

Name: _____ # _____

Geometry: Period _____

Ms. Pierre

Date: _____

Reflections

Today's Objective

KWBAT understand how reflection changes the orientation of a figure and that a reflection can be represented as a function of coordinate pairs.

A **reflection** is a transformation that flips a figure across a line called a _____.

When a point is reflected across the y-axis, the sign of its _____ changes.

The function for a reflection across the y-axis is

$$R_{y\text{-axis}}(x, y) = \underline{\hspace{2cm}}$$

When a point is reflected across the x-axis, the sign of its _____ changes.

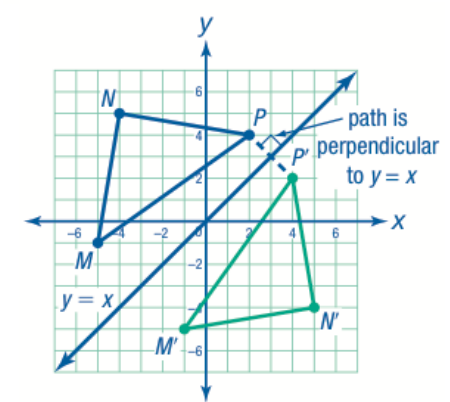
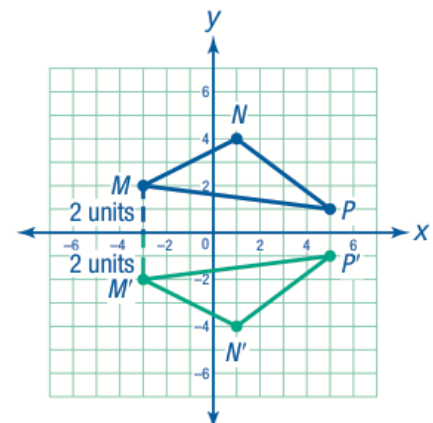
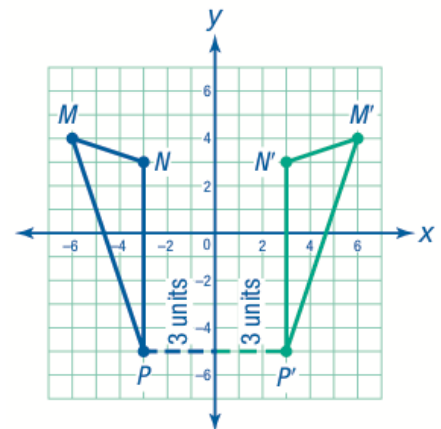
The function for a reflection across the x-axis is

$$R_{x\text{-axis}}(x, y) = \underline{\hspace{2cm}}$$

Another common line of reflection is the diagonal line $y = x$. To reflect over this line, _____ the x- and y-coordinates.

The function for a reflection across line $y = x$ is

$$R_{y=x}(x, y) = \underline{\hspace{2cm}}$$



Example 1

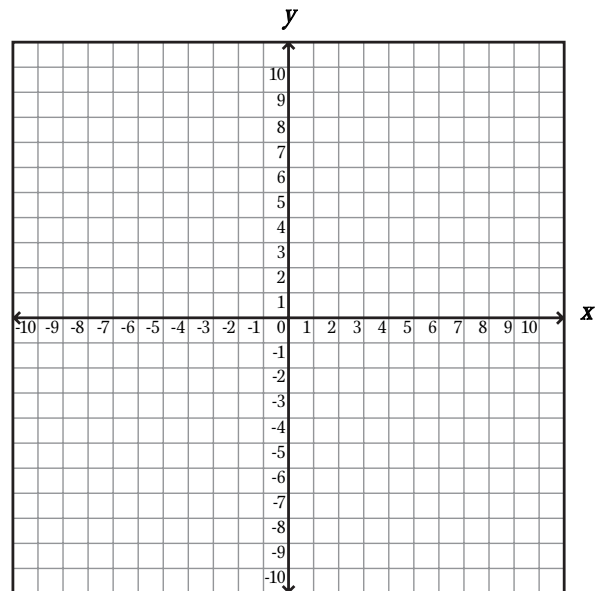
Reflect the figure with the given vertices across the given line.

