## Unit 1 Lesson 4: Coordinate Moves

### 1 Translating Coordinates (Warm up)

#### Student Task Statement

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



1. Translate $\left(-3,0\right)$ to $\left(1,2\right)$.
2. Translate $\left(2,1\right)$ to $\left(-2,-1\right)$.
3. Translate $\left(-4,-3\right)$ to $\left(0,-1\right)$.
4. Translate $\left(1,2\right)$ to $\left(2,1\right)$.

#### Activity Synthesis



### 2 Reflecting Points on the Coordinate Plane

#### Student Task Statement



1. Here is a list of points $\begin{matrix}A&=\left(0.5,4\right)&B&=\left(-4,5\right)&C&=\left(7,-2\right)&D&=\left(6,0\right)&E&=\left(0,-3\right)\\&&&&&&&&&\end{matrix}$ On the **coordinate plane**:
	1. Plot each point and label each with its coordinates.
	2. Using the $x$-axis as the line of reflection, plot the image of each point.
	3. Label the image of each point with its coordinates.
	4. Include a label using a letter. For example, the image of point $A$ should be labeled $A^{′}$.
2. If the point $\left(13,10\right)$ were reflected using the $x$-axis as the line of reflection, what would be the coordinates of the image? What about $\left(13,-20\right)$? $\left(13,570\right)$? Explain how you know.
3. The point $R$ has coordinates $\left(3,2\right)$.
	1. 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.
	2. Check your answer by finding the image of $R$ on the graph.
	* 
	1. Label the image of point $R$ as $R^{′}$.
	2. 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?

#### Activity Synthesis



### 3 Transformations of a Segment

#### Student Task Statement



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 $\left(0,0\right)$. Label the image of $A$ as $E$ and the image of $B$ as $F$. What are the coordinates of $E$ 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?



© CC BY Open Up Resources. Adaptations CC BY IM.