

Geometry

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
1	Students will develop the language of geometry including specialized vocabulary, reasoning, and application of theorems, properties, and postulates.		
LG.1.G.1	Define, compare and contrast inductive reasoning and deductive reasoning for making predictions based on real world situations		
LG.1.G.1.a	venn diagrams		
LG.1.G.1.b	matrix logic		
LG.1.G.1.c	conditional statements (statement, inverse, converse, and contrapositive)	Unit 2: Introduction to Proof	Section A, p. 28: Writing Assignment: Conditional Statements
LG.1.G.1.d	figural patterns		
LG.1.G.2	Represent points, lines, and planes pictorially with proper identification, as well as basic concepts derived from these undefined terms, such as segments, rays, and angles	Unit 3: Lines and the Coordinate Plane Unit 1: Introduction to Geometry	Section A, p. 11: Assignment: Points, Lines, and Planes Section C: Rays and Angles
LG.1.G.3	Describe relationships derived from geometric figures or figural patterns		
LG.1.G.4	Apply, with and without appropriate technology, definitions, theorems, properties, and postulates, related to such topics as complementary, supplementary, vertical angles, linear pairs, and angles formed by perpendicular lines	Unit 1: Introduction to Geometry	Section C, p. 12: Think & Click: Supplementary and Complementary Angles Section D, p. 5: Think & Click: Vertical Angles Think & Click: p. 13: Perpendicular Lines and Angle Bisectors
LG.1.G.5	Explore, with and without appropriate technology, the relationship between angles formed by two lines cut by a transversal to justify when lines are	Unit 1: Introduction to Geometry	Section D, p. 19: Tutorial: Parallel Lines and Transversals

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	parallel		
LG.1.G.6	Justify conclusions reached by deductive reasoning. State and prove key basic theorems in geometry (i.e., the Pythagorean theorem, the sum of the measures of the angles of a triangle is 180° , and the line joining the midpoints of two sides of a triangle is parallel to the third side and half its length)		
2	Students will identify and describe types of triangles and their special segments. They will use logic to apply the properties of congruence, similarity, and inequalities. The students will apply the Pythagorean Theorem and trigonometric ratios to solve problems in real world situations.		
T.2.G.1	Apply congruence (SSS ...) and similarity (AA...) correspondences and properties of figures to find missing parts of geometric figures and provide logical justification	Unit 4: Triangles	Section B: Congruent Triangles
T.2.G.2	Investigate the measures of segments to determine the existence of triangles (triangle inequality theorem)	Unit 4: Triangles	Section D, p. 9: Avatar: Triangle Inequality
T.2.G.3	Identify and use the special segments of triangles (altitude, median, angle bisector, perpendicular bisector, and midsegment) to solve problems	Unit 4: Triangles	Section A, p. 18: Flashcards: Altitudes, Medians, and Bisectors

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T.2.G.4	Apply the Pythagorean Theorem and its converse in solving practical problems	Unit 4: Triangles	Section C, p. 14: Flashcards: Real World Applications of the Pythagorean Theorem
T.2.G.5	Use the special right triangle relationships (30°-60°-90° and 45°-45°-90°) to solve problems	Unit 4: Triangles	Section C, p. 10: Flashcards: Special Triangles
T.2.G.6	Use trigonometric ratios (sine, cosine, tangent) to determine lengths of sides and measures of angles in right triangles including angles of elevation and angles of depression	Unit 8: Right Triangles and Trigonometry	Section B, p. 19: Flashcards: Trigonometric Ratios in Real-Life Problems
T.2.G.7	Use similarity of right triangles to express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given including angles of elevation and angles of depression		
3	Students will measure and compare, while using appropriate formulas, tools, and technology to solve problems dealing with length, perimeter, area and volume.		
M.3.G.1	Calculate probabilities arising in geometric contexts		
M.3.G.2	Apply, using appropriate units, appropriate formulas (area, perimeter, surface area, volume) to solve application problems involving polygons, prisms, pyramids, cones, cylinders, spheres as well as composite figures, expressing solutions in both exact and approximate forms	Unit 4: Triangles Unit 5: Quadrilaterals and Polygons Unit 7: Circles Unit 9: Surface Area and Volume	

