

Name: Key

Class: \_\_\_\_\_

M8-U3: Transformation Review

Total: 44 pts

**Multiple Choice**

Identify the choice that best completes the statement or answers the question. (2pts each)

a 1. Write a description of the rule  $(x, y) \rightarrow (x + 10, y + 8)$ .

- (a) translation 10 units to the right and 8 units up
- (b) translation 10 units to the left and 8 units down
- (c) translation 10 units to the right and 8 units down
- (d) translation 10 units to the left and 8 units up

d 2. Point  $A(-2, -10)$  is reflected over the  $x$ -axis. Write the coordinates of  $A'$ .

- $(x, y) \rightarrow (x, -y)$  change  $y$ -value  
 $(-2, -10) \rightarrow (-2, 10)$
- (a)  $(2, -10)$
  - (b)  $(2, 10)$
  - (c)  $(-2, -10)$
  - (d)  $(-2, 10)$

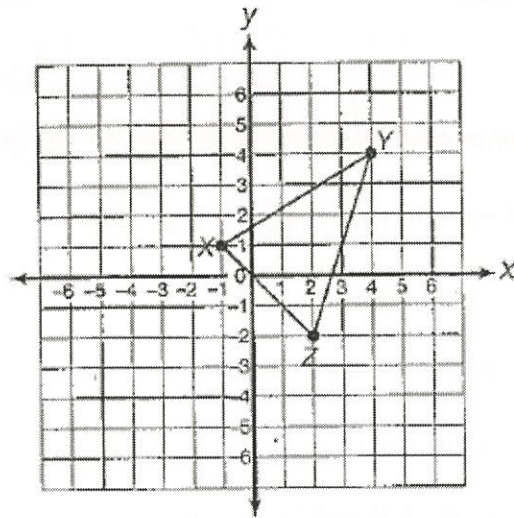
c 3. Point  $D(2, 4)$  is rotated  $180^\circ$  about the origin, what is the coordinate of  $D'$ ?

- $(x, y) \rightarrow (-x, -y)$   
 $(2, 4) \rightarrow (-2, -4)$
- (a)  $(-4, 2)$
  - (b)  $(4, -2)$
  - (c)  $(-2, -4)$
  - (d)  $(-4, -2)$

a 4. Which of the following transformations does not result in a congruent figure?

- (a) dilation
- (b) rotation
- (c) reflection
- (d) translation

- C 5. What set of coordinates will provide the vertices for the translation of  $\triangle XYZ$  two units to the left?



$(x, y) \rightarrow (x-2, y)$

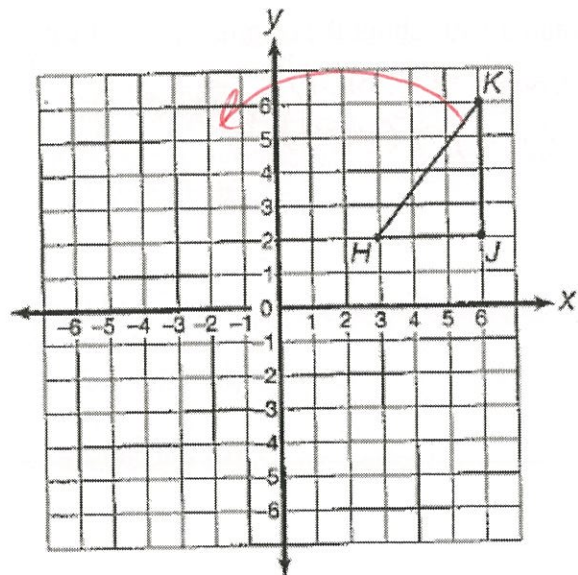
~~(a)~~  $X'(1,1), Y'(6,4), Z'(4,-2)$

**(c)**  $X'(-3,1), Y'(2,4), Z'(0,-2)$

~~(b)~~  $X'(-1,3), Y'(4,6), Z'(2,0)$

~~(d)~~  $X'(-3,1), Y'(1,4), Z'(-2,0)$

- C 6. If this triangle was reflected over the y-axis to form  $\triangle H'J'K'$ , what would be the coordinates of vertex  $K'$ ?



