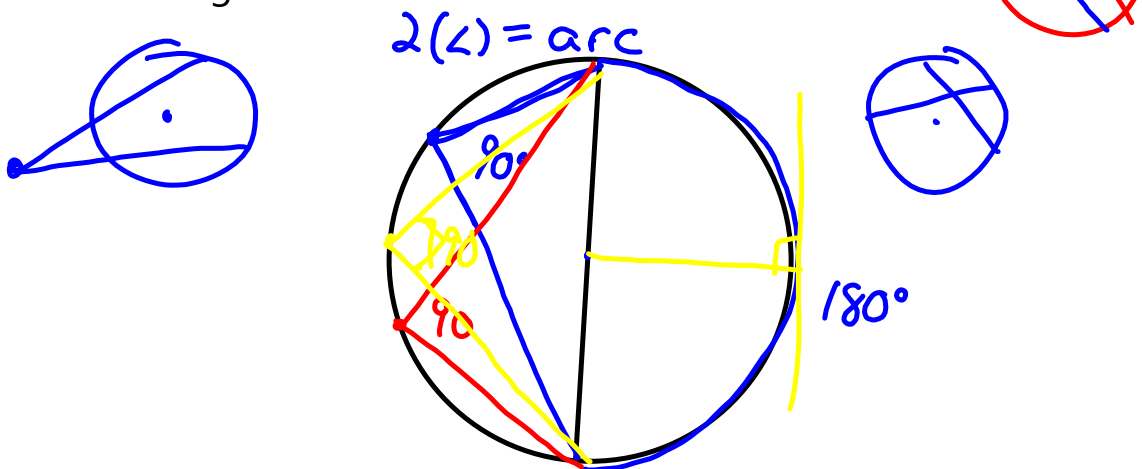


Goals For Today

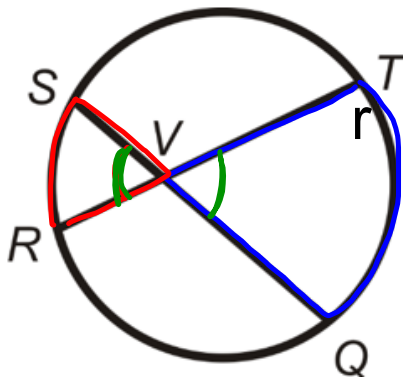
C.2 Identify and describe relationships among inscribed angles, radii, chords, tangents, and secants. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.



In the Circle

Circle Properties

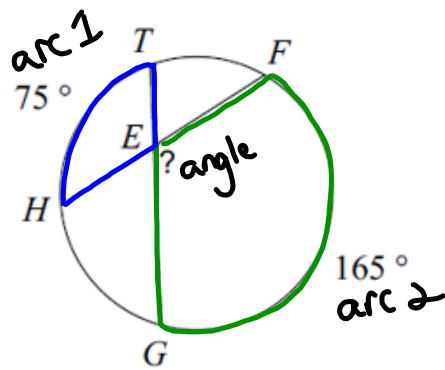
Angles: Chord-Chord (Vertex Inside)



$$2(\angle) = \widehat{1} + \widehat{2}$$

Circle Properties

Ex. 1: Solve for the value of '?'.



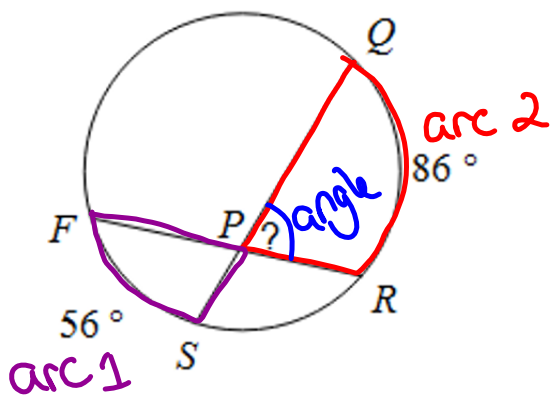
$$\text{IN: } 2(\angle) = \widehat{1} + \widehat{2}$$

$$2(?) = 75 + 165$$

$$2(?) = 240$$

$$? = 120^\circ$$

Ex. 2: Solve for the value of '?'.



