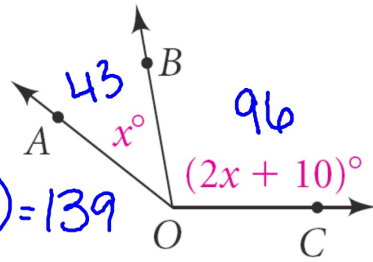


## Launch:

Solve for  $x$   
 $m\angle AOC = 139$



$$x + (2x + 10) = 139$$

$$\underline{x} + \underline{2x} + 10 = 139$$

$$3x + 10 = 139$$

$$-10 \quad -10$$

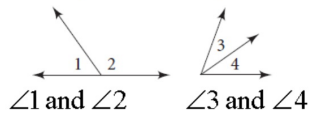
$$\frac{3x}{3} = \frac{129}{3}$$

$$x = 43$$

## 2.7 (and a half) Reasoning in Algebra

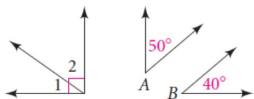
Objective: To connect reasoning in Algebra and Geometry

adjacent angles



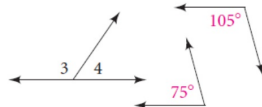
common side  
 common vertex

complementary angles



sum = 90

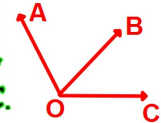
supplementary angles



sum = 180

**The Angle Addition Postulate**

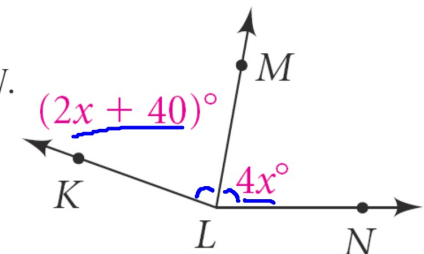
If B lies on the interior of  $\angle AOC$ ,  
 then  $m\angle AOB + m\angle BOC = m\angle AOC$ .



EXAMPLE:

Solve for  $x$ .

$\overline{LM}$  bisects  $\angle KLN$ .



$$2x + 40 = 4x$$

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

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

$$x = 20$$

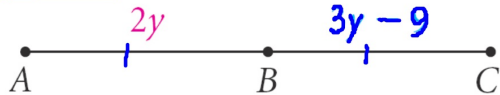
### The Segment Addition Postulate

If 3 points A, B, and C are collinear and B is between A and C, then  $AB + BC = AC$



EXAMPLE:

B is the midpoint of  $\overline{AC}$ . Solve for y.



$$\begin{array}{r} 2y = 3y - 9 \\ -3y \quad -3y \\ \hline -y = -9 \\ \hline y = 9 \end{array}$$

## Homework: Reasoning in Algebra Worksheet