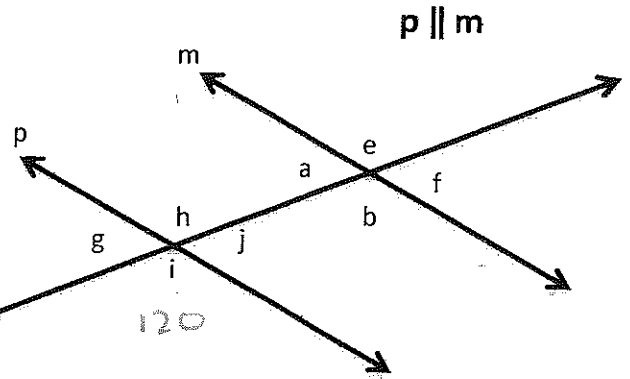


Test Review: Angle Relationships

1. Use the drawing to the right.



a. Name two pairs of same-side interior angles.

$\angle h$ and $\angle a$ $\angle j$ and $\angle b$

b. Name two pairs of alternate-interior angles.

$\angle h$ and $\angle b$ $\angle j$ and $\angle a$

c. Name four pairs of corresponding angles.

$\angle g$ and $\angle a$, $\angle h$ and $\angle e$, $\angle i$ and $\angle b$, $\angle j$ and $\angle f$.

d. Name four pairs of vertical angles.

$\angle g$ and $\angle j$, $\angle h$ and $\angle i$, $\angle a$ and $\angle f$, $\angle e$ and $\angle b$

e. Name two pairs of supplementary angles that are NOT same side interior.

$\angle g$ and $\angle h$, $\angle e$ and $\angle f$

f. Suppose $m\angle i = 120^\circ$, find $m\angle h = 120^\circ$ $m\angle b = 120^\circ$ $m\angle a = 60^\circ$ $m\angle j = 60^\circ$

$$\begin{array}{r} 180 \\ -120 \\ \hline 60 \end{array}$$

g. Suppose that $m\angle h = 3x + 12$ and $m\angle a = 4x - 7$. Find $m\angle h$ and $m\angle a$.

$$3x + 12 + 4x - 7 = 180$$

$$7x + 5 = 180$$

$$-5 \quad -5$$

$$7x = 175$$

$$x = 25$$

$$\frac{\angle h}{3x + 12}$$

$$3(25) + 12$$

$$75 + 12$$

$$87^\circ$$

$$\boxed{87^\circ}$$

$$\frac{\angle a}{4x - 7}$$

$$4(25) - 7$$

$$100 - 7$$

$$93^\circ$$

$$\boxed{93^\circ}$$

h. Suppose that $m\angle g = 5x - 31$ and $m\angle f = 4x - 10$. Find $m\angle g$ and $m\angle f$.

$$\begin{array}{r} 5x - 31 = 4x - 10 \\ -4x \quad -4x \\ \hline x - 31 = -10 \\ +31 \quad +31 \\ \hline x = 21 \end{array}$$

$$x - 31 = -10$$

$$+31 \quad +31$$

$$x = 21$$

$$\frac{\angle f}{4x - 10}$$

$$4(21) - 10$$

$$84 - 10$$

$$74^\circ$$

$$\boxed{74^\circ}$$

$$\frac{\angle g}{5x - 31}$$

$$5(21) - 31$$

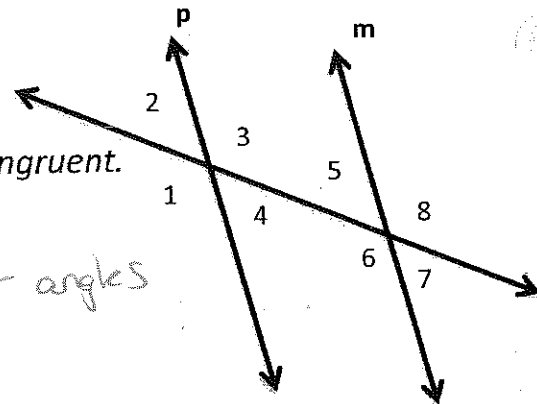
$$105 - 31$$

$$74^\circ$$

$$\boxed{74^\circ}$$

2. Tell whether the lines are guaranteed to be parallel based on the given angle measurements and what you know about certain angle relationships.