a. Reflect over the y-axis

$X (2, -1)$,

$Y (-4, -3)$,

$Z (3, 2)$



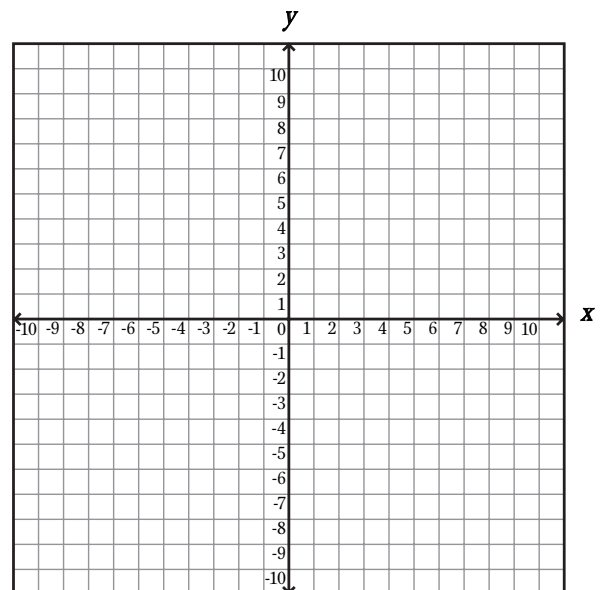
b. Reflect over the x-axis

$S (3, 4)$,

$T (3, 1)$,

$U (-2, 1)$

$V (-2, 4)$

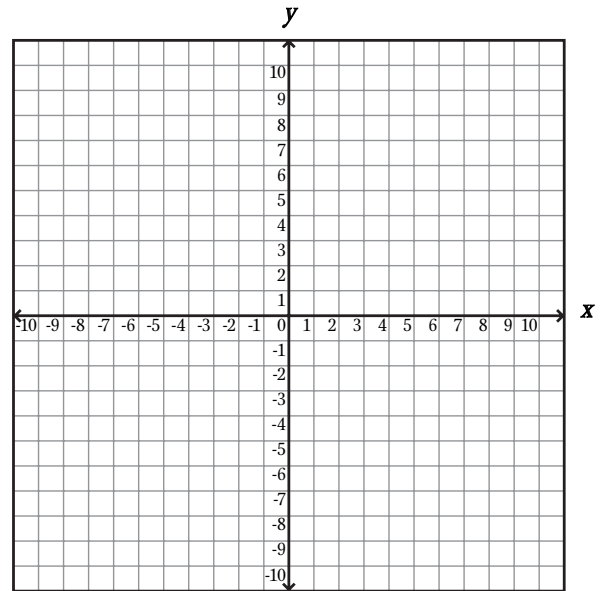


c. Reflect over the line $y = x$

$R (-2, 2)$,

$S (5, 0)$,

$T (3, -1)$



☑ Check for Understanding

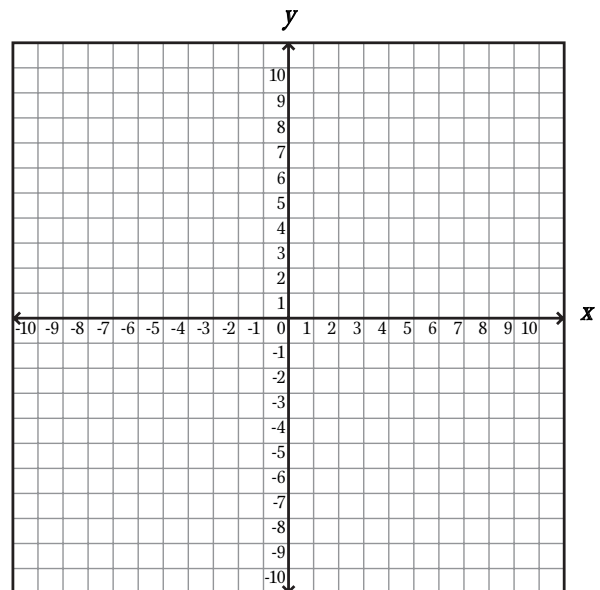
Reflect the figure with the given vertices across the given line.

