

7.8 Circumference and Arc Length

Name: _____

Circumference is the distance around the edge of a circle. It is a type of perimeter.

$$C = 2\pi r = \pi d$$

Find the Circum. given that $r = 6$ in.

$$C = 2 \cdot \pi \cdot 6$$

exact $C = 12\pi$ in.

Approx. $C \approx 37.7$ in

Find the radius given that the $C = 42$ cm.

$$42 = 2\pi r$$

$$21 = \pi r$$

$$21/\pi_{\text{cm}} = r \text{ exact}$$

$$6.7_{\text{cm}} \approx r \text{ APPROX.}$$

Arc Length is the distance along the arc (a portion of the circumference of a circle).

$$AL = \underbrace{2\pi r}_{\text{circumference}} \times \left(\frac{\theta}{360} \right)$$

← portion

← central \angle measure

$$AL = \frac{2\pi r \theta}{360}$$



1. Find $m\widehat{XY}$.

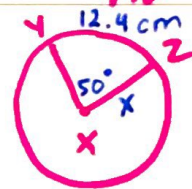
$$30^\circ$$

2. Find \widehat{XY} .

$$AL = \frac{2 \cdot \pi \cdot 10 \cdot 30}{360}$$

$$AL = \frac{600\pi}{360}$$

$$AL = \left[\frac{5}{3} \pi \right] \text{ or } \left[\frac{5\pi}{3} \right]$$



Find the radius!

$$12.4 = \frac{2 \cdot \pi \cdot X \cdot 50}{360}$$

$$44.64 = 2 \cdot \pi \cdot X \cdot 50$$

$$44.64 = 100\pi X$$

$$44.64 = \pi X$$

$$14.2 \text{ cm} \approx X$$