Geometry Pacing Guide/Standards Correlation

Semester 1: (44 Days)

Project Benchmark Stds:

- **16.0 Perform basic constructions with a straightedge and compass.**
- **8.0 Know and solve problems involving perimeter, circumference, area of common geometric figures.**

	Chapter in Textbook	Objective	Content Standards	Alloted Time
Unit 1: Geometry Foundations	**Chatper 1**			7 days
	1.1	• Identify, name and draw points, lines, segments, rays, and planes • Apply basic facts about points, lines, and planes	1.0 Demonstrate understanding by identifying and giving examples of undefined terms, axioms.	
	1.2	• Use length and midpoint of a segment • Construct midpoints and congruent segments	16.0 Perform basic constructions with a straightedge and compass.	
	1.3	• Name and classify angles • Measure and construct angles and angle bisectors	16.0 Perform basic constructions with a straightedge and compass, such as angle bisectors.	
	1.4	• Identify adjacent, vertical, complementary, and supplementary angles • Find measures of pairs of angles	Preparation for 13.0 Prove relationships between angles in polygons by using properties of complementary, supplementary and vertical angles.	
	1.5	• Apply formulas for perimeter, area, and circumference	8.0 Know and solve problems involving perimeter, circumference, area of common geometric figures.	
	1.6	• Develop and apply the formula for a midpoint	Preparation for 17.0 Prove theorems by using coordinate geometry, including the	

		• Use the distance formula and the Pythagorean Theorem to find the distance between two points	midpoint of a line segment and the distance formula Also covered: 15.0	
	1.7	• Identify reflections, rotations, and translations • Graph transformations in the coordinate plane	22.0 Know the effects of rigid motion on figures in the coordinate plane, including rotations, translations, and reflections.	
Unit 2: Geometric Reasoning	**Chapter 2**			6 days
	2.1	• Use inductive reasoning to identify patterns and make conjectures • Find counterexamples to disprove conjectures	1.0 Demonstrate understanding by identifying and giving examples of inductive reasoning. Also covered: 3.0 Construct and judge the validity of a logical argument and give counterexamples to disprove a statement.	
	2.2	• Identify, write and analyze the truth value of conditional statements • Write the inverse, converse and contrapositive of a conditional statement	3.0 Construct and judge the validity of a logical argument and give counterexamples to disprove a statement.	
	2.3	• Apply the Law of Detachment and the Law of Syllogism in Logical Reasoning	1.0 Demonstrate understanding by identifying and giving examples of inductive and deductive reasoning.	
	2.4	• Write and analyze biconditional statements	3.0 Construct and judge the validity of a logical argument and give counterexamples to disprove a statement.	

	2.5	• Review properties of equality and use them to write algebraic proofs • Identify properties of equality and congruence	Preparation for 2.0 Write geometric proofs, including proofs by contradiction	
	2.6	• Write two-column proofs • Prove geometric theorems by using deductive reasoning	2.0 Write geometric proofs	
	2.7	• Write flowchart and paragraph proofs • Prove geometric theorems by using deductive reasoning	2.0 Write geometric proofs	
Unit 3: Parallel and Perpendicular Lines	**Chapter 3**			8 days
	3.1	• Identify parallel, perpendicular and skew lines • Identify the angles formed by two lines and a transversal	Preparation for 7.0 Prove and use theorems involving the properties of parallel lines cut by a transversal	
	3.2	• Prove and use theorems about the angles formed by parallel lines and a transversal	7.0 Prove and use theorems involving the properties of parallel lines cut by a transversal	
	3.3	• Use the angles formed by a transversal to prove two lines are parallel	7.0 Prove and use theorems involving the properties of parallel lines cut by a transversal Also covered 16.0	
	3.4	• Prove and apply theorems about perpendicular lines	2.0 Write geometric proofs	
	3.5	• Find slopes of lines • Use slopes to identify parallel and perpendicular lines	Preparation for 17.0 Prove theorems by using coordinate geometry	
	3.6	• Graph lines and write their equations in slope-intercept and	Preparation for 17.0 Prove theorems by using coordinate geometry	

