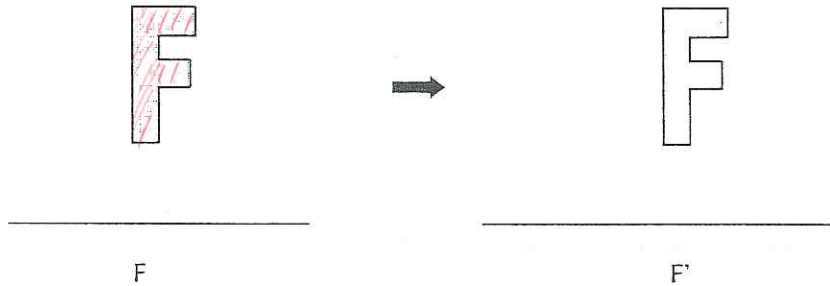


10A-1 Transformations

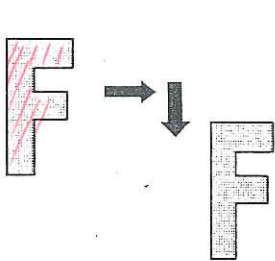
Translations & Reflections

When you move a figure around, change its orientation, or grow/shrink it, you are performing a **transformation**. This unit (I'm calling it 10A) is about transforming figures on the coordinate plane.

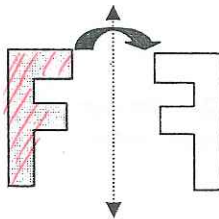
To do this, we need words to describe the "before" and the "after" figures.



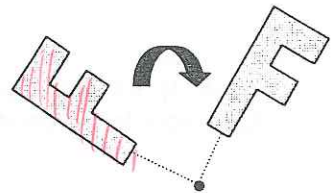
Congruence Transformations: _____



slide up/down/left/right

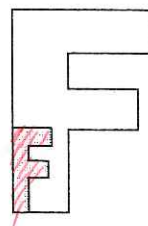


mirror image over a line



turn about a point

Similarity Transformation: _____



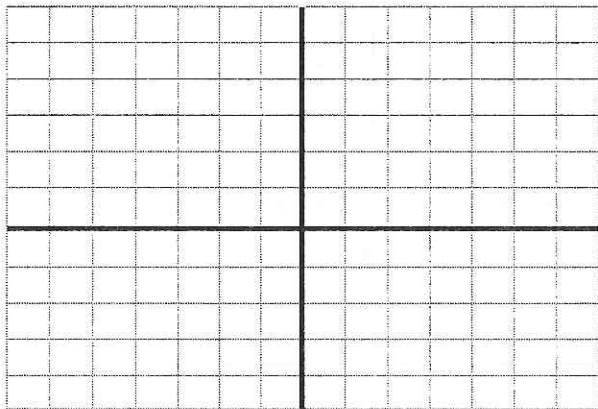
grow shrink from a point

TRANSLATIONS

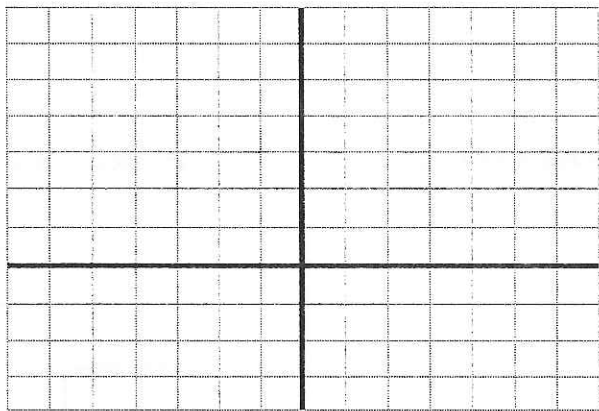
Translation notation: $(x, y) \rightarrow (x \pm a, y \pm b)$

a is the # of units you move left (-) or right (+), b is the # of units you move up (+) or down (-)

1. A (-1, -3), B (1, -1), and C (-1, 0). Perform $(x, y) \rightarrow (x - 3, y + 4)$.
Label your image points and give the coordinates.



