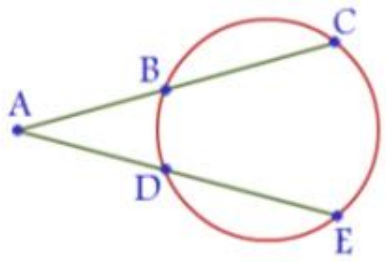
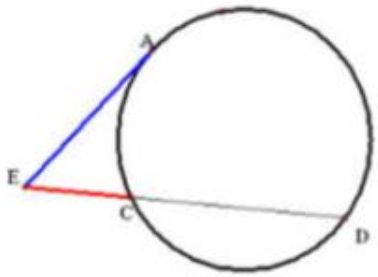
Now that we have learned about the angles formed, we have to look at what happens to the segment lengths.

Outside
Secant - Secant
Secant - Tangent
Tangent - Tangent

Inside
Chord-Chord

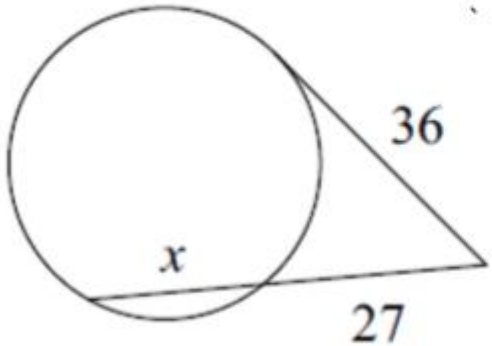
Segments: Secant-Secant, Tangent-Secant (Vertex Outside)





Outside(whole) = Outside(whole)

Ex.1: Solve for x



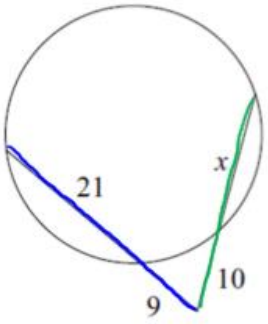
$36(36) = 27(27+x)$

$1296 = 729+27x$

$567 = 27x$

$x = 21$

Ex.2: Solve for x



$9(21+9) = 10(x+10)$

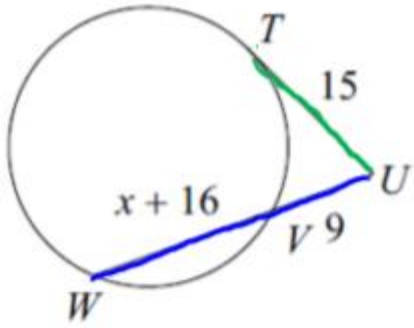
$270 = 10x + 100$

$170 = 10x$

$x = 17$

Circle Properties

Ex.3: Find *UW*



$15(15) = 9(x+16)$

$225 = 9x + 144$

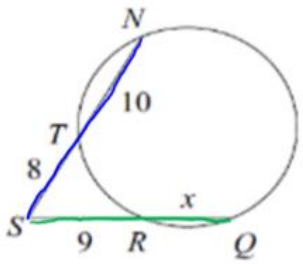
$81 = 9x$

$x = 9$

$\overline{UW} = (9)+16+9 = 34$

Circle Properties

Ex.4: Find QR



$8(8+10) = 9(9+x)$

$144 = 81 + 9x$

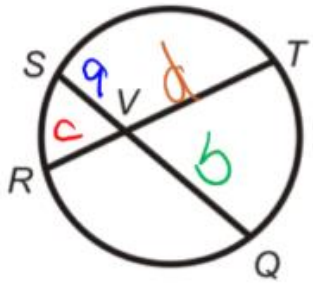
$63 = 9x$

$7 = x$

$\overline{QR} = 9+7$

$\overline{QR} = 16$

Segments: Chord - Chord (Vertex Inside)



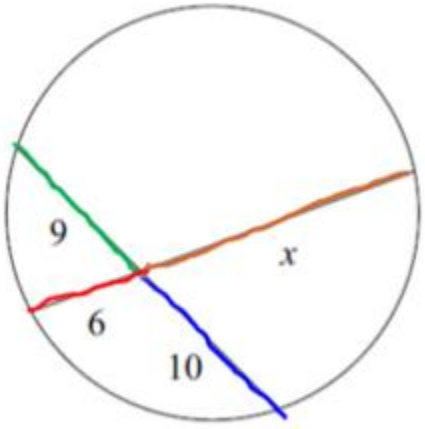
$ab = cd$

or

part · part = part · part

Circle Properties

Ex. 1: Solve for x



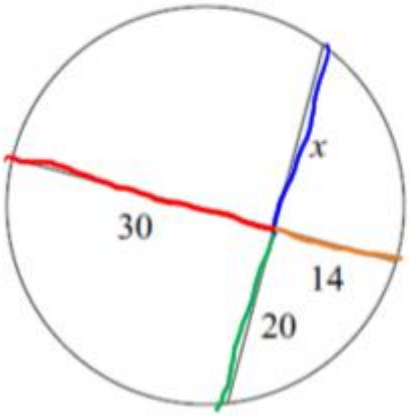
$9 \cdot 10 = 6 \cdot x$

$90 = 6x$

$x = 15$

Circle Properties

Ex 2: Solve for x



$20x = 30 \cdot 14$

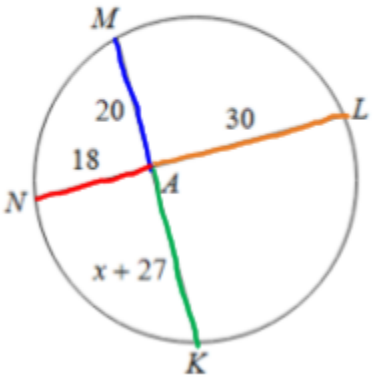
$20x = 420$

$x = 21$

Circle Properties

Ex. 3:

Find MK



$20(x+27) = 18 \cdot 30$

$20x + 540 = 540$

$20x = 0$

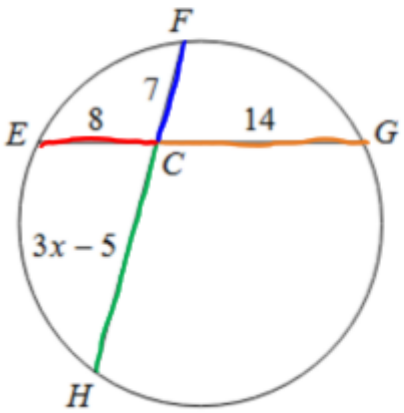
$x = 0$

$\overline{MK} = 20 + (0) + 27 = 47$

Circle Properties

Ex 4:

Find CH



$7(3x-5) = 8 \cdot 14$

$21x - 35 = 112$

$21x = 147$

$x = 7$

$\overline{CH} = 3(7) - 5 = 16$

Bringing it All Together Circle Properties

	Angle	Segment
IN	$\frac{\text{Arc1} + \text{Arc2}}{2} = \text{Angle}$	$P \bullet P = P \bullet P$
ON	$2 \times \text{Angle} = \text{Arc}$	N/A
OUTSIDE	$\frac{\text{BigArc-SmallArc}}{2} = \text{Angle}$	$O \times W = O \times W$