		point-slope form • Classify lines as parallel, intersecting, or coinciding		
Unit 4: Triangle Congruence	**Chapter 4**			10 days
	4.1	• Classify triangles by their angle measures and side lengths • Use triangle classification to find angle measures and side lengths	12.0 Find and use measures of sides and of interior angles of triangles to classify figures and solve problems	
	4.2	• Find the measures of interior and exterior angles of triangles • Apply theorems about the interior and exterior angles of triangles	12.0 Find and use measures of interior and exterior angles of triangles to solve problems 13.0 Prove relationships between angles in polygons by using properties of complementary and exterior angles	
	4.3	• Use properties of congruent triangles • Prove triangles congruent by using the definition of congruence	5.0 Prove that triangles are congruent and use concept of corresponding parts of congruent triangles	
	4.4	• Apply SSS and SAS to construct triangles and solve problems • Prove triangles congruent by using SSS and SAS	5.0 Prove that triangles are congruent and use concept of corresponding parts of congruent triangles	
	4.5	• Apply ASA, AAS, and HL to construct triangles and to solve problems • Prove triangles congruent by using ASA, AAS, and HL	5.0 Prove that triangles are congruent and use concept of corresponding parts of congruent triangles	
	4.6	• Use CPCTC to prove parts of	5.0 Prove that triangles are congruent and	

		triangles are congruent	use concept of corresponding parts of congruent triangles	
	4.7	• Position figures in the coordinate plane for use in coordinate proof • Prove geometric concepts by using coordinate proof	17.0 Prove theorems by using coordinate geometry	
	4.8	• Prove Theorems about isosceles and equilateral triangles • Apply properties of isosceles and equilateral triangles	12.0 Find and use measures of sides and of interior angles of triangles to classify figures and solve problems	
Unit 5: Properties and Attributes of Triangles	**Chapter 5**			7 days
	5.1	• Prove and apply theorems about perpendicular bisectors • Prove and apply theorems about angle bisectors	2.0 Write geometric proofs	
	5.2	• Prove and apply properties of perpendicular bisectors of a triangle • Prove and apply properties of angle bisectors of a triangle	2.0 Write geometric proofs	
	5.3	• Apply properties of medians of a triangle • Apply properties of altitudes of a triangle	16.0 Perform basic constructions with a straight edge and a compass	
	5.4	• Prove and use properties of triangle midsegments	17.0 Prove theorems by using coordinate geometry	
	5.5	• Write indirect proofs • Apply inequalities in one	2.0 Write geometric proofs, including proofs by contradiction	

		triangle	6.0 Know and be able to use the triangle inequality theorem	
	5.6	• Apply inequalities in two triangles	2.0 Write geometric proofs, including proofs by contradiction	
	5.7	• Use Pythagorean Theorem and its converse to solve problems • Use Pythagorean inequalities to classify triangles	14.0 Prove the Pythagorean theorem 15.0 Use Pythagorean theorem to determine distance and find missing lengths of sides of right triangles Also covered 6.0 and 12.0	
	5.8	• Justify and apply properties of 45-45-90 triangles • Justify and apply properties of 30-60-90 triangles	20.0 Know and be able to use angle and side relationships in problems with special right triangles, such as 30, 60, 90 triangles and 45, 45, 90 triangles	
Unit 6: Polygons and Quadrilaterals	**Chapter 6**			7 days
	6.1	• Classify polygons based on their sides and angles • Find and use the measures of interior and exterior angles of polygons	12.0 Find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems	
	6.2	• Prove and apply properties of parallelograms • Use properties of parallelograms to solve problems	7.0 Prove and use theorems involving the properties of quadrilaterals 12.0 Find and use measures of sides and of interior angles of polygons to solve problems	
	6.3	• Prove that a given quadrilateral is a parallelogram	7.0 Prove and use theorems involving the properties of quadrilaterals 17.0 Prove theorems by using coordinate geometry	
	6.4	• Prove and apply properties of	7.0 Prove and use theorems involving the	

		rectangles, rhombuses, and squares • Use properties of rectangles, rhombuses, and squares to solve problems	properties of quadrilaterals 12.0 Find and use measures of sides and of interior angles of polygons to solve problems 17.0 Prove theorems by using coordinate geometry	
	6.5	• Prove that a given quadrilateral is a rectangle, rhombus, or square	7.0 Prove and use theorems involving the properties of quadrilaterals 12.0 Find and use measures of sides and of interior angles of polygons to solve problems also covered 17.0	
	6.6	• Use properties of kites to solve problems • Use properties of trapezoids to solve problems	2.0 Write geometric proofs, including proofs by contradiction. 7.0 Prove and use theorems involving the properties of quadrilaterals 12.0 Find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems also covered 15.0	
<u>Semester 2: (40 Days)</u> **Project Benchmark Stds.**				
Unit 7: Similarity	**Chapter 7**			
	7.1	• Write and simplify ratios • Use proportions to solve problems	Preparation for 5.0 Prove that triangles are similar	
	7.2	• Identify similar polygons • Apply properties of similar	5.0 Prove that triangles are similar	

