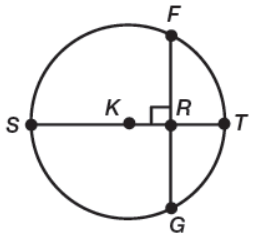
Lesson 11.4 ~ Extra Note Sheet

The Diameter-Chord Theorem states: "If a circle's diameter is perpendicular to a chord, then the diameter bisects the chord and bisects the arc determined by the chord."

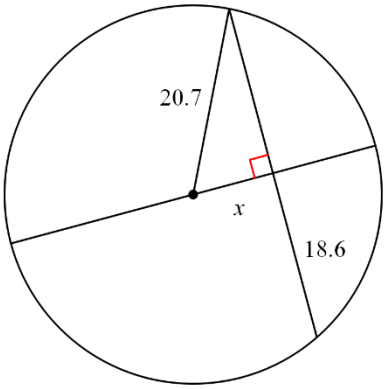
Example

In circle K, diameter $\overline{ST}$ is perpendicular to chord $\overline{FG}$. So $FR = GR$ and $m\overset{\frown}{FT} = m\overset{\frown}{GT}$.



Use the Diameter-Chord Theorem and the Pythagorean Theorem to find the value of x.

1.



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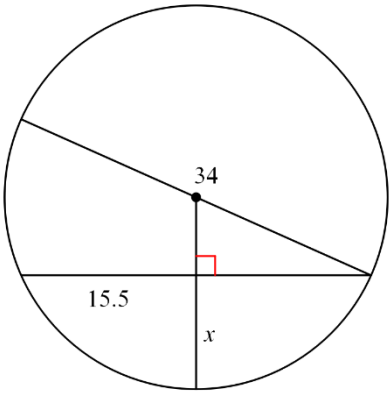
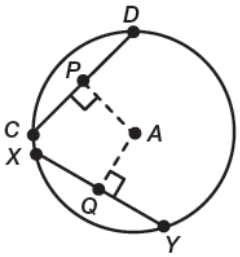


The Equidistant Chord Theorem states: "If two chords of the same circle or congruent circles are congruent, then they are equidistant from the center of the circle."

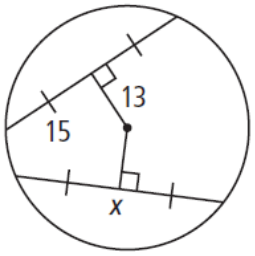
Example

In circle A, chord $\overline{CD}$ is congruent to chord $\overline{XY}$. So $PA = QA$.



Use the Equidistant Chord Theorem to find the value of x.

3.



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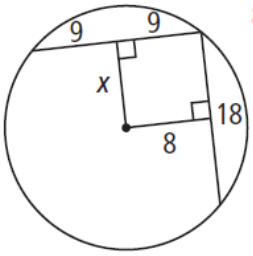

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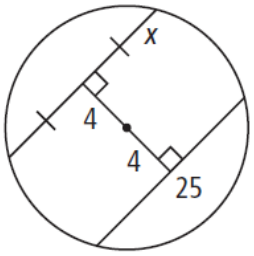
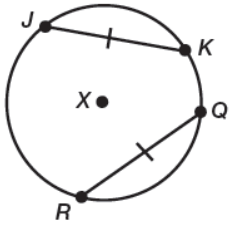


The Congruent Chord – Congruent Arc Theorem states: "If two chords of the same circle or congruent circles are congruent, then their corresponding arcs are congruent."

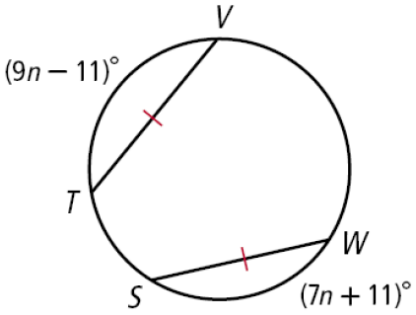
Example

In circle X, chord $\overline{JK}$ is congruent to chord $\overline{QR}$. So $m\overset{\frown}{JK} = m\overset{\frown}{QR}$.

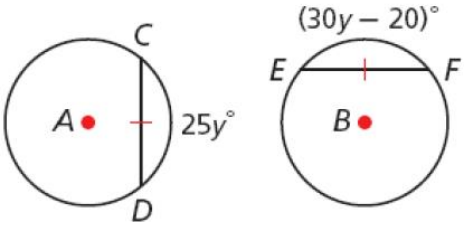


Use the Congruent Chord – Congruent Arc Theorem to set up and solve an equation to find the value of x. Then find the indicated arc measure.

6. $\overline{TV} \cong \overline{WS}$. **Find** $m\overset{\frown}{WS}$.



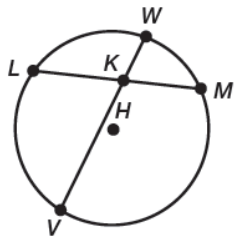
7. $\odot A \approx \odot B$. $\overline{CD} \cong \overline{EF}$. **Find** $m\overset{\frown}{CD}$.



The Segment-Chord Theorem states: "If two chords in a circle intersect, then the product of the lengths of the segments of one chord is equal to the product of the lengths of the segments of the second chord."

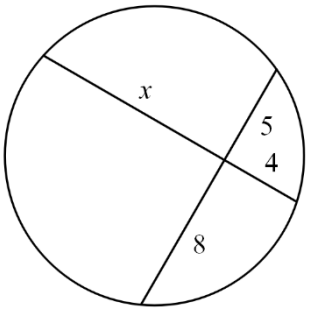
Example

In circle H, chords $\overline{LM}$ and $\overline{VW}$ intersect to form $\overline{LK}$ and $\overline{MK}$ of chord $\overline{LM}$ and $\overline{WK}$ and $\overline{VK}$ of chord $\overline{VW}$. So $LK \cdot MK = WK \cdot VK$.



Use the Segment-Chord Theorem to set up and solve an equation to find the value of x.

8.



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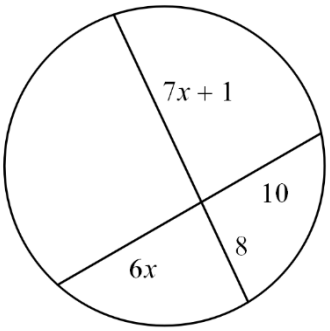

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