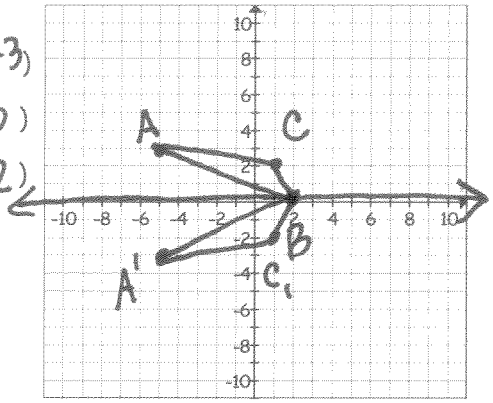
9-1 Reflections Master G

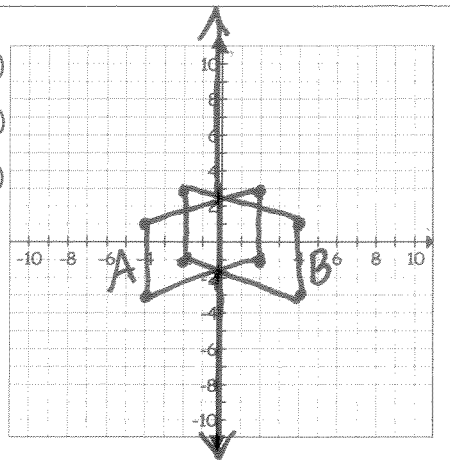
REFLECTION:

A reflection or flip is a transformation in a line called the line of symmetry. Each point of the preimge and its corresponding point on the image are the same distance from this line.

REFLECTION IN THE X-AXIS OR IN THE Y-AXIS:

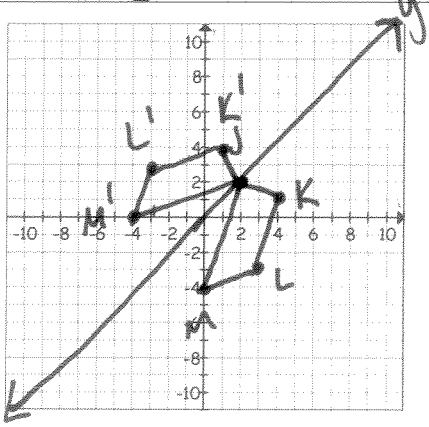
	Reflect a figure in the x-axis	Reflect a figure in the y-axis
Words:	To reflect a point in the x-axis, multiply its y-coordinate by -1.	To reflect a point in the y-axis, multiply its x-coordinate by -1.
Symbols:	$(X, Y) \rightarrow (X, -Y)$	$(X, Y) \rightarrow (-X, Y)$
Example:	ΔABC $A(-5,3) \rightarrow A'(-5,-3)$ $B(2,0) \rightarrow B'(2,0)$ $C(1,2) \rightarrow C'(1,-2)$	$(-4, 1) \rightarrow (4, 1)$ $(2, 3) \rightarrow (-2, 3)$ $(2, -1) \rightarrow (-2, -1)$ $(-4, -3) \rightarrow (4, -3)$

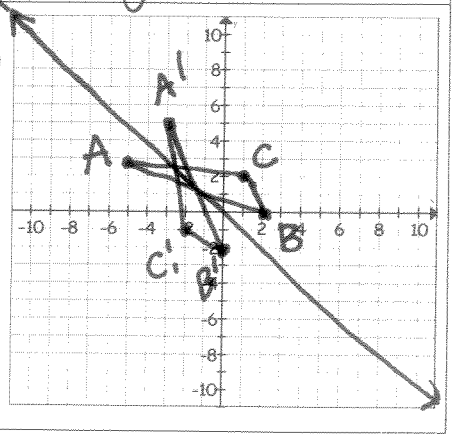




REFLECTION IN THE LINE Y = X OR Y = -X:

	Reflect a Figure in the line y = x	Reflect a Figure in the line y = -x
Words:	To reflect a point in the line y = x, interchange the x- and y- coordinates	To reflect a point in the line y = -x, interchange and negate the x- and y- coordinates
Symbols:	$(X, Y) \rightarrow (Y, X)$	$(X, Y) \rightarrow (-Y, -X)$
Example:	$J(2, 2) \rightarrow J'(2, 2)$ $K(4, 1) \rightarrow K'(1, 4)$ $L(3, -3) \rightarrow L'(-3, 3)$ $M(0, -4) \rightarrow M'(-4, 0)$	$A(-5,3) \rightarrow (-3,5)$ $B(2,0) \rightarrow (0,-2)$ $C(1,2) \rightarrow (-2,-1)$

