Anoka-Hennepin Secondary Curriculum Unit Plan

Department:	Mathematics	Course:	Intermediate PreAlgebra	Unit 8 Title:	Circles with Proportional Reasoning	Grade Level(s):	7
Assessed Trimester:	Trimester C	Pacing:	12-15 Days	Date Created:	5/31/2014	Last Revision Date:	6/16/2014

Course Understandings: *Students will understand that:*

A. There are multiple strategies and representations that can be used to solve real world problems involving rational numbers.

C. Proportional reasoning and percents can be used to solve real world problems.

D. The characteristics of geometric figures are used in the real world.

G. There are appropriate uses for various technologies and that limitations may exist with them.

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 (7.3.1.#): Use reasoning with proportions and ratios to determine measurements, justify form Benchmark:	ulas and solve real-world and mathematical problems inv				
 7.3.1.1 Demonstrate an understanding of the proportional relationship between the diameter and area of circles and sectors of circles to solve problems in various contexts. 7.3.1.2 Calculate the volume and surface area of cylinders and justify the formulas used. 	d circumference of a circle and that the unit rate (constant				
Transfer					
 Students will be able to independently use their learning to: (product, high order reasoning) Use formulas and proportional reasoning to solve real-world problems involving circles and cylinders. 					
Меа	Meaning				
Unit Understanding(s):	Essential Q				
 Students will understand that: Identifying parts of a circle. There is a proportional relationship between the diameter and circumference of a circle where the unit rate (constant of proportionality) of the circumference to diameter is π. Formulas for circumference and area of a circle can be justified and used to solve real-world mathematical problems. Formulas for surface area and volume of cylinders can be justified and used to solve real-world mathematical problems. Area and arc length of a sector are proportionally related to the area and circumference of a circle. 	 Students will keep considering: How can the circumference of a circle be used to What is the relationship between circumference a What shapes are cylinders made of and how can How is finding the volume of a cylinder similar to f How can I use the area and circumference of a w 				
Αϲϥι	uisition				

olving circles and related geometric figures.

of proportionality) is π . Calculate the circumference and

Question(s):

- find the the area of a circle?
- and diameter of a circle?
- they be used to find surface area.
- finding the volume of a rectangular prism?
- hole circle to find the area and arc length of a sector?

Common Misunderstandings	Essential new vocabulary		
 Apply formulas to real-world situations. Recognize π as the constant of proportionality between circumference and diameter 			
 Justify the formulas used with circles and cylinders. 			
Reasoning - Students will:	 Solve real-world situations involving circles and cy 		
 Understand that a cylinder is made up of two circles and a rectangle 	 Calculate volume and surface area of a cylinder. 		
 Use 3.14 to approximate π 	 Show the proportional relationships between arc least 		

•	Students sometimes believe r ² is the same as r x 2	•	Arc	
•	Students do not label their answers with appropriate units	•	Circumference	
•	Students believe π is equivalent to 3.14 rather than being an approximate.	•	Diameter	
•	Use the diameter in place of the radius or vice versa.	•	Radius	
•	Students use the radius or diameter for the base in volume rather than finding the area of the base.	•	Lateral Surface Area	
•	Confused "lateral surface area" with total surface area.	•	Notation: π	
•	If a cylinder is laying on its side, students sometimes misread the height as the vertical distance, which	•	Sector	
	would actually be the diameter in this orientation.			

length and circumference and sectors and area.

ylinders