

NAME \_\_\_\_\_

Date \_\_\_\_\_

Period \_\_\_\_\_

# SYLLABUS

## GEOMETRY H

### *Unit 7 Syllabus: Area*

<u>Day</u>	<u>Topic</u>
1	Areas of Parallelograms and Triangles
2	Areas of Trapezoids, Rhombuses and Kites
3	Areas of Regular Polygons
4	Quiz
5	Perimeters and Areas of Similar Figures
6	Circles and Arcs
7	Areas of Arcs and Sectors
8	Review
9	Test

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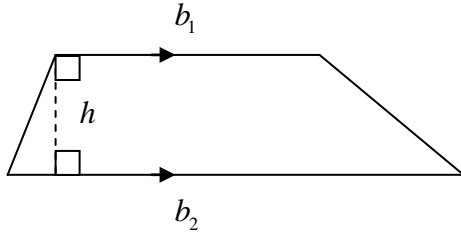
# NOTES

## GEOMETRY H

### Areas of Trapezoids, Rhombi, Kites - Unit 7 Day 2

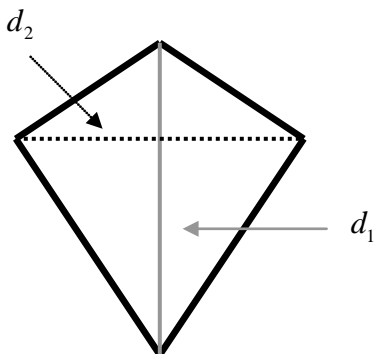
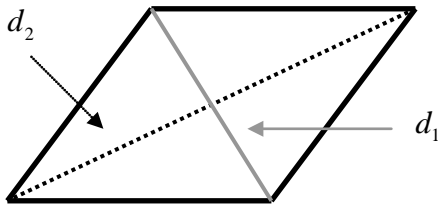
Directions: This notes sheet may be used during the game. You can add information to it if you so desire.

#### Part I: The Trapezoid



$$A = \frac{1}{2}h(b_1 + b_2)$$

#### Part II: The Rhombus & the Kite (both use the same formula)



$$A = \frac{1}{2}d_1d_2$$

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# NOTES

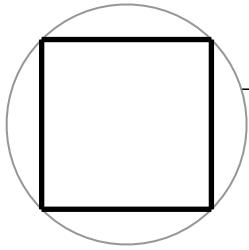
## GEOMETRY H

### Unit 7 Day 3: Areas of Regular Polygons

Warm-up: Fill in the chart below for regular polygons

Sum of Interior Angles	Sum of Exterior Angles	One Interior Angle	One Exterior Angle

**Fact:** You can circumscribe a circle about any regular polygon.

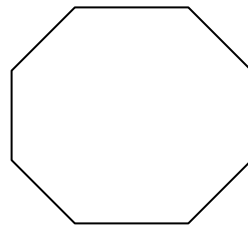
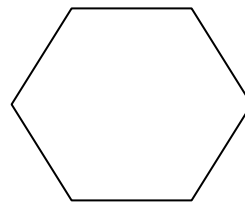
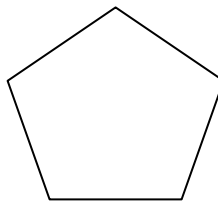
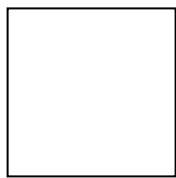
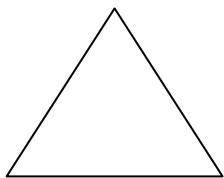


This means that the polygon (and circle) have a \_\_\_\_\_.

Therefore, the polygon also has \_\_\_\_\_.

Finally, each polygon has apothems, which are...

For each regular polygon below, draw all radii using a solid line, and each apothem using a dashed line.

