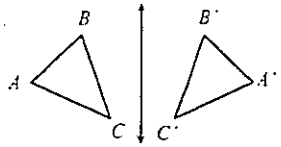
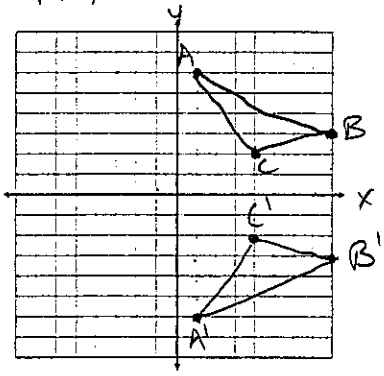
Name: Key	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
Transformation	• A transformation is an operation that **maps an original figure** called the preimage onto a **new figure** called the image. • A transformation can change the size, shape, or position of a figure. • There are **four types of transformations:** translation, reflection, rotation, and dilation.
Reflections 	• A flip over a line called the line of symmetry. • Each point and its image are the same distance from the line of reflection. • The x-axis and y-axis are common lines of reflection. • Reflections result in mirror images.

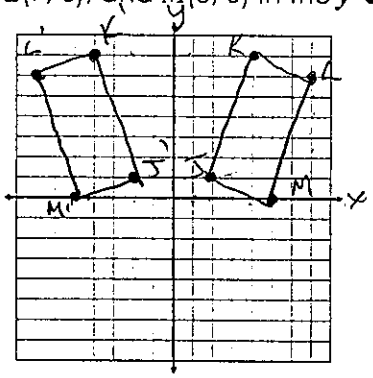
Practice! Graph and label each figure and its image under the given reflection. Give the new coordinates.

1. Triangle ABC with vertices $A(1, 6)$, $B(8, 3)$, and $C(4, 2)$ in the **x-axis**.



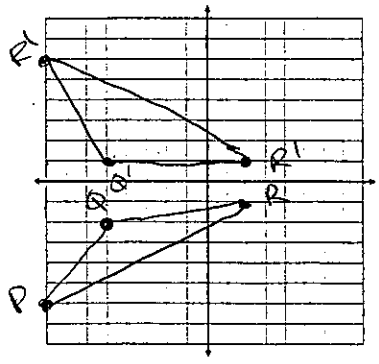
$A'(1, -6)$
$B'(8, -3)$
$C'(4, -2)$

2. Rectangle $JKLM$ with vertices $J(2, 1)$, $K(4, 7)$, $L(7, 6)$, and $M(5, 0)$ in the **y-axis**.



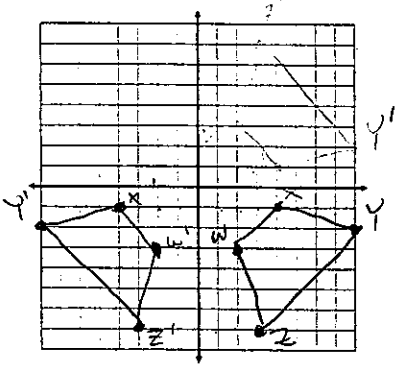
$J'(-2, 1)$
$K'(-4, 7)$
$L'(-7, 6)$
$M'(-5, 0)$

3. Triangle PQR with vertices $P(-8, -6)$, $Q(-5, -2)$, and $R(2, -1)$ in the **x-axis**.



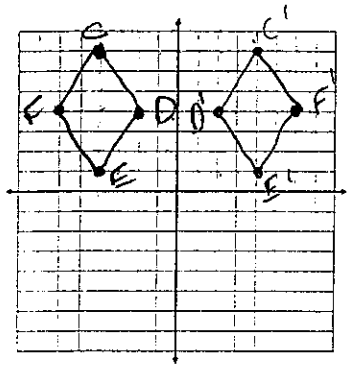
$P'(-8, 6)$
$Q'(-5, 2)$
$R'(2, 1)$

4. Trapezoid $WXYZ$ with vertices $W(2, -3)$, $X(4, -1)$, $Y(8, -2)$, and $Z(3, -7)$ in the **y-axis**.



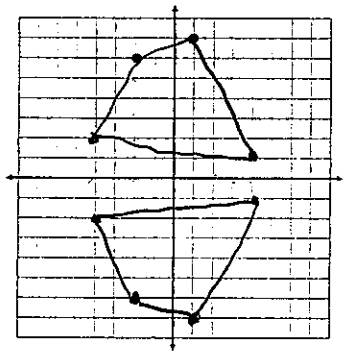
$W'(-2, -3)$
$X'(-4, -1)$
$Y'(-8, -2)$
$Z'(-3, -7)$