2. A (-4, -1), B (-2, 0), C (-1, 3), and D (-3, 2). Perform $(x, y) \rightarrow (x + 4, y - 2)$.
Label your image points and give the coordinates.

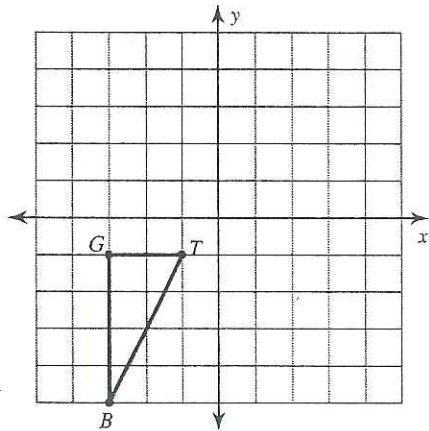


3. Write the described transformation in coordinate translation notation:
 - a. 6 units to the left and 2 units up
 - b. 2 units down:
 - c. 8 units right:

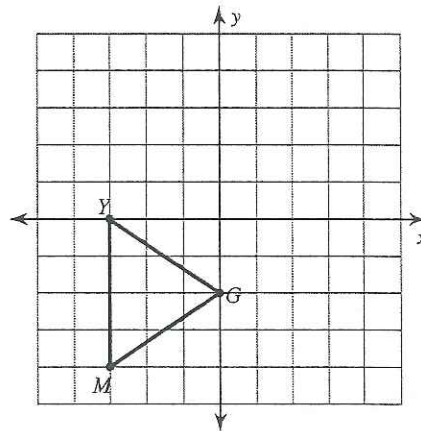
Translations

Graph the image of the figure using the transformation given (label image points)

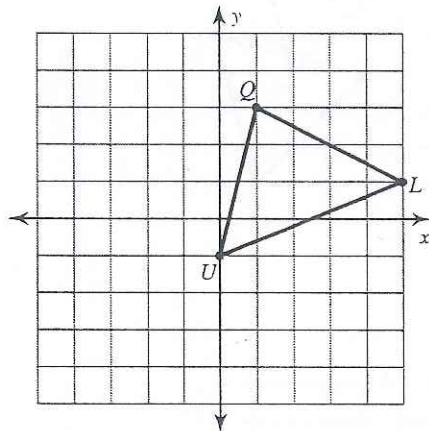
1) translation: 5 units right and 1 unit up



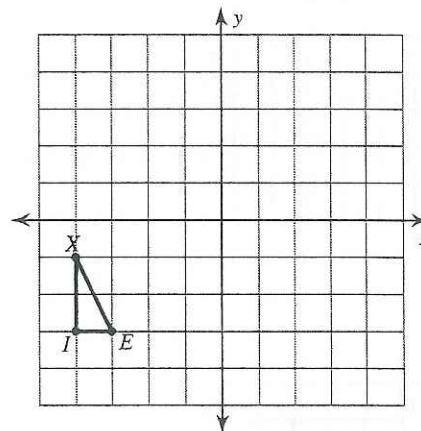
2) translation: 1 unit left and 2 units up