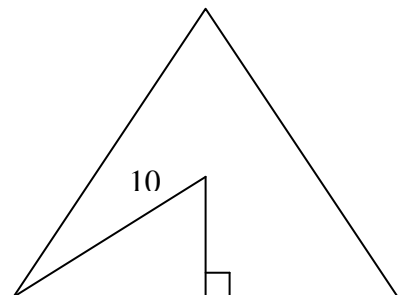


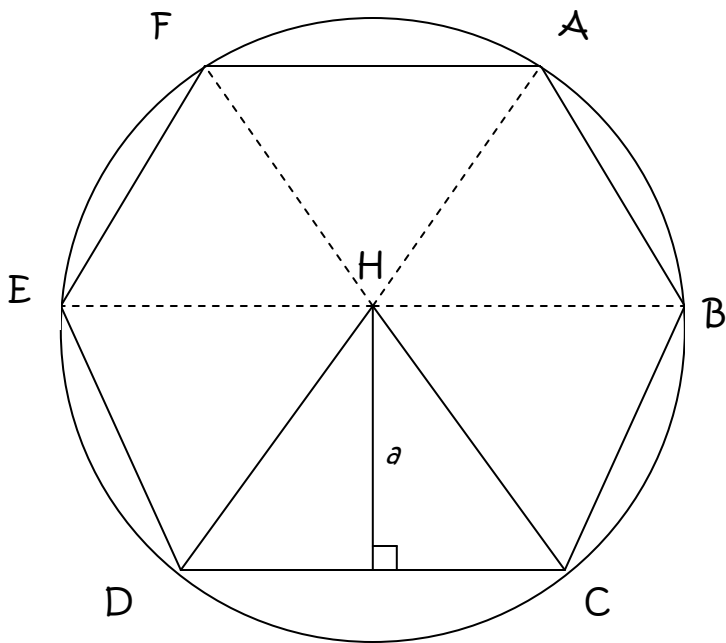
Finding the area of a regular polygon

$$A = \frac{1}{2}ap$$

$a$  represents the \_\_\_\_\_.

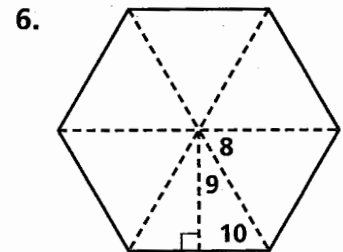
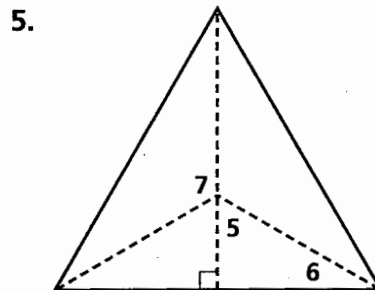
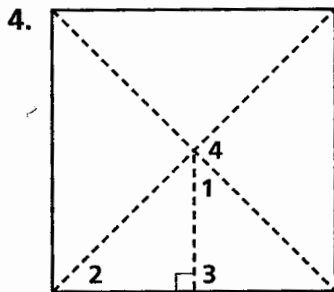
$p$  represents the \_\_\_\_\_.





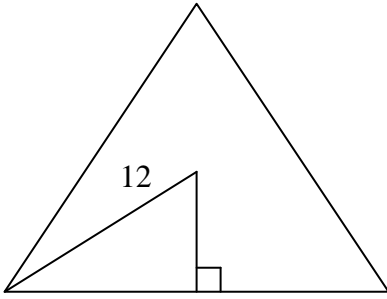
1. What is the **center** of the circle above? \_\_\_\_\_
2. What is the **radius**? \_\_\_\_\_
3. The \_\_\_\_\_, the distance from the center to any **SIDE** of the polygon is  $a$ .  
\* in order for a length to be a distance it must be perpendicular to the side.
4. How can you find  $m\angle DHC$  \_\_\_\_\_
5. What kind of triangle is  $\triangle DHC$  \_\_\_\_\_
6.  $a$  is the \_\_\_\_\_ of  $\triangle DHC$  which means it passes through the \_\_\_\_\_ of  $\overline{DC}$

**Each regular polygon has radii and an apothem as shown. Find the measure of each numbered angle.**

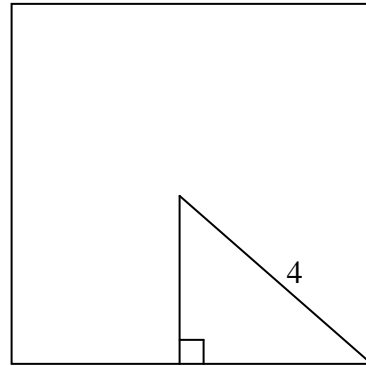


Find the perimeter and area of each regular polygon.

