

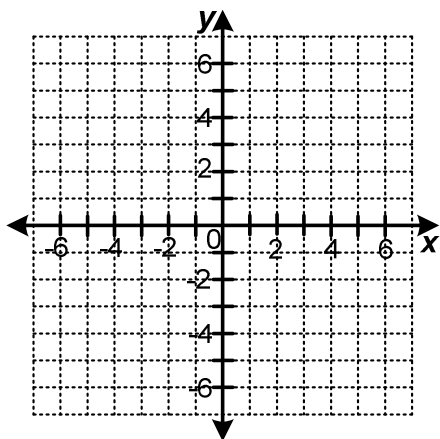
## Translations, Reflections, and Dilations

1. Label the  $x$ -axis and  $y$ -axis.

- Graph the original figure. Trace it in blue.
- Perform the indicated transformation.
- Write the coordinates for the image and graph the image. Trace it in red.

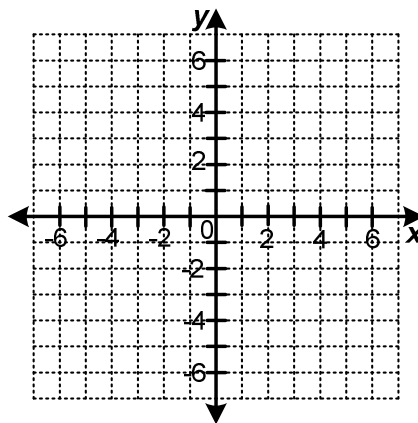
a. Reflect the original figure across the  $x$ -axis.

Original Figure Coordinates  
**A**(4, 3); **B**(2, 3); **C**(1, 1); **D**(5, 1)  
 Image Coordinates  
**A'**( \_\_\_\_, \_\_\_\_); **B'**( \_\_\_\_, \_\_\_\_);  
**C'**( \_\_\_\_, \_\_\_\_); **D'**( \_\_\_\_, \_\_\_\_)



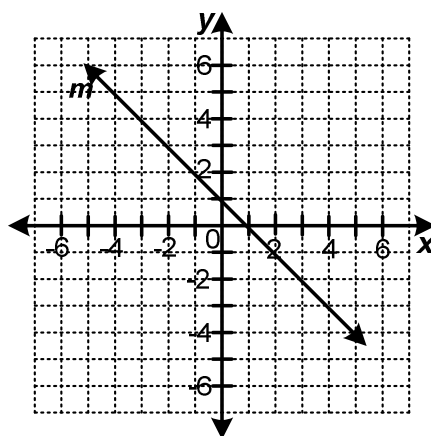
b. Reflect the original figure across the  $y$ -axis.

Original Figure Coordinates  
**A**(4, 3); **B**(2, 3); **C**(1, 1); **D**(5, 1)  
 Image Coordinates  
**A'**( \_\_\_\_, \_\_\_\_); **B'**( \_\_\_\_, \_\_\_\_);  
**C'**( \_\_\_\_, \_\_\_\_); **D'**( \_\_\_\_, \_\_\_\_)



c. Reflect  $\triangle PQR$  across line  $m$ .

Original Figure Coordinates  
**P**(2, 5); **Q**(5, 1); **R**(2, 1)  
 Image Coordinates  
**P'**( \_\_\_\_, \_\_\_\_); **Q'**( \_\_\_\_, \_\_\_\_); **R'**( \_\_\_\_, \_\_\_\_)



## Translations, Reflections, and Dilations

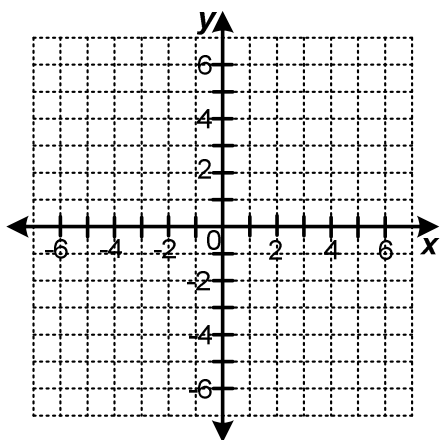
2. Label the x-axis and y-axis.

- Graph the original figure. Trace it in blue.
- Perform the indicated transformation.
- Write the coordinates for the image and graph the image. Trace it in red.

a. Translate  $\triangle PQR$  2 units up and 2 units right.