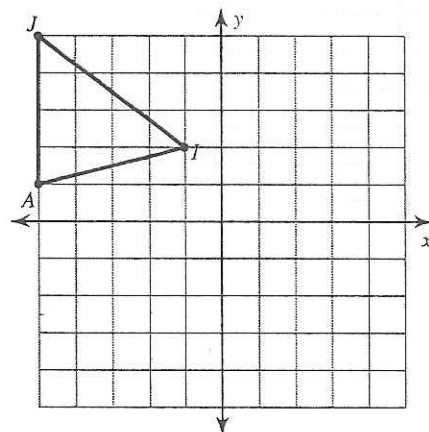
3) translation: 3 units down



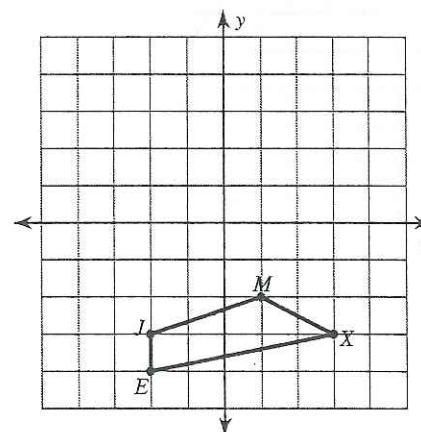
4) translation: 5 units right and 2 units up



5) translation: 4 units right and 4 units down

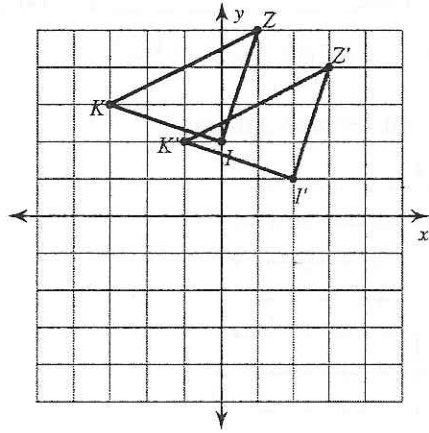


6) translation: 2 units right and 3 units up

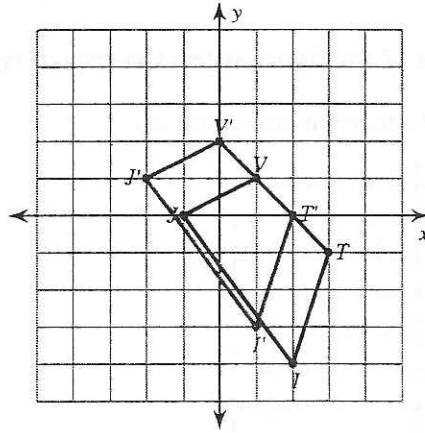


Write a rule to describe each transformation (in transformation notation)

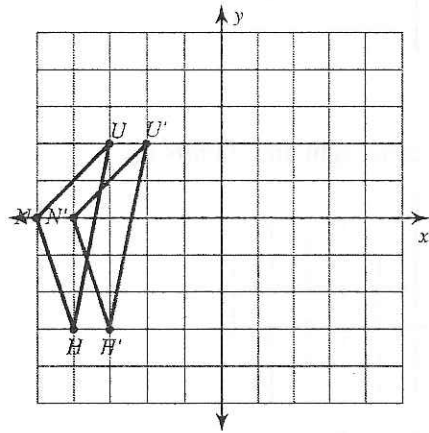
7)



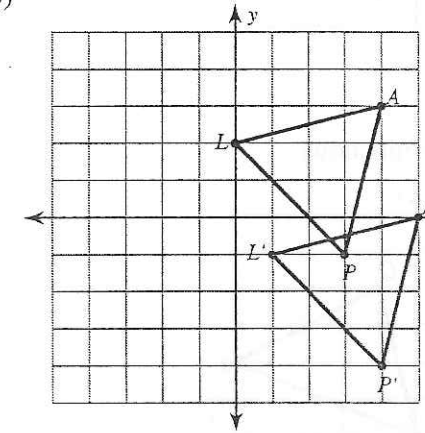
8)



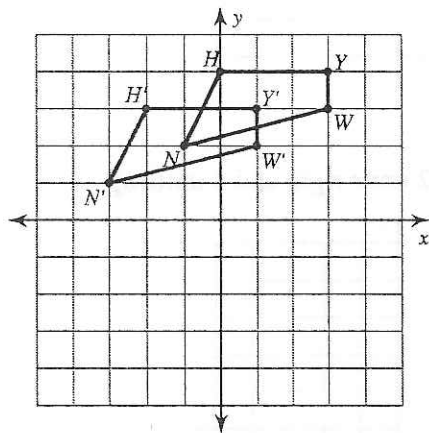
9)