a. Reflect over the y-axis

$A (-6, -1)$,

$B (-2, -1)$,

$C (-2, -4)$

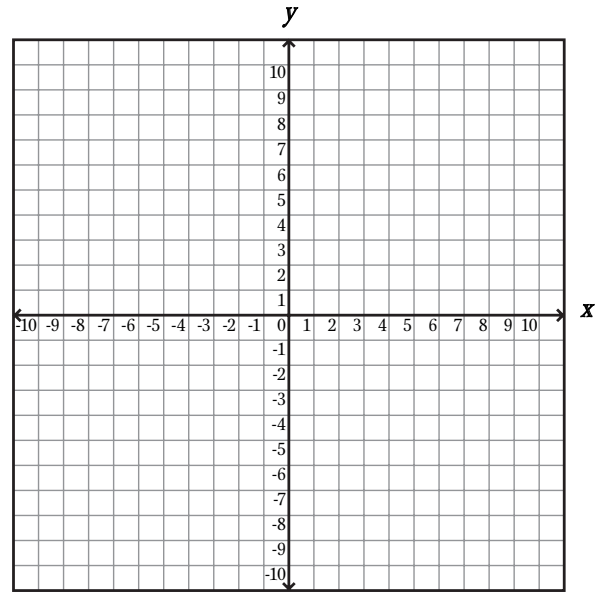


b. Reflect over the x-axis

$A (1, 2)$,

$B (3, 6)$,

$C (5, 4)$



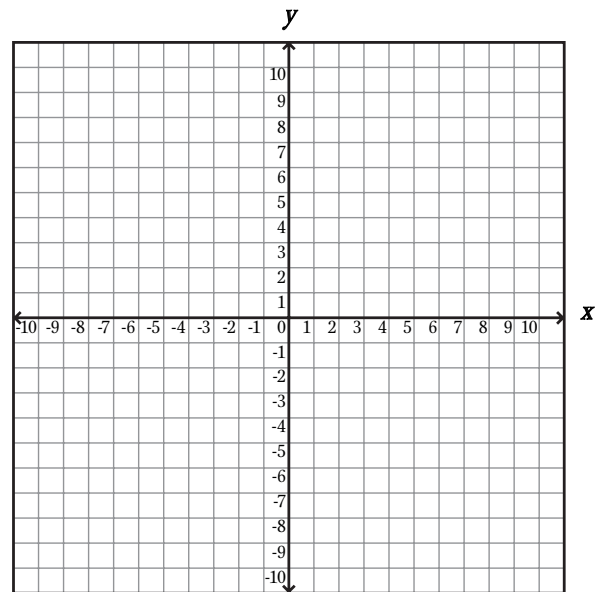
c. Reflect over the line $y = x$

$J (-4, 3)$,

$K (0, 4)$,

$L (2, 2)$

$M (-1, 1)$



Example 2

Reflect the figure with the given vertices across the given line.

