

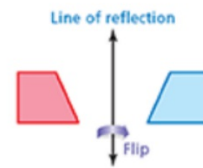
Today: **Happy Friday!**

- Staple Graphs in hall
(Make sure your name is on the front!)
- Check 2.2 HW
- Pick up Guided Notes Lesson 2.3
(Reflections)

Lesson 2.3

Learning Target:

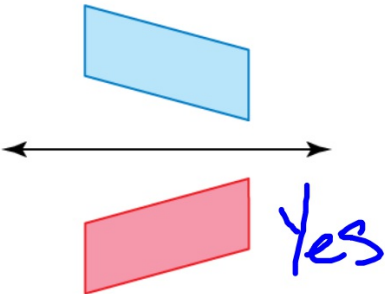
- Identify Reflections
- Reflect Figures in a Coordinate Plane



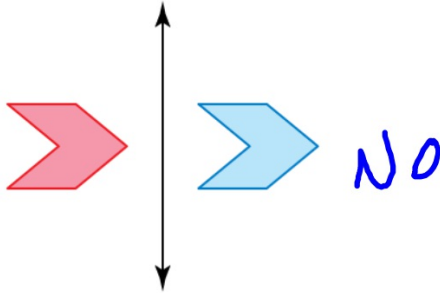
-
- A **reflection** is a *flip*.
 - A figure is reflected in a line called the line of reflection.
 - A reflection creates a **MIRROR** image of the original figure.

Tell whether the blue figure is a reflection of the red figure.

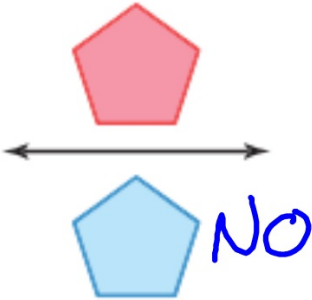
a.



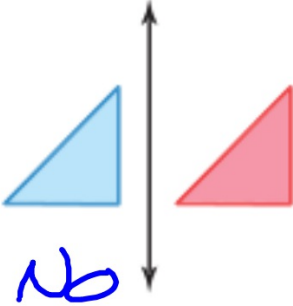
b.



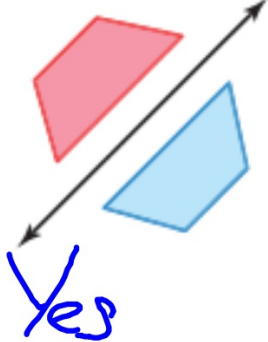
1.

