

Quarter	Topic	Time (Instructional Weeks)	Big Ideas	Essential Questions	Resources
1	First Week of School		Norms, Syllabus, etc.		Acquire Textbook
1	Reasoning and Proof	1 Week	Reasoning and Proof	<p>How can you make a conjecture and prove that it is true?</p> <ul style="list-style-type: none"> - Students will observe patterns leading to making conjectures. - Students will solve equations giving their reasons for each step and - Students will prove geometric relationships using given information 	<p>** REVIEW **</p> <ul style="list-style-type: none"> 1.2 - Patterns and Inductive Reasoning 1.3 - Conditional Statements 1.4 - Biconditionals and Definitions 1.5 - Deductive Reasoning 1.6 - Reasoning in Algebra and Geometry 1.7 - Proving Angles Congruent
1	Proving Theorems about Lines and Angles	1 Week	Reasoning and Proof Measurement	<p>How do you prove that two lines are parallel or perpendicular?</p> <ul style="list-style-type: none"> - Students will use postulates and theorems to explore lines in a plane <p>What is the sum of the measures of the angles of a triangle?</p> <ul style="list-style-type: none"> - Students will use the Triangle Angle-Sum Theorem. 	<p>*** REVIEW ***</p> <ul style="list-style-type: none"> 2.1 - Lines and Angles 2.2 - Properties of Parallel Lines 2.3 - Proving Lines Parallel 2.4 - Parallel and Perpendicular Lines 2.5 - Parallel Lines and Triangles
1	Congruent Triangles	2 Weeks	Visualization Reasoning and Proof	<p>How do you identify corresponding parts of congruent triangles?</p> <ul style="list-style-type: none"> - Students will visualize the triangles placed on top of each other. - Students will use tick marks and angle marks to label corresponding parts <p>How do you show that two triangles are congruent?</p> <ul style="list-style-type: none"> - Students will use the SSS Postulate, the SAS Postulate, the ASA Postulate, and the AAS Postulate 	<p>*** REVIEW ***</p> <ul style="list-style-type: none"> 3.1 - Congruent Figures 3.2 - Triangle Congruence by SSS and SAS 3.3 - Triangle Congruence by ASA and AAS 3.4 - Using Corresponding Parts of Congruent Triangles 3.5 - Isosceles and Equilateral Triangles 3.6 - Congruence in Right Triangles 3.7 - Congruences in Overlapping Triangles 3.8 - Congruences Transformations
1	Proving Theorems about Triangles	2 Weeks	Coordinate Geometry Measurement	<p>How do you use coordinate geometry to find relationships within triangles?</p> <ul style="list-style-type: none"> - Students will use the Midpoint Formula to find midsegments of triangles - Students will use the Distance Formula and Slope Formulas to examine relationships <p>How do you solve problems that involve measurements of triangles?</p> <ul style="list-style-type: none"> - Students will examine inequalities in one triangle. - Students will examine inequalities in two triangles. 	<ul style="list-style-type: none"> 4.1 - Midsegments of Triangles 4.2 - Perpendicular and Angle Bisectors 4.3 Bisectors in Triangles 4.4 - Medians and Altitudes 4.6 - Inequalities in One Triangle 4.7 - Inequalities in Two Triangles
1, 2	Proving Theorems about Quadrilaterals	3 Weeks	Measurement Reasoning and Proof	<p>How can you find the sum of the measures of polygons angles?</p> <ul style="list-style-type: none"> - The formula for angle measures of a polygon will be derived using the Polygon Angle-Sum Theorem <p>How can you classify quadrilaterals?</p> <ul style="list-style-type: none"> - Students will use the properties of parallel and perpendicular lines and the properties of quadrilaterals - Students will use coordinate geometry to classify special parallelograms 	<ul style="list-style-type: none"> 5.1 - The Polygon Angle-Sum Theorems 5.2 - Properties of Parallelograms 5.3 - Proving that a Quadrilateral is a Parallelogram* 5.4 - Properties of Rhombuses, Rectangles, and Squares 5.5 - Conditions for Rhombuses, Rectangles, and Squares* 5.6 - Trapezoids and Kites 5.7 - Applying Coordinate Geometry 5.8 - Proofs using Coordinate Geometry

