



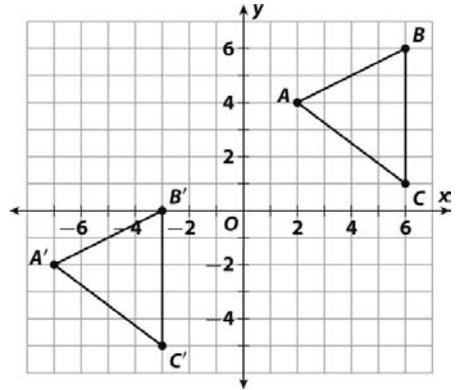
**LESSON**  
**12-1**

# Properties of Translations

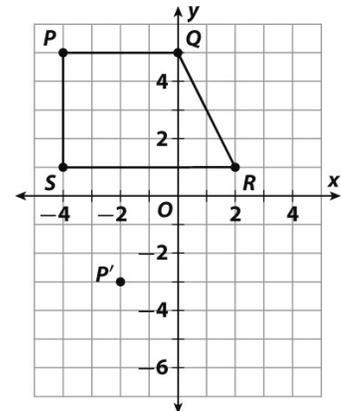
## Practice and Problem Solving: D

Answer the questions about the given translation of triangle  $ABC$  onto triangle  $A'B'C'$ . The first one is done for you.

1. What is the image of  $A(2, 4)$ ?  $A'(-7, -2)$
2. What is the preimage of  $B'(-3, 0)$ ? \_\_\_\_\_
3. What is the image of  $C(6, 1)$ ? \_\_\_\_\_
4. Which side is congruent to side  $AB$ ? \_\_\_\_\_
5. Which angle is congruent to angle  $C$ ? \_\_\_\_\_
6. How would you describe the translation?  
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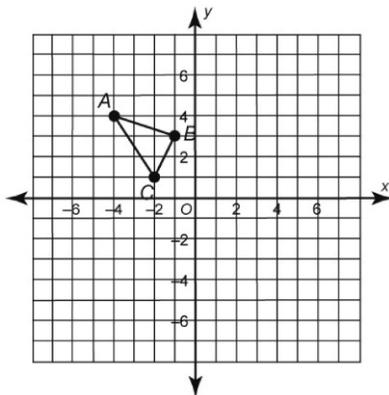


7. Quadrilateral  $PQRS$  is given.
  - a. Vertex  $P$  is translated to point  $P'$  as shown. Describe the translation.  
\_\_\_\_\_
  - b. Use the same translation to translate the remaining vertices. Draw quadrilateral  $P'Q'R'S'$ .
  - c. How do quadrilateral  $PQRS$  and quadrilateral  $P'Q'R'S'$  compare?  
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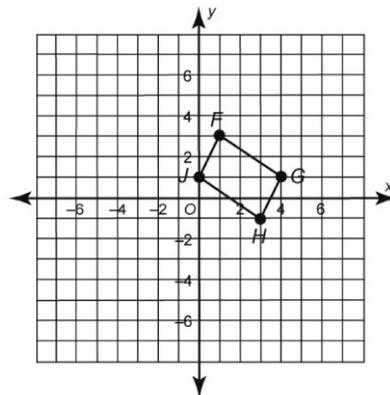


Draw the image of the figure after each translation.

8. 3 units right and 4 units down



9. 5 units left and 2 units up



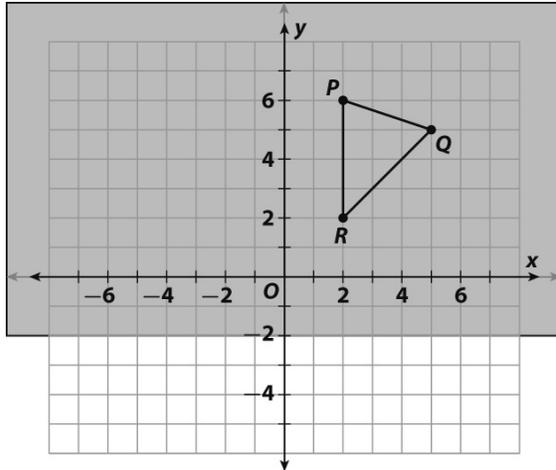
**LESSON**  
**12-2**

# Properties of Reflections

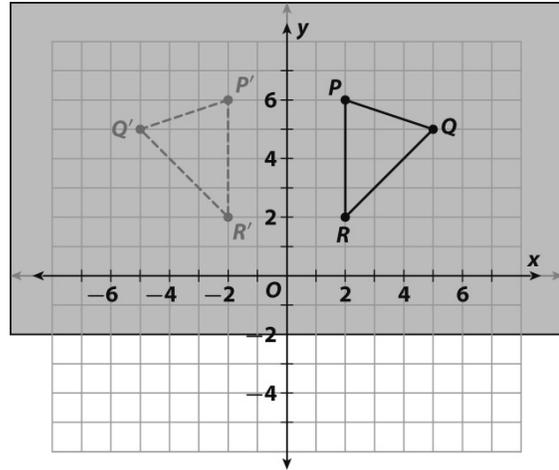
## Reteach

You can use tracing paper to reflect a figure in the coordinate plane. The graphs below show how to reflect a triangle across the  $y$ -axis.

