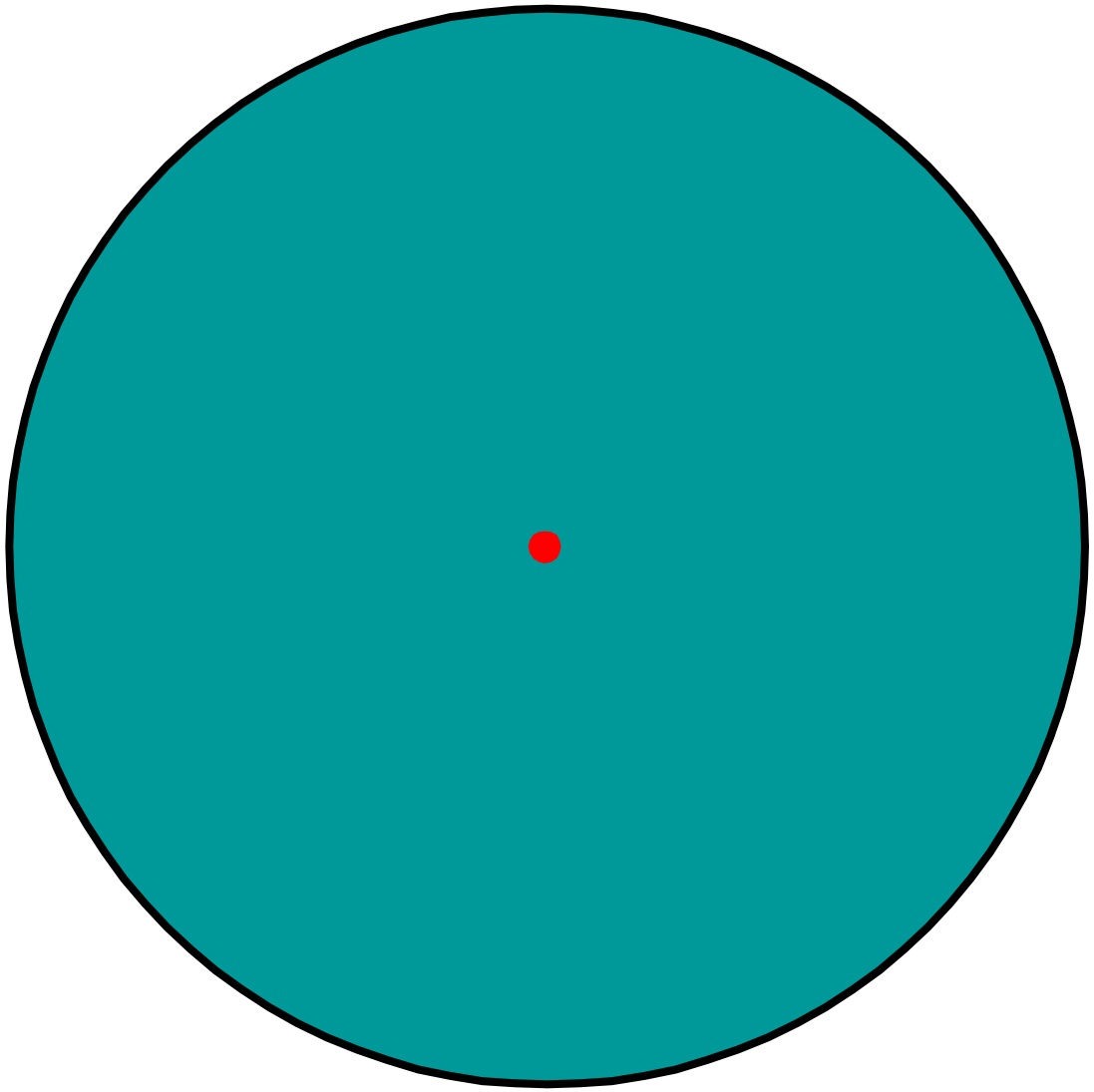
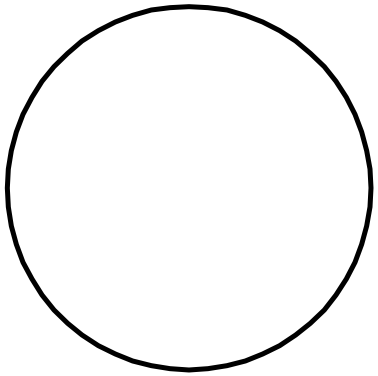
10.4

Circumference and Arc Length



The **circumference** is the distance around a circle.