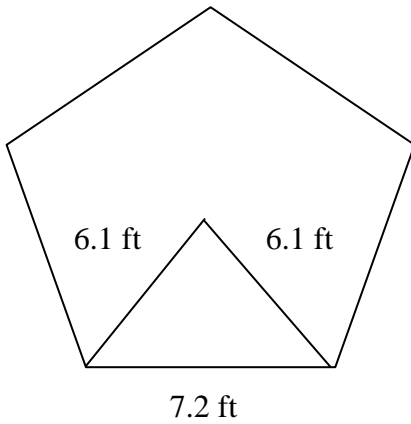
1.



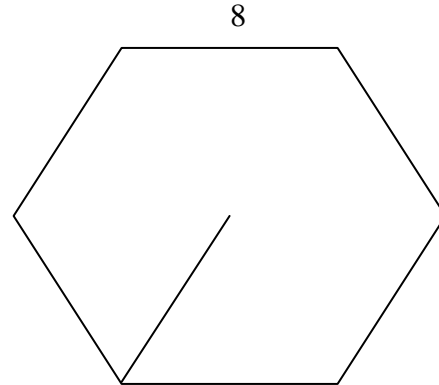
2.



3.



4.



Closure:

a) Describe the difference between the apothem of a polygon and the radius of a polygon.

b) Describe in words how you would solve #4. Pretend you are talking to someone who has never seen it before.

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# NOTES

## GEOMETRY H

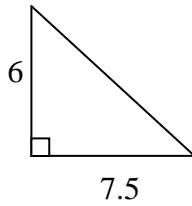
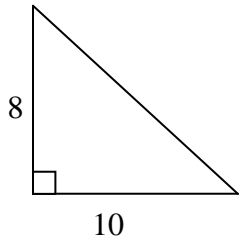
### Areas and Perimeters of Similar Figures - Unit 7 Day 5

Directions: For each pair of figures below, make 3 ratios of bigger: smaller.  
Be sure to write as reduced fractions! Use the MATH-FRAC button if necessary.

Ratio #1: Side Length

Ratio #2: Perimeters

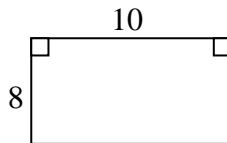
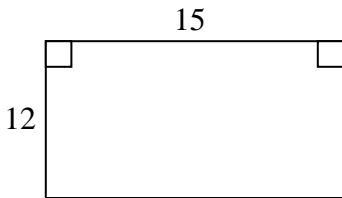
Ratio #3: Areas



Ratio #1

Ratio #2

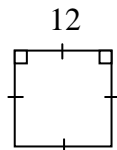
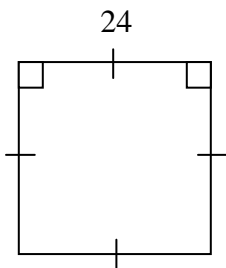
Ratio #3



Ratio #1

Ratio #2

Ratio #3



Ratio #1

Ratio #2

Ratio #3

Based on your findings above, make a generalization about the ratios. In other words, if a side length of the first figure was  $a$ , and the second figure was  $b$ , what would the three ratios be?

Vocab Reminder – Similarity Ratio:

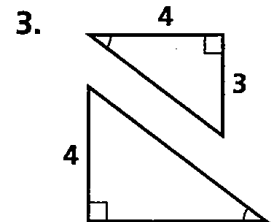
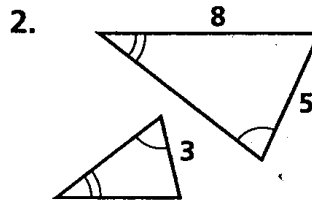
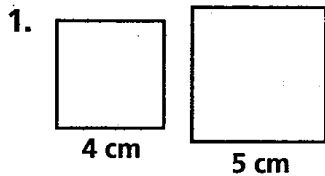
The ratio of the \_\_\_\_\_ side of \_\_\_\_\_ figures.

