



Alignment Document
State of Nebraska and Aventa Learning Pre-Algebra

Pre-Algebra
2005-2007 Benchmark Blueprint

Strand	Standards	Benchmarks	Unit Name	Course Topic Description
12.1 Numeration/Number Sense	12.1.1 Describe and compare the relationships between subsets of real numbers.	12.1.1.A Draw Venn diagrams including, but not limited to, natural, whole, integers, rational, irrational, and real numbers.	Basics	Integer Math
		12.1.1.B Find intersection and union of two sets of numbers.	Basics	Integer Math
		12.1.1.C Given a number, identify which subsets it belongs.	Basics	Integer Math
		12.1.1.D Justify why a number does not belong to a specific set.	Basics	Integer Math
	12.1.2 Express the equivalent forms of numbers using exponents, radicals, scientific notation, absolute values, fractions, decimals, and percents.		Basics	Exponents
			Basics	Absolute Values
			Decimals and Percents	Decimals and Percents
		Polynomials	Evaluating Polynomials	
		Fractions	Fraction Basics	
12.2 Computation/Estimation	12.2.1 Solve theoretical and applied problems using numbers in equivalent forms, radicals, exponents, scientific notation, absolute values, fractions, decimals, and percents, ratios and		Fractions	Adding and Subtracting
			Fractions	Fraction Basics
			Basics	Exponents

	proportions, order of operations, and properties of real numbers.		Basics Basics Decimals and Percents Geometry Concepts Number Basics Number Basics	Absolute Values Integer Math Decimals and Percents Proportions Number Properties Rounding, Significant
	12.2.2 Justify solutions to mathematical problems.	12.2.2.A Write an explanation based on the context of the problem stating why the solution is reasonable.	Word Problems Word Problems	Strategies Translating English to Math
	12.2.3 Perform estimations and computations of real numbers mentally, with paper and pencil, and with technology.		Basics	Integer Math
12.3 Measurement	12.3.1 Select and use measuring units, tools, and/or technology and explain the degree of accuracy and precision of measurements.	12.3.1.A Explain the accuracy of the measurement.	Basic Geometry Basic Geometry Word Problems	Geometric Formulas Three Dimensional Measurements Strategies
		12.3.1.B Explain the precision of the measurement tool.	Word Problems	Strategies
	12.3.2 Convert between metric and standard units of measurement, given conversion factors.	12.3.2.A Change yards to meters.	Measurements	Metric and English Systems
		12.3.2.B Change miles/hours to meters/second.	Measurements	Metric and English Systems
12.4 Geometry/Spatial Concepts	12.4.1 Calculate perimeter and area of two-dimensional shapes and surface area and volume of three-dimensional shapes.		Basic Geometry	Geometric Formulas
	12.4.2 Create geometric models to	12.4.2.A Create perspective drawing.	Geometric Formulas	Basic Geometric Concepts

	describe the physical world.	12.4.2.B Create scale models.	Geometry Concepts Geometry Concepts	Proportion Basic Geometric Concepts
12.4.3 Evaluate characteristics and properties of two- and three-dimensional geometric shapes.		12.4.3.A Classify and compare attributes of two- and three-dimensional shapes.	Basic Geometry	Three Dimensional Measurements
			Basic Geometry	Geometric Formulas
			Geometry Concepts	Basic Geometric Concepts
		12.4.3.B Classify shapes in terms of congruence and similarity and apply these relationships.	Basic Geometry	Geometric Formulas
		12.4.3.C Determine the effects of changing dimensions on perimeter, area, and volume.	Factoring and Geometric Formulas	Geometric Formulas
12.4.3.D Investigate and deduce geometric properties using transformations such as translations, rotations, and reflections.		Geometric Concepts	Translations	
		Geometric Concepts	Rotations	
		Geometric Concepts	Reflections	
12.4.4 Apply coordinate geometry to locate and describe objects algebraically.		12.4.4.A Graph a geometric shape and determine the slope of the sides.	Equations	Linear Equations
		12.4.4.B Identify the missing vertices of a polygon.	Basic Geometry	Three Dimensional Measurements
12.4.5 Apply right triangle trigonometry to find length and angle measures.			Basic Geometry	Geometric Formulas
12.4.6 Apply geometric properties to solve problems.		12.4.6.A Find missing angles and lengths of geometric shapes using geometric properties. (Properties may include, but are not limited to, similarity, parallel and line-transversal).	Basic Geometry	Geometric Formulas
			Geometric Concepts	Basic Geometric Concepts
12.4.7 Apply deductive reasoning to arrive at a conclusion.		12.4.7.A Justify steps when solving an algebraic equation using properties of real numbers.	Word Problems	Strategies
			Equation	Solving Simple Equations
		12.4.7.B Use logic statements, paragraph	Word Problems	Strategies

