

10-1 Study Guide and Intervention

Circles and Circumference

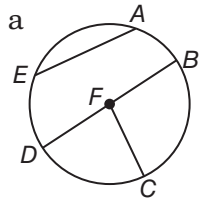
Segments in Circles A **circle** consists of all points in a plane that are a given distance, called the **radius**, from a given point called the **center**.

A segment or line can intersect a circle in several ways.

- A segment with endpoints that are at the center and on the circle is a **radius**.
- A segment with endpoints on the circle is a **chord**.
- A chord that passes through the circle's center and made up of collinear radii is a **diameter**.

For a circle that has radius r and diameter d , the following are true

$$r = \frac{d}{2} \qquad r = \frac{1}{2}d \qquad d = 2r$$



chord: \overline{AE} , \overline{BD}

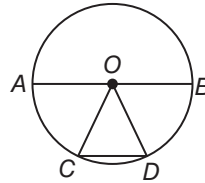
radius: \overline{FB} , \overline{FC} , \overline{FD}

diameter: \overline{BD}

Example

a. Name the circle.

The name of the circle is $\odot O$.



b. Name radii of the circle.

\overline{AO} , \overline{BO} , \overline{CO} , and \overline{DO} are radii.

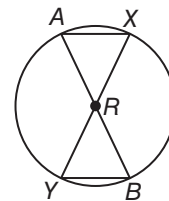
c. Name chords of the circle.

\overline{AB} and \overline{CD} are chords.

Exercises

For Exercises 1–7, refer to

1. Name the circle.
2. Name radii of the circle.
3. Name chords of the circle.
4. Name diameters of the circle.
5. If $AB = 18$ millimeters, find AR .
6. If $RY = 10$ inches, find AR and AB .
7. Is $\overline{AB} \cong \overline{XY}$? Explain.



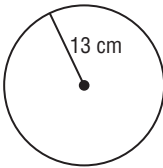
10-1 Study Guide and Intervention *(continued)*

Circles and Circumference

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

Circumference	For a circumference of C units and a diameter of d units or a radius or r units, $C = \pi d$ or $C = 2\pi r$
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Example Find the circumference of the circle to the nearest hundredth.



$$\begin{aligned}
 C &= 2\pi r && \text{Circumference formula} \\
 &= 2\pi(13) && r = 13 \\
 &= 26\pi && \text{Simplify.} \\
 &\approx 81.68 && \text{Use a calculator.}
 \end{aligned}$$

The circumference is 26π or about 81.68 centimeters.

Exercises

Find the diameter and radius of a circle with the given circumference. Round to the nearest hundredth.

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|------------------|-------------------|
| 1. $C = 40$ in. | 2. $C = 256$ ft |
| 3. $C = 15.62$ m | 4. $C = 9$ cm |
| 5. $C = 79.5$ yd | 6. $C = 204.16$ m |

Find the exact circumference of each circle using the given inscribed or circumscribed polygon.

