



Alignment Document

State of Washington And Aventa Learning Algebra 1

Algebra 1 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
1	The student understands and applies the concepts and procedures of mathematics.		
1.1	Understand and apply concepts and procedures from number sense		
0	Number and Numeration		
1.1.1	Demonstrate understanding of the concept and symbolic representation of numbers written in scientific notation.	Polynomials	Computing with Scientific Notation
		Polynomials	Scientific Notation
		Polynomials	From Scientific Notation to Standard Notation
1.1.2	Washington has no indicator for this item at this grade level.		
1.1.3	Washington has no indicator for this item at this grade level.		
1.1.4	Demonstrate understanding of and apply the concepts of both direct and inverse proportion.	Rational Expressions	Indirect Variation
		Functions and Linear Equations	Direct Variation
0	Computation		
1.1.5	Washington has no indicator for this item at this grade level.		

1.1.6	Complete multi-step computations with combinations of rational numbers, including whole number powers and square roots of perfect squares, using order of operations.	Variables and Expressions	Exponents
		Variables and Expressions	Roots
		Variables and Expressions	Expressions with Powers
		Variables and Expressions	Fractional Exponents
		Variables and Expressions	Order of Operations
		Variables and Expressions	Problem Solving using Exponents and Roots
		Real Numbers	Rational Numbers
		Real Numbers	Decimals
		Real Numbers	Fractions
		Real Numbers	Evaluating Expressions
		Real Numbers	Adding Fractions with Real Numbers
		Real Numbers	Division of Rational Numbers
		Real Numbers	Subtracting Fractions with Real Numbers
		Real Numbers	Evaluating Division Expressions
		Exponentials	Exponential Equations
		Quadratics and Radicals	Operations on Radicals
1.1.7	Washington has no indicator for this item at this grade level.		
0	Estimation		
1.1.8	Use estimation to determine the reasonableness of answers in situations involving multi-step computations with rational numbers, including whole number powers and square roots.	Variables and Expressions	Expressions with Powers
		Variables and Expressions	Problem Solving using Exponents and Roots
		Variables and Expressions	Exponents
		Variables and Expressions	Roots

		Variables and Expressions	Fractional Exponents
		Real Numbers	Subtracting Fractions with Real Numbers
		Real Numbers	Rational Numbers
		Real Numbers	Decimals
		Real Numbers	Fractions
		Real Numbers	Evaluating Division Expressions
		Real Numbers	Adding Fractions with Real Numbers
		Real Numbers	Estimation and Problem Solving
		Exponentials	Exponential Equations
1.2	Understand and apply concepts and procedures from measurement		
0	Attributes, Units, and Systems		
1.2.1	Demonstrate understanding of how a change in one linear dimension affects surface area and volume or how changes in two linear dimensions affect perimeter, area, and volume.	Real Numbers	Estimation with Real Numbers
1.2.2	Washington has no indicator for this item at this grade level.		
1.2.3	Demonstrate understanding of how to convert within the US or the metric system to achieve an appropriate level of precision.		
0	Procedures and Estimation		
1.2.4	Washington has no indicator for this item at this grade level.		
1.2.5	Use formulas to determine measurements of prisms or cylinders.	Real Numbers	Problem Solving with Formulas
1.2.6	Identify situations in which estimated measurements are sufficient; use estimation to obtain reasonable measurements at an appropriate level of precision.	Real Numbers	Estimation with Real Numbers
1.3	Understand and Apply Concepts and Procedures from Geometric Sense		
0	Properties and Relationships		
1.3.1	Demonstrate understanding of the relationships among 1-dimensional, 2-dimensional and 3-dimensional shapes and figures.	Real Numbers	Problem Solving with Formulas

1.3.2	Draw, describe, and/or compare 1-dimensional, 2-dimensional and 3-dimensional shapes and figures, including prisms, cylinders, cones, and pyramids.		
0	Locations and Transformations		
1.3.3	Use geometric properties to describe or identify the location of points on coordinate grids.	Functions and Linear Equations	Coordinate Plane
1.3.4	Use multiple transformations, including translations, reflections, and/or rotations, to create congruent figures in any or all of the four quadrants.		
1.4	Understand and Apply Concepts and Procedures from Probability and Statistics		
0	Probability		
1.4.1	Demonstrate understanding of the concepts of dependent and independent events.		
1.4.2	Determine and use probabilities of dependent and independent events.	Rational Expressions	Using Data to Make Predictions
0	Statistics		
1.4.3	Identify possible sources of bias in questions, data collection methods, samples, and/or measures of central tendency for a situation and describe how such bias can be controlled.		
1.4.4	Washington has no indicator for this item at this grade level.		
1.4.5	Draw a reasonable line to describe the data represented by a scatter plot and determine whether a straight line is an appropriate way to describe the trend in the data.	Functions and Linear Equations	Line of Fit
1.4.6	Use statistics to support different points of view and/or evaluate a statistical argument based on data.	Solving Systems	Histograms
		Solving Systems	Analyzing Statistical Data
1.5	Understand and Apply Concepts and Procedures from Algebraic Sense		