Fact: If the similarity ratio of two similar figures is  $\frac{a}{b}$ , then ...

- 1) The ratio of their perimeters is
- 2) The ratio of their areas is

\* Important!: This does not tell you the **actual** areas – it just tells you the (reduced!) ratios.

**For each pair of similar figures, find the ratio of the perimeters and the ratio of the areas.**



4. What is the ratio of the perimeters of two regular hexagons with areas  $8 \text{ in}^2$  and  $32 \text{ in}^2$ ?

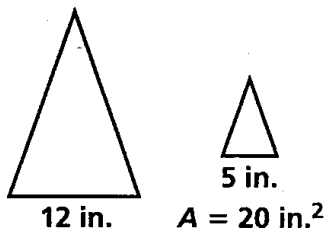
5. What is the similarity ratio of two rectangles with perimeters 32 in and 24 in?

6. The similarity ratio of two similar polygons is 5:6. What is the ratio of their perimeters?

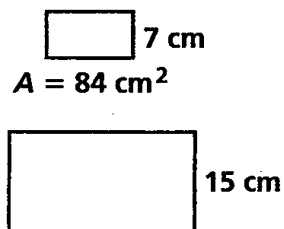
7. Using #6, what is the ratio of their areas?

**For each pair of similar figures, the area of the smaller figure is given.  
Find the area of the larger figure.**

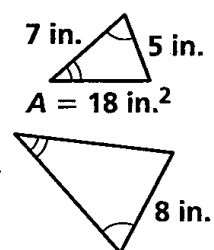
8.



9.



10.



Wrap-up

11. The shorter sides of a rectangle are 6 ft. The shorter sides of a similar rectangle are 9 ft.  
the area of the smaller rectangle is  $48 \text{ ft}^2$ . What is the area of the larger rectangle?

Extension: Start #40 from the HW.

- a) Find the area of a regular hexagon with sides 2 cm long. Leave your answer in simplest radical form
- b) Use your answer in part a to find the areas of regular polygons with the following sides lengths... i) 6 cm      ii) 3 cm      iii) 8 cm



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# NOTES

## GEOMETRY H

### Unit 7 Day 6: Circles and Arcs

**T/E** Inspiring the Future **Vocabulary Review**

- Radius
- Diameter
- Central Angle



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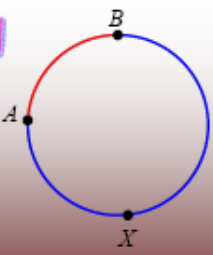
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**T/E** Inspiring the Future **Arcs**

The "Short" Way  $\overbrace{AB}$  The "Long" Way  $\overbrace{AXB}$



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**T/E** Inspiring the Future **Minor & Major Arcs**

The "Short" Way Anything less than half way Uses 2 Letters  $\overbrace{AB}$

The "Long" Way Halfway or more Uses 3 Letters  $\overbrace{AXB}$



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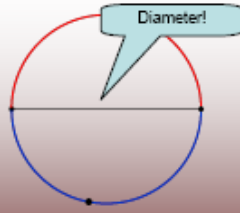
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# Semicircle

Exactly "Half" Way

Still need 3 letters  
(so you know which way to go!)




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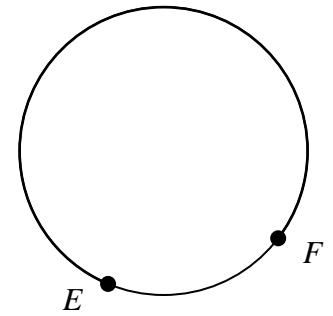
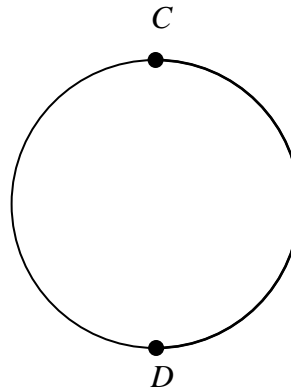
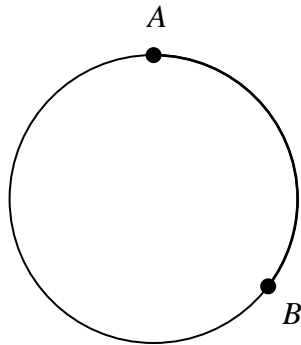
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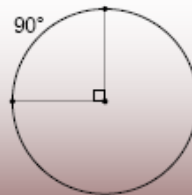
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Practice: Determine whether each arc is a major arc, minor arc, or semicircle. Then write it in arc notation.



