Name: _____ # _____

Geometry: Period _____
Ms. Pierre
Date: _____

Circumference & Arc Length

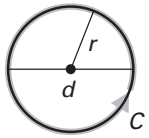
Today's Objective

SWBAT find the circumference of a circle given the radius or the diameter and use the relationship between lengths and angles to determine the length of an arc.

The circumference of a circle is the _____ around a circle.

THEOREM 6.19: CIRCUMFERENCE OF A CIRCLE

The circumference C of a circle is $C =$ _____ or $C =$ _____, where d is the diameter of the circle and r is the radius of the circle.



$C =$ _____ $=$ _____

Example 1

Find the indicated measure.

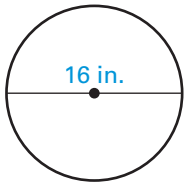
a. Circumference of a circle with radius 11 feet.

b. Diameter of a circle with circumference 75 meters.

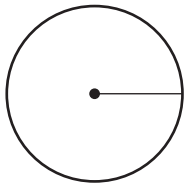
☑ Check for Understanding

Use the diagram to find the indicated measure.

a) Circumference



b) Radius

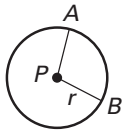


An arc length is a portion of the circumference of a circle.

ARC LENGTH COROLLARY

In a circle, the ratio of the length of a given arc to the circumference is equal to the ratio of the measure of the arc to 360°.

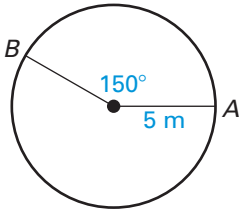
$$\frac{\text{Arc length of } \overset{\frown}{AB}}{2\pi r} = \frac{m\overset{\frown}{AB}}{360°}, \text{ or}$$



$$\text{Arc length of } \overset{\frown}{AB} = \frac{m\overset{\frown}{AB}}{360°} \cdot 2\pi r$$

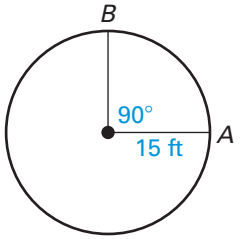
Example 2

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



☑ Check for Understanding

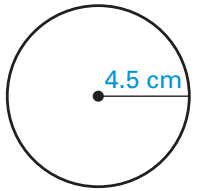
Find the length of $\overset{\frown}{AB}$.



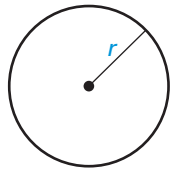
Guided Practice

Use the diagram to find the indicated measure.

1. Circumference



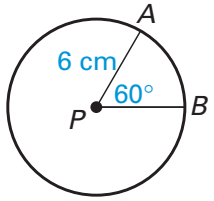
2. Find the radius.



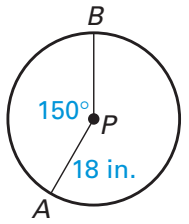
$C = 65.98$ cm

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

3.



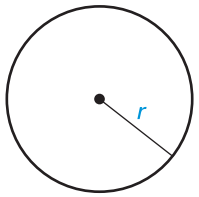
4.



Independent Practice

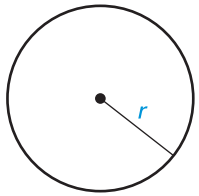
Use the diagram to find the indicated measure.

1. Find the circumference.



$r = 5.7\text{cm}$

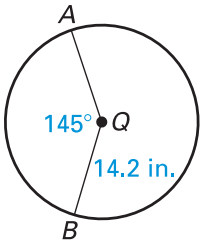
2. Find the radius.



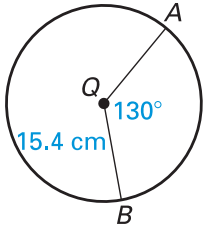
$C \approx 94$ in.

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

3.



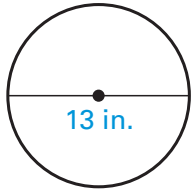
4.



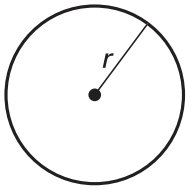
Home Work

Use the diagram to find the indicated measure.

1. Find the circumference.



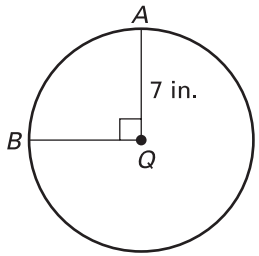
2. Find the radius.



$C = 48$ in.

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

3.



4.