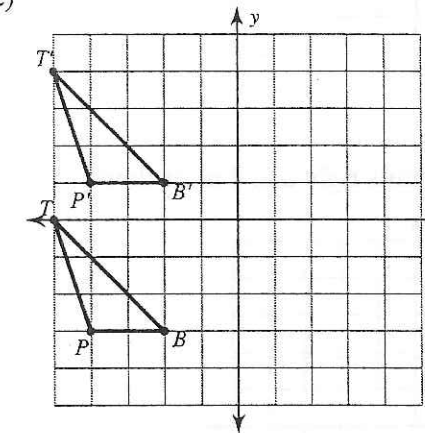
10)



11)

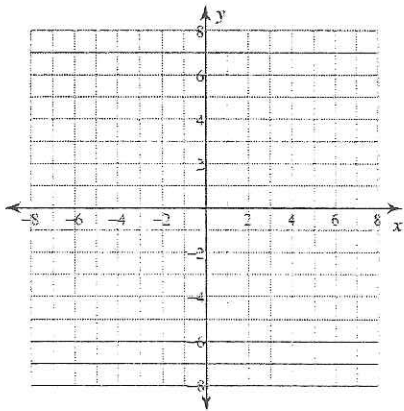


12)

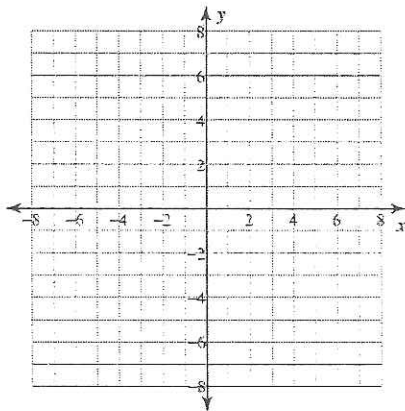


REFLECTIONS

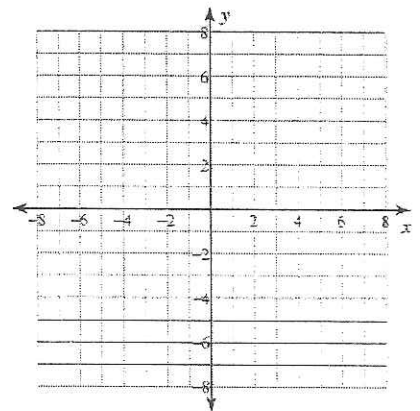
4. A(6, 0) B(1, 1) C(3, 3). Perform the reflection and label your image points.