# Degree Measures of Arcs

The Degree Measure of an Arc Equals the measure of the central angle




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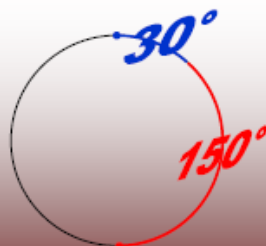
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# Arc Addition Postulate




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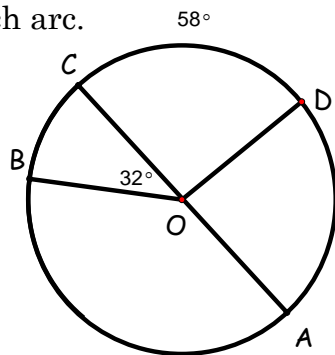
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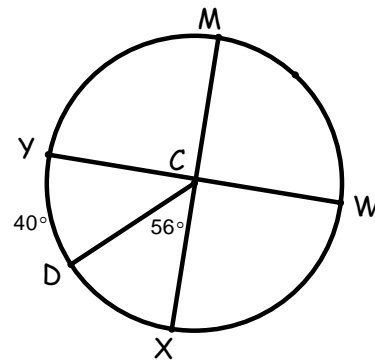
1. Find the measure of each arc.

$\odot C$



- a.  $\widehat{BC}$
- b.  $\widehat{BD}$
- c.  $\widehat{ABC}$
- d.  $\widehat{AB}$

2. Find  $m\widehat{XY}$  and  $m\widehat{DXM}$  in



**T/E** Inspiring the Future Length of an Arc

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$C = 2\pi r$

$L = 2\pi r$

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**T/E** Inspiring the Future Length of Arc Continued

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$m = 90^\circ$

$L = \frac{1}{4} 2\pi r$

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# Formula: Length of Arc

$$L = \frac{m}{360} \cdot 2\pi r$$

$m$  represents the DEGREE measure of the arc

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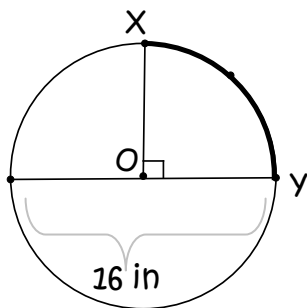
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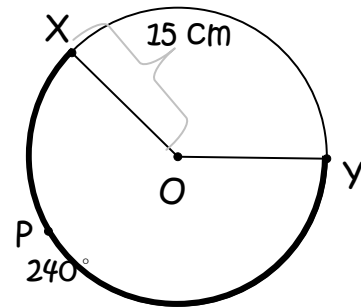
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Find the length of each arc shown. Leave your answer in terms of  $\pi$

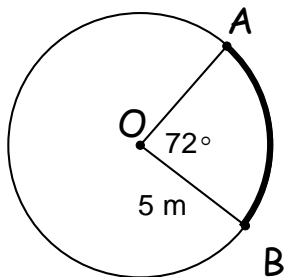
1.



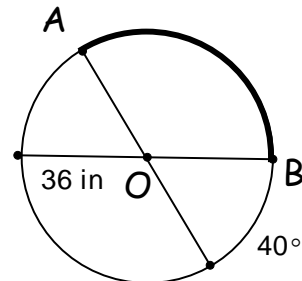
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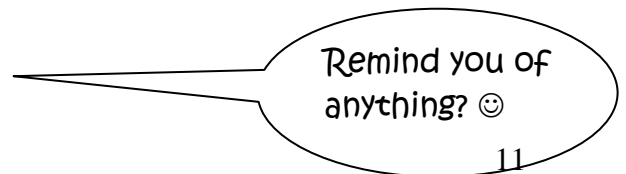
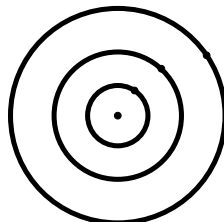
3.



