

Geometry

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
G.1.0	Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.	Introduction to Proof	Reasoning in Geometry
G.2.0	Students write geometric proofs, including proofs by contradiction.	Introduction to Proof	Informal and Two-Column Proofs
G.3.0	Students construct and judge the validity of a logical argument and give counterexamples to disprove a statement.	Introduction to Proof	Informal and Two-Column Proofs
G.4.0	Students prove basic theorems involving congruence and similarity.	Introduction to Proof	Informal and Two-Column Proofs
G.5.0	Students prove that triangles are congruent or similar, and they are able to use the concept of corresponding parts of congruent triangles.	Triangles	Congruent Triangles
G.6.0	Students know and are able to use the triangle inequality theorem.	Triangles	Triangle Inequality
G.7.0	Students prove and use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals, and the properties of circles.	Introduction to Geometry	Parallel and Perpendicular Lines
G.8.0	Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.	Triangles Circles Surface Area and Volume	Perimeter and Area of Triangles Circumference and Area of a Circle Surface Area and Volume of Prisms and Cylinders Surface Area and Volume of Pyramids and Cones Surface Area and Volume of Spheres

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G.9.0	Students compute the volumes and surface areas of prisms, pyramids, cylinders, cones, and spheres; and students commit to memory the formulas for prisms, pyramids, and cylinders.	Surface Area and Volume	Surface Area and Volume of Prisms and Cylinders Surface Area and Volume of Pyramids and Cones Surface Area and Volume of Spheres
G.10.0	Students compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids.	Triangles Quadrilaterals and Polygons	Perimeter and Area of Triangles Parallelograms Squares, Rectangles and Rhombi Trapezoids and Kites
G.11.0	Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.	Similarity	Similar Polygons
G.12.0	Students find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems.	Triangles Quadrilaterals and Polygons	Introduction to Triangles Polygons Parallelograms Squares, Rectangles and Rhombi
G.13.0	Students prove relationships between angles in polygons by using properties of complementary, supplementary, vertical, and exterior angles.	Quadrilaterals and Polygons	Polygons Parallelograms Squares, Rectangles and Rhombi Trapezoids and Kites

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G.14.0	Students prove the Pythagorean theorem.	Triangles	Right Triangles and the Pythagorean Theorem
G.15.0	Students use the Pythagorean theorem to determine distance and find missing lengths of sides of right triangles.	Right Triangles and Trigonometry	Review of Pythagorean Theorem
G.16.0	Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line.	Introduction to Geometry Lines and the Coordinate Plane	Basic Elements of Geometry The Coordinate Plane
G.17.0	Students prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.	Lines and the Coordinate Plane	The Coordinate Plane
G.18.0	Students know the definitions of the basic trigonometric functions defined by the angles of a right triangle. They also know and are able to use elementary relationships between them. For example, $\tan(x) = \frac{\sin(x)}{\cos(x)}$, $(\sin(x))^2 + (\cos(x))^2 = 1$.	Right Triangles and Trigonometry	Ratios of Right Triangles
G.19.0	Students use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side.	Right Triangles and Trigonometry	Ratios of Right Triangles
G.20.0	Students know and are able to use angle and side relationships in problems with special right triangles, such as 30°, 60°, and 90° triangles and 45°, 45°, and 90° triangles.	Triangles	Right Triangles and the Pythagorean Theorem

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G.21.0	Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.	Circles	Special Segments in Circles Specials Angles and Arcs in Circles
G.22.0	Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.	Transformations	Translations and Reflections Rotations and Dilations