

Name: Key

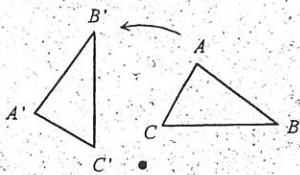
Date:

Topic:

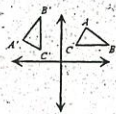
Class:

Main Ideas/Questions

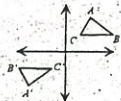
Notes/Examples

ROTATION

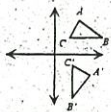
- A ~~turn~~ ^{turn or pivot} around a fixed point called the **center of rotation**.
- The figure rotates at a specific angle and direction.
- Rotations result in congruent polygons.

Rules for rotating COUNTERCLOCKWISE about the ORIGIN**90°**

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

180°

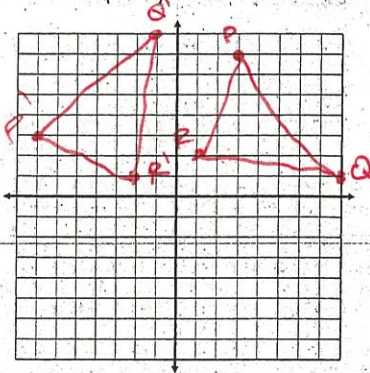
$$(x, y) \rightarrow (-x, -y)$$

270°

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

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

1. Triangle PQR with vertices $P(3, 7)$, $Q(8, 1)$, and $R(1, 2)$: **90° counterclockwise**

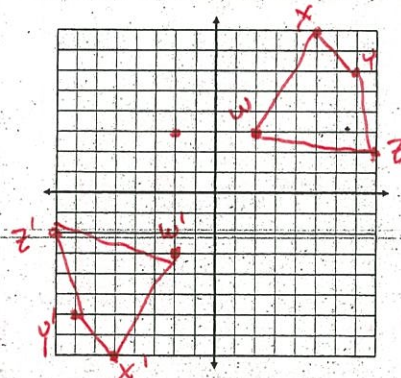


$$P'(-7, 3)$$

$$Q'(-1, 8)$$

$$R'(-2, 1)$$

2. Quadrilateral $WXYZ$ with vertices $W(2, 3)$, $X(5, 8)$, $Y(7, 6)$, and $Z(8, 2)$: **180°**



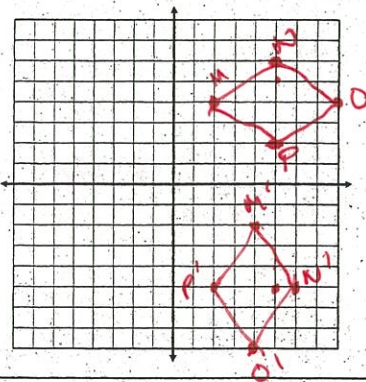
$$W'(-2, -3)$$

$$X'(-5, -8)$$

$$Y'(-7, -6)$$

$$Z'(-8, -2)$$

3. Rhombus $MNOP$ with vertices $M(2, 4)$, $N(5, 6)$, $O(8, 4)$, and $P(5, 2)$: **270° counterclockwise**



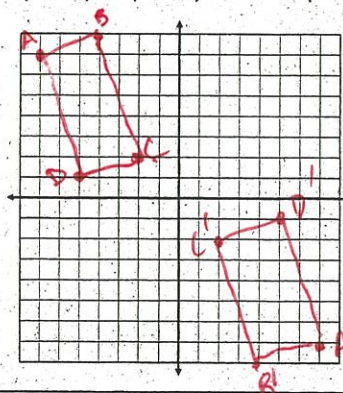
$$M'(4, -2)$$

$$N'(6, -5)$$

$$O'(4, -8)$$

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

4. Rectangle $ABCD$ with vertices $A(-7, 7)$, $B(-4, 8)$, $C(-2, 2)$, and $D(-5, 1)$: **180°**



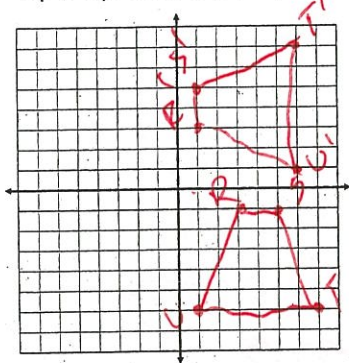
$$A'(7, -7)$$

$$B'(4, -8)$$

$$C'(2, -2)$$

$$D'(5, -1)$$

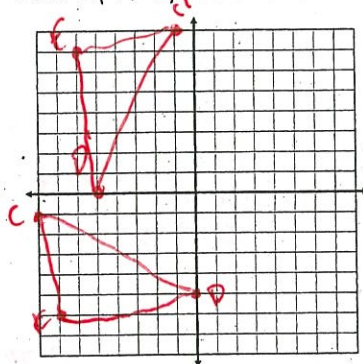
5. Trapezoid $RSTU$ with vertices $R(3, -1)$, $S(5, -1)$, $T(7, -6)$, and $U(1, -6)$: 90° counterclockwise



$(-y, x)$

$R'(\underline{1}, \underline{3})$
 $S'(\underline{1}, \underline{5})$
 $T'(\underline{6}, \underline{7})$
 $U'(\underline{6}, \underline{1})$

