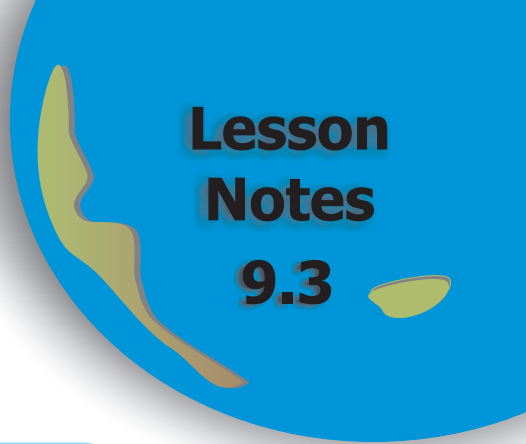


NAME \_\_\_\_\_

Module 9 Characteristics of Geometric Shapes  
Lesson 3 Circles



### Lesson Objectives

- Model and identify circle, radius, diameter, center, circumference, and chord.
- Draw, label, and determine relationships among the radius, diameter, center, and circumference (e.g. radius is half the diameter) of a circle.
- Model and develop the concept that  $\pi$  is the ratio of the circumference to the diameter of any circle.

### Subtopic 1

### Circles

A circle is the set of points that are equidistant from a special point in the plane called the center.

A radius is a line segment that connects the center of the circle to any point on the circle.

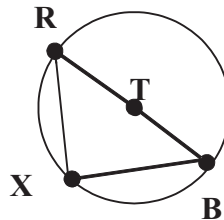
A chord is a line segment that connects two points on a circle.

A diameter is a line segment that connects two points on the circle and passes through the center of the circle.

The length of a diameter is twice the length of a radius.

**1** Identify the radii, the diameter, and the chords shown in Circle  $T$ .

Radii:  $\overline{TR}$ ,  $\overline{TB}$   
Diameter:  $\overline{RB}$   
Chord:  $\overline{RB}$ ,  $\overline{XB}$ ,  $\overline{XR}$

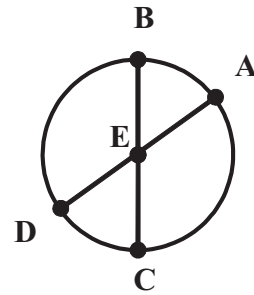


- 2 Identify the radii, the diameters, and the chords shown in circle  $E$ .

Radii:  $\overline{EB}, \overline{EA}, \overline{EC}, \overline{ED}$

Diameters:  $\overline{BC}, \overline{AD}$

Chords:  $\overline{BC}, \overline{AD}$



- 3 The diameter of a circle is 30 feet. Find the radius.

$$\begin{aligned}d &= 2r \\30 &= 2r \\30 \div 2 &= r \\30 \div 2 &= 15\end{aligned}$$

The radius of the circle is 15 feet.

- 4 Tell whether each statement is always true, sometimes true, or never true.

- A radius is a chord. **Never**
- A diameter is a chord. **Always**
- A chord is a diameter. **Sometimes**

### Subtopic 2 Circumference

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

Pi is the ratio of the circumference of any circle to its diameter.

Pi ( $\pi$ )

- Irrational number
- Approximately 3.14 or  $\frac{22}{7}$

NAME \_\_\_\_\_

Module 9 Characteristics of Geometric Shapes  
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The diameter of a bike wheel is 28 inches. What is the circumference? Round to the nearest inch.

$$\begin{aligned}C &= \pi d \\C &\approx 3.14(28) \\C &\approx 87.92\end{aligned}$$

**The circumference of the bike wheel is about 88 inches.**



The diameter of a manhole cover is  $2\frac{1}{2}$  ft. What is the circumference?

$$\begin{aligned}C &= \pi d \\C &\approx \frac{22}{7} \times \frac{5}{2} \\C &\approx \frac{\overset{11}{\cancel{22}}}{7} \times \frac{5}{\underset{1}{\cancel{2}}} = \frac{55}{7} = 7\frac{6}{7}\end{aligned}$$

**The circumference of the manhole cover is about  $7\frac{6}{7}$  feet.**