What is the connection between the diameter and the circumference?

Ancient mathematicians found out that the circumference is about a little more than 3 times the diameter.

They found out that that it's more like 3.14.....and so on

Instead of using this long ongoing number they have rounded it to 3.14

This is otherwise known as π "pi"

Circumference

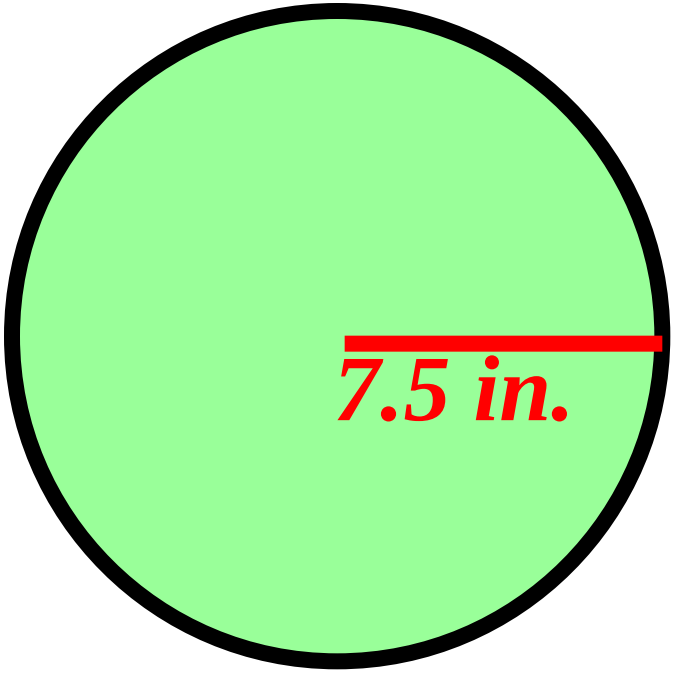
3.14159265358979323846...

