

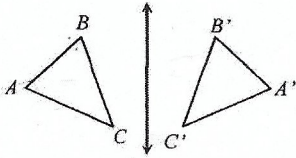
Name: _____

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Main Ideas/Questions

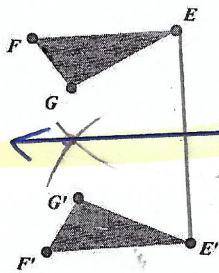
Notes

Reflection



- A Flip over a line called the line of reflection.
- The line of reflection is the perpendicular bisector of any segment whose endpoints are a preimage point and its corresponding image point.
- Possible lines of reflection:
 - ✓ X-axis or y-axis
 - ✓ Vertical or horizontal lines in the form $x = \#$ or $y = \#$
 - ✓ Diagonal lines in the form $y = x$ or $y = -x$

Construct the line of reflection below:



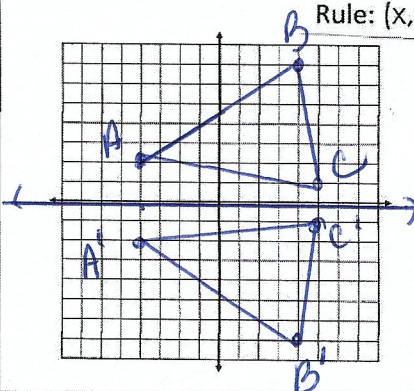
Rules for most common reflections on a coordinate plane:

- Over the x-axis: $(x, y) \rightarrow (x, -y)$
- Over the y-axis: $(x, y) \rightarrow (-x, y)$
- Over the line $y = x$: $(x, y) \rightarrow (y, x)$
- Over the line $y = -x$: $(x, y) \rightarrow (-y, -x)$

Practical: Graph and label each figure and its image under the given reflection. Give the new coordinates.

1. Triangle ABC with vertices $A(-4, 2)$, $B(4, 7)$, and $C(5, 1)$ in the x-axis.

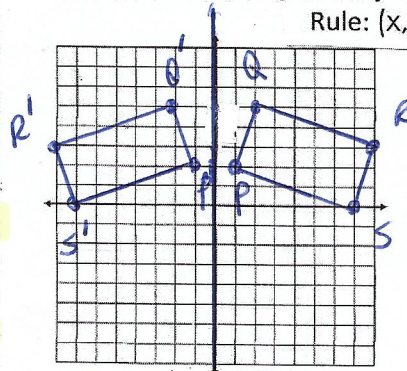
Rule: $(x, y) \rightarrow (x, -y)$



- $A'(-4, -2)$
- $B'(4, -7)$
- $C'(5, -1)$

2. Rectangle PQRS with vertices $P(1, 2)$, $Q(2, 5)$, $R(8, 3)$, and $S(7, 0)$ in the y-axis.

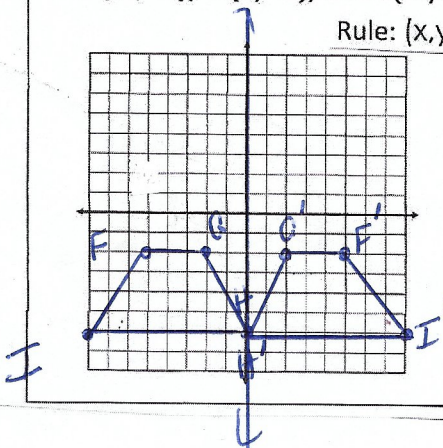
Rule: $(x, y) \rightarrow (-x, y)$



- $P'(-1, 2)$
- $Q'(-2, 5)$
- $R'(-8, 3)$
- $S'(-7, 0)$

3. Trapezoid FGHI with vertices $F(-5, -2)$, $G(-2, -2)$, $H(0, -6)$, and $I(-8, -6)$ in the y-axis.

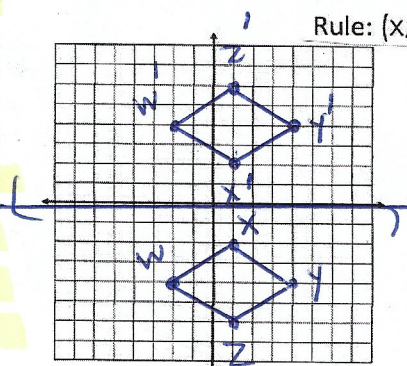
Rule: $(x, y) \rightarrow (-x, y)$



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

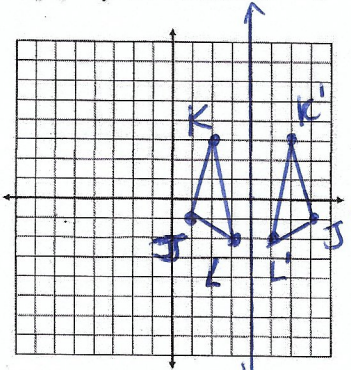
4. Rhombus WXYZ with vertices $W(-2, -4)$, $X(1, -2)$, $Y(4, -4)$, and $Z(1, -6)$ in the x-axis.