		polygons to solve problems		
	7.3	• Prove certain triangles are similar by using AA, SSS, and SAS • Use triangle similarity to solve problems	5.0 Prove that triangles are similar	
	7.4	• Use properties of similar triangles to find segment length • Apply proportionality and triangle angle bisector theorems	7.0 Use theorems involving the properties of parallel lines cut by a transversal 12.0 Find and use measures of sides and of interior angles of triangles to solve problems	
	7.5	• Use ratios to make indirect measurements • Use scale drawings to solve problems	11.0 Determine how changes in dimensions affect the perimeter and area of common geometric figures 12.0 Find and use measures of sides of triangles and polygons to solve problems	
	7.6	• Apply similarity properties in the coordinate plane • Use coordinate proof to prove figures similar	5.0 Prove that triangles are similar 17.0 Prove theorems by using coordinate geometry	
Unit 8: Right Triangles and Trigonometry	**Chapter 8**			
	8.1	• Use geometric mean to find segment lengths in right triangles • Apply similarity relationships in right triangles to solve problems	4.0 Prove basic theorems involving similarity	
	8.2	• Find the sine, cosine, and tangent of an acute angle • Use trigonometric ratios to find	18.0 Know the definitions of the basic trigonometric functions defined by the angles of a right triangle	

		side lengths in right triangles and to solve real-world problems	19.0 Use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side	
	8.3	• Use trigonometric ratios to find angle measures in right triangles and to solve real-world problems	19.0 Use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side Also covered:15.0 18.0	
	8.4	• Solve problems involving angles of elevation and angles of depression	19.0 Use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side	
	8.5	• Use the Law of Sines and the Law of Cosines to solve triangles	19.0 Use trigonometric functions to solve for an unknown length of a side of a right triangle	
	8.6	• Find the magnitude and direction of a vector • Use vectors and vector addition to solve real-world problems	19.0 Use trigonometric functions to solve for an unknown length of a side of a right triangle	
Unit 9: Extending Perimeter, Circumference, and Area	**Chapter 9**			
	9.1	• Develop and apply the formulas for the areas of triangles and special quadrilaterals • Solve problems involving perimeters and areas of	8.0 Know, derive, and solve problems involving the area of common geometric figures 10.0 Compute area of polygons, including rectangles, scalene triangles, rhombi,	

		triangles and special quadrilaterals	parallelograms, and trapezoids	
	9.2	• Develop and apply the formulas for the area and circumference of a circle • Develop and apply the formula for the area of a regular polygon	8.0 Know, derive, and solve problems involving the circumference, and area of common geometric figures 10.0 Compute area of polygons, equilateral triangles	
	9.3	• Use the Area Addition Postulate to find the areas of composite figures • Use composite figures to estimate the area of irregular shapes	8.0 Know and solve problems involving area of common geometric figures 10.0 Compute area of polygons, including rectangles, scalene triangles, parallelograms, and trapezoids	
	9.4	• Find the perimeters and areas if figures in a coordinate plane	8.0 Know and solve problems involving the perimeter and area of common geometric figures 10.0 Compute area of polygons, including rectangles, scalene triangles 12.0 Find and use measures of sides of polygons to classify figures and solve problems	
	9.5	• Describe the effect on perimeter and area when one or more dimensions of a figure are changed • Apply the relationship between perimeter and area in problem solving	8.0 Know and solve problems involving the perimeter, circumference, and area of common geometric figures 10.0 Compute area of polygons, including rectangles, scalene triangles, and parallelograms 11.0 determine how changes in dimensions affect the perimeter and area of common geometric figures	
	9.6	• Calculate geometric probability	8.0 Know and solve problems involving	

