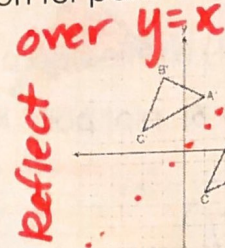
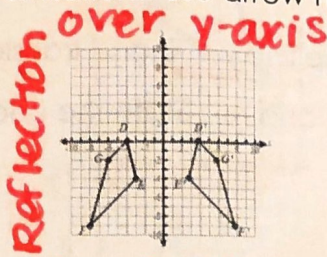
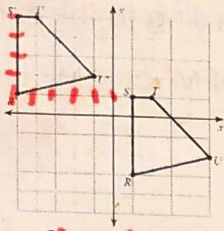


Unit 1 Transformations and Triangles Review

1. Write rules to describe these transformations. Use arrow notation for parts a and b.

**Translation**



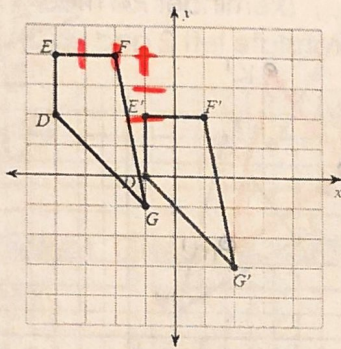
a.  $(x, y) \rightarrow (x-6, y+4)$

b.  $(x, y) \rightarrow (-x, y)$

c.  $(x, y) \rightarrow (y, x)$

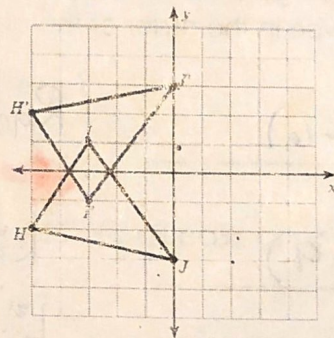
2. The image of a translation, rotation, and reflection will be an isometry with the pre-image. What does this mean? the image and pre-image are congruent

3. **B**



- A) reflection across  $y = x$
- B) translation:  $(x, y) \rightarrow (x+3, y-2)$**
- C) translation:  $(x, y) \rightarrow (x+4, y-2)$
- D) translation:  $(x, y) \rightarrow (x+6, y-3)$

**C**



- A) translation:  $(x, y) \rightarrow (x+5, y-2)$
- B) reflection across  $y = x$
- C) reflection across the x-axis**
- D) translation:  $(x, y) \rightarrow (x+3, y+2)$

4. Write the rule for the following; then find the image:

Reflect across the line  $y = x$   $(x, y) \rightarrow (y, x)$   $(-3, 5) \rightarrow (5, -3)$

Reflect across the line  $y = -x$   $(x, y) \rightarrow (-y, -x)$   $(-3, 5) \rightarrow (-5, 3)$

Reflect across the y-axis  $(x, y) \rightarrow (-x, y)$   $(-3, 5) \rightarrow (3, 5)$

Translate 4 left and 4 up  $(x, y) \rightarrow (x-4, y+4)$   $(-3, 5) \rightarrow (-7, 9)$

Translate 3 right and reflect x-axis  $(x, y) \rightarrow (x+3, -y)$   $(-3, 5) \rightarrow (0, -5)$

5. Solve the isometry:

$X = 6$

$Y = 40$

$Z = 120$

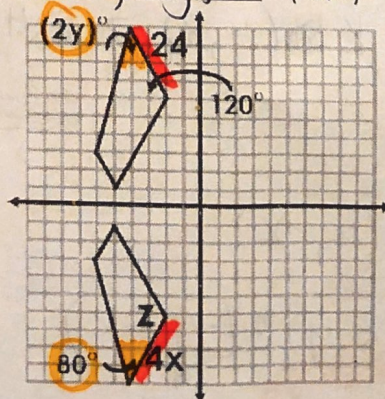
$2y = 80$

$y = 40$

$4x = 24$

$x = 6$

$Z = 120$





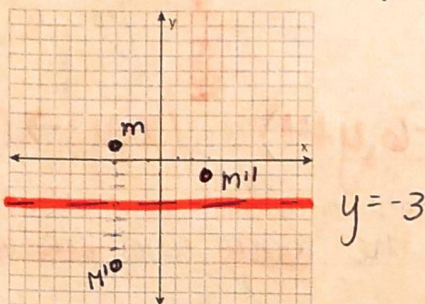
6. If the image of  $(x, y) \rightarrow (x + 2, y - 3)$  is  $A'(-5, -3)$ , find the pre-image A.  $(-7, 0)$