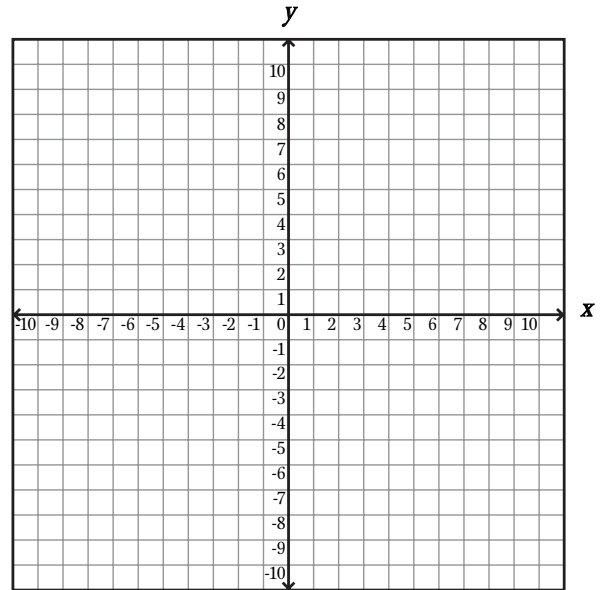
a. Reflect over the $y = -1$

$A (-1, -1)$,

$B (-5, 1)$,

$C (-4, 2)$,

$D (-2, 2)$

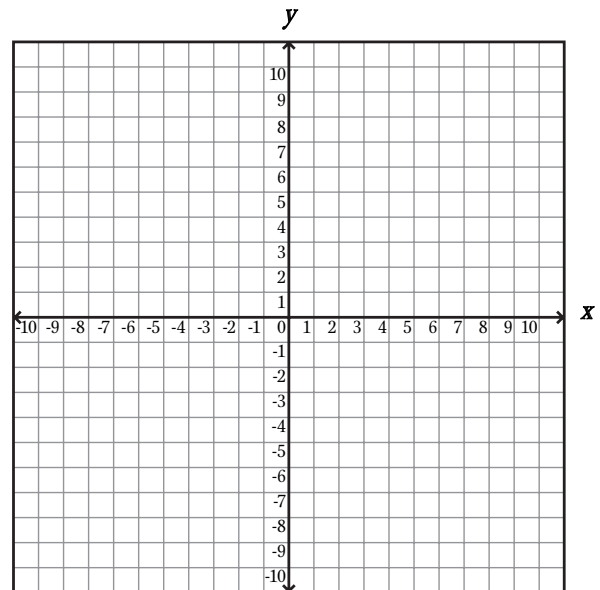


b. Reflect over the $x = 2$

$P (4, 2)$,

$Q (3, 0)$,

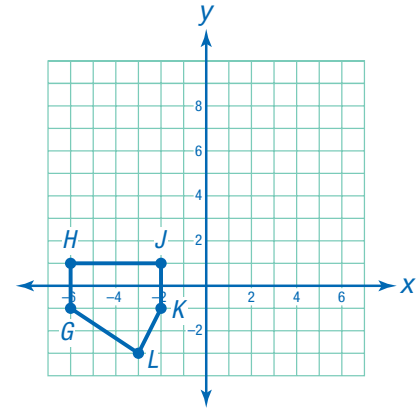
$R (5, -5)$



☑ Check for Understanding

Reflect the figure with the given vertices across the given line.

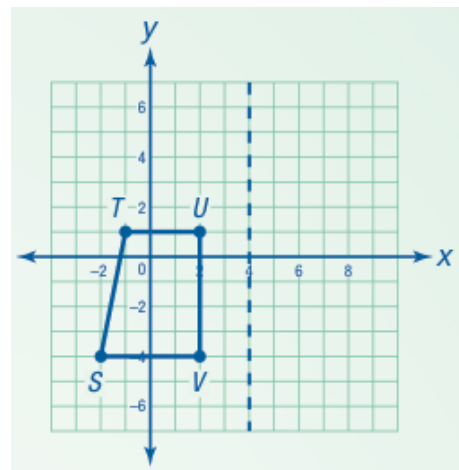
a. Reflect pentagon GHJKL over the $y = 3$



$G'(\underline{\quad}, \underline{\quad}) H'(\underline{\quad}, \underline{\quad}) J'(\underline{\quad}, \underline{\quad})$

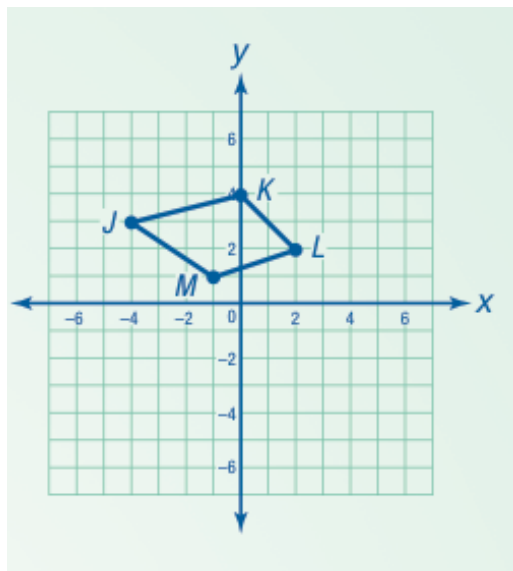
$K'(\underline{\quad}, \underline{\quad}) L'(\underline{\quad}, \underline{\quad})$

b. Trapezoid STUV is graphed on the right. Reflect this trapezoid over the line $x = 4$.

