

Name \_\_\_\_\_ Date \_\_\_\_\_

# Dilations (Pages 370–373)

The process of enlarging or reducing an image is called a **dilation**.

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| <b>Working with Dilations</b> | Since the dilated image has the same shape as the original, the two images are similar. The ratio of the dilated image to the original is called the <b>scale factor</b> . |
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## EXAMPLE

A triangle has vertices  $M(2, -2)$ ,  $N(6, -2)$ , and  $P(2, 4)$ . Find the coordinates of the image for a dilation with a scale factor of  $\frac{5}{2}$ .

Multiply each coordinate in each ordered pair by  $\frac{5}{2}$ .

$$M(2, -2) \rightarrow \left(2 \cdot \frac{5}{2}, -2 \cdot \frac{5}{2}\right) \rightarrow M'(5, -5)$$

$$N(6, -2) \rightarrow \left(6 \cdot \frac{5}{2}, -2 \cdot \frac{5}{2}\right) \rightarrow N'(15, -5)$$

$$P(2, 4) \rightarrow \left(2 \cdot \frac{5}{2}, 4 \cdot \frac{5}{2}\right) \rightarrow P'(5, 10)$$

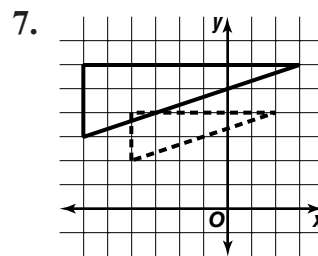
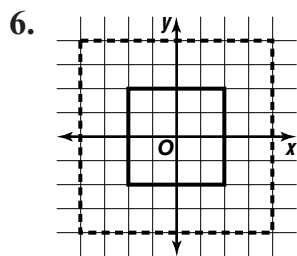
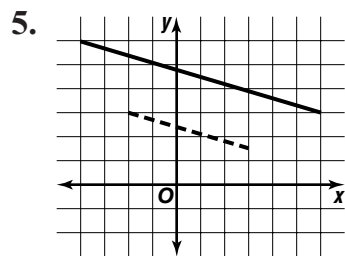
## PRACTICE

- Find the coordinates of the image of point  $C(12, 4)$  for a dilation with a scale factor of  $\frac{2}{3}$ .

**Triangle KLM has vertices  $K(-5, 15)$ ,  $L(-5, -10)$ , and  $M(15, 20)$ . Find the coordinates of its image for a dilation with each given scale factor.**

- 3
- $\frac{1}{5}$
- $\frac{3}{5}$

**In each figure, the dashed-lined figure is a dilation of the straight-lined figure. Find each scale factor.**



- Standardized Test Practice** What are the coordinates of the image of point  $Q(3, 8)$  for a dilation with a scale factor of  $\frac{1}{4}$ ?

- A**  $Q'\left(\frac{3}{4}, 2\right)$       **B**  $Q'(12, 32)$       **C**  $Q'(3, 2)$       **D**  $Q'\left(\frac{4}{3}, \frac{1}{2}\right)$

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| <b>Answers:</b> 1. $C'\left(8, 2\frac{2}{3}\right)$ 2. $K'(-15, 45)$ , $L'(-15, -30)$ , $M'(45, 60)$ 3. $K'(-1, 3)$ , $L'(-1, -2)$ , $M'(3, 4)$<br>4. $K'(-3, 9)$ , $L'(-3, -6)$ , $M'(9, 12)$ 5. $\frac{1}{2}$ 6. 2 7. $\frac{3}{2}$ 8. A |
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