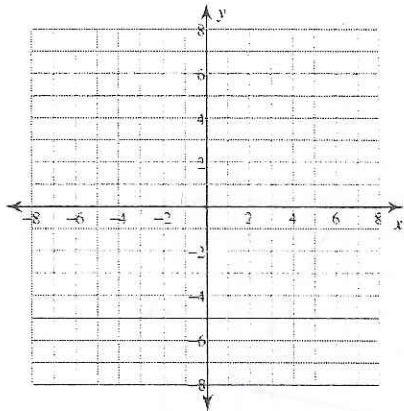
a. reflect over $x = 0$



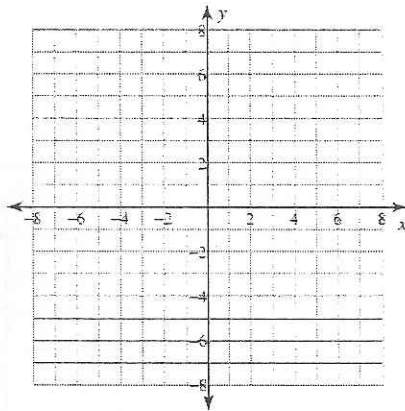
b. reflect over $y = 0$



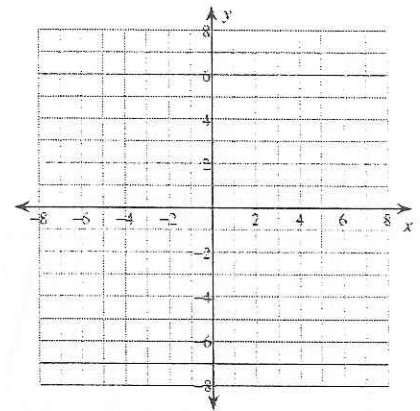
c. reflect over $x = -1$



d. reflect over $x = 2$



e. reflect over $y = -2$



f. reflect over $y = x$

5. a. Reflect (5, 3) over the x-axis _____

b. Reflect (-2, 7) over the y-axis _____

c. Reflect (5, 3) over $y = x$ _____

d. Reflect (-2, 7) over $y = -x$ _____

6. Identify if the given reflection is in the x-axis or the y-axis.

a. $(4, 5) \rightarrow (4, -5)$ is a reflection in the _____ - axis

b. $(-6, 2) \rightarrow (6, 2)$ is a reflection in the _____ - axis

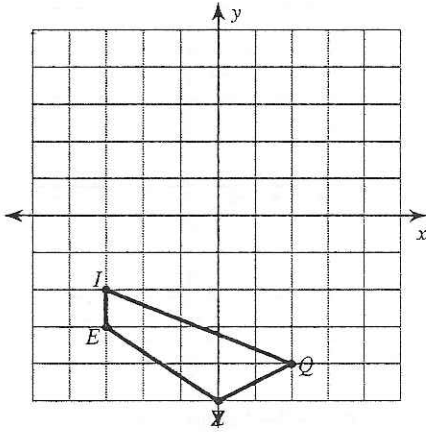
c. $(7, -3) \rightarrow (-7, -3)$ is a reflection in the _____ - axis

d. $(1, -3) \rightarrow (1, 3)$ is a reflection in the _____ - axis

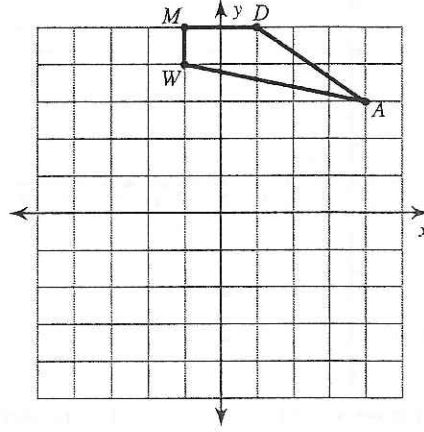
Reflections

Graph the image of the figure using the transformation given. (label image points)

