



Alignment Document

State of Alaska And Aventa Learning Algebra 1

Algebra 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
A	A student should understand mathematical facts, concepts, principles, and theories.		
A.1	understand and use numeration		
A.1.a	numbers, number systems, counting numbers, whole numbers, integers, fractions, decimals, and percents	Variables and Expressions	Integers
		Variables and Expressions	Addition of Integers
		Variables and Expressions	Subtraction of Integers
		Variables and Expressions	Multiplying and Dividing Integers
		Equations	Percent of a Number
		Equations	Percent of Change
		Real Numbers	Adding Fractions with Real Numbers
		Real Numbers	Subtracting Fractions with Real Numbers
		Real Numbers	Number Sets
		Real Numbers	Order of Numbers
		Real Numbers	Adding Rational Numbers
		Real Numbers	Subtracting Rational Numbers
		Real Numbers	Multiplying and Dividing Rational Numbers



A.1.b	irrationals and complex numbers	Quadratics and Radicals	Radicals
		Quadratics and Radicals	Operations on Radicals
		Quadratics and Radicals	Solving Radical Equations
A.2	select and use appropriate systems, units, and tools of measurement, including estimation	Real Numbers	Estimation
		Real Numbers	Estimation with Real Numbers
A.3	perform basic arithmetic functions, make reasoned estimates, and select and use appropriate methods or tools for computation or estimation including mental arithmetic, paper and pencil, a calculator, and a computer	Real Numbers	Estimation with Real Numbers
		Real Numbers	Estimation
A.4	represent, analyze, and use mathematical patterns, relations, and functions using methods such as tables, equations, and graphs	Variables and Expressions	Tables and Graphs
		Equations	Solving Multi-Step Equations
		Equations	Rate Problems
		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
		Functions and Linear Equations	Functions
		Functions and Linear Equations	Scatter Plots and Correlation
		Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Line of Fit
		Functions and Linear Equations	Linear Patterns



		Functions and Linear Equations	Direct Variation
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point-Slope Form
		Functions and Linear Equations	Arithmetic Sequences
		Quadratics and Radicals	Graphing Quadratics
		Quadratics and Radicals	Solving Quadratics by Graphing
		Quadratics and Radicals	Solving Quadratics by Factoring
		Quadratics and Radicals	Solving Quadratics by Square Roots
		Quadratics and Radicals	Completing the Square
		Quadratics and Radicals	Solving Radical Equations
		Exponentials	Exponential Equations
		Exponentials	Exponential Graphs
		Exponentials	Growth and Decay
		Exponentials	Geometric Sequences
		Rational Expressions	Indirect Variation
		Rational Expressions	Solving Rational Equations
A.5	construct, draw, measure, transform, compare, visualize, classify, and analyze the relationships among geometric figures	Polynomials	Perimeter, Area, and Volume problems imbedded in Adding, Subtracting and Multiplying Polynomials
		Equations	Equations (Surface Area)
		Equations	Formulas (Area and Volume)
		Variables and Expressions	Exponents and Roots- Problem Solving
A.6	collect, organize, analyze, interpret, represent, and formulate questions about data and make reasonable and useful predictions about the certainty, uncertainty, or impossibility of an event.	Rational Expressions	Probability



B	A student should understand and be able to select and use a variety of problem-solving strategies.		
B.1	use computational methods and appropriate technology as problem-solving tools	Equations	Equations
		Equations	Multi-Step Problems
		Equations	Proportion and Percent
		Equations	Formulas and Absolute Value
		Equations	Work Problems
		Equations	Rate Problems
		Equations	Mixture Problems
		Real Numbers	Problem Solving
		Inequalities	Simple Inequalities
		Inequalities	Multi-Step and Compound Inequalities
		Inequalities	Absolute Value Inequalities
		Quadratics and Radicals	Graphing Quadratics
		Quadratics and Radicals	Solving Quadratics by Graphing
		Quadratics and Radicals	Solving Quadratics by Factoring
		Quadratics and Radicals	Solving Quadratics by Square Roots
		Quadratics and Radicals	Completing the Square
		Quadratics and Radicals	Solving Radical Equations
		Solving Systems	Solving by Graphing
		Solving Systems	Solving by Substitution
		Solving Systems	Solving by Elimination
		Solving Systems	Problem Solving
		Solving Systems	Solving Systems of Inequalities
		Variables and Expressions	Exponents and Roots-Problem Solving
		Exponentials	Exponential Graphs
		Exponentials	Growth and Decay
		Rational Expressions	Indirect Variation
		Rational Expressions	Solving Rational Equations
		Polynomials	Solving by Factoring



		Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Arithmetic Sequences
		Functions and Linear Equations	Linear Patterns
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point-Slope Form
		Functions and Linear Equations	Direct Variation
		Functions and Linear Equations	Line of Fit
B.2	use problem solving to investigate and understand mathematical content	Variables and Expressions	Assignment 1: Commutative Property
		Variables and Expressions	Assignment 2: Associative Property
		Real Numbers	Assignment 3: Writing and Justifying Steps
		Equations	Problem Solving 1-Writing and Solving Equations
		Functions and Linear Equations	Activity 1-Graphing Inverses
		Functions and Linear Equations	Problem Solving 2-Writing and Graphing Linear Equations
		Functions and Linear Equations	Problem Solving 3-Using Slope and Intercept to Graph
		Functions and Linear Equations	Activity 2-Discovering Parallel and Perpendicular Slopes
		Functions and Linear Equations	Activity 3-Scatterplot Activity
		Solving Systems	Activity 1-Graphing and Using a Table to Solve Systems
		Solving Systems	Problem Solving 1-Writing and Solving Systems
		Solving Systems	Problem Solving 2-Linear Programming
		Polynomials	Activity 1-Sieve of Eratosthenes
		Quadratics and Radicals	Discussion-Looking at Maximum and Minimum
		Rational Expressions	Discussion-Sharing Inverse Variation Problems



		Exponentials	Discussion-Comparing Banks
		Exponentials	Activity 1-Looking at Growth in Ticket Prices
B.3	formulate mathematical problems that arise from everyday situations	Variables and Expressions	Discussion-Finding Volumes
		Solving Systems	Discussion-Sharing Problems
		Exponentials	Discussion-Comparing Banks
		Exponentials	Activity 1-Looking at Growth in Ticket Prices
B.4	develop and apply strategies to solve a variety of problems	Equations	Equations
		Equations	Multi-Step Problems
		Equations	Proportion and Percent
		Equations	Formulas and Absolute Value
		Equations	Work Problems
		Equations	Rate Problems
		Equations	Mixture Problems
		Real Numbers	Problem Solving
		Inequalities	Simple Inequalities
		Inequalities	Multi-Step and Compound Inequalities
		Inequalities	Absolute Value Inequalities
		Quadratics and Radicals	Graphing Quadratics
		Quadratics and Radicals	Solving Quadratics by Graphing
		Quadratics and Radicals	Solving Quadratics by Factoring
		Quadratics and Radicals	Solving Quadratics by Square Roots
		Quadratics and Radicals	Completing the Square
		Quadratics and Radicals	Solving Radical Equations
		Solving Systems	Solving by Graphing
		Solving Systems	Solving by Substitution
		Solving Systems	Solving by Elimination
		Solving Systems	Problem Solving
		Solving Systems	Solving Systems of Inequalities
		Variables and Expressions	Exponents and Roots-Problem Solving
		Exponentials	Exponential Graphs
		Exponentials	Growth and Decay
		Rational	Indirect Variation



		Expressions	
		Rational Expressions	Solving Rational Equations
		Polynomials	Solving by Factoring
		Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Arithmetic Sequences
		Functions and Linear Equations	Linear Patterns
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point-Slope Form
		Functions and Linear Equations	Direct Variation
		Functions and Linear Equations	Line of Fit
B.5	check the results against mathematical rules	Real Numbers	Writing and Justifying Steps Using Properties
		Equations	Equations with Variables on Each Side
B.6	use common sense to help interpret results	Variables and Expressions	Deductive Reasoning
		Variables and Expressions	Inductive Reasoning
		Variables and Expressions	Logical Reasoning
B.7	apply what was learned to new situations	Variables and Expressions	Assignment 1: Commutative Property
		Variables and Expressions	Assignment 2: Associative Property
		Variables and Expressions	Exponents and Roots- Problem Solving
		Variables and Expressions	Discussion-Volumes
		Exponentials	Discussion-Comparing Banks
		Exponentials	Activity 1-Looking at Growth in Ticket Prices
		Solving Systems	Activity 1-Graphing and Using a Table to Solve Systems
		Solving Systems	Problem Solving 1-Writing and Solving Systems
		Solving Systems	Problem Solving 2-Linear Programming



		Equations	Problem Solving 1-Writing and Solving Equations
B.8	use mathematics with confidence	Equations	Solving Problems
		Equations	Equations and Problem Solving
		Real Numbers	Problem Solving
C	A student should understand and be able to form and use appropriate methods to define and explain mathematical relationships.		
C.1	express and represent mathematical ideas using oral and written presentations, physical materials, pictures, graphs, charts, and algebraic expressions	Variables and Expressions	Evaluating Expressions
		Variables and Expressions	Exponents and Roots
		Variables and Expressions	Tables and Graphs
		Variables and Expressions	Deductive and Inductive Logic
		Solving Systems	Histograms
		Solving Systems	Box Plots
		Solving Systems	Stem and Leaf Plots
		Solving Systems	Analyzing Statistical Data
		Solving Systems	Activity 1-Graphing and Using a Table to Solve Systems
		Solving Systems	Problem Solving 1-Writing and Solving Systems
		Solving Systems	Problem Solving 2-Linear Programming
		Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Arithmetic Sequences
		Functions and Linear Equations	Linear Patterns
		Functions and Linear Equations	Direct Variation
		Functions and Linear Equations	Line of Fit
		Exponentials	Growth and Decay
		Exponentials	Geometric Sequences
		Quadratics and Radicals	Quadratic Equations and Graphs