		proof, two-column proof, or algebraic proof to arrive at a conclusion.	Word Problems	Translating English to Math
12.5 Data Analysis, Probability, and Statistical Concepts	12.5.1 Select a sampling technique to gather data, analyze the resulting data, and make inferences.	12.5.1.A Justify the chosen sampling techniques.	Probability and Data Analysis	Data Analysis Projects
		12.5.1.B Use technology to analyze the data.	Probability and Data Analysis	Data Analysis Projects
	12.5.2 Write equations and make predictions from sets of data.	12.5.2.A Display data in a scatter plot, describe its shape, and estimate how close the data comes to fitting an equation.	Probability and Data Analysis	Data Analysis Projects
			Equations	Solving Simple Equations
		12.5.2.B Relate the slope of a regression line to the rate of change for the data set.	Probability and Data Analysis	Data Analysis Projects
			Equations	Solving Simple Equations
		12.5.2.C Determine what the y-intercept or beginning value indicates about the data.	Probability and Data Analysis	Data Analysis Projects
	12.5.2.D Determine the validity of predictions made from regression equations.	Equations	Solving Simple Equations	
		Equations	Linear Equations	
	12.5.3 Apply theoretical probability to represent problems and make decisions.	12.5.3.A Explain the likelihood of the next event based on theoretical probabilities.	Probability and Data Analysis	Probability
12.5.4 Evaluate how transformations on data affect the measures of central tendency and variability.	12.5.4.A Describe how adding the same amount to each score changes the mean, median, mode, range, outliers, interquartile points, maximum, and minimum.	Probability and Data Analysis	Data Analysis Projects	
		Probability and Data Analysis	Probability	
12.5.4.B Describe how dropping an outlier changes the other measures.	Probability and Data Analysis	Data Analysis Projects		
	12.5.5 Interpret data represented by the normal distribution and	12.5.5.A Sketch a normal or bell curve, label one and two standard deviations	Probability and Data Analysis	Probability

	formulate conclusions.	from the mean and fill in approximate percents associated with the deviations.	Probability and Data Analysis	Data Analysis Projects
		12.5.5.B Determine factors that will produce a curve that is not normal.	Probability and Data Analysis	Probability
			Probability and Data Analysis	Data Analysis Projects
		12.5.5.C Describe how sample size is related to a normal curve.	Probability and Data Analysis	Probability
		Probability and Data Analysis	Data Analysis Projects	
		12.5.5.D Determine position or rank relative to others in a normally distributed group given the standard deviation and mean.	Probability and Data Analysis	Data Analysis Projects
	12.5.6 Calculate probabilities of independent events.	12.5.6.A Calculate probabilities using the fundamental counting principle and permutations.	Probability and Data Analysis	Probability
			Probability and Data Analysis	Data Analysis Projects
12.6 Algebraic Concepts	12.6.1 Graph and interpret algebraic relations and inequalities.	12.6.1.A Describe a graph by identifying intercepts, slopes, maximum, minimum, increasing, decreasing, parallel, and perpendicular.	Equations	Linear Equations
			Equations	Solving Simple Equations
		12.6.1.B Use families of curves to describe the effect of changing coefficients of an equation.	Equations	Solving Simple Equations
	12.6.2 Solve problems involving equations and inequalities.	12.6.2.A Use appropriate methods to solve linear and quadratic equations.	Equations	Linear Equations
			Equations	Solving Simple Equations
	12.6.3 Solve problems involving systems of two equations, and systems of two or more inequalities.	12.6.3.A Solve systems by graphing, substitution, elimination, or matrices.	Equations	Linear Equations
			Equations	Solving Simple Equations
	12.6.4 Solve problems using	12.6.4.A Apply direct and indirect	Equations	Solving Simple Equations



	patterns and functions.	variations.		
		12.6.4.B Recognize the properties of families of functions.	Equations	Solving Simple Equations
		12.6.4.C Recognize patterns of exponential growth and decay and their significance to real-life situations.	Word Problems	Strategies
			Basics	Exponents
	Geometric Concepts	Arithmetic Sequence		
		12.6.4.D Represent a problem in multiple formats (words, tables, graphs, and symbols).	Equations	Linear Equations
			Equations	Solving Simple Equations
			Word Problems	Strategies
			Probability and Data Analysis	Data Analysis Projects