$p \parallel m$



a. **Example:** $m\angle 1 = 110^\circ, m\angle 6 = 110^\circ$

Yes, $\angle 1$ and $\angle 6$ are corresponding angles and are congruent.

b. $m\angle 3 = x^\circ, m\angle 6 = x^\circ$

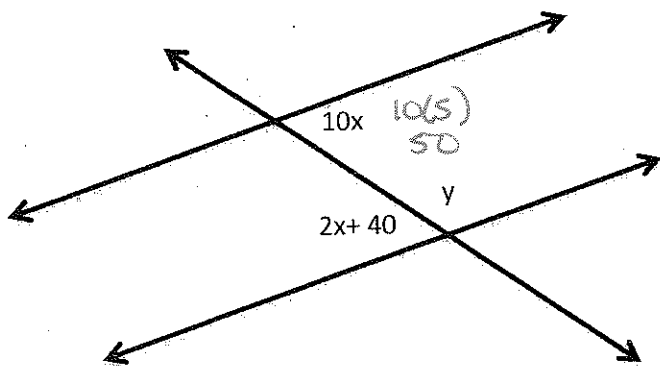
Yes $\angle 3$ and $\angle 6$ are alternate interior angles and are congruent.

c. $m\angle 5 = x^\circ, m\angle 3 = (180 - x)^\circ$

Yes $\angle 5$ and $\angle 3$ are same side interior angles and are supplementary.

3. Find x and y .

a.



Find x .

$$10x = 2x + 40$$

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

$$\frac{8x = 40}{8 \quad 8}$$

$$x = 5$$

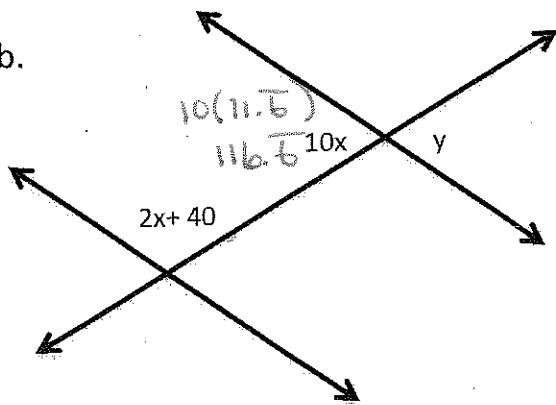
$$x = \underline{5}$$

$$y = \underline{130^\circ}$$

Find y

$$180 - 50 = 130$$

b.



Find x

$$2x + 40 + 10x = 180$$

$$12x + 40 = 180$$

$$12x = 140$$

$$\frac{12 \quad 12}{x = 11.6}$$

$$x = \underline{11.6}$$

$$x = \underline{11.6}$$

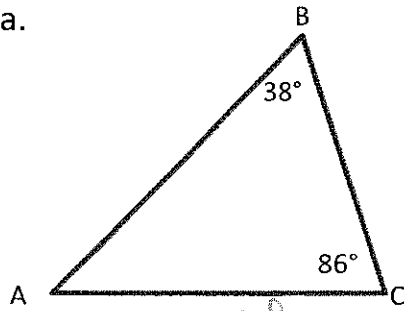
Find y

$$116.6$$

$$y = \underline{116.6}$$

4. Find all the angle measures in each triangle below.

a.



