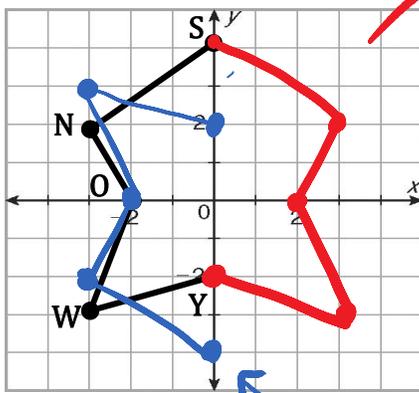


SECTION 9.1 NOTES - REFLECTIONS

Target 9.1: Identify and draw reflections.

PART I - WARM-UP: What do you already know?

- With your partner, discuss where you see reflections in the real world. List a few characteristics you think are true about all reflections.
 - preserves \times measures of side lengths
 - seg. that connect preimage & image pts are all parallel to one another
 - Flip/mirror image
 - line of reflection is \perp bisector of the segment that connects preimage/image pts.
 - reflections preserve size & shape of figure
- Draw what you think the reflection of the figure below should be. Add to your list of characteristics in problem #1.

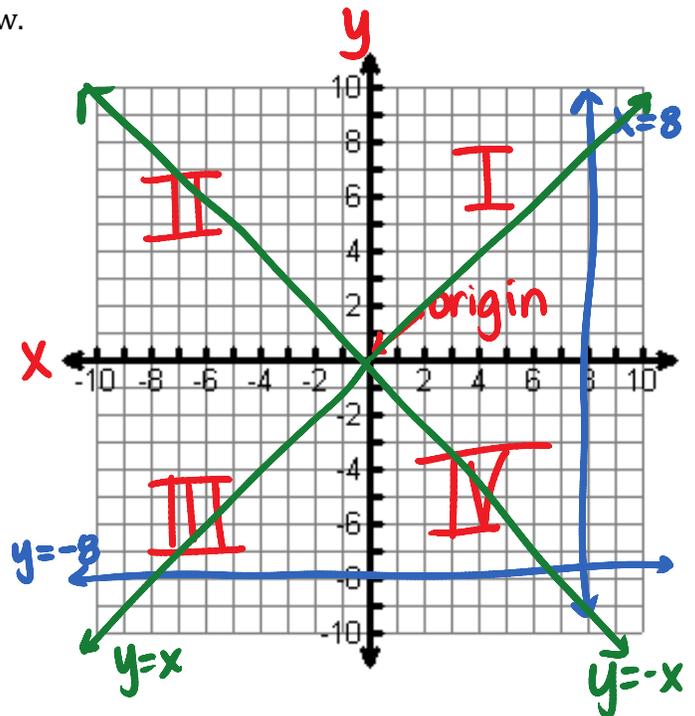


Reflect over y-axis

Reflect over x-axis

- Label the following on the coordinate plane below.

- x-axis
- y-axis
- the origin
- Quadrants I, II, III, IV
- Graph and label the line $x = 8$.
- Graph and label the line $y = -8$.
- Graph and label the line $y = x$.
- Graph and label the line $y = -x$.

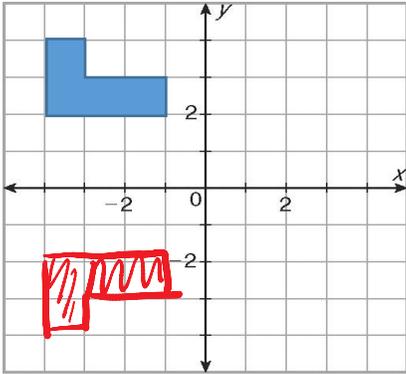


PART II - REFLECTIONS: With a partner, reflect the shape over the given line.

1) Reflect over x-axis

Function Notation:

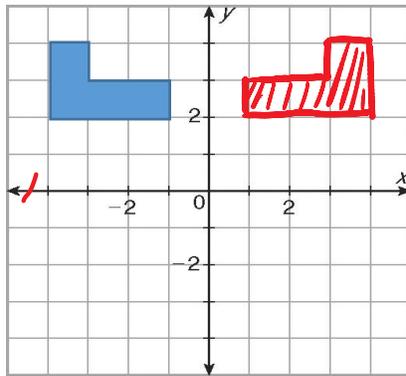
$$R(x,y) = (x,-y)$$



2) Reflect over y-axis

Function Notation:

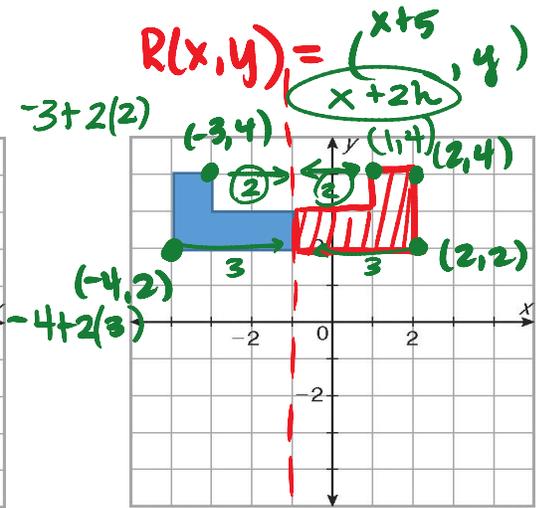
$$R(x,y) = (-x,y)$$



3) Reflect over $x = -1$

Function Notation:

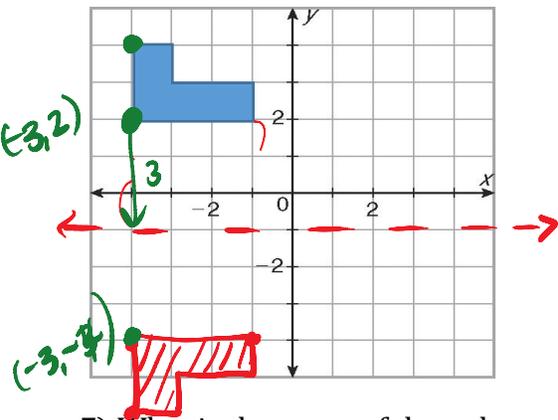
$$R(x,y) = (x+2h, y)$$



4) Reflect over $y = -1$

Function Notation:

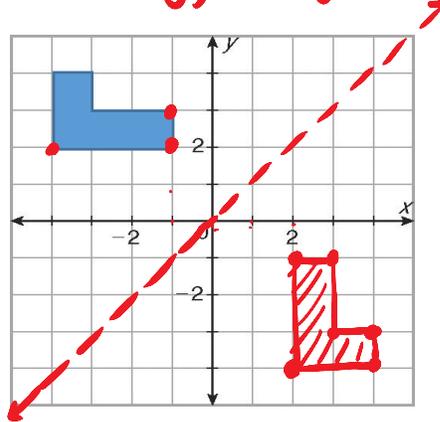
$$(x, y - 2k)$$



5) Reflect over $y = x$

Function Notation:

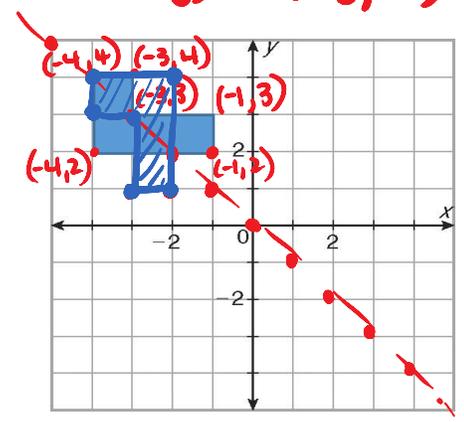
$$R(x,y) \rightarrow (y,x)$$



6) Reflect over $y = -x$

Function Notation:

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

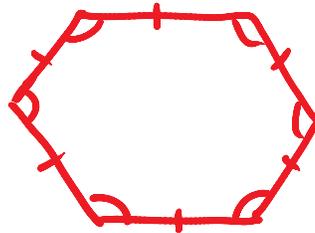


7) What is the name of the polygon you reflected? Is the figure regular/irregular? Convex/concave? (6.1.a)

Hexagon ; irregular ; concave

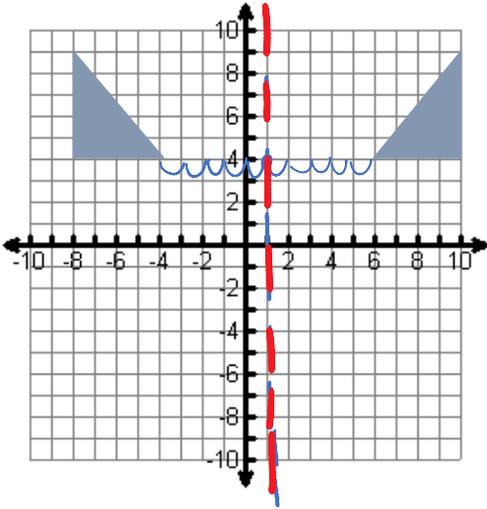
8) Draw a picture of a regular convex hexagon. What is the measure of each interior angle of a regular convex hexagon? Each exterior angle? (6.1.b)

$$\begin{aligned} \textcircled{1} S_I &= (n-2)180 \\ &= (6-2)180 \\ S_I &= 4(180) \\ S_I &= 720^\circ \end{aligned} \quad \begin{aligned} \textcircled{2} \text{Int} \angle &= \frac{720}{6} \\ \text{Int} \angle &= 120^\circ \\ \text{Ext} \angle &= 180 - 120 \\ \text{Ext} \angle &= 60^\circ \end{aligned}$$

