Math: Geometry

UNIT/Weeks (not consecutive)	Timeline/Topics	Essential Questions
2	**Reasoning and Proof** • Patterns and Inductive Reasoning • Conditional Statements • Biconditionals • Deductive Reasoning • Reasoning in Algebra and Geometry • Proving Angles Congruent	• How can you make a conjecture and prove that it is true?
2.8	**Congruent Triangles** • Congruent Figures • Triangle Congruence by SSS and SAS • Triangle Congruence by ASA and AAS • Using Corresponding Parts of Congruent Triangles • Isosceles and Equilateral Triangles • Congruence in Right Triangles • Congruence in Overlapping Triangles	• How do you identify corresponding parts of congruent triangles? • How do you show that two triangles are congruent? • How can you tell whether a triangle is isosceles or equilateral?
2.8	**Relationships Within Triangles** • Mid segments of Triangles • Perpendicular and Angle Bisectors • Bisectors in Triangles • Medians and Altitudes • Indirect Proof • Inequalities in One Triangle • Inequalities in Two Triangles	• How do you use coordinate geometry to find relationships within triangles? • How do you solve problems that involve measurements of triangles? • How do you write indirect proofs?
3.2	**Polygons and Quadrilaterals** • The Polygon Angle-Sum Theorems • Properties of Parallelograms • Proving that a Quadrilateral is a Parallelogram • Properties of Rhombuses, Rectangles and Squares • Conditions for Rhombuses, Rectangles and Squares • Trapezoids and Kites • Polygons in the Coordinate Plane • Applying Coordinate Geometry	• How can you find the sum of the measures of polygon angles? • How can you classify quadrilaterals? • How can you use coordinate geometry to prove general relationships?

	• Proofs Using Coordinate Geometry	
1.6	**Similarity** • Ratios and Proportions • Similar Polygon • Proving Triangles Similar • Similarity in Right Triangles • Proportions in Triangles	• How do you use proportions to find side lengths in similar polygons? • How do you show two triangles are similar? • How do you identify corresponding parts of similar triangles?
3.2	**Right Triangles and Trigonometry** • The Pythagorean Theorem and its Converse • Special Right triangles • Trigonometry • Angles of Elevation and Depression	• How do you find a side length or angle measure in a right triangle? • How do trigonometric ratios relate to similar right triangles?
2.8	**Area** • Areas of Parallelograms and Triangles • Areas of Trapezoids, Rhombuses and Kites • Areas of Regular Polygons • Circles • Areas of Circles	• How do you find the area of a polygon or find the circumference and area of a circle?
3.2	**Surface Area and Volume** • Surface Areas of Prisms and Cylinders • Surface Areas of Pyramids and Cones • Volumes of Prisms and Cylinders • Volumes of Pyramids and Cones • Surface Areas and Volumes of Spheres • Areas and Volumes of Similar Solids	• How do you find the surface area and volume of a solid? • How do the surface areas and volumes of similar solids compare?
2.4	**Circles** • Tangent Lines	• How can you prove relationships between angles and arcs in a circle?

	• Chords and Arcs • Inscribed Angles • Angle Measures and Segment Lengths • Circles in the Coordinate Plane • Locus: A Set of Points	• When lines intersect a circle, or within a circle, how do you find the measures of resulting angles, arcs, and segments? • How do you find the equation of a circle in the coordinate plane?
2.4	**Transformations** • Translations • Reflections • Rotations • Compositions of Isometries • Congruence Transformations • Dilations • Similarity Transformations	• How can you change a figure's position without changing its size and shape? • How can you change a figure's size without changing its shape? • How can you represent a transformation in the coordinate plane? • How do you recognize congruence and similarity in figures?
5	**Algebra Review** • Patterns and Expressions • Properties of Real Numbers • Algebraic Expressions • Solving Equations • Solving Inequalities • Absolute Value Equations and Inequalities • Relations and Functions • Direct Variation • Linear Functions and Slope-Intercept Form • More About Linear Equations • Using Linear Models • Families of Functions • Absolute Value Functions and Graphs • Two-Variable Inequalities	• How do variables help you model real-life situations? • How can you use the properties of real numbers to simplify algebraic expressions? • How do you solve an equation or inequality?
4.2	**Quadratic Functions and Equations** • Quadratic Functions and Transformation • Standard Form of a Quadratic Function • Modeling with Quadratic Functions • Factoring Quadratic Expressions	• What are the advantages of a quadratic function in vertex form versus standard form? • What are the similarities and differences of any quadratic function as compared to the parent function $y=x^2$?

		• How are the real solutions of a quadratic equation related to its graph?