4.



**Concentric Circles:** Circles that lie in the same plane and have the same center.



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# NOTES

## GEOMETRY H

### Areas of Circles and Sectors - Unit 7 Day 7



**Pizza**



**Slice**



**Crust**



**Sector**



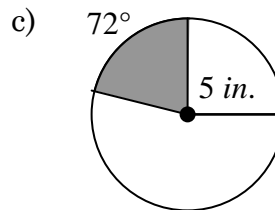
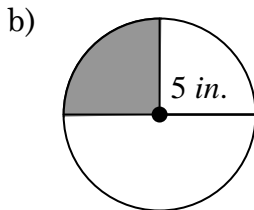
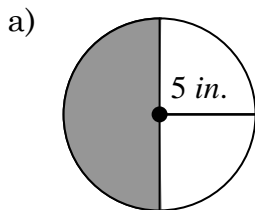
**Segment**

Reminder: Area of a Circle = \_\_\_\_\_

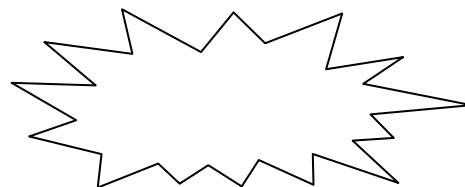
A \_\_\_\_\_ of a circle is a region bounded by an arc of the circle and the two radii to the arc's endpoint.

The part of a circle bounded by an arc and the segment joining its endpoints is known as the \_\_\_\_\_ of a circle

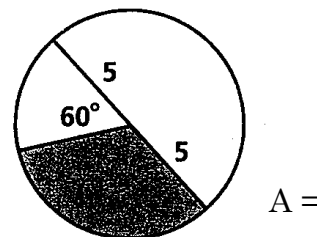
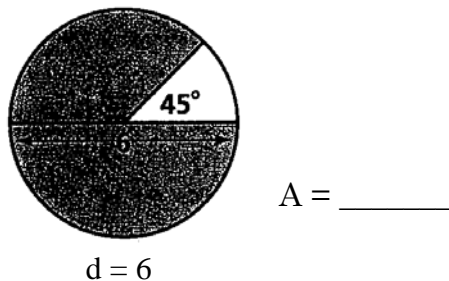
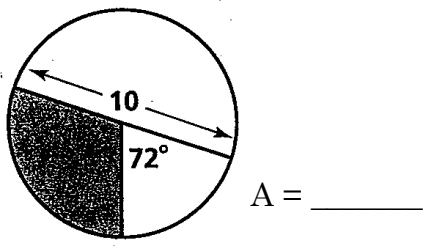
Question: How do you find the area of a sector?

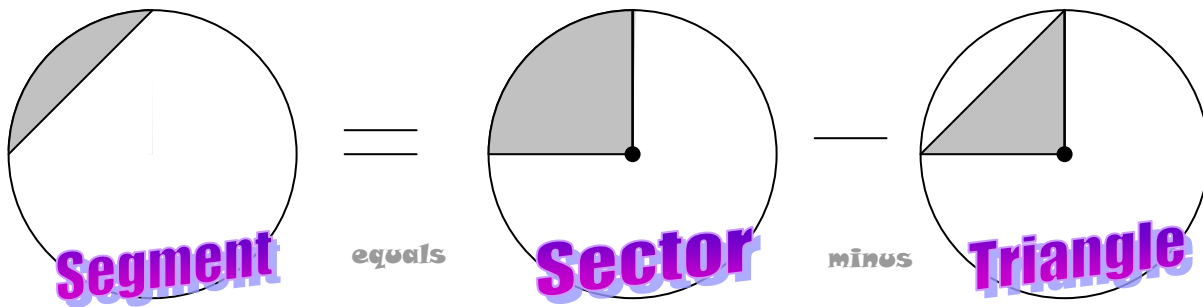


**FORMULA:** Area of a Sector of a Circle =

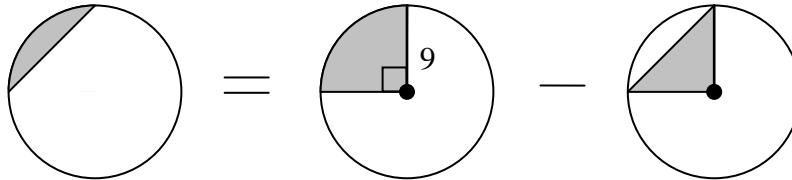


Practice:

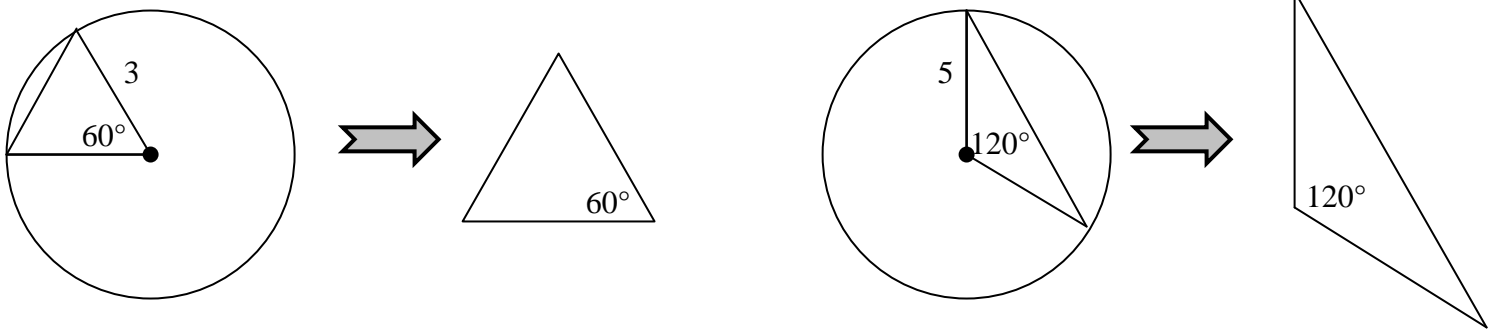




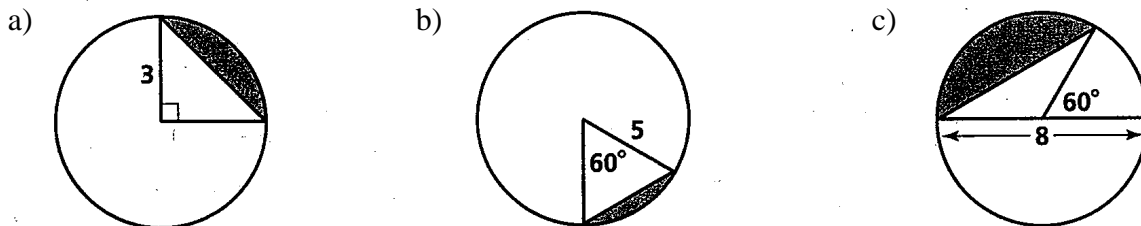
Example 1:



How do you find the area of a triangle if the degree measure is not 90°?



Other angles require that trigonometry – you'll have to wait until the end of the year!



Closure: Define and describe how to find the sector and segment of a circle.

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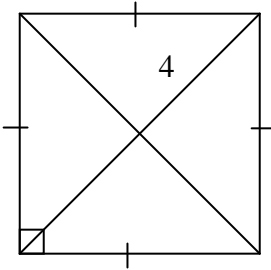
Date \_\_\_\_\_ Period \_\_\_\_\_