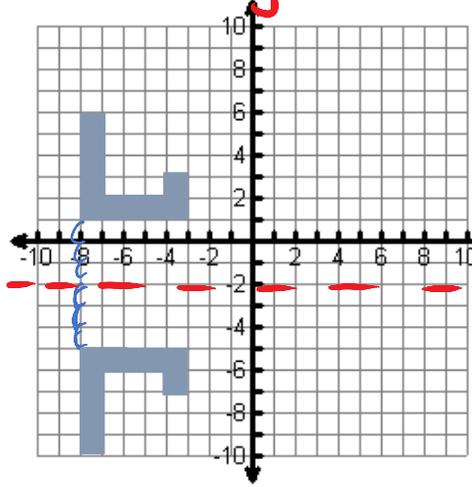


Part III - Write Equations: Given the pre-image and the image, write the equation of the line of reflection.

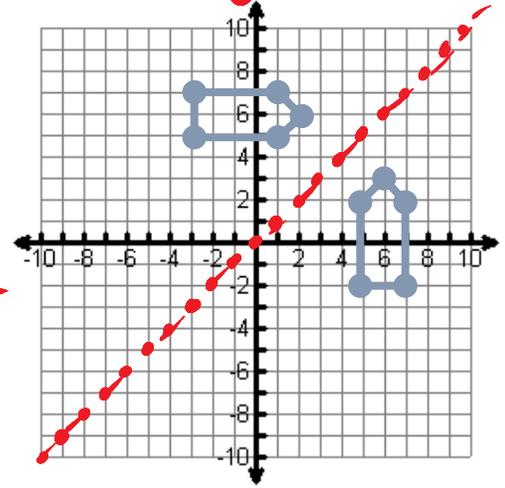
9) Equation: $x=1$



10) Equation: $y=-2$

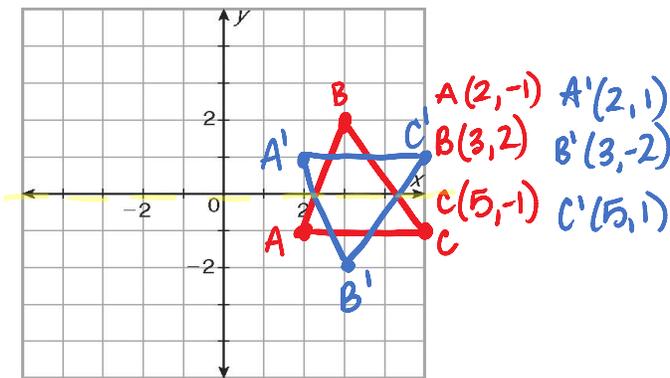


11) Equation: $y=x$

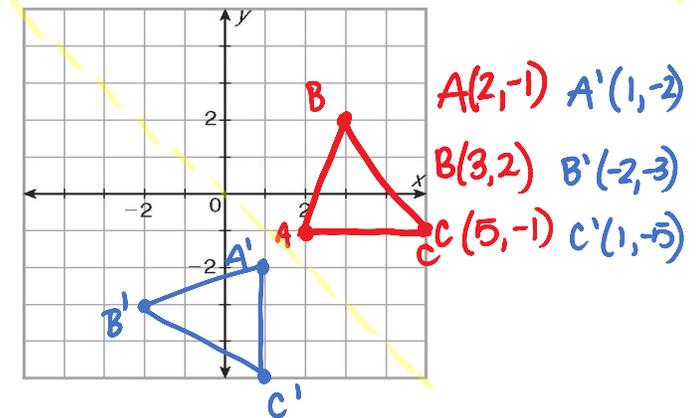


Part IV - Use function notation: Use the given function to transform triangle ABC. Then describe the transformation in words.

12) $R(x, y) = (x, -y)$



13) $R(x, y) = (-y, -x)$



Transformation: Reflected over x-axis

Transformation: Reflected over $y=-x$

Part V - Take it up a notch!

14) Use the figure at right and $P(x, y) = (x, -y + 2)$.

A) Draw the image of $\triangle ABC$ under this transformation. Write the coordinates of A' , B' , and C' .

$A'(4, 1)$ $B'(5, 4)$ $C'(-6, 2)$

B) Draw the line of reflection. Then write an equation for it.

$y=1$

