting Radical
		Quadratics and Radicals	Simplifying Radicals
		Quadratics and Radicals	Multiplying Radical Expressions
		Quadratics and Radicals	Simplifying Radicals with Variables
		Quadratics and Radicals	Simplifying Radicals Containing Fractions
M.O.A1.2.13.b	exact and approximate forms	Quadratics and Radicals	Simplifying Radicals Containing Fractions
		Quadratics and Radicals	Simplifying Radicals
		Quadratics and Radicals	Simplifying Radicals with Variables
		Variables and Expressions	Roots
M.O.A1.2.14	solve quadratic equations by graphing (with and without technology), factoring, quadratic formula and draw reasonable conclusions about a situation being modeled.	Polynomials	Factoring Other Trinomials
		Polynomials	Solving Equations by Factoring Trinomials
		Quadratics and Radicals	Solving Quadratic Equations with Graphs
		Quadratics and Radicals	Solving by Using Square Roots
		Quadratics and Radicals	The Quadratic Formula
M.O.A1.2.15	describe real life situations involving exponential growth and decay equations including $y=2$ to the x power and $y=(\frac{1}{2})$ to the x power; compare the equation with attributes of an associated table and graph to demonstrate an understanding of their interrelationship.	Exponentials	Graphing Exponential Equations
		Exponentials	Exponential Graphs
		Exponentials	Growth and Decay
M.O.A1.2.16	simplify and evaluate rational expressions		



M.O.A1.2.16.a	add, subtract, multiply and divide	Rational Expressions	Polynomial Long Division
		Rational Expressions	Multiplying Rational Expressions
		Rational Expressions	Adding with Like Denominators
		Rational Expressions	Dividing Rational Expressions
		Rational Expressions	Unlike Denominators
		Rational Expressions	Dividing Polynomials by a Monomial
M.O.A1.2.16.b	determine when an expression is undefined.	Rational Expressions	Simplifying Rational Expressions
		Rational Expressions	Multiplying Rational Expressions
		Rational Expressions	Adding with Like Denominators
		Rational Expressions	Dividing Rational Expressions
		Rational Expressions	Unlike Denominators
		Rational Expressions	Dividing Polynomials by a Monomial
M.O.A1.2.17	perform a linear regression (with and without technology),	Functions and Linear Equations	Line of Fit (without technology)
M.O.A1.2.17.a	compare and evaluate methods of fitting lines to data.		
M.O.A1.2.17.b	identify the equation for the line of regression,	Functions and Linear Equations	Line of Fit
M.O.A1.2.17.c	examine the correlation coefficient to determine how well the line fits the data		
M.O.A1.2.17.d	use the equation to predict specific values of a variable.	Functions and Linear Equations	Line of Fit



M.O.A1.2.18	compute and interpret the expected value of random variables in simple cases using simulations and rules of probability (with and without technology).	Rational Expressions	More about the Multiplication Principle
		Rational Expressions	The Basics of Probability
		Rational Expressions	Using Data to Make Predictions
		Rational Expressions	Counting: An introduction to the Multiplication Principle
M.O.A1.2.19	gather data to create histograms, box plots, scatter plots and normal distribution curves and use them to draw and support conclusions about the data.	Solving Systems	Histograms
		Solving Systems	Analyzing Statistical Data
		Solving Systems	Box Plots
M.O.A1.2.20	design experiments to model and solve problems using the concepts of sample space and probability distribution.		
M.O.A1.2.21	use multiple representations, such as words, graphs, tables of values and equations, to solve practical problems; describe advantages and disadvantages of the use of each representation.	Real Numbers	Estimation
		Real Numbers	Problem Solving
		Quadratics and Radicals	Quadratic Functions
		Quadratics and Radicals	Solving with Graphing
		Quadratics and Radicals	Elimination
		Quadratics and Radicals	Substitution
		Exponentials	Growth and Decay
		Exponentials	Exponential Equations