§4.1A: Arc Length and Sector Area
"I WILL…
…solve for Arc Length and Sector Area"

I. Conversions
    A. <u>Sector</u> is a region of the circle that bounded by two radii and arc of a circle
    B. The <u>Central Angle</u> of a sector is the angle formed by the two radii
    C. Arc Length equation: _____
    D. Degrees must be converted to _____
    E. Do NOT forget the units

Ex 1: Determine the Arc Length of a circle with the given radius of $r = 4$ inches and $\theta = \frac{\pi}{6}$.	Ex 2: The second hand on a clock is 6 inches long. How far does the tip of the second hand move in 15 seconds? 1 full rotation is 60 seconds. Round to 4 decimal places.

Your Turn: Your Turn: Determine the Arc Length of a circle with the given radius of $r = 4$ inches and $\theta = 240°$.

II. Area of a Sector Area

    A. <u>Sector</u> is a circle of the region bounded by two radii of the circle and their intercepted arc

    B. Equation: $A = $ _____ where radius is the base and θ is the height

    C. Always leave answers in radian mode

Ex 3: A sprinkler on a golf course fairway sprays water over 70 feet and rotates through an angle of 120°. Find the area of the fairway watered by the sprinkler.

Ex 4: A sector of a circle of radius 24 m has an area of 288 m². Find the central angle of this sector.

Ex 5: Three circles with radii 1, 2, and 3 feet are externally tangent to one another, as shown in the figure. Find the area of the sector of the circle of radius 1 that is cut off by the line segments joining the center of that circle to the centers of the other two circles.
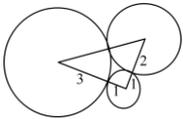
Your Turn: A sector of a circle has a central angle of 60°. Find the area of the sector if the radius of the circle is 3 miles.

Assignment: Worksheet