

## Lesson: Transformations- Reflections

### Exploring Reflections

A **reflection** is a transformation that flips a figure across a line. The line is called the **line of reflection**. Each point and its image are the same distance from the line of reflection.

To reflect a figure across a line of reflection, reflect each of its vertices. Then connect the vertices to form the image. Remember that each point and its image are the same distance from the line of reflection.

#### Example #1:

The triangle shown on the grid is the preimage. You will explore reflections across the  $x$ - and  $y$ -axes.

- Reflect the given triangle in the  $x$ -axis.
- Reflect the original triangle in the  $y$ -axis.

#### Example #2:

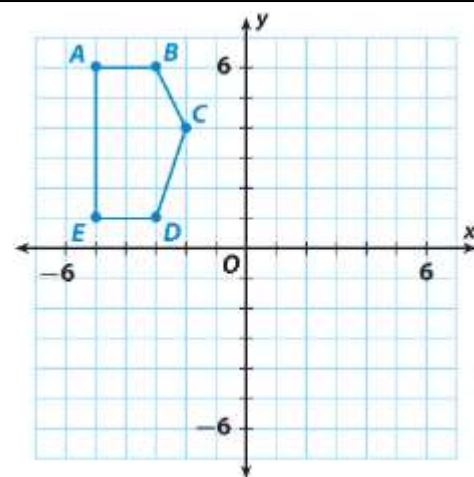
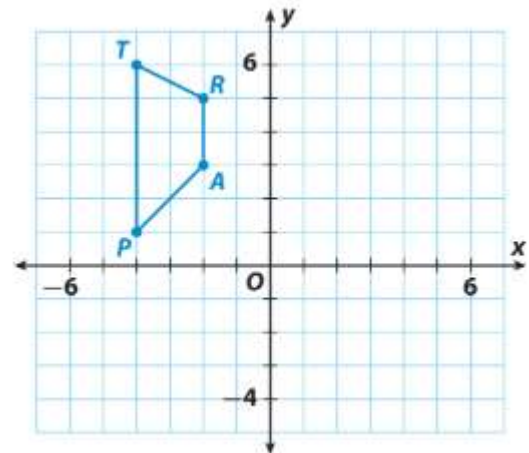
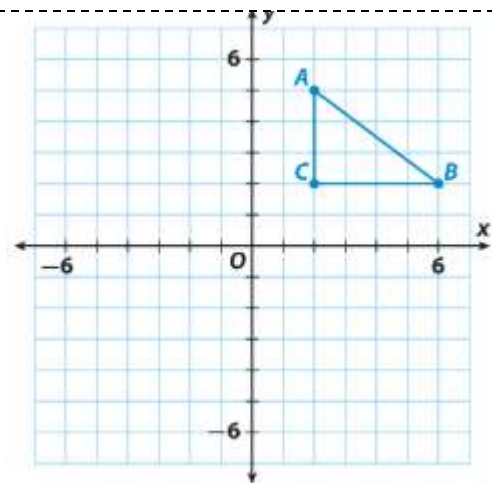
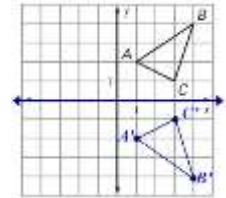
- Reflect the given trapezoid in the  $x$ -axis.
- Reflect the original trapezoid in the  $y$ -axis.

#### Example #3:

The figure shows pentagon  $ABCDE$ . Graph the image of the pentagon after a reflection across the  $y$ -axis.



Reflection



### Example #4:

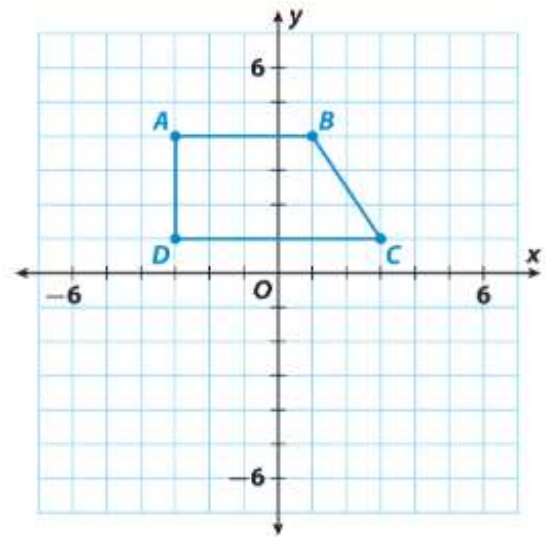
**What If?** Suppose you reflected trapezoid  $ABCD$  across the  $y$ -axis. How would the orientation of the image of the trapezoid compare with the orientation of the preimage?

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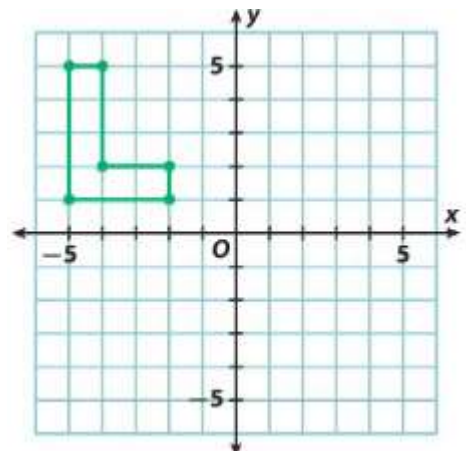
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### Example #5:

- Graph the image of the figure shown after a reflection across the  $y$ -axis.
- On the same coordinate grid, graph the image of the figure you drew in part **a** after a reflection across the  $x$ -axis.



### Example #6:

- Graph triangle  $DEF$  with vertices  $D(2, 6)$ ,  $E(5, 6)$ , and  $F(5, 1)$  on the coordinate grid.
- Next graph triangle  $D'E'F'$ , the image of triangle  $DEF$  after a reflection across the  $y$ -axis.
- On the same coordinate grid, graph triangle  $D''E''F''$ , the image of triangle  $D'E'F'$  after a translation of 7 units down and 2 units to the right.