Original Coordinates  
**P(2, 5); Q(5, 1); R(2, 1)**  
 Image Coordinates

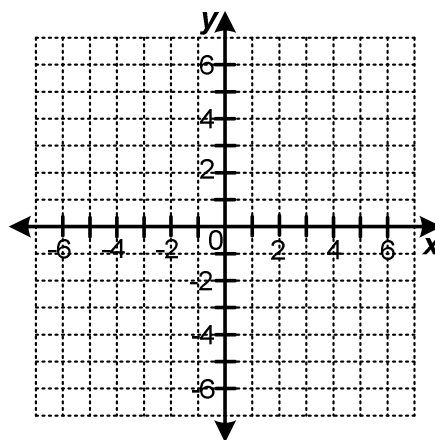
**P'( \_\_\_ , \_\_\_ ); Q'( \_\_\_ , \_\_\_ ); R'( \_\_\_ , \_\_\_ )**



b. Translate  $\triangle PQR$  7 units down and 7 units left.

Original Coordinates  
**P(2, 5); Q(5, 1); R(2, 1)**  
 Image Coordinates

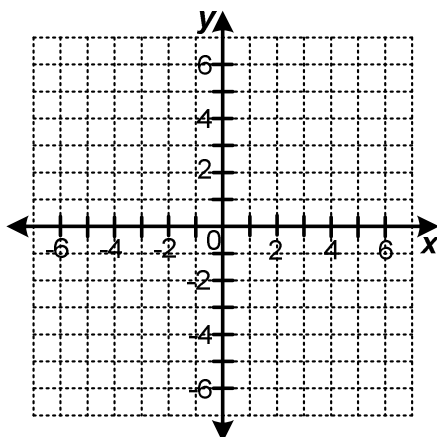
**P'( \_\_\_ , \_\_\_ ); Q'( \_\_\_ , \_\_\_ ); R'( \_\_\_ , \_\_\_ )**



c. Translate  $\triangle PQR$  5 units down and 3 units left.

Original Coordinates  
**P(2, 5); Q(5, 1); R(2, 1)**  
 Image Coordinates

**P'( \_\_\_ , \_\_\_ ); Q'( \_\_\_ , \_\_\_ ); R'( \_\_\_ , \_\_\_ )**



## Translations, Reflections, and Dilations

3. Label the x-axis and y-axis.

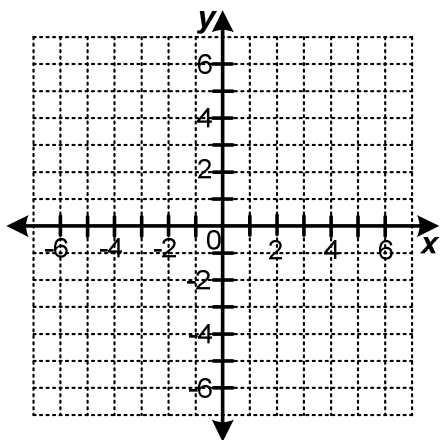
- Graph the original figure. Trace it in blue.
- Perform the indicated transformation.
- Write the coordinates for the image and graph the image. Trace it in red.

a. Dilate the original figure by a scale factor of 2.

Original Coordinates  
**A**(0, 3); **B**(-2, 3); **C**(-2, 1); **D**(1, 1)

Image Coordinates  
**A'**( \_\_\_\_, \_\_\_\_); **B'**( \_\_\_\_, \_\_\_\_);

**C'**( \_\_\_\_, \_\_\_\_); **D'**( \_\_\_\_, \_\_\_\_)

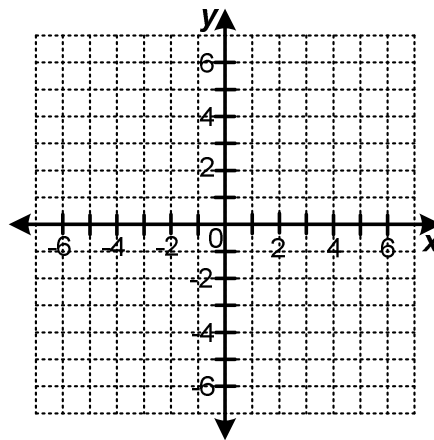


b. Dilate the original figure by a scale factor of  $\frac{1}{2}$ .