$K(6,6) \rightarrow K'(-6,6)$

(a)  $(6,-6)$

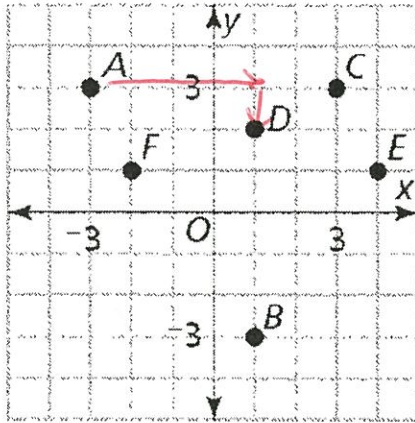
**(c)**  $(-6,6)$

(b)  $(6,6)$

(d)  $(-6,-6)$

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a 7. Using the graph below, what is the rule for a translation from point  $A$  to point  $D$ ?



- (a)  $(x, y) \rightarrow (x + 4, y - 1)$                       (c)  $(x, y) \rightarrow (x - 4, y + 1)$   
 (b)  $(x, y) \rightarrow (x - 1, y + 4)$                       (d)  $(x, y) \rightarrow (x + 1, y - 4)$

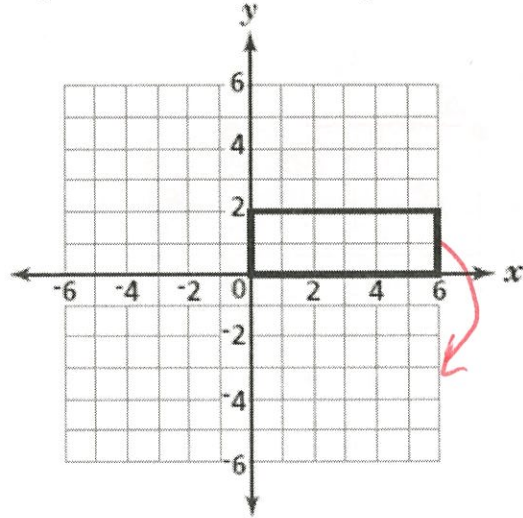
b 8.  $\overline{CD}$  was dilated around the origin by a scale factor of 2. The endpoints of the image are  $C'(4, 0)$  and  $D'(6, 2)$ . What are the coordinates of the endpoints of the original line segment?

- (a)  $C(2, 0), D(3, 0)$                       (c)  $C(2, 0), D(1, 1)$   
 (b)  $C(2, 0), D(3, 1)$                       (d)  $C(4, 0), D(6, 2)$

