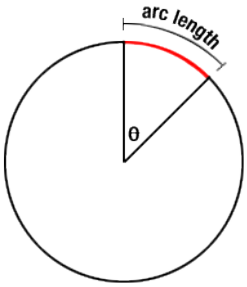
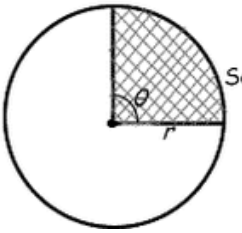
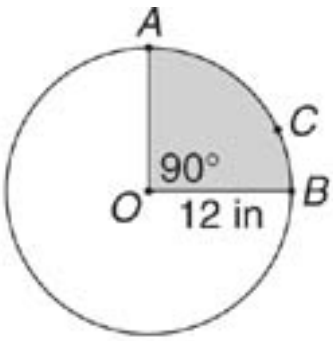
Name: _____ Date: _____

Arc Length & Sector Area

	ARC LENGTH	*SECTOR AREA*
Formula	$l = \dfrac{\theta \times r \times \pi}{180}$	$A = \dfrac{\theta}{2} r^2$ (in radians), or $A = \dfrac{\theta}{360} r^2$ (in degrees)
When to Use	**When finding the length of an arc (a portion of the circumference) given the angle (θ) and the radius (r).**	**When finding the area sector (or portion of) a circle.**
Diagram		 Sector is the shaded area

SAMPLE PROBLEM: Find the length of arc AB and the area of the shaded region
GIVE AN EXACT ANSWER AND IN TERMS OF π.



θ =

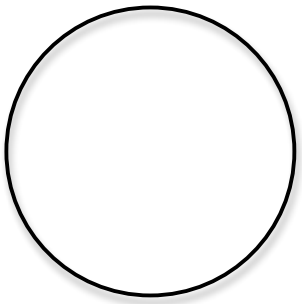
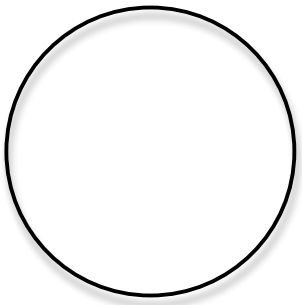
r =

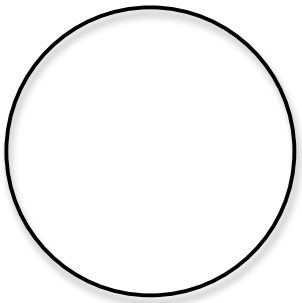
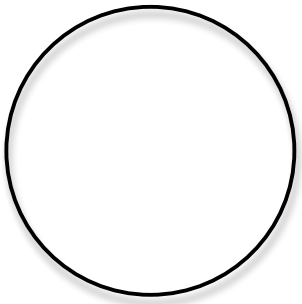
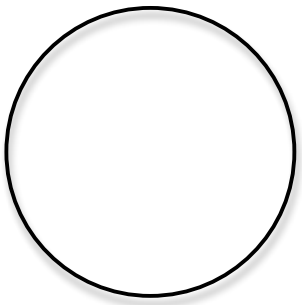
r^2 =

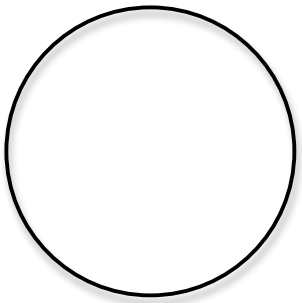
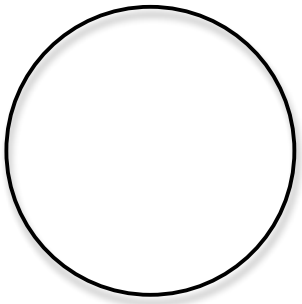
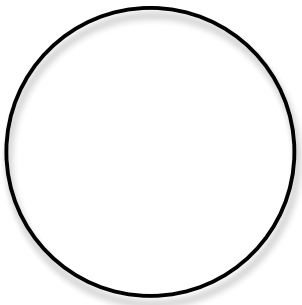
ARC LENGTH	SECTOR AREA