π is usually rounded to 3.14

$\pi \approx$ or

Approximately

PRACTICE



Approximate Form

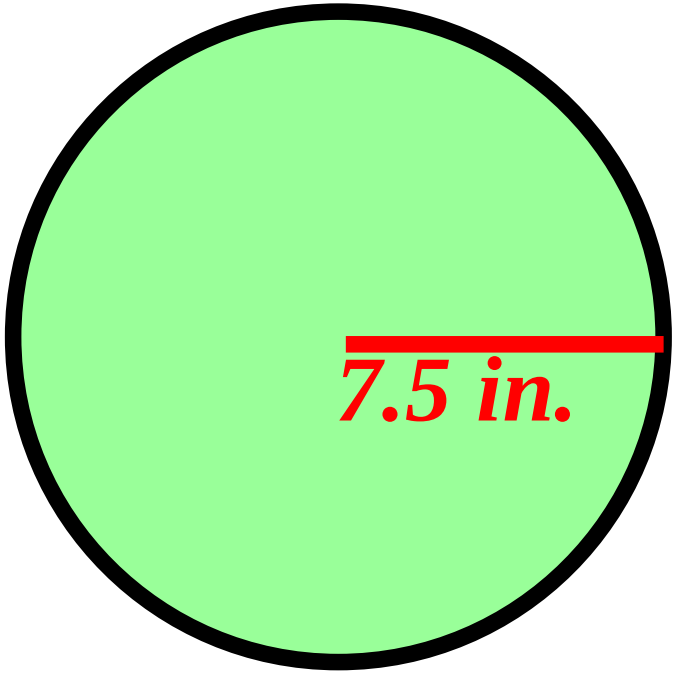
$C = \pi d$

Exact Form