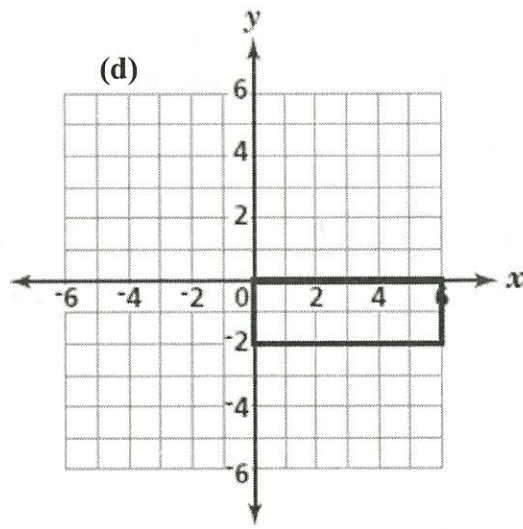
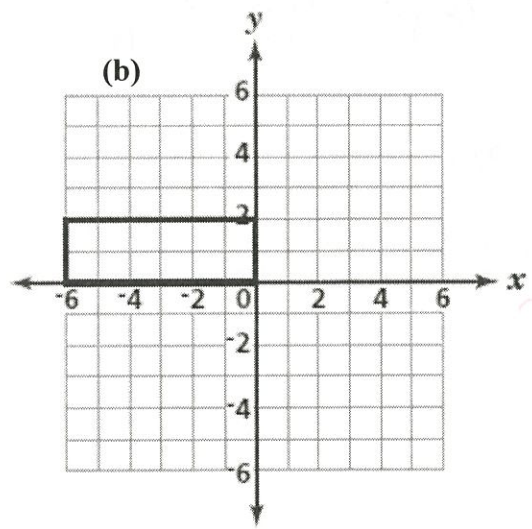
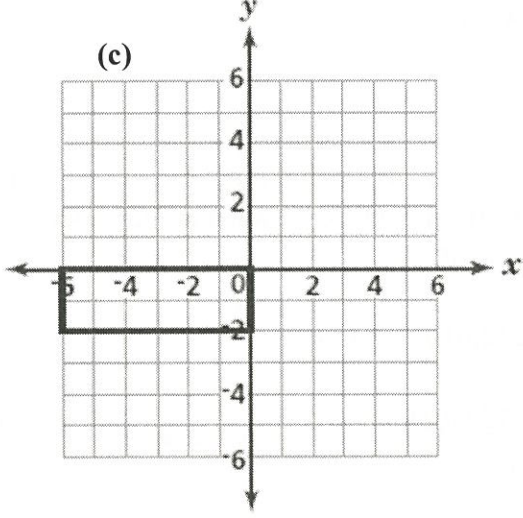
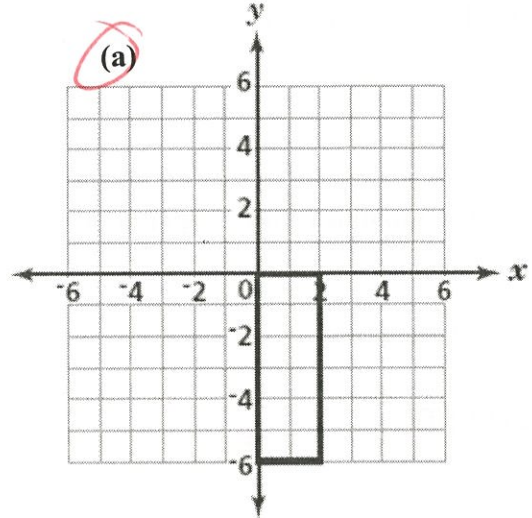
b 9. Point  $X(-3, -2)$  is translated using the rule  $(x, y) \rightarrow (x + 3, y + 4)$ , then reflected over the  $x$ -axis. What is the coordinate of  $X''$ ?  $(0, 2) \rightarrow (0, -2)$

- (a)  $(0, 2)$                       (c)  $(-2, 0)$   
 (b)  $(0, -2)$                       (d)  $(2, 0)$

a 10. A rectangle is plotted on the coordinate plane below.



