

7.5 Angles Inside, Outside, & On the Circle Guided Notes

Case One: Central Angle  
(Vertex is at the center)

Formula:

Angle = arc

Example:



Case Two: Inscribed Angle  
(Vertex is on the circle)

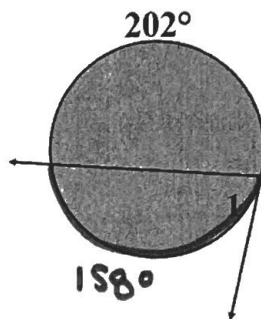
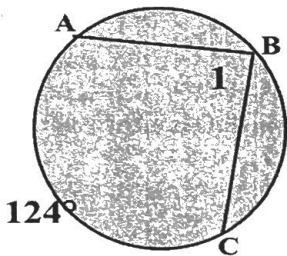
Formula:

angle =  $\frac{\text{arc}}{2}$



Example 1:

Example 2:



$360 - 202 = 158$

$\frac{158}{2} = 79$

$m\angle 1 = 79^\circ$

$m\angle 1 = \frac{124}{2} = 62^\circ$

Case Three: Inside Angle  
(Vertex is inside circle, not at the center)

Formula:

angle =  $\frac{\text{arc} + \text{arc}}{2}$

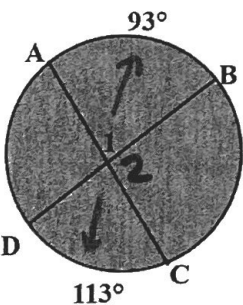


\*looks like a plus sign!

Example 3:

Example 4:

Find  $m\widehat{QT}$



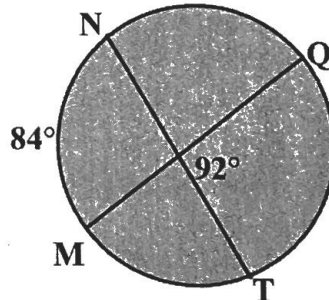
$m\angle 1 = \frac{93 + 113}{2}$

$m\angle 1 = 103^\circ$

\*If we want  $m\angle 2$ , then find

$m\angle 1$  first & remember they are a linear pair.

$m\angle 2 = 180 - 103 = 77^\circ$



$m\angle = \frac{\text{arc} + \text{arc}}{2}$

$92 = \frac{84 + x}{2}$

$184 = 84 + x$

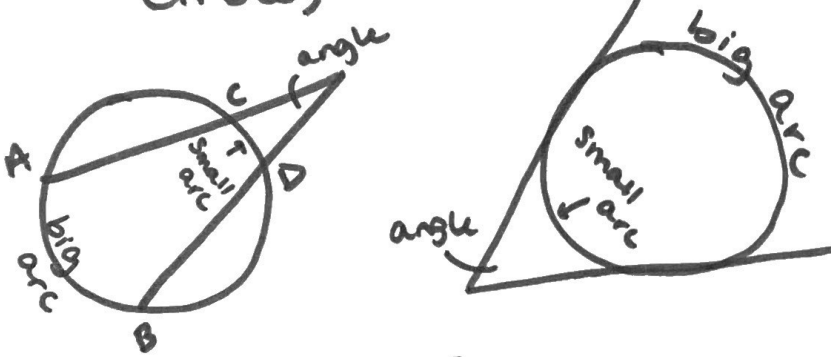
$-84 \quad -84$

$m\widehat{QT} = 100^\circ \quad 100 = x$

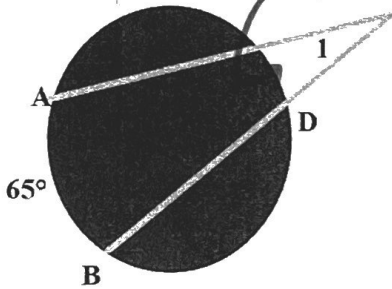
Case Four: Outside  $\angle$   
(Vertex is outside the circle)

Formula:

$$\text{angle} = \frac{\text{big arc} - \text{Small arc}}{2}$$



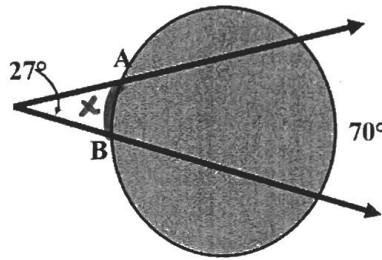
Example 5: Small arc =  $15^\circ$



$$m\angle I = \frac{65 - 15}{2} =$$

$$m\angle I = 25^\circ$$

Example 6: Find  $m\widehat{AB}$



$$x = 16^\circ$$

$$m\widehat{AB} = 16^\circ$$

$$m\angle = \frac{b.A - S.A}{2}$$

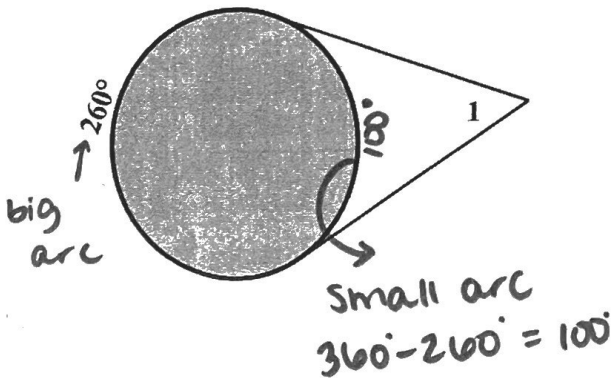
$$27 = \frac{70 - x}{2} \cdot 2$$

$$54 = 70 - x$$

$$-70 - 70$$

$$-16 = -x$$

Example 7:



$$m\angle I = \frac{260 - 100}{2}$$

$$m\angle I = 80^\circ$$