



Pre-Algebra

Standards	Benchmarks	Unit Name	Course Topic Description
1 Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.	1.1 recognizes and formulates problems from situations within and outside mathematics and applies solution strategies to those problems.	Word Problems	Strategies
	1.2 select, apply, and evaluate appropriate estimation strategies throughout the problem-solving process.	Word Problems	Strategies
	1.3 formulates definitions, make and justify inferences, express generalizations, and communicate mathematical ideas and relationships.	Word Problems	Strategies
	1.4 applies and translates among different representations of the same problem situation or of the same mathematical concept. Model connections between problem situations that arise in disciplines other than mathematics.	Word Problems	Strategies Problem Solving
	1.5 Select and use appropriate technology to enhance mathematical understanding. Appropriate technology may include, but is not limited to, paper and pencil, calculator, computer, and data collection devices.	Word Problems	Strategies
2 Students demonstrate understanding of and an ability to use numbers and operations.	2.1 use and understand the real number system, its operations, notations, and the various subsystems.	Basics	Integer Math
	2.2 use definitions and basic operations of the complex number system.	Number Basics	Number Properties
3 Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.	3.1 use algebra to represent patterns of change.	Equations	Solving Simple Equations
	3.2 use basic operations with algebraic expressions.	Equations	Solving Simple Equations
	3.3 solve algebraic equations and inequalities: linear, quadratic, exponential, logarithmic, and power.	Equations	Linear Equations Inequalities Quadratic



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		Polynomials	Evaluating Polynomials
	3.4 solve systems of algebraic equations and inequalities, including use of matrices.	Equations	Solving Simple Equations
			Inequalities
	3.5 use algebraic models to solve mathematical and real-world problems.	Equations	Solving Simple Equations
Word Problem		Strategies	
4 Students demonstrate understanding of shape and an ability to use geometry.	4.1 construct, interpret, and draw three-dimensional objects.	Geometry Basics	Factoring and Geometric Formulas
	4.2 classify figures in terms of congruence and similarity and apply these relationships.	Geometry Basics	Factoring and Geometric Formulas
	4.3 translate between synthetic and coordinate representations.	Geometry Concepts	Overview
	4.4 deduce properties of figures using transformations, coordinates, and vectors in problem solving.	Geometry Concepts	Transformation
			Overview
4.5 apply trigonometric ratios (sine, cosine and tangent) to problem situations involving triangles.	Geometry Basics	Factoring and Geometric Formulas	
5 Students demonstrate understanding of measurable attributes and an ability to use measurement processes.	5.1 apply concepts of indirect measurements (e.g., using similar triangles to calculate a distance).	Geometry Basics	Factoring and Geometric Formulas
	5.2 use dimensional analysis to check reasonableness of procedures.	Geometry Concepts	Overview
		Geometry Basics	Factoring and Geometric Formulas
	5.3 investigate systems of derived measures (e.g., km/sec, g/cm ³).	Geometry Basics	Overview
		Measurement	Unit Conversion
	5.4 apply the appropriate concepts of estimates in measurement, error in measurement, tolerance, and precision.	Measurement	Overview
Geometric Basics		Overview	
6 The students demonstrate understanding of and an ability to use data analysis, probability,	6.1 use curve fitting to make predictions from data.	Probability and Data Analysis	Data Analysis Projects
	6.2 apply measures of central tendency and demonstrate understanding of the concepts of	Probability and Data Analysis	Data Analysis Projects
			Probability



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and statistics.	variability and correlation.	Probability and Data Analysis	Data Analysis Projects Probability
	6.3 select an appropriate sampling method for a given statistical analysis.	Probability and Data Analysis	Probability
	6.4 use experimental probability, theoretical probability, and simulation methods to represent and solve problems, including expected values.	Probability and Data Analysis	Probability
	6.5 design a statistical experiment to study a problem and communicate the outcomes.	Probability and Data Analysis	Probability
	6.6 describe, in general terms, the normal curve and use its properties to answer questions about sets of data that are assumed to be normally distributed.	Probability and Data Analysis	Data Analysis Projects
7 Students demonstrate understanding of and an ability to use patterns, relations and functions.	7.1 describe functions and their inverses using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.	Equations	Graph Lines and Inequalities Solving Simple Equations Linear Equations
		Polynomials	Exponents Evaluating Polynomials
			Number Basics
	7.3 analyze the effects of parameter changes on the graphs of functions and relations, including translations.	Equations	Graph Lines and Inequalities
		Geometry Concepts	Translations
	7.4 model real-world phenomena with a variety of functions.	Word Problems	Strategies
	7.5 use graphing for parametric equations, three-dimensional equations, and recursive relations.	Equations	Solving Multi-Steps Equations
			Graph Lines and Inequalities