

Geometry

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	Reasoning, Lines, and Transformations		
G.1	The student will construct and judge the validity of a logical argument consisting of a set of premises and a conclusion. This will include		
G.1.a	identifying the converse, inverse, and contrapositive of a conditional statement;	Introduction to Proof	Reasoning in Geometry Informal and Two-Column Proofs
G.1.b	translating a short verbal argument into symbolic form;	Introduction to Proof	Reasoning in Geometry
G.1.c	using Venn diagrams to represent set relationships; and		
G.1.d	using deductive reasoning.	Introduction to Proof	Reasoning in Geometry
G.2	The student will use the relationships between angles formed by two lines cut by a transversal to		
G.2.a	determine whether two lines are parallel;	Introduction to Geometry	Parallel and Perpendicular Lines
G.2.b	verify the parallelism, using algebraic and coordinate methods as well as deductive proofs; and		

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G.2.c	solve real-world problems involving angles formed when parallel lines are cut by a transversal.		
G.3	The student will use pictorial representations, including computer software, constructions, and coordinate methods, to solve problems involving symmetry and transformation. This will include		
G.3.a	investigating and using formulas for finding distance, midpoint, and slope;	Lines and the Coordinate Plane	The Coordinate Plane Slope of a Line
G.3.b	applying slope to verify and determine whether lines are parallel or perpendicular;		
G.3.c	investigating symmetry and determining whether a figure is symmetric with respect to a line or a point; and		
G.3.d	determining whether a figure has been translated, reflected, rotated, or dilated, using coordinate methods.	Transformations	Translations and Reflections Rotations and Dilations
G.4	The student will construct and justify the constructions of		

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G.4.a	a line segment congruent to a given line segment;		
G.4.b	the perpendicular bisector of a line segment;	Introduction to Geometry	Basic Elements of Geometry
G.4.c	a perpendicular to a given line from a point not on the line;		
G.4.d	a perpendicular to a given line at a given point on the line;		
G.4.e	the bisector of a given angle;		
G.4.f	an angle congruent to a given angle; and		
G.4.g	a line parallel to a given line through a point not on the given line.		
	Triangles		

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G.5	These concepts will be considered in the context of real-world situations. The student, given information concerning the lengths of sides and/or measures of angles in triangles, will		
G.5.a	order the sides by length, given the angle measures;	Triangles	Introduction to Triangles
G.5.b	order the angles by degree measure, given the side lengths;	Triangles	Introduction to Triangles
G.5.c	determine whether a triangle exists; and	Triangles	Triangle Inequalities
G.5.d	determine the range in which the length of the third side must lie.	Triangles	Triangle Inequalities
G.6	The student, given information in the form of a figure or statement, will prove two triangles are congruent, using algebraic and coordinate methods as well as deductive proofs.	Triangles	Congruent Triangles
G.7	The student, given information in the form of a figure or statement, will prove two triangles are similar, using algebraic and coordinate methods as well as deductive proofs.	Similarity	Similar Triangles
G.8	The student will solve real-world problems involving right triangles by using the Pythagorean Theorem and its converse, properties of special right triangles, and right triangle trigonometry.	Triangles	Right Triangles and the Pythagorean Theorem

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	Polygons and Circles		
G.9	The student will verify characteristics of quadrilaterals and use properties of quadrilaterals to solve real-world problems.	Quadrilaterals and Polygons	Covered throughout unit
G.10	The student will solve real-world problems involving angles of polygons.	Quadrilaterals and Polygons	Covered throughout unit
G.11	The student will use angles, arcs, chords, tangents, and secants to		
G.11.a	investigate, verify, and apply properties of circles;	Circles	Special Segments in Circles Special Angles and Arcs in Circles
G.11.b	solve real-world problems involving properties of circles; and	Circles	Covered throughout unit
G.11.c	find arc lengths and areas of sectors in circles.	Circle	Arc Length and Area of a Circle
G.12	The student, given the coordinates of the center of a circle and a point on the circle, will write the equation of the circle.	Circles	Equations of a Circle

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	Three-Dimensional Figures		
G.13	The student will use formulas for surface area and volume of three-dimensional objects to solve real-world problems.	Surface Area and Volume	Covered throughout unit
G.14	The student will use similar geometric objects in two- or three-dimensions to		
G.14.a	compare ratios between side lengths, perimeters, areas, and volumes;		
G.14.b	determine how changes in one or more dimensions of an object affect area and/or volume of the object;	Surface Area and Volume	Covered throughout unit
G.14.c	determine how changes in area and/or volume of an object affect one or more dimensions of the object; and		
G.14.d	solve real-world problems about similar geometric objects.		