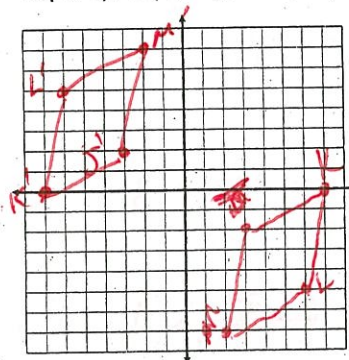
6. Triangle CDE with vertices $C(-8, -1)$, $D(0, -5)$, and $E(-7, -6)$: 270° counterclockwise



$(y, -x)$

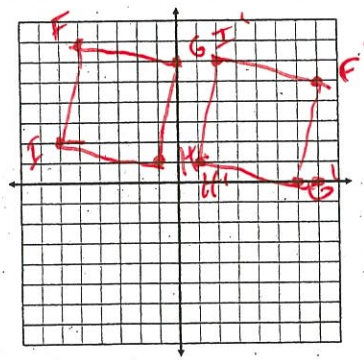
$C'(\underline{-1}, \underline{9})$
 $D'(\underline{-5}, \underline{0})$
 $E'(\underline{-6}, \underline{7})$

7. Parallelogram $JKLM$ with vertices $J(3, -2)$, $K(7, 0)$, $L(6, -5)$, and $M(2, -7)$: 180°



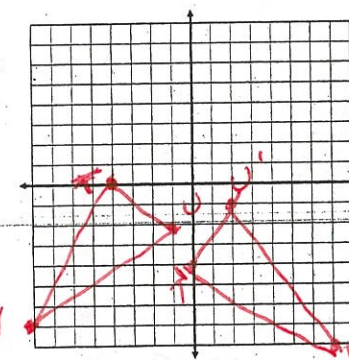
$J'(\underline{-3}, \underline{2})$
 $K'(\underline{-7}, \underline{0})$
 $L'(\underline{-6}, \underline{5})$
 $M'(\underline{-2}, \underline{7})$

8. Square $FGHI$ with vertices $F(-5, 7)$, $G(0, 6)$, $H(-1, 1)$, and $I(-6, 2)$: 270° counterclockwise



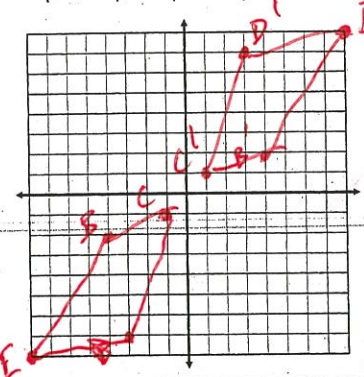
$F'(\underline{7}, \underline{9})$
 $G'(\underline{6}, \underline{0})$
 $H'(\underline{1}, \underline{1})$
 $I'(\underline{7}, \underline{6})$

9. Triangle TUV with vertices $T(-4, 0)$, $U(-1, -2)$, and $V(-8, -7)$: 90° counterclockwise



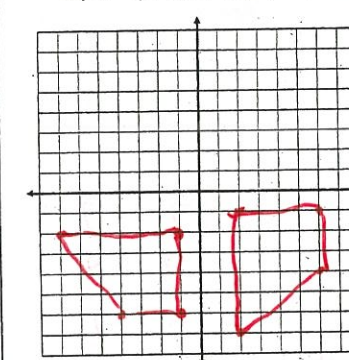
$T'(\underline{0}, \underline{-4})$
 $U'(\underline{2}, \underline{-1})$
 $V'(\underline{7}, \underline{-8})$

10. Quadrilateral $BCDE$ with vertices $B(-4, -2)$, $C(-1, -1)$, $D(-3, -7)$, and $E(-8, -8)$: 180°



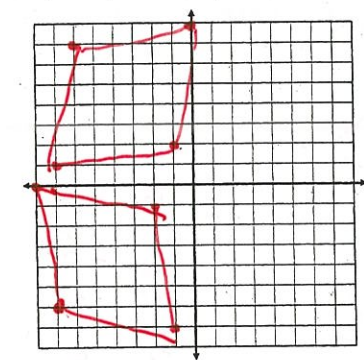
$B'(\underline{4}, \underline{2})$
 $C'(\underline{1}, \underline{1})$
 $D'(\underline{3}, \underline{7})$
 $E'(\underline{8}, \underline{8})$

11. Trapezoid $EFGH$ with vertices $E(2, -1)$, $F(6, -1)$, $G(6, -4)$, and $H(2, -7)$: 270° counterclockwise



$E'(\underline{-1}, \underline{-2})$
 $F'(\underline{-1}, \underline{-6})$
 $G'(\underline{-4}, \underline{-6})$
 $H'(\underline{-1}, \underline{-2})$

12. Rhombus $QRST$ with vertices $Q(-6, 7)$, $R(0, 8)$, $S(-1, 2)$, and $T(-7, 1)$: 90° counterclockwise



$Q'(\underline{-7}, \underline{-6})$
 $R'(\underline{-8}, \underline{0})$
 $S'(\underline{-2}, \underline{-1})$
 $T'(\underline{-1}, \underline{-7})$