If the image of  $(x, y) \rightarrow (-x, y + 5)$  is  $B'(-3, -6)$ , find the pre-image B.  $(3, -11)$

7. If point  $M(-3, 1)$  is reflected over the line  $y = -3$  and translated according to the rule  $(x, y) \rightarrow (-x, y + 6)$ , plot point M,  $M'$ , and  $M''$ . State the coordinates of  $M'$  and  $M''$ .

$M'$   $(-3, -7)$

$M''$   $(3, -1)$



8. Graph the image of  $\triangle KLM$  under the transformation rule  $R_{90}(T_{-2,3})$ . (Reminder  $R_{90}$  means rotate counterclockwise in the order of the quadrants and  $T_{-2,3}$  means translate left 2 and up 3).

$K''$   $(-11, -6)$

$L''$   $(-7, -9)$

$M''$   $(-4, -4)$

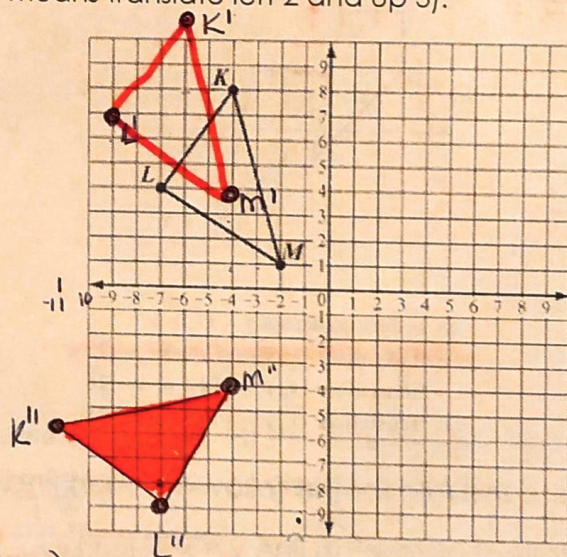
$(R_{90}(T_{-2,3}))$



$K'(-6, 11)$

$L'(-9, 7)$

$M'(-4, 4)$



9. Rotate 90 CW about the origin then reflect across  $y = -x$ . List the final coordinates.

$K''$   ~~$(-4, 8)$~~

$L''$   ~~$(-7, -4)$~~

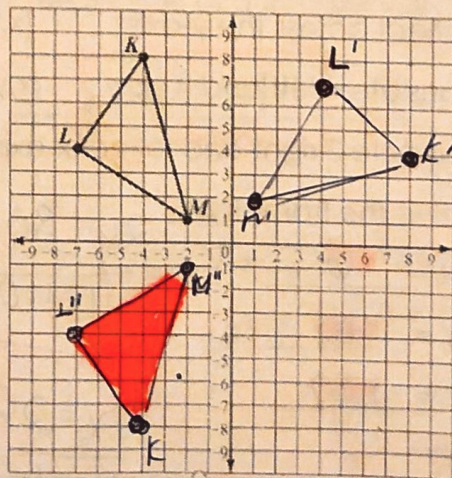
$M''$   ~~$(-2, -1)$~~

$(x, y) \rightarrow (y, -x)$

$M(-2, 1) \rightarrow M'(1, 2)$

$L(-7, 4) \rightarrow L'(4, 7)$

$K(-4, 8) \rightarrow K'(8, 4)$



$90^\circ \text{ CW } (x, y) \rightarrow (y, -x)$

reflect over  $y = -x$   $(x, y) \rightarrow (-y, -x)$