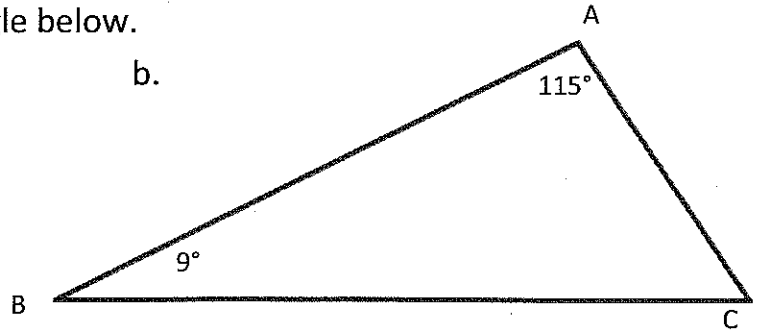
$$\angle A = \underline{56^\circ}$$

$$\angle B = \underline{38^\circ}$$

$$\angle C = \underline{86^\circ}$$

$$\begin{array}{r} 38 \\ +86 \\ \hline 124 \end{array} \quad \begin{array}{r} 71 \\ 180 \\ -124 \\ \hline 56 \end{array}$$

b.



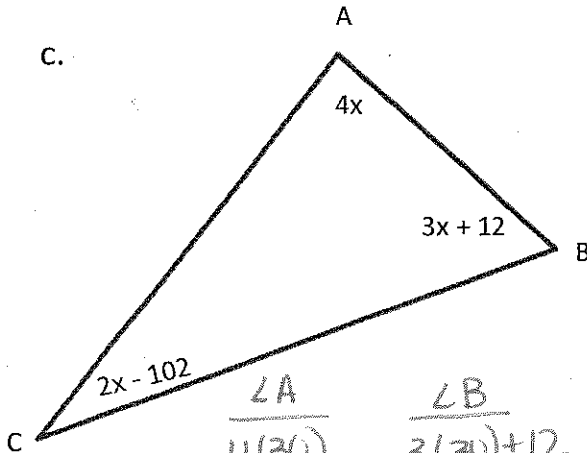
$$\angle A = \underline{115^\circ}$$

$$\angle B = \underline{9^\circ}$$

$$\angle C = \underline{56^\circ}$$

$$\begin{array}{r} 115 \\ +9 \\ \hline 124 \\ 71 \\ 180 \\ -124 \\ \hline 56 \end{array}$$

c.



$$\frac{\angle A}{4(30)} = \frac{120}{120}$$

$$\frac{\angle B}{3(30)+12} = \frac{102}{102}$$

$$4x + 3x + 12 + 2x - 102 = 180$$

$$9x - 90 = 180$$

$$\frac{9x = 270}{9} \quad \frac{270}{9}$$

$$x = 30$$

$$\frac{\angle C}{2x - 102} = \frac{2(30) - 102}{-42}$$

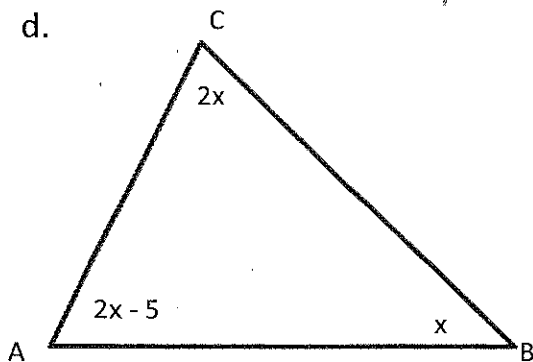
$$\angle A = \underline{120^\circ}$$

$$\angle B = \underline{102^\circ}$$

$$\angle C = \underline{-42^\circ}$$

(This is not reasonable because it is negative.)

d.



