

Directions: Write the rule of the transformation.

1) A triangle ABC is rotated 360 degrees CW.

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

2) A line segment DE is rotated 180 degrees.

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

3) A square MNOP is rotated 270 degrees CW / 90 degrees CCW

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

4) A line segment XY is rotated 90 degrees CW.

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

Directions: Describe the transformation. (This is a mixed review).

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

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

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

Rotate 270° CW / 90° CCW

Rotate 90° CW / 270° CCW

Rotate 180° CW / 180° CCW

8)  $(x, y) \rightarrow (x + 2, y)$

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

\*10)  $(x, y) \rightarrow (-y, x + 1)$

- Rotate 90° CCW / 270° CW

- up 1 unit

Right 2 units

Reflect over  $y = -x$

Directions: Complete the transformation of the new image. If the rule was provide, describe the transformation. If the transformation was described, write the rule.

Rotate 90° CW / 270° CCW

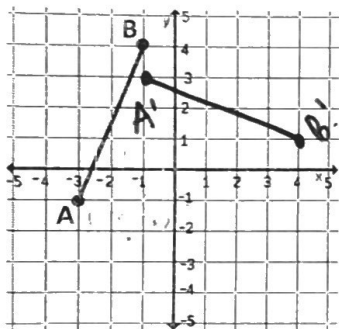
Rotate 90° CCW / 270° CW

Rotate 180° CW / 180° CCW

11)  $AB(x, y) \rightarrow A'B'(y, -x)$

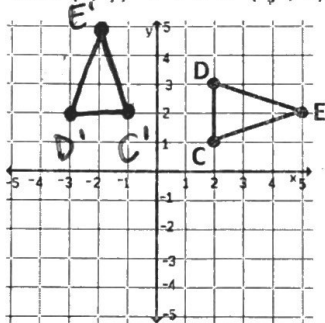
12)  $CDE(x, y) \rightarrow C'D'E'(-y, x)$

13)  $JK(x, y) \rightarrow J'K'(-x, -y)$



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

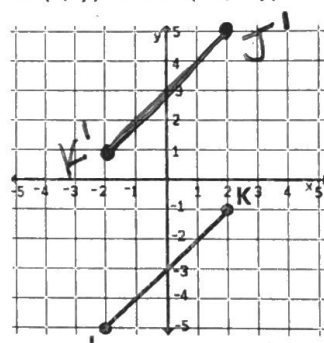
$$B(-1, 4) \rightarrow B'(4, 1)$$



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

$$D(2, 3) \rightarrow D'(-3, 2)$$

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



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

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

14) Rotate FGH by 270° CCW / 90° CW

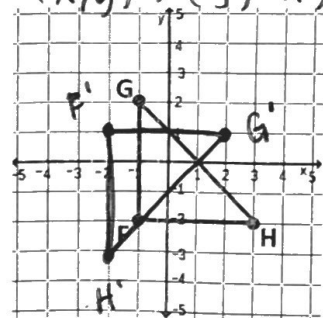
$$(x, y) \rightarrow (y, -x)$$

15) Rotate ABCD by 90° CCW / 270° CW

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

16) Rotate ABC 180°

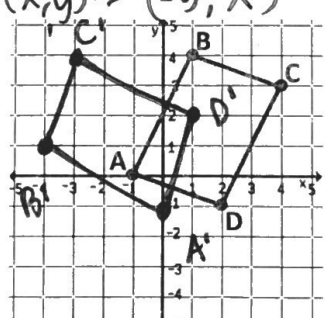
$$(x, y) \rightarrow (-x, -y)$$



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

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

$$H(3, -2) \rightarrow H'(-2, -3)$$

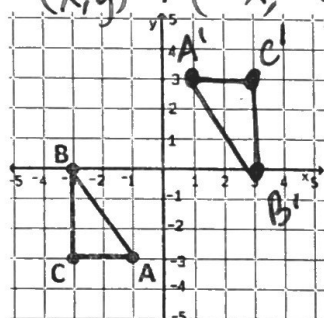


$$A(-1, 0) \rightarrow A'(0, -1)$$

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

$$C(4, 3) \rightarrow C'(-3, 4)$$

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



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

$$B(-3, 0) \rightarrow B'(3, 0)$$

$$C(-3, -3) \rightarrow C'(3, 3)$$

Directions: Find the missing point using the given information.

17)  $A(8, 4)$

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

Find  $A'$ .

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

18)  $B'(-6, -1)$   $(x, y) \rightarrow (-y, x)$

Description: Rotation of  $270^\circ$  CW.

Find B.

$$B(-1, 6)$$

19)  $C'(0, 4)$

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

Find C.

$$C(-4, 0)$$

20) Pre-Image:  $(-2, 6)$   $(x, y) \rightarrow (-y, x)$

Description: Rotation of  $90^\circ$  CCW.

Find the image coordinate.

$$(-6, -2)$$

21) Image:  $(5.4, 11.2)$

Description: Rotation of  $270^\circ$  CCW /  $90^\circ$  CW

Find the pre-image coordinate.

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

$$(-11.2, 5.4) \rightarrow (5.4, 11.2)$$

22) Pre-Image  $(-\frac{1}{3}, -4\frac{5}{8})$

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

Find the image coordinate.

$$(4\frac{5}{8}, -\frac{1}{3})$$

Directions: Solve each problem.

23) A wheel has its center located at the origin of a graph. A nail is found on the bicycle wheel in a location of  $W(-25, 3)$ . After the tire is rotated  $180^\circ$  CW, at what coordinate is this nail?

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

$$W(-25, 3) \rightarrow W'(25, -3)$$

24)  $(-h, k)$  is rotated  $90^\circ$  CCW. What is the coordinate of its image?

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

$$(-h, k) \rightarrow (-k, -h)$$

25) The long hand of this clock is rotated  $270^\circ$  CW. What is the time after this rotation?

$$2:45 \text{ am/pm}$$



25) After a rotation about the origin,  $M(4, 12)$  has an image of  $M'(12, -4)$ . What is  $R'$  if  $R$  is located at  $(-1, 3)$  and follows this same rotation?

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

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