

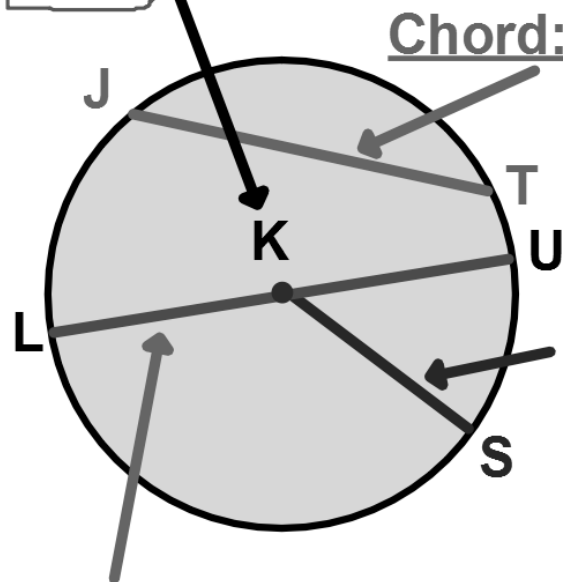
Unit 8 Lesson 1 (section 10-1) Circles and Circumference

Objective: Identify and use parts of circles

Solve problems involving parts of a circle.

Circle: Is the set of all points in a plane equidistant from a given point called the Center of the circle.

Name a circle with its center point. Circle K or $\odot K$



Chord: segment with BOTH endpoints ON the circle.

\overline{JT} \overline{LU}

Radius: segment with one endpoint at center and other endpoint ON the circle.

\overline{KS} , \overline{KU} , \overline{KL}

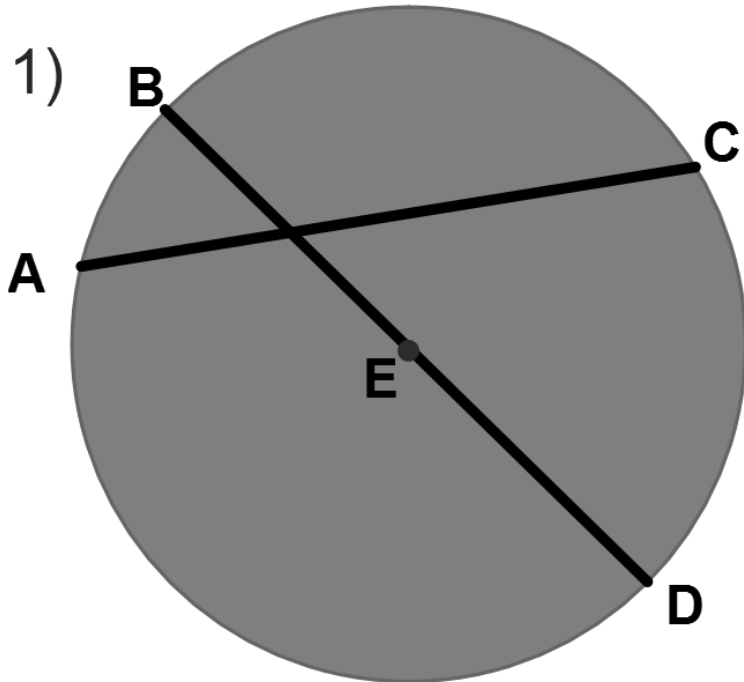
Diameter: chord that passes through the center and is made up of 2 collinear radii.

\overline{LU}

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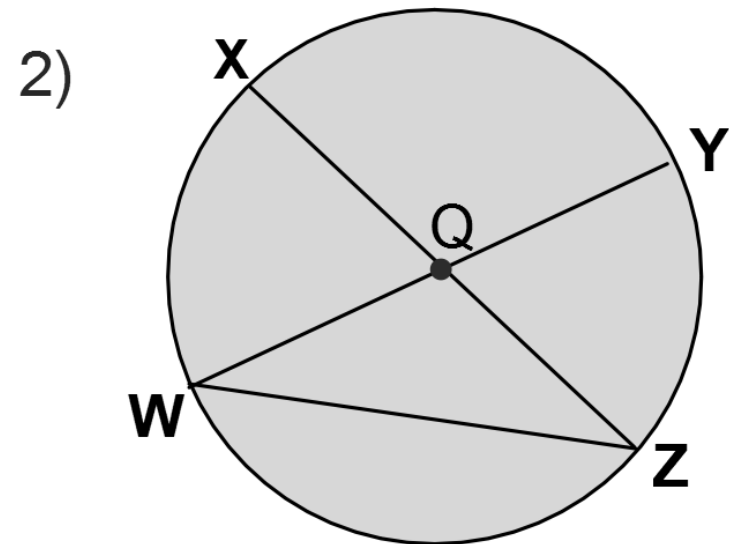
Name the circle: ⊙E

Identify a radius: \overline{EB} \overline{ED}

Identify a diameter: \overline{BD}

What radii make up the diameter?

