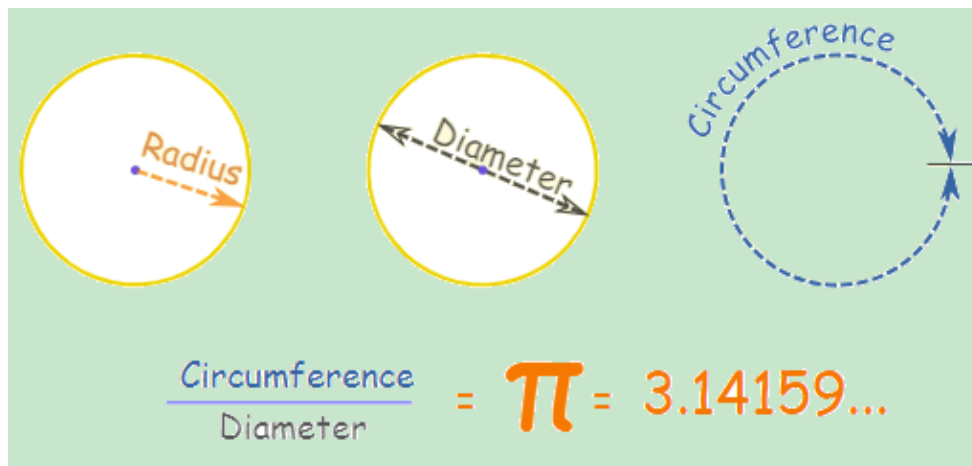


RADIUS, DIAMETER AND CIRCUMFERENCE



Unit Overview

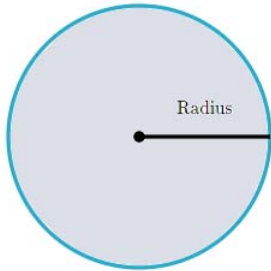
In this unit, students will identify and describe relationships among inscribed angles, radii, chords, central angles and arc.

Key Vocabulary

Radius	The distance from the center of the circle to its outer rim
Diameter	A chord that passes through the center of a circle; the length of a diameter is two times the length of a radius
Circle	Set of all points in the plane that are the same distance away from a specific point, called the center.
Center	A circle is usually named by its center point.
Circumference	The distance around the circle
Area	Pi (π) times the radius squared ($A = \pi r^2$)
Pi (π)	The circumference divided by the diameter of a circle (3.14159...)

Radius of a Circle

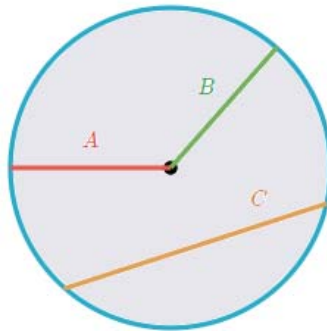
The circle is the most fundamental shape in our universe. A circle is all of the points that are equal distance from the center of the circle to the edge of the circle. This distance is called the **radius** of the circle.



All points are the same distance from the center. The radius is half of the diameter. $r = d/2$
Click on the word [radius](#) to practice the relationship of the radius and circumference.

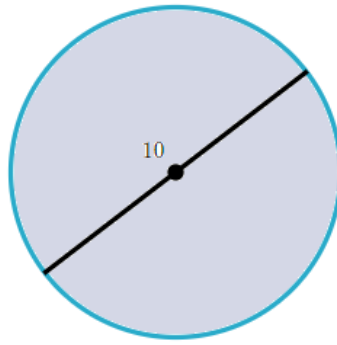
Let's Practice – Radius

1.) Which segments below is the radius?



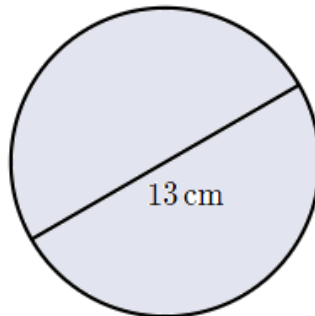
(Both A and B)

2.) Find the radius of the circle below? (Hint $\rightarrow r = d/2$)



(5)

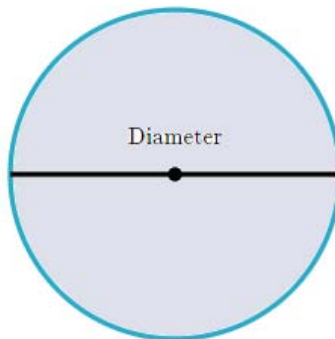
3.) Find the radius of the circle below?



(6.5 cm)

Diameter of a Circle

How wide is the circle? The distance along the widest point of the circle is called the **diameter**. The diameter is the length of the line through the center that touches two points on the edge of the circle.

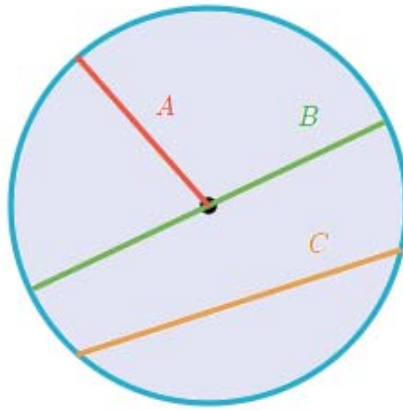


The diameter is equal to two times the radius. $d = 2r$

Click on the word [Diameter](#) to see its relationship to the circle.

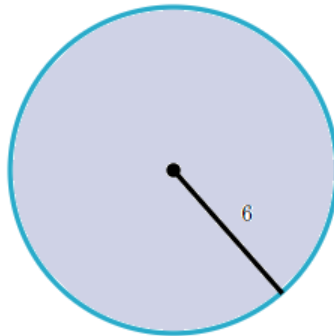
Let's Practice – Diameter

4.) Which segment below is the diameter?



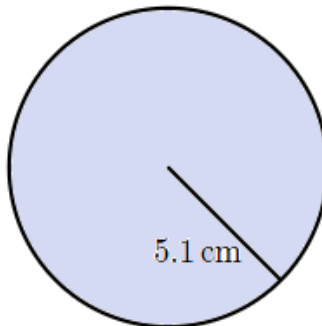
(B)

5.) Find the diameter of the circle below. Hint $\rightarrow d = 2r$



(12 $\rightarrow d = 2 \cdot 6$)

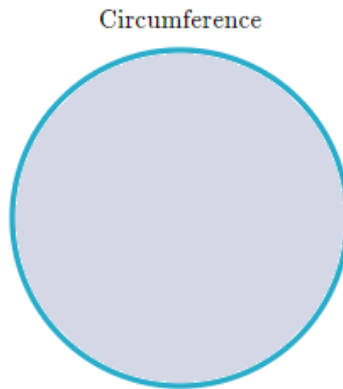
6.) Find the diameter of the circle below.



(10.2 cm)

Circumference of a Circle

The **circumference** is the distance around a circle. The circumference can also be called the perimeter of the circle.



The ratio of the diameter to the circumference is called **pi** (π). The numerical value of *pi* is a non-terminating decimal. The number **3.14** is used to represent pi and is used for estimating the circumference of a circle.

To find the circumference of a circle, you can use two formulas:

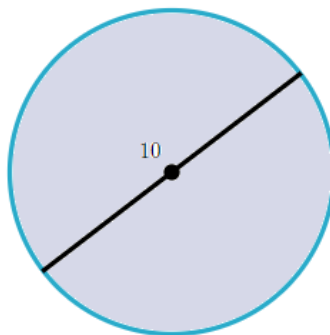
$$\text{Circumference} = \pi \times \text{diameter}$$

$$\text{Circumference} = 2 \times \pi \times \text{radius}$$

Click on the word [circumference](#) to view the relationship with the radius and diameter.

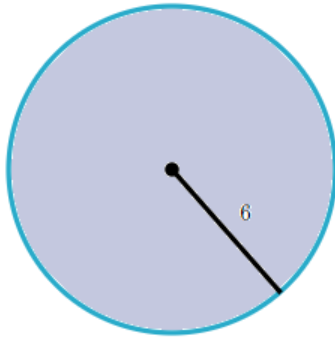
Let's Practice – Circumference

7.) Find the circumference of the circle below. (Hint $\rightarrow C = \pi \times d$)



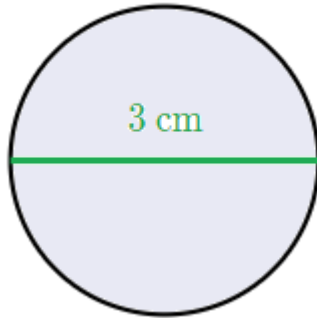
$$(31.4 \rightarrow C = 3.14 \times 10)$$

8.) Find the circumference of the circle below. (Hint $\rightarrow C = 2 \times \pi \times r$)



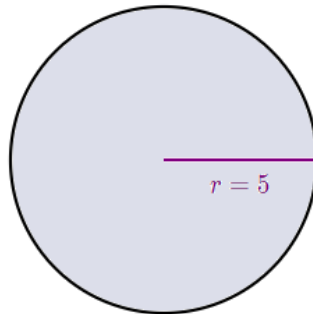
(37.68 $\rightarrow C = 2 \times 3.14 \times 6$)

9.) Find the circumference of the circle below.



(9.42 cm)

10.) Find the circumference of the circle below.



(31.4)

Summary – Radius, Diameter, and Circumference

A **circle** is an important shape in the field of geometry. Let's look at the definition of a circle and its parts. A circle is a shape with all points the same distance from its center. A circle is named by its center. Some real world examples of a circle are a wheel, a dinner plate and the surface of a coin.

The length of the words may help you remember:

- **Radius** – shortest measure
- **Diameter** – longer
- **Circumference** – longest

The definition of *pi* (π) is the circumference divided by the diameter of a circle. *Pi* is approximately equal to 3.14159.... You can use 3.14 as the number to use for *Pi*.

Below are important formulas for a circle.

To find circumference (Diameter) \rightarrow Circumference = $\pi \times$ Diameter

To find circumference (Radius) \rightarrow Circumference = $2 \times \pi \times$ Radius

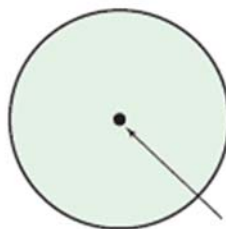
To find diameter (Circumference) \rightarrow Diameter = Circumference / π

To find radius (Circumference) \rightarrow Radius = Circumference / 2π

Let's Practice – Summary

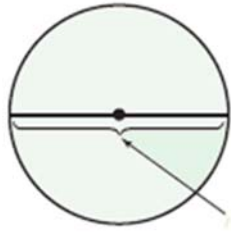
Identify the arrow in the image as either circumference, diameter, radius, or center.

11.)



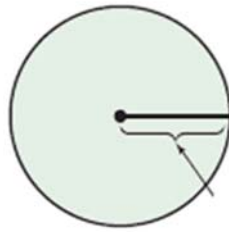
(Center)

12.)



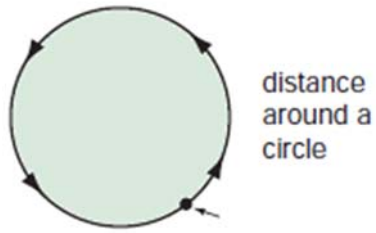
(Diameter)

13.)



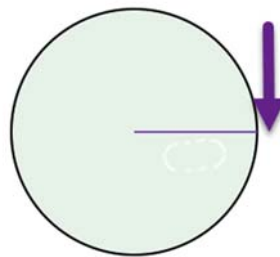
(Radius)

14.)



(Circumference)

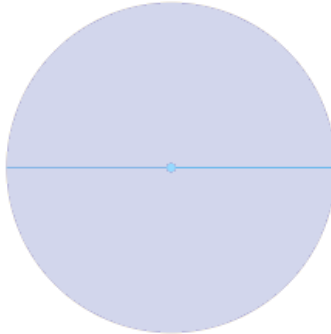
15.)



(Radius)

16.) Find the diameter of the circle below. (Hint \rightarrow Diameter = Circumference / π)

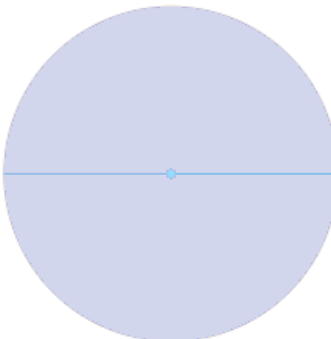
**Circumference =
15.7 inches**



(5 inches \rightarrow 15.7 / 3.14)

17.) Find the radius of the circle below. (Hint \rightarrow Radius = Circumference / 2π)

**Circumference =
31.4 inches**



(5 inches \rightarrow 31.4 / 6.28)

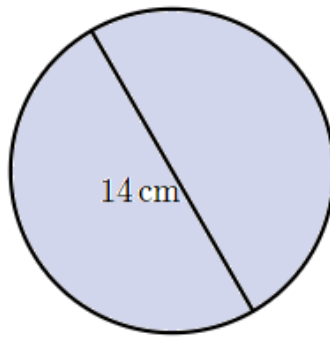
18.) The circumference of a circle is 94.20 centimeters. What is the circle's radius?

(15 centimeters \rightarrow 94.20 / 6.28)

19.) The circumference of a circle is 81.64 centimeters. What is the circle's diameter?

(26 centimeters \rightarrow 81.64 / 3.14)

20.) What is the radius and diameter of the circle below?



(Radius = 7 cm and Diameter = 14 cm)



Below are additional educational resources and activities for this unit.



Click on the icon to the left to watch a video and complete a quiz on Circles.



Click on the icon to the left to watch a video explanation of a Radius, Diameter, Circumference and Pi.

[Practice 1: Find the Radius, Diameter, and Circumference](#)

[Practice 2: Radius and Diameter](#)

[Practice 3: Find Pi](#)