$$2x + 2x - 5 + x = 180$$

$$5x - 5 = 180$$

$$\frac{5x = 185}{5} \quad \frac{185}{5}$$

$$x = 37$$

$$\angle A = \underline{69^\circ}$$

$$\angle B = \underline{37^\circ}$$

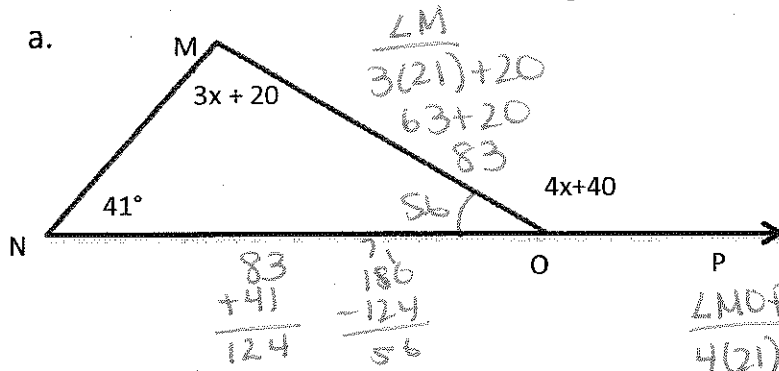
$$\angle C = \underline{74^\circ}$$

$$\frac{\angle A}{2(37) - 5} = \frac{69}{69}$$

$$\frac{\angle B}{37} = \frac{37}{37}$$

$$\frac{\angle C}{2(37)} = \frac{74}{74}$$

5. Find the measure of each of the angle below...



$$3x+20+41=4x+40$$

$$3x+61=4x+40$$

$$-3x \quad -3x$$

$$61 = x+40$$

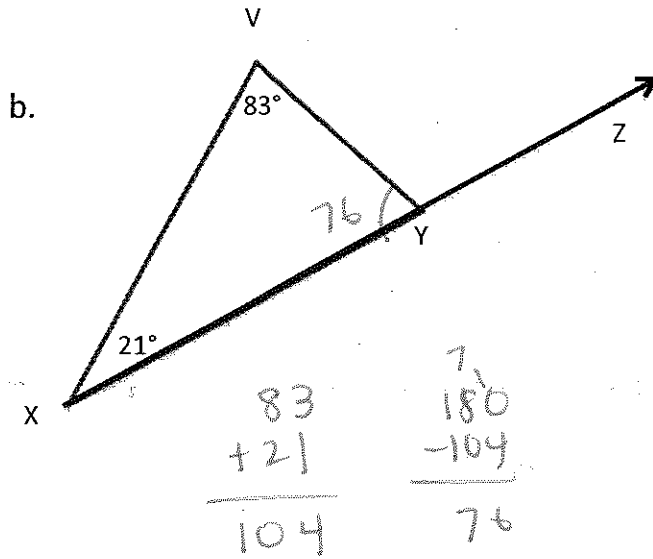
$$21 = x$$

$$\angle M = \underline{83^\circ}$$

$$\angle N = \underline{41^\circ}$$

$$\angle MON = \underline{56^\circ}$$

$$\angle MOP = \underline{124^\circ}$$



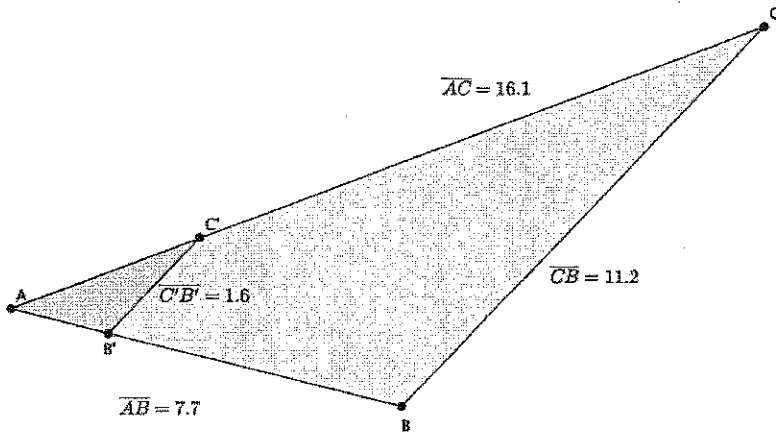
$$\angle X = \underline{21}$$

$$\angle V = \underline{83}$$

$$\angle VYX = \underline{76^\circ}$$

$$\angle VYZ = \underline{104^\circ}$$

6. In the diagram below you have $\triangle ABC$ and $\triangle AB'C'$. Use this information to answer parts (a)–(d).



- a. Based on the information given, is $\triangle ABC \sim \triangle AB'C'$? Explain.

