

Dilations

Practice and Problem Solving: A/B

For Problems 1 and 2, find the coordinates of the image point using the coordinate notation. Plot and label the pre-image and the image. Use the graph to determine the scale factor.

1. $D(x, y) \rightarrow (1.5x, 1.5y)$
 $G(1, -2), H(1, -4), J(4, -2)$

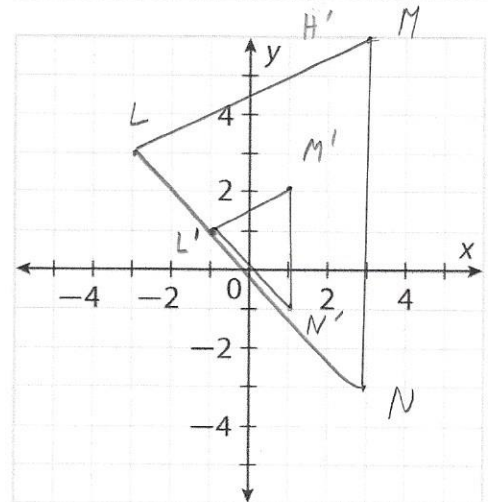
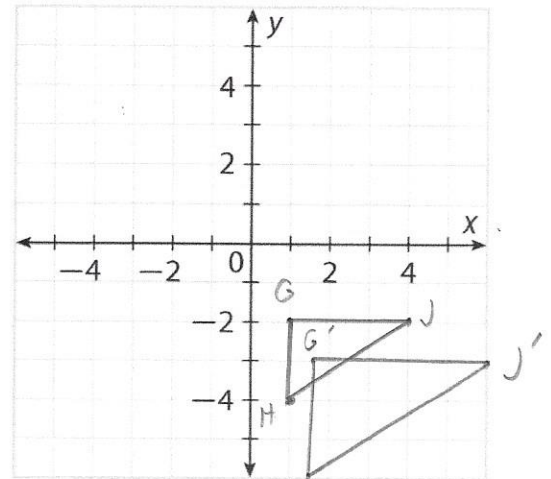
$G'(1.5, -3), H'(1.5, -6), J'(6, -3)$

Scale factor: $\frac{3}{2}$

2. $D(x, y) \rightarrow \left(\frac{1}{3}x, \frac{1}{3}y\right)$
 $L(-3, 3), M(3, 6), N(3, -3)$

$L'(-1, 1), M'(1, 2), N'(1, -1)$

Scale factor: $\frac{1}{3}$



For Problems 3–5, use your graphs for Problems 1 and 2.

3. If you drew lines $\overline{GG'}$, $\overline{HH'}$, and $\overline{JJ'}$ on the graph for Problem 1, where would the lines intersect? $(0, 0)$ This point is called the

center of dilation.

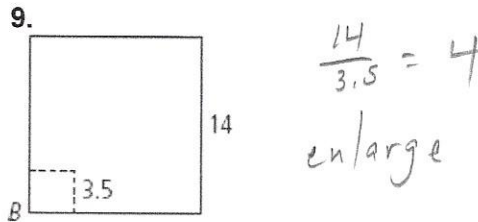
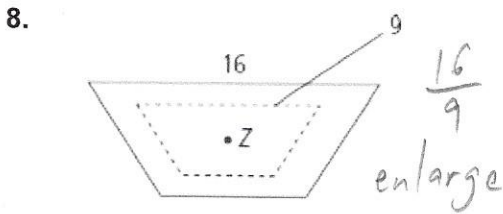
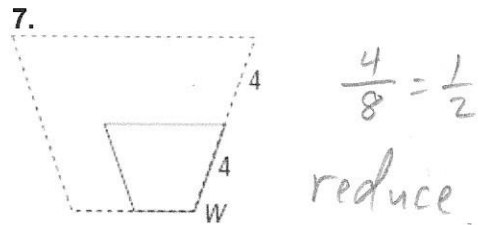
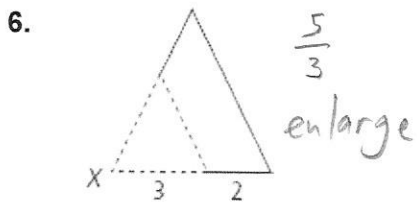
4. If you drew lines $\overline{LL'}$, $\overline{MM'}$, and $\overline{NN'}$ on the graph for Problem 2,

