AVENTA LEARNING

Alignment Document
State of Hawaii and Aventa Learning Algebra I

Algebra I

2005-2007 Benchmark Blueprint

Strand	Standard	Topic	State Standard Area / Description	Unit Name	Course Topic Description
Numbers and Operations	**AI.1** Understand numbers, ways of representing numbers, relationships among numbers, and number systems	Numbers and Number Systems	**MA.AI.1.1** Recognize situations that can be represented by matrices		
Numbers and Operations	**AI.2** Understand the meaning of operations and how they relate to each other		There are no benchmarks for this standard for this Grade/Course		

Numbers and Operations	**AI.3** Use computational tools and strategies fluently and, when appropriate, use estimation	Computational Fluency	**MA.AI.3.1** Apply arithmetic properties to operate on and simplify expressions that include radicals and other real numbers	Real Numbers	Properties of Closure and Equality
				Real Numbers	Writing and Justifying Steps Using Properties
				Real Numbers	Decimals
				Real Numbers	Using the Properties
				Quadratics and Radicals	Simplifying Radicals with Variables
				Quadratics and Radicals	Multiplying Radical Expressions
				Quadratics and Radicals	Simplifying Radicals
				Quadratics and Radicals	Adding and Subtracting Radical
				Quadratics and Radicals	Simplifying Radicals Containing Fractions
				Variables and Expressions	The Commutative Property
				Variables and Expressions	Order of Operations
				Variables and Expressions	The Distributive Property
				Variables and Expressions	The Associative Property

			MA.AI.3.2 Apply the laws of exponents to perform operations on expressions with integral exponents	Variables and Expressions Variables and Expressions Variables and Expressions Variables and Expressions Exponentials	Problem Solving using Exponents and Roots Fractional Exponents Expressions with Powers Exponents Exponential Equations
			MA.AI.3.3 Use addition, subtraction, and scalar multiplication of matrices to solve problems	Solving Systems Solving Systems Solving Systems	Scalar Multiplication of Matrices Addition of Matrices The Matrix
Measurement	**AI.4** Understand attributes, units, and systems of units in measurement; and develop and use techniques, tools, and formulas for measuring	Measurement Formulas	**MA.AI.4.1** Use formulas, functions, or conversion equations to solve problems dealing with determining a measurement based on another derived or given measurement	Functions and Linear Equations Equations	Functions Distance Formula
Geometry and Spatial Sense	**AI.5** Analyze properties of objects and relationships among the properties		There are no benchmarks for this standard for this Grade/Course.		
Geometry and Spatial Sense	**AI.6** Use transformations and symmetry to analyze mathematical situations		There are no benchmarks for this standard for this Grade/Course.		
Geometry and Spatial Sense	**AI.7** Use visualization and spatial reasoning to solve problems both within and outside of mathematics		There are no benchmarks for this standard for this Grade/Course.		

Geometry and Spatial Sense	**AI.8** Select and use different representational systems, including coordinate geometry	Coordinate Geometry	**MA.AI.8.1** Graph linear equations using slope-intercept, point-slope, and x- and y-intercept techniques	Functions and Linear Equations	Slope-Intercept Form
				Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and Linear Equations	Point-Slope Form
				Functions and Linear Equations	Graphing an Equation Using Points
				Functions and Linear Equations	More about Slope
				Functions and Linear Equations	Forms of Non-Vertical Linear Equations
				Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Quadratics and Radicals	Graphing Quadratic Functions
				Solving Systems	Review of Writing Linear Equations
				Solving Systems	Review of Graphing Linear Equations
			MA.AI.8.2 Determine the slope of a line when given the graph of a line, two points on the line, or the equation of the line	Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and Linear	Graphing an Equation Using

				Equations Functions and Linear Equations Solving Systems	Points More about Slope Review of Graphing Linear Equations
Patterns, Functions, and Algebra	**AI.9** Understand various types of patterns and functional relationships	Patterns	**MA.AI.9.1** Determine if a linear pattern exists in a set of data and represent the data algebraically and graphically	Functions and Linear Equations Functions and Linear Equations Functions and Linear Equations Functions and Linear Equations Functions and Linear Equations Functions and Linear Equations Solving Systems Solving Systems Solving Systems	Graphing an Equation Using Slope and Y-Intercept Line of Fit Graphing an Equation Using Intercepts Scatter Plots and Correlation Graphing an Equation Using Points Linear Patterns Review of Graphing Linear Equations Histograms Analyzing Statistical Data

		Functions	**MA.AI.9.2** Compare and contrast the concepts of direct and inverse variation of a relation	Functions and Linear Equations	Direct Variation
				Rational Expressions	Inverse Variation
				Rational Expressions	Problem Solving
			MA.AI.9.3 Determine the zeros of a linear or quadratic function algebraically and graphically	Functions and Linear Equations	Graphing an Equation Using Points
				Functions and Linear Equations	Graphing an Equation Using Intercepts
				Quadratics and Radicals	Graphing Quadratics
				Quadratics and Radicals	Graphing Quadratic Functions
				Solving Systems	Review of Graphing Linear Equations
			MA.AI.9.4 Compare and contrast the properties of linear functions and exponential functions		