C.2	relate mathematical terms to everyday language	Variables and Expressions	Evaluating Expressions
C.3	develop, test, and defend mathematical hypotheses	Real Numbers	Writing and Justifying Steps Using Properties
		Variables and Expressions	Deductive Reasoning
		Variables and Expressions	Inductive Reasoning
		Variables and Expressions	Logical Reasoning
		Equations	Equations with Variables on Each Side
		Equations	Problem Solving 1 Writing and Solving Equations
		Equations	Equations with Variables on Each Side
C.4	clarify mathematical ideas through discussion with others	Variables and Expressions	Discussion-Volumes
		Real Numbers	Discussion-Sets
		Solving Systems	Discussion-Sharing Problems
		Polynomials	Discussion-Sharing Problems in Factoring
		Quadratics and Radicals	Discussion-Looking at Maximum and Minimum
		Rational Expressions	Discussion-Writing an Indirect Variation Problem
		Exponentials	Discussion-Comparing Banks
D	A student should be able to use logic and reason to solve mathematical problems.		
D.1	analyze situations	Variables and Expressions	Inductive Reasoning
		Variables and Expressions	Logical Reasoning
		Variables and Expressions	Deductive Reasoning
D.2	draw logical conclusions	Variables and Expressions	Inductive Reasoning
		Variables and Expressions	Deductive Reasoning
		Variables and Expressions	Logical Reasoning
		Real Numbers	Writing and Justifying Steps with Properties

D.3	use models, known facts, and relationships to explain the student's reasoning	Equations	Equations with Variables on Each Side
		Real Numbers	Writing and Justifying Steps Using Properties
D.4	use deductive reasoning to verify conclusions, judge the validity of arguments, and construct valid arguments	Variables and Expressions	Logical Reasoning
		Variables and Expressions	Deductive Reasoning
		Variables and Expressions	Inductive Reasoning
D.5	use inductive reasoning to recognize patterns and form mathematical propositions	Variables and Expressions	Inductive Reasoning
		Variables and Expressions	Logical Reasoning
		Variables and Expressions	Deductive Reasoning
		Functions and Linear Equations	Number Patterns
		Functions and Linear Equations	Linear Patterns
		Functions and Linear Equations	Arithmetic Sequences
		Functions and Linear Equations	Line of Fit
		Exponentials	Geometric Sequences
E	A student should be able to apply mathematical concepts and processes to situations within and outside of school.		
E.1	explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations	Quadratics and Radicals	Graphing Quadratics
		Quadratics and Radicals	Solving Quadratics by Graphing
		Quadratics and Radicals	Solving Quadratics by Factoring
		Quadratics and Radicals	Solving Quadratics by Square Roots
		Quadratics and Radicals	Completing the Square
		Quadratics and Radicals	Solving Radical Equations



		Exponentials	Exponential Graphs
		Exponentials	Growth and Decay
		Exponentials	Geometric Sequences
		Rational Expressions	Indirect Variation
		Rational Expressions	Solving Rational Equations
		Functions and Linear Equations	Direct Variation
		Functions and Linear Equations	Slope-Intercept Form
		Functions and Linear Equations	Point-Slope Form
		Functions and Linear Equations	Arithmetic Sequences
		Equations	Equations
		Equations	Multi-Step Problems
		Equations	Proportion and Percent
		Equations	Formulas and Absolute Value
		Equations	Work Problems
		Equations	Rate Problems
		Equations	Mixture Problems
		Solving Systems	Activity 1-Graphing and Using a Table to Solve Systems
		Solving Systems	Problem Solving 1-Writing and Solving Systems
		Solving Systems	Problem Solving 2-Linear Programming
E.2	use mathematics in daily life	Variables and Expressions	Variables and Expressions Topic: Discussion-Volumes
		Real Numbers	Discussion-Sets
		Exponentials	Discussion-Comparing Banks
		Exponentials	Activity 1-Looking at Growth in Ticket Prices
E.3	use mathematics in other curriculum areas	Exponentials	Discussion-Comparing Banks
		Exponentials	Activity 1-Looking at Growth in Ticket Prices