Geometry Content

	Standard 1: Logical Reasoning - 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.
G1.2	State, use, and examine the validity of the converse, inverse, and contrapositive of "if-then" statements.
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).
	Standard 2: Properties of 2-Dimensional Figures - 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.
G.2.2a	Line and Angle Relationships - Use the angle relationships formed by parallel lines cut by a transversal to solve problems.
G.2.2b	Line and Angle Relationships - 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.
G.2.2c	Line and Angle Relationships - Use relationships between pairs of angles (for example, adjacent, complementary, vertical) to solve problems.
G.2.3a	Polygons and Other Plane Figures - Identify, describe, and analyze polygons (for example, convex, concave, regular, pentagonal, hexagonal, n-gonal).
G.2.3b	Polygons and Other Plane Figures - Apply the interior and exterior angle sum of convex polygons to solve problems, and verify using algebraic and deductive proofs.
G.2.3c	Polygons and Other Plane Figures - Develop and apply the properties of quadrilaterals to solve problems (for example, rectangles, parallelograms, rhombi, trapezoids, kites).
G.2.3d	Polygons and Other Plane Figures - 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.
G.2.4a	Similarity - Determine and verify the relationships of similarity of triangles, using algebraic and deductive proofs.
G.2.4b	Similarity - Use ratios of similar 2-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference, and area.
G.2.5a	Congruence - Determine and verify the relationships of congruency of triangles, using algebraic and deductive proofs.
G.2.5b	Congruence - Use the relationships of congruency of 2-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference, and area.
G.2.6a	Circles - Find angle measures and arc measures related to circles.
G.2.6b	Circles - Find angle measures and segment lengths using the relationships among radii, chords, secants, and tangents of a circle.
	Standard 3: Triangles and Trigonometric Ratios - The student will use the properties of right triangles and trigonometric ratios to solve problems.
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.

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.
G.3.3	Express the trigonometric functions as ratios and use sine, cosine, and tangent ratios to solve real-world problems.
G.3.4*	Use the trigonometric ratios to find the area of a triangle.
Standard 4: Properties of 3-Dimensional Figures - The student will use the properties and formulas of geometric figures to solve problems.	
G.4.1a	Polyhedra and Other Solids - Identify, describe, and analyze polyhedra (for example, regular, decahedral).
G.4.1b	Polyhedra and Other Solids - 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.
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).
Standard 5: Coordinate Geometry - 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.
G.5.2a	Properties of Figures - Given a set of points determine the type of figure formed based on its properties.
G.5.2b	Properties of Figures - Use transformations (reflection, rotation, translation) on geometric figures to solve problems within coordinate geometry.

Geometry Process

Process Standard 1: Problem Solving	
HS.1.1	Apply a wide variety of problem-solving strategies (identify a pattern, use equivalent representations) to solve problems from within and outside mathematics.
HS.1.2	Identify the problem from a described situation, determine the necessary data and apply appropriate problem-solving strategies.
Process Standard 2: Communication	
HS.2.1	Use mathematical language and symbols to read and write mathematics and to converse with others.
HS.2.2	Demonstrate mathematical ideas orally and in writing.
HS.2.3	Analyze mathematical definitions and discover generalizations through investigations.
Process Standard 3: Reasoning	
HS.3.1	Use various types of logical reasoning in mathematical contexts and real-world situations.
HS.3.2	Prepare and evaluate suppositions and arguments.
HS.3.3	Verify conclusions, identify counterexamples, test conjectures, and justify solutions to mathematical problems.
HS.3.4	Justify mathematical statements through proofs.
Process Standard 4: Connections	
HS.4.1	Link mathematical ideas to the real world (e.g., statistics helps qualify the confidence we can have when drawing conclusions based on a sample).
HS.4.2	Apply mathematical problem-solving skills to other disciplines.
HS.4.3	Use mathematics to solve problems encountered in daily life.
HS.4.4	Relate one area of mathematics to another and to the integrated whole (e.g., connect equivalent representations to corresponding problem situations or mathematical concepts).
Process Standard 5: Representation	
HS.5.1	Use algebraic, graphic, and numeric representations to model and interpret mathematical and real world situations.
HS.5.2	Use a variety of mathematical representations as tools for organizing, recording, and communicating mathematical ideas (e.g., mathematical models, tables, graphs, spreadsheets).
HS.5.3	Develop a variety of mathematical representations that can be used flexibly and appropriately.