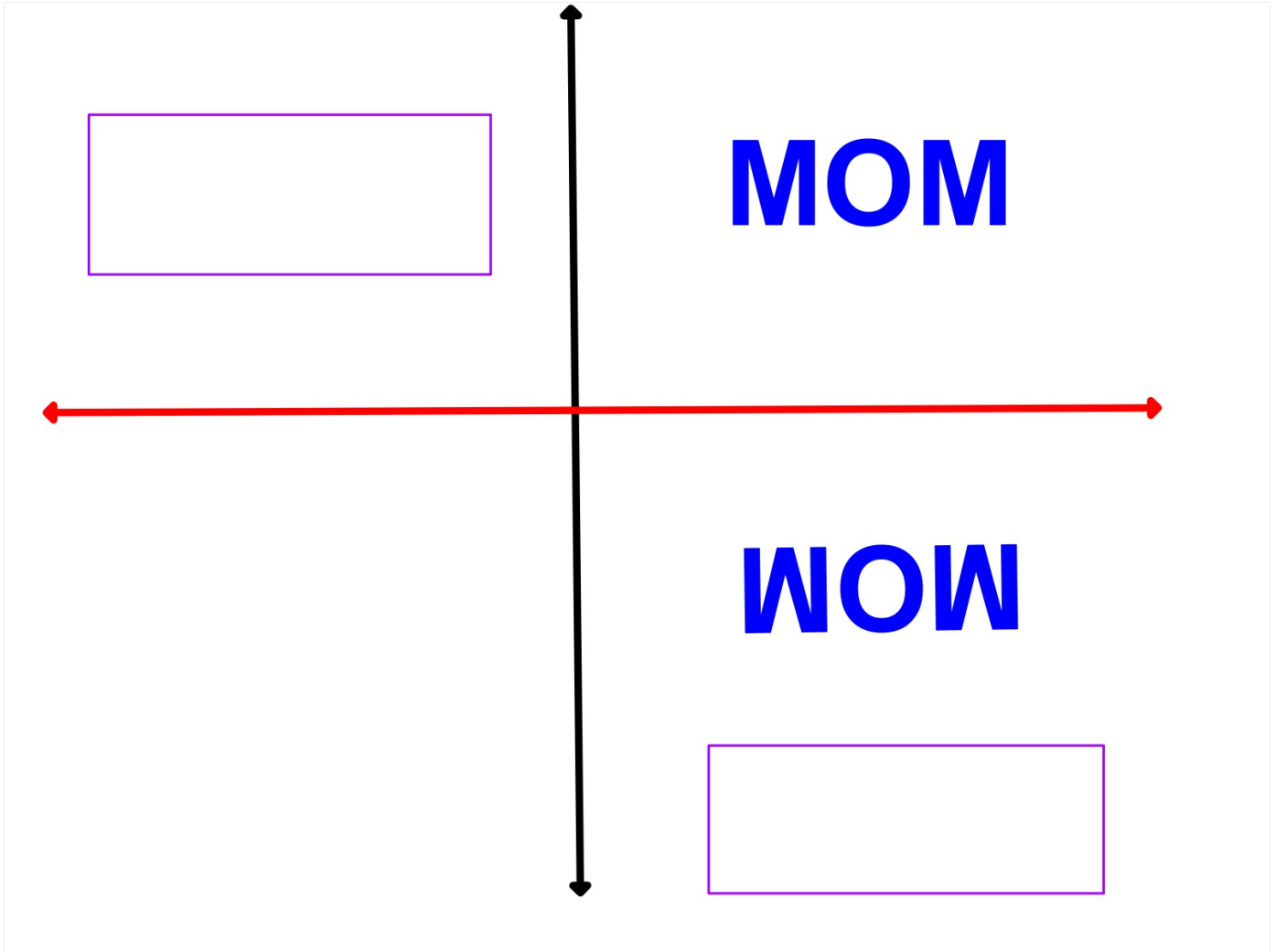


2.



3.