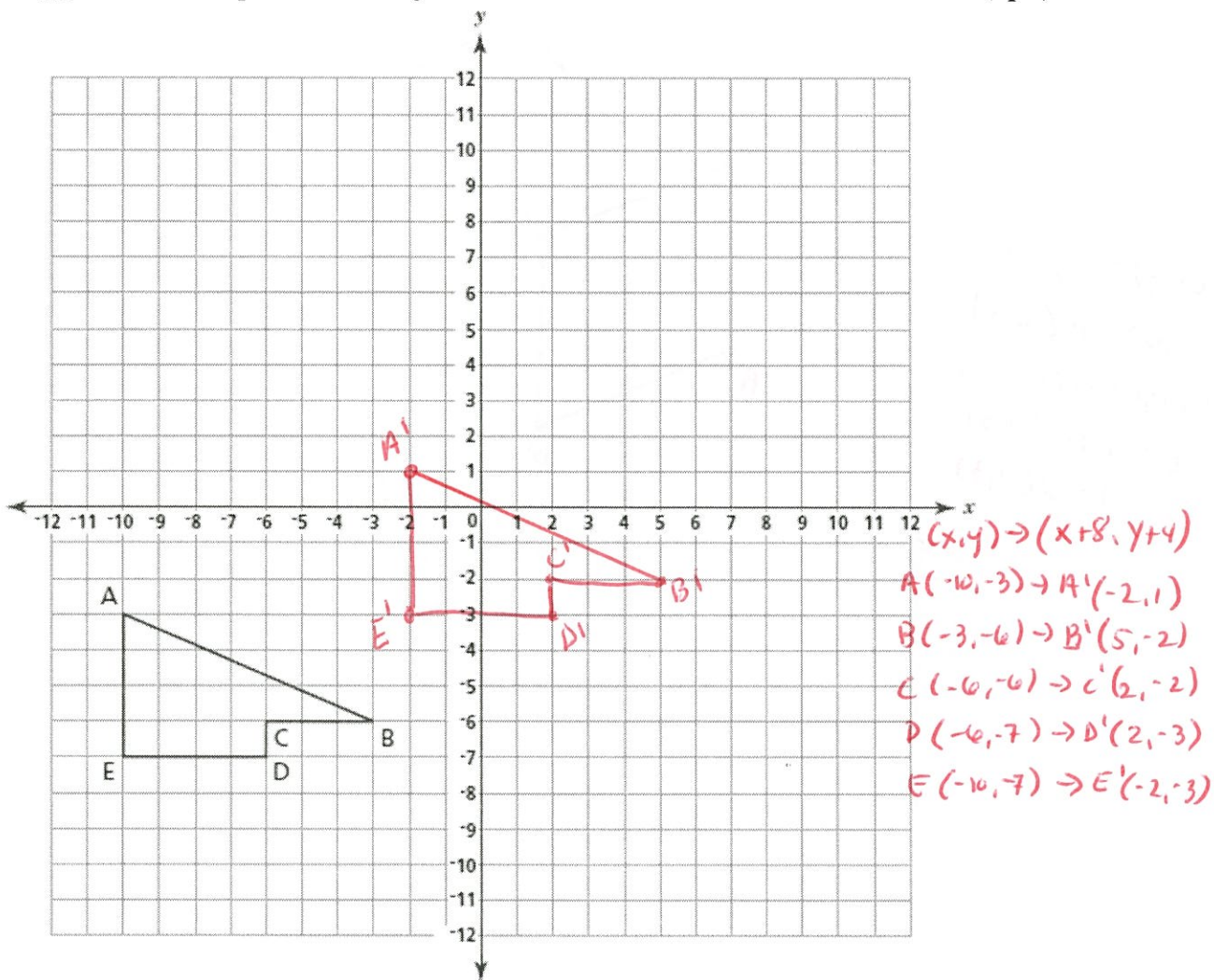
Which image shows a  $90^\circ$  clockwise rotation about the origin?



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11. Polygon  $ABCDE$  is plotted on the grid below.

(3pts)



**Part A**

On the graph, draw the translation of polygon  $ABCDE$  eight units to the right and four units up. Label the image  $A'B'C'D'E'$ .

**Part B**

What are the coordinates of  $A'$ ?

