

A reflection is a transformation which **FLIPS** the figure over a **LINE**.

This line is called the **LINE OF REFLECTION**.

Example 1:

$\triangle ABC$ is being reflected over the x -axis.

Draw and label the image $\triangle A'B'C'$.

We can use an arrow to describe this reflection.

$$\triangle ABC \rightarrow \triangle A'B'C'$$

What are the coordinates of:

$$A \ (1, -3) \rightarrow A' \ (1, 3)$$

$$B \ (3, 0) \rightarrow B' \ (3, 0)$$

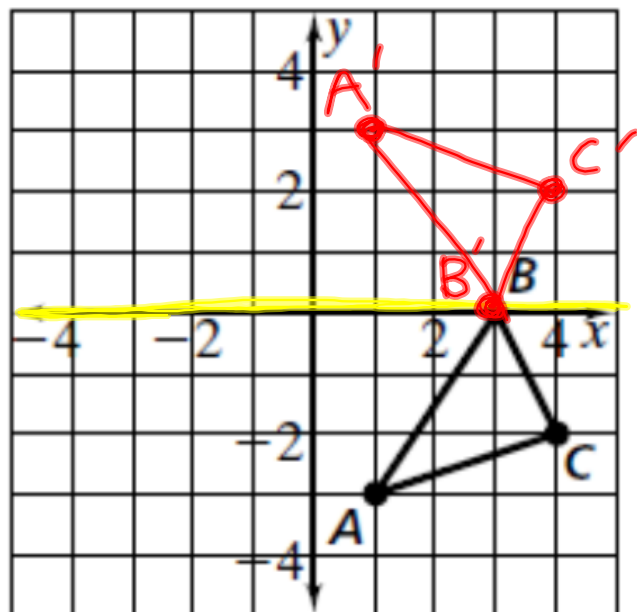
$$C \ (4, -2) \rightarrow C' \ (4, 2)$$

Write a general rule for an x -axis reflection:

$$(x, y) \rightarrow (\underline{x} , \underline{-y}).$$

Tell me more about this figure, is it congruent or similar? Explain how you know.

congruent; stays same shape & size



Example 2:

$\triangle ABC$ is reflected over the y -axis.

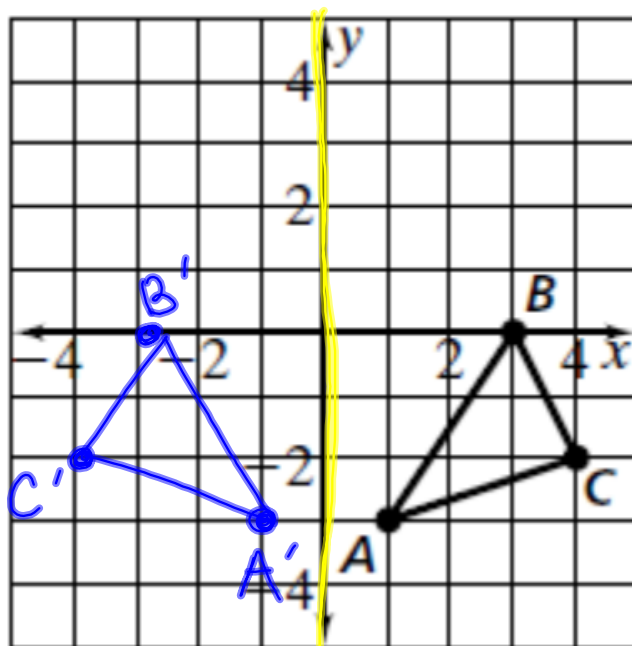
Draw the image $\triangle A'B'C'$.

What are the coordinates of:

$$A \underline{(1, -3)} \rightarrow A' \underline{(-1, -3)}$$

$$B \underline{(3, 0)} \rightarrow B' \underline{(-3, 0)}$$

$$C \underline{(4, -2)} \rightarrow C' \underline{(-4, -2)}$$

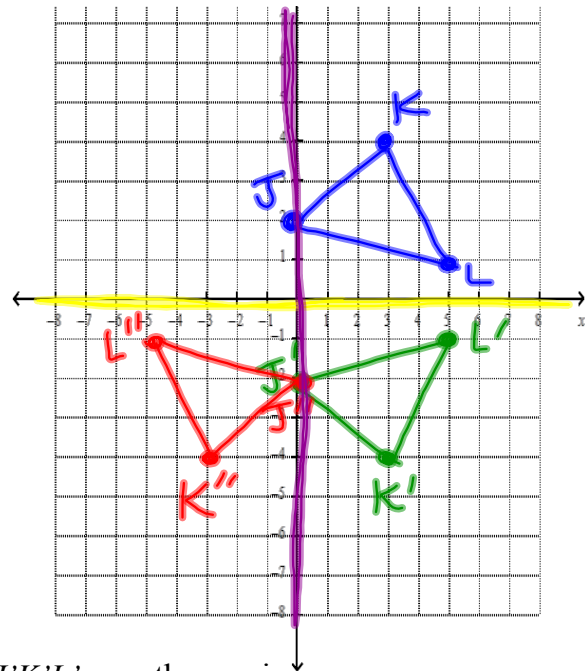


Write a general rule for a y -axis reflection: $(x, y) \rightarrow (\underline{-x}, \underline{y})$.

Example 3:

- a) Draw $\triangle JKL$ which has coordinates $J(0,2)$, $K(3,4)$, and $L(5,1)$.
- b) Draw the image $\triangle J'K'L'$ after a reflection of $\triangle JKL$ over the x -axis.
- c) List the coordinates of $J'K'L'$.

