Alg 2 Unit 3 (2.1) **Understanding Radians** Name: _____

Activity

1. Draw a dot for the center of a circle (label it P)
2. Draw a circle of any size.
3. Draw a horizontal diameter through point P.
4. Where the diameter meets the circle on the right, label that point V.
5. On your string, mark off the length of PV with your marker/pen.
6. Starting at point V, mark off one radius length on the circle (mark it with the number 1)
7. Draw in the radius from the center to number 1 – **this angle you've created is 1 radian.**
8. Use your string to mark off another radius length on the circle starting at number 1, continuing along the circle. Call this new point 2.
9. Draw in the radius from the center to number 2 – this angle is how many radians? _____ because it is created by marking off how many radii? _____
10. Use your string to mark off another radius length on the circle starting at number 2, continuing along the circle. Call this new point 3.
11. Draw in the radius from the center to the number 3 – this angle is how many radians? _____ because it is created by marking off how many radii? _____
12. How many radii do you think it takes to get half way around the circle? _____
13. How many radii do you think it will take to get all the way around the circle? _____

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Your turn: Since 360° = 2π, what do you think the following would equal?

180° = _____ 90° = _____ 45° = _____

30° = _____ 60° = _____ 225° = _____

270° = _____ 135° = _____ 210° = _____

240° = _____ 300° = _____ 330° = _____

120° = _____ 150° = _____ 315° = _____

Key Concept:

To convert degrees to radians or radians to degrees use one of the following ratios to set up a proportion:

_____ or _____

Example: a.)Convert $\frac{11\pi}{12}$ to degrees

$\frac{11\pi radians}{12}$ ·

b.) Convert 22.5° to radians

22.5° ·

You Try: Convert degree measures to radians and radian measures to degrees.

1. 140°
2. $-\frac{3\pi}{5}$
3. -860°
4. $\frac{11\pi}{3}$
5. -370°
6. $\frac{5\pi}{2}$