Start by tracing the figure and the axes on tracing paper.



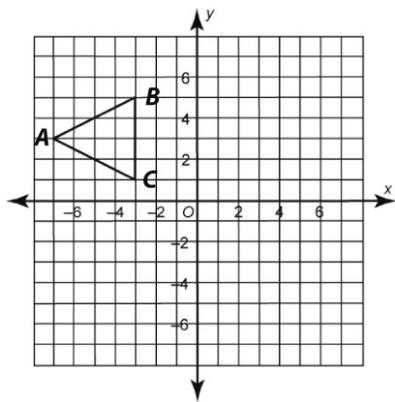
Flip the tracing paper over, making sure to align the axes. Transfer the flipped image onto the coordinate plane.



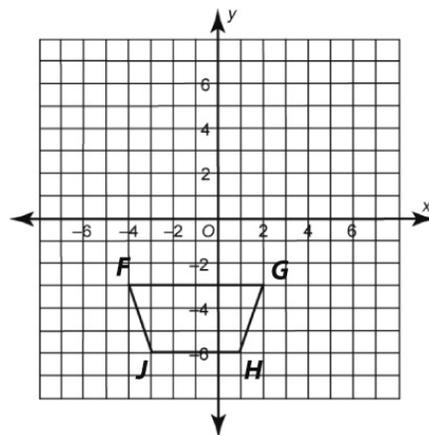
As shown above, flip the paper horizontally for a reflection in the  $y$ -axis. For a reflection in the  $x$ -axis, flip the paper vertically.

Use tracing paper to draw the image after the reflection.

1. across the  $y$ -axis



2. across the  $x$ -axis



**LESSON**  
**12-2**

**Properties of Reflections**

*Practice and Problem Solving: A/B*

Use the graph for Exercises 1–3.

1. Quadrilateral  $J$  is reflected across the  $x$ -axis. What is the image of the reflection?

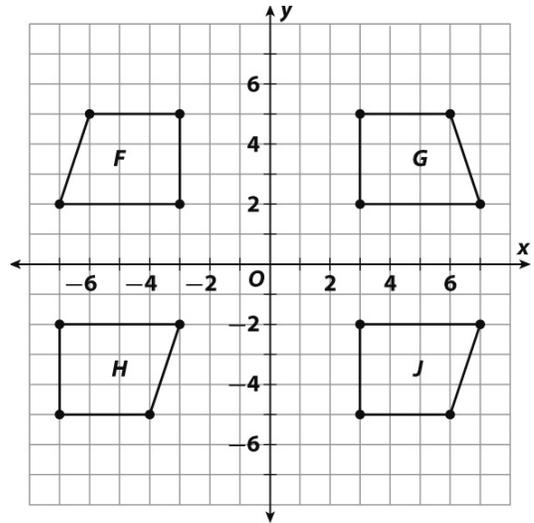
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2. Which two quadrilaterals are reflections of each other across the  $y$ -axis?

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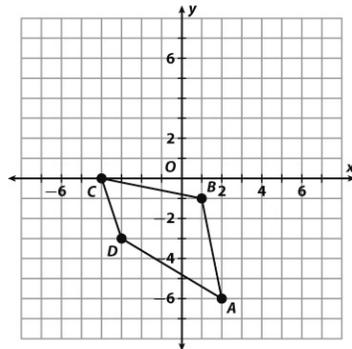
3. How are quadrilaterals  $H$  and  $J$  related?

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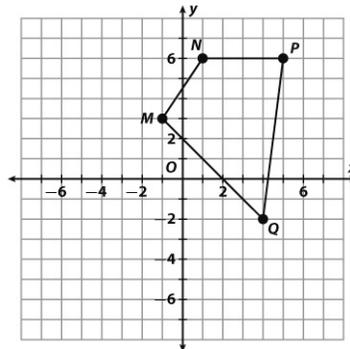


Draw the image of the figure after each reflection.

4. across the  $x$ -axis



5. across the  $y$ -axis



6. a. Graph rectangle  $K'L'M'N'$ , the image of rectangle  $KLMN$  after a reflection across the  $y$ -axis.  
b. What is the perimeter of each rectangle?

\_\_\_\_\_

- c. Is it possible for the perimeter of a figure to change after it is reflected? Explain.

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