$J(0,2) \rightarrow J'(0,-2)$
 $K(3,4) \rightarrow K'(3,-4)$
 $L(5,1) \rightarrow L'(5,-1)$



- d) Draw the image $\triangle J''K''L''$ after a reflection of $\triangle J'K'L'$ over the y -axis.

e) List the coordinates of $J''K''L''$
 $J'(0,-2) \rightarrow J''(0,-2)$
 $K'(3,-4) \rightarrow K''(-3,-4)$
 $L'(5,-1) \rightarrow L''(-5,-1)$

f) Describe a different combination of two reflections that would move $\triangle JKL$ to $\triangle J''K''L''$.
 reflect over y -axis
 then x -axis

g) Is this new image congruent or similar to the original figure?
 congruent

Example 4:

a) Draw $\triangle ABC$ which has coordinates $A(0,1)$, $B(3,4)$, and $C(5,1)$.

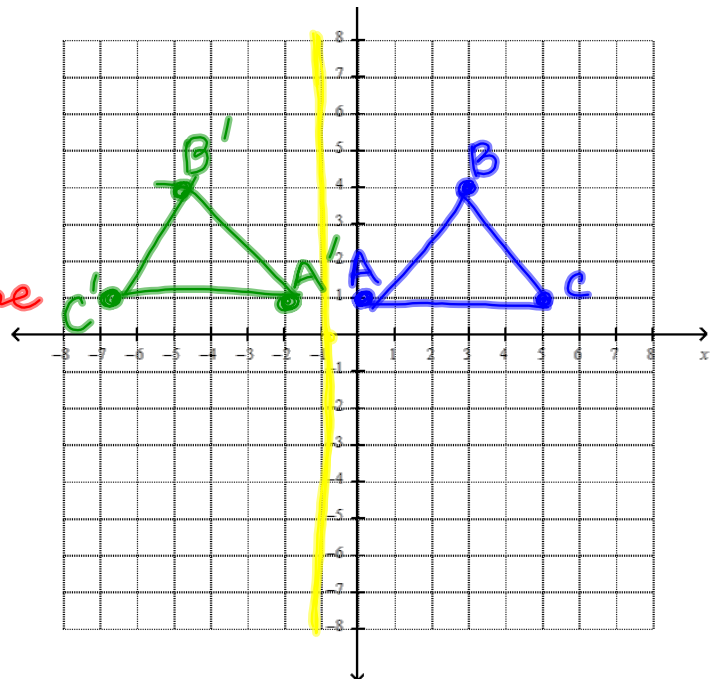
b) Draw the image $\triangle A'B'C'$ after a reflection of $\triangle ABC$ over $x = -1$. **vertical line**

c) List the coordinates of $A'B'C'$.

$$A \ (0, 1) \rightarrow A' \ (-2, 1)$$

$$B \ (3, 4) \rightarrow B' \ (-5, 4)$$

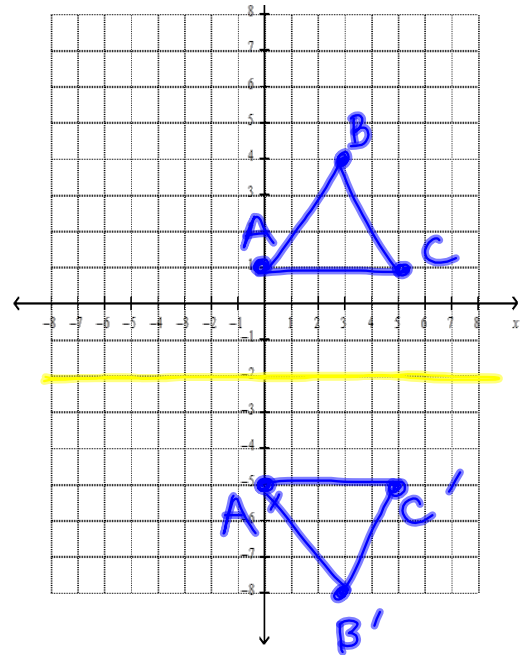
$$C \ (5, 1) \rightarrow C' \ (-7, 1)$$



Example 5:

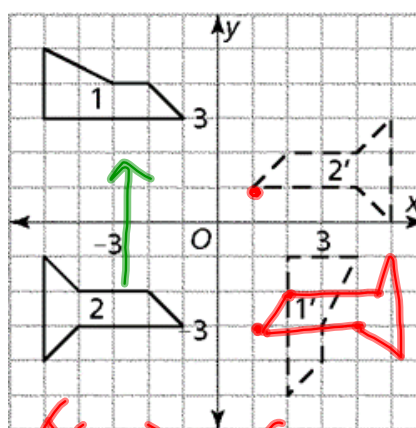
- a) Draw $\triangle ABC$ which has coordinates $A(0,1)$, $B(3,4)$, and $C(5,1)$.
- b) Draw the image $\triangle A'B'C'$ after a reflection of $\triangle ABC$ over $y = -2$. **Horizontal line**
- c) List the coordinates of $A'B'C'$.

$$A \underline{(0, 1)} \rightarrow A' \underline{(0, -5)}$$
$$B \underline{(3, 4)} \rightarrow B' \underline{(3, -8)}$$
$$C \underline{(5, 1)} \rightarrow C' \underline{(5, -5)}$$



Example 9:

Describe how you could move shape 2 to exactly match shape 2' by using one translation and one reflection.



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