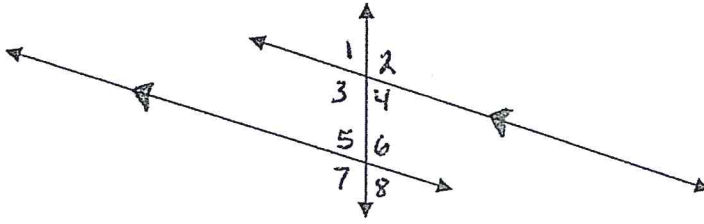


Parallel Lines
Unit 4: Similarities



Identify each of the following:

1. List all the pairs of Corresponding Angles.

Remove intersection $\begin{array}{c|c} 1 & 2 \\ \hline 3 & 4 \end{array}$ put it on top of the intersection $\begin{array}{c|c} 5 & 6 \\ \hline 7 & 8 \end{array}$ corresponding angles are on top of each other.
 $\angle 1 \cong \angle 5$; $\angle 2 \cong \angle 6$; $\angle 3 \cong \angle 7$; $\angle 4 \cong \angle 8$

2. List all the pairs of Alternate Interior Angles.

Inside the parallel lines, on opposite sides of the single line (AKA-The Transversal)
 $\angle 3 \cong \angle 6$ $\angle 4 \cong \angle 5$

3. List all the pairs of Alternate Exterior Angles.

Outside the parallel lines, on opposite sides of the single line, transversal.
 $\angle 1 \cong \angle 8$ $\angle 2 \cong \angle 7$

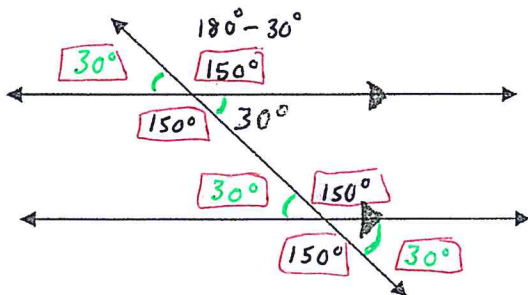
4. List the Same-Side Interior Angles.

Inside the parallel lines; on the SAME sides of the transversal.
 $\angle 3 \cong \angle 5$ $\angle 4 \cong \angle 6$

5. List all of the Vertical Angles.

Angles opposite of each other. Arrows pointing at each other. Form a "bow-tie"
 $\angle 1 \cong \angle 4$; $\angle 2 \cong \angle 3$; $\angle 5 \cong \angle 8$; $\angle 6 \cong \angle 7$

6. Find the measure of each of the missing angles.



Note:

Corresponding \angle 's are \cong

Alternate Interior \angle 's are \cong

Alternate Exterior \angle 's are \cong

Vertical \angle 's are \cong

110 & (y-28) make a straight line so add to 180°

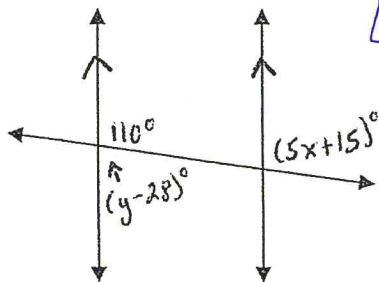
$$110 + y - 28 = 180$$

$$\begin{array}{r} 82 + y = 180 \\ -82 \quad -82 \end{array}$$

Find the value of variables:

$$\boxed{y = 98}$$

7.



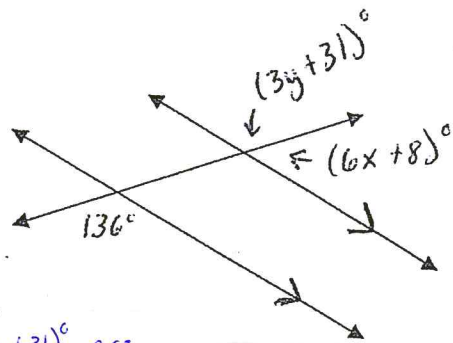
110° & (5x+15)° are corresponding:

$$\begin{array}{r} 110 = 5x + 15 \\ -15 \quad -15 \end{array}$$

$$\frac{95}{5} = \frac{5x}{5}$$

$$\boxed{x = 19}$$

8.