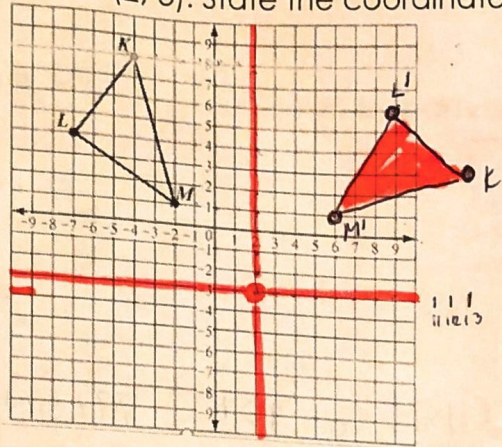


10. Rotate  $\triangle KLM$  90 degrees CW about the point  $(2, -3)$ . State the coordinates of the image.

$K'$  ~~(0, 3)~~ **(13, 3)**

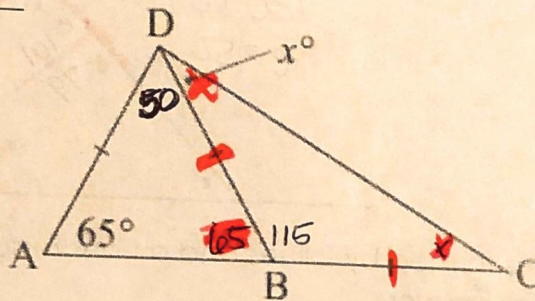
$L'$  ~~(9, 6)~~

$M'$  ~~(6, 1)~~



11. Solve for  $x$ .  $x = 32.5$

$$\begin{array}{r} 180 \\ -115 \\ \hline 65 \\ \sqrt{65} \end{array}$$



12. Multiple select. Given the parallel lines and transversal, CIRCLE all pairs of angles that are supplementary.

a. 1 and 4

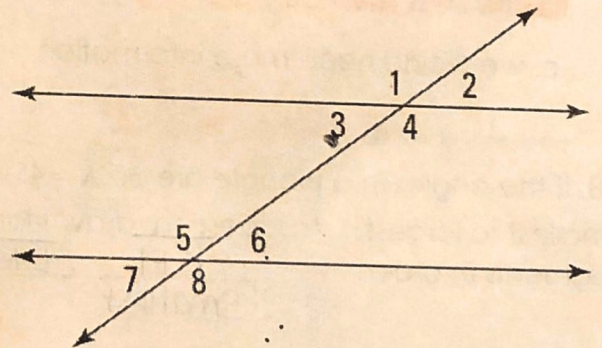
**b. 1 and 6**

**c. 5 and 6**

d. 7 and 2

**e. 3 and 8**

**f. 8 and 2**



13. Using the diagram above #12: If  $m\angle 3 = 4(x + 2)$  and  $m\angle 6 = 3x + 14$ , find  $m\angle 7$ .

$$\begin{aligned} 4(x + 2) &= 3x + 14 \\ 4x + 8 &= 3x + 14 \\ x &= 6 \end{aligned}$$

$$\begin{aligned} 4x + 8 &= 3x + 14 \\ x &= 6 \\ 3(6) + 14 & \end{aligned}$$

14. Using the diagram above #12: If  $m\angle 7 = \frac{1}{3}x + 8$  and  $m\angle 3 = x$ , solve for  $x$ .

**$m\angle 7 = 32^\circ$**

$$\begin{aligned} x &= \frac{1}{3}x + 8 \\ -\frac{1}{3}x &= -\frac{1}{3}x + 8 \\ \frac{3}{2} \cdot \frac{2}{3}x &= 8 \cdot \frac{3}{2} \end{aligned}$$

