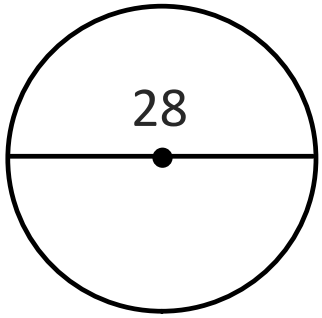
Warm-up

On Handout

The CIRCUMFERENCE of a circle is the distance around it (perimeter)

$$C = \pi d \quad \text{OR} \quad C = 2\pi r$$

Circumference = ?

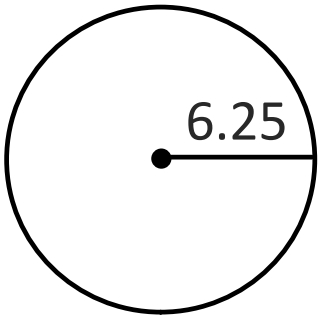


$C = d\pi$

$C = 28\pi$ exact!

$C \approx 87.965$ approx

Circumference = ?



$C = 2\pi r$

$C = 2\pi(6.25)$

$= 12.5\pi$

Find the indicated measure

a) Circumference of a circle with a radius of 23 ft

$C = 46\pi$ ft

b) Diameter of a circle with a circumference of 64 meters

$C = d\pi$

$64 = d\pi$

$d = \frac{64}{\pi}$ m

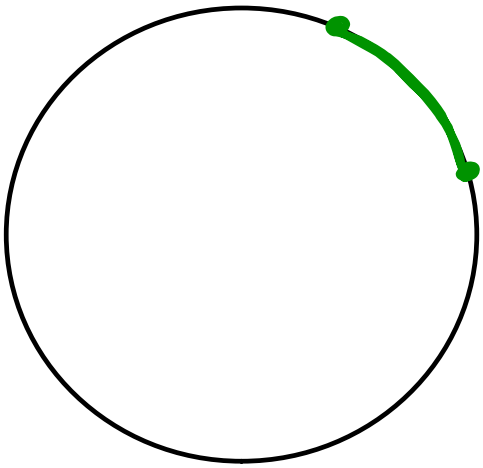
c) Radius of a circle with a circumference of 58 centimeters

$C = 2\pi r$

$58 = 2\pi r$

$r = \frac{58}{2\pi} = \frac{29}{\pi}$ cm

Def'n: An ARC of a circle is made up of two points on the circle and all points on the circle needed to connect them by a single path



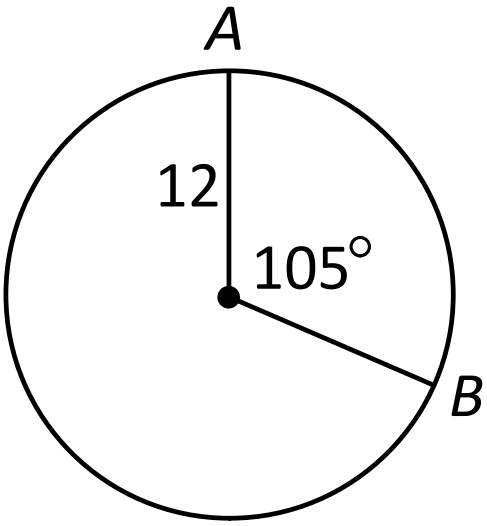
# of degrees of circle that arc contains: arc measure

if flattened the arc and used a ruler: arc length

Formula for Arc Length:

$$\frac{\text{Arc Length}}{\text{Circumference}} = \frac{m\overset{\frown}{}}{360^\circ}$$

Find the length of $\overset{\frown}{AB}$



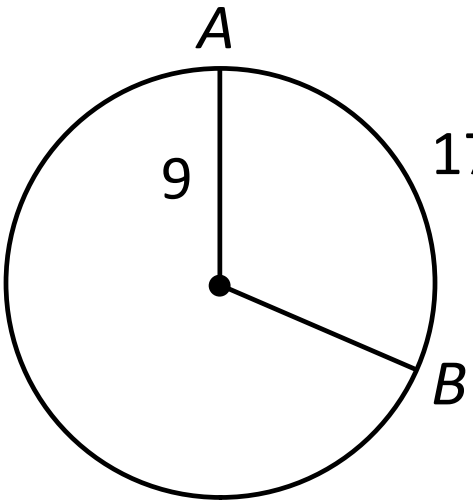
$$\frac{x}{2\pi r} = \frac{105^\circ}{360^\circ}$$

$$\frac{x}{24\pi} = \frac{7}{24}$$

$$\frac{24x}{24} = \frac{7 \cdot 24 \cdot \pi}{24}$$

$$x = 7\pi \text{ u}$$

Find m$\overset{\frown}{AB}$



17.92 in

$$\frac{17.92}{18\pi} = \frac{x}{360^\circ}$$

$$x \cdot 18\pi = 6451.2$$

$$x = \frac{6451.2}{18\pi}$$

$$x = \frac{358.4^\circ}{\pi}$$

Find the circumference of a circle if the arc intercepted by a 112^o central angle has a length of 37 cm

$$\frac{37}{C} = \frac{112^\circ}{360^\circ}$$

$$\frac{37}{C} = \frac{14}{45}$$

$$14C = 1665$$

$$C = \frac{1665}{14} \text{ cm}$$

Find the radius of a circle if a minor arc has a measure of 45^o and a length of 20 ft