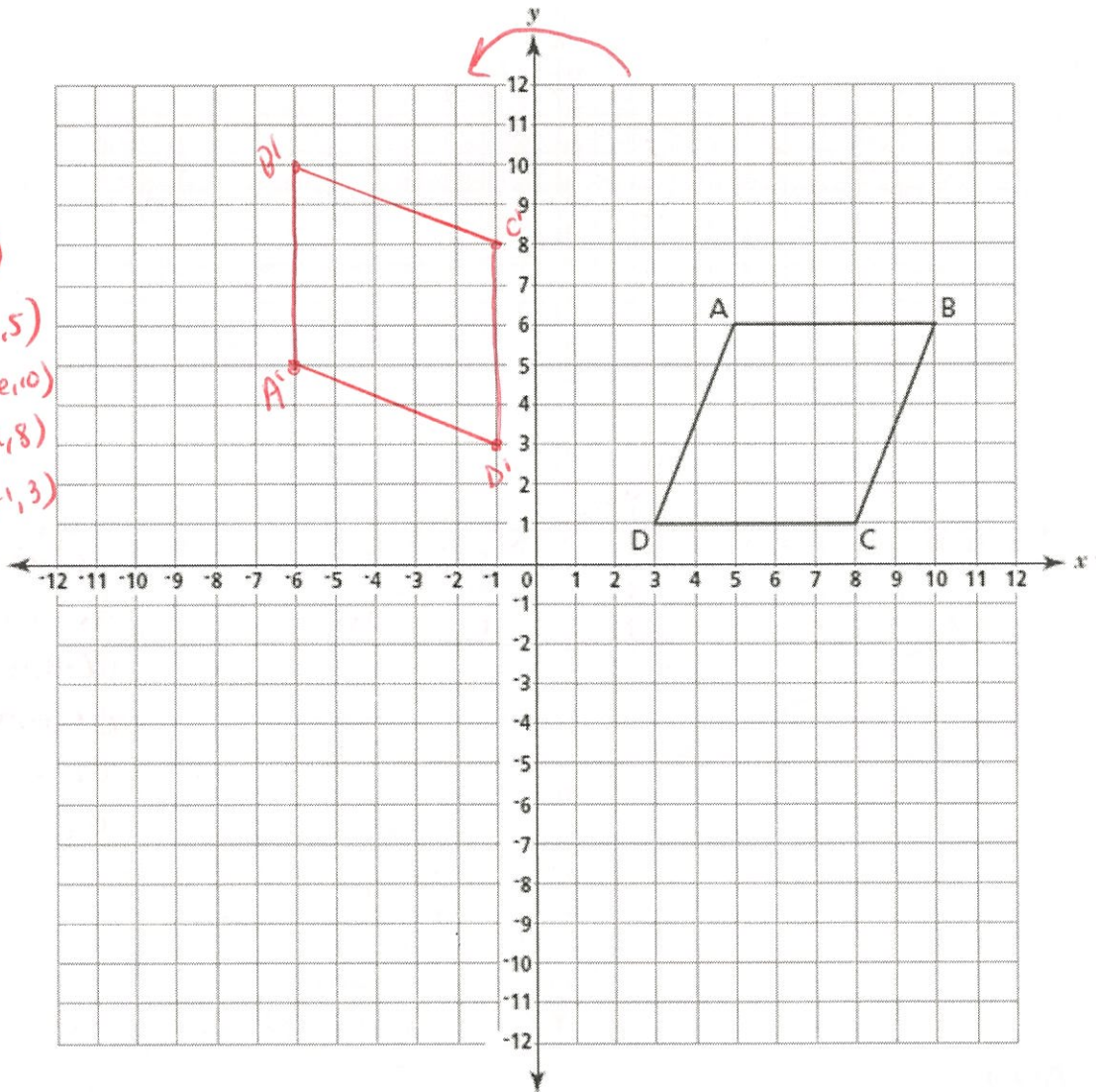
Answer  $(-2, 1)$

**Part C**

Is the resulting figure similar or congruent to the original figure?

12. Quadrilateral  $ABCD$  is plotted on the grid below.

(3pts)



**Part A**

On the graph, draw the image of quadrilateral  $ABCD$  after a counterclockwise rotation of  $90^\circ$  about the origin. Label the image  $A'B'C'D'$ .

**Part B**

On the lines below, explain how the coordinates of  $A$  changed to the coordinates of  $A'$ .

rotated  $90^\circ$  cc and saw it went into Quadrant II

where coordinates are  $(-,+)$  so I rotated the  $x$  &  $y$  coordinates and made the 1<sup>st</sup> one negative so  $A(5,6) \rightarrow A'(-6,5)$

or I used the rule  $(x,y) \rightarrow (-y,x)$  so

+3

13. The table below shows the coordinates of triangle  $HKL$ .

(3pts)

