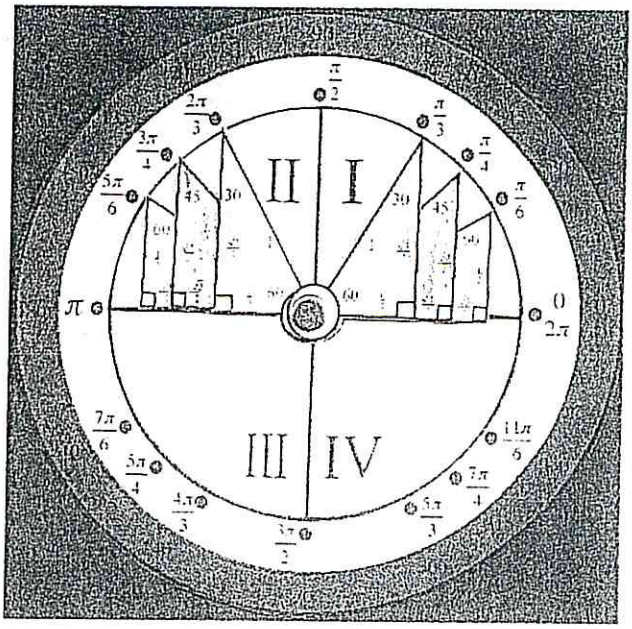
FACEing MATH™ PRESENTS...

The Unit Circle

STUDENT DIRECTIONS:



1. Gather the following materials:
   a. ONE LARGE CIRCLE pattern (with degree measures)
   b. ONE MEDIUM CIRCLE pattern (with radian measures)

*The large and medium circles should be different colors of cardstock!

   c. ONE SMALL CIRCLE pattern (with x and y-axis and labeled quadrants) and SIX special right triangle patterns

*This should be on WHITE cardstock..

   d. THREE Crayons
   e. Scissors, Glue stick, ONE BRAD

2. Locate your six triangle patterns and look at the ANGLE closest to the CIRCLE on each triangle. Now, color the PAIR of 60° triangles the SAME COLOR. Next, color the PAIR of 45° triangles the SAME COLOR. Finally, color the PAIR of 30° triangles the SAME COLOR.

3. Cut out the LARGE, MEDIUM, and SMALL circles. Cut out all SIX special right triangles.

4. Use a glue stick to glue the SMALL CIRCLE to the CENTER of the MEDIUM CIRCLE. The X-AXIS should be lined up with 0 and π. The Y-AXIS should be lined up with $\frac{\pi}{2}$ and $\frac{3\pi}{2}$.

5. Use a glue stick to glue the MEDIUM CIRCLE to the LARGE CIRCLE. The X-AXIS should be lined up with 0° and 180°. The Y-AXIS should be lined up with 90° and 270°.

6. Use your scissors (or an ink pen) to poke a hole through the center of your circle at the origin (where the X and Y-AXIS intersect). If you are in a carpeted room, you can put your circle on the floor and then poke a hole through the origin.

7. Using a single hole punch, punch a hole in the center of each circle that is connected to your SIX card stock TRIANGLES.

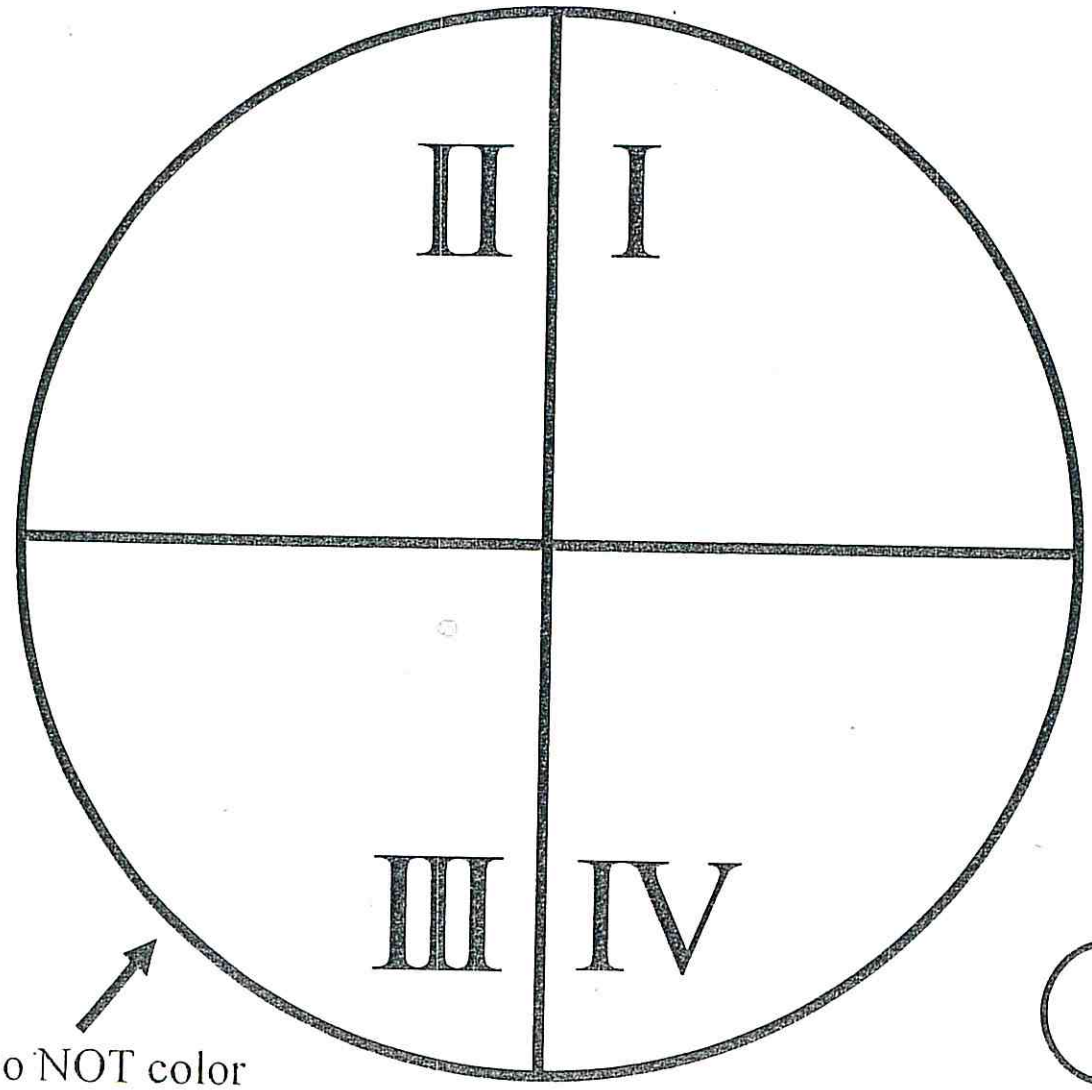
8. Use your brad to secure your triangles together. The recommended order is as follows:
60° triangles (same color), 45° triangles (same color), 30° triangles (same color)

9. Stick the brad holding the triangles through the hole that you made in the center of your circle. Secure the brad to the back of your unit circle.

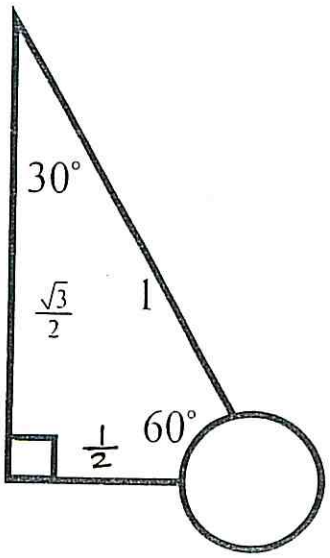
10. Write YOUR NAME on the back of your unit circle.

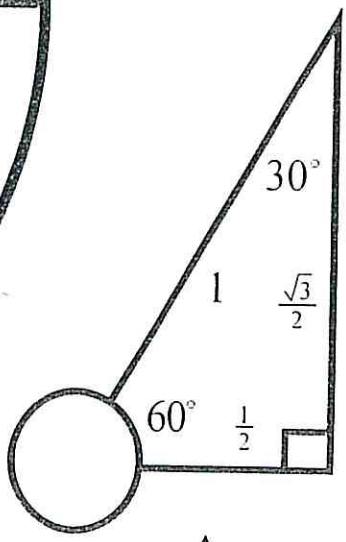
Congratulations... You Just Created the Unit Circle!

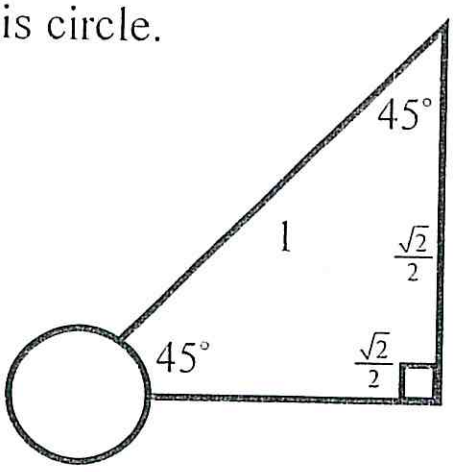
Photocopy this page on WHITE CARDSTOCK.

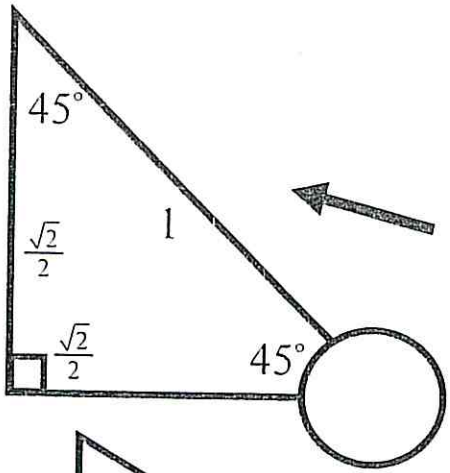


Do NOT color this circle.

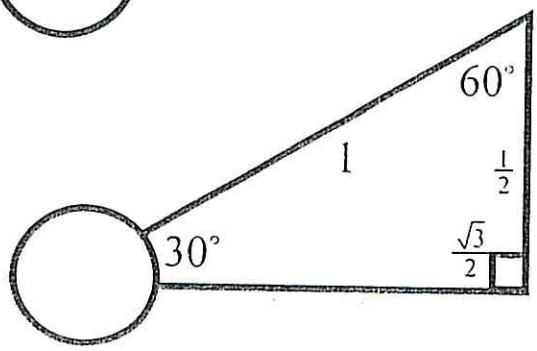


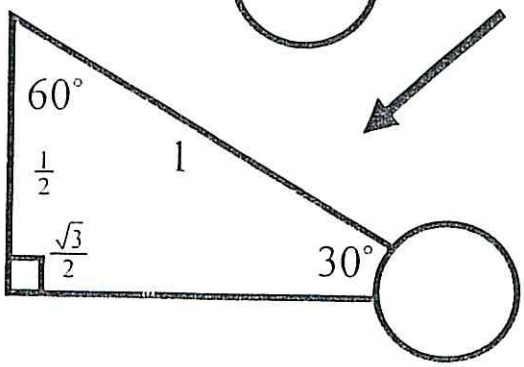


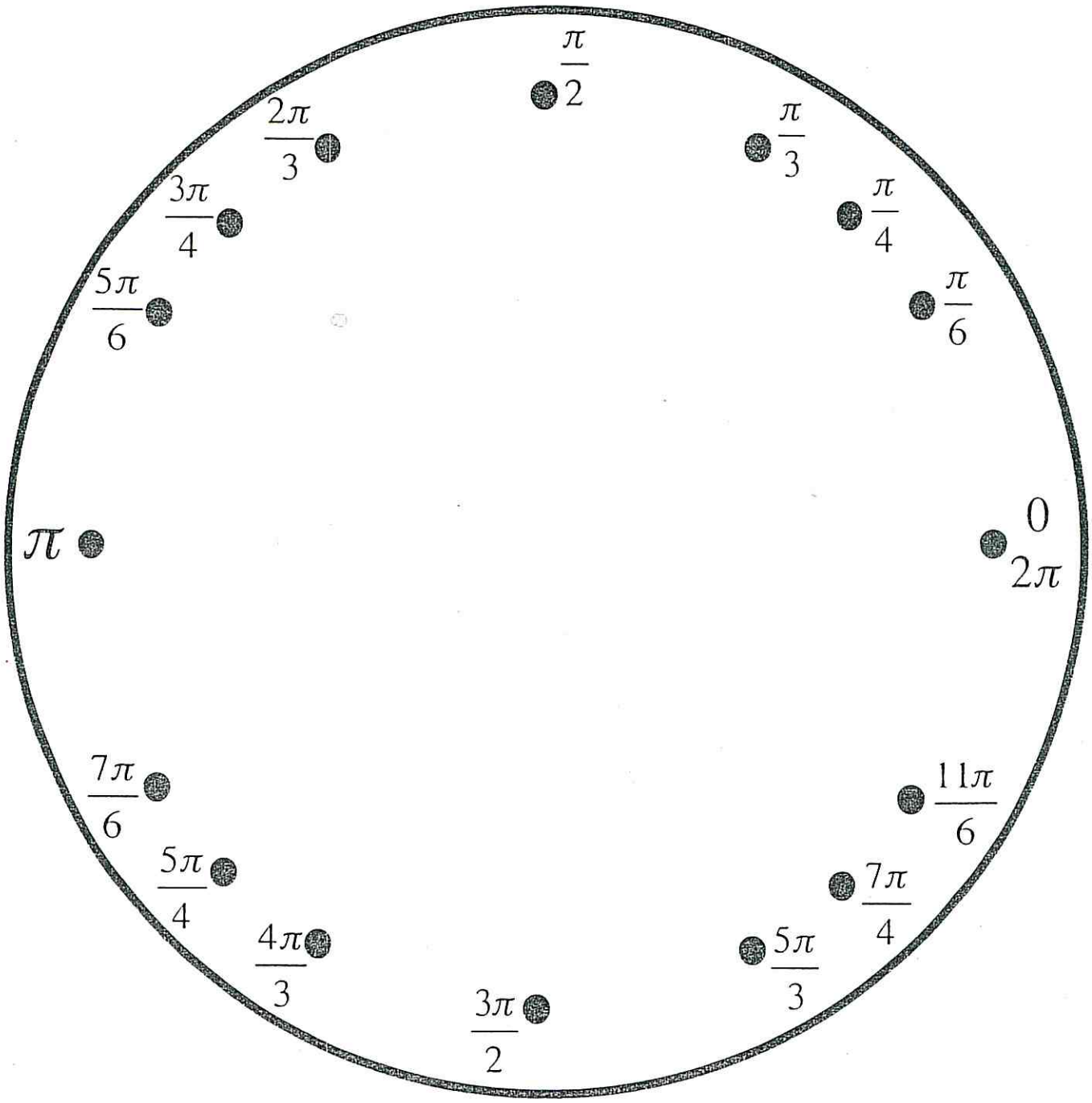


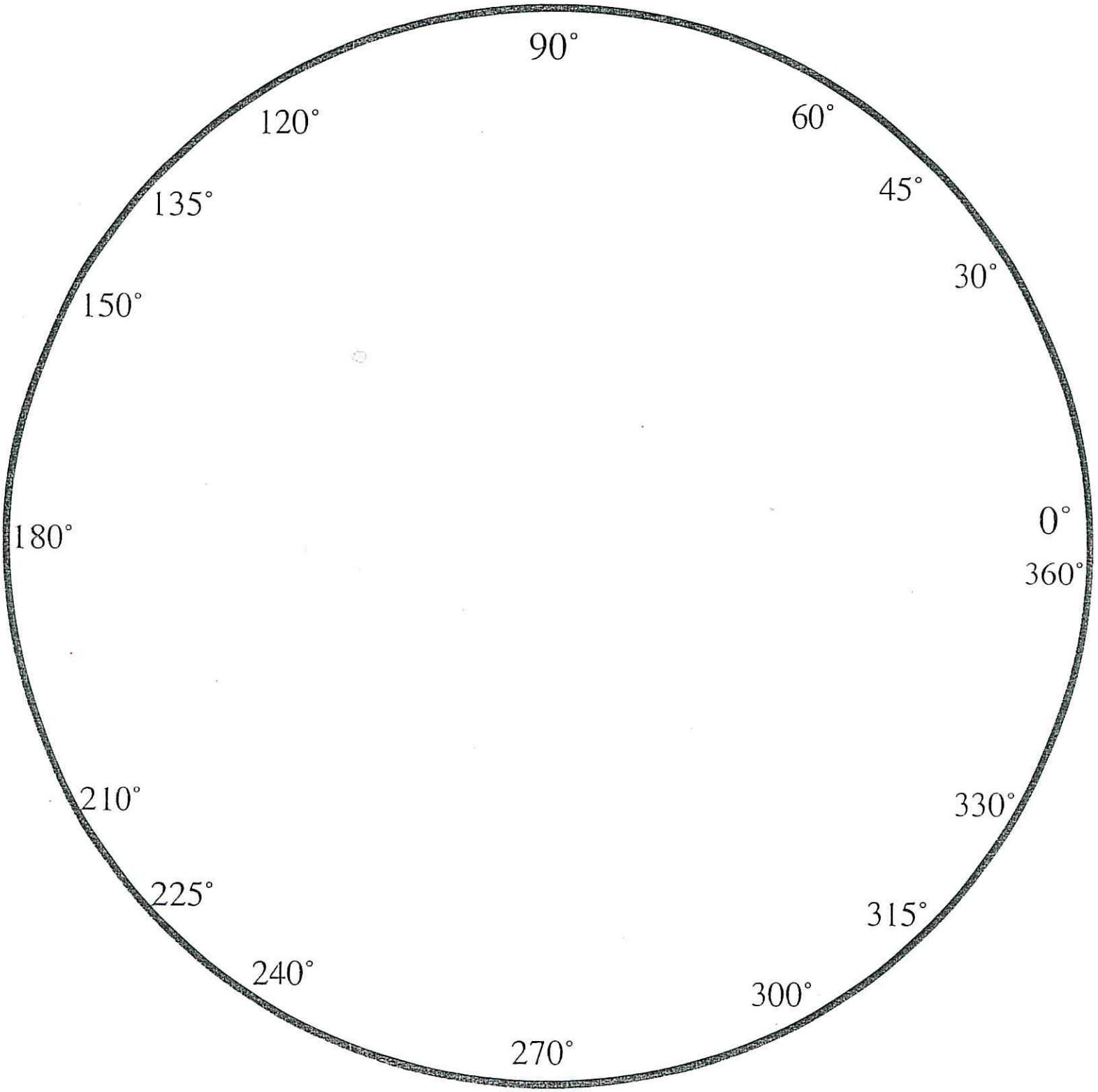


Color each PAIR of triangles the SAME color.






$\frac{\pi}{2}$
$\frac{2\pi}{3}$
$\frac{\pi}{3}$
$\frac{3\pi}{4}$
$\frac{\pi}{4}$
$\frac{5\pi}{6}$
$\frac{\pi}{6}$
π
0
2π
$\frac{7\pi}{6}$
$\frac{11\pi}{6}$
$\frac{5\pi}{4}$
$\frac{7\pi}{4}$
$\frac{4\pi}{3}$
$\frac{5\pi}{3}$
$\frac{3\pi}{2}$


90°
120°
60°
135°
45°
150°
30°
180°
0°
360°
210°
330°
225°
315°
240°
300°
270°

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Name: _____

My Hand-Made Unit Circle

Directions: Using ONLY your hand-made UNIT CIRCLE, complete the table below. DO NOT use a CALCULATOR.

(There may be more than one solution to certain rows. You only need to list one of the possibilities, NOT all of them.)

ANGLE in RADIANS	ANGLE in DEGREES	COS θ	SIN θ	COORDINATE (x, y)	POSITIVE COTERMNAL ANGLE	NEGATIVE COTERMINAL ANGLE	QUADRANT # or AXIS
$\frac{\pi}{6}$	30°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$	390°	-330°	I
				$\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$			
	45°						
						-90°	
$\frac{5\pi}{4}$							
		$\frac{\sqrt{2}}{2}$					
			$-\frac{\sqrt{3}}{2}$				
$\frac{11\pi}{6}$							
		$-\frac{\sqrt{2}}{2}$					
					360°		
$\frac{\pi}{2}$							
	180°						
							III
			$\frac{1}{2}$				
$\frac{2\pi}{3}$							
							IV

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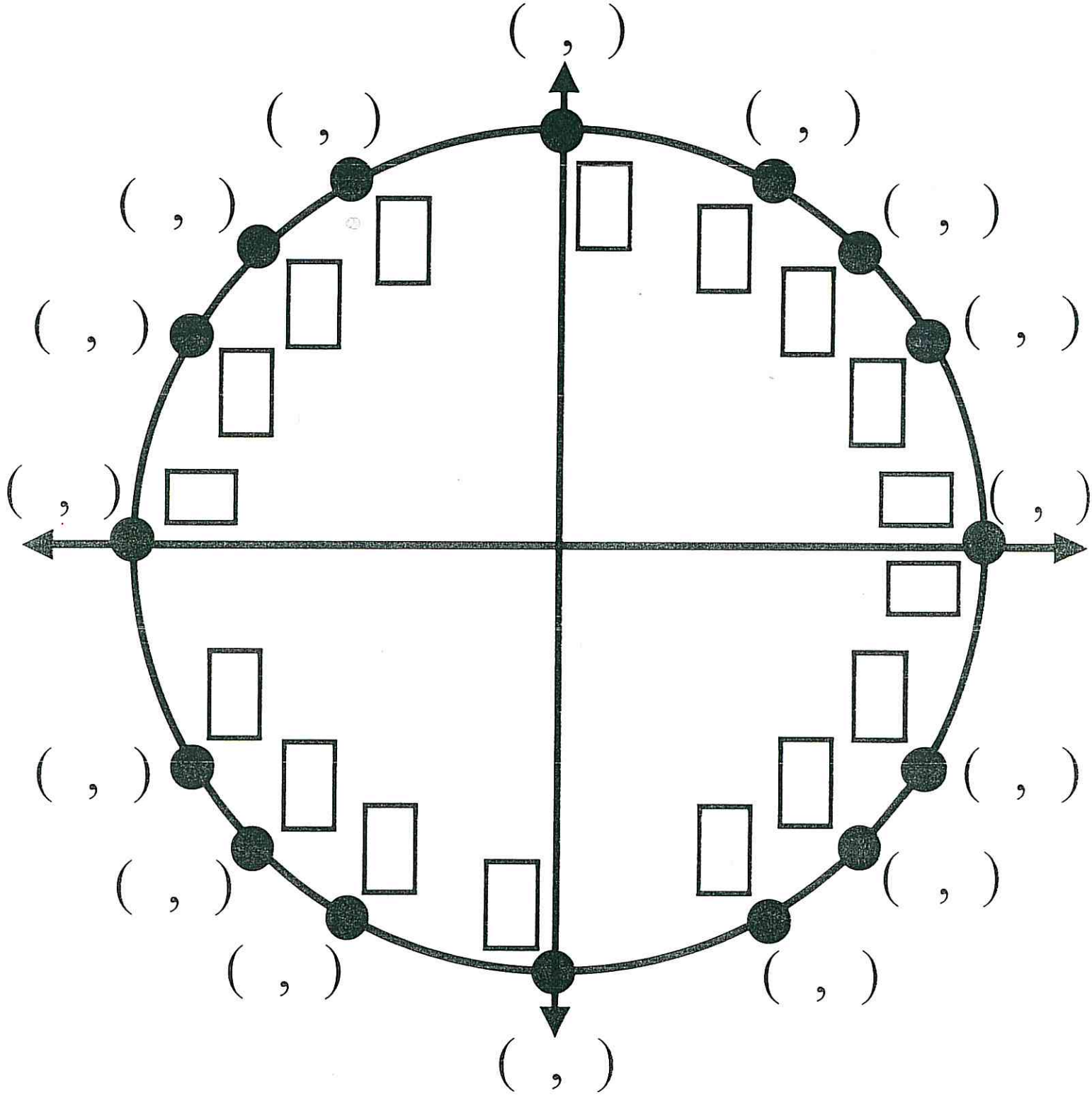
The Unit Circle

Use your hand-made unit circle to help you complete the following unit circle. In the rectangles, list the angle in radian measure. In the parenthesis, list the corresponding (x, y) coordinates.



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Name: _____

My Hand-Made Unit Circle

Directions: Using ONLY your hand-made UNIT CIRCLE, **DRAW** and **LABEL** the appropriate special right triangles that correspond to the given radian measures. Make sure the RIGHT ANGLE on your triangles are lined up with the X-AXIS!!! Add negative signs when appropriate.