Circle Properties

$$\text{IN: } 2(\angle) = \widehat{1} + \widehat{2}$$

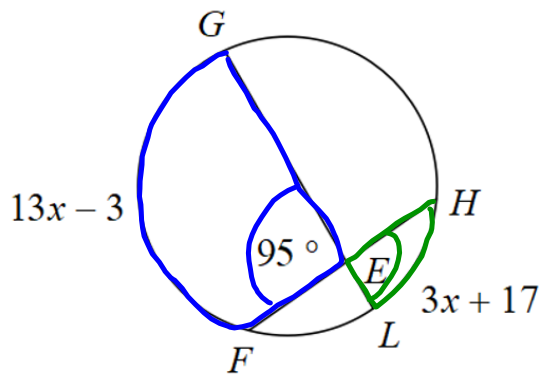
$$2(?) = 86 + 56$$

$$2(?) = 142$$

$$? = 71^\circ$$

Circle Properties

Ex. 3: Solve for the value of x.



$$2(\angle) = \widehat{1} + \widehat{2}$$

$$2(95) = \underline{3x + 17} + \underline{13x - 3}$$

$$190 = 16x + 14$$

$$\underline{-14} \qquad \underline{-14}$$

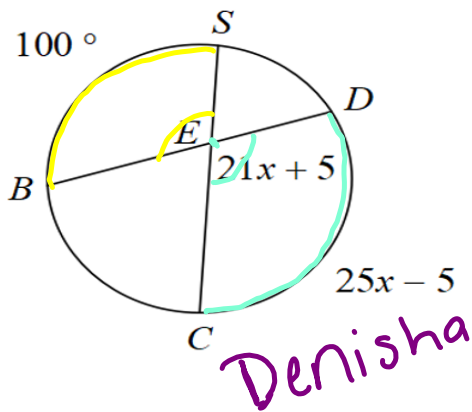
$$\frac{176}{16} = \frac{16x}{16}$$

$$11 = x$$

Circle Properties

Ex. 4 Solve for the value of x.

$$2(\angle) = \hat{1} + \hat{2}$$



$$2(21x + 5) = 100^\circ + 25x - 5$$

$$42x + 10 = 25x + 95$$

$$\begin{array}{r} -25x \\ \hline \end{array}$$

$$17x + 10 = 95$$

$$\begin{array}{r} -10 \\ \hline \end{array}$$

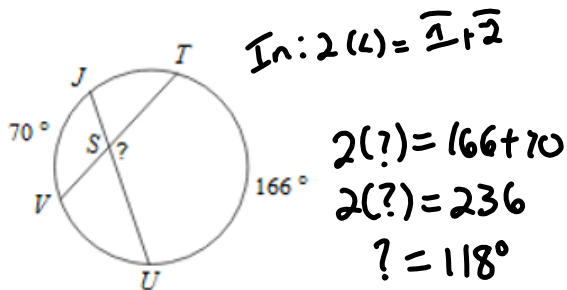
$$\frac{17x}{17} = \frac{85}{17}$$

$$x = 5$$

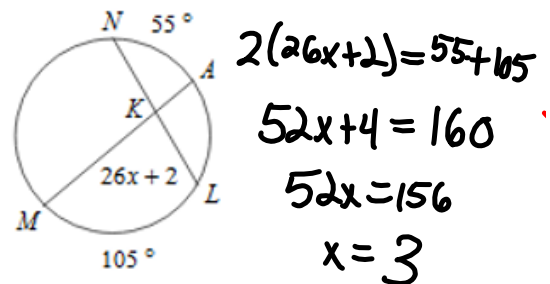
Practice: Chord - Chord

1, 3, 5, 7

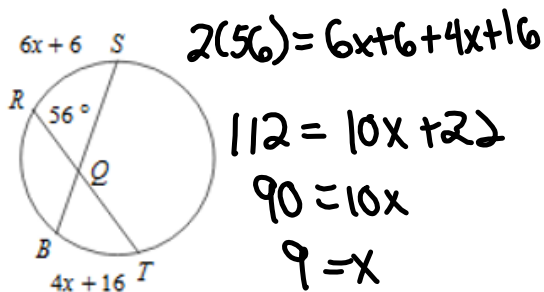
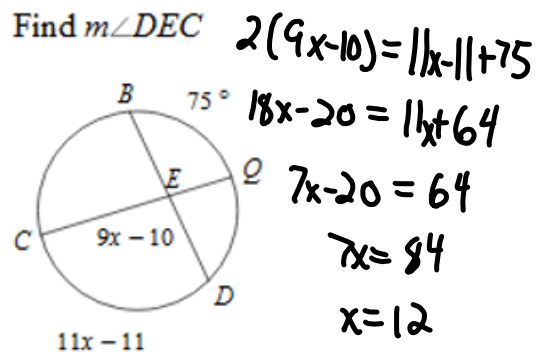
1)



3)



5)