		• Use geometric probability to predict results in real-world situations	the area of common geometric figures 10.0 Compute area of polygons, including rectangles, equilateral triangles, and trapezoids	
Unit 10: Spatial Reasoning	**Chapter 10**			
	10.1	• Classify three-dimensional figures according to their properties • Use nets and cross sections to analyze three-dimensional figures	Preparation for 9.0 Compute the volumes and surface area of prisms, pyramids, cylinders, cones,	
	10.2	• Draw representations of three-dimensional figures • Recognize a three-dimensional figure from a given representation	Preparation for 9.0 Compute the volumes and surface area of prisms, pyramids,	
	10.3	• Apply Euler's formula to find the number of vertices, edges, and faces of a polyhedron • Develop and apply the distance and midpoint formulas in three dimensions	Preparation for 9.0 Compute the volumes and surface area of prisms, pyramids, cylinders, cones and spheres	
	10.4	• Learn and apply the formula foe the surface area of a prism • Learn and apply the formula foe the surface area of a cylinder	9.0 Compute surface area of prisms, cylinders, commit to memory the formulas for prisms and cylinders 11.0 Determine how changes in dimensions affect the area of solids	
	10.5	• Learn and apply the formula for the surface area of a pyramid • Learn and apply the formula for the surface area of a cone	9.0 Compute the surface area of pyramids, cones, and commit to memory the formulas for pyramids	

			Also covered: 8.0, 11.0	
	10.6	• Learn and apply the formula foe the volume of a prism • Learn and apply the formula for the volume of a cylinder	9.0 Compute the volumes of prisms, cylinders, and commit to memory the formulas for prisms, and cylinders 11.0 Determine how changes in dimensions affect the area and volume of solids	
	10.7	• Learn and apply the formula for the volume of a pyramid • Learn and apply the formula for the volume of a cone	9.0 Compute the volumes of pyramids, cones and commit to memory the formulas for pyramids 11.0 Determine how changes in dimensions affect the volume of solids	
	10.8	• Learn and apply the formula for the volume of a sphere • Learn and apply the formula for the surface area of a sphere	9.0 Compute the volumes and surface area spheres 11.0 Determine how changes in dimensions affect the area and volume of solids	
Unit 11: Circles	**Chapter 11**			
	11.1	• Identify tangents, secants, and chords • Use properties of tangents to solve problems	7.0 Prove and use theorems involving the properties of circles 21.0 Solve problems regarding relationships among chords, secants, tangents of circles	
	11.2	• Apply properties of arcs • Apply properties of chords	7.0 Prove and use theorems involving the properties of circles 21.0 Solve problems regarding relationships among chords of circles	
	11.3	• Find the area of sectors • Find arc lengths	8.0 Know and solve problems involving the circumference and area of common	

			geometric figures 21.0 Solve problems regarding relationships among chords of circles	
	11.4	• Find the measure of an inscribed angles • Use inscribed angles and their properties to solve problems	7.0 Prove and use theorems involving the properties of circles 21.0 Prove and solve problems regarding relationships among inscribed angles, and inscribed polygons of circles	
	11.5	• Find the measures of angles formed by lines that intersect circles • Use angle measures to solve problems	7.0 Prove and use theorems involving the properties of circles 21.0 Prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles of circles	
	11.6	• Find the lengths of segments formed by lines that intersect circles • Use lengths of segments in circles to solve problems	7.0 Prove and use theorems involving the properties of circles 21.0 Prove and solve problems regarding relationships among chords, secants, tangents of circles	
	11.7	• Write equations and graph circles in the coordinate plane • Use the equation and graph of a circle to solve problems	7.0 Prove and use theorems involving the properties of circles	
Unit 12: Extending Transformational Geometry	**Chapter 12**			
	12.1	• Identify and draw reflections	22.0 Know the effect of rigid motions on figures in the coordinate plane, including reflections	
	12.2	• Identify and draw translations	22.0 Know the effect of rigid motions on figures in the coordinate plane including translations	
	12.3	• Identify and draw rotations	22.0 Know the effect of rigid motions on figures in the coordinate plane, including	

			rotations	
	12.4	• Apply theorems about isometries • Identify and draw compositions of transformations, such as glide reflections	22.0 Know the effect of rigid motions on figures in the coordinate plane including rotations, translations, and reflections	
	12.5	• Identify and describe symmetry in geometric figures	22.0 Know the effect of rigid motions on figures in space, including rotations and reflections	
	12.6	• Use transformations to draw tessellations • Identify regular and semiregular tessellations and figures that will tessellate	22.0 Know the effect of rigid motions on figures in space, including rotations, translations, and reflections	
	12.7	• Identify and draw dilations	8.0 Know and solve problems involving the perimeter and area of common geometric figures 11.0 Determine how changes in dimensions affect the perimeter and area of common geometric figures	