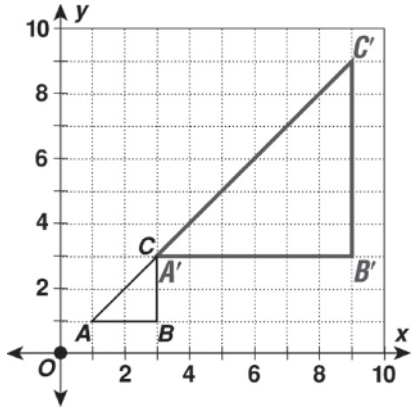
Name _____ Date _____ Class _____

LESSON 10-1

Properties of Dilations

Practice and Problem Solving: A/B

Use triangles *ABC* and *A′B′C′* for Exercises 1–4.



1. Use the coordinates to find the lengths of the sides.

   Triangle *ABC*: *AB* = ____ ; *BC* = ____

   Triangle *A′B′C′*: *A′B′* = ____ ; *B′C′* = ____

2. Find the ratios of the corresponding sides.

   $\frac{A'B'}{AB} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$ $\frac{B'C'}{BC} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

3. Is triangle *A′B′C′* a dilation of triangle *ABC*? _____

4. If triangle *A′B′C′* is a dilation of triangle *ABC*, is it a reduction or an enlargement? _____

For Exercises 5–8, tell whether one figure is a dilation of the other or not. If one figure is a dilation of the other, tell whether it is an enlargement or a reduction. Explain your reasoning.

5. Triangle *R′S′T′* has sides of 3 cm, 4 cm, and 5 cm. Triangle *RST* has sides of 12 cm, 16 cm, and 25 cm.

   _____

   _____

6. Quadrilateral *WBCD* has coordinates of *W*(0, 0), *B*(0, 4), *C*(−6, 4), and *D*(−6, 0). Quadrilateral *W′B′C′D′* has coordinates of *W′*(0, 0), *B′*(0, 2), *C′*(−3, 2), and *D′*(−3, 0).

   _____

   _____

7. Triangle *MLQ* has sides of 4 cm, 4 cm, and 7 cm. Triangle *M′L′Q′* has sides of 12 cm, 12 cm, and 21 cm.

   _____

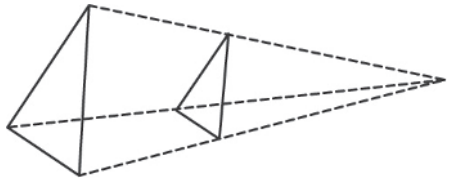
   _____

8. Do the figures at the right show a dilation? Explain.

   _____

   _____

   _____



MODULE 9 Challenge

1. $(x, y) \rightarrow (x + h, y + k)$; translation, direct
2. $(x, y) \rightarrow (x - y)$; reflection across x-axis, opposite
3. $(x, y) \rightarrow (-y, x)$; rotation of 90°, opposite
4. $(x, y) \rightarrow (-x, y)$; reflection across y-axis, opposite
5. translation
6. rotation, reflection

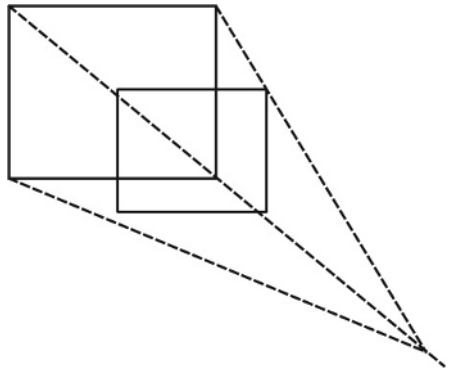
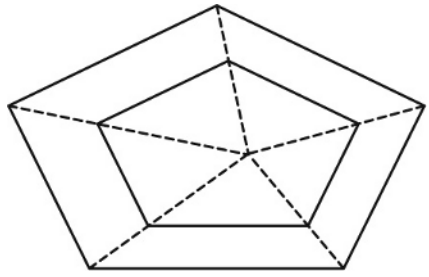
MODULE 10 Transformations and Similarity

LESSON 10-1

Practice and Problem Solving: A/B

1. 2, 2; 6, 6
2. $\frac{6}{2} = 3; \frac{6}{2} = 3$
3. Yes
4. enlargement
5. No, the ratios are not all equal. $\frac{3}{12} = \frac{1}{4}; \frac{4}{16} = \frac{1}{4}; \frac{5}{25} = \frac{1}{5}$
6. Yes, this shows a reduction. The ratio of the lengths of corresponding sides is $\frac{1}{2}$.
7. Yes, this shows an enlargement. The ratio of the lengths of corresponding sides is $\frac{3}{1}$.
8. Yes; The lines drawn through corresponding vertices meet in a single point.

Practice and Problem Solving: C

1. 2.5
2. $\frac{1}{3}$
3. 
4. 
5. scale factor: 3; area of original rectangle: 6 square units; area of dilation: 54 square units
6. scale factor: $\frac{1}{2}$; area of original rectangle: 8 square units; area of dilation: 2 square units
7. Sample answer: The area of the image is the area of the original figure times the square of the scale factor.

Practice and Problem Solving: D

1. 3; 2; 9; 6
2. $\frac{9}{3} = 3; \frac{6}{2} = 3;$
3. Yes
4. Enlargement
5. 6, 6, 6, 6; 3, 3, 3, 3
6. $\frac{3}{6} = \frac{1}{2}; \frac{3}{6} = \frac{1}{2}; \frac{3}{6} = \frac{1}{2}; \frac{3}{6} = \frac{1}{2}$
7. Yes
8. Reduction
9. Enlargement

Reteach

1. $\frac{4}{3} = 1\frac{1}{3}; \frac{3}{4} = \frac{3}{4};$ no; no
2. $\frac{2}{4} = \frac{1}{2}; \frac{4}{8} = \frac{1}{2};$ yes; yes