Standard 1: Logical Reasoning

6th Grade	7th Grade	8th Grade	Geometry
			1. Identify and use logical reasoning skills (inductive and deductive) to make and test conjectures, formulate counter examples, and follow logical arguments.
			2. State, use, and examine the validity of the converse, inverse, and contrapositive of "if-then" statements.
			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

6th Grade	7th Grade	8th Grade	Geometry
			The student will use the properties and formulas of geometric figures to solve problems.
			1. *Use geometric tools (for example, protractor, compass, straight edge) to construct a variety of figures.
			2. Line and Angle Relationships – a. Use the angle relationships formed by parallel lines cut by a transversal to solve problems.
	3.2 Identify and analyze the angle relationships formed by parallel lines cut by a transversal (e.g., alternate interior angles, alternate exterior angles,		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.

	adjacent, and vertical angles).		c. Use relationships between pairs of angles (for example, adjacent, complementary, vertical) to solve problems.
			3. Polygons and Other Plane Figures – a. Identify, describe, and analyze polygons (for example, convex, concave, regular, pentagonal, hexagonal, n-gonal).
			b. Apply the interior and exterior angle sum of convex polygons to solve problems, and verify using algebraic and deductive proofs.
	3.1 Classify regular and irregular geometric figures including triangles and quadrilaterals according to their sides and angles.		c. Develop and apply the properties of quadrilaterals to solve problems (for example, rectangles, parallelograms, rhombi, trapezoids, kites).
	4.3 Find the area and perimeter of composite figures to solve application problems.	4.3 Find the area of a "region of a region" for simple composite figures and the area of cross sections of regular geometric solids (e.g., area of a rectangular picture frame).	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.
		4.2 Apply knowledge of ratio and proportion to solve relationships between similar geometric figures.	4. Similarity – a. Determine and verify the relationships of similarity of triangles, using algebraic and deductive proofs.
			b. Use ratios of similar 2-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference, and area.
			5. Congruence – a. Determine and verify the relationships of congruency of triangles, using algebraic and deductive proofs.

			b. Use the relationships of congruency of 2-dimensional figures to determine unknown values, such as angles, side lengths, perimeter or circumference, and area.
			6. Circles – a. Find angle measures and arc measures related to circles.
			b. Find angle measures and segment lengths using the relationships among radii, chords, secants, and tangents of a circle.

Standard 3: Triangles and Trigonometric Ratios

6th Grade	7th Grade	8th Grade	Geometry
			The student will use the properties of right triangles and trigonometric ratios to solve problems.
		3.2 Develop the Pythagorean Theorem and apply the formula to find the length of line segments, the shortest distance between two points on a graph, and the length of an unknown side of a right triangle.	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.
			2. Apply the 45-45-90 and 30-60-90 right triangle relationships to solve problems, and verify using algebraic and deductive proofs.
			3. Express the trigonometric functions as ratios and use sine, cosine, and tangent ratios to solve real-world problems.
			4. *Use the trigonometric ratios to find the area of a triangle.

Standard 4: Properties of 3-Dimensional Figures

6th Grade	7th Grade	8th Grade	Geometry
			The student will use the properties and formulas of geometric figures to solve problems.
3.1 Compare and contrast the basic characteristics of three-dimensional figures (pyramids, prisms, cones, and cylinders).			1. Polyhedra and Other Solids – a. Identify, describe, and analyze polyhedra (for example, regular, decahedral).
4.1 Use formulas to find the circumference and area of circles in terms of pi.	4.1 Develop and apply the formulas for perimeter and area of triangles and quadrilaterals to solve problems. 4.2 Apply the formula for the circumference and area of a circle to solve problems.	4.1 Develop and apply formulas to find the surface area and volume of rectangular prisms, triangular prisms, and cylinders (in terms of pi).	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.
3.2 Compare and contrast congruent and similar figures.		4.2 Apply knowledge of ratio and proportion to solve relationships between similar geometric figures.	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.
	3.3 Construct geometric figures and identify geometric transformations on the rectangular coordinate plane (e.g., rotations, translations, reflections, magnifications).	3.1 Construct models, sketch (from different perspectives), and classify solid figures such as rectangular solids, prisms, cones, cylinders, pyramids, and combined forms.	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

6th Grade	7th Grade	8th Grade	Geometry
			The student will solve problems with geometric figures in the coordinate plane.

			1. Find the distance between two points; the midpoint of a segment; and calculate the slopes of parallel, perpendicular, horizontal, and vertical lines.
3.3 Identify the characteristics of the rectangular coordinate system and use them to locate points and describe shapes drawn in all four quadrants.			2. Properties of Figures – a. Given a set of points determine the type of figure formed based on its properties.
	3.3 Construct geometric figures and identify geometric transformations on the rectangular coordinate plane (e.g., rotations, translations, reflections, magnifications).		b. Use transformations (reflection, rotation, translation) on geometric figures to solve problems within coordinate geometry.