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M.3.G.3	Relate changes in the measurement of one attribute of an object to changes in other attributes	Unit 6: Similarity	Section C, p. 11: Perimeter and Area of Similar Polygons
M.3.G.4	Use (given similar geometric objects) proportional reasoning to solve practical problems (including scale drawings)		
M.3.G.5	Identify and apply properties of and theorems about parallel and perpendicular lines to prove other theorems and perform basic Euclidean constructions		
4	Students will analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.		
R.4.G.1	Explore and verify the properties of quadrilaterals	Unit 5: Quadrilaterals and Polygons	Section B, p. 12: Tutorial: Proving a Quadrilateral is a Parallelogram
R.4.G.2	Solve problems using properties of polygons:		
R.4.G.2.a	sum of the measures of the interior angles of a polygon	Unit 5: Quadrilaterals and Polygons	Section A, p. 8: Tutorial: Interior Angles in a Polygon
R.4.G.2.b	interior and exterior angle measure of a regular polygon or irregular polygon	Unit 5: Quadrilaterals and Polygons	Section A, p. 8: Tutorial: Interior Angles in a Polygon p. 12: Exterior Angles in a Polygon

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R.4.G.2.c	number of sides or angles of a polygon	Unit 5: Quadrilaterals and Polygons	Section A, p. 5: Naming Polygons Based on the Number of Sides Section A, p. 8: Tutorial: Interior Angles in a Polygon
R.4.G.3	Identify and explain why figures tessellate	Unit 10: Transformations	Section B, p. 11: Writing Assignment: Tessellations
R.4.G.4	Identify the attributes of the five Platonic Solids		
R.4.G.5	Investigate and use the properties of angles (central and inscribed) arcs, chords, tangents, and secants to solve problems involving circles	Unit 7: Circles	Section A, p. 7: Tutorial: Properties of Chords p. 10: Properties of Secants p. 15: Properties of Tangents Section B, p. 4: Arcs of Circles Section B, p. 12: Angles Made by Chords, Secants, and Tangents
R.4.G.6	Solve problems using inscribed and circumscribed figures		
R.4.G.7	Use orthographic drawings (top, front, side) and isometric drawings (corner) to represent three-dimensional objects		
R.4.G.8	Draw, examine, and classify cross-sections of three-dimensional objects		

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R.4.G.9	Explore non-Euclidean geometries, such as spherical geometry and identify its unique properties which result from a change in the parallel postulate		
5	Students will specify locations, apply transformations and describe relationships using coordinate geometry.		
CGT.5.G.1	Use coordinate geometry to find the distance between two points, the midpoint of a segment, and the slopes of parallel, perpendicular, horizontal, and vertical lines	Unit 3: Lines and the Coordinate Plane	Section A, p. 17: Writing Assignment: Distance and Midpoint Formulas Section B: Slope of a Line
CGT.5.G.2	Write the equation of a line parallel to a line through a given point not on the line	Unit 3: Lines and the Coordinate Plane	Section C, p. 10: Parallel Lines
CGT.5.G.3	Write the equation of a line perpendicular to a line through a given point	Unit 3: Lines and the Coordinate Plane	Section C, p. 11: Perpendicular Lines
CGT.5.G.4	Write the equation of the perpendicular bisector of a line segment		
CGT.5.G.5	Determine, given a set of points, the type of figure based on its properties (parallelogram, isosceles triangle, trapezoid)	Unit 5: Quadrilaterals and Polygons	Section C, p. 11: Tutorial: Identifying a Parallelogram with Coordinates of Vertices Given p. 17: Vertices of a Parallelogram Assignment
CGT.5.G.6	Write, in standard form, the equation of a circle given a graph on a coordinate plane or the center and radius of a circle	Unit 7: Circles	Section C, p. 4: Equations of a Circle Centered at the Origin p. 5: Equations of a Circle Centered at the Point (h,k) p. 7: Matching: Circles

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CGT.5.G.7	Draw and interpret the results of transformations and successive transformations on figures in the coordinate plane		
CGT.5.G.7.a	translations	Unit 10: Transformations	Section B, p. 11: Writing Assignment: Tessellations
CGT.5.G.7.b	reflections	Unit 10: Transformations	Section B, p. 11: Writing Assignment: Tessellations
CGT.5.G.7.c	rotations (90°, 180°, clockwise and counterclockwise about the origin)		
CGT.5.G.7.d	dilations (scale factor)		