Original Coordinates  
**A**(0, 6); **B**(-4, 6); **C**(-4, 2); **D**(2, 2)

Image Coordinates  
**A'**( \_\_\_\_, \_\_\_\_); **B'**( \_\_\_\_, \_\_\_\_);

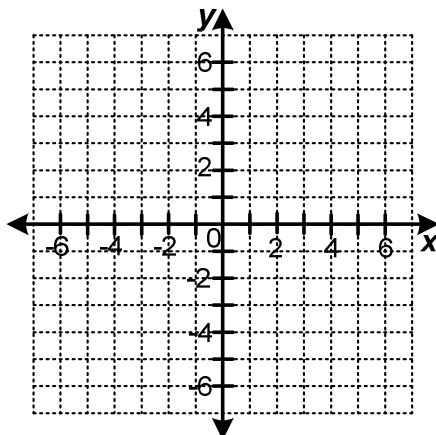
**C'**( \_\_\_\_, \_\_\_\_); **D'**( \_\_\_\_, \_\_\_\_)



c. The original circle has a radius of 2 units and the center of the original circle is at (-3, -1).

What quadrants does the original circle lie in?

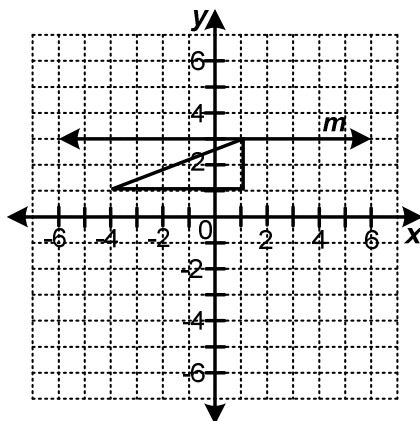
If the original circle is translated 5 units to the right and 3 units up, what are the coordinates of the center of the image?



## Translations, Reflections, and Dilations

4. Look at the original right triangle. In order to have the image with exactly one vertex in Quadrant I, should the original right triangle be reflected across the  $x$ -axis, the  $y$ -axis, or line  $m$ ?

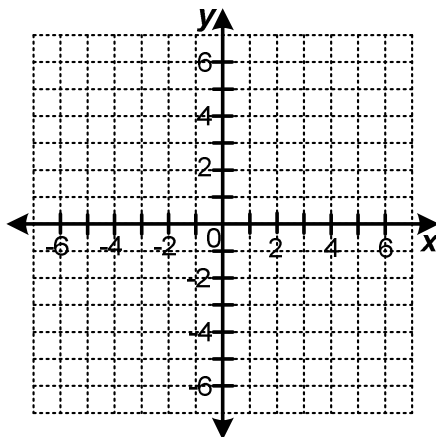
Write the coordinates of the reflected image.



5. The original circle with a radius of 3 units has its center at  $(3, 0)$ .

What quadrants does the original circle lie in?

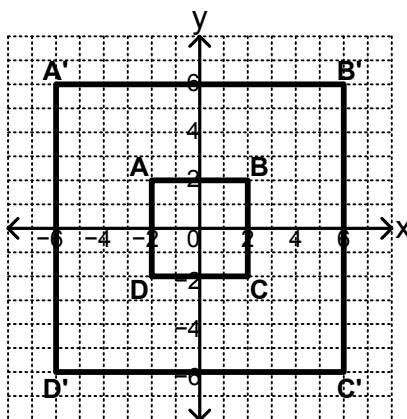
If the circle is translated 3 units to the left and 2 units up, what are the coordinates of the center of the image?



## Translations, Reflections, and Dilations

Answer the following questions. It may be helpful to make a table of the original coordinates and the image coordinates.

- Suppose an original point has coordinates  $(3, 2)$  and is reflected across the  $y$ -axis. What are the coordinates of the image point?
- Suppose an original point is reflected across the  $x$ -axis. If the image point has coordinates  $(-5, 4)$ , what is the coordinates of the original point?
- Suppose an original point has coordinates  $(4, -6)$  and is translated 3 to the right and 5 down. What are the coordinates of the image point?
- Suppose an original point undergoes a translation of 2 units to the left and 3 units up. If the image point has the coordinates  $(-3, 7)$ , what is the coordinates of the original point?
- Square **ABCD** was dilated to form square **A'B'C'D'**. What scale factor was used to change square **ABCD** into square **A'B'C'D'**? Justify your response.



- Carey drew an equilateral triangle with a perimeter of 15 inches. He dilated the triangle by a scale factor of 0.5. What is the length of each side of the image of the dilated triangle?