7) Find $m\angle DEC$ 

Circle Properties

Outside the circle

Secant-Secant

Secant - Tangent

Tangent - Tangent

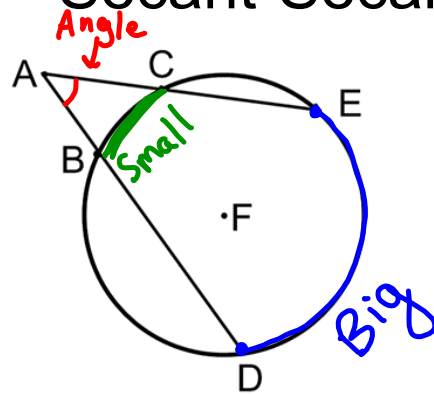
(Circumscribed)

.

Circle Properties

Outside the circle

Secant-Secant



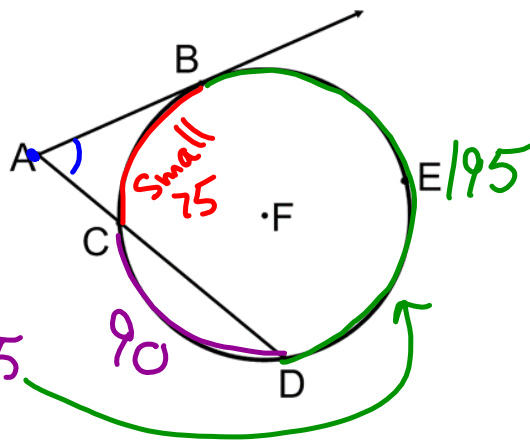
$$2(\angle) = \widehat{\text{Big}} - \widehat{\text{Small}}$$

Outside the circle

Circle Properties

Secant - Tangent

$$2(\angle) = \text{Big} - \text{Small}$$



$$75 + 90$$

$$360 - 165 = 195$$

$$2(x) = 195 - 75$$

$$2(x) = 120$$

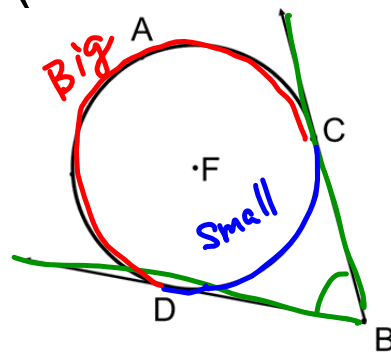
$$x = 60$$

Outside the circle

Circle Properties

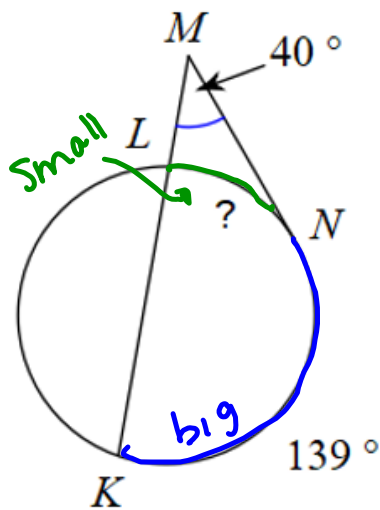
Tangent - Tangent
(Circumscribed)

$$2(\angle) = \text{Big} - \text{Small}$$



Circle Properties

Ex. 1: Solve for the value of '?'. $2(\angle) = \widehat{\text{big}} - \widehat{\text{small}}$

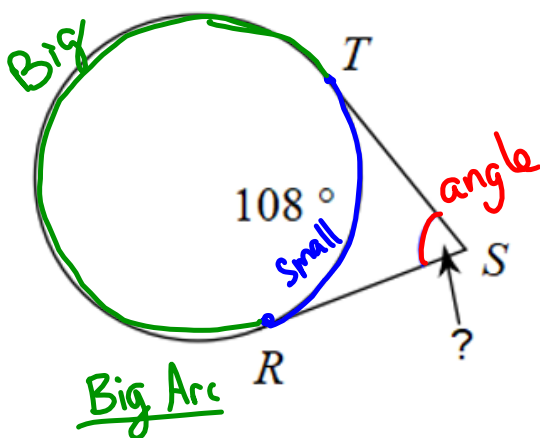


$$\begin{aligned}
 2(40) &= 139 - ? \\
 80 &= 139 - ? \\
 \underline{-139} \quad \underline{-139} & \\
 -59 &= -? \\
 \underline{-1} \quad \underline{-1} & \\
 59 &= ?
 \end{aligned}$$

← cancel out

Circle Properties

Ex. 2: Solve for the value of '?'.