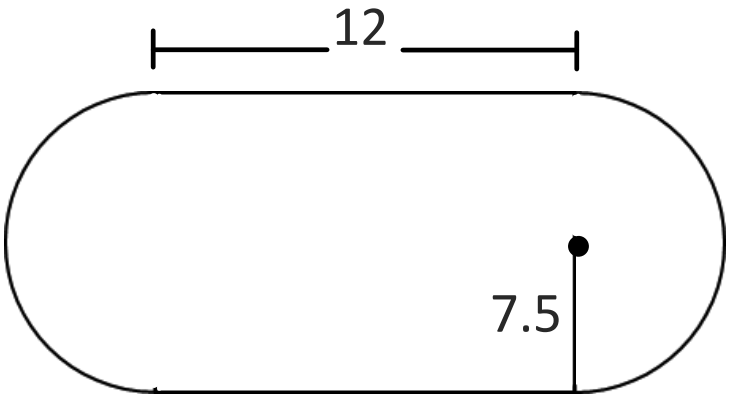
$$\frac{20}{2\pi r} = \frac{45^\circ}{360^\circ}$$

$$\frac{10}{\pi r} = \frac{1}{8}$$

$$\pi r = 80$$

$$r = \frac{80}{\pi} \text{ ft}$$

Find the perimeter of the figure

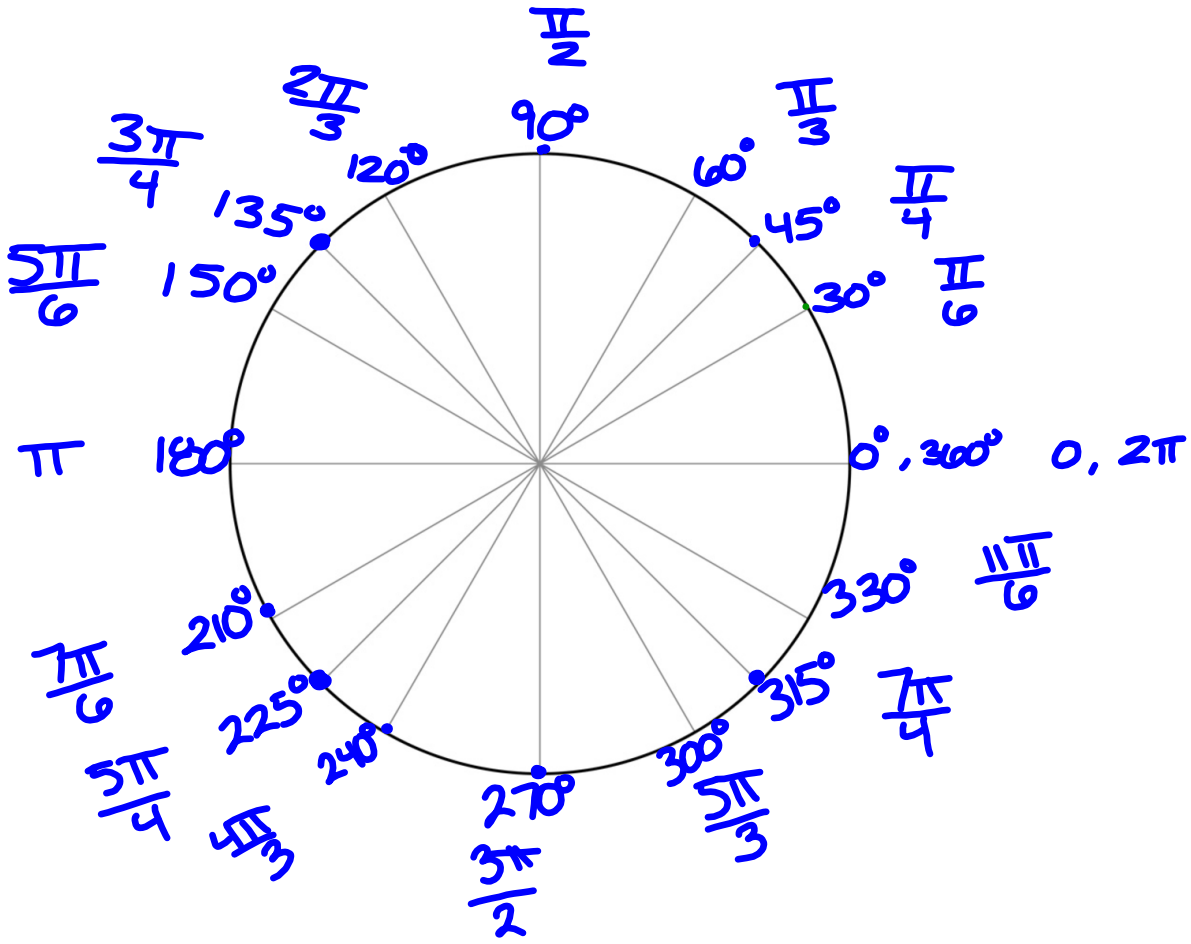


$P = 12 + 12 + 2\pi 7.5$

$= 24 + 15\pi$ units

A RADIAN is defined as the measure of a central angle that occurs when one radius of a circle is "wrapped around" the circumference of the circle.

https://www.geogebra.org/m/VYq5gSqU



Converting from DEGREES to RADIANS

$$\text{rad} = \text{deg}\left(\frac{\pi}{180^\circ}\right)$$

Converting from RADIANS to DEGREES

$$\text{deg} = \text{rad}\left(\frac{180^\circ}{\pi}\right)$$

Convert to the other form:

a) $75° \cdot \frac{\pi}{180°} = \frac{5\pi}{12}$

b) $-36° \cdot \frac{\pi}{180°} = -\frac{\pi}{5}$

c) $\frac{2\pi}{9} \cdot \frac{180°}{\pi} = 40°$

d) $-\frac{5\pi}{6} \cdot \frac{180°}{\pi} = -150°$