Assignment

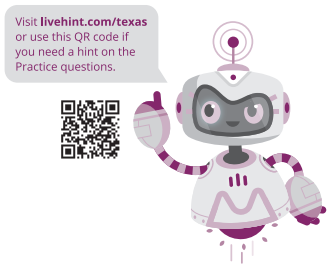
Write

In your own words, explain how horizontal and vertical translations each affect the coordinates of the points of a figure.

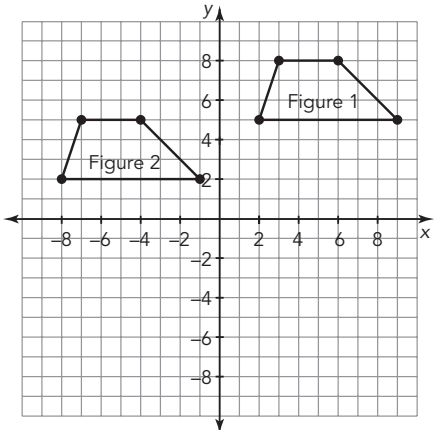
Remember

A translation "slides" a figure along a line. A translation is a rigid motion that preserves the size and shape of figures.

Practice



1. Use the figures shown to complete parts (a) through (d).



   a. Describe the sequence of translations used to move Figure 1 onto Figure 2.
   b. Determine the coordinates of the image of Figure 1 if it is translated 1 unit horizontally and −8 units vertically.
   c. Explain how you determined the coordinates in part (b).
   d. Verify your answer to part (b) by graphing the image. Label it Figure 3.

2. Use a coordinate plane to complete parts (a) through (d).
   a. Plot the given points and connect them with straight lines in the order in which they are given. Connect the last point to the first point to complete the figure. Label the figure *A*.
   (−3, −6), (−3, −3), (0, 0), (3, −3), (3, −6), (0, −3)
   b. Translate the figure in part (a) −3 units vertically. Label the image *B*.
   c. Translate the figure in part (a) 6 units vertically and 3 units horizontally. Label the image *C*.
   d. Translate the figure in part (a) −3 units horizontally and 6 units vertically. Label the image *D*.

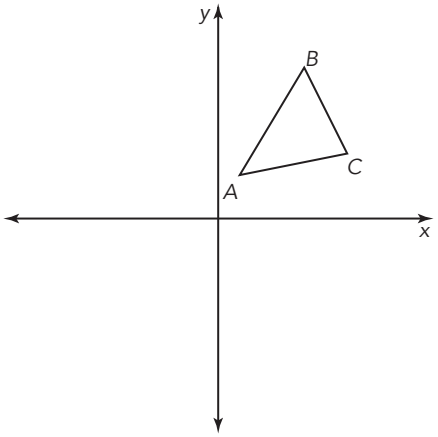
Stretch

A point at the origin is repeatedly translated c units horizontally and d units vertically. Write the coordinates of the translated point if the translation sequence is repeated n times.

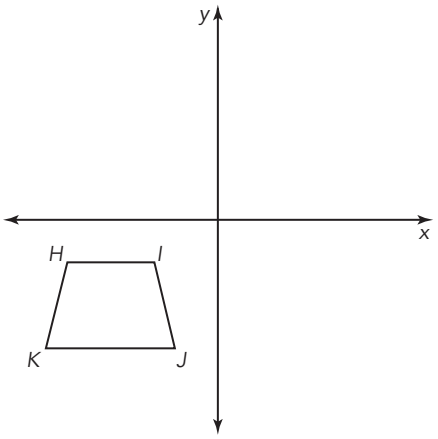
Review

1. Sketch the translation of each figure.

   a. Translate the figure to the left.



   b. Translate the figure up.



2. What is true about the relationship between the image and pre-image in each translation?
3. Use the order of operations to evaluate each expression.

   a. $-10 + 3(-8)$

   b. $\frac{-4(-12)}{3}$