2	Similarity	2 Weeks	Similarity Reasoning and Proof Visualization	<p>How do you use proportions to find side lengths in similar polygons?</p> <ul style="list-style-type: none"> - Students will form proportions based on known lengths of corresponding sides. <p>How do you show two triangles are similar?</p> <ul style="list-style-type: none"> - Students will use the AA Similarity Postulate. - Students will use the SAS Similarity Theorem. - Students will use the SSS Similarity Theorem. <p>How do you identify corresponding parts of similar triangles?</p> <ul style="list-style-type: none"> - A key to understanding corresponding parts of similar triangles is to 	<p>6.1 - Ratios and Proportions</p> <p>6.2 - Similar Polygons</p> <p>6.3 - Proving Triangles Similar</p> <p>6.4 - Similarity in Right Triangles</p> <p>6.5 - Proportions in Triangles</p> <p>6.6 - Dilations</p> <p>6.7 - Similarity Transformations</p>
2	Right Triangles and Trigonometry	2 Weeks	Measurement Similarity	<p>How do you find a side length or angle measure in a right triangle?</p> <ul style="list-style-type: none"> - Students will use the Pythagorean Theorem - Students will use concepts of 30-60-90 and 45-45-90 triangles. - Students will use trigonometric ratios to form proportions. <p>How do trigonometric ratios relate to similar right triangles?</p> <ul style="list-style-type: none"> - Students will examine the sine ratio. - Students will examine the cosine ratio. - Students will examine the tangent ratio. 	<p>7.1 - The Pythagorean Theorem and Its Converse</p> <p>7.2 - Special Right Triangles</p> <p>7.3 - Trigonometry</p> <p>7.4 - Angles of Elevation and Depression</p> <p>7.5 - Areas of Regular Polygons</p>
2	Circles	2 Weeks	Reasoning and Proof Measurement	<p>How can you prove relationships between angles and arcs in a circle?</p> <ul style="list-style-type: none"> - Students will examine angles formed by lines that intersect inside a circle. - Students will relate arcs and angles. <p>When lines intersect outside, on, or within a circle, how do you find angle measures?</p> <ul style="list-style-type: none"> - Students will use properties of tangent lines. - Students will use the relationships among chords, arcs, and central angles. - Students will solve problems with angles formed by secants and tangents. 	<p>8.1 - Circles and Arcs</p> <p>8.2 - Areas of Circles and Sectors</p> <p>8.3 - Tangent Lines</p> <p>8.4 - Chords and Arcs</p> <p>8.5 - Inscribed Angles</p> <p>8.6 - Angle Measures and Segment Lengths</p>
3	Surface Area and Volume	2 Weeks	Measurement	<p>How do you find the surface area and volume of a solid?</p> <ul style="list-style-type: none"> - Students will use formulas to find surface areas and volumes of prisms and cylinders. - Students will use formulas to find surface areas and volumes of pyramids and cones. - Students will use formulas to find surface areas and volumes of spheres. 	<p>9.1 - Surface Areas of Prisms and Cylinders</p> <p>9.2 - Surface Areas of Pyramids and Cones</p> <p>9.3 - Volumes of Prisms and Cylinders</p> <p>9.4 - Volumes of Pyramids and Cones</p> <p>9.5 - Surface Areas and Volumes of Spheres</p>
3	Exponents	2 Weeks	Equivalence Properties	<p>How can you write expressions with rational exponents using radical notation?</p> <ul style="list-style-type: none"> - Students will learn to represent rational exponents using radicals. <p>How can you simplify expressions involving exponents?</p> <ul style="list-style-type: none"> - Students will use zero and negative exponents. - Students will learn the rules for multiplying powers. - Students will learn the rules for dividing powers. 	<p>10.1 - Multiplying Powers With the Same Base</p> <p>10.2 - More Multiplication Properties of Exponents</p> <p>10.3 - Division Properties of Exponents</p> <p>10.4 - Rational Exponents and Radicals</p>
