



Alignment Document

State of Tennessee And Aventa Learning Pre-Algebra

Pre-Algebra 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
0	Foundations I		
1.0	Students will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically and to compute fluently and make reasonable estimates in problem solving.	Basics	Integer Math
		Fractions	Addition and Subtraction
		Decimals and Percents	Decimals
		Decimals and Percents	Percents
		Number Basics	Significant Digits
		Equations	Introduction
		Equations	Solving Simple Linear Equations
1.1	demonstrate an understanding of the subsets, elements, properties, and operations of the rational number system;	Basics	Integer Math
		Fractions	Fraction Basics
		Fractions	Multiplying and Dividing
		Fractions	Adding and Subtracting
		Decimals and Percents	Decimals
		Decimals and Percents	Percents
		Number Basics	Number properties

1.2	connect physical, graphical, verbal, and symbolic representations of rational numbers;		
1.3	order and compare rational numbers;	Basics	Integer Math
		Basics	Absolute Value
1.4	informally describe and model the concept of additive and multiplicative inverses (e.g., opposites, reciprocals) in real life problem situations;		
1.5	apply number theory concepts (e.g., primes, composites, factors, divisibility, and multiples) in mathematical problem situations;	Basics	Factors
1.6	use rational numbers to represent real-world applications (e.g., probability, proportionality);	Probability and Data Analysis	Probability
		Probability and Data Analysis	Data Analysis Projects
1.7	use mathematical notations appropriately;	Probability and Data Analysis	Data Analysis Projects
1.8	select and apply an appropriate method (i.e., mental arithmetic, paper and pencil, or technology) for computing with rational numbers, and evaluate the reasonableness of results;		
1.9	apply estimation strategies in computation and in problem solving.		
2.0	Students will describe, extend, analyze, and create a wide variety of patterns and solve real-world problems using appropriate representations.		
2.1	recognize, extend, and create geometric, spatial, and numerical patterns;		

2.2	solve problems in number theory, geometry, probability and statistics, and measurement and estimation using algebraic thinking;	Probability and Data Analysis	Probability
		Probability and Data Analysis	Data Analysis Projects
2.3	communicate the meaning of variables in algebraic expressions and equations;	Polynomials	Evaluating Polynomials
		Polynomials	Adding and Subtracting
		Polynomials	Multiplying
		Factoring and Geometric Formulas	Factoring
		Equations	Solving Simple Equations
		Equations	Linear Equations
2.4	apply the concept of variable in simplifying algebraic expressions and solving equations;	Polynomials	Evaluating Polynomials
		Polynomials	Adding and Subtracting
		Polynomials	Multiplying
		Factoring and Geometric Formulas	Factoring
		Equations	Solving Simple Equations
		Equations	Linear Equations
2.5	interpret graphs that depict real-world phenomena;	Probability and Data Analysis	Probability
2.6	model real-world phenomena using graphs.	Probability and Data Analysis	Probability
3.0	Students will investigate, model, and apply geometric properties and relationships.		
3.1	apply geometric properties, formulas, and relationships to solve real-world problems;		
3.2	communicate position using spatial sense with two-dimensional coordinate systems;	Equations	Linear Equations

3.3	demonstrate an understanding of the properties and construction of geometric figures, including angles, parallel lines, perpendicular lines, triangles, circles, and quadrilaterals;	Factoring and Geometric Formulas	Geometric Formulas
4.0	Students will become familiar with the units and processes of measurement in order to use various tools, techniques, and formulas to determine and estimate measurements in problem solving.		
4.1	apply appropriate techniques, tools, and formulas to determine measurements;	Factoring and Geometric Formulas	Geometric Formulas
4.2	communicate the concepts and strategies being to estimate measurements;		
4.3	apply measurement concepts and relationships in geometric problem-solving situations.		
5.0	Students will understand and apply basic statistical and probability concepts in order to organize and analyze data and to make predictions.		
5.1	choose, construct, and analyze appropriate graphical representations for a data set including pie charts, histograms, stem and leaf plots, and scatterplots;	Probability and Data Analysis	Probability
5.2	interpret a set of data using the appropriate measure of central tendency (mean, median, mode);	Probability and Data Analysis	Probability
		Probability and Data Analysis	Data Analysis Projects
5.3	determine experimental and theoretical probabilities for simple experiments.		

0	Foundations II		
1.0	Students will recognize, represent, model, and apply real numbers and operations verbally, physically, symbolically, and graphically and will compute fluently and make reasonable estimates in problem solving.	Basics	Integer Math
		Fractions	Addition and Subtraction
		Decimals and Percents	Decimals
		Decimals and Percents	Percents
		Number Basics	Significant Digits
		Equations	Introduction
		Equations	Solving Simple Linear Equations
1.1	demonstrate an understanding of the subsets, elements, properties, and operations of the real number system;	Number Basics	Number properties
1.2	demonstrate an understanding of the relative size of rational and irrational numbers;	Number Basics	Rounding
		Number Basics	Significant Digits
1.3	connect physical, graphical, verbal, and symbolic representations of real numbers;		
1.4	informally describe and model the concept of inverse (e.g., opposites, reciprocals, and squares and square roots);	Equations	Solving Simple Equations
		Factoring and Geometric Formulas	Geometric Formulas
1.5	demonstrate an understanding of division involving zero;		
1.6	describe, model, and apply inverse operations;	Equations	Solving Simple Equations
1.7	apply number theory concepts (e.g., primes, factors, divisibility and multiples) in mathematical problem situations;	Factors	Basics

