

FRANKLIN-SIMPSON HIGH SCHOOL

Course Name: Geometry **Unit Name:** Going in Circles

Quality Core Objectives:

Unit 13 Going in Circles	
B.1. Mathematical Processes	<p>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</p> <p>b. Use a variety of strategies to set up and solve increasingly complex problems</p> <p>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</p> <p>d. Use the language of mathematics to communicate increasingly complex ideas orally and in writing, using symbols and notations correctly</p> <p>e. Make appropriate use of estimation and mental mathematics in computations and to determine the reasonableness of solutions to increasingly complex problems</p> <p>f. Make mathematical connections among concepts, across disciplines, and in everyday experiences</p> <p>h. Apply previously learned algebraic concepts in geometric contexts</p>
C.1. Logic and Proof	<p>b. Use inductive reasoning to make conjectures and deductive reasoning to arrive at valid conclusions</p> <p>f. Prove that two triangles are congruent by applying the SSS, SAS, ASA, AAS, and HL congruence statements</p> <p>g. Use the principle that corresponding parts of congruent triangles are congruent to solve problems</p> <p>h. Use several methods, including AA, SAS, and SSS, to prove that two triangles are similar, corresponding sides are proportional, and corresponding angles are congruent</p>
D.1. Points, Lines, Planes, and Space	<p>a. Identify and model plane figures, including collinear and noncollinear points, lines, segments, rays, and angles using appropriate mathematical symbols</p>
D.2. Polygons	<p>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</p>
D.3. Circles	<p>a. Identify and define line segments associated with circles (e.g., radii, diameters, chords, secants, tangents)</p>

	<ul style="list-style-type: none"> b. Determine the measure of central and inscribed angles and their intercepted arcs c. Find segment lengths, angle measures, and intercepted arc measures formed by chords, secants, and tangents intersecting inside and outside circles d. Solve problems using inscribed and circumscribed polygons
E.1. Similarity and Congruence	<ul style="list-style-type: none"> b. Identify congruent figures and their corresponding parts c. Identify similar figures and use ratios and proportions to solve mathematical and real-world problems (e.g., finding the height of a tree using the shadow of the tree and the height and shadow of a person) d. Use the definition of similarity to establish the congruence of angles, proportionality of sides, and scale factor of two similar polygons
F.1. Area and Perimeter	<ul style="list-style-type: none"> a. Find the perimeter and area of common plane figures, including triangles, quadrilaterals, regular polygons, and irregular figures, from given information using appropriate units of measurement d. Find arc lengths and circumferences of circles from given information (e.g., radius, diameter, coordinates) e. Find the area of a circle and the area of a sector of a circle from given information (e.g., radius, diameter, coordinates)
G.1. Coordinate Geometry	<ul style="list-style-type: none"> 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. Write equations for circles in standard form and solve problems using equations and graphs

Purpose of the Unit:

Prerequisites:

Daily Lesson Guide

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	Identify and use parts of circles		Can you solve problems involving circumference?		Have students make a manipulative with diagrams of the vocabulary.
2	Find the measures of central angles and arcs	Introduce central angles using an analog clock.	Can you find the portion of the circumference represented by a central arc?	Find the percentage of the circumference represented by a given angle	Problems Pg. 654 9-23 and 30-35
3	Use properties of a tangent to a circles	Measure the lengths of tangent segments with a common endpoint and use inductive reasoning to make a conjecture.		As students draw circles with different tangent segments, be sure theya re drawing them correctly. Model the process on the board.	
	Recognize and use relationships between arcs and chords.	Paper folding activities offer students a good way to develop key	Give students a diagram of radii, central angles, chords, and arcs. Have them compare congruent		Lesson Check Pg 776 1-3. (together) Problems on 776 and 777 as well as

4		concepts related to central angles, chords, and arcs	chords and distances.		Practice Masters.
5	Find the measure of an inscribed angle and the measure of an angle formed by a tangent and a chord	Prove properties of angles for a quadrilateral inscribed in a circle.	Compare 3 cases...the center of a circle is either on, inside, or outside an inscribed angle. Why consider separately?	Have students indentify arcs intercepted by inscribed angles, Construct both an inscribed and central angle intercepting the same arc. Conclusion?	
6	Find the measures of arcs formed by chords, secants, and tangents.	Identify and describe relationships among inscribed angles, radii, and chords	Discriminate between angles formed by intersecting lines inside and circle and outside the circle.		Pg 794. Work in teams to do 8-11. Then let students draw and work together on board.
7	Find the measure of segments that intersect in the interior and exterior of a circle.				
	Write the equation of a circle. Find the center and radius.				

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