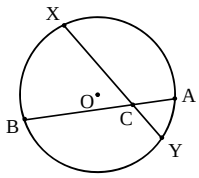
Lesson 11-6

Objective – To solve problems involving lengths of segments formed by intersecting lines of circles.

Chord Intersect Chord Product Theorem

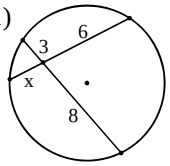
If two chords intersect each other in the interior of a circle, then the product of segment lengths of one chord are equal to the product of segment lengths of the other chord.

$CX \cdot CY = BC \cdot AC$



Find the length of x.

1)

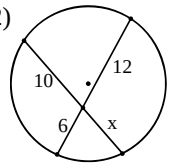


$3 \cdot 8 = 6 \cdot x$

$\frac{24}{6} = \frac{6x}{6}$

$4 = x$

2)

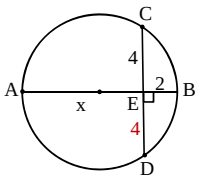


$10 \cdot x = 6 \cdot 12$

$\frac{10x}{10} = \frac{72}{10}$

$x = 7.2$

Find the length of diameter AB.



ED = 4 by chord $\perp$ to radius is bisected by radius.

$4 \cdot 4 = 2 \cdot x$

$\frac{16}{2} = \frac{2x}{2}$

$8 = x$

$AB = x + 2$

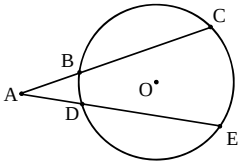
$AB = 8 + 2 = 10$

External Secant - Secant Product Theorem

If two secants intersect each other in the exterior of a circle, then the product of the external segment length and the entire secant length of one segment equals that of the other.

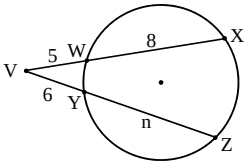
External•Whole = External•Whole

$AB \cdot AC = AD \cdot AE$



Find the value of n.

External•Whole = External•Whole



$VW \cdot VX = VY \cdot VZ$

$5 \cdot (5 + 8) = 6 \cdot (6 + n)$

$5 \cdot (13) = 6 \cdot (6 + n)$

$65 = 36 + 6n$

$-36 \quad -36$

$\frac{29}{6} = \frac{6n}{6}$

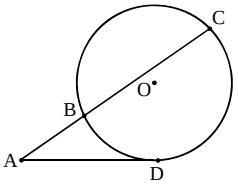
$\frac{29}{6} = n = 4\frac{5}{6}$

External Secant - Tangent Product

External•Whole = External•Whole

$AB \cdot AC = AD \cdot AD$

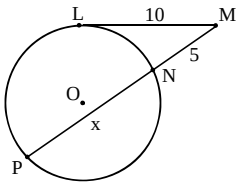
$AB \cdot AC = (AD)^2$



Lesson 11-6

Find the value of x.

External•Whole = External•Whole



$MN \bullet MP = (LM)^2$

$5 \bullet (5 + x) = (10)^2$

$25 + 5x = 100$

$-25 \quad -25$

$\frac{5x}{5} = \frac{75}{5}$

$x = 15$