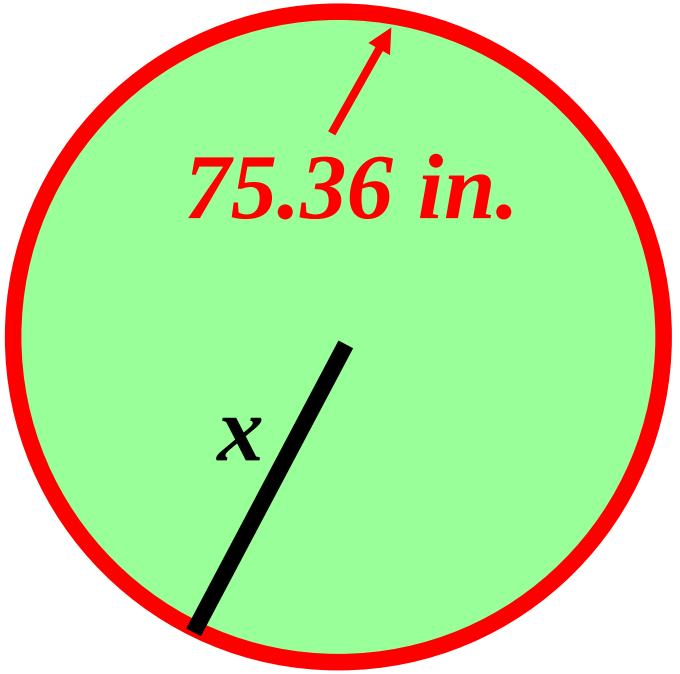
$C = \pi d$

REVIEW

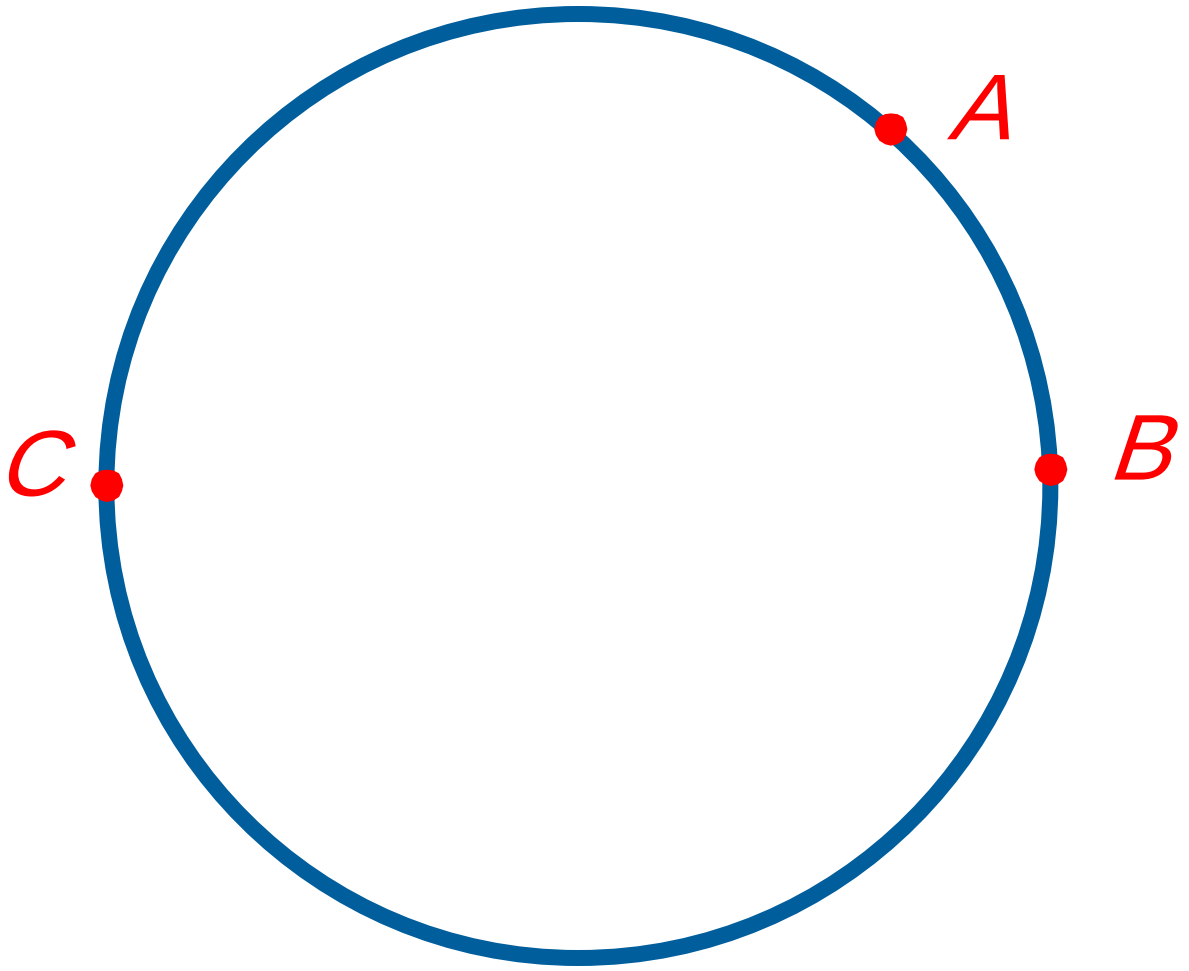
1) Find the circumference of the following circle:



2) Given the circumference, find the radius:

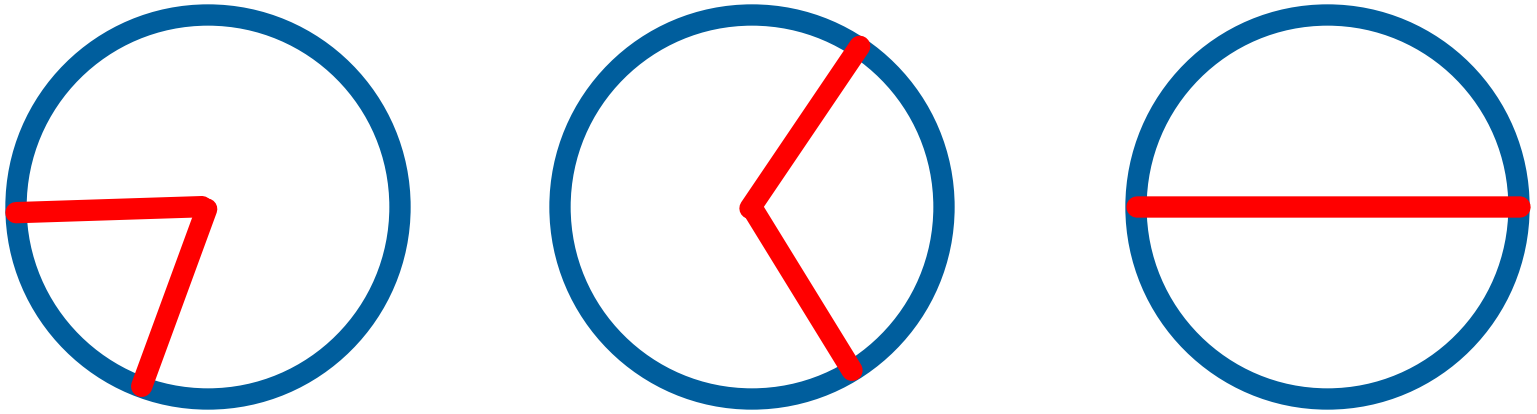


Arcs

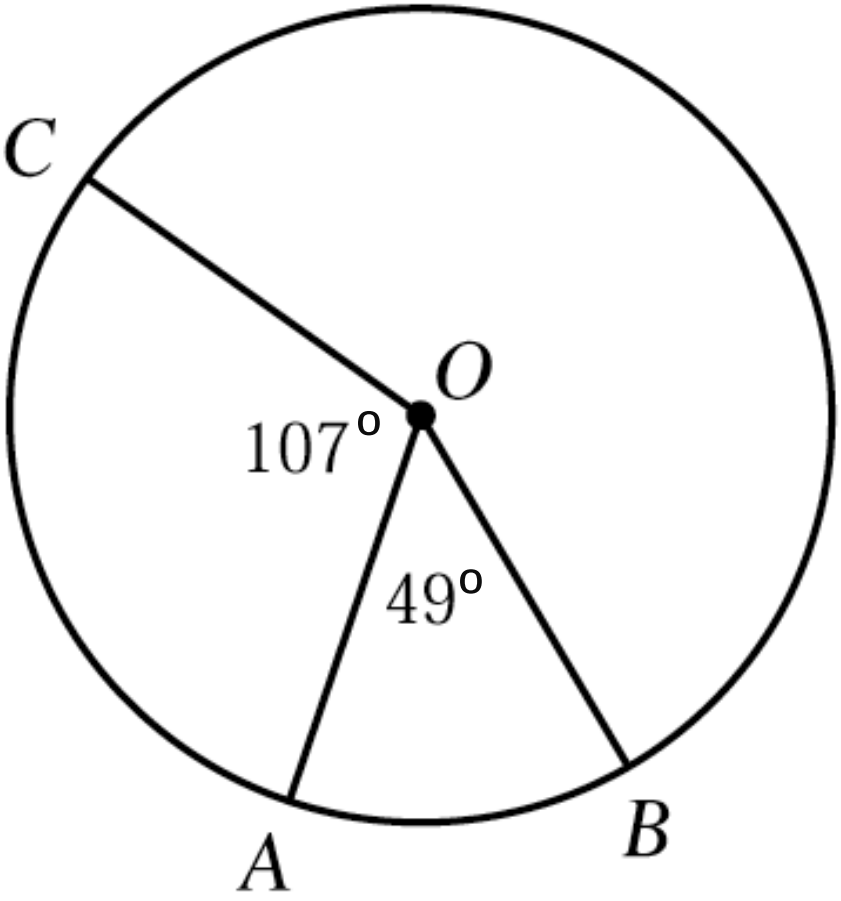


Minor arcs are the _____ arc between two points.
Major arc is the _____ arc between two points.

