

April 4

GUIDED NOTES: Angles Formed By Secants, Tangents, and Chords

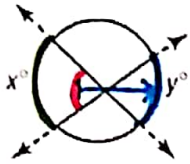
hits circle twice
inside + outside

hits circle once
outside only

start and end on circle
inside only

Theorem 1:

The measure of an angle formed by two lines that intersect inside a circle is half the sum of the measures of the intercepted arcs.



angle is inside circle

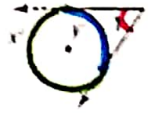


In your own words...

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

Theorem 2:

The measure of an angle formed by two lines that intersect outside a circle is half the difference of the measures of the intercepted arcs.



angle is outside circle

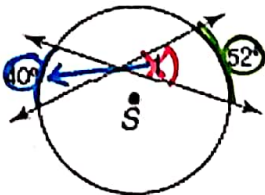


In your own words...

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

Find each measure.

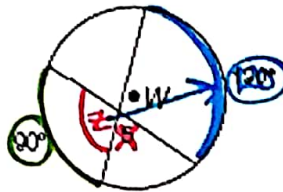
EX1: $m\angle 1$



$$x = \frac{52 + 40}{2}$$

$$x = 46^\circ$$

EX2: $m\angle 5$

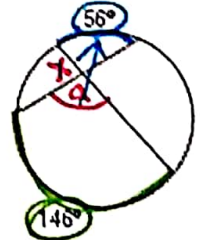


$$z = \frac{90 + 120}{2}$$

$$z = 105^\circ$$

$$180 - 105 = 75^\circ = x$$

EX3: $m\angle 1$



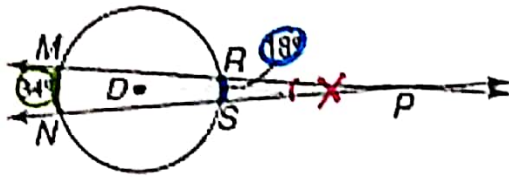
$$a = \frac{146 + 56}{2}$$

$$a = 101^\circ$$

$$180 - 101 = 79^\circ = x$$

Find the following angles.

4: $m\angle MPN$

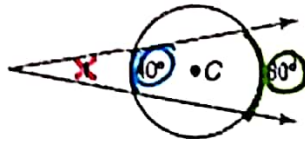


$$x = \frac{34 - 18}{2}$$

$$x = 8^\circ$$

EX5:

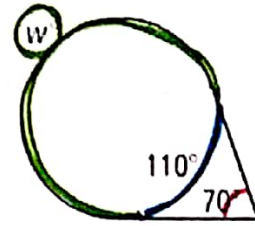
$m\angle 1$



$$x = \frac{80 - 40}{2}$$

$$x = 20^\circ$$

EX6:



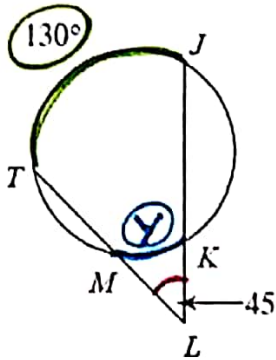
$$2 \cdot 70 = \frac{W - 110}{2} \cdot 2$$

$$140 = W - 110$$

$$+110 \quad +110$$

$$250 = W$$

EX7:



$$2 \cdot 45 = \frac{130 - y}{2} \cdot 2$$

$$90 = 130 - y$$

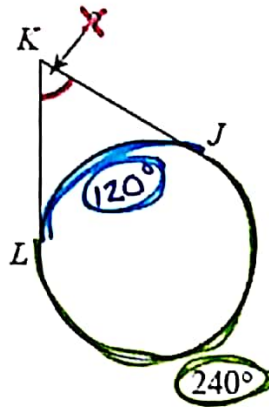
$$-130 \quad -130$$

$$-40 = -y$$

$$\frac{-40}{-1} = \frac{-y}{-1}$$

$$40 = y$$

EX8:



$$x = \frac{240 - 120}{2}$$

$$x = 60^\circ$$

$$360 - 240 = 120$$