$$360 - 108 = \text{Big Arc}$$

$$252 = \text{Big Arc}$$

$$\text{OUT: } 2(\angle) = \widehat{\text{Big}} - \widehat{\text{Small}}$$

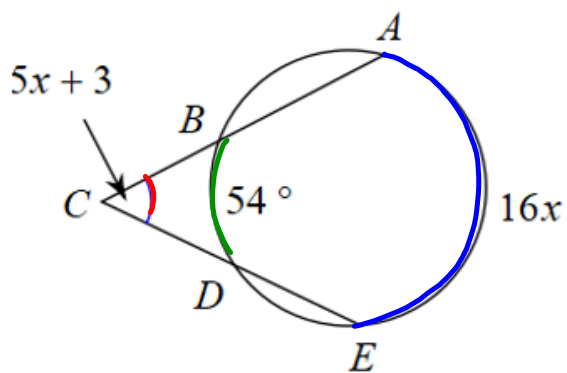
$$2(?) = 252 - 108$$

$$2(?) = 144$$

$$? = 72^\circ$$

Circle Properties

Ex. 3: Solve for the value of x .



OUT: $2(\angle) = \text{Big} - \text{Small}$

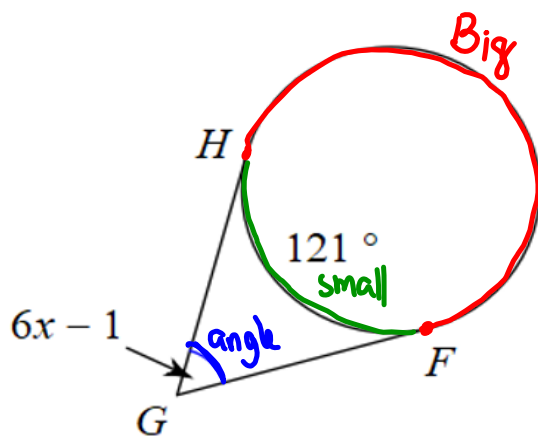
$$2(\widehat{5x+3}) = 16x - 54$$

$$\begin{array}{r} 10x + 6 = 16x - 54 \\ \underline{-10x} \quad \underline{-10x} \end{array}$$

$$\begin{array}{r} 6 = 6x - 54 \\ \underline{+54} \quad \underline{+54} \\ 60 = 6x \\ 10 = x \end{array}$$

Circle Properties

Ex. 4: Solve for the value of x .



$$\begin{aligned} \text{Big} \\ 360 - 121 &= \text{Big} \\ 239 &= \text{Big} \end{aligned}$$

$$2(\angle) = \widehat{\text{Big}} - \widehat{\text{Small}}$$

$$2(6x - 1) = 239 - 121$$

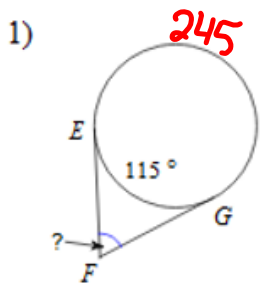
$$12x - 2 = 118$$

$$12x = 120$$

$$x = 10$$

Practice: Secant - Tangents Circle Properties

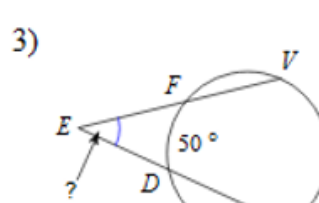
Odd problems



$$2(?) = 245 - 115$$

$$2(?) = 130$$

$$? = 65^\circ$$

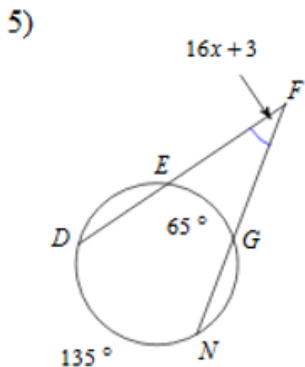


$$2(?) = 126 - 50$$

$$2(?) = 76$$

$$? = 38$$

$2(\angle) = \text{Big} - \text{Small}$

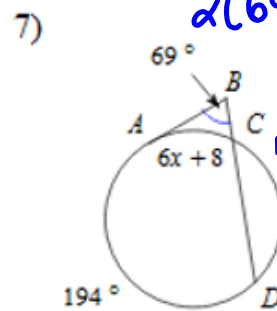


$$2(16x + 3) = 135 - 65$$

$$32x + 6 = 70$$

$$32x = 64$$

$$x = 2$$



$$2(69) = 194 - (6x + 8)$$

$$138 = 194 - 6x - 8$$

$$138 = 186 - 6x$$

$$-48 = -6x$$

$$8 = x$$