

**LESSON 6.7 Practice A**  
For use with pages 424–431

State whether a dilation using the scale factor  $k$  results in a *reduction* or an *enlargement* of the original figure.

1.  $k = 3$                       2.  $k = \frac{1}{3}$                       3.  $k = \frac{5}{4}$                       4.  $k = 0.93$

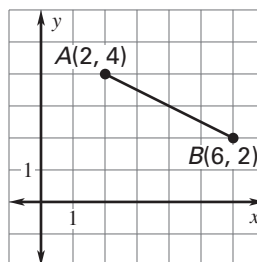
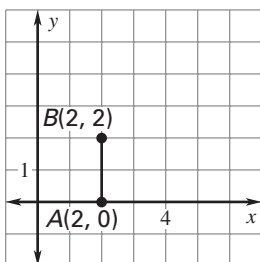
**A and B are the endpoints of  $\overline{AB}$ . Complete the coordinates of C and D, the endpoints of the image  $\overline{CD}$  after a dilation of scale factor  $k$ .**

5.  $A(1, 1), B(3, 1), k = 2$                       6.  $A(4, 4), B(8, 12), k = \frac{3}{4}$                       7.  $A(0, 0), B(-3, 2), k = 5$

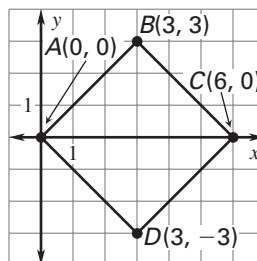
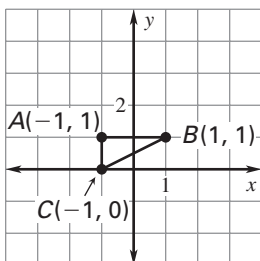
$(x, y) \rightarrow (2x, 2y)$	$(x, y) \rightarrow \left(\frac{3}{4}x, \frac{3}{4}y\right)$	$(x, y) \rightarrow (5x, 5y)$
$A(1, 1) \rightarrow C(\underline{\quad?}, \underline{\quad?})$	$A(4, 4) \rightarrow C(\underline{\quad?}, \underline{\quad?})$	$A(0, 0) \rightarrow C(\underline{\quad?}, \underline{\quad?})$
$B(3, 1) \rightarrow D(\underline{\quad?}, \underline{\quad?})$	$B(8, 12) \rightarrow D(\underline{\quad?}, \underline{\quad?})$	$B(-3, 2) \rightarrow D(\underline{\quad?}, \underline{\quad?})$

Draw a dilation of the figure with the given vertices using the given scale factor  $k$ . Verify that the figure and its image are similar.

8.  $A(2, 0), B(2, 2); k = 2$                       9.  $A(2, 4), B(6, 2); k = \frac{1}{2}$



10.  $A(-1, 1), B(1, 1), C(-1, 0); k = 3$                       11.  $A(0, 0), B(3, 3), C(6, 0), D(3, -3); k = \frac{1}{3}$



Point A is a vertex of a polygon. Point R is the image of A after a dilation. Find the scale factor of the dilation.

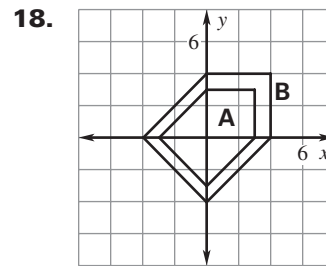
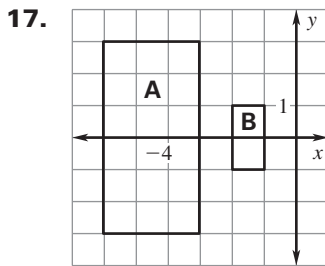
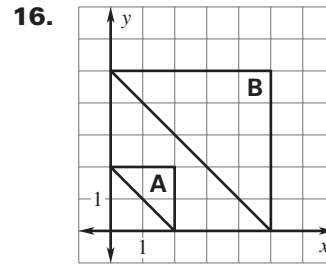
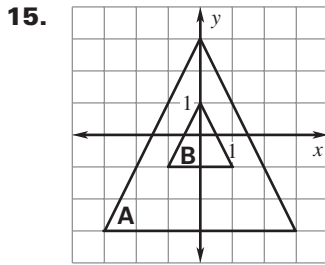
12.  $A(3, 4), R(9, 12)$                       13.  $A(9, 12), R(6, 8)$                       14.  $A(-2, -3), R(-10, -15)$