3	Polynomials and Factoring	3 Weeks	Equivalence Properties	<p>Can two algebraic expressions that appear to be different be equivalent?</p> <ul style="list-style-type: none"> - Students will add and subtract polynomial expressions. - Students will multiply polynomial expressions. - Students will factor polynomials. <p>How are the properties of real numbers related to polynomials?</p> <ul style="list-style-type: none"> - Students will use the Commutative and Associative Properties to multiply polynomials. - Students will use the Distributive Property to multiply polynomials and factor. 	<p>11.1 - Adding and Subtracting Polynomials</p> <p>11.2 - Multiplying and Factoring</p> <p>11.3 - Multiplying Binomials</p> <p>11.4 - Multiplying Special Cases</p> <p>11.5 - Factoring $x^2 + bx + c$</p> <p>11.6 - Factoring $ax^2 + bx + c$</p> <p>11.7 - Factoring Special Cases</p> <p>11.8 - Factoring by Grouping</p>

3, 4	Quadratic Functions	3 Weeks	Function Solving Equations and Inequality Modeling	<p>What are the characteristics of quadratic functions?</p> <ul style="list-style-type: none"> - Students will graph quadratic functions on the coordinate plane. - Students will use the discriminant of a quadratic equation to analyze <p>How can you solve a quadratic equation?</p> <ul style="list-style-type: none"> - Students will solve quadratic equations by graphing, factoring, completing the square <p>How can you use functions to model real-world situations?</p> <ul style="list-style-type: none"> - Students will use quadratic functions that represent real-world situations 	12.1 - Quadratic Graphs and their Properties 12.2 - Quadratic Functions 12.3 - Modeling with Quadratic Functions 12.4 - Solving Quadratic Functions 12.5 - Factoring to Solve Quadratic Equations 12.6 - Completing the Square 12.7 - The Quadratic Formula and Discriminant 12.8 - Complex Numbers 12.9 - Linear, Quadratic, and Exponential Models 12.10 - Systems of Linear and Quadratic Equations 12.11 - A New Look at Parabolas 12.12 - Circles in the Coordinate Plane
4	Probability	3 Weeks	Probability Data Representation	<p>What is the difference between experimental probability and theoretical probability?</p> <ul style="list-style-type: none"> - Students will find probabilities based on real-world observations and theoretical probability <p>What is a frequency table?</p> <ul style="list-style-type: none"> - Students will use frequency tables to find relative frequency. - Students will use two-way frequency tables to calculate conditional probabilities <p>What does it mean for an event to be random?</p> <ul style="list-style-type: none"> - Students will learn different ways to model randomness and make predictions 	13.1 - Experimental and Theoretical Probability 13.2 - Probability Distributions and Frequency Tables 13.3 - Permutations and Combinations 13.4 - Compound Probability 13.5 - Probability Models 13.6 - Conditional Probabilities Formulas 13.7 - Modeling Randomness
4	Other Types of Functions	1.5 Weeks	Modeling Function	<p>How do you model a quantity that changes regularly over time by the use of exponential functions?</p> <ul style="list-style-type: none"> - Students will model situations with exponential functions. <p>What are the characteristics of exponential functions?</p> <ul style="list-style-type: none"> - Students will describe key characteristics of exponential functions. <p>How do you combine functions using arithmetic operations?</p> <ul style="list-style-type: none"> - Students will add, subtract, multiply, and divide functions? 	14.1 - Properties of Exponential Functions 14.2 - Graphing Radical Functions 14.3 - Piecewise Functions 14.4 - Combining Functions
4	Sequences and Series	1.5 Weeks	Variable Equivalence	<p>How can you represent the terms of a sequence explicitly? How can you represent the terms of a sequence recursively?</p> <ul style="list-style-type: none"> - Students will identify mathematical patterns found in a sequence. - Students will find a rule to describe a pattern. <p>What are equivalent explicit and recursive definitions for an arithmetic sequence?</p> <ul style="list-style-type: none"> - Students will find the common difference of an arithmetic sequence 	15.2 - Arithmetic Sequences 15.3 - Geometric Sequences 15.4 - Arithmetic Series 15.5 - Geometric Series