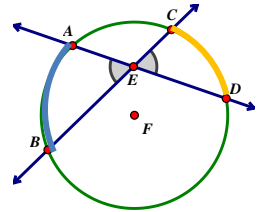


**Interior Angles:**

Any angle with a vertex **INSIDE** the circle and formed by segments/rays which intersect the circle

\* Angle measure = average of 2 intercepted arcs

$$m\angle 1 = \frac{\widehat{AB} + \widehat{CD}}{2}$$

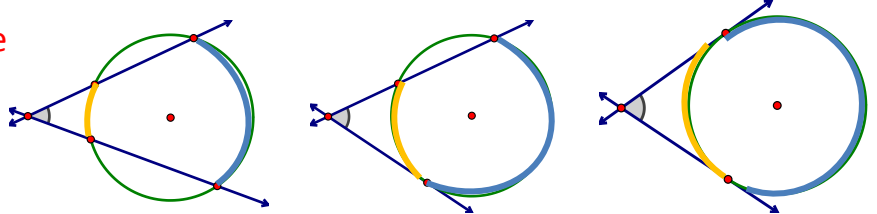


**Exterior Angles:**

Any angle with a vertex **OUTSIDE** the circle and formed by segments/rays which intersect the circle

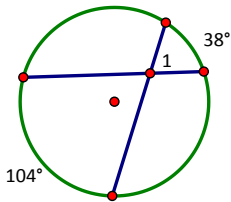
\* Angle measure = half the difference of 2 intercepted arcs

$$m\angle 1 = \frac{\text{big arc} - \text{small arc}}{2}$$



**1. Determine the requested value(s).** (Lines that appear to be tangent are tangent.)

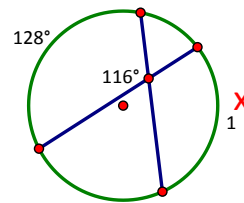
a)



$$m\angle 1 = \frac{38 + 104}{2} = \frac{142}{2}$$

$$m\angle 1 = \underline{71^\circ}$$

b)



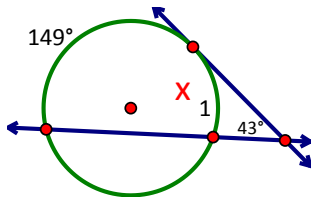
$$116 = \frac{x + 128}{2}$$

$$232 = 128 + x$$

$$x = 104$$

$$m\hat{1} = \underline{104^\circ}$$

c)



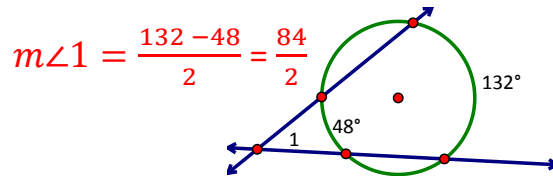
$$43 = \frac{149 - x}{2}$$

$$86 = 149 - x$$

$$x = 63$$

$$m\hat{1} = \underline{63^\circ}$$

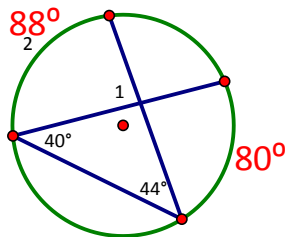
d)



$$m\angle 1 = \frac{132 - 48}{2} = \frac{84}{2}$$

$$m\angle 1 = \underline{42^\circ}$$

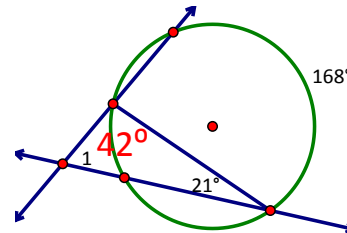
e)



$$m\angle 1 = \frac{88 + 80}{2} = \frac{168}{2}$$

$$m\angle 1 = \underline{84^\circ} \quad m\hat{2} = \underline{88^\circ}$$

f)



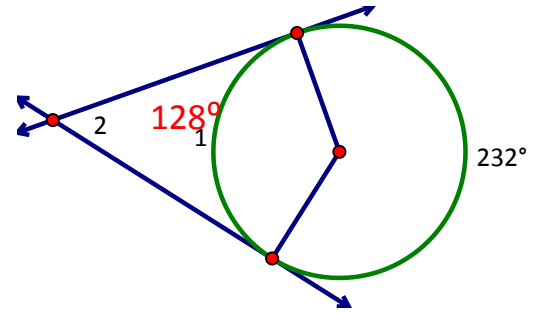
$$m\angle 1 = \frac{168 - 42}{2} = \frac{126}{2}$$

$$m\angle 1 = \underline{63^\circ}$$

2. Given the two tangent lines, explain how you would solve for  $m\hat{1}$  and  $m\angle 2$ .

$$m\angle 2 = \frac{232 - 128}{2} = \frac{104}{2}$$

$$m\angle 2 = 52^\circ$$



3. Use the previous question to help you solve for  $m\hat{1}$  and  $m\hat{2}$ .

$$64 = \frac{360 - x - x}{2} = \frac{360 - 2x}{2}$$

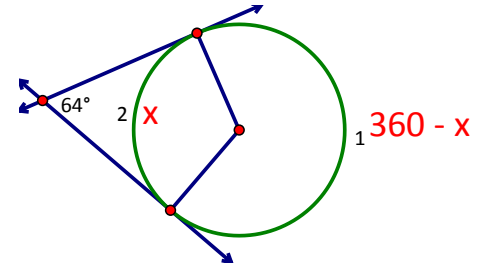
$$28 = 360 - 2x$$

$$2x = 232$$

$$x = 116^\circ$$

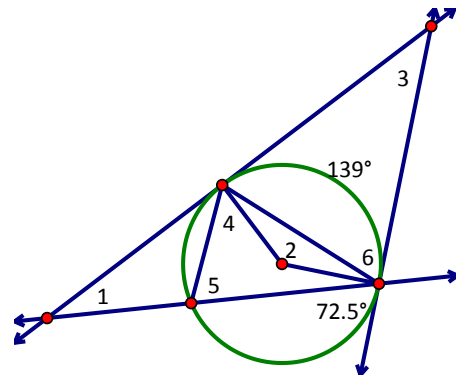
$$m\hat{1} = 244^\circ$$

$$m\hat{2} = 116^\circ$$



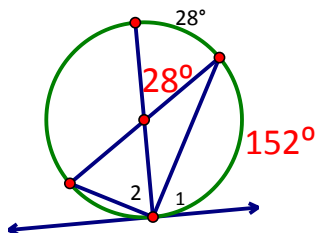
4. Solve for the missing values.

- a)  $m\angle 1 = \underline{31.5^\circ}$       b)  $m\angle 2 = \underline{139^\circ}$   
 c)  $m\angle 3 = \underline{41^\circ}$       d)  $m\angle 4 = \underline{52^\circ}$   
 e)  $m\angle 5 = \underline{69.5^\circ}$       f)  $m\angle 6 = \underline{69.5^\circ}$



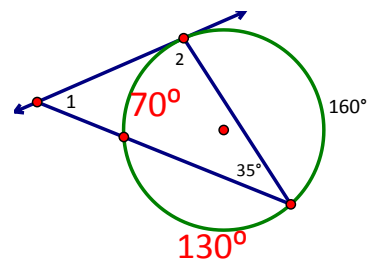
5. Determine the requested value(s). (Lines that appear to be tangent are tangent.)

a)



$$m\angle 1 = \underline{76^\circ} \quad m\angle 2 = \underline{76^\circ}$$

b)



$$m\angle 1 = \underline{45^\circ} \quad m\angle 2 = \underline{100^\circ}$$