AVENTA LEARNING

Alignment Document
State of Hawaii and Aventa Learning Pre-Algebra

Pre-Algebra
2005-2007 Benchmark Blueprint

Strand	Standard	Topic	Benchmark	Unit Name	Course Topic Description
Numbers and Operations	**PA.1** Understand numbers, ways of representing numbers, relationships among numbers, and number systems	Numbers and Number Systems	**MA.PA.1.1** Identify situations represented by square roots and cube roots **MA.PA.1.2** Compare and order rational numbers and square roots **MA.PA.1.3** Use ratios and proportions to represent the relationship between two quantities	Geometric Concepts	Proportions
Numbers and Operations	**PA.2** Understand the meaning of operations and how they relate to each other	Operations	**MA.PA.2.1** Apply the order of operations when calculating with rational numbers **MA.PA.2.2** Demonstrate the inverse relationship between square numbers and square roots, and cubes and cubed roots	Basics	Integer Math
Numbers and Operations	**PA.3** Use computational tools and strategies fluently and, when appropriate, use estimation	Computational Fluency Estimation	**MA.PA.3.1** Add, subtract, multiply, and divide numbers with whole number exponents **MA.PA.3.2** Estimate a reasonable range (i.e., upper and lower limit) for the solution to a problem	Basics Fractions	Exponents Negative Exponents

			MA.PA.3.3 Explain that rounding answers in certain real-world situations may lead to major problems	Number Basics Basic Geometry	Significant Figures Geometric Formulas
Measurement	**PA.4** Understand attributes, units, and systems of units in measurement; and develop and use techniques, tools, and formulas for measuring	Measurement Attributes and Units	**MA.PA.4.1** Select and use appropriate units to measure the surface area and volume of solids	Basic Geometry Basic Geometry	Geometric Formulas Three Dimensional Measurements
		Measurement Tools and Techniques	**MA.PA.4.2** Express rates of change as a ratio of two different measures, where units are included in the ratio, and use the derived rate to solve problems	Geometric Concepts and Proportions	Proportions
		Measurement Formulas	**MA.PA.4.3** Use ratios and proportions to solve measurement problems	Geometric Concepts and Proportions	Proportions
			MA.PA.4.4 Use formulas to determine the surface area and volume of selected prisms, cylinders, and pyramids	Basic Geometry	Three-Dimensional Measurements
			MA.PA.4.5 Use the right triangle relationships (e.g., trigonometric ratios: cosine, sine, and tangent) to solve problems		
Geometry and Spatial Sense	**PA.5** Analyze properties of objects and relationships among the properties	Geometric Shapes and Their Properties and Relationships	**MA.PA.5.1** Apply the Pythagorean theorem to solve problems involving right triangles	Basic Geometry	Geometric Formulas
			MA.PA.5.2 Evaluate conjectures about classes of two- and three-dimensional shapes/objects	Basic Geometry	Three-Dimensional Measurements
Geometry and Spatial Sense	**PA.6** Use transformations and symmetry to analyze mathematical situations	Transformation	**MA.PA.6.1** Perform a transformation (reflection, rotation, translation) when given a figure and necessary parameters	Geometric Concepts and Proportions	Geometric Concepts
			MA.PA.6.2 Describe the size, position, and orientation of shapes under transformations and compositions of transformations	Geometric Concepts and Proportions	Geometric Concepts

			MA.PA.6.3 Describe three-dimensional shapes that are formed by rotating two-dimensional figures about an axis	Geometric Concepts and Proportions	Geometric Concepts
Geometry and Spatial Sense	**PA.7** Use visualization and spatial reasoning to solve problems both within and outside of mathematics	Visualization and Spatial Reasoning	**MA.PA.7.1** Use two-dimensional representations of pyramids, prisms, and cylinders to solve problems involving these figures	Basic Geometry	Three-Dimensional Measurements
Geometry and Spatial Sense	**PA.8** Select and use different representational systems, including coordinate geometry	Coordinate Geometry	**MA.PA.8.1** Use coordinate geometry to represent transformations in the coordinate plane	Geometric Concepts and Proportions	Geometric Concepts
Patterns, Functions, and Algebra	**PA.9** Understand various types of patterns and functional relationships	Patterns	**MA.PA.9.1** Represent a variety of patterns (including recursive patterns) with tables, graphs (including graphing technology when available), words, and when possible, symbolic rules	Word Problems	Strategies
		Functions	**MA.PA.9.2** Use linear relationships with two variables to solve problems	Equations	Linear Equations
			MA.PA.9.3 Identify functions as linear or nonlinear and contrast their properties from tables, graphs (including graphing technology when available), or equations	Equations	Linear Equations
Patterns, Functions, and Algebra	**PA.10** Use symbolic forms to represent, model, and analyze mathematical situations	Numeric and Algebraic Representations	**MA.PA.10.1** Translate among tables, graphs (including graphing technology when available), and equations involving linear relationships	Equations	Linear Equations
			MA.PA.10.2 Solve linear equations and inequalities with two variables using algebraic methods, manipulatives, or models	Equations	Linear Equations
			MA.PA.10.3 Use tables and graphs to represent and compare linear relationships	Equations	Linear Equations

		Rates of Change	**MA.PA.10.4** Use the slope of a line to describe a constant rate of change	Equations	Linear Equations
Data Analysis, Statistics, and Probability	**PA.11** Pose questions and collect, organize, and represent data to answer those questions	Data Collection and Representation	**MA.PA.11.1** Design a study that compares two samples, collect data, and select the appropriate representation (double bar graph, back-to-back stem and leaf plot, parallel box and whisker plots, scatter plot) to compare the sets of data **MA.PA.11.2** Judge the validity of data based on the data collection method	Probability and Data Analysis Probability and Data Analysis	Probability Data Analysis Projects
Data Analysis, Statistics, and Probability	**PA.12** Interpret data using methods of exploratory data analysis	Data Interpretation	**MA.PA.12.1** Recognize situations appropriate for scatter plots **MA.PA.12.2** Analyze different representations of the same data to describe how representations can be used to skew a person's interpretation of the data	Probability and Data Analysis Probability and Data Analysis	Probability Probability
Data Analysis, Statistics, and Probability	**PA.13** Develop and evaluate inferences, predictions, and arguments that are based on data	Predictions and Inferences	**MA.PA.13.1** Make conjectures about possible relationships between two characteristics of a sample based on interpretations of scatter plots	Probability and Data Analysis	Probability
Data Analysis, Statistics, and Probability	**PA.14** Understand and apply basic notions of chance and probability	Probability	**MA.PA.14.1** Judge the validity of conjectures that are based on experiments or simulations **MA.PA.14.2** Calculate probabilities for simple events under different relationships (e.g., inclusion, disjoint, complementary, independent, dependent, with replacement, without replacement) **MA.PA.14.3** Use the Fundamental Counting Principle to calculate combinations and permutations	Probability and Data Analysis	Probability