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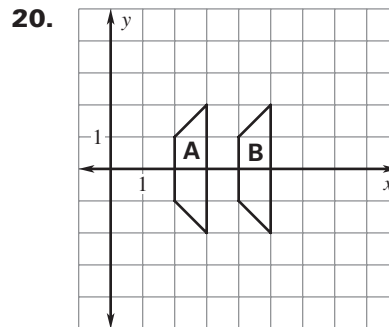
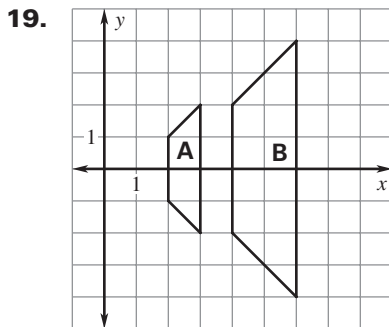
**LESSON 6.7**

**Practice A** *continued*  
For use with pages 424–431

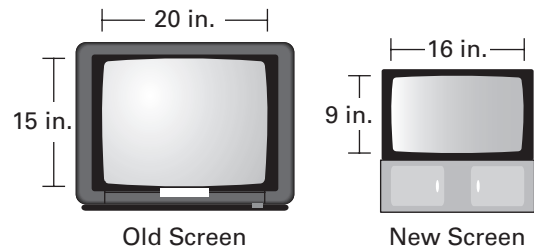
Determine whether the dilation from Figure A to Figure B is a *reduction* or an *enlargement*. Then find its scale factor.



Determine whether the transformation from Figure A to Figure B is a *translation*, *reflection*, *rotation*, or *dilation*.



21. **Television Screens** The screen on your old television is 20 inches wide and 15 inches high. The screen on your new widescreen television is 16 inches wide and 9 inches high. Is the screen on your new TV a dilation of the screen on your old TV? *Explain.*



22. **Painting** You are using a photograph that is 4 inches wide and 6 inches high to paint a portrait of a friend on a canvas that is 1 foot wide and 18 inches high. Are the dimensions of the portrait a dilation of the dimensions of the photograph? If so, state the scale factor. If not, *explain why not.*

## Lesson 6.6, continued

13. D 14. C 15. 6 16. 6 17. 10 18. 4.5  
 19. 7.5 20. 6 21.  $7\frac{5}{7}$  22.  $3\frac{1}{3}$  23.  $9\frac{1}{3}$   
 24. 50 yd 25. 7.2 ft

### Practice Level B

1. GD 2. EB 3. GB 4. GD 5. AE 6. CD  
 7. yes 8. no 9. no 10. yes 11. 6 12.  $8\frac{14}{17}$   
 13.  $4\frac{7}{17}$  14.  $8\frac{2}{5}$  15. 8 16.  $2\frac{1}{3}$  17.  $5\sqrt{2}$   
 18. 21 19. 2 20.  $3\frac{3}{4}$  21.  $1\frac{1}{4}$   
 22–24. Check student's work.

25. a. 600 ft b. yes; If a transversal is perpendicular to one of two parallel lines, then it is perpendicular to the other.

### Practice Level C

1. AG 2. DE 3. EG 4. BG 5. CG 6. DC  
 7. no;  $\frac{7}{2} \neq \frac{8}{3}$  8. yes;  $\frac{6}{9} = \frac{2}{3} = \frac{4}{6}$  9. yes;  $\frac{3}{4} = \frac{3^3}{5}$   
 10. 10 11. 20 12. 10 13.  $2\frac{2}{3}$  14. 7.5  
 15. 11.25 16. 10 17. 11.2 18. 12.5 19. 4.5  
 20.

Statements	Reasons
1. $\overline{GB} \parallel \overline{FC} \parallel \overline{ED}$	1. Given
2. $\angle ABG \cong \angle ADE$	2. Corresponding $\sphericalangle$ Post.
3. $\angle AGB \cong \angle AED$	3. Corresponding $\sphericalangle$ Post.
4. $\triangle ABG \sim \triangle ADE$	4. AA Similarity Post.

21.

Statements	Reasons
1. $\overline{WZ}$ bisects $\angle XZY$ .	1. Given
2. $\frac{XW}{XZ} = \frac{WY}{ZY}$	2. Thm. 6.7
3. $XW(ZY) = XZ(WY)$	3. Cross Products Prop.
4. $XW = WY$	4. Def. of segment bisector
5. $XW(ZY) = XZ(XW)$	5. Subst. Prop. of Equality
6. $ZY = XZ$	6. Div. Prop. of Equality

22. 22.1 in.

### Review for Mastery

1. 15 2. not parallel 3. 34 4. 21

### Problem Solving Workshop: Worked Out Example

1. 35 yd 2. 