Central Angles



Arc Measures



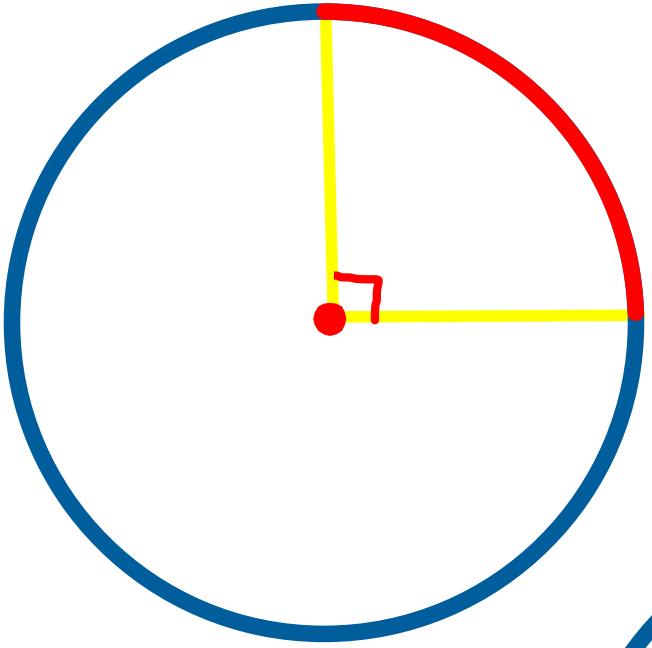
$m\overset{\frown}{AB} =$

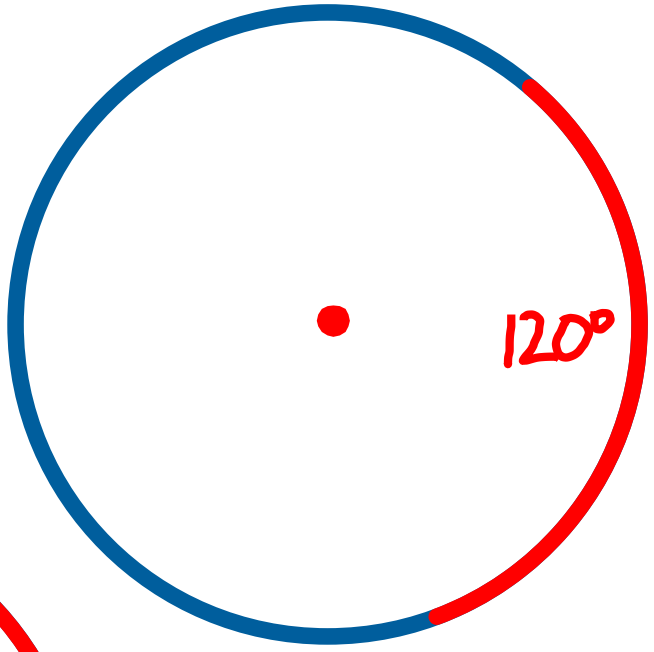
$m\overset{\frown}{ABC} =$

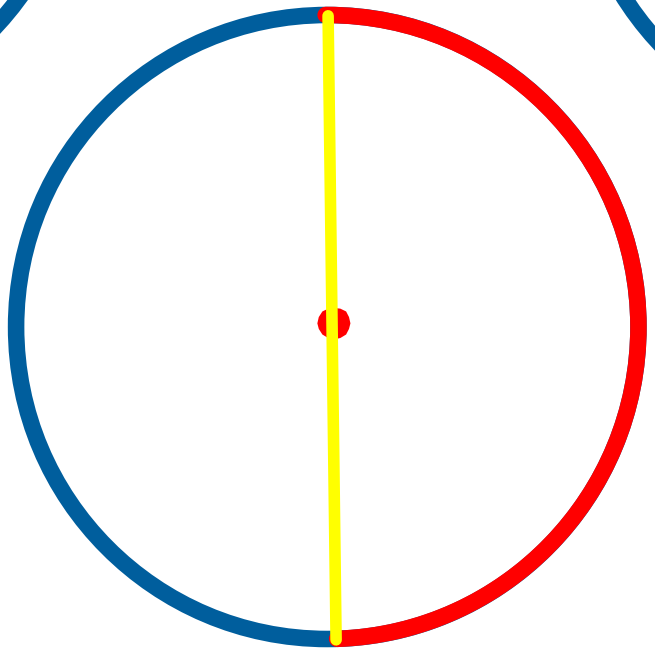
$m\overset{\frown}{BAC} =$

$m\overset{\frown}{ACB} =$

Fraction of a circumference





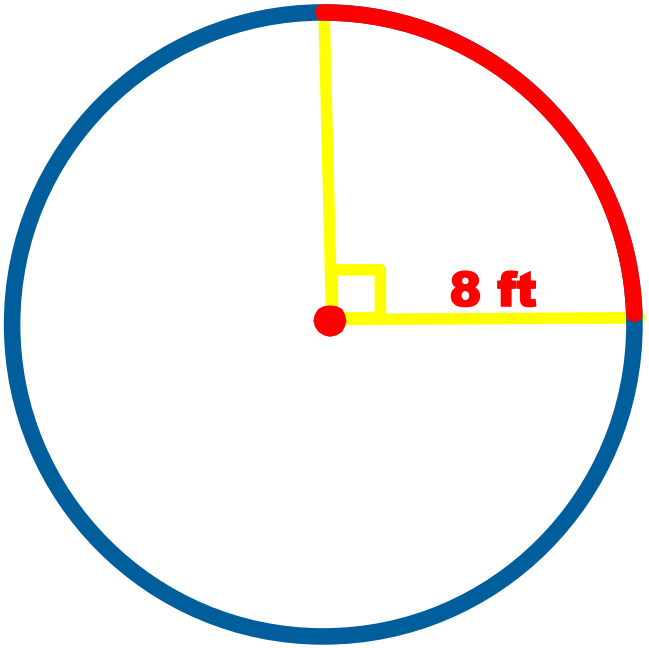


What is Arc Length??

