

Geometry CR

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
G-1	The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.		
G-1.1	Demonstrate an understanding of the axiomatic structure of geometry by using undefined terms, definitions, postulates, theorems, and corollaries.	Connections from Algebra Reasoning and Introduction to Proof	Section 1, 2 Section 2
G-1.2	Communicate knowledge of geometric relationships by using mathematical terminology appropriately.	Throughout course	Throughout course
G-1.3	Apply basic rules of logic to determine the validity of the converse, inverse, and contrapositive of a conditional statement.	Reasoning and Introduction to Proof	Section 2, 3
G-1.4	Formulate and test conjectures by using a variety of tools such as concrete models, graphing calculators, spreadsheets, and dynamic geometry software.		
G-1.5	Use inductive reasoning to formulate conjectures.	Reasoning and Introduction to Proof	Section 1
G-1.6	Use deductive reasoning to validate conjectures with formal and informal proofs, and give counterexamples to disprove a statement.	Reasoning and Introduction to Proof	Section 3, 5
G-1.7	Understand the historical development of geometry.		

Geometry CR

G-1.8	Connect geometry with other branches of mathematics.		
G-1.9	Demonstrate an understanding of how geometry applies to in real-world contexts (including architecture, construction, farming, and astronomy).		
G-1.10	Demonstrate an understanding of geometric relationships (including constructions through investigations by using a variety of tools such as straightedge, compass, Patty Paper, dynamic geometry software, and handheld computing devices).		
G-2	The student will demonstrate through the mathematical processes an understanding of the properties of basic geometric figures and the relationships between and among them.		
G-2.1	Infer missing elements of visual or numerical geometric patterns (including triangular and rectangular numbers and the number of diagonals in polygons).		

Geometry CR

G-2.2	Apply properties of parallel lines, intersecting lines, and parallel lines cut by a transversal to solve problems.	Parallel Lines and Coordinate Plane	Section 1, 3
G-2.3	Use the congruence of line segments and angles to solve problems.	Connections from Algebra	Section 1, 3
G-2.4	Use direct measurement to determine the length of a segment, degree of an angle, and distance from a point to a line.		
G-2.5	Carry out a procedure to create geometric constructions (including the midpoint of a line segment, the angle bisector, the perpendicular bisector of a line segment, the line through a given point that is parallel to a given line, and the line through a given point that is perpendicular to a given line).		

Geometry CR

G-2.6	Use scale factors to solve problems involving scale drawings and models.		
G-2.7	Use geometric probability to solve problems.		
G-3	The student will demonstrate through the mathematical processes an understanding of the properties and special segments of triangles and the relationships between and among triangles.		
G-3.1	Carry out a procedure to compute the perimeter of a triangle.	Perimeters and Areas	Section 1
G-3.2	Carry out a procedure to compute the area of a triangle.	Perimeters and Areas	Section 1

Geometry CR

G-3.3	Analyze how changes in dimensions affect the perimeter or area of triangles.		
G-3.4	Apply properties of isosceles and equilateral triangles to solve problems.	Triangles: Basic Closed Figures in Geometry Special Triangles and Special Relationships in Triangles	Section 1 Section 1, 2
G-3.5	Use interior angles, exterior angles, medians, angle bisectors, altitudes, and perpendicular bisectors to solve problems.	Connections from Algebra Parallel Lines and Coordinate Plane Triangles: Basic Closed Figures in Geometry	Section 6 Section 1 Section 3
G-3.6	Apply the triangle sum theorem to solve problems.	Triangles: Basic Closed Figures in Geometry	Section 1
G-3.7	Apply the triangle inequality theorem to solve problems.		
G-3.8	Apply congruence and similarity relationships among triangles to solve problems.	Triangles: Basic Closed Figures in Geometry	Section 2