0	Patterns and Functions		
1.5.1	Recognize, extend or create a pattern or sequence of pairs of numbers representing a linear function.	Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Linear Patterns
		Functions and Linear Equations	Scatter Plots and Correlation
		Functions and Linear Equations	Line of Fit
1.5.2	Identify or write a rule to describe a pattern, sequence, and/or linear function.	Functions and Linear Equations	Functions
		Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Arithmetic Sequences
		Functions and Linear Equations	Line of Fit
		Functions and Linear Equations	Linear Patterns
		Exponentials	Geometric Sequence Formulas
		Exponentials	Geometric Sequences
0	Symbols and Notations		
1.5.3	Washington has no indicator for this item at this grade level.		
1.5.4	Use variables to write expressions, linear equations, and inequalities that represent situations involving whole number powers and square and cube roots.	Variables and Expressions	Expressions with Powers
		Variables and Expressions	Roots
		Variables and Expressions	Algebraic Expressions
		Variables and Expressions	Multiplying and Dividing Monomials
		Functions and Linear Equations	Writing Linear Equations
		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
		Functions and Linear Equations	Point-Slope Form
		Inequalities	Compound Inequalities
		Inequalities	Solving Inequalities by Addition and Subtraction
		Inequalities	Absolute Value Inequalities
		Inequalities	Solving Inequalities Using Multiplication and Division
		Inequalities	Inequalities in Two Variables
		Inequalities	Multi-Step Inequalities
		Inequalities	Graphing Inequalities in Two Variables
		Equations	Equations with Variables on Each Side
		Equations	Multiplication and Division in Equations
		Equations	Rate Problems
		Equations	Solving Problems
		Equations	Mixture Problems
		Rational Expressions	Simplifying Rational Expressions
		Rational Expressions	Adding, Subtracting, Multiplying and Dividing Rational Expressions
		Polynomials	Addition, Subtraction, Multiplication of Polynomials
0	Evaluating and Solving		
1.5.5	Simplify expressions.	Variables and Expressions	Multiplying and Dividing Integers
		Variables and Expressions	Order of Operations
		Real Numbers	Decimals
		Rational Expressions	Simplifying Rational Expressions
		Rational Expressions	Adding, Subtracting, Multiplying and Dividing Rational Expressions
		Quadratics and Radicals	Simplify Radicals
		Quadratics and Radicals	Add, Subtract, and Multiply Radicals



1.5.6	Solve multi-step equations and systems of equations.	Equations	Equations with Variables on Each Side
		Equations	Formulas as Equations
		Equations	Solving Problems
		Equations	Rate Problems
		Equations	Solving Multi-Step Equations
		Equations	Mixture Problems
		Solving Systems	Systems of equations
		Solving Systems	Problem Solving
		Solving Systems	Problem Solving with Systems
		Solving Systems	Solving with Substitution
		Solving Systems	Solving with Elimination
		Quadratics and Radicals	Solving by Elimination
		Quadratics and Radicals	Solving by Substitution
		Quadratics and Radicals	Solving Radical Equations
		Rational Expressions	Indirect Variation
		Rational Expressions	Solving Rational Equations
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point-Slope Form
		Functions and Linear Equations	Direct Variation
		Polynomials	Solving Equations Using Factoring
		Exponentials	Exponential Equations
2	The student uses mathematics to define and solve problems.		
2.1	Define Problems		
2.1.1	Identify questions to be answered in complex situations.	Equations	Problem Solving
2.1.2	Recognize when information is missing or extraneous.	Equations	Problem Solving
2.1.3	Identify what is known and unknown in complex situations.		
2.2	Construct Solutions		
2.2.1	Select and organize relevant information.	Equations	Problem Solving

2.2.2	Use appropriate concepts and procedures from number sense, measurement, geometric sense, probability and statistics, and algebraic sense.	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
		Real Numbers	Problem Solving
2.2.3	Use a variety of strategies and approaches.	Real Numbers	Problem Solving
		Equations	Equations and Problem Solving
		Equations	Solving Problems
2.2.4	Determine whether a solution is viable, is mathematically correct, and answers the question(s) asked.	Equations	Equations
		Equations	Multi-Step Equations
		Equations	Formulas and Absolute Value
		Equations	Proportions and Percent
		Equations	Rate Problems
		Equations	Mixture Problems
		Equations	Work Problems
3	The student uses mathematical reasoning.		
3.1	Analyze Information		
3.1.1	Interpret, compare, and integrate mathematical information from multiple sources.		
3.2	Conclude		
3.2.1	Draw conclusions and support them using inductive and deductive reasoning.	Variables and Expressions	Inductive Reasoning
		Variables and Expressions	Logical Reasoning
		Variables and Expressions	Deductive Reasoning
3.2.2	Evaluate procedures and make needed revisions.		