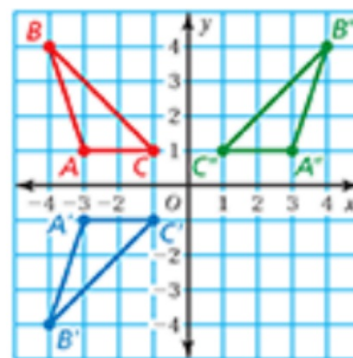


 **Key Idea****Reflections in the Coordinate Plane**

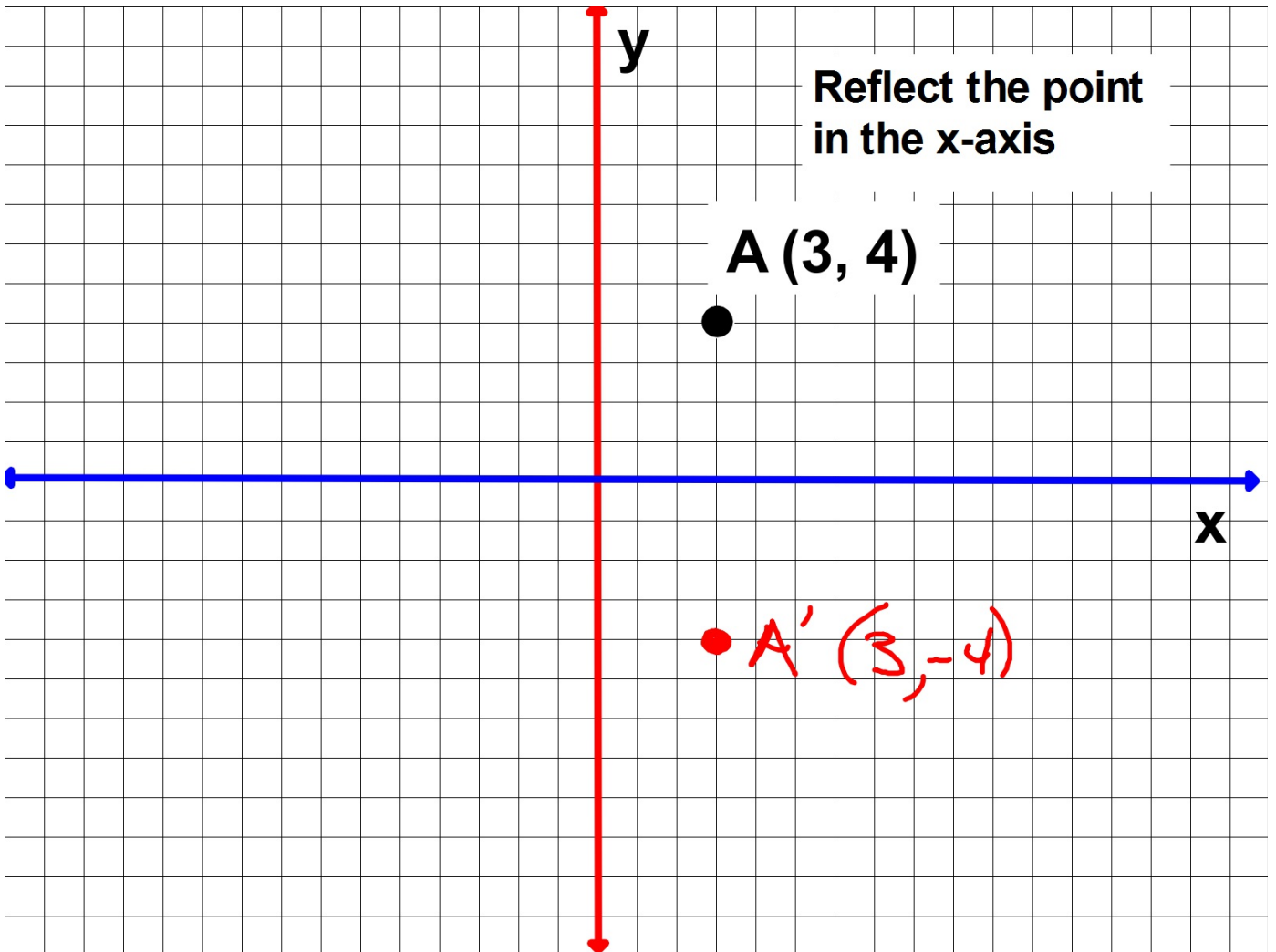
Words To reflect a figure in the x -axis, take the opposite of the y -coordinate.

To reflect a figure in the y -axis, take the opposite of the x -coordinate.

Algebra Reflection in x -axis: $(x, y) \rightarrow (x, -y)$
Reflection in y -axis: $(x, y) \rightarrow (-x, y)$



In a reflection, the original figure and its image are congruent.



Reflections in the Coordinate Plane

Change Coordinate Points

To **reflect a figure in the x-axis**, take the opposite of the y-coordinate

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

$$(3, 4) \longrightarrow (3, -4)$$

$$(-2, -5) \longrightarrow (-2, 5)$$

$$(7, -6) \longrightarrow (7, 6)$$

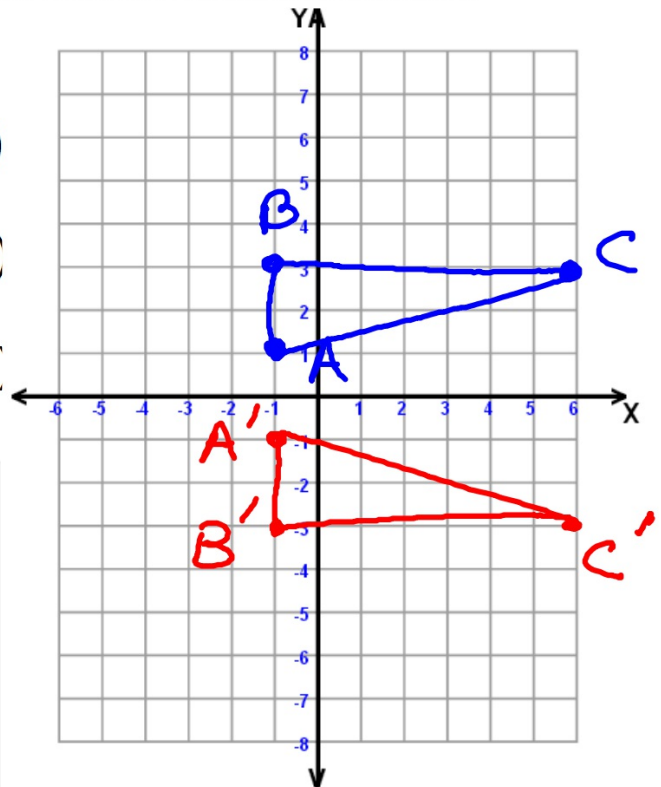
The vertices of a triangle are $A(-1, 1)$, $B(-1, 3)$, and $C(6, 3)$. Draw the figure and its reflection in the x -axis. What are the coordinates of the image?