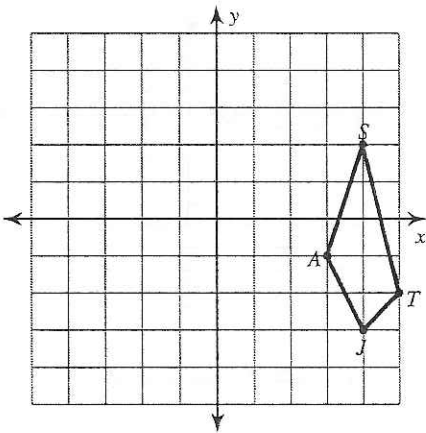
1) reflection across $y = -2$



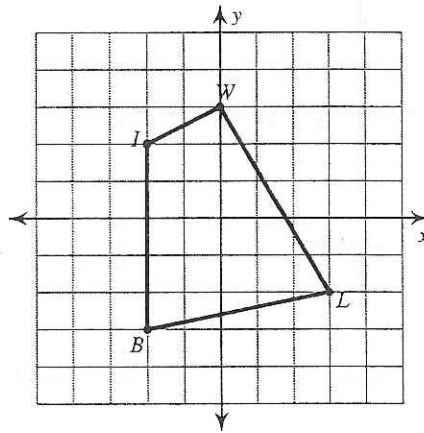
2) reflection across the x-axis



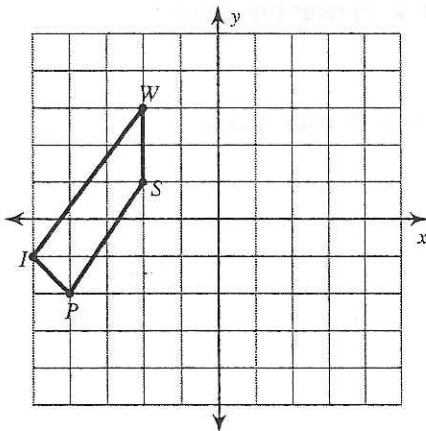
3) reflection across $y = -x$



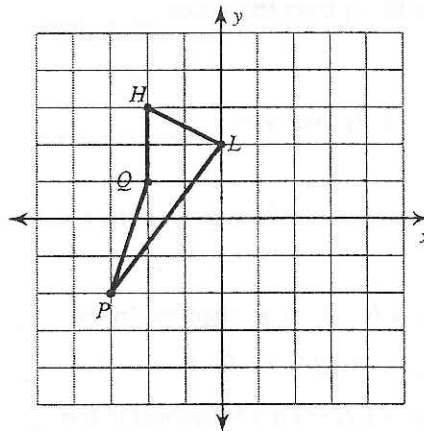
4) reflection across $y = -1$



5) reflection across $x = -3$

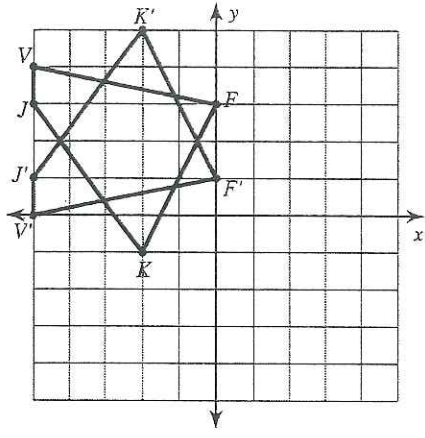


6) reflection across $y = x$

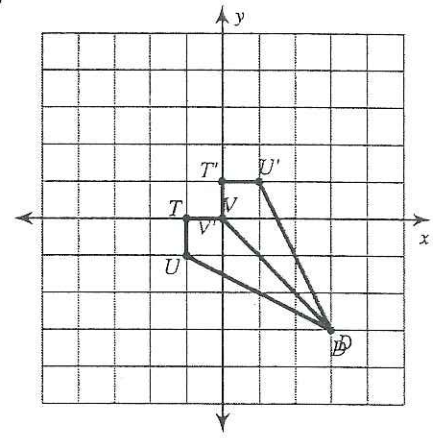


Write a rule to describe each transformation.

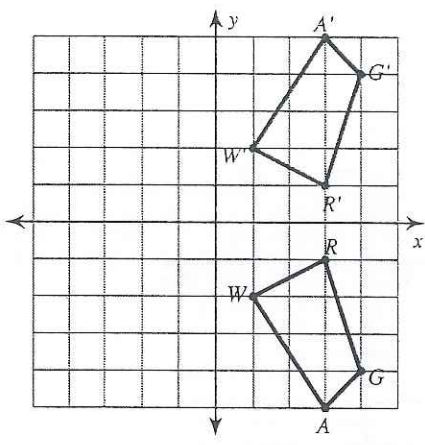
7)



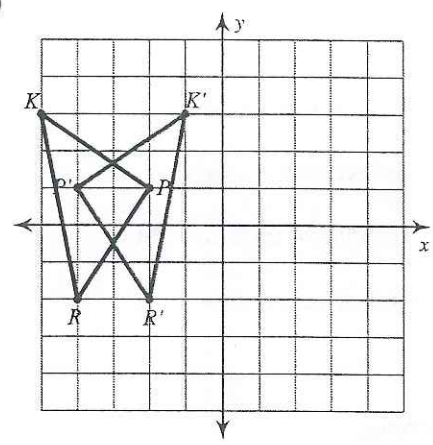
8)



