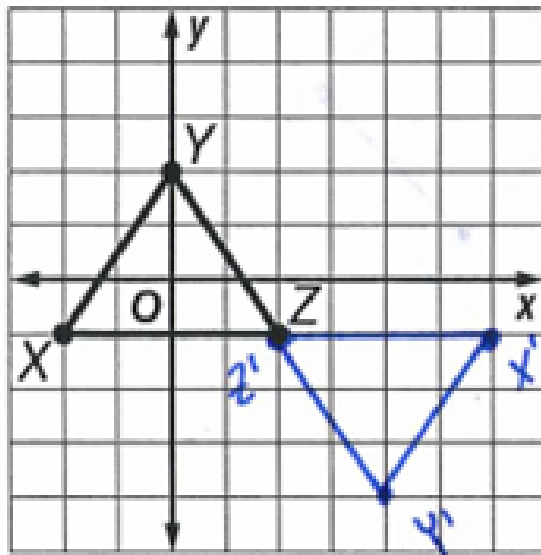


Get out your homework and have it ready to check. Target Check on Friday.

Classwork - Rotations

1) Graph $\triangle XYZ$ and its image after each rotation. Then give the coordinates of the vertices for $\triangle X'Y'Z'$.

A) 180° clockwise about vertex Z

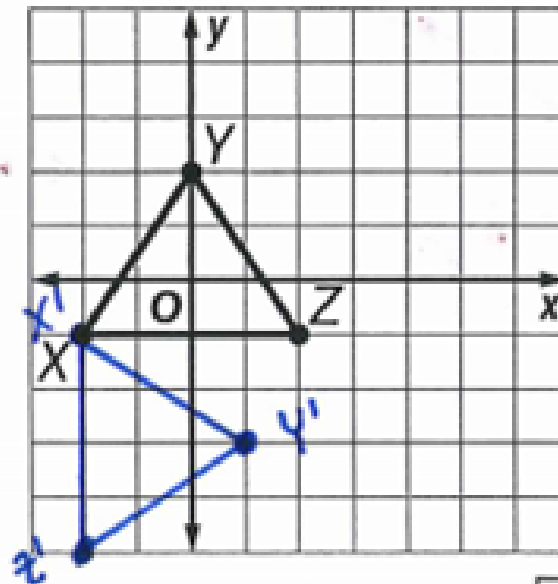


$$X' \rightarrow (6, -1)$$

$$Y' \rightarrow (4, -4)$$

$$Z' \rightarrow (2, -1)$$

B) 90° clockwise about vertex X

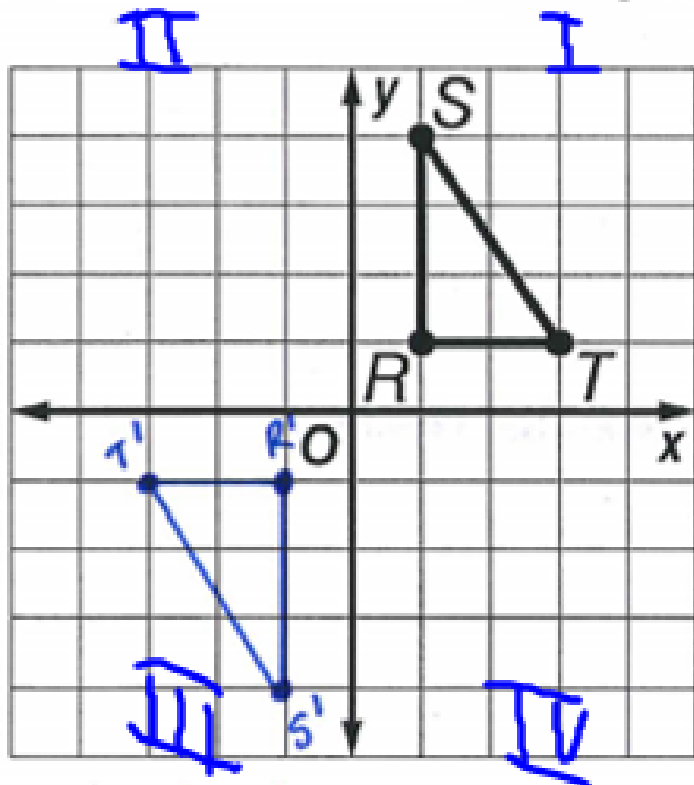


$$X' \rightarrow (-2, -1)$$

$$Y' \rightarrow (1, -3)$$

$$Z' \rightarrow (-2, -5)$$

2) Triangle RST has vertices $R(1, 1)$, $S(1, 4)$, and $T(3, 1)$. Graph its rotated image after a clockwise rotation of 180° about the origin. Then give the coordinates of the vertices for triangle $R'S'T'$.