$$A(-1, 1) \longrightarrow A'(-1, -1)$$

$$B(-1, 3) \longrightarrow B'(-1, -3)$$

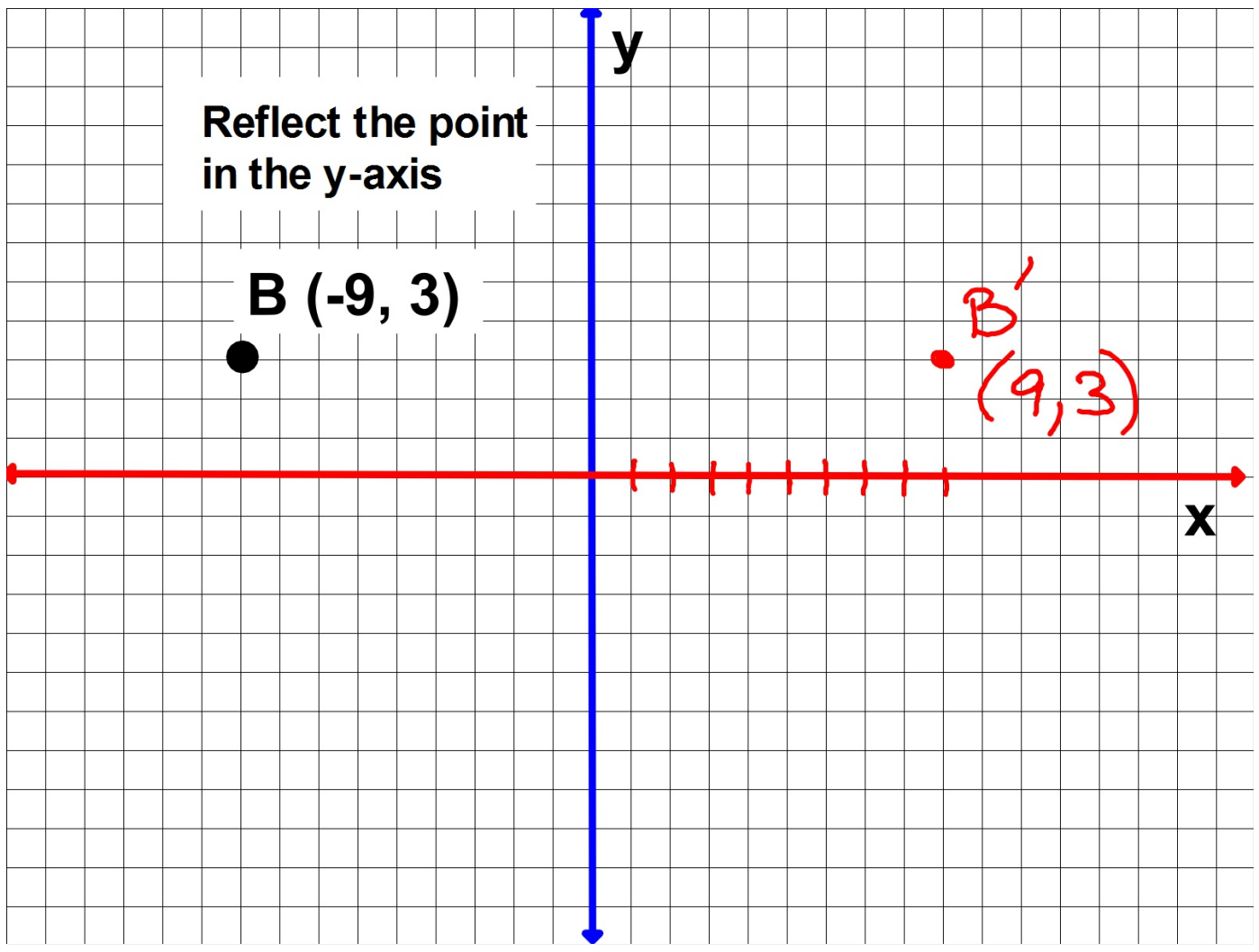
$$C(6, 3) \longrightarrow C'(6, -3)$$

Rule
 $(x, -y)$



Reflect the point
in the y-axis

B (-9, 3)



A coordinate plane with a grid. The x-axis is a red horizontal line with an arrow at the right end, labeled 'x'. The y-axis is a blue vertical line with an arrow at the top end, labeled 'y'. The origin is at the center. Point B is a black dot at the coordinates (-9, 3). Point B' is a red dot at the coordinates (9, 3). The text 'B (-9, 3)' is written in black next to point B. The text 'B' (9, 3)' is written in red next to point B'. The instruction 'Reflect the point in the y-axis' is written in black in the upper left quadrant. There are tick marks on the x-axis between the origin and point B'.