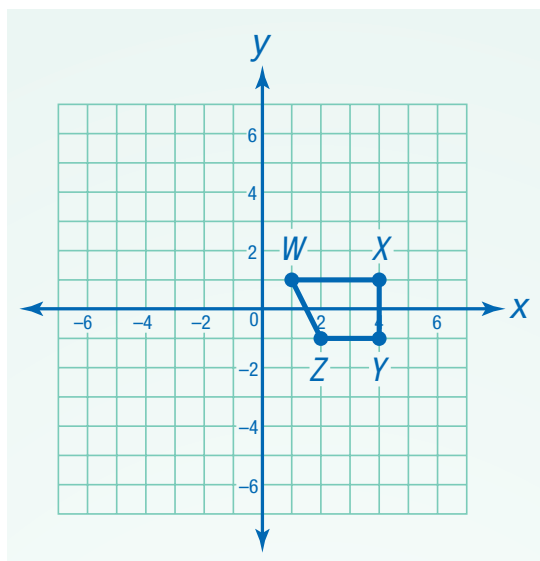


Independent Practice

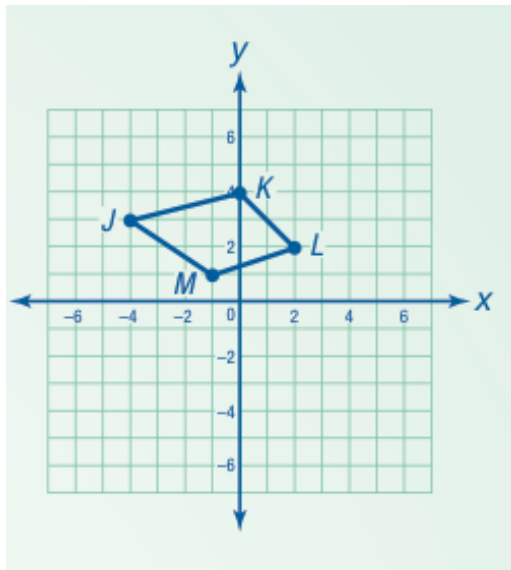
1.) Reflect quadrilateral $JKLM$ across the x -axis.



2.) Reflect trapezoid $WXYZ$ across the y -axis.

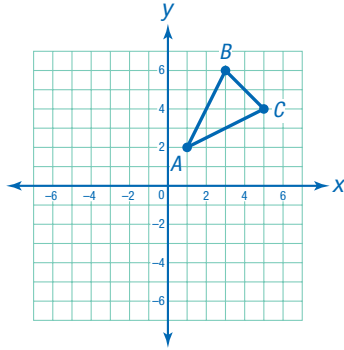


3.) Quadrilateral JKLM is graphed on the right.
Reflect this quadrilateral over the line $y = -2$.



 **Homework**

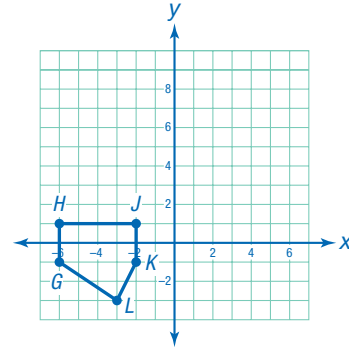
1. Reflect $\triangle ABC$ across the x -axis.



$A'(\underline{\quad}, \underline{\quad})$ $B'(\underline{\quad}, \underline{\quad})$ $C'(\underline{\quad}, \underline{\quad})$

REMEMBER When a point is reflected across the x -axis, the sign of its y -coordinate changes.

2. Reflect pentagon $GHJKL$ across the line $y = 3$.

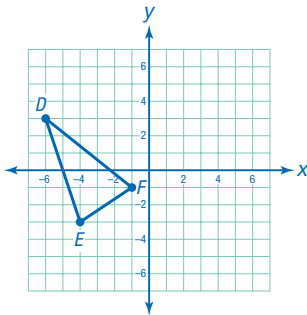


$G'(\underline{\quad}, \underline{\quad})$ $H'(\underline{\quad}, \underline{\quad})$ $J'(\underline{\quad}, \underline{\quad})$

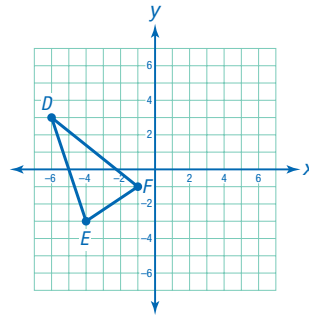
$K'(\underline{\quad}, \underline{\quad})$ $L'(\underline{\quad}, \underline{\quad})$

Use the given function to transform $\triangle DEF$. Then describe the transformation in words.

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



4. $R(x, y) = (y, x)$



Identify the coordinates of the image for each reflection as described.

5. Reflect $M(3, 4)$ across the x -axis.

$M'(\underline{\quad}, \underline{\quad})$

6. Reflect $N(-2, -8)$ across the y -axis.

$N'(\underline{\quad}, \underline{\quad})$