3.3	Verify Results		
3.3.1	Justify results using inductive and deductive reasoning.	Variables and Expressions	Deductive Reasoning
		Variables and Expressions	Inductive Reasoning
		Variables and Expressions	Logical Reasoning
		Real Numbers	Writing and Justifying Steps Using Properties
3.3.2	Check for reasonableness of results.	Equations	Equations
		Equations	Multi-Step Equations
		Equations	Formulas and Absolute Value
		Equations	Proportions and Percent
		Equations	Rate Problems
		Equations	Mixture Problems
		Equations	Work Problems
3.3.3	Validate thinking and mathematical ideas using models, known facts, patterns, relationships, counter examples, and/or proportional reasoning.	Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Linear Patterns
		Functions and Linear Equations	Scatter Plots and Correlation
		Functions and Linear Equations	Line of Fit
		Variables and Expressions	Logical Reasoning
		Variables and Expressions	Deductive Reasoning
		Variables and Expressions	Inductive Reasoning
		Equations	Ratio and Proportion
4	The student communicates knowledge and understanding in both everyday and mathematical language.		
4.1	Gather Information		
4.1.1	Develop or select and follow an efficient system for collecting mathematical information for a given purpose.		
4.1.2	Extract mathematical information for a given purpose from multiple, self-selected sources using reading, listening, and/or observation.		

4.2	Organize, Represent, and Share Information		
4.2.1	Organize, clarify, and refine mathematical information relevant to a given purpose.	Functions and Linear Equations	Linear Patterns
		Functions and Linear Equations	Arithmetic Sequences
		Exponentials	Geometric Sequences
4.2.2	Use everyday and mathematical language and notation in appropriate and efficient forms to clearly express or represent complex ideas and information.	Inequalities	Complex Inequalities
		Inequalities	Absolute Value Inequalities
		Equations	Mixture Problems
		Equations	Rate Problems
		Equations	Work Problems
		Functions and Linear Equations	Arithmetic Sequences
		Functions and Linear Equations	Linear Patterns
		Solving Systems	Problem Solving
		Quadratics and Radicals	Quadratic Equations
		Quadratics and Radicals	Radicals
4.2.3	Explain and/or represent complex mathematical ideas and information in ways appropriate for audience and purpose in a context that is relevant to tenth grade students.	Variables and Expressions	Discussion-Volumes
		Functions and Linear Equations	Activity 1--Graphing Inverses
		Functions and Linear Equations	Activity 2--Discovering Parallel and Perpendicular Slopes
		Solving Systems	Activity 1--Graphing and Using a Table to Solve Systems
		Solving Systems	Discussion--Writing and Solving a System



		Real Numbers	Discussion--Sets
		Polynomials	Discussion--Sharing Problems in Factoring
		Quadratics and Radicals	Discussion--Minimum and Maximum
		Rational Expressions	Discussion--Sharing Inverse Variation Problems
5	The student understands how mathematical ideas connect within mathematics, to other subject areas, and to real-world situations.		
5.1	Relate Concepts and Procedures within Mathematics		
5.1.1	Use concepts and procedures from two or more of the mathematics content strands in a given problem or situation.	Solving Systems	Activity 1--Graphing and Using a Table to Solve Systems
5.1.2	Relate and use different mathematical models and representations of the same situations.	Exponentials	Activity--Looking at Growth of Ticket Prices
		Solving Systems	Activity 1--Graphing and Using a Table to Solve Systems
5.2	Relate Mathematical Concepts Procedures to Other Disciplines		
5.2.1	Extend mathematical patterns and ideas and apply mathematical thinking and modeling to other disciplines.	Exponentials	Activity--Looking at Growth of Ticket Prices
		Functions and Linear Equations	Direct Variation
		Rational Expressions	Indirect Variation
5.2.2	Describe examples of contributions to the development of mathematics such as the contributions of women, men, and different cultures.		
5.3	Relate Mathematical Concepts and Procedures to Real-World Situations		
5.3.1	Identify situations in which mathematics can be used to solve problems with local, national, or international implications.		
5.3.2	Investigate the mathematical knowledge and training requirements for occupational/career areas of interest.		