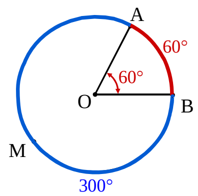
Lesson 11-2

Objective – To use properties of arcs.



$\angle AOB$ - Central Angle - Angle whose vertex is the center of a circle.

Arc - A piece of a circle.

$\overset{\frown}{AB}$ - Minor Arc - An arc whose points are on interior of central angle.

$\overset{\frown}{AMB}$ - Major Arc - An arc whose points are on exterior of central angle.

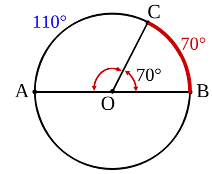
$m\overset{\frown}{AC} = 60°$

$m\overset{\frown}{AMC} = 360° - 60°$

$300°$

Arc Addition Postulate

The measure of an arc formed by two adjacent arcs is the sum of their measures.



$m\overset{\frown}{AC} + m\overset{\frown}{CB} = m\overset{\frown}{ACB}$

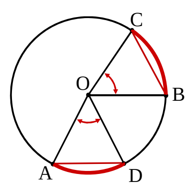
Find $m\overset{\frown}{AC}$.

$70° + m\overset{\frown}{AC} = 180°$

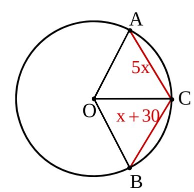
$-70° \qquad\qquad -70°$

$m\overset{\frown}{AC} = 110°$

Congruent Central Angles, Chords, and Arcs Theorem



$\cong$ Central Angles $\rightarrow$ $\cong$ Chords $\rightarrow$ $\cong$ Arcs



If $\overrightarrow{OC}$ bisects $\angle AOB$, find AC.

$m\angle AOC = m\angle COB$ by Def. of Bisector

$\therefore$ AC = BC by $\cong$ Central $\angle$s $\rightarrow$ $\cong$ Chords

$5x = x + 30$

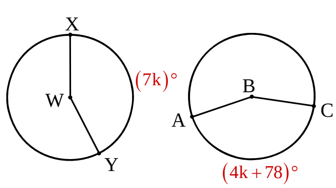
$-x \quad -x$

$4x = 30$

$x = 7.5$

$AC = 5x = 5(7.5) = 37.5$ un.

Find $m\overset{\frown}{AC}$ if $\bigcirc W \cong \bigcirc B$ and $m\angle XWY \cong m\angle ABC$.



$7k = 4k + 78$

$-4k \quad -4k$

$3k = 78$

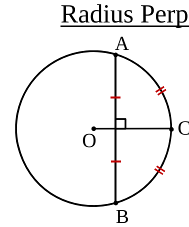
$k = 26$

$m\overset{\frown}{AC} = (4k + 78)°$

$m\overset{\frown}{AC} = (4 \cdot 26 + 78)°$

$m\overset{\frown}{AC} = 126°$

Radius Perpendicular to Chord Theorem



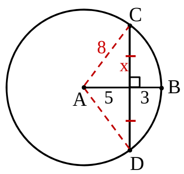
If a radius (or diameter) is perpendicular to a chord, then it bisects the chord and its intercepted arc.

Converse of Radius Perpendicular to Chord Theorem

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

Lesson 11-2

Find CD.



AB, AC, and AD are radii.

$AC = 8$

$a^2 + b^2 = c^2$

$5^2 + x^2 = 8^2$

$25 + x^2 = 64$

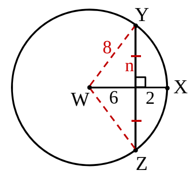
$-25 \qquad -25$

$x^2 = 39$

$x = \sqrt{39}$

$CD = 2\sqrt{39}$

Find YZ.



WX, WY, and WZ are radii.

$WY = 8$

$a^2 + b^2 = c^2$

$6^2 + n^2 = 8^2$

$36 + n^2 = 64$

$-36 \qquad -36$

$n^2 = 28$

$n = \sqrt{28} = 2\sqrt{7}$

$YZ = 4\sqrt{7}$