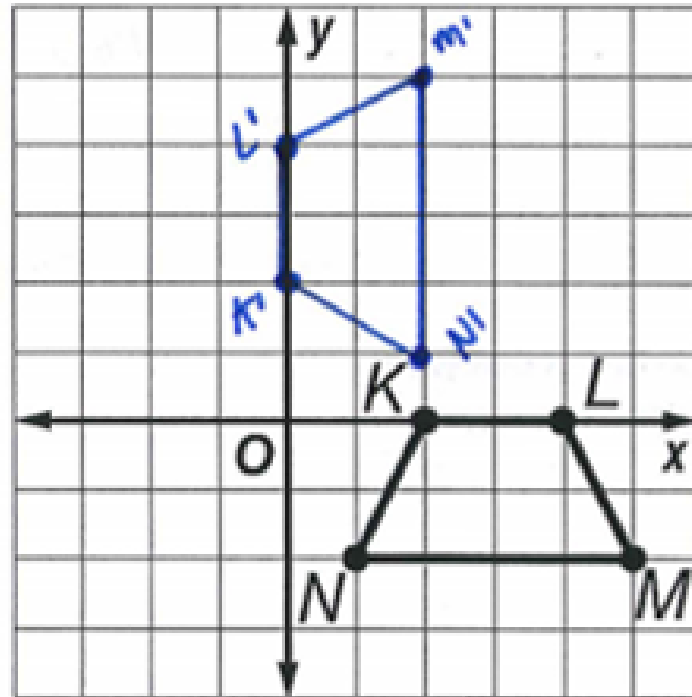


$$R' \rightarrow (-1, -1)$$

$$S' \rightarrow (-1, -4)$$

$$T' \rightarrow (-3, -1)$$

3) Quadrilateral $KLMN$ has vertices $K(2, 0)$, $L(4, 0)$, $M(5, -2)$, and $N(1, -2)$. Graph its rotated image after a counterclockwise rotation of 90° about the origin. Then give the coordinates of the vertices for quadrilateral $K'L'M'N'$.