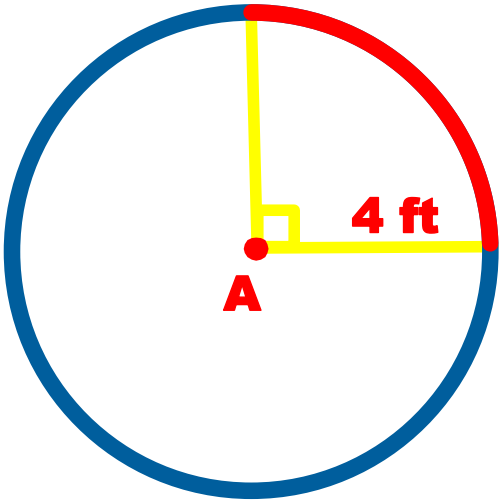
Arc Measure vs Arc Length

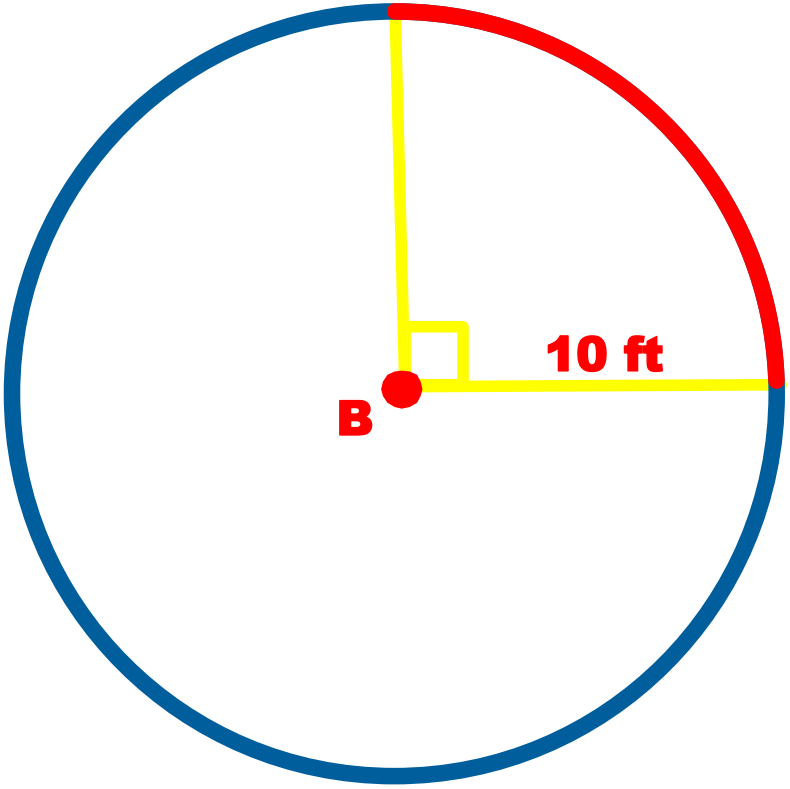
This is the measure of an arc in relation to the central angle.