ARC LENGTH	*SECTOR AREA*
$l = \theta \times \frac{\pi}{180} \times r$	$A = \frac{\theta}{2} r^2$ (in radians), or $A = \frac{\theta}{360} r^2$ (in degrees)

PRACTICE PROBLEMS: Find the **ARC LENGTH** and **SECTOR AREA** of each of the following:

PROBLEM	ARC LENGTH	SECTOR AREA
1.)  $\theta =$ $r =$ $r^2 =$	**In terms of π:** **Exact Answer:**	**In terms of π:** **Exact Answer:**
2.)  $\theta =$ $r =$ $r^2 =$	**In terms of π:** **Exact Answer:**	**In terms of π:** **Exact Answer:**

PROBLEM	ARC LENGTH	SECTOR AREA
3.)  $\theta =$ $r =$ $r^2 =$	**In terms of π:** **Exact Answer:**	**In terms of π:** **Exact Answer:**
4.)  $\theta =$ $r =$ $r^2 =$	**In terms of π:** **Exact Answer:**	**In terms of π:** **Exact Answer:**
5.)  $\theta =$ $r =$ $r^2 =$	**In terms of π:** **Exact Answer:**	**In terms of π:** **Exact Answer:**

PROBLEM	ARC LENGTH	SECTOR AREA
6.)  $\theta =$ $r =$ $r^2 =$	**In terms of π:** **Exact Answer:**	**In terms of π:** **Exact Answer:**
7.)  $\theta =$ $r =$ $r^2 =$	**In terms of π:** **Exact Answer:**	**In terms of π:** **Exact Answer:**
8.)  $\theta =$ $r =$ $r^2 =$	**In terms of π:** **Exact Answer:**	**In terms of π:** **Exact Answer:**

NAME: _____

If you do not try, then you can never learn!

Warm-Up

ARC LENGTH	SECTOR AREA	CIRCUMFERENCE & AREA
$l = \theta \times \frac{\pi}{180} \times r$	$A = \frac{\theta}{2} r^2$ (in radians), or $A = \frac{\theta}{360} r^2$ (in degrees)	$C = \pi d$ $A = \pi r^2$

1.) What is the length of the line connecting the points *(-4,2)* and *(10, -2)*?
ROUND ANSWER TO THE NEAREST WHOLE NUMBER.

My Answer: _____

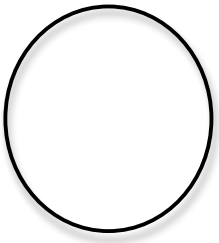
2.) What is the circumference of a circle with a radius of 12 feet?

My Answer: _____

3.) What is the area of a circle with a diameter of 21 yards?

My Answer: _____

4.) What is the length of arc *AB* in the circle below (leave answer in terms of pi)?



My Answer: _____

5.) Carlos operates a pizzeria in Chicago. If the diameter of a large pie at his restaurant is 24 inches, what would be the area of one slice (if every pizza is cut into 8 equal slices)?
ROUND ANSWER TO THE NEAREST TENTH OF AN INCH.

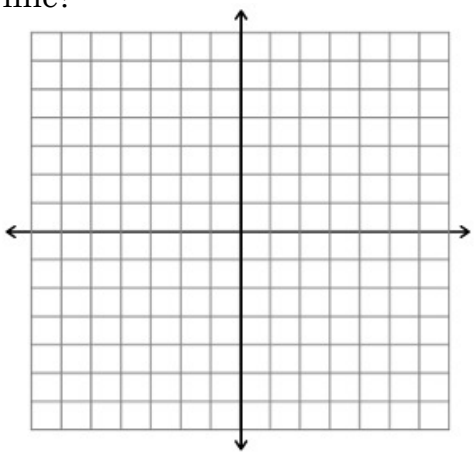
My Answer: _____

NAME: _____ DATE: _____

GEOMETRY HOMEWORK

NO WORK = NO CREDIT!!!

1.) What is the apparent slope of the given line?

