Anoka-Hennepin Secondary Curriculum Unit Plan

Department:	Mathematics	Course:	Geometry (Honors)	Unit 6 Title:	Polygons and Circles	Grade Level(s):	8, 9, 10
Assessed Trimester:	Trimester B	Pacing:	High School: 11 - 13 Middle School: 11 - 15	Date Created:	05/22/2014	Last Revision Date:	08/20/2014

Course Understandings: *Students will understand that:*

A. Some problems require proportional thinking in order to be solved.
B. Coordinate geometry can be used in order to demonstrate spatial relationships.
G. Visualization, spatial reasoning and geometric modeling can be used to solve geometric problems.
F. Properties of two- and three-dimensional figures can be used in classification and problem solving.
H. Algebraic models can be used to solve geometric problems.

DESIRED RESULTS (Stage 1) - WHAT WE WANT STUDENT TO KNOW AND BE ABLE TO DO?

Established Goals

Minnesota State/Local/Technology Standard(s) addressed (2007):

- **Standard (9.3.3.#):** Know and apply properties of geometric figures to solve real-world and mathematical problems and to logically justify results in geometry.
  Benchmark:
  9.3.3.8 Know and apply properties of a circle to solve problems and logically justify results.

- **Standard (9.3.4.#):** Solve real-world and mathematical geometric problems using algebraic methods.
  Benchmark:
  9.3.4.5 Know the equation for the graph of a circle with radius *r* and center $(h,\ k)$, $(x - h)^2 + (y - k)^2 = r^2$, and justify this equation using the Pythagorean Theorem and properties of translations.

Transfer

Students will be able to independently use their learning to: (product, high order reasoning)

-

Meaning

Unit Understanding(s):	Essential Question(s):
Students will understand that: • given a circles radius, circumference and area of a circle can be calculated. • given measure of a central angle, the arc measures of a circle can be calculated. • given measure of an angle with vertex inside the circle, the arc measures of a circle can be calculated. • given measure of an angle with vertex outside the circle, the arc measures of a circle can be calculated.	**Students will keep considering:** •

Acquisition

Knowledge - Students will:	Reasoning - Students will:

- Know the segments and lines related to circles:
  - Secant
  - Tangent
  - Chord
- Know arcs and angles related to circles:
  - Central angle
  - Major Arc
  - Minor Arc
  - Inscribed angle
  - Intercepted arc
  - Semicircle
- Distance formulas
- Standard form for the equation of a circle
- Recognize the difference between inscribed and circumscribed polygons
- Identify the center and radius of a circle from a diagram and/or an equation

- Interpret given information to classify various situations
- Distinguish the center and radius within a circle
- Given the graph of a circle use the center and radius to write an equation
- Justify the equation of a circle using the Pythagorean Theorem and the distance formula
- Justify when to use p and when an approximation is sufficient in a specific problem
- Analyze a circle and classify special segments and lines related to the circle

Skills - Students will:

- Calculate missing length, angles, secants, tangents, chords, interior angles, exterior angles, central angles, arc length, and areas
- Demonstrate the ability to use circle theorems and properties to solve problems

Common Misunderstandings

- Students will sometimes mix up the formulas for angle measure when the vertex is inside the circle vs. when the vertex is outside the circle.
- Students sometimes confuse clockwise rotations with counterclockwise rotations.
- Students sometimes confuse a rotation of positive degree measure, which rotates a figure counterclockwise, with a rotation of negative degree measure, which rotates a figure clockwise.
- Students often mistake the formula for slope with the formula for midpoint and/or the Distance Formula.

Essential new vocabulary

- arc length
- central angle
- chord
- circumscribed
- major arc
- minor arc
- inscribed
- inscribed angle
- intercepted arc
- secant
- semicircle
- tangent