where would the lines intersect? $(0, 0)$

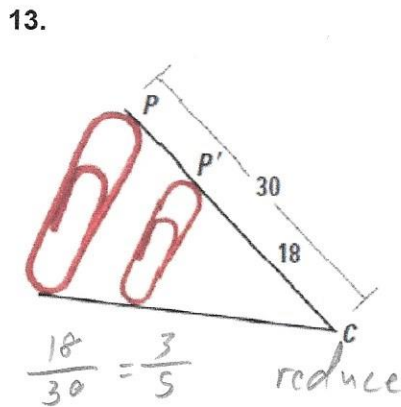
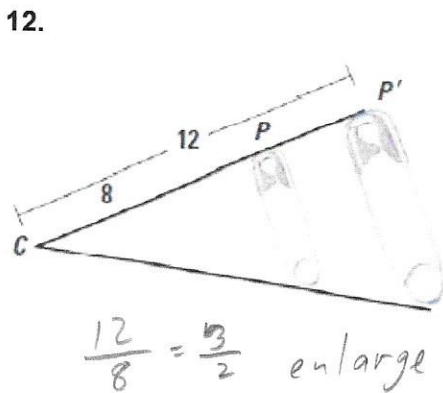
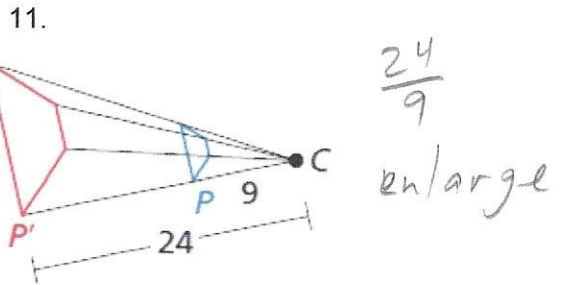
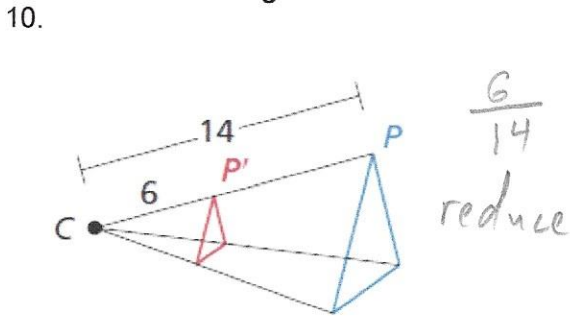
5. Fill in the lengths of the segments in Problem 1.

$$\frac{G'H'}{GH} = \frac{\boxed{3}}{\boxed{2}} = \frac{3}{2} \quad \frac{J'G'}{JG} = \frac{\boxed{4.5}}{\boxed{3}} = \frac{3}{2}$$

In Exercises 6-9, the solid-line figure is the image after a dilation of the dashed-line figure. The labeled point is the center of dilation. Find the scale factor of the dilation. Then tell whether the dilation is a reduction or an enlargement.

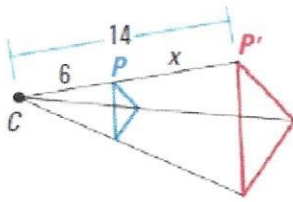


In Exercises 10 – 13, find the scale factor of the dilation. Then tell whether the dilation is a reduction or an enlargement.



In Exercises 14-15, find the scale factor. Tell whether the dilation is a *reduction* or an *enlargement*. Find the value of x .

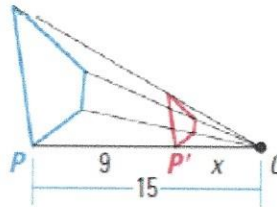
14.



$$\frac{14}{6} = \frac{7}{3}$$

enlarge
 $x = 8$

15.

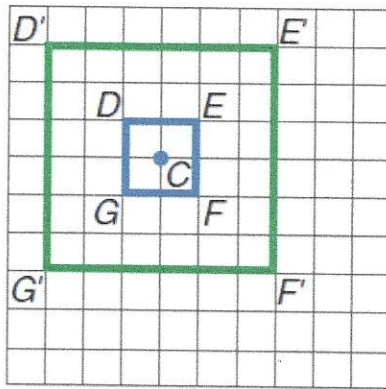


$$\frac{6}{15} = \frac{2}{5}$$

reduce
 $x = 6$

In Exercises 16 – 17, find the scale factor of the dilation. Then tell whether the dilation is a *reduction* or an *enlargement*.

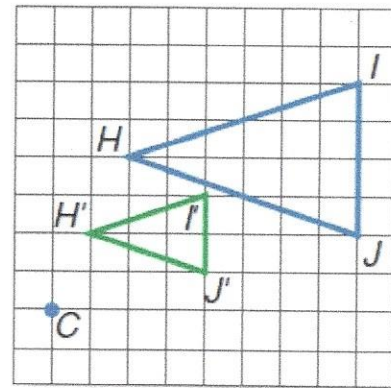
16.



17.

$$\frac{6}{2} = 3$$

enlarge



$$\frac{2}{4} = \frac{1}{2}$$

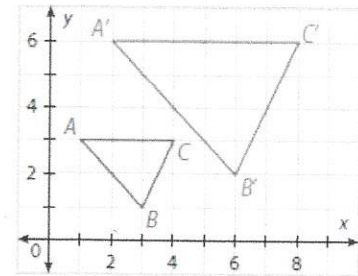
reduce

4. Is the scale factor of the dilation of $\triangle ABC$ equal to $\frac{1}{2}$? Explain.

no

$$\frac{A'C'}{AC} = \frac{6}{3} = 2$$

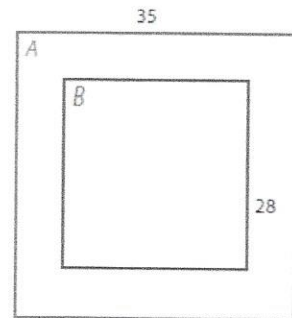
scale factor is 2



5. Square A is a dilation of square B.
What is the scale factor?

- a. $\frac{1}{7}$
- b. $\frac{4}{5}$
- c. $\frac{5}{4}$
- d. 7
- e. $\frac{25}{16}$

$$\frac{35}{28} = \frac{5}{4}$$



5.

9. Draw an image of $WXYZ$. The center of the dilation is O , and the scale factor is 2.