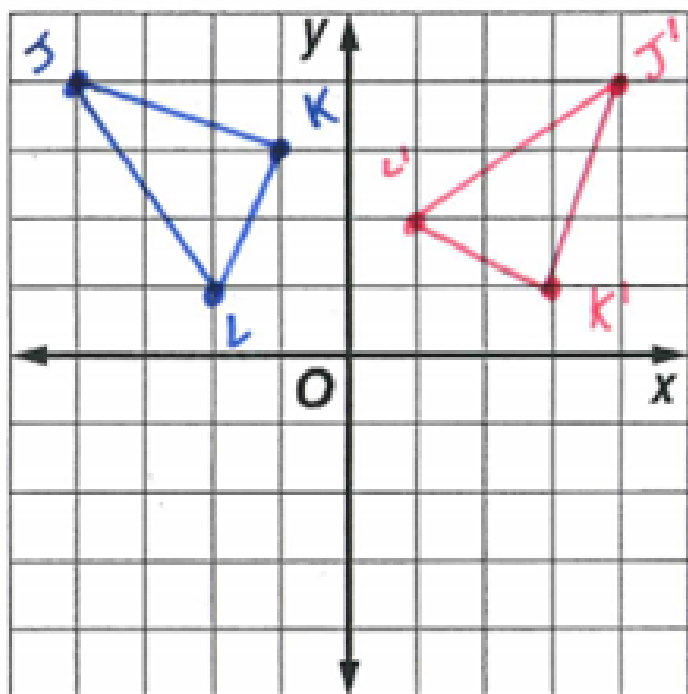
$$K' \rightarrow (0, 2)$$

$$L' \rightarrow (0, 4)$$

$$M' \rightarrow (2, 5)$$

$$N' \rightarrow (2, 1)$$

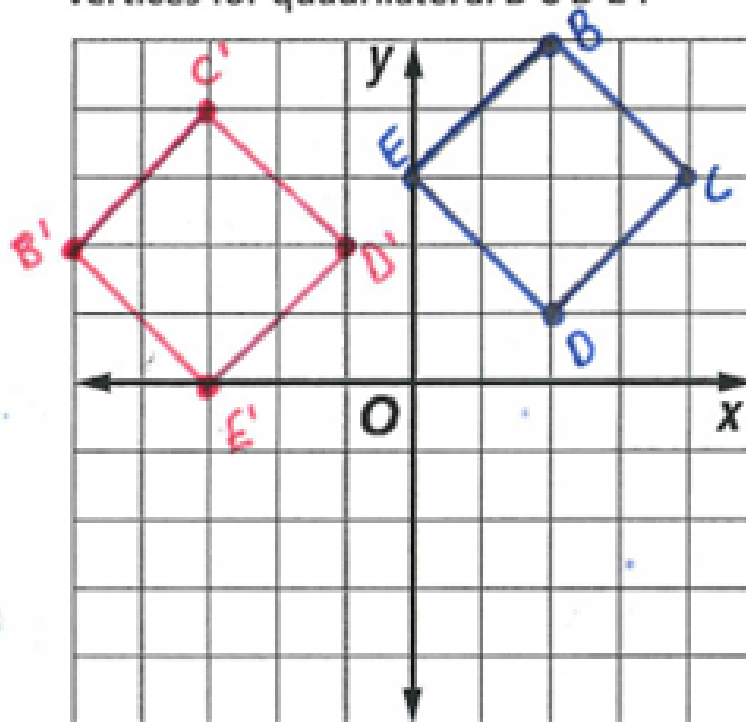
4) Triangle JKL has vertices $J(-4, 4)$, $K(-1, 3)$, and $L(-2, 1)$. Graph the figure and its rotated image after a clockwise rotation of 90° about the origin. Then give the coordinates of the vertices for triangle $J'K'L'$.



$$J' \rightarrow (4, 4) \quad K' \rightarrow (3, 1)$$

$$L' \rightarrow (1, 2)$$

5) Quadrilateral $BCDE$ has vertices $B(2, 6)$, $C(6, 5)$, $D(5, 2)$, and $E(2, 3)$. Graph the figure and its rotated image after a clockwise rotation of 270° about the origin. Then give the coordinates of the vertices for quadrilateral $B'C'D'E'$.



$$B' \rightarrow (-5, 2) \quad C' \rightarrow (-3, 4)$$

$$D' \rightarrow (-1, 2) \quad E' \rightarrow (-3, 0)$$

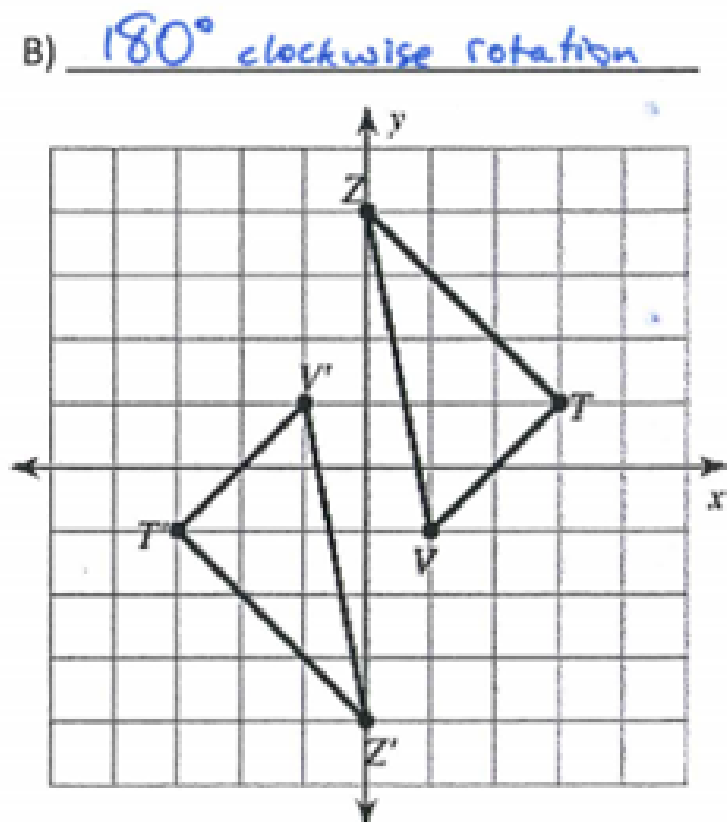
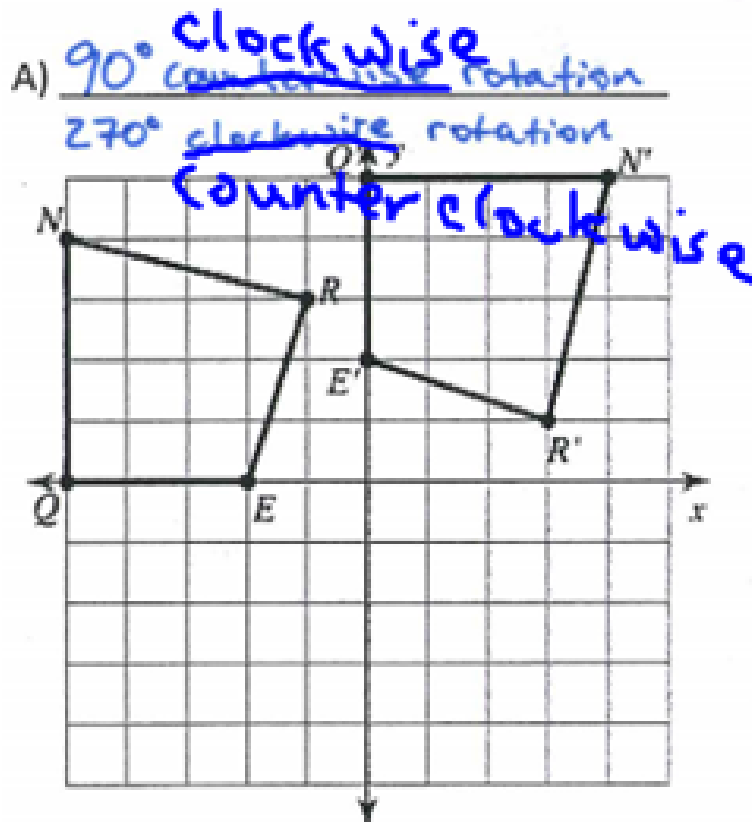
6) Complete the following statements about clockwise and counterclockwise rotations.

A) A 90° clockwise rotation is the same as a 270° counterclockwise rotation.

B) A 180° clockwise rotation is the same as a 180° counterclockwise rotation.

C) A 270° clockwise rotation is the same as a 90° counterclockwise rotation.

7) Write a rotation rule to describe each transformation.

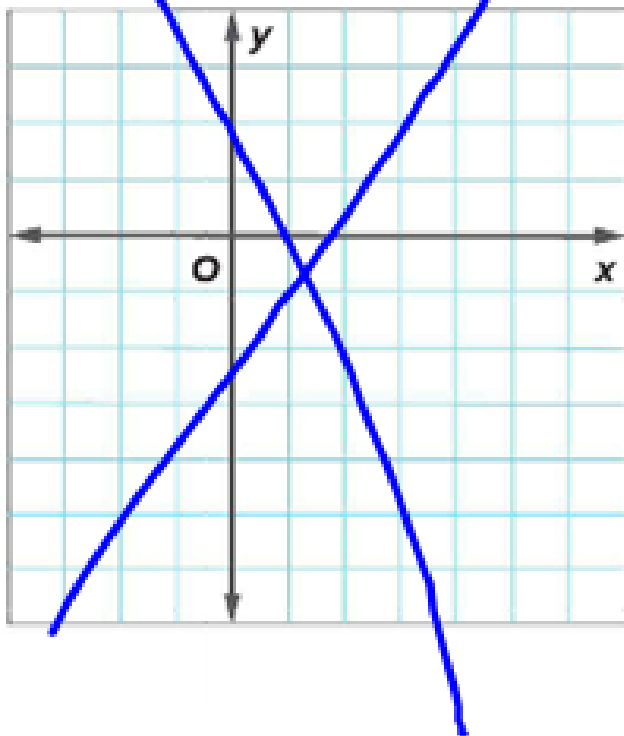


Guided Practice

p. 478

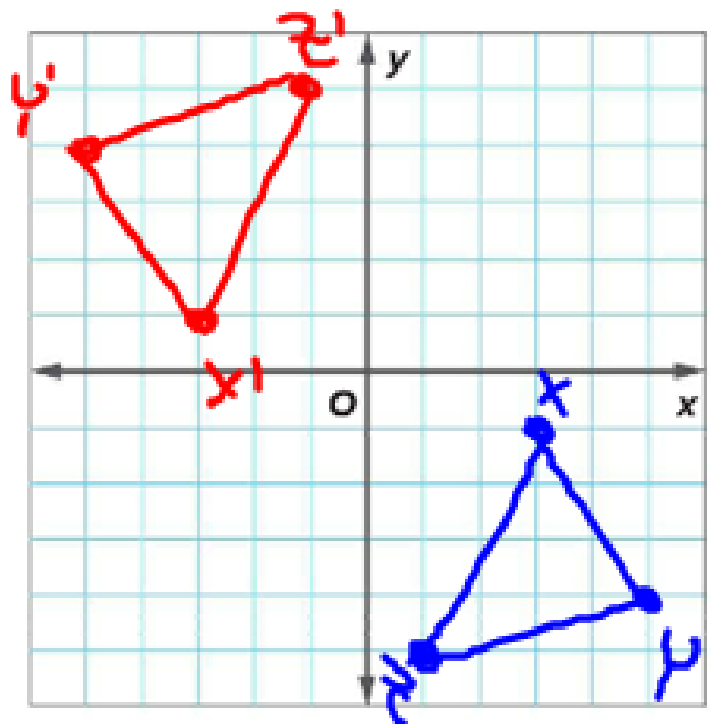
Triangle XYZ has vertices $X(3, -1)$, $Y(5, -4)$, and $Z(1, -5)$. Graph $\triangle XYZ$ and its image after each rotation. Then give the coordinates of the vertices for $\triangle X'Y'Z'$. (Examples 1 and 2)

1. 270° counterclockwise about vertex X



$$\begin{aligned} X' &(-3, 1) \\ Y' &(-5, 4) \\ Z' &(-1, 5) \end{aligned}$$

2. 180° clockwise about the origin

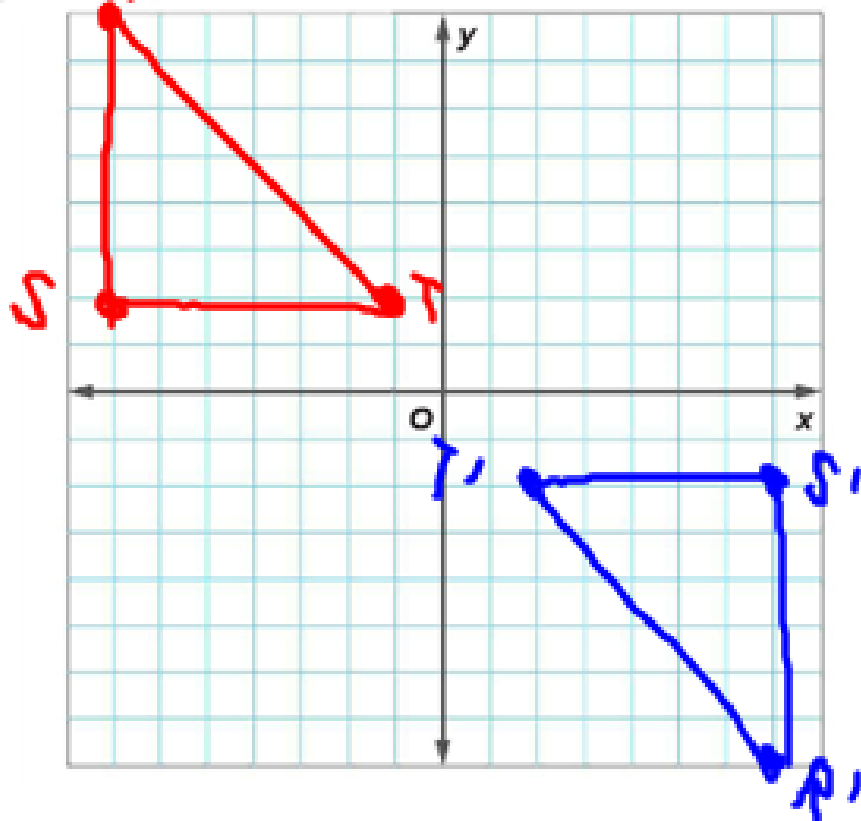


Independent Practice

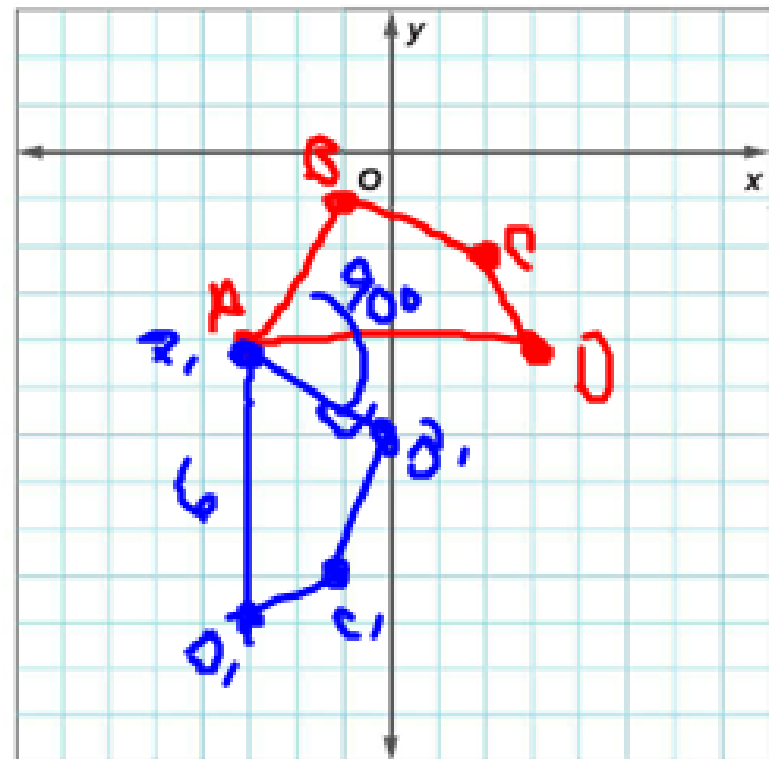
Go online for Step-by-Step Solutions

1. Triangle RST represents the placement of Tyra's tricycle in the driveway and has vertices $R(-7, 8)$, $S(-7, 2)$, and $T(-2, 2)$. Graph the figure and its rotated image after a clockwise rotation of 180° about the origin. Then give the coordinates of the vertices for triangle $R'S'T'$. (Example 2)

$R'(-7, -8)$ $S'(-7, -2)$ $T'(2, -2)$



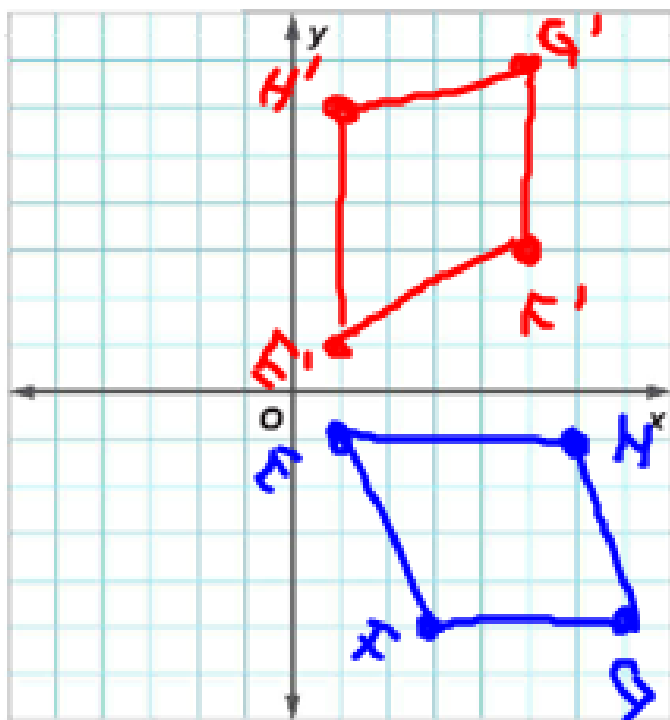
2. Quadrilateral $ABCD$ has vertices at $A(-3, -4)$, $B(-1, -1)$, $C(2, -2)$, and $D(3, -4)$. Graph quadrilateral $ABCD$ and its image after a 90° clockwise rotation about vertex A . Then give the coordinates of the vertices of the image. (Example 1)



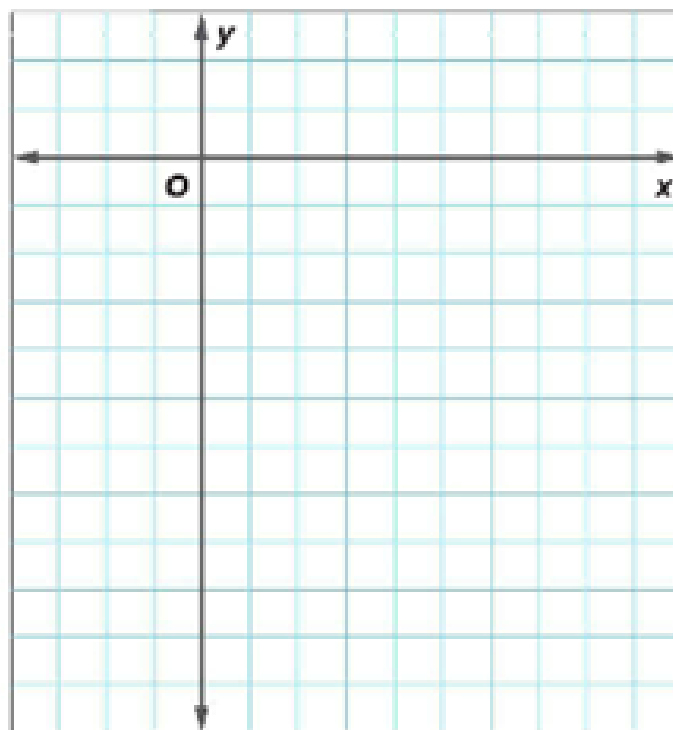
Extra Practice

11. Quadrilateral $EFGH$ has vertices $E(1, -1)$, $F(3, -5)$, $G(7, -5)$, and $H(6, -1)$. Graph the figure and its rotated image after a counterclockwise rotation of 90° about the origin. Then give the coordinates of the vertices for quadrilateral $E'F'G'H'$.

$$E'(1, 1) \quad F'(5, 3) \quad G'(5, 7) \quad H'(1, 6)$$



12. Quadrilateral $ABCD$ has vertices at $A(-3, -4)$, $B(-1, -1)$, $C(2, -2)$, and $D(3, -4)$. Graph quadrilateral $ABCD$ and its image after a 180° counterclockwise rotation about vertex D . Then give the coordinates of the vertices of the image.



Clockwise Rotations About the Origin

90° Rotation

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

180° Rotation

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

270° Rotation

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

Copy and Solve Triangle MNP has vertices $M(1, 4)$, $N(3, 1)$, and $P(5, 3)$.

Find the vertices of $M'N'P'$ after each rotation about the origin. Show your work on a separate piece of paper.

14. 90° clockwise

$$M(1, 4) \rightarrow M'(4, -1)$$

$$N(3, 1) \rightarrow N'(1, -3)$$

15. 180° clockwise

$$M(1, 4) \rightarrow M'(-1, -4)$$

270° clockwise

16. 90° counterclockwise

$$M(1, 4) \rightarrow M'(-4, 1)$$