## 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 $(-3,0)$ to $(1,2)$.
2. Translate $(2,1)$ to $(-2,-1)$.
3. Translate $(-4,-3)$ to $(0,-1)$.
4. Translate $(1,2)$ to $(2,1)$.

#### Activity Synthesis



### 2 Reflecting Points on the Coordinate Plane

#### Student Task Statement



1. Here is a list of points $\begin{matrix}A&=(0.5,4)&B&=(-4,5)&C&=(7,-2)&D&=(6,0)&E&=(0,-3)\\&&&&&&&&&\end{matrix}$ 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 $(13,10)$ 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 $(3,2)$.
	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.
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	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 $(0,0)$. 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?



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