B' (9, 3)

Reflections in the Coordinate Plane

Change Coordinate Points

To **reflect a figure in the y-axis**, take the opposite of the x-coordinate

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

$(-9, 3)$	\longrightarrow	$(9, 3)$
$(4, -8)$	\longrightarrow	$(-4, -8)$
$(-1, -6)$	\longrightarrow	$(1, -6)$

The vertices of a quadrilateral are $P(-2, 5)$, $Q(-1, -1)$, $R(-4, 2)$, and $S(-4, 4)$. Draw the figure and its reflection in the y -axis.

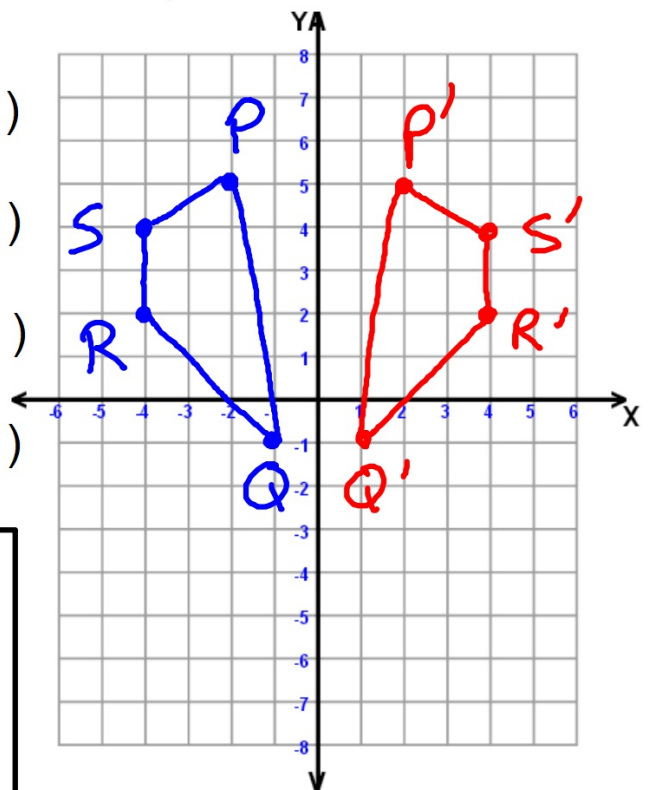
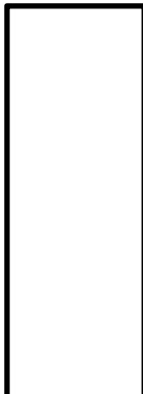
$$P(-2, 5) \longrightarrow P'(2, 5)$$

