



Alignment Document

State of Texas And Aventa Learning Geometry

Geometry 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
111.34	Geometry		
0	Geometric structure.		
111.34.G.1	The student understands the structure of, and relationships within, an axiomatic system.		
111.34.G.1.A	develop an awareness of the structure of a mathematical system, connecting definitions, postulates, logical reasoning, and theorems;	Language of Geometry	Connections From Algebra
111.34.G.1.B	recognize the historical development of geometric systems and know mathematics is developed for a variety of purposes; and	Reasoning and Introduction to Proof	Overview
111.34.G.1.C	compare and contrast the structures and implications of Euclidean and non-Euclidean geometries.		
111.34.G.2	The student analyzes geometric relationships in order to make and verify conjectures.		
111.34.G.2.A	use constructions to explore attributes of geometric figures and to make conjectures about geometric relationships; and	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
		Triangles: Basic Closed Figures in Geometry:	Special Segments in Triangles
111.34.G.2.B	make conjectures about angles, lines, polygons, circles, and three-dimensional figures and determine the validity of the conjectures, choosing from a variety of approaches such as coordinate, transformational, or axiomatic.	Reasoning and Introduction to Proof	Inductive Reasoning



111.34.G.3	The student applies logical reasoning to justify and prove mathematical statements.		
111.34.G.3.A	determine the validity of a conditional statement, its converse, inverse, and contrapositive;	Reasoning and Introduction to Proof	If-Then, Converses, and Postulates
111.34.G.3.C	use logical reasoning to prove statements are true and find counter examples to disprove statements that are false;	Reasoning and Introduction to Proof	Inductive Reasoning
111.34.G.3.D	use inductive reasoning to formulate a conjecture; and	Reasoning and Introduction to Proof	Inductive Reasoning
111.34.G.3.E	use deductive reasoning to prove a statement.	Reasoning and Introduction to Proof	Deductive Reasoning
111.34.G.4	The student uses a variety of representations to describe geometric relationships and solve problems.		
111.34.G.4.A	The student is expected to select an appropriate representation (concrete, pictorial, graphical, verbal, or symbolic) in order to solve problems.	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
0	Geometric patterns.		
111.34.G.5	The student uses a variety of representations to describe geometric relationships and solve problems.		
111.34.G.5.A	use numeric and geometric patterns to develop algebraic expressions representing geometric properties;	Language of Geometry	Measuring Segments
111.34.G.5.B	use numeric and geometric patterns to make generalizations about geometric properties, including properties of polygons, ratios in similar figures and solids, and angle relationships in polygons and circles;	Similarity	Similar Triangles
111.34.G.5.C	use properties of transformations and their compositions to make connections between mathematics and the real world, such as tessellations; and		
111.34.G.5.D	identify and apply patterns from right triangles to solve meaningful problems, including special right triangles (45-45-90 and 30-60-90) and triangles whose sides are Pythagorean triples.	Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem



0	Dimensionality and the geometry of location.		
111.34.G.6	The student analyzes the relationship between three-dimensional geometric figures and related two-dimensional representations and uses these representations to solve problems.		
111.34.G.6.A	describe and draw the intersection of a given plane with various three-dimensional geometric figures;		
111.34.G.6.B	use nets to represent and construct three-dimensional geometric figures; and		
111.34.G.6.C	use orthographic and isometric views of three-dimensional geometric figures to represent and construct three-dimensional geometric figures and solve problems.		
111.34.G.7	The student understands that coordinate systems provide convenient and efficient ways of representing geometric figures and uses them accordingly.		
111.34.G.7.A	use one- and two-dimensional coordinate systems to represent points, lines, rays, line segments, and figures;	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
111.34.G.7.B	use slopes and equations of lines to investigate geometric relationships, including parallel lines, perpendicular lines, and special segments of triangles and other polygons; and	Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane
111.34.G.7.C	derive and use formulas involving length, slope, and midpoint.	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
		Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane
0	Congruence and the geometry of size.		
111.34.G.8	The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations.		
111.34.G.8.A	find areas of regular polygons, circles, and composite figures;	Perimeters and Areas	Perimeters and Areas of Triangles and Polygons
111.34.G.8.B	find areas of sectors and arc lengths of circles using proportional reasoning;	Perimeters and Areas	Circumferences and Areas of Circles
111.34.G.8.C	derive, extend, and use the Pythagorean Theorem; and	Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem



111.34.G.8.D	find surface areas and volumes of prisms, pyramids, spheres, cones, cylinders, and composites of these figures in problem situations.		
111.34.G.9	The student analyzes properties and describes relationships in geometric figures.		
111.34.G.9.A	formulate and test conjectures about the properties of parallel and perpendicular lines based on explorations and concrete models;	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
111.34.G.9.B	formulate and test conjectures about the properties and attributes of polygons and their component parts based on explorations and concrete models;	Quadrilaterals and Polygons	Polygons
111.34.G.9.C	formulate and test conjectures about the properties and attributes of circles and the lines that intersect them based on explorations and concrete models; and	Circles	Arcs and Circular Angles
		Circles	Special Segments in Circles
111.34.G.9.D	analyze the characteristics of polyhedra and other three-dimensional figures and their component parts based on explorations and concrete models.		
111.34.G.10	The student applies the concept of congruence to justify properties of figures and solve problems.		
111.34.G.10.A	use congruence transformations to make conjectures and justify properties of geometric figures including figures represented on a coordinate plane; and	Triangles: Basic Closed Figures in Geometry	Congruent Triangles and Congruence Tests
111.34.G.10.B	justify and apply triangle congruence relationships.	Triangles: Basic Closed Figures in Geometry	Congruent Triangles and Congruence Tests
0	Similarity and the geometry of shape.		
111.34.G.11	The student applies the concepts of similarity to justify properties of figures and solve problems.		
111.34.G.11.A	use and extend similarity properties and transformations to explore and justify conjectures about geometric figures;	Similarity	Similar Quadrilaterals and Polygons
111.34.G.11.B	use ratios to solve problems involving similar figures;	Similarity	Similar Triangles
111.34.G.11.C	develop, apply, and justify triangle similarity relationships, such as right triangle ratios, trigonometric ratios, and Pythagorean triples using a variety of methods; and	Right Triangles and Trigonometry	Special Ratios in a Right Triangle



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111.34.G.11.D	describe the effect on perimeter, area, and volume when one or more dimensions of a figure are changed and apply this idea in solving problems.		
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