$$\begin{aligned} x &= \frac{24}{2} \\ \mathbf{x} &= \mathbf{12} \end{aligned}$$

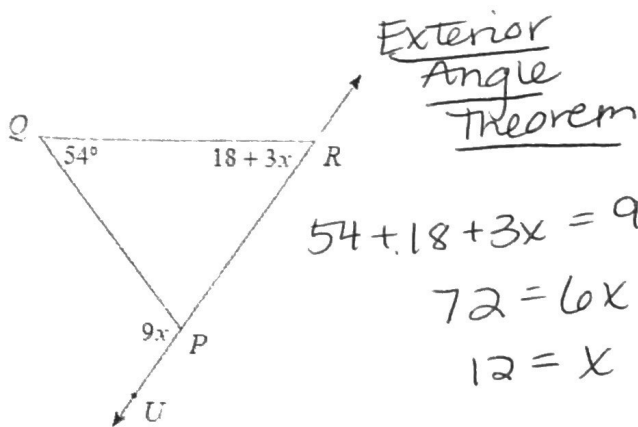






15. Solve for x.

$x = \underline{12}$



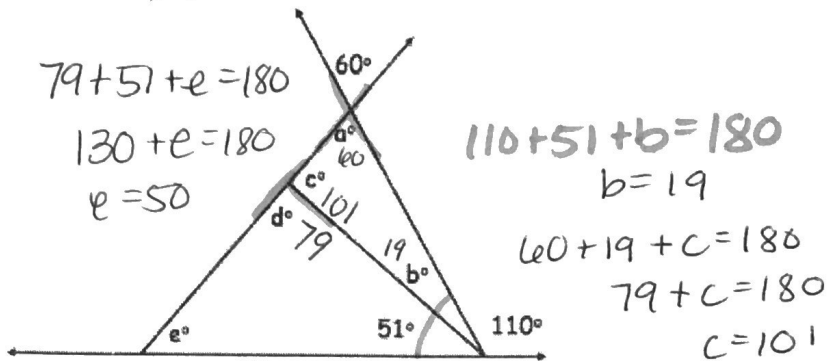
$$54 + 18 + 3x = 9x$$

$$72 = 6x$$

$$12 = x$$

16.  $a = \underline{60}$   $b = \underline{19}$   $c = \underline{101}$

$d = \underline{79}$   $e = \underline{50}$



$$79 + 51 + e = 180$$

$$130 + e = 180$$

$$e = 50$$

$$110 + 51 + b = 180$$

$$b = 19$$

$$60 + 19 + c = 180$$

$$79 + c = 180$$

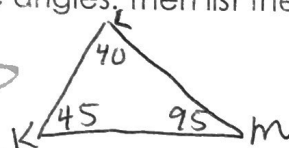
$$c = 101$$

17. If 2 alternate interior angles formed by 2 lines and a transversal are congruent, what must be true? Circle the correct answer.

- a. the lines cannot be parallel
- b. the lines must be parallel.**
- c. we would need more information

18. If the angles in a triangle are  $m\angle K = 45$ ,  $m\angle L = 40$ , and  $m\angle M = 95$ , list the side lengths from smallest to largest. \*suggestion: draw triangle KLM and label the angles. Then list the segments in order.

KM   LM   LK  
 Smallest                      Largest

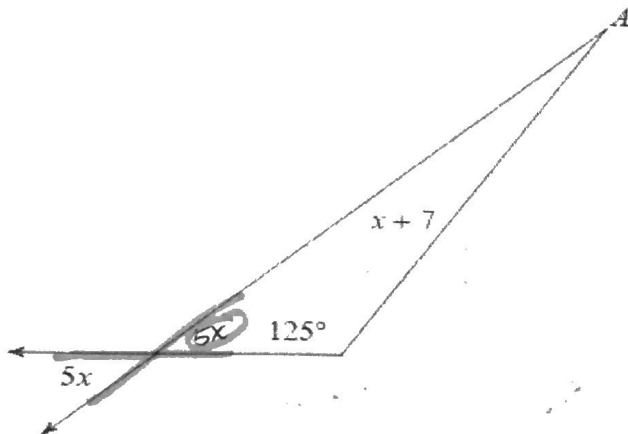


19. Write an inequality that represents all possible values of the 3rd side of a triangle with the given side lengths:

4 and 7:  $\underline{3 < x < 11}$

1 and 13:  $\underline{12 < x < 14}$

20. Solve for x.



$$5x + x + 7 + 125 = 180$$

$$6x + 132 = 180$$

$$6x = 48$$

$$\boxed{x = 8}$$

