NAME_____

Module 11 **Transformation of Shapes**
Lesson 1 **Translations and Reflections**

Lesson Objectives

- Perform translations and reflections of two-dimensional figures using a variety of methods (paper folding, tracing, graph paper).
- Draw and describe the results of translations and reflections about the *x*- and *y*-axis.

Subtopic 1   Translations

A _____ is a change in the position, shape, or size of a geometric figure.

Translations, _____, and _____ are three types of transformations that are basic rigid motions of geometry.

Translation (_____)

- Transformation that slides each of the points of a figure the same _____ in the same direction

- Slides a figure _____, vertically, or diagonally along a line without turning

The resulting figure after a translation is called the _____ of the original figure.
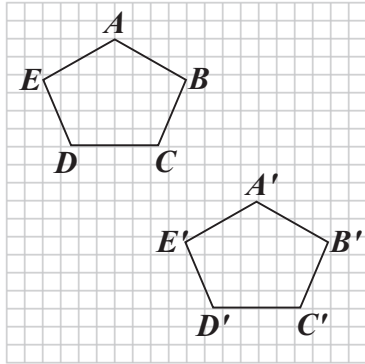
- Are _____

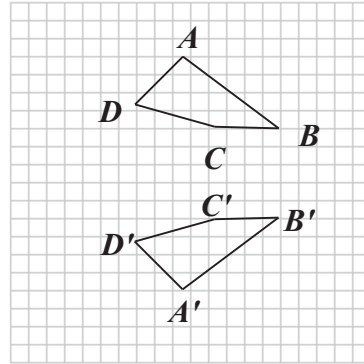- Have the same orientation

Motion rule

- Describes a transformation made in a coordinate plane

- Movements left and down are _____.

- Movements _____ and _____ are positive.

Tell whether the figure shown and its image show a translation. Explain your answer.
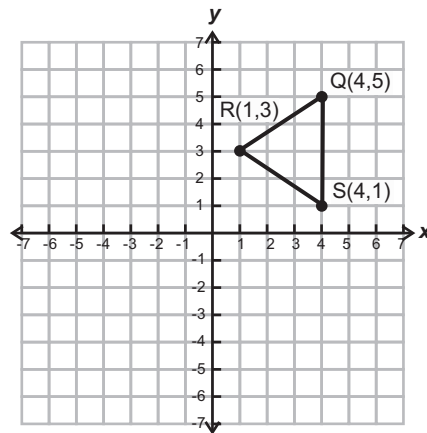
1

2

3 Translate $\triangle QSR$ using the rule $(x, y) \rightarrow (x - 4, y - 3)$. Give the coordinates of Q', R', and S'.
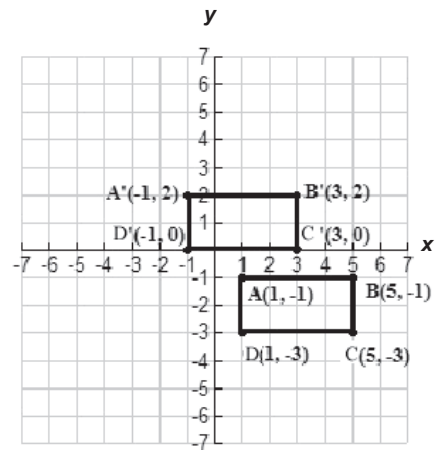
Module 11   Transformation of Shapes
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4 Write the motion rule for the transformation
of rectangle *ABCD* into rectangle *A'B'C'D'*.

```
                              y
                          7
                          6
                          5
                          4
                          3
     A'(-1, 2)            2        B'(3, 2)
                          1
     D'(-1, 0)                   C '(3, 0)          x
-7 -6 -5 -4 -3 -2 -1      1  2  3  4  5  6  7
                         -1
     A(1, -1)            -2        B(5, -1)
                         -3
     D(1, -3)           -4   C(5, -3)
                         -5
                         -6
                         -7
```

Subtopic 2   Reflections

- A reflection flips each point of a figure across a line and produces a congruent

  _____ _____.

- A reflection is sometimes called a _____.

- A line of _____ is the line over which an image is flipped.
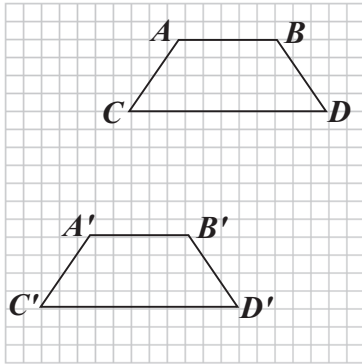
Reflection across *y*-axis:

- The *x*-coordinate is the _____.

- The *y*-coordinate is the same.

- $(x, y) \rightarrow (-x, y)$
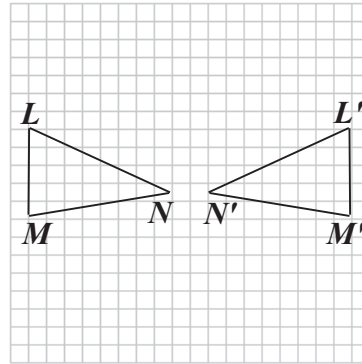
Reflection across _____:

- The *x*-coordinate is the _____.

- The *y*-coordinate is the opposite.

- $(x, y) \rightarrow (x, -y)$

Tell whether the figure and its image show a reflection. Explain your answer.
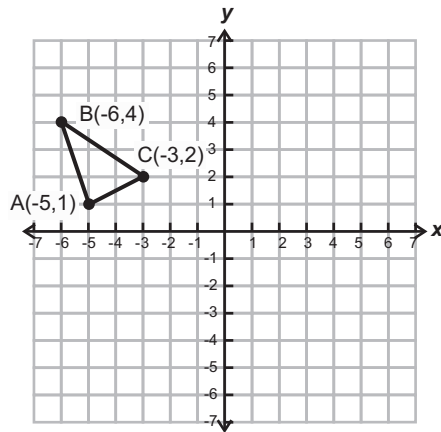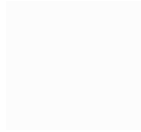
5

6

7 Reflect $\triangle ABC$ across the y-axis.
Give the coordinates of A', B', and C'.

8 Write the motion rule for the transformation
of square $LMNP$ into square $L'M'N'P'$.