136° & (3y+31)° are Alternate Exterior ∠s

$$\begin{array}{r} 136 = 3y + 31 \\ -31 \quad -31 \end{array}$$

$$\frac{105}{3} = \frac{3y}{3}$$

$$\boxed{35 = y}$$

We know 3y+31 = 136 because of solving for y. So 136° & (6x+8)° make a straight line and add to 180°

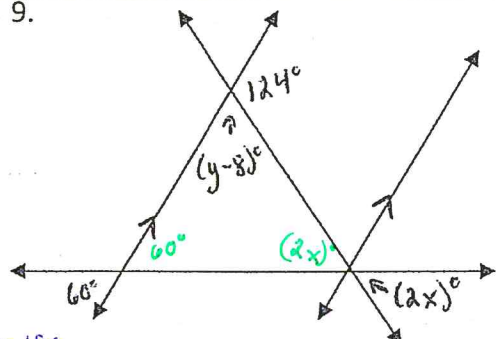
$$136 + 6x + 8 = 180$$

$$\begin{array}{r} 144 + 6x = 180 \\ -144 \quad -144 \end{array}$$

$$\frac{6x}{6} = \frac{36}{6}$$

$$\boxed{x = 6}$$

9.



$$124 + y - 8 = 180$$

$$\begin{array}{r} 116 + y = 180 \\ -116 \quad -116 \end{array}$$

$$\boxed{y = 64}$$

60°, (2x)°, & (y-8)° form a triangle and add to 180°

$$60 + 2x + y - 8 = 180$$

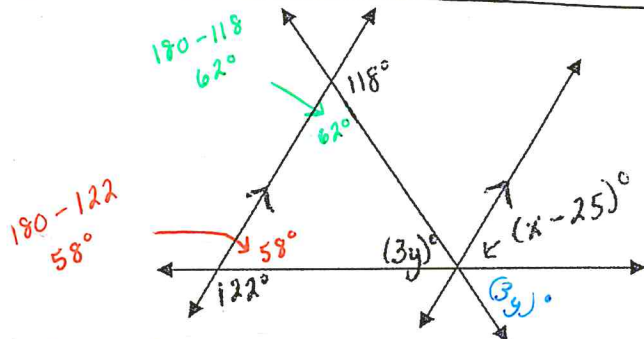
$$60 + 2x + 64 - 8 = 180$$

$$\begin{array}{r} 116 + 2x = 180 \\ -116 \quad -116 \end{array}$$

$$\frac{2x}{2} = \frac{64}{2}$$

$$\boxed{x = 32}$$

10.



$$\begin{array}{r} 180 - 122 \\ 58 \end{array}$$

58°, 62°, & 3y form a triangle so 180°

$$58 + 62 + 3y = 180$$

$$\begin{array}{r} 120 + 3y = 180 \\ -120 \quad -120 \end{array}$$

$$\frac{3y}{3} = \frac{60}{3}$$

$$\boxed{y = 20}$$

Combining 3y+(x-25)° they form a corresponding ∠ to the 118° so they are ≅

$$3y + x - 25 = 118$$

$$3(20) + x - 25 = 118$$

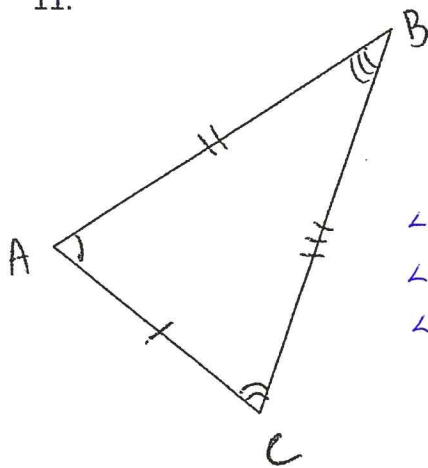
$$60 + x - 25 = 118$$

$$\begin{array}{r} 35 + x = 118 \\ -35 \quad -35 \end{array}$$

$$\boxed{x = 83}$$

Write a Congruence Statement for the following Triangles:

11.



Angles

$$\angle A \cong \angle S$$

$$\angle C \cong \angle U$$

$$\angle B \cong \angle T$$

Sides

$$\overline{AC} \cong \overline{SU}$$

$$\overline{CB} \cong \overline{UT}$$

$$\overline{AB} \cong \overline{ST}$$