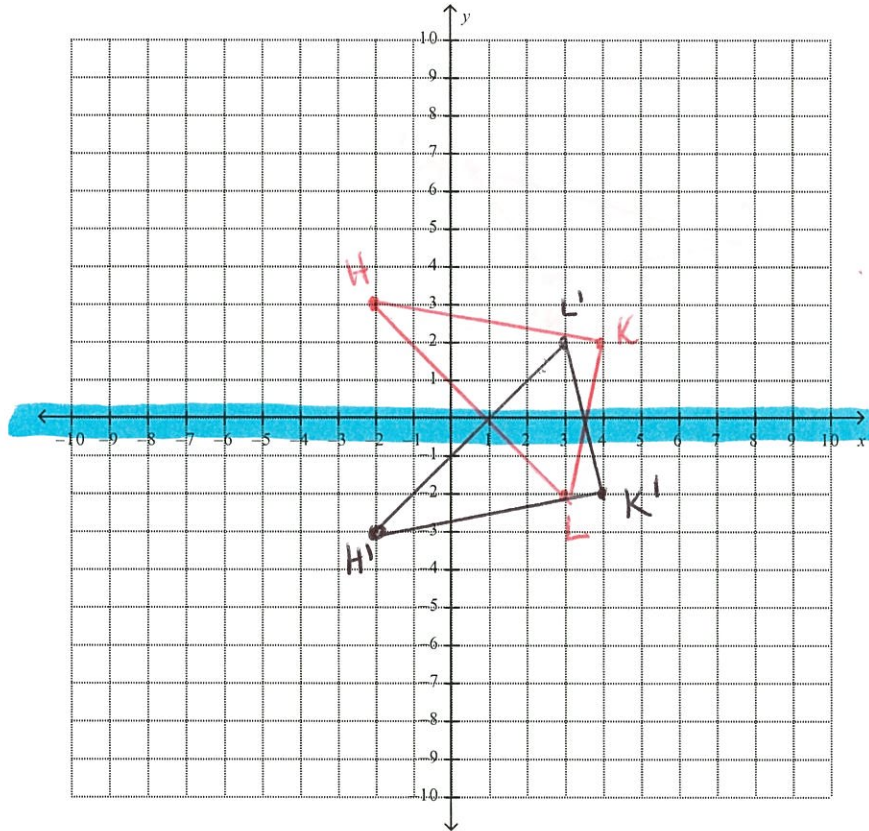
Triangle $HKL$		Triangle $H'K'L'$	
$H$	$(-2, 3)$	$H'$	$(-2, -3)$
$K$	$(4, 2)$	$K'$	$(4, -2)$
$L$	$(3, -2)$	$L'$	$(3, 2)$

**Part A**

Fill in the table above for the coordinates of  $H'$ ,  $K'$ , and  $L'$  after a reflection over the x-axis. (change the y-value)

**Part B**

On the graph below, draw and label triangle  $HKL$  and triangle  $H'K'L'$ .



14. The table below shows the coordinates of triangle  $RUN$  and the coordinates of  $R'$  in triangle  $R'U'N'$ . Triangle  $R'U'N'$  is a dilation of triangle  $RUN$ . (3pts)

$(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y) \rightarrow (x-2, y+5)$

Triangle $RUN$		Triangle $R'U'N'$	
$R$	(6, 4)	$R'$	(3, 2)
$U$	(-8, 0)	$U'$	(-4, 0)
$N$	(2, -2)	$N'$	(1, -1)