$$Q(-1, -1) \longrightarrow Q'(1, -1)$$

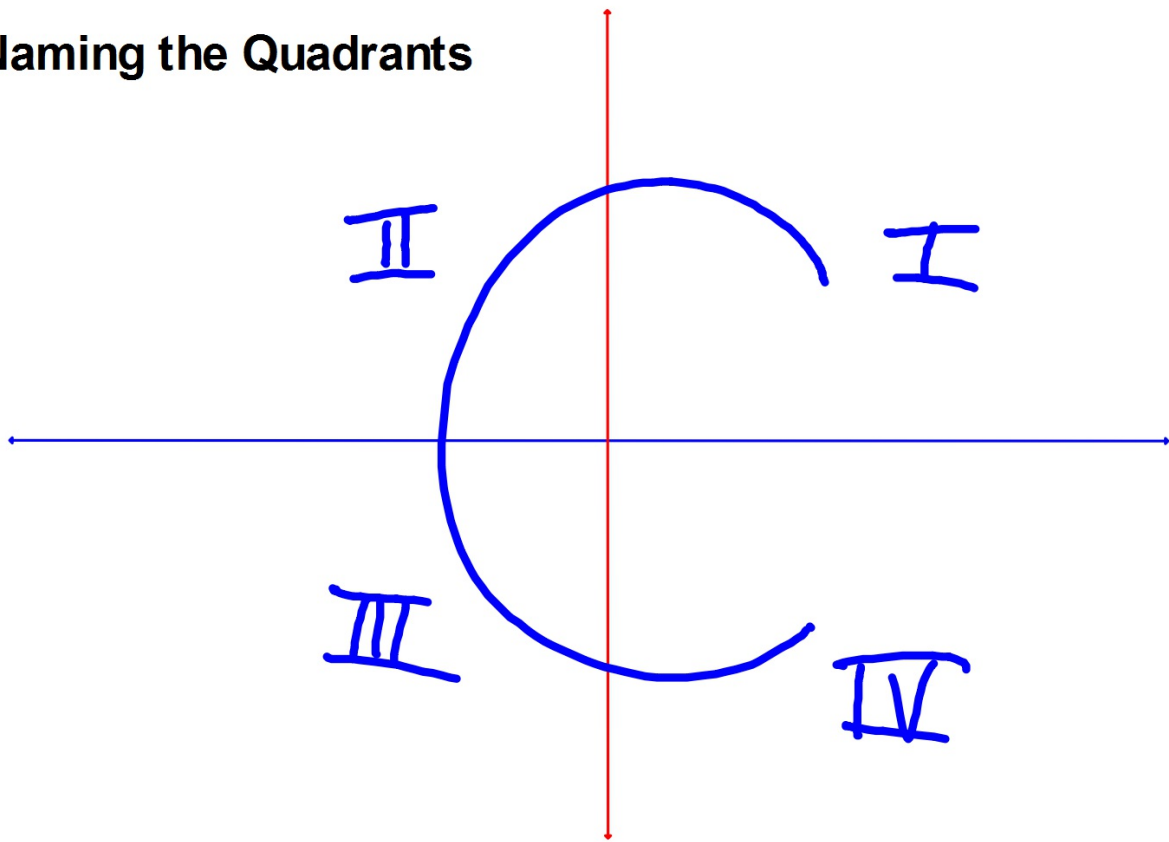
$$R(-4, 2) \longrightarrow R'(4, 2)$$

$$S(-4, 4) \longrightarrow S'(4, 4)$$

$$(-x, y)$$



Naming the Quadrants



Multiple Transformations

Translate the figure 7 units left and 5 units down.
Then **reflect** it in the y-axis.

Rule $(x-7, y-5)$

$$D(2, 3) \longrightarrow D'(-5, -2)$$

$$E(5, -1) \longrightarrow E'(-2, -6)$$

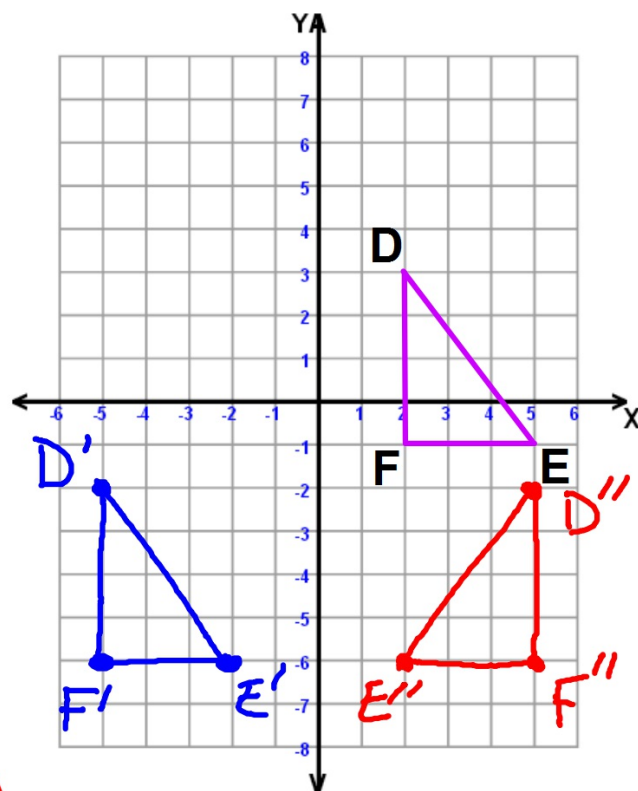
$$F(2, -1) \longrightarrow F'(-5, -6)$$

Rule $(-x, y)$

$$D'(-5, -2) \longrightarrow D''(5, -2)$$

$$E'(-2, -6) \longrightarrow E''(2, -6)$$

$$F'(-5, -6) \longrightarrow F''(5, -6)$$



Homework
pg. 58 #1, 3,
4-24 evens