# REVIEW!

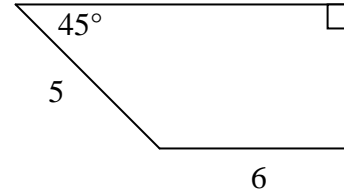
## GEOMETRY H

### Unit 7 Day 8: Unit 8 Review!

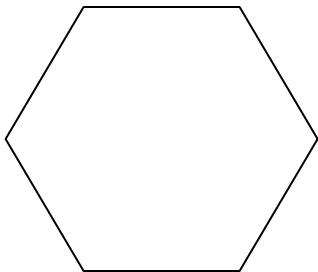
1. Find the area of the square



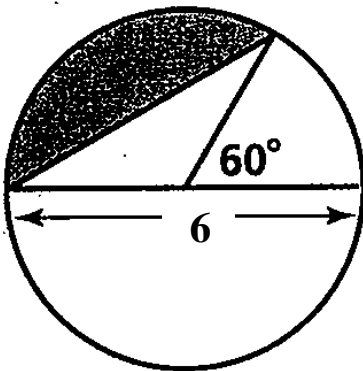
1a. Find the area of the trapezoid



2. The radius of a regular hexagon is 6 inches. Find the area.



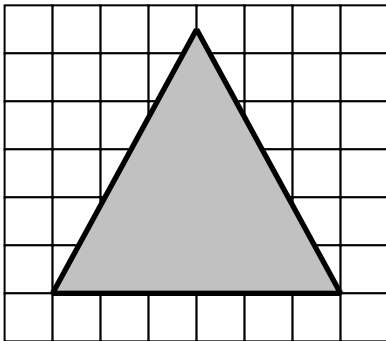
3. Find the area of the shaded area shown below.



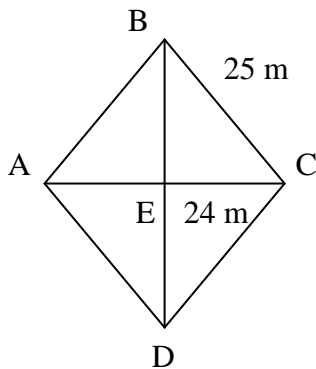
What is the proper name for the shaded area?

4. The area of two similar rectangles are 400 and 900. Find the scale factor of the rectangles.

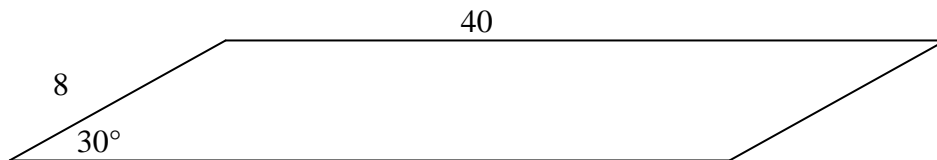
5. Find the area of the **equilateral** triangle shown below.



6. Find the area of the rhombus shown below.  $BC = 25m$  and  $EC = 24m$



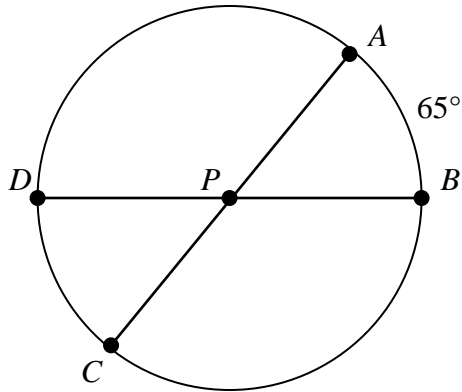
7. Find the area of the parallelogram shown below.





8. The radius of a circle is 8 inches. What is the length of an  $120^\circ$  arc?

9. P is the center of the circle, and  $\overline{AC}$  and  $\overline{BD}$  are diameters. Find the following.



- a) Name a major arc
- b) Name a minor arc
- c) Name a semicircle
- d)  $m\widehat{AD} =$
- e)  $m\widehat{DC} =$
- f)  $m\widehat{ABD} =$
- g)  $m\widehat{CDA} =$

10. Complete the statements below with *always*, *sometimes*, or *never*.

- a. The diagonals of a kite are \_\_\_\_\_ perpendicular.
- b. The ratio of the sides of similar polygons is \_\_\_\_\_ the same as the ratio of areas of those same polygons.
- c. The degree measure of an arc is \_\_\_\_\_ the same as the degree measure of its central angle.
- d. The circumference of a circle and the area of the same circle are \_\_\_\_\_ equal.

11. Complete the chart below by filling in the appropriate formula...

Rhombus	Triangle	Trapezoid	Parallelogram	Reg. Polygon	Kite