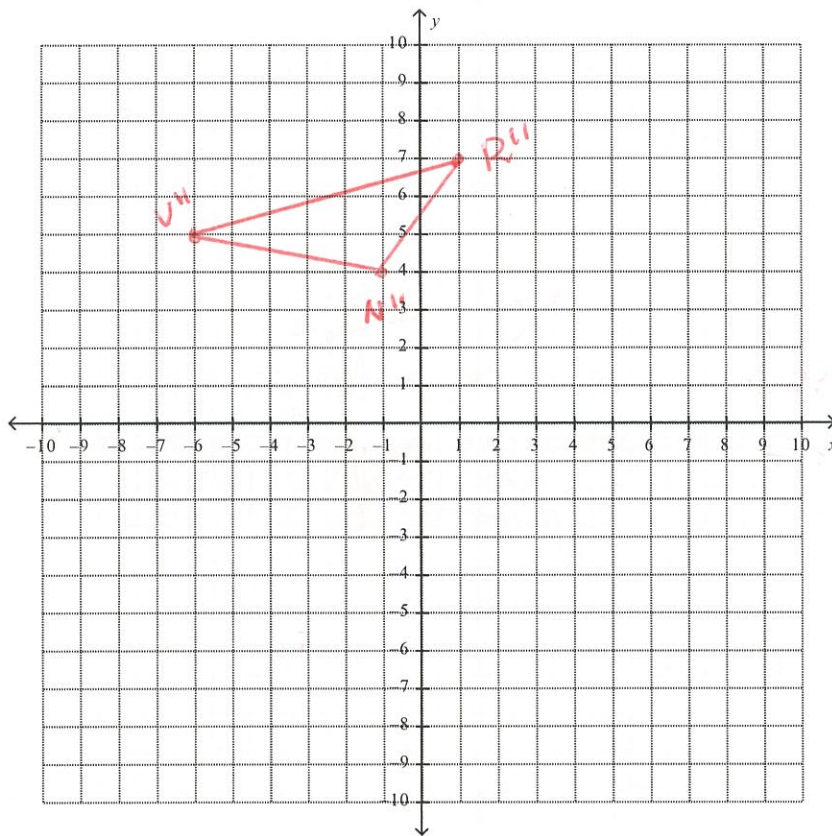
$R''(1, 7)$   
 $U''(-6, 5)$   
 $N''(-1, 4)$

**Part A**

Fill in the table above for the coordinates of point  $U'$  and point  $N'$ .

**Part B**

On the graph below, draw and label triangle  $R''U''N''$  after a translation of  $R'U'N'$  using the rule  $(x, y) \rightarrow (x-2, y+5)$ .



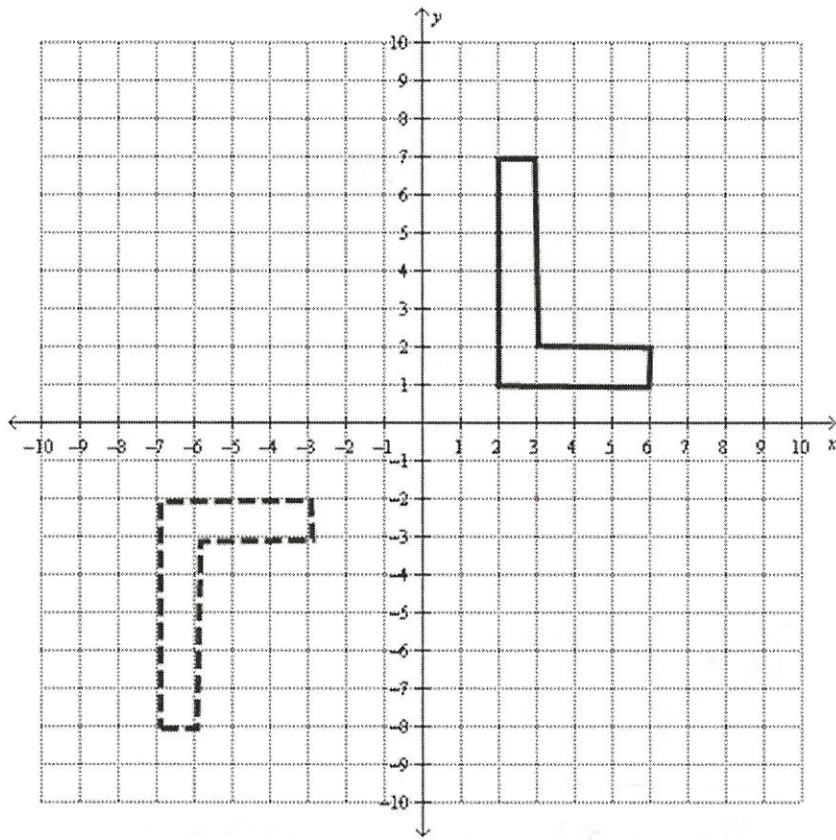
**Part C**

Which part(s) of the resulting figure are congruent to the original?

The corresponding angles are  $\cong$ .



