FRANKLIN-SIMPSON HIGH SCHOOL

Course Name: Geometry   **Unit Name:** **What's Your Angle on Polygons and Quadrilaterals?**

Quality Core Objectives:

	Unit 7 What's Your Angle on Polygons and Quadrilaterals?	
B.1.	Mathematical Processes	a. Apply problem-solving skills (e.g., identifying irrelevant or missing information, making conjectures, extracting mathematical meaning, recognizing and performing multiple steps when needed, verifying results in the context of the problem) to the solution of real-world problems
		b. Use a variety of strategies to set up and solve increasingly complex problems
		c. Represent data, real-world situations, and solutions in increasingly complex contexts (e.g., expressions, formulas, tables, charts, graphs, relations, functions) and understand the relationships
		d. Use the language of mathematics to communicate increasingly complex ideas orally and in writing, using symbols and notations correctly
		e. Make appropriate use of estimation and mental mathematics in computations and to determine the reasonableness of solutions to increasingly complex problems
		f. Make mathematical connections among concepts, across disciplines, and in everyday experiences
		g. Demonstrate the appropriate role of technology (e.g., calculators, software programs) in mathematics (e.g., organize data, develop concepts, explore relationships, decrease time spent on computations after a skill has been established)
		h. Apply previously learned algebraic concepts in geometric contexts
C.1.	Logic and Proof	a. Use definitions, basic postulates, and theorems about points, segments, lines, angles, and planes to write proofs and to solve problems
		b. Use inductive reasoning to make conjectures and deductive reasoning to arrive at valid conclusions
		c. Identify and write conditional and biconditional statements along with the converse, inverse, and contrapositive of a conditional statement; use these statements to form conclusions
		d. Use various methods to prove that two lines are parallel or perpendicular (e.g., using coordinates, angle measures)
		e. Read and write different types and formats of proofs including two-column, flowchart, paragraph, and indirect proofs
		f. Prove that two triangles are congruent by applying the SSS, SAS, ASA, AAS, and HL congruence statements

		g. Use the principle that corresponding parts of congruent triangles are congruent to solve problems
		i. Use properties of special quadrilaterals in a proof
D.1.	Points, Lines, Planes, and Space	a. Identify and model plane figures, including collinear and noncollinear points, lines, segments, rays, and angles using appropriate mathematical symbols
		b. Identify vertical, adjacent, complementary, and supplementary angle pairs and use them to solve problems (e.g., solve equations, use in proofs)
		c. Identify corresponding, same-side interior, same-side exterior, alternate interior, and alternate exterior angle pairs formed by a pair of parallel lines and a transversal and use these special angle pairs to solve problems (e.g., solve equations, use in proofs)
		f. Apply properties and theorems of parallel and perpendicular lines to solve problems
D.2.	Polygons	g. Identify and classify quadrilaterals, including parallelograms, rectangles, rhombi, squares, kites, trapezoids, and isosceles trapezoids, using their properties
		h. Identify and classify regular and nonregular polygons (e.g., pentagons, hexagons, heptagons, octagons, nonagons, decagons, dodecagons) based on the number of sides, the angle measures, and the side lengths
		i. Apply the Angle Sum Theorem for triangles and polygons to find interior and exterior angle measures given the number of sides, to find the number of sides given angle measures, and to solve real-world problems
E.1.	Similarity and Congruence	a. Determine points or lines of symmetry and apply the properties of symmetry to figures
G.1.	Coordinate Geometry	a. Use slope to distinguish between and write equations for parallel and perpendicular lines
		b. Apply the midpoint and distance formulas to points and segments to find midpoints, distances, and missing information
		c. Use coordinate geometry to solve problems about geometric figures (e.g., segments, triangles, quadrilaterals)
D.2.	Application (From English 10 standards)	c. Give impromptu and planned presentations (e.g., debates, formal meetings) that stay on topic and/or adhere to prepared notes
		g. Actively participate in small-group and large-group discussions, assuming various roles

Purpose of the Unit: Use properties of Quadrilaterals and Polygons to solve mathematical and real world problems

Prerequisites: Sum of Angles in a Triangle is 180

Daily Lesson Guide   10 days

Day	Lesson Content and Daily Focus Questions	Tasks/Procedures		Engagement	Assessment and/or Accommodations
		Knowledge and Comprehension Activities	Critical Thinking (High Yield / Literacy /LTF/etc.)		
1,2	Interior and Exterior Angles in Polygons (2 days)		LTF lesson – Angles in a Polygon To discover the sum of exterior angles is 360. Derive (n-2)180 for the sum of interior angles		
3	Create a frame using miter cuts		Real Life Application of interior angles		
4	Find the angles in polygons given the sum of interior angles, sum of exterior angle and interior angle or exterior angle.	Notemaking			Pg 356 7-25 all
5	Properties of Parallelograms		Use dot paper, rulers and protractors to determine properties of parallelograms		Pg. 364 9-12, 14-16, 25-27

6	Proving quadrilaterals are parallelograms	Notemaking			Pg 372 7-16
7	Properties of Rhombuses, Rectangles and Squares	Use models to determine the properties			Pg 374 32-34, 36-44
8	Properties of Trapezoids and Kites				Pg 379 9-14, 15-23 odds
9	Review		Label Polygon sheet		Practice Test
10	Assessment				Test