

Geometry

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
G.1	The student will use deductive and inductive reasoning to solve problems.		
G.1.1	Identify and use logical reasoning skills (inductive and deductive) to make and test conjectures, formulate counter examples, and follow logical arguments.	Introduction to Proof	Reasoning in Geometry
G.1.2	State, use, and examine the validity of the converse, inverse, and contrapositive of "if-then" statements.	Introduction to Proof	Reasoning in Geometry
G.1.3	Compare the properties of Euclidean geometry to non-Euclidean geometries (for example, elliptical geometry, as shown on the surface of a globe, does not uphold the parallel postulate).		
G.2	The student will use the properties and formulas of geometric figures to solve problems.		
G.2.1	Use geometric tools (for example, protractor, compass, straight edge) to construct a variety of figures.	Covered throughout course	Covered throughout course
G.2.2	Line and Angle Relationships		
G.2.2.a	Use the angle relationships formed by parallel lines cut by a transversal to solve problems.	Introduction to Geometry	Parallel and Perpendicular Lines
G.2.2.b	Use the angle relationships formed by two lines cut by a transversal to determine if the two lines are parallel and verify, using algebraic and deductive proofs.	Introduction to Proofs	Informal and 2-Column Proofs
G.2.2.c	Use relationships between pairs of angles (for example, adjacent, complementary, vertical) to solve problems.	Introduction to Geometry	Rays and Angles

Geometry

G.2.3	Polygons and Other Plane Figures		
G.2.3.a	Identify, describe, and analyze polygons (for example, convex, concave, regular, pentagonal, hexagonal, n-gonal).	Quadrilaterals and Polygons	Polygons
G.2.3.b	Apply the interior and exterior angle sum of convex polygons to solve problems, and verify using algebraic and deductive proofs.	Quadrilaterals and Polygons	Polygons
G.2.3.c	Develop and apply the properties of quadrilaterals to solve problems (for example, rectangles, parallelograms, rhombi, trapezoids, kites).	Quadrilaterals and Polygons	Parallelograms Rectangles, Squares, and Rhombi
G.2.3.d	Use properties of 2-dimensional figures and side length, perimeter or circumference, and area to determine unknown values and correctly identify the appropriate unit of measure of each.	Quadrilaterals and Polygons	Rectangles, Squares, and Rhombi
G.2.4	Similarity		
G.2.4.a	Determine and verify the relationships of similarity of triangles, using algebraic and deductive proofs.	Similarity	Similar Triangles

Geometry

G.2.4.b	Use ratios of similar 2-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference, and area.	Similarity	Similar Polygons
G.2.5	Congruence		
G.2.5.a	Determine and verify the relationships of congruency of triangles, using algebraic and deductive proofs.	Triangles	Congruent Triangles
G.2.5.b	Use the relationships of congruency of 2-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference, and area.	Triangles	Congruent Triangles Perimeter and Area of Triangles
G.2.6	Circles		
G.2.6.a	Find angle measures and arc measures related to circles.	Circles	Special Angles and Arcs in Circles
G.2.6.b	Find angle measures and segment lengths using the relationships among radii, chords, secants, and tangents of a circle.	Circles	Special Segments in Circles Special Angles and Arcs in Circles
G.3	The student will use the properties of right triangles and trigonometric ratios to solve problems.		

Geometry

G.3.1	Use the Pythagorean Theorem and its converse to find missing side lengths and to determine acute, right, and obtuse triangles, and verify using algebraic and deductive proofs.	Right Triangles and Trigonometry	Review of the Pythagorean Theorem
G.3.2	Apply the 45-45-90 and 30-60-90 right triangle relationships to solve problems, and verify using algebraic and deductive proofs.	Triangles	Right Triangles and the Pythagorean Theorem
G.3.3	Express the trigonometric functions as ratios and use sine, cosine, and tangent ratios to solve real-world problems.	Right Triangles and Trigonometry	Ratios of Right Triangles
G.3.4	Use the trigonometric ratios to find the area of a triangle.	Right Triangles and Trigonometry	Ratios of Right Triangles
G.4	The student will use the properties and formulas of geometric figures to solve problems.		
G.4.1	Polyhedra and Other Solids		
G.4.1.a	Identify, describe, and analyze polyhedra (for example, regular, decahedral).	Surface Area and Volume	Covered throughout unit
G.4.1.b	Use properties of 3-dimensional figures; side lengths, perimeter or circumference, and area of a face; and volume, lateral area, and surface area to determine unknown values and correctly identify the appropriate unit of measure of each.	Surface Area and Volume	Covered throughout unit

Geometry

G.4.2	Similarity: Use ratios of similar 3-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference of a face, area of a face, and volume.		
G.4.3	Create a model of a 3-dimensional figure from a 2-dimensional drawing and make a 2-dimensional representation of a 3-dimensional object (for example, nets, blueprints, perspective drawings).		
G.5	The student will solve problems with geometric figures in the coordinate plane.		
G.5.1	Find the distance between two points; the midpoint of a segment; and calculate the slopes of parallel, perpendicular, horizontal, and vertical lines.	Lines and the Coordinate Plane	The Coordinate Plane Slope of a Line
G.5.2	Properties of Figures		
G.5.2.a	Given a set of points determine the type of figure formed based on its properties.		
G.5.2.b	Use transformations (reflection, rotation, translation) on geometric figures to solve problems within coordinate geometry.	Transformations	Translations and Reflections Rotations and Dilations