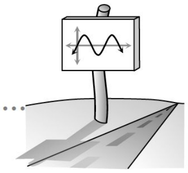
CW#____ Name:____________________

2.2.2 What does the unit circle tell me?

Trigonometric Ratios in the Unit Circle



#56

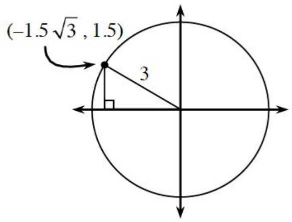
a.

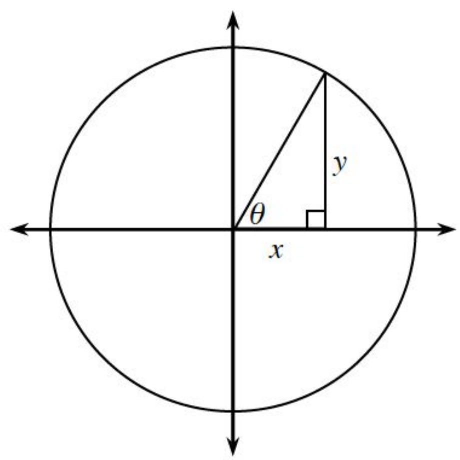
θ (radians)	θ (degrees)	cos(θ)	sin(θ)	tan(θ)
0	0°			
$\frac{\pi}{6}$	30			
$\frac{\pi}{4}$				
$\frac{\pi}{3}$				
$\frac{\pi}{2}$				
$\frac{2\pi}{3}$				
$\frac{3\pi}{4}$				
$\frac{5\pi}{6}$				
π				
$\frac{7\pi}{6}$				
$\frac{5\pi}{4}$				
$\frac{4\pi}{3}$				
$\frac{3\pi}{2}$				
$\frac{5\pi}{3}$				
$\frac{7\pi}{4}$				
$\frac{11\pi}{6}$				
2π				

b. What patterns do you notice between the values in your table and the coordinates of the corresponding points?

c. State a range of values for cos(θ). Then state a range for sin(θ). Why are these ranges limited to the stated values?

#57
Conor draws a circle with a radius of 3 and uses a special right triangle to label the coordinates. He determines that sin $\left(\frac{5\pi}{6}\right)$ is equal to 1.5, the value of the y-coordinate. Is Conor correct? Why or why not?



#58	
a. Review the diagram at right. In terms of *x* and *y*, what does tan(*θ*) equal?	
b. In terms of sin(*θ*) and cos(*θ*), what does tan(*θ*) equal?	
c.How can tan(*θ*) be described geometrically?	d.Do your answers for part (a) and part (b) work for circles with radii other than one? Explain your reasoning.
e.Add a column to your table from problem 2‑56 for tan(*θ*). Complete this column using your observations from parts (a) through (d).	f.State a range of values for tan(*θ*).

#59 Sketch a unit circle. Then draw a right triangle with its base on the *x*-axis and vertex at the origin in your unit circle, as shown in the diagram in problem 2‑58.

a.Write the equation of the unit circle.

b.Using what you know about *x* and *y* in the unit circle, rewrite the equation in terms of sin(θ) and cos(θ).

c.The equation you found in part (b) is referred to as the **Pythagorean Identity**. Why do you think it is named as such?