Geometry CR

G-3.9	Apply theorems to prove that triangles are either similar or congruent.	Triangles: Basic Closed Figures in Geometry	Section 2
G-3.10	Use the Pythagorean theorem and its converse to solve problems.		
G-3.11	Use the properties of 45-45-90 and 30-60-90 triangles to solve problems.	Special Triangles and Special Relationships in Triangles	Section 3
G-3.12	Use trigonometric ratios (including sine, cosine, and tangent) to solve problems involving right triangles.	Right Triangles and Trigonometry	Section 1
G-4	The student will demonstrate through the mathematical processes an understanding of the properties of quadrilaterals and other polygons and the relationships between and among them.		
G-4.1	Carry out a procedure to compute the perimeter of quadrilaterals, regular polygons, and composite figures.		
G-4.2	Carry out a procedure to find the area of quadrilaterals, regular polygons, and composite figures.		
G-4.3	Apply procedures to compute measures of interior and exterior angles of polygons.	Quadrilaterals and Polygons	Section 1, 3, 4
G-4.4	Analyze how changes in dimensions affect the perimeter or area of quadrilaterals and regular polygons.		
G-4.5	Apply the properties and attributes of quadrilaterals and regular polygons and their component parts to solve problems.	Quadrilaterals and Polygons	Sections 1-4
G-4.6	Apply congruence and similarity relationships among shapes (including quadrilaterals and polygons) to solve problems.	Similarity Quadrilaterals and Polygons	Section 3 Section 4
G-5	The student will demonstrate through the mathematical processes an understanding of the properties of circles, the lines that intersect them, and the use of their special segments.		
G-5.1	Carry out a procedure to compute the circumference of circles.	Perimeters and Areas	Section 3

Geometry CR

G-5.2	Carry out a procedure to compute the area of circles.	Perimeters and Areas	Section 3
G-5.3	Analyze how a change in the radius affects the circumference or area of a circle.		
G-5.4	Carry out a procedure to compute the length of an arc or the area of a sector of a circle.		
G-5.5	Apply the properties of the component parts of a circle (including radii, diameters, chords, sectors, arcs, and segments) to solve problems.	Circles	Section 1
G-5.6	Apply the properties of lines that intersect circles (including two secants, two tangents, and a secant and a tangent) to solve problems.		
G-5.7	Apply the properties of central angles, inscribed angles, and arcs of circles to solve problems.	Circles	Section 2
G-6	The student will demonstrate through the mathematical processes an understanding of transformations, coordinate geometry, and vectors.		
G-6.1	Use the distance formula to solve problems.	Parallel Lines and Coordinate Plane	Section 2
G-6.2	Use the midpoint formula to solve problems.	Parallel Lines and Coordinate Plane	Section 2
G-6.3	Apply transformations-translation, reflection, rotation, and dilation-to figures in the coordinate plane by using sketches and coordinates.		
G-6.4	Apply transformations (including translation and dilation) to figures in the coordinate plane by using matrices.		
G-6.5	Carry out a procedure to represent the sum of two vectors geometrically by using the parallelogram method.		
G-6.6	Carry out a procedure to determine the magnitude and direction of the resultant of two vectors by using a scale drawing and direct measurement.		
G-6.7	Carry out a procedure to compute		

Geometry CR

	the magnitude of the resultant of two perpendicular vectors by using the Pythagorean theorem.		
G-6.8	Carry out a procedure to determine the direction of the resultant of two perpendicular vectors by using a scale drawing and direct measurement.		
G-7	The student will demonstrate through the mathematical processes an understanding of the surface area and volume of three-dimensional objects.		
G-7.1	Carry out a procedure to compute the surface area of three-dimensional objects (including cones, cylinders, pyramids, prisms, spheres, and hemispheres).	Perimeters and Areas	Section 4
G-7.2	Carry out a procedure to compute the volume of three-dimensional objects (including cones, cylinders, pyramids, prisms, spheres, hemispheres, and composite objects).		
G-7.3	Analyze how changes in dimensions affect the volume of objects (including cylinders, prisms, and spheres).		
G-7.4	Apply congruence and similarity relationships among geometric objects to solve problems.	Triangles: Basic Closed Figures in Geometry Similarity	Section 3 Section 2
G-7.5	Apply a procedure to draw a top view, front view, and side view of a three-dimensional object.		
G-7.6	Apply a procedure to draw an isometric view of a three-dimensional object.		