5. Rhombus $CDEF$ with vertices $C(-4, 7)$, $D(-2, 4)$, $E(-4, 1)$, and $F(-6, 4)$ in the **y-axis.**



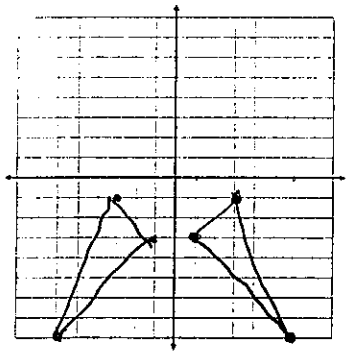
$C'(4, 7)$
$D'(2, 4)$
$E'(4, 1)$
$F'(6, 4)$

6. Quadrilateral $STUV$ with vertices $S(-4, 2)$, $T(-2, 6)$, $U(1, 7)$, and $V(4, 1)$ in the **x-axis.**



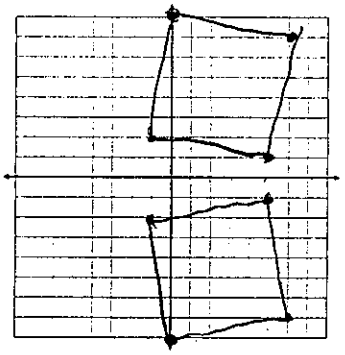
$S'(-4, -2)$
$T'(-2, -6)$
$U'(1, -7)$
$V'(4, -1)$

7. Triangle MNP with vertices $M(3, -1)$, $N(6, -8)$, and $P(1, -3)$ in the **y-axis.**



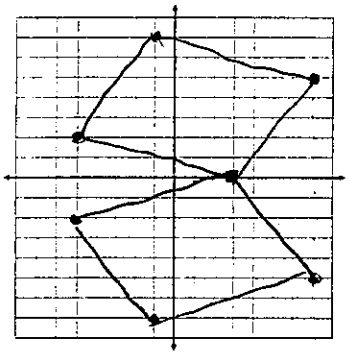
$M'(-3, -1)$
$N'(-6, -8)$
$P'(-1, -3)$

8. Square $FGHI$ with vertices $F(-1, -2)$, $G(5, -1)$, $H(6, -7)$, and $I(0, -8)$ in the **x-axis.**



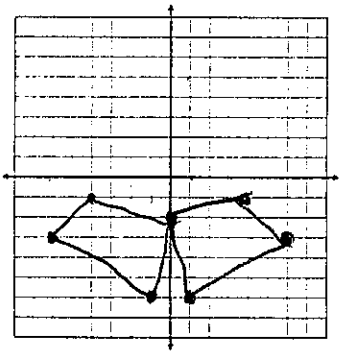
$F'(-1, 2)$
$G'(5, 1)$
$H'(6, 7)$
$I'(0, 8)$

9. Parallelogram $VWXY$ with vertices $V(-5, 2)$, $W(-1, 7)$, $X(7, 5)$, and $Y(3, 0)$ in the **x-axis.**



$V'(-5, -2)$
$W'(-1, -7)$
$X'(7, -5)$
$Y'(3, 0)$

10. Quadrilateral $ABCD$ with vertices $A(-4, -1)$, $B(0, -2)$, $C(-1, -6)$, and $(-6, -3)$ in the **y-axis.**



$A'(4, -1)$
$B'(0, -2)$
$C'(1, -6)$
$D'(6, -3)$

RULE

Look for a pattern in the reflections to create general rules:

$r_{x\text{-axis}}(x, y) \rightarrow (x, -y)$

$r_{y\text{-axis}}(x, y) \rightarrow (-x, y)$

11. ΔLMN with vertices $L(-8, -2)$, $M(-3, -1)$, and $N(-1, -8)$ undergoes a reflection with new coordinates $L'(8, -2)$, $M'(3, -1)$, and $N'(1, -8)$. Name the line of reflection.

Ry-axis

12. Which pair of points represents a reflection across the **x-axis**?

A. $A(-7, 2)$ and $A'(7, 2)$ **C.** $C(4, -5)$ and $C'(-4, 5)$

B. $B(0, 3)$ and $B'(-3, 0)$ **D.** $D(1, -8)$ and $D'(1, 8)$