Lesson 10-3 Arcs and Chords

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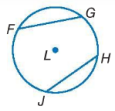
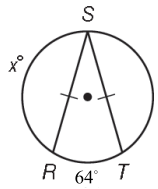
Theorem 10.2

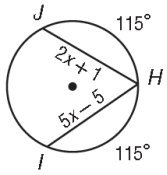
Words In the same circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.

Example $\overline{FG} \cong \overline{HJ}$ if and only if $\overset{\frown}{FG} \cong \overset{\frown}{HJ}$.



Examples: Solve for x.





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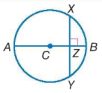
Theorems

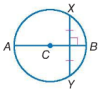
10.3 If a diameter (or radius) of a circle is perpendicular to a chord, then it bisects the chord and its arc.

Example If diameter $\overline{AB}$ is perpendicular to chord $\overline{XY}$, then $\overline{XZ} \cong \overline{ZY}$ and $\overset{\frown}{XB} \cong \overset{\frown}{BY}$.

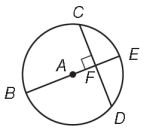


10.4 The perpendicular bisector of a chord is a diameter (or radius) of the circle.

Example If $\overline{AB}$ is a perpendicular bisector of chord $\overline{XY}$, then $\overline{AB}$ is a diameter of $\odot C$.



Example 1: If the $m\overset{\frown}{CD} = 102°$, find the $m\overset{\frown}{BC}$.



Example 2: If $CD = 30$ and $AF = 8$, find the length of the radius of $\odot A$.

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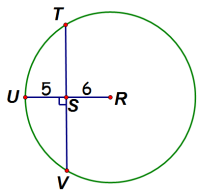
Example 3: In $\odot R$, find TV. Round to the nearest hundredth.



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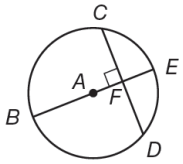
Try this one...

In ⊙A, the diameter is 12 inches and CD is 8 inches. Find the lengths of the following:

FD =

AC =

AF =



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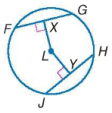
Theorem 10.5

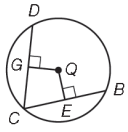
Words In the same circle or in congruent circles, two chords are congruent if and only if they are equidistant from the center.

Example $\overline{FG} \cong \overline{JH}$ if and only if $LX = LY$.



Example:

In $\odot Q$, $\overline{CD} \cong \overline{CB}$, $GQ = x + 5$ and $EQ = 3x - 6$. What is x?



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