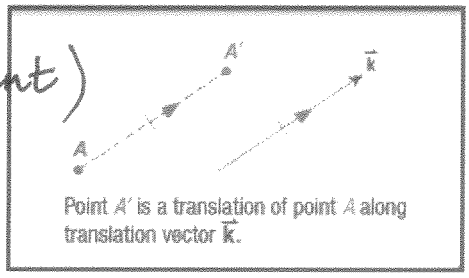




9-2 Translations

TRANSLATION:

- A translation maps each point to its image along a vector, called the translation vector. (directed segment)
- Each segment joining a point and its image has the same length as the vector.
- Each segment will be parallel to the vector.

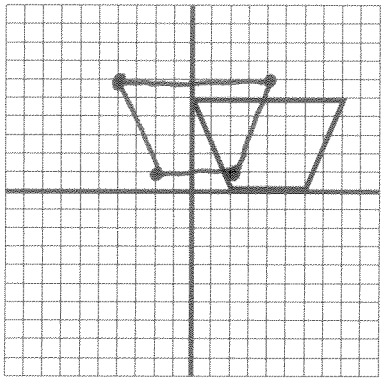


TRANSLATIONS IN THE COORDINATE PLANE:

♦ Function Notation: $(x,y) \rightarrow (x + a, y + b)$

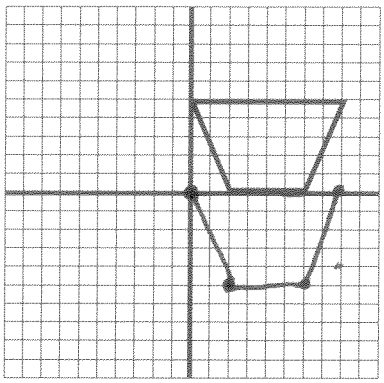
Examples:

1. $(x, y) \rightarrow (x - 4, y + 1)$



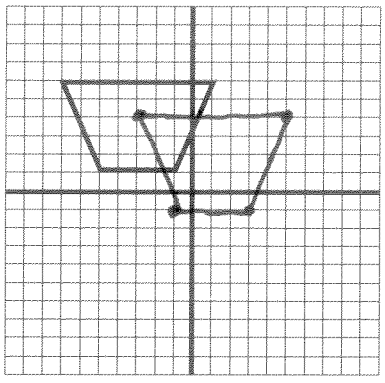
$(2,0) \rightarrow (-2,1)$
$(6,0) \rightarrow (2,1)$
$(8,5) \rightarrow (4,6)$
$(0,5) \rightarrow (-4,6)$

2. $(x, y) \rightarrow (x, y - 5)$



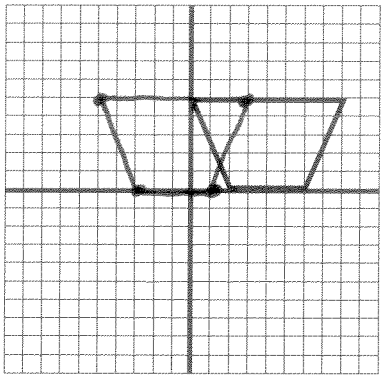
$(2,0) \rightarrow (2,-5)$
$(6,0) \rightarrow (6,-5)$
$(8,5) \rightarrow (8,0)$
$(0,5) \rightarrow (0,0)$

3. $(x, y) \rightarrow (x + 4, y - 2)$



$(-5,1) \rightarrow (-1,-1)$
$(-1,1) \rightarrow (3,-1)$
$(1,6) \rightarrow (5,4)$
$(-1,6) \rightarrow (-3,4)$

4. $(x, y) \rightarrow (x - 5, y)$



$(2,0) \rightarrow (-3,0)$
$(6,0) \rightarrow (1,0)$
$(8,5) \rightarrow (3,5)$
$(0,5) \rightarrow (-5,5)$

ANIMATION: Describe the translation that moves the figure on the coordinate plane.

5. figure 1 → figure 2 $(x,y) \rightarrow (x+4, y+2)$
6. figure 2 → figure 3 $(x,y) \rightarrow (x-4, y+1)$
7. figure 3 → figure 4 $(x,y) \rightarrow (x+3, y+3)$