Lesson 5: Coordinate Moves

Let's transform some figures and see what happens to the coordinates of points.

5.1: Translating Coordinates

Select all of the translations that take Triangle $T$ to Triangle $U$. There may be more than one correct answer.

1. Translate (-3, 0) to (1, 2).
2. Translate (2, 1) to (-2, -1).
3. Translate (-4, -3) to (0, -1).
4. Translate (1, 2) to (2, 1).
1. Here is a list of points

\[ A = (0.5, 4) \quad B = (-4, 5) \quad C = (7, -2) \quad D = (6, 0) \quad E = (0, -3) \]

On the coordinate plane:

a. Plot each point and label each with its coordinates.
b. Using the x-axis as the line of reflection, plot the image of each point.
c. Label the image of each point with its coordinates.
d. Include a label using a letter. For example, the image of point A should be labeled \( A' \).
2. If the point (13, 10) were reflected using the x-axis as the line of reflection, what would be the coordinates of the image? What about (13, -20)? (13, 570)? Explain how you know.

3. The point $R$ has coordinates (3, 2).

   a. Without graphing, predict the coordinates of the image of point $R$ if point $R$ were reflected using the y-axis as the line of reflection.

   b. Check your answer by finding the image of $R$ on the graph.

   c. Label the image of point $R$ as $R'$.

   d. What are the coordinates of $R'$?

4. Suppose you reflect a point using the y-axis as line of reflection. How would you describe its image?
5.3: Transformations of a Segment

Apply each of the following transformations to segment $AB$.

1. Rotate segment $AB$ 90 degrees counterclockwise around center $B$. Label the image of $A$ as $C$. What are the coordinates of $C$?

2. Rotate segment $AB$ 90 degrees counterclockwise around center $A$. Label the image of $B$ as $D$. What are the coordinates of $D$?

3. Rotate segment $AB$ 90 degrees clockwise around $(0, 0)$. Label the image of $A$ as $E$ and the image of $B$ as $F$. What are the coordinates of $B$ and $F$?

4. Compare the two 90-degree counterclockwise rotations of segment $AB$. What is the same about the images of these rotations? What is different?