
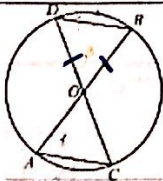
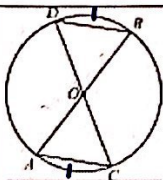
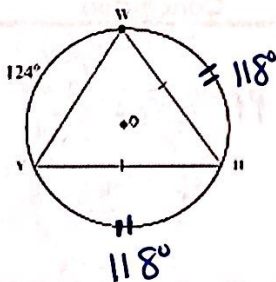


Day 7 - Chord Properties – Notes

Learning Target: I can use properties and theorems of chords to solve problems.

Name	Theorem	Hypothesis	Conclusion
Congruent Angle- Congruent Chord Theorem	Congruent central angles have congruent chords.		$\overline{DC} \cong \overline{AB}$
Congruent Chord- Congruent Arc Theorem	Congruent chords have congruent arcs.		$\widehat{DB} \cong \widehat{AC}$
Congruent Arc- Congruent Angle Theorem	Congruent arcs have congruent central angles.		$\angle DOB \cong \angle AOC$

Example: Find the measure of arc HY and HYW.



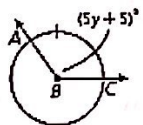
$$360 - 124 = 236^\circ$$

$$236 \div 2 = 118^\circ$$

$$\widehat{HY} = 118^\circ$$

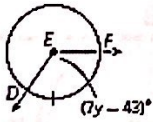
$$\widehat{HYW} = 242^\circ$$

Example: Find the measure of angle DEF.



$$7y - 43 = 5y + 5$$

$$\angle DEF = 7(24) - 43 = \boxed{125^\circ}$$



$$2y = 48$$

$$y = 24$$

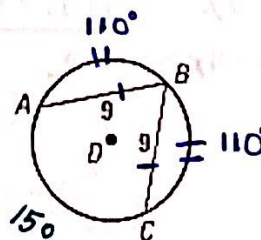
Example: Answer the following:

1. If $m\widehat{AB} = 110^\circ$, find $m\widehat{BC}$. 110°

2. If $m\widehat{AC} = 150^\circ$, find $m\widehat{AB}$.

$$360 - 150 = 210$$

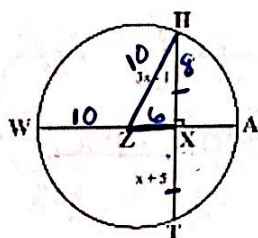
$$210 \div 2 = \boxed{105^\circ}$$



Name	Theorem	Hypothesis	Conclusion
Diameter-Chord Theorem	If a radius or diameter is perpendicular to a chord, then it bisects the chord and its arc.		$\overline{FR} \cong \overline{GR}$ and $\widehat{FT} \cong \widehat{GT}$
Converse of Diameter-Chord Theorem	If a segment is the perpendicular bisector of a chord, then it is the radius or diameter.		ST is a diameter

Example: Find the measure of HT. Then find the measure of WA if you know $XZ = 6$.

Example: Find the measures of arc CB, BE, and CE.



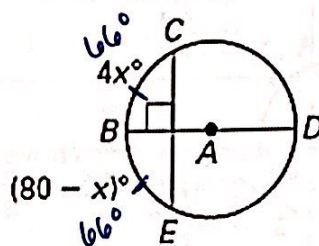
$$3x - 1 = x + 5$$

$$2x = 6$$

$$x = 3$$

$$\boxed{WA = 20}$$

$$\boxed{HT = 16}$$



$$4x = 80 - x$$

$$5x = 80$$

$$x = 16$$

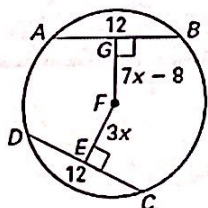
$$\widehat{CB} = 66^\circ$$

$$\widehat{BE} = 66^\circ$$

$$\widehat{CE} = 132^\circ$$

Name	Theorem	Hypothesis	Conclusion
Equidistant Chord Theorem	If two chords are congruent, then they are equidistant from the center.		$\overline{PA} \cong \overline{QA}$
Converse of Equidistant Chord Theorem	If two chords are equidistant from the center, then the chords are congruent.		$\overline{CD} \cong \overline{XY}$

Example: Find EF.



$$7x - 8 = 3x$$

$$-8 = -4x$$

$$2 = x$$

$$\boxed{FE = 6}$$