

1.4 More Practice:

1. If  $\angle CBD \cong \angle DBE$ ,  $m\angle A = (x+5)^\circ$ ,  $m\angle CBD = (x+10)^\circ$ , and  $m\angle DBE = 60^\circ$ . Find  $m\angle A$ .

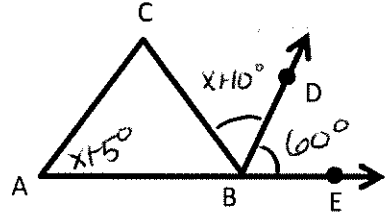
$$x+10=60$$

$$x=50$$

$$m\angle A = x+5$$

$$m\angle A = 50+5$$

$$m\angle A = 55^\circ$$



2. If  $\angle POA$  is a right angle and  $\angle POC$  is three times as large as  $\angle COA$ , find  $m\angle POC$ .

$$3x+x=90$$

$$4x=90$$

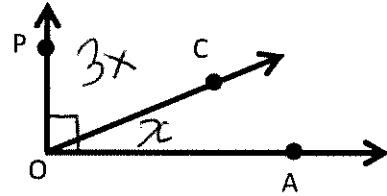
$$x=22.5$$

$$m\angle POC = 3x$$

$$m\angle POC = 3(22.5)$$

$$m\angle POC = 67.5^\circ$$

or  $135/2^\circ$



- 3.

$\angle ABC$  and  $\angle CBD$  have the same measure.

If  $\angle ABC = \left(\frac{3x}{2} + 2\right)^\circ$  and  $\angle CBD = \left(2x - 29\frac{1}{4}\right)^\circ$ .

Is  $\angle ABD$  a straight angle?

$$\frac{3x}{2} + 2 = 2x - 29\frac{1}{4}$$

$$-2x \quad -2 \quad -2x \quad -2$$

$$-2(-\frac{1}{2}x) = (-31\frac{1}{4}) - 2$$

$$x = 62.5 \text{ Resubstitute in!}$$

$$\frac{3(62.5)}{2} + 2 = 95.75$$

$$2(62.5) - 29\frac{1}{4} = 95.75$$



IS  $\angle ABD = 180^\circ$ ?

$$95.75 + 95.75 = 180$$

$$191.5 \neq 180$$

NO, NOT a straight angle.

4.  $\angle ABD = (3x)^\circ$  and  $\angle DBC = x^\circ$ . Find  $m\angle ABD$ .

$$3x+x=180$$

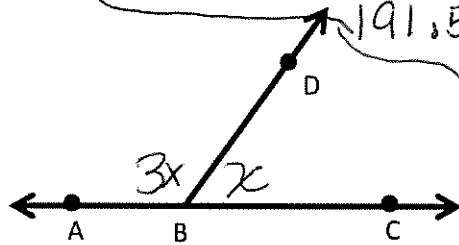
$$4x=180$$

$$x=45$$

$$m\angle ABD = 3x$$

$$m\angle ABD = 3(45)$$

$$m\angle ABD = 135^\circ$$



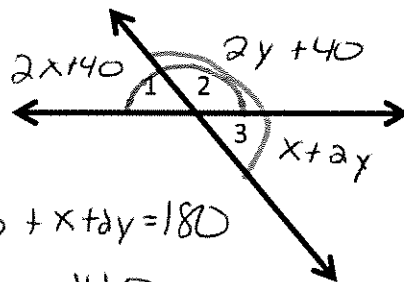
- 5.

Given:  $m\angle 1 = 2x+40$ .

$m\angle 2 = 2y+40$ ,

$m\angle 3 = x+2y$ .

Find:  $m\angle 1$ ,  $m\angle 2$ , and  $m\angle 3$ .



$$2x+40+2y+40=180 \text{ and } 2y+40+x+2y=180$$

$$2x+2y=100$$

$$x+4y=140$$

System!

$$\begin{cases} 2x + 2y = 100 \\ -2x + 4y = 140 \end{cases}$$

$$\begin{array}{r} 2x + 2y = 100 \\ -2x - 8y = -280 \\ \hline \end{array}$$

$$-6y = -180$$

$$y = 30$$

$$\begin{array}{r} -4x - 4y = -200 \\ x + 4y = 140 \\ \hline \end{array}$$

$$-3x = -60$$

$$x = 20$$

$$m\angle 1 = 2(20) + 40$$

$$m\angle 1 = 80^\circ$$

$$m\angle 2 = 2(30) + 40$$

$$m\angle 2 = 100$$

$$m\angle 3 = 20 + 2(30)$$

$$m\angle 3 = 80^\circ$$