The is the length of the arc as part (fraction) of the circumference



Comparing Circles and Arcs



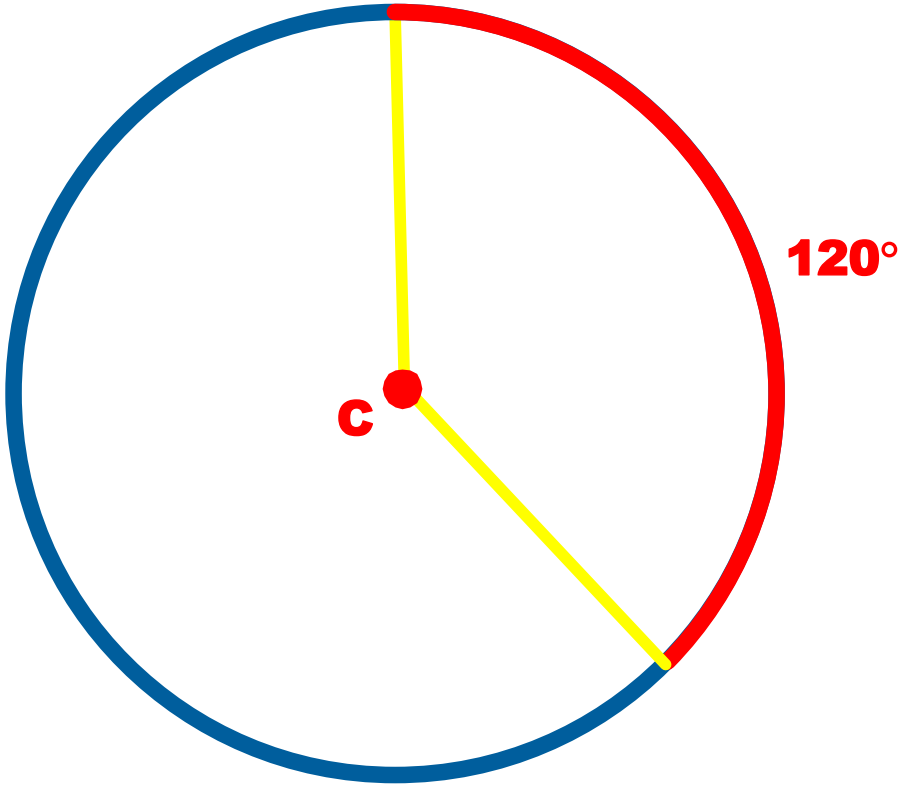


What can you tell me about the arc measures of both circles?

What is the arc length of Circle A?

What is the arc length of Circle B?

Finding Arc Length



What is the arc length of the red arc?

Formula for Arc Length

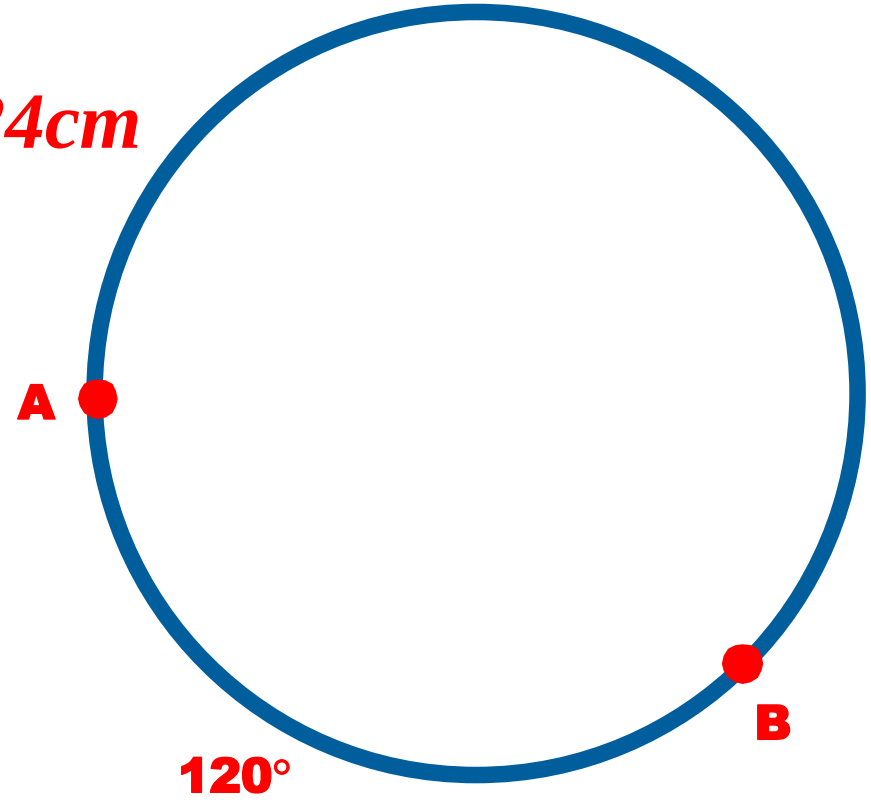
$$\text{Arc length} = \frac{x}{360} \bullet C$$

Formula for Arc Length

$$\text{Arc length} = \frac{x}{360} \bullet \pi d$$

Practice

Radius = 24cm



1) What is the arc length of $\overset{\frown}{AB}$?