DO NOW

In a circle with a diameter of 24 cm, a central angle of $\dfrac{4\pi}{3}$ radians intercepts an arc. The length of the arc, in centimeters, is

1) 8π 3) 16π

2) 9π 4) 32π

$$S = r\theta \quad \text{or} \quad \theta = \frac{S}{r}$$

$$S = (12)\left(\frac{4\pi}{3}\right) \qquad \frac{4\pi}{3} = \frac{x}{12}$$

$$S = 16\pi$$

Feb 26-7:55 AM

- The arc measure of the central angle of an entire circle is 360º

- The radian measure of the central angle of an entire circle is 2π

$$360º \text{ (degrees)} = 2\pi \text{ (radians)}$$

$$\frac{360º}{2\pi} = \frac{2\pi}{2\pi} \qquad\qquad \frac{360º}{360} = \frac{2\pi}{360}$$

$$\frac{180}{\pi} = 1 \text{ radian} \qquad\qquad 1º = \frac{\pi}{180}$$

Feb 25-9:44 AM

To change from degrees to radians, multiply degrees by $\dfrac{\pi}{180}$	To change from radians to degrees, multiply radians by $\dfrac{180}{\pi}$

1. Convert 60° to radians.

$$60 \cdot \frac{\pi}{180_{3}}$$

$$\boxed{\frac{\pi}{3}}$$

3. Convert to $\dfrac{5\pi}{2}$ degrees.

$$\frac{5\pi}{2} \cdot \frac{180}{\pi} \longrightarrow 2.5\pi$$

$$\boxed{450°}$$

2. Convert 135° to radians.
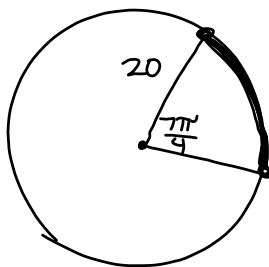
$$135 \cdot \frac{\pi}{180}$$

$$\boxed{\frac{3\pi}{4}}$$

4. Convert to $\dfrac{\pi}{6}$ degrees.

$$\frac{\pi}{6} \cdot \frac{180}{\pi}^{30} = \boxed{30°}$$

Feb 26-8:09 AM

Find the length of an arc subtended by an angle of $\dfrac{7\pi}{4}$ radians in a circle of radius 20 centimeters.

$$\ast \quad s = r\theta$$

$$s = 20\left(\frac{7\pi}{4}\right)$$

$$\boxed{S = 35\pi}$$

Arclength =

$$\frac{n}{360} \cdot \pi d$$

$$\frac{315}{360} \pi (40)$$

$$\boxed{35\pi}$$

$$\frac{7\pi}{4} \cdot \frac{180}{\pi} = 315°$$

Feb 25-9:55 AM