Math 3

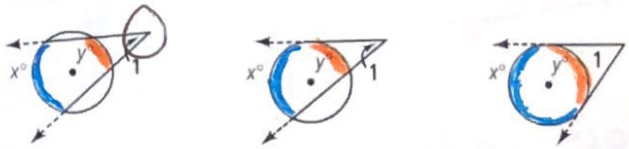
6.6 Angle Measures

Unit 6

OBJ: Apply the rules and theorems of segments to solve for unknowns.

Theorem 1:	Theorem 2:
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.	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.

$m\angle 1 = \frac{1}{2}(x + y)$

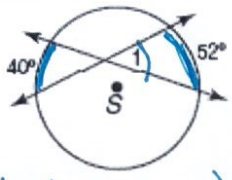


$m\angle 1 = \frac{1}{2}(x - y)$

$m\angle 1 = \frac{1}{2}(\text{outside} - \text{inside})$

Example 1: Find each measure.

a) $m\angle 1$

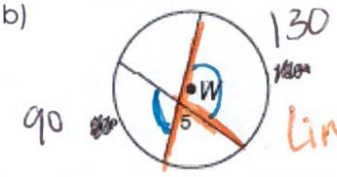


$\frac{1}{2}(40 + 52)$

$\frac{1}{2}(92) = 46$

$m\angle 1 = 46°$

b) $m\angle 5$



Linear Pair (supp.)

$\frac{1}{2}(130 + 90)$

$\frac{1}{2}(220) = 110$

$180 - 110 = 70°$

$m\angle 5 = 70°$

c) $m\angle 1$

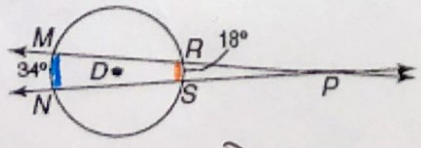
Linear pair!!

$\frac{1}{2}(56 + 146) = 101$

$180 - 101 = 79°$

Example 2: Find the following angles.

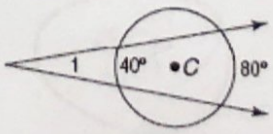
a) $m\angle MPN$



$\frac{1}{2}(34 - 18)$

$\frac{1}{2}(16) = 8°$

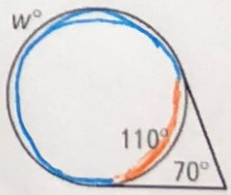
b) $m\angle 1$



$\frac{1}{2}(80 - 40)$

$40 - 20 = 20°$

c)



$360 - 110 = 250$

$\frac{1}{2}(W - 110) = 70$

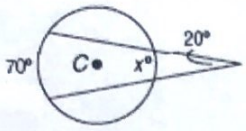
$W - 110 = 140$

$+110 \quad +110$

$W = 250$

You Try! Find the following measures.

a) x



$\frac{1}{2}(70-x)=20$

$35-\frac{x}{2}=20$

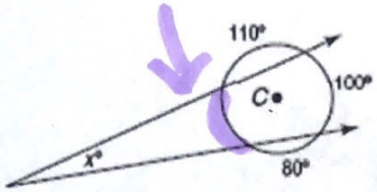
$-35 \quad -35$

$-\frac{x}{2}=-15$

$\times -2 \quad \times -2$

$x=30$

b) x 70



$110+100+80=290$

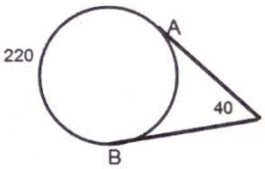
$360-290=70$

$\frac{1}{2}(100-70)$

$\frac{1}{2}(30)$

$x=15$

c) Arc AB



$360-220$

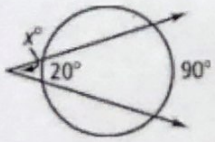
140

$\frac{1}{2}(200-x)=40$

$100-\frac{x}{2}=40$

$x=140$

d) x

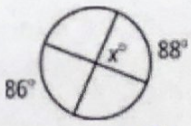


$90-20$

$70/2$

$x=35$

e) x



88

$+86$

174

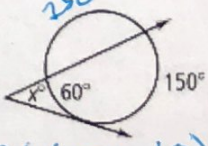
2

87

f) x

$360-150-60=$

150



$1/2(150-60)=x$

$x=45$