

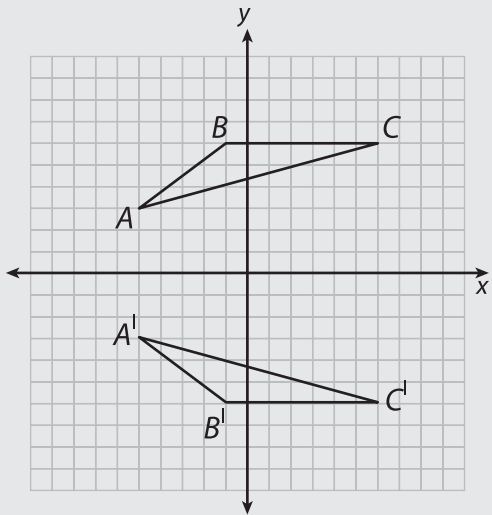
21

Transformations

2.E.1.a

Example

Which transformation is shown below?



- A** reflection of $\triangle ABC$ over the x -axis
- B** rotation of $\triangle ABC$ 90°
- C** translation of $\triangle ABC$ 10 units down
- D** reflection of $\triangle ABC$ over the y -axis

- **Reflection**—A transformation in which a figure is *flipped* over a line, usually the x -axis or y -axis on the coordinate plane. The *Example* in this lesson showed a reflection.
- **Rotation**—A transformation in which a figure is *turned* about a point, called the *center of rotation*. Triangle $Q'R'S'$ is the image of triangle QRS after a rotation of 180° about the origin.

Thinking it Through

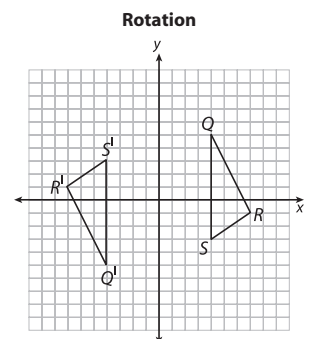
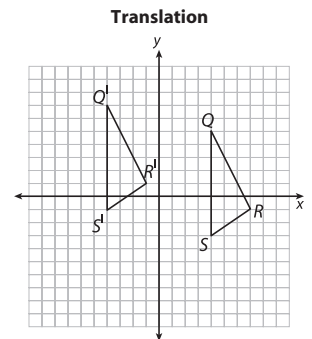
You can *visualize*, or imagine, $\triangle ABC$ being “flipped” over the x -axis (the horizontal axis) and ending up at the position of $\triangle A'B'C'$.

The x -axis serves as a reflection line, or mirror line. The two triangles are mirror images of each other.

The correct choice is A.

Review

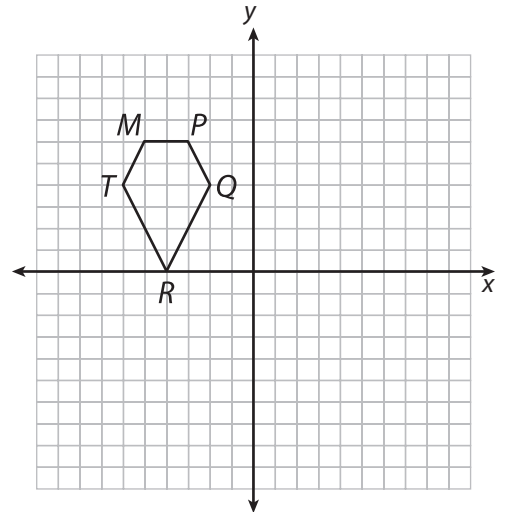
- A **transformation** is the movement of a figure in a *coordinate plane* (see *Lesson 31, Ordered Pairs*). The new figure, or *image* of the original, is congruent to the original; only its position has changed.
- **Translation**—A transformation in which a figure is *slid* up, down, right, left, or any combination of these. Triangle $Q'R'S'$ is the image of triangle QRS after a translation 8 units to the left and 2 units up.



Transformations

Directions: Write the answer to each Part on the lines provided.

1 At right is a polygon plotted on a coordinate plane.



Part A

Give the coordinates of T' after a translation of $MPQRT$ positive 5 units horizontally.

Part B

- Use what you know about transformations to explain why your answer is correct. Use words, numbers, and/or drawings in your explanation.
- Suppose that instead of a translation, $MPQRT$ was reflected over the x -axis. Explain how this would change the coordinates of point T' . Use words, numbers, and/or symbols in your explanation.



Which coordinate will change and which will stay the same?