15. Describe how you could move the solid polygon to exactly match the dashed polygon using a series of two transformations. (3pts)

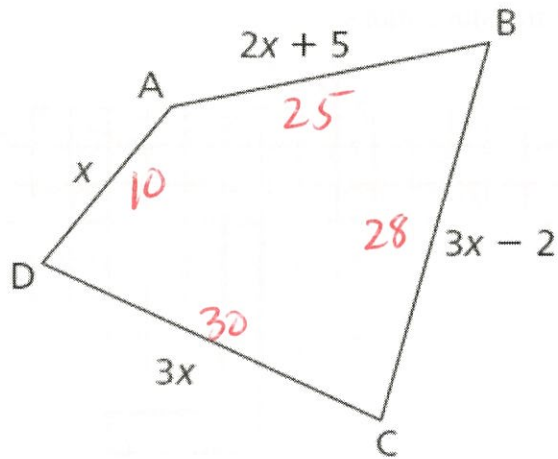


Answers will vary:

translate then reflect: translate 9 units to the left and up 1 unit, then reflect over the x-axis.

reflect then translate: reflect over the x-axis and translate 9 units to the left and down 1 unit.

16. In the figure  $ABCD$  shown below, the total length of the sides equals 93 inches. (3pts)



[not drawn to scale]

Find the length of side  $\overline{AB}$ .

Show your work.

$$\begin{array}{r} 9x + 3 = 93 \\ -3 \quad -3 \\ \hline 9x = 90 \\ \frac{9x}{9} = \frac{90}{9} \\ x = 10 \end{array}$$

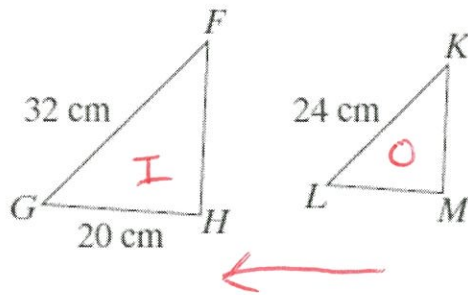
$$\begin{aligned} AB &= 2x + 5 \\ &= 2(10) + 5 \\ &= 25 \end{aligned}$$

Answer 25 inches

+3

17. a) In the figure,  $\triangle FGH \sim \triangle KLM$ . Find  $LM$ .

(3 pts)



$$\frac{32}{24} = \frac{20}{LM}$$

$$\frac{32 \cdot LM}{32} = \frac{480}{32}$$

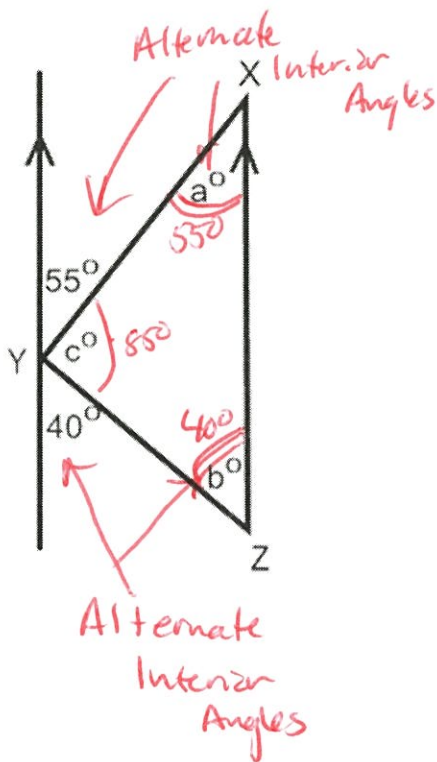
$$LM = 15 \text{ cm}$$

b) What is the scale factor from  $\triangle KLM$  to  $\triangle FGH$ ?

$$\frac{I}{O} = \frac{32}{24} = \left(\frac{4}{3}\right)$$

18. Label the missing angle measures. Explain how you arrived at your answer.

(3 pts)



$\angle A + \angle B + \angle C = 180^\circ$  they form a  $\triangle$ .

$$\text{So } \angle C + (55 + 40) = 180$$

$$\angle C + 95 = 180$$

$$-95 \quad -95$$

$$\angle C = 85^\circ$$

