



Alignment Document  
State of Colorado  
And  
Aventa Learning Geometry

**Geometry**  
2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
1	Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.		
1.1	demonstrate meanings for real numbers, absolute value, and scientific notation using physical materials and technology in problem-solving situations;		
1.2	develop, test, and explain conjectures about properties of number systems and sets of numbers; and	Reasoning and Introduction to Proof	Properties From Algebra and Proof
1.3	use number sense to estimate and justify the reasonableness of solutions to problems involving real numbers.	Reasoning and Introduction to Proof	Inductive Reasoning

2	Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.		
2.1	model real-world phenomena (for example, distance-versus-time relationships, compound interest, amortization tables, mortality rates) using functions, equations, inequalities, and matrices;		
2.2	represent functional relationships using written explanations, tables, equations, and graphs, and describing the connections among these representations;	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
		Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane
2.3	solve problems involving functional relationships using graphing calculators and/or computers as well as appropriate paper-and-pencil techniques;	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
		Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane
2.4	analyze and explain the behaviors, transformations, and general properties of types of equations and functions (for example, linear, quadratic, exponential); and	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
		Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane
2.5	interpret algebraic equations and inequalities geometrically and describing geometric relationships algebraically.	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
		Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane
		Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem
		Special Triangles and Special Relationships in Triangles	Triangle Inequalities

3	Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.		
3.1	design and conduct a statistical experiment to study a problem, and interpret and communicate the results using the appropriate technology (for example, graphing calculators, computer software);		
3.2	analyze statistical claims for erroneous conclusions or distortions;		
3.3	fit curves to scatter plots, using informal methods or appropriate technology, to determine the strength of the relationship between two data sets and to make predictions;		
3.4	draw conclusions about distributions of data based on analysis of statistical summaries (for example, the combination of mean and standard deviation, and differences between the mean and median);		
3.5	use experimental and theoretical probability to represent and solve problems involving uncertainty (for example, the chance of playing professional sports if a student is a successful high school athlete); and		
3.6	solve real-world problems with informal use of combinations and permutations (for example, determining the number of possible meals at a restaurant featuring a given number of side dishes).		
4	Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.		
4.1	find and analyze relationships among geometric figures using transformations (for example, reflections, translations, rotations, dilations) in coordinate systems;		

4.2	derive and use methods to measure perimeter, area, and volume of regular and irregular geometric figures;	Perimeters and Areas	Perimeters and Areas of Quadrilaterals
		Perimeters and Areas	Perimeters and Areas of Triangles and Polygons
		Perimeters and Areas	Circumference and Area of Circles
4.3	make and test conjectures about geometric shapes and their properties, incorporating technology where appropriate; and	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	Deductive Reasoning
		Reasoning and Introduction to Proof	If-Then, Converses, and Postulates
		Reasoning and Introduction to Proof	Basic Algebraic Properties
		Reasoning and Introduction to Proof	Two-Column Proof
		Language of Geometry	Points, Lines and Planes
		Language of Geometry	Measuring Segments
		Language of Geometry	Rays and Angles
		Language of Geometry	Classifying Angles
		Language of Geometry	Pairs of Angles
		Language of Geometry	Right Angles and Perpendicular Lines
		Special Triangles and Special Relationships in Triangles	Isosceles Triangles
		Special Triangles and Special Relationships in Triangles	Equilateral Triangles
		Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem
		Special Triangles and Special Relationships in Triangles	Triangle Inequalities
		Parallel Lines and Coordinate Plane	Parallel Lines and Transversals

		Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
		Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane
		Triangles Basic Closed Figures in Geometry	Structure of Triangles
		Triangles Basic Closed Figures in Geometry	Congruent Triangles and Congruence Tests
		Triangles Basic Closed Figures in Geometry	Special Segments in Triangles
		Quadrilaterals and Polygons	Square and Rectangle
		Quadrilaterals and Polygons	Parallelogram
		Quadrilaterals and Polygons	Rhombus and Trapezoid
		Quadrilaterals and Polygons	Polygons
		Similarity	Ratios and Proportions
		Similarity	Similar Triangles
		Similarity	Similar Quadrilaterals and Polygons
		Circles	Arcs and Circular Angles
		Circles	Special Segments in Circles
		Circles	Equations of Circles
		Right Triangles and Trigonometry	Introduction to Trig Ratios
		Right Triangles and Trigonometry	Introduction to Law of Sine and Cosine
4.4	use trigonometric ratios in problem-solving situations (for example, finding the height of a building from a given point, if the distance to the building and the angle of elevation are known).		

5	Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.		
5.1	measure quantities indirectly using techniques of algebra, geometry, or trigonometry;	Similarity	Ratios and Proportions
		Similarity	Similar Triangles
		Similarity	Similar Quadrilaterals and Polygons
		Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem
		Special Triangles and Special Relationships in Triangles	Triangle Inequalities
5.2	select and use appropriate techniques and tools to measure quantities in order to achieve specified degrees of precision, accuracy, and error (or tolerance) of measurements; and		
5.3	determine the degree of accuracy of a measurement (for example, by understanding and using significant digits).		
5.4	demonstrate the meanings of area under a curve and length of an arc.		
6	Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.		
6.1	use ratios, proportions, and percents in problem-solving situations;	Similarity	Ratios and Proportions
		Similarity	Similar Figures
6.2	select and use appropriate algorithms for computing with real numbers in problem-solving situations and determine whether the results are reasonable; and	All Units	Exercises
6.3	describe the limitations of estimation, and assess the amount of error resulting from estimation within acceptable limits.		