Rule: $(x, y) \rightarrow (x, -y)$



- $W'(-2, 4)$
- $X'(1, 2)$
- $Y'(4, 4)$
- $Z'(1, 6)$

5. Triangle JKL with vertices $J(1, -1)$, $K(2, 3)$, and $L(3, -2)$ in the line $x = 4$.

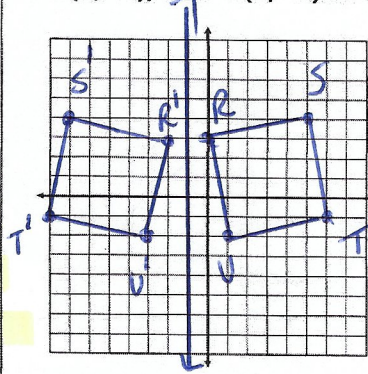


$$J'(\underline{7}, \underline{-1})$$

$$K'(\underline{6}, \underline{3})$$

$$L'(\underline{5}, \underline{-2})$$

6. Square $RSTU$ with vertices $R(0, 3)$, $S(5, 4)$, $T(6, -1)$, and $U(1, -2)$ in the line $x = -1$.



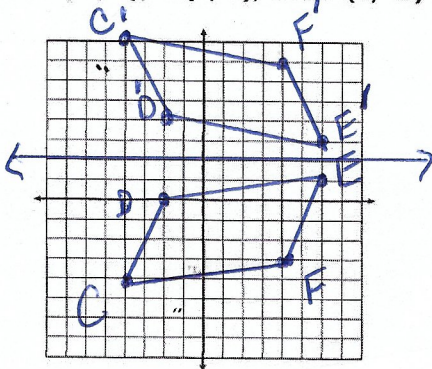
$$R'(\underline{-2}, \underline{3})$$

$$S'(\underline{-7}, \underline{4})$$

$$T'(\underline{-8}, \underline{-1})$$

$$U'(\underline{-3}, \underline{-2})$$

7. Parallelogram $CDEF$ with vertices $C(-4, -4)$, $D(-2, 0)$, $E(6, 1)$, and $F(4, -3)$ in the line $y = 2$.



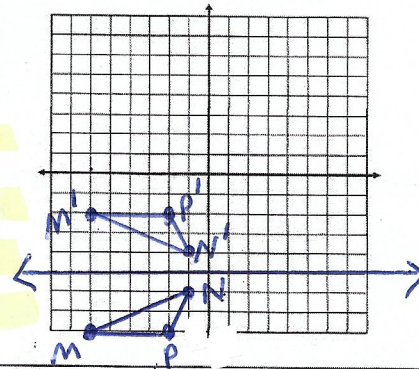
$$C'(\underline{-4}, \underline{8})$$

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

$$E'(\underline{6}, \underline{3})$$

$$F'(\underline{4}, \underline{7})$$

8. Triangle MNP with vertices $M(-6, -8)$, $N(-1, -6)$, and $P(-2, -8)$ in the line $y = -5$.



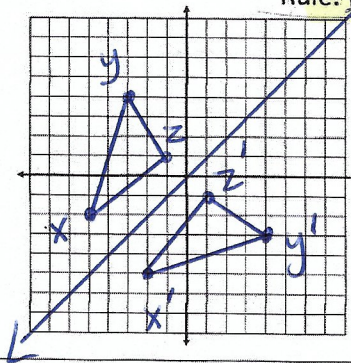
$$M'(\underline{-6}, \underline{-2})$$

$$N'(\underline{-1}, \underline{-4})$$

$$P'(\underline{-2}, \underline{-2})$$

9. Triangle XYZ with vertices $X(-5, -2)$, $Y(-3, 4)$, and $Z(-1, 1)$ in the line $y = x$.

Rule: $(x, y) \rightarrow (\underline{y}, \underline{x})$



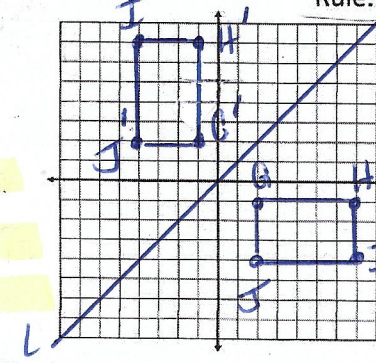
$$X'(\underline{-2}, \underline{-5})$$

$$Y'(\underline{4}, \underline{-3})$$

$$Z'(\underline{1}, \underline{-1})$$

10. Rectangle $GHIJ$ with vertices $G(2, -1)$, $H(7, -1)$, $I(7, -4)$, and $J(2, -4)$ in the line $y = x$.

Rule: $(x, y) \rightarrow (\underline{y}, \underline{x})$



$$G'(\underline{-1}, \underline{2})$$

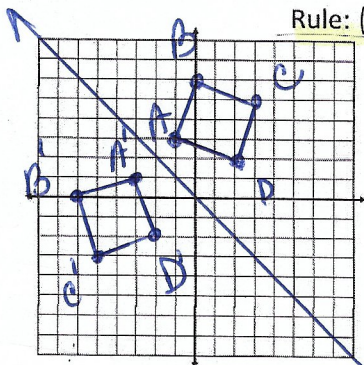
$$H'(\underline{-1}, \underline{7})$$

$$I'(\underline{-4}, \underline{7})$$

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

11. Square $ABCD$ with vertices $A(-1, 3)$, $B(0, 6)$, $C(3, 5)$, and $D(2, 2)$ in the line $y = -x$.

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



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

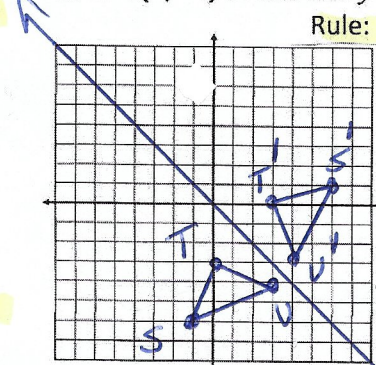
$$B'(\underline{-6}, \underline{0})$$

$$C'(\underline{-5}, \underline{-3})$$

$$D'(\underline{-2}, \underline{-2})$$

12. Triangle STU with vertices $S(-1, -6)$, $T(0, -3)$, and $U(3, -4)$ in the line $y = -x$.

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



$$S'(\underline{6}, \underline{1})$$

$$T'(\underline{3}, \underline{0})$$

$$U'(\underline{4}, \underline{-3})$$