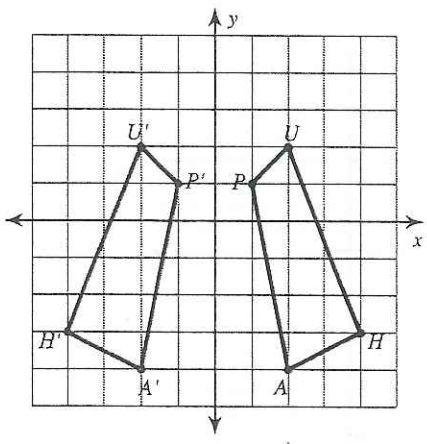
9)



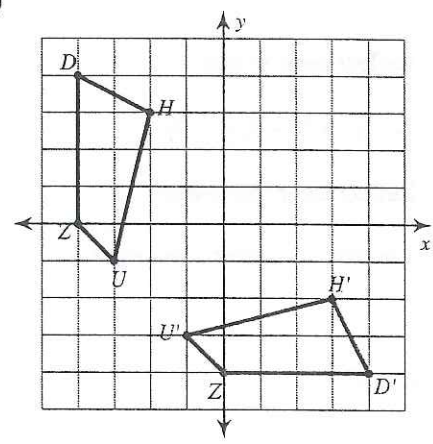
10)



11)



12)



TRANSLATIONS & REFLECTIONS TOGETHER

7. A(5, 0) B(2, 1) C(3, 5). Perform the transformations and label your image points.

- a. Reflect over $x = 1$
- b. Translate 4 units down
- c. Reflect over $y = 0$
- d. Translate 2 units to the right

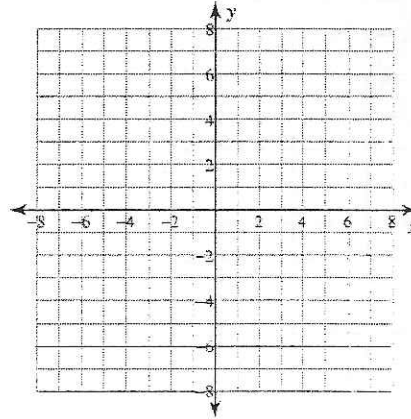


Image Points:

8. A(8, 1) B(2, 1) C(8, 3). Perform the transformations and label your image points.

- a. Reflect over y -axis
- b. Reflect over x -axis
- c. Translate 4 units to right.
- d. Reflect over $y = x$

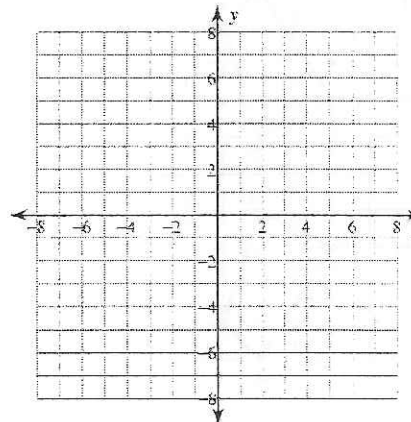


Image Points:

9. A(-4, -2) B(0, 0) C(-1, 2). Perform the transformations and label your image points.

- a. Reflect over y -axis
- b. $(x, y) \rightarrow (x - 5, y - 2)$
- c. Reflect over the x -axis.
- d. Translate 2 units to the right

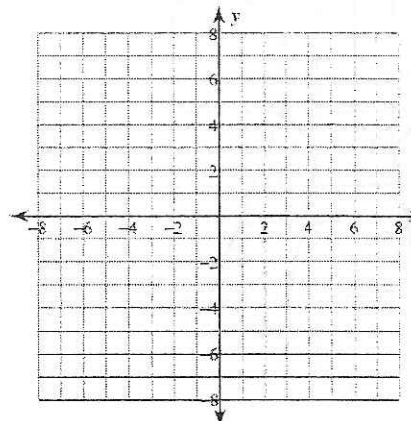


Image Points:
