

1. What type of transformation is defined by the rule $(x, y) \rightarrow (x + 4, y)$?
 - A A reflection
 - B A translation
 - C A rotation

2. What type of transformation is defined by the rule $(x, y) \rightarrow (y, x)$?
 - A A reflection
 - B A translation
 - C A rotation

3. What type of transformation is defined by the rule $(x, y) \rightarrow (-y, x)$?
 - A A reflection
 - B A translation
 - C A rotation

4. Find the image of point $A(3, -1)$ under each transformation:

| | |
|--|-----------------|
| a. Translated along vector $\langle -2, 4 \rangle$ | $A' (1, 3)$ |
| b. Reflected across x-axis | $A' (3, 1)$ |
| c. Rotated 90° counterclockwise | $A' (1, 3)$ |
| d. Reflected across line $y = x$ | $A' (-1, 3)$ |
| e. Rotated 180° | $A' (-3, 1)$ |
| f. Reflected across y-axis | $A' (-3, -1)$ |
| g. Rotated 270° | $A' (-1, -3)$ |
| h. Translated along vector $\langle 3, -2 \rangle$ | $A' (6, -3)$ |
| i. Reflected across line $y = -x$ | $A' (1, -3)$ |

5. Write the coordinate notation for rotation by an angle of 90° CCW.

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

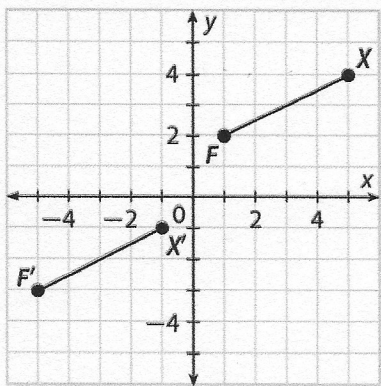
6. Write the coordinate notation for reflection over the line $y = -x$.

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

7. Write the coordinate notation for a translation that is 4 units to the right and 2 units down.

$(x, y) \rightarrow (x+4, y-2)$

8.



What is the component form of the vector that maps \overline{XF} to $\overline{X'F'}$?

- A $\langle 6, 5 \rangle$
- B $\langle -6, -5 \rangle$
- C $\langle -5, -6 \rangle$

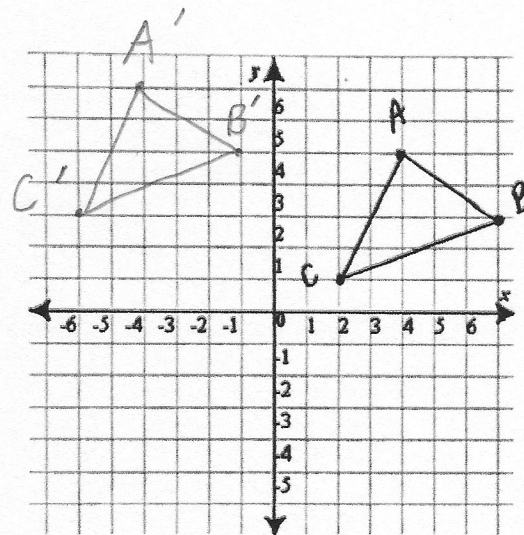
9. Use $\triangle ABC$ to find the following:

- a. Find the coordinates for the image after $\triangle ABC$ is translated along the vector $\langle -8, 2 \rangle$.

$$\begin{array}{ll} A(4, 5) & A'(-4, 7) \\ B(7, 3) & B'(-1, 5) \\ C(2, 1) & C'(-6, 3) \end{array}$$

- b. Graph the image coordinates (don't forget to include primes).
 c. Write the transformation in coordinate notation.

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



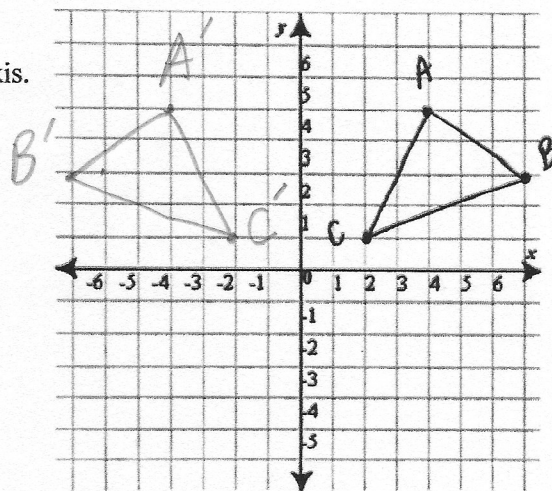
10. Use $\triangle ABC$ to find the following:

- a. Find the coordinates for the image after $\triangle ABC$ is reflected over the y-axis.

$$\begin{array}{ll} A(4, 5) & A'(-4, 5) \\ B(7, 3) & B'(-7, 3) \\ C(2, 1) & C'(-2, 1) \end{array}$$

- b. Graph the image coordinates (don't forget to include primes).
 c. Write the transformation in coordinate notation.

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



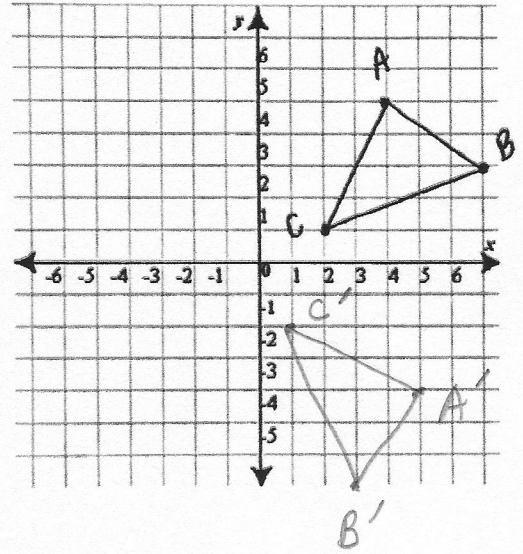
11. Use $\triangle ABC$ to find the following:

- a. Find the coordinates for the image after $\triangle ABC$ is rotated 270° CCW.

$$\begin{array}{l} A(4, 5) \\ B(7, 3) \\ C(2, 1) \end{array} \quad \begin{array}{l} A'(5, -4) \\ B'(3, -7) \\ C'(1, -2) \end{array}$$

- b. Graph the image coordinates (don't forget to include primes).
 c. Write the transformation in coordinate notation.

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



| Rules for Reflections on a Coordinate Plane | |
|---|-------------------------------|
| Reflection across the x-axis | $(x, y) \rightarrow (x, -y)$ |
| Reflection across the y-axis | $(x, y) \rightarrow (-x, y)$ |
| Reflection across the line $y = x$ | $(x, y) \rightarrow (y, x)$ |
| Reflection across the line $y = -x$ | $(x, y) \rightarrow (-y, -x)$ |

| Rules for Rotations Around the Origin on a Coordinate Plane | |
|---|-------------------------------|
| 90° rotation counterclockwise | $(x, y) \rightarrow (-y, x)$ |
| 180° rotation | $(x, y) \rightarrow (-x, -y)$ |
| 270° rotation counterclockwise | $(x, y) \rightarrow (y, -x)$ |