\overline{EB} & \overline{ED}



Identify all diameters:

\overline{XZ} \overline{WY}

Identify all chords:

\overline{XZ} , \overline{WY} , \overline{WZ}

Identify all radii:

\overline{QX} , \overline{QY} , \overline{QW} , \overline{QZ}

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Circle Facts: All radii of a circle are congruent.

All diameters of a circle are congruent.

Since a diameter is made up of 2 radii, the following relationships exist.

$$d = 2r$$

$$r = \frac{d}{2} \quad \text{or} \quad r = \frac{1}{2}d$$

3) If $RT = 21\text{cm}$, what is the length of QV ?

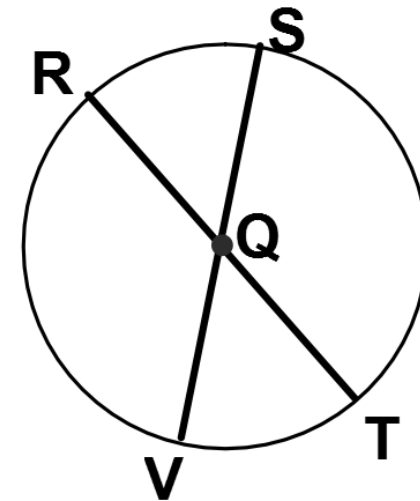
$$QV = \frac{21}{2} = 10.5\text{cm}$$

If $QS = 6.4$, what is the length of SV ?

$$SV = 6.4 \cdot 2 = 12.8$$

If $QT = 8$ in, what is the length of QS ?

$$QS = 8\text{in}$$



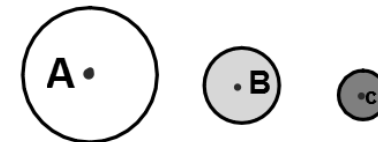
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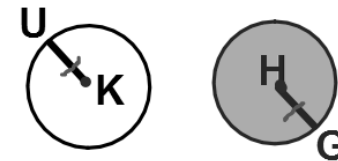
Solve problems involving parts of a circle.

Circle Relationships:

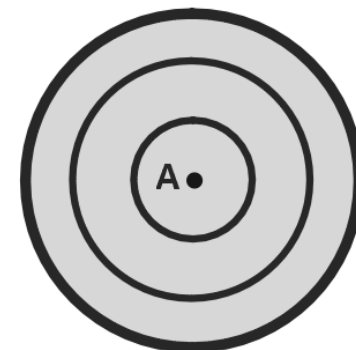
All circles are **SIMILAR** (same shape)



Circles can be **CONGRUENT**: 2 circles are congruent if and only if they have congruent radii.



Circles can be **CONCENTRIC CIRCLES**: coplanar circles that have the same center point.