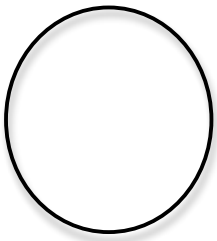


My Answer: _____

2.) Approximately how many feet of rope would be needed to make a circle with a radius of 10 feet (use $\pi = 3.14$ if you do not have a graphing calculator)?

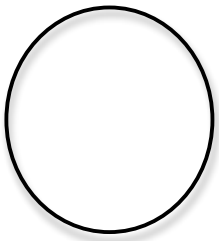
My Answer: _____

3.) What is the area of the given circle (use $\pi = 3.14$ if you do not have a graphing calculator)?



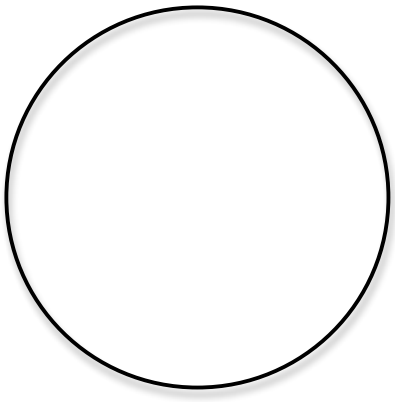
My Answer: _____

4.) What is the arc length of $\overset{\frown}{PQ}$ (give your answer in terms of pi).



My Answer: _____

5.) What is the area of the shaded region in the circle below (leave you answer in terms of pi).



My Answer: _____

NAME: _____ **DATE:** _____

Topic Review: Perpendicular Lines

Model Problems:

Example #1:

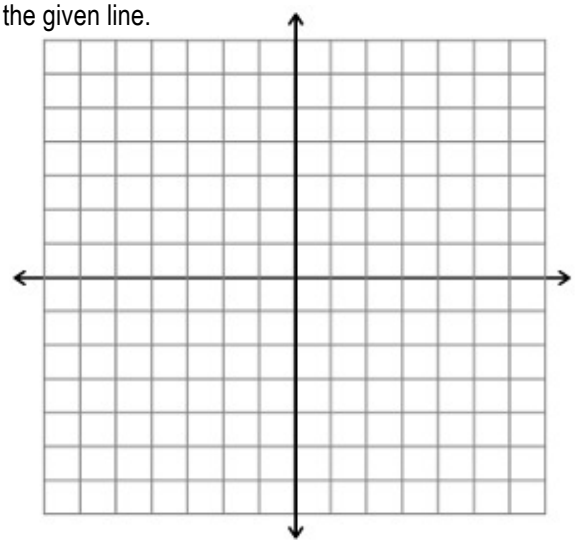
Which of the following lines would be perpendicular to the line $y = \frac{6}{7}x + 2$?

a) $y = -\frac{6}{7}x + 3$ b) $y = \frac{6}{7}x - 5$

c) $y = -\frac{7}{6}x - 5$ d) $y = \frac{7}{6}x + 2$

Example #2:

Through the given point, construct a line that is perpendicular to the given line.



PRACTICE PROBLEMS:

1.) Write the **negative reciprocal** of each of the following slopes:

$\frac{2}{3}$	$-\frac{4}{5}$	$\frac{6}{8}$	-3	$-\frac{1}{4}$
5	$-\frac{1}{3}$	$\frac{5}{3}$	$-\frac{12}{13}$	1

2.) Match each line with the letter of the line that would be **perpendicular** to it.

1.) _____ $y = \frac{2}{3}x + 8$

2.) _____ $y = -\frac{8}{7}x - 2$

3.) _____ $y = 4x + 1$

4.) _____ $y = \frac{1}{3}x + 4$

5.) _____ $y = -3x - 3$

A) $y = -3x + 8$

B) $y = \frac{1}{3}x - 1$

C) $y = -\frac{3}{2}x + 8$

D) $y = \frac{7}{8}x + 13$

E) $y = -\frac{1}{4}x$

For each of the following graphs construct a line through the point that is PERPENDICULAR to the given line: