### Lesson 10 Practice Problems

1. A rotation takes $P$ to $Q$. What could be the measure of the angle of rotation in radians? Select **all** that apply.
* 
	1. $\frac{3π}{2}$
	2. $\frac{π}{2}$
	3. $\frac{π}{4}$
	4. $\frac{5π}{2}$
	5. $\frac{5π}{4}$
	6. A $\frac{2π}{3}$ radian rotation takes $N$ to $P$. Label $P$.
	7. A $\frac{7π}{6}$ radian rotation takes $N$ to $Q$. Label $Q$.
	8. A $\frac{25π}{6}$ radian rotation takes $N$ to $R$. Label $R$.
* 
1. Here is a wheel with radius 1 foot.
* 
	1. List three different counterclockwise angles the wheel can rotate so that point $P$ ends up at position $Q$.
	2. How many feet does the wheel roll for each of these angles?
1. The point $P$ on the unit circle is in the 0 radian position.
	1. Which counterclockwise rotations take $P$ back to itself? Explain how you know.
	2. Which counterclockwise rotations take $P$ to the opposite point on the unit circle? Explain how you know.
2. Here is the unit circle with a point $P$ at $\left(1,0\right)$. Find the coordinates of $P$ after the circle rotates the given amount counterclockwise around its center.
* 
	1. $\frac{1}{3}$ of a full rotation
	2. $\frac{1}{2}$ of a full rotation
	3. $\frac{2}{3}$ of a full rotation
* (From Unit 6, Lesson 4.)
1. Here is a graph of $y=sin\left(θ\right)$.
	1. Plot the points on the graph where $sin\left(θ\right)=-\frac{1}{2}$.
	2. For which angles $θ$ does $sin\left(θ\right)=-\frac{1}{2}$?
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* (From Unit 6, Lesson 9.)



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