Arcs and Chords

In a circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.

Abbreviations:

In ⊙, 2 minor arcs are ≅, corr. chords are ≅.

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Examples:

If $\overline{AB} \cong \overline{CD}$, $\overset{\frown}{AB} \cong \overset{\frown}{CD}$.

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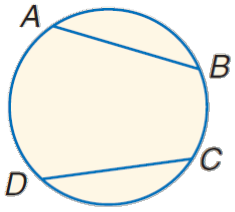
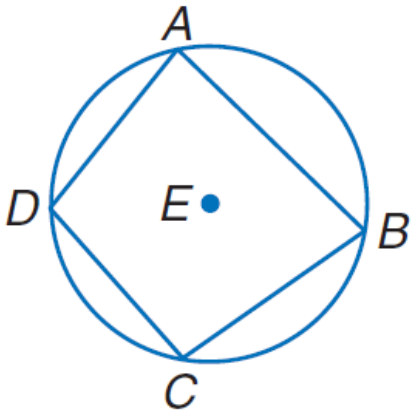
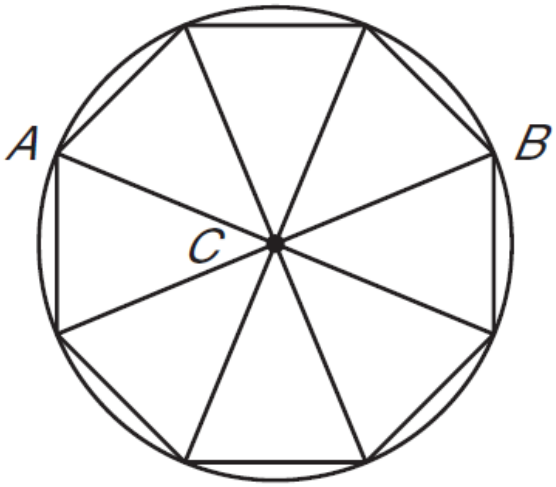


The chords of adjacent arcs can form a polygon. Quadrilateral *ABCD* is an **inscribed** polygon because all of its vertices lie on the circle. Circle *E* is **circumscribed** about the polygon because it contains all the vertices of the polygon.



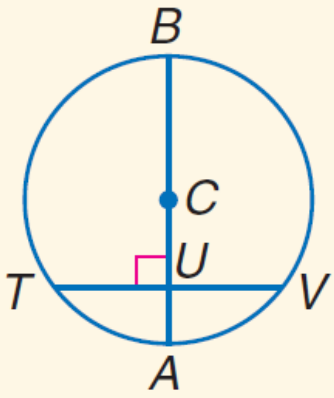
A regular octagon is inscribed in circle C.

What is the measure of angle ACB?



In a circle, if a diameter (or radius) is perpendicular to a chord, then it bisects the chord and its arc.

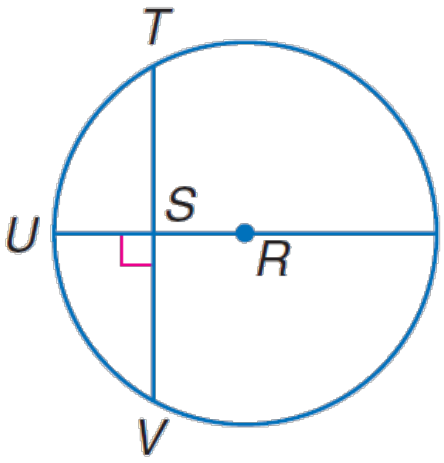
Example: If $\overline{BA} \perp \overline{TV}$, then $\overline{UT} \cong \overline{UV}$ and $\overset{\frown}{AT} \cong \overset{\frown}{AV}$.



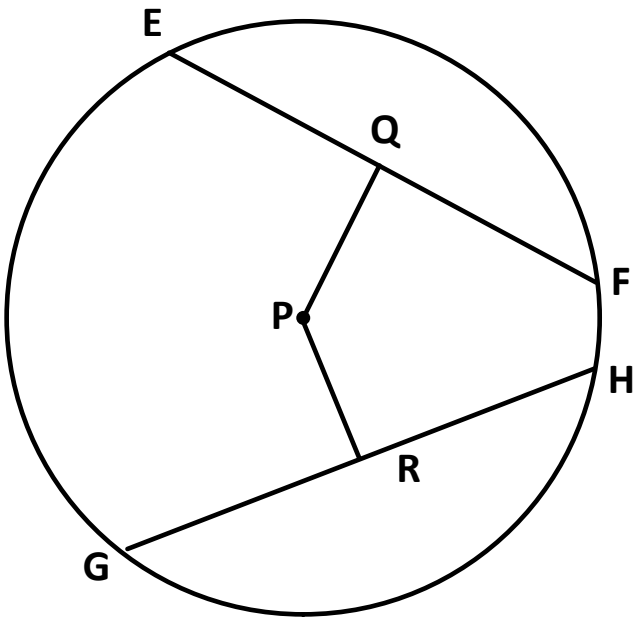
Circle R has a radius of 16 centimeters. Radius $\overline{RU}$ is perpendicular to chord $\overline{TV}$, which is 22 centimeters long.

3A. If $m\overset{\frown}{TV} = 110$, find $m\overset{\frown}{UV}$.

3B. Find RS.



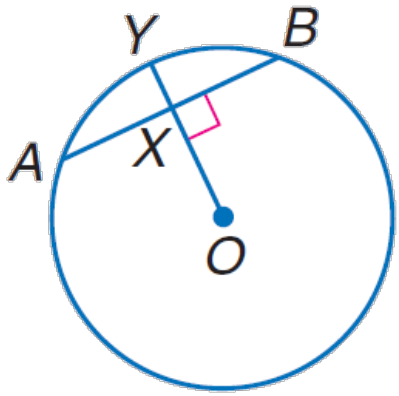
In a circle or in congruent circles, two chords are congruent if and only if they are equidistant from the center.



Chords $\overline{EF}$ and $\overline{GH}$ are equidistant from the center. If the radius of circle P is 15 inches and EF = 24 inches, find PR and RH.

Circle O has a radius of 10, $AB = 10$, and $m\overset{\frown}{AB} = 60$. Find each measure.

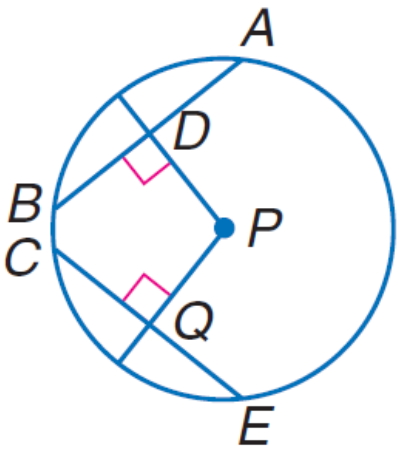
3. $m\overset{\frown}{AY}$ **4.** AX **5.** OX



Exercises 3–5

In $\odot P$, $PD = 10$, $PQ = 10$, and $QE = 20$. Find each measure.

6. AB **7.** PE



Exercises 6–7