1.8	connect physical, graphical, verbal, and symbolic representations of absolute value;	Absolute Value	Basics
1.9	use real numbers to represent real-world applications (e.g., rate of change, probability, and proportionality);	Data Analysis Projects	Probability and Data Analysis
		Probability	Probability and Data Analysis
1.10	select and apply an appropriate method (i.e., mental arithmetic, paper and pencil, or technology) for computing with real numbers, and evaluate the reasonableness of results;	Fractions	Addition and Subtraction
		Decimals and Percents	Decimals
		Decimals and Percents	Percents
		Number Basics	Significant Digits
		Equations	Introduction
		Equations	Solving Simple Linear Equations
1.11	communicate the concepts and strategies being used in estimation and computation;	Fractions	Addition and Subtraction
		Decimals and Percents	Decimals
		Decimals and Percents	Percents
		Number Basics	Significant Digits
		Equations	Introduction
		Equations	Solving Simple Linear Equations
1.12	perform operations on simple algebraic expressions, and informally justify the procedures chosen;	Polynomials	Evaluating Polynomials
		Polynomials	Adding and Subtracting
		Polynomials	Multiplying
1.13	use estimation to make predictions and determine reasonableness of computational results;		



1.14	use mathematical notations appropriately.	Fractions	Addition and Subtraction
		Decimals and Percents	Decimals
		Decimals and Percents	Percents
		Number Basics	Significant Digits
		Equations	Introduction
		Equations	Solving Simple Linear Equations
2.0	Students will describe, extend, analyze, and create a wide variety of patterns and solve real-world problems using appropriate materials and representations.		
2.1	recognize, extend, and create geometric, spatial, and numerical patterns;		
2.2	analyze mathematical patterns related to algebra and geometry in real-world problem solving;		
2.3	solve problems in number theory, geometry, probability and statistics, and measurement and estimation using algebraic thinking and symbolism (attention given to solving linear equations);	Probability	Probability and Data Analysis
		Data Analysis Projects	Probability and Data Analysis
		Equations	Solving Simple Equations
		Equations	Linear Equations
2.4	communicate the meaning of variables in algebraic expressions, equations, and inequalities;	Polynomials	Definitions
2.5	interpret the results of algebraic procedures;	Translating English to Math	Word Problems



2.6	apply the concept of variable in simplifying algebraic expressions, solving equations, and solving inequalities;	Polynomials	Evaluating Polynomials
		Polynomials	Adding and Subtracting
		Polynomials	Multiplying
		Equations	Solving Simple Equations
		Equations	Linear Equations
2.7	interpret graphs that depict real-world phenomena;	Probability and Data Analysis	Probability
2.8	model real-world phenomena using graphs.	Probability and Data Analysis	Probability
3.0	Students will investigate, model, and apply geometric properties and relationships.		
3.1	analyze relationships among corresponding parts of similar or congruent geometric figures;		
3.2	apply geometric properties, formulas, and relationships to solve real-world problems;	Geometric Formulas	Factoring and Geometric Formulas
3.3	use inductive reasoning to make conjectures;		
3.4	communicate position using spatial sense with two-dimensional coordinate system;	Equations	Linear Equations
3.5	demonstrate an understanding of transformations of geometric figures;		
3.6	apply the Pythagorean Theorem in problem solving;	Geometric Formulas	Factoring and Geometric Formulas
3.7	name, analyze, and describe the properties of various polygons.	Geometric Formulas	Geometric Formulas
4.0	Students will become familiar with the units and processes of measurement in order to use various tools, techniques, and formulas to determine and estimate measurements in problem solving.		
4.1	communicate the concepts and strategies used to measure and to estimate measurements;		

4.2	use concepts of length and area, including surface area and volume, to estimate and solve real-world problems (e.g., parallelograms, triangles, right rectangular prisms, circles, right cylinders, spheres, and pyramids);	Geometric Formulas	Factoring and Geometric Formulas
4.3	apply measurement concepts and relationships in algebraic and geometric problem-solving situations;	Geometric Formulas	Factoring and Geometric Formulas
4.4	choose appropriate techniques and tools to measure quantities in order to meet specifications for precision and accuracy;		
4.5	demonstrate an understanding of rates and other derived and indirect measurements (e.g., velocity, miles per hr, rpm, and cost per unit).		
5.0	Students will interpret a given set of data, including analyzing the use, misuse, and abuse of data; choose, construct, and analyze appropriate graphical representations for a data set; use technology in data collection and analysis; and apply theoretical and experimental probability to analyze the likelihood of an event.		
5.1	interpret a set of data using the appropriate measure of central tendency (mean, median, mode) and the appropriate measure of dispersion (e.g., quartiles, range);	Probability and Data Analysis	Probability
		Probability and Data Analysis	Data Analysis Projects
5.2	choose, construct, and analyze appropriate graphical representations for a data set including pie charts, histograms, stem-and-leaf plots, scatterplots, and box plots;	Probability and Data Analysis	Probability



5.3	apply appropriate technology in data collection and analysis;		
5.4	apply theoretical and experimental probability to analyze the likelihood of an event;		
5.5	use simulations to estimate probability;	Probability and Data Analysis	Data Analysis Projects
5.6	analyze the validity of statistical conclusions and the use, misuse, and abuse of data;	Probability and Data Analysis	Data Analysis Projects
5.7	apply counting principles of permutations and combinations using appropriate technology.		