Patterns, Functions, and Algebra	**AI.10** Use symbolic forms to represent, model, and analyze mathematical situations	Numeric and Algebraic Representations	**MA.AI.10.1** Solve linear equations and inequalities in one variable using a variety of strategies (e.g., algebraically, by graphing, by using a graphing calculator)	Functions and Linear Equations	Slope-Intercept Form
				Functions and Linear Equations	Linear Patterns
				Functions and Linear Equations	Writing Linear Equations
				Equations	Multiplication and Division in Equations
				Equations	Equations with Variables on Each Side
				Equations	Addition and Subtraction in Equations
				Equations	Parentheses in Equations
				Equations	Solving Multi-Step Equations
				Equations	Formulas as Equations
				Equations	Solving Problems
				Equations	Mixture Problems
				Solving Systems	Review of Graphing 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
				Inequalities	Multi-Step Inequalities
			MA.AI.10.2 Translate between verbal mathematical situations and algebraic expressions and equations	Variables and Expressions	Algebraic Expressions
				Variables and Expressions	Expressions with Powers
				Equations	Equations
			MA.AI.10.3 Justify the steps used in simplifying expressions and solving equations and inequalities	Variables and Expressions	Multiplying and Dividing Integers
				Variables and Expressions	Order of Operations
				Real Numbers	Decimals
			MA.AI.10.4 Determine the equation of a line when given the graph of the line, the slope and a point on the line, or two points on the line	Functions and Linear Equations	More about Slope
				Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and Linear Equations	Graphing an Equation Using Points

				Solving Systems	Review of Graphing Linear Equations
			MA.AI.10.5 Solve systems of two linear equations in two variables algebraically and graphically	Solving Systems	Problem Solving with Systems
				Solving Systems	Problem Solving
				Solving Systems	Solving with Substitution
				Solving Systems	Systems of equations
				Solving Systems	Solving with Elimination
				Equations	Rate Problems
			MA.AI.10.6 Factor first- and second-degree binomials and trinomials in one or two variables	Polynomials	Factoring Perfect Square Trinomials
				Polynomials	Factoring with the GCF
				Polynomials	Difference of Two Squares
				Polynomials	Factoring Other Trinomials
				Polynomials	Factoring Simple Trinomials
			MA.AI.10.7 Solve quadratic equations in one variable algebraically, graphically, or by using graphing technology	Polynomials	Factoring Other Trinomials
				Quadratics and Radicals	The Quadratic Formula
				Quadratics and Radicals	Solving by Using Square Roots
				Quadratics and Radicals	Solving Quadratic Equations with Graphs

				Polynomials	Solving Equations by Factoring Trinomials
			MA.AI.10.8 Select and use a variety of strategies (e.g., concrete objects, pictorial representations, algebraic manipulation) to perform operations on polynomials	Polynomials	Addition and Subtraction of Polynomials
				Polynomials	Multiplying Polynomials by a Monomial
				Polynomials	Multiplying Using FOIL
				Polynomials	Special Products
				Variables and Expressions	Multiplying Monomials
			MA.AI.10.9 Analyze transformations of lines and understand how the transformation are represented in equations	Functions and Linear Equations	Graphing an Equation Using Intercepts
				Functions and Linear Equations	Graphing an Equation Using Points
				Functions and Linear Equations	Functions
				Functions and Linear Equations	Graphing an Equation Using Slope and Y-Intercept
				Solving Systems	Review of Graphing Linear Equations

Data Analysis, Statistics, and Probability	**AI.11** Pose questions and collect, organize, and represent data to answer those questions		There are no benchmarks for this standard for this Grade/Course.		
Data Analysis, Statistics, and Probability	**AI.12** Interpret data using methods of exploratory data analysis	Data Interpretation	**MA.AI.12.1** Compare data sets using statistical techniques (e.g., measures of central tendency, standard deviation, range, stem-and-leaf plots, and box-and-whisker graphs) **MA.AI.12.2** Display bivariate data in a scatter plot, describe its shape, and determine the line of best fit that models a trend (if a trend exists)	Variables and Expressions Solving Systems Solving Systems Solving Systems Functions and Linear Equations	Stem and Leaf Plots Analyzing Statistical Data Analyzing Statistical Data Histograms Line of Fit
Data Analysis, Statistics, and Probability	**AI.13** Develop and evaluate inferences, predictions, and arguments that are based on data		There are no benchmarks for this standard for this Grade/Course.		
Data Analysis, Statistics, and Probability	**AI.14** Understand and apply basic notions of chance and probability		There are no benchmarks for this standard for this Grade/Course.		