No because we don't know if $B'C'$ is parallel to BC .

- b. Assume line BC is parallel to line $B'C'$. With this information, can you say that $\triangle ABC \sim \triangle AB'C'$? Explain.

Yes because the $\angle A \cong \angle A$, $\angle CCB' \cong \angle C'AB'$ by corresponding angles, + $\angle C'B'B \cong \angle C'AB'$ by corresponding angles. So by AA they are similar.

- c. Given that $\triangle ABC \sim \triangle AB'C'$, determine the length of AC' .

$$\frac{11.2}{1.6} \times \frac{16.1}{x}$$

$$\begin{array}{r} 3 \quad 16.1 \\ \times 1.6 \\ \hline 1966 \\ 1610 \\ \hline 2576 \end{array}$$

$$25.76 = 11.2x$$

- d. Given that $\triangle ABC \sim \triangle AB'C'$, determine the length of AB' .

$$\frac{11.2}{1.6} = \frac{7.7}{x}$$

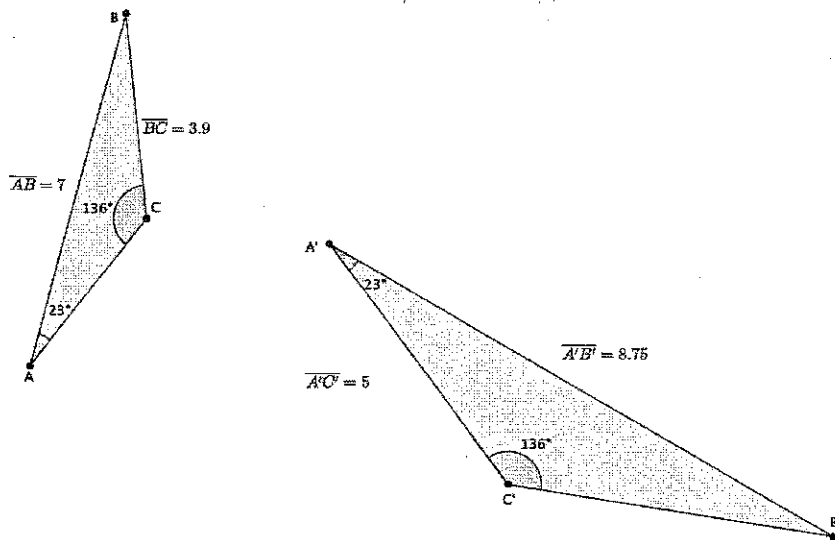
$$11.2x = 7.7 \cdot 1.6$$

$$11.2x = 12.32$$

$$\frac{11.2}{11.2} = \frac{11.2}{11.2}$$

$$x = 1.1$$

7. In the diagram below you have $\triangle ABC$ and $\triangle A'B'C'$. Use this information to answer parts (a)–(c).



- a. Based on the information given, is $\triangle ABC \sim \triangle A'B'C'$? Explain.

Yes, since $\angle A$ and $\angle A'$ both equal 23° and $\angle C$ and $\angle C'$ both equal 136° they are similar by angle-angle.

- b. Given that $\triangle ABC \sim \triangle A'B'C'$, determine the length of $B'C'$.

$$\frac{7}{8.75} = \frac{3.9}{x}$$

$$\frac{7x}{7} = \frac{34.125}{7}$$

$$B'C' \approx 4.875$$

- c. Given that $\triangle ABC \sim \triangle A'B'C'$, determine the length of AC .

$$\frac{7}{8.75} = \frac{x}{5}$$

$$\frac{35}{8.75} = \frac{8.75x}{8.75}$$

$$x \approx 4$$

$$AC \approx 4$$