

## Lesson 8-3

## Example 1

Draw the dilation image of quadrilateral  $MNPQ$  below with vertices at  $M(-4, 3)$ ,  $N(-1, 3)$ ,  $P(-1, 1)$ , and  $Q(-4, 1)$ . The center of dilation is the origin and the scale factor is 2.

## Solution

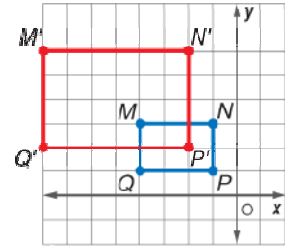
Because the center of dilation is at the origin, use the rule  $(x, y) \rightarrow (2x, 2y)$ .

$$M(-4, 3) \rightarrow M'(-8, 6)$$

$$N(-1, 3) \rightarrow N'(-2, 6)$$

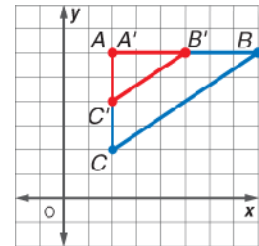
$$P(-1, 1) \rightarrow P'(-2, 2)$$

$$Q(-4, 1) \rightarrow Q'(-8, 2)$$



## Example 2

**GRAPHIC DESIGN** A triangular flag is designed to promote a new attraction at an amusement park. The flags represented by  $\triangle ABC$  on the grid shown to the right will also be manufactured in a smaller size. Draw a dilation image of  $\triangle ABC$  with center of dilation at  $A$  and a scale factor of  $\frac{1}{2}$ .



## Solution

The distance from the center of dilation,  $A$ , to  $B$  is 6 units. So the distance from  $A$  to  $B'$  is  $\frac{1}{2} \times 6$ , or 3. Count over 3 units from  $A$  to locate  $B'$ . The distance from  $A$  to  $C$  is  $\frac{1}{2} \times 4$ , or 2. Count down 2 units from  $A$  to locate  $C'$ . Points  $A$  and  $A'$  coincide because  $A$  is the center of dilation.