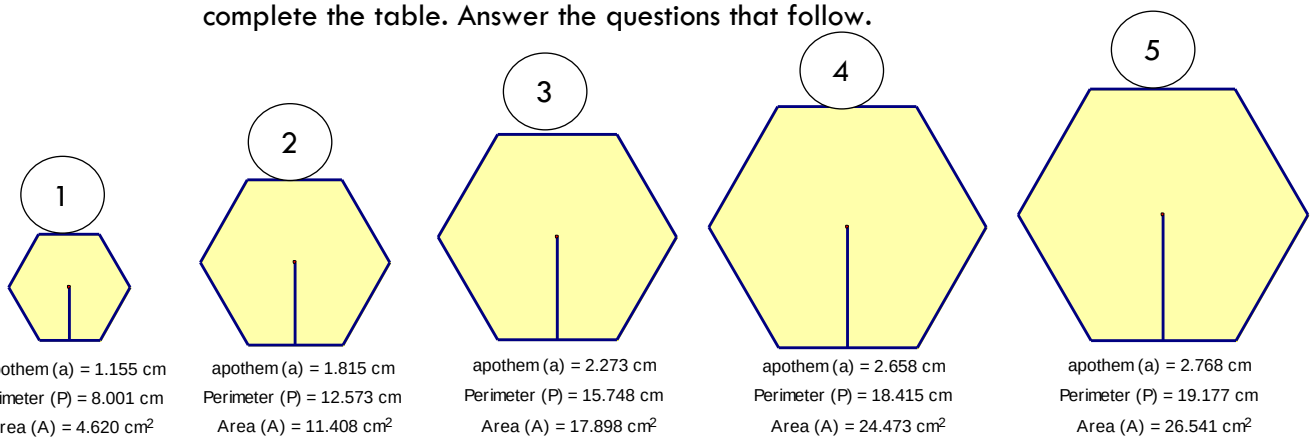
Name _____ Date _____

Perimeter and Area of Polygons and Circles

Explore Activity

Directions: The data below were collected using dynamic geometry software. Use the data to complete the table. Answer the questions that follow.



1: apothem (a) = 1.155 cm, Perimeter (P) = 8.001 cm, Area (A) = 4.620 cm^2

2: apothem (a) = 1.815 cm, Perimeter (P) = 12.573 cm, Area (A) = 11.408 cm^2

3: apothem (a) = 2.273 cm, Perimeter (P) = 15.748 cm, Area (A) = 17.898 cm^2

4: apothem (a) = 2.658 cm, Perimeter (P) = 18.415 cm, Area (A) = 24.473 cm^2

5: apothem (a) = 2.768 cm, Perimeter (P) = 19.177 cm, Area (A) = 26.541 cm^2

Hexagon Number	Apothem (a) (cm)	$\frac{1}{2}a$	Perimeter (P) (cm)	Area (A) (cm^2)
1				
2				
3				
4				
5				

Debriefing Questions

1. Taking a rounding error into account, what is the relationship among the apothem, perimeter and area of each hexagon?

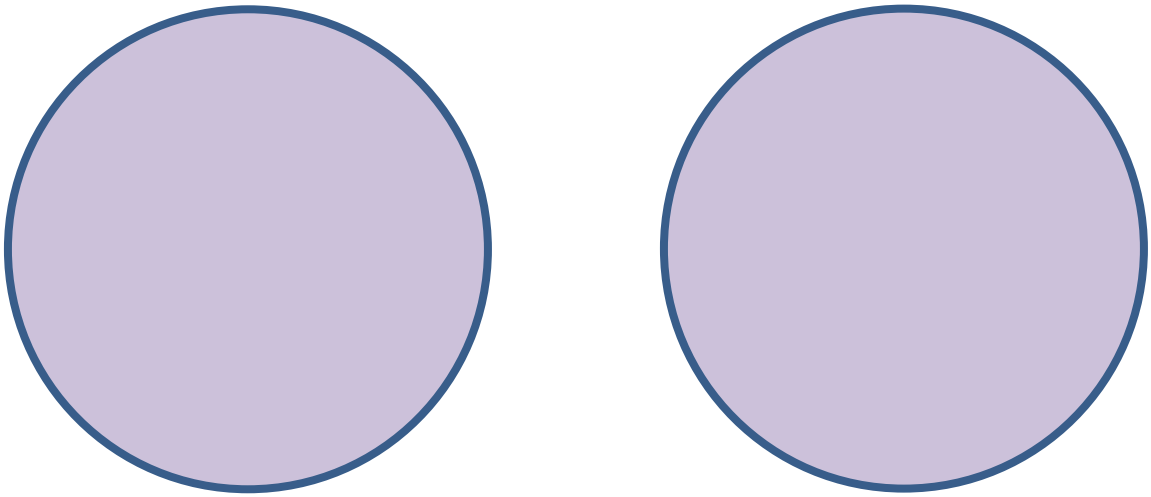
2. What symbolic formula can you write to show the relationship among the apothem, perimeter and area of each hexagon?

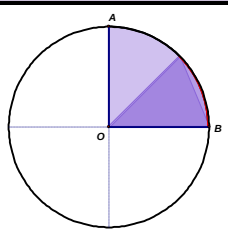
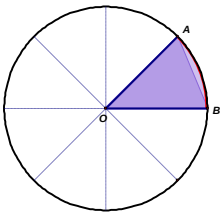
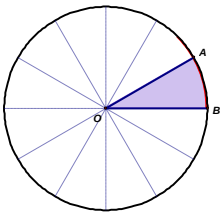
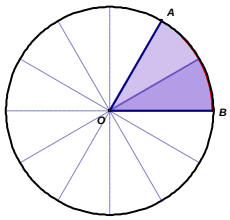
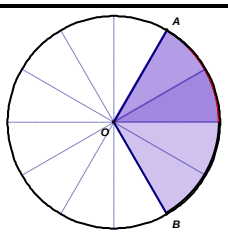
3. Explain why your formula can be used to find the area of any regular polygon.

© Cosenza & Associates, LLC. All rights reserved.

Name _____ Date _____

Directions: Cut out or trace the two circles below. Use paper folding or a protractor to create the sectors shown in the table. Use a centimeter ruler to measure and help you complete the table.



Circle	$m\angle AOB$	$\frac{m\angle AOB}{360}$	Circumference of the Circle	Length of arc AB	Area of the Circle	Area of sector AOB
	$90°$	$\frac{90}{360}=\frac{1}{4}$	$C=\pi d$ $C=3.14(6.5)$ $C=20.41cm$	$L_{arc}=\frac{1}{4}(20.41)$ $L_{arc}=5.1cm$	$A=\pi r^2$ $A=3.14(3.25)^2$ $A=33.17cm^2$	$A_{sec}=\frac{1}{4}(33.17)$ $A_{sec}=8.29cm^2$
						
						
						
						

© Cosenza & Associates, LLC. All rights reserved.

Name_____Date_____

Debriefing Questions

1. How did you determine the length of arc *AB*?

2. How did you determine the area of sector *AOB*?

3. What formula can be used to find the length of an arc of a circle?

4. What formula can be used to find the area of a sector of a circle?

© Cosenza & Associates, LLC. All rights reserved.