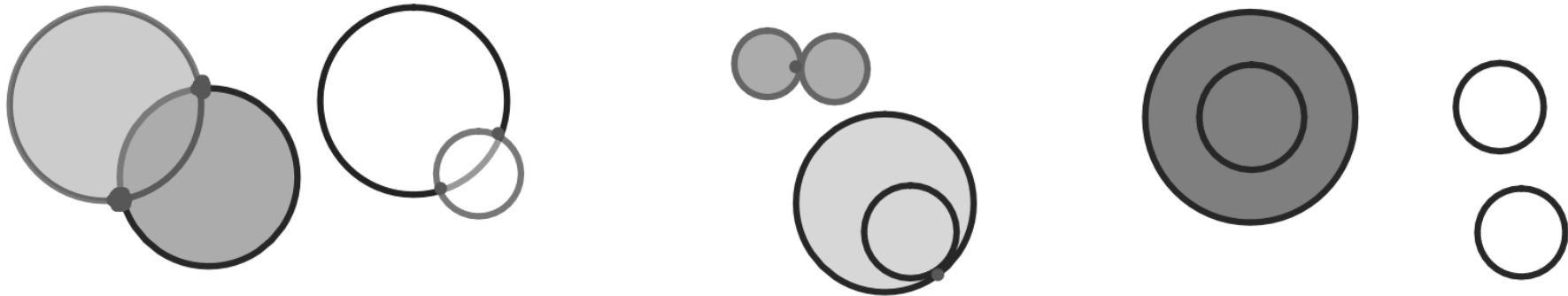


Unit 8 Lesson 1 (section 10-1) Circles and Circumference

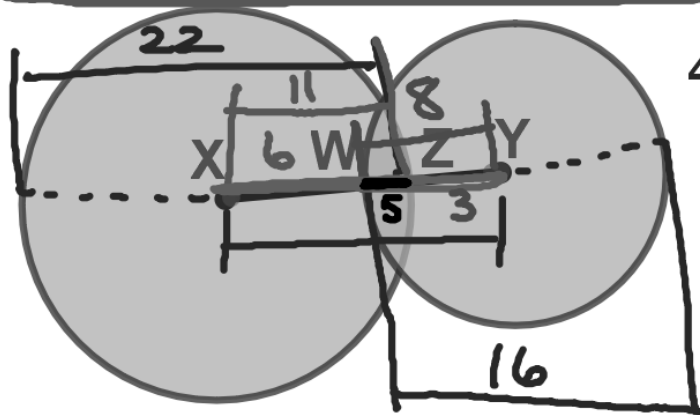
Objective: Identify and use parts of circles

Solve problems involving parts of a circle.

Circles can intersect in 2 points, 1 point, or no points.



The segment that connects the centers of 2 circles contains the radii of both circles.



- 4) The diameter of $\odot X$ is 22, the diameter of $\odot Y$ is 16, and $WZ=5$. Find XY .

$$11 + 8 - 5 = 14 \text{ OR}$$
$$6 + 5 + 3 = 14$$

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Solve problems involving parts of a circle.

The **CIRCUMFERENCE**, **C**, of a circle is the *distance* around the circle.

pi is the ratio of the circumference divided by the **π** diameter of a circle. It is an irrational number.

3.14 and $\frac{22}{7}$ are estimations. We will be using the **π button** on our calculators to be more accurate.

★ $C = 2\pi r$

★ $C = \pi d$

r is the radius, d is the diameter.

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Solve problems involving parts of a circle.

$$C = 2\pi r$$

$$C = \pi d$$

5) Find the circumference to the nearest hundredth.

a) radius = 4.2 cm

b) diameter = 13 ft

$$C = 2\pi r$$

$$2\pi(4.2) \approx 26.39 \text{ cm}$$

$$C = \pi d$$

$$C = \pi(13) \approx 40.84 \text{ ft}$$

6) Find the diameter and radius of a circle to the nearest hundredth if $C = 65.4 \text{ ft}$.

Wrong $\rightarrow 65.4 \div 2\pi$

Correct $\rightarrow 65.4 \div (2\pi)$ or $\frac{n}{d}$

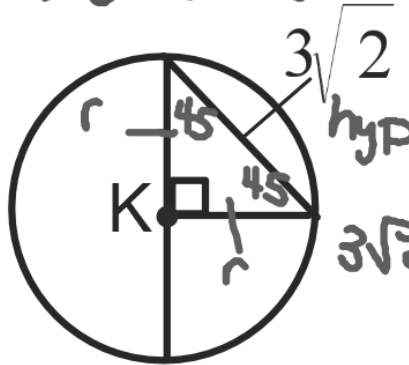
$$\frac{65.4}{2\pi} = \frac{2\pi r}{2\pi}$$

$$r \approx 10.41 \text{ ft}$$

$$\frac{65.4}{\pi} = \frac{\pi d}{\pi}$$

$$d \approx 20.82 \text{ ft}$$

7)



Find the exact circumference of $\odot K$.

$$3\sqrt{2} \div \sqrt{2} = r$$

$$3 = r$$

means leave π in your answer

$$C = 2\pi r$$

$$C = 2\pi(3)$$

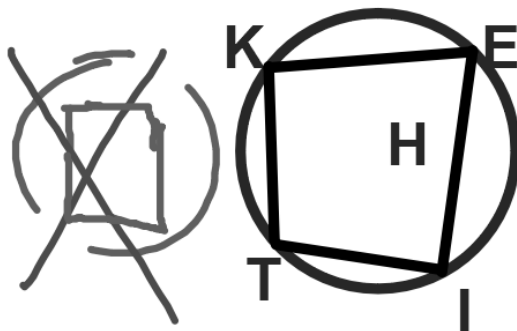
$$C = 6\pi$$

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A polygon is **INSCRIBED** in a circle if all of its vertices lie ON the circle. A circle is **CIRCUMSCRIBED** about a polygon if it contains ALL the vertices of the polygon.



Quadrilateral KEIT is inscribed in $\odot H$.

$\odot H$ is circumscribed about quadrilateral KEIT.

8) The right triangle shown is inscribed in $\odot J$. Find the **exact circumference** of $\odot J$.

hyp of Δ is diameter of \odot .

$$8^2 + 6^2 = d^2$$
$$64 + 36 = d^2$$
$$100 = d^2$$
$$\sqrt{100} = \sqrt{d^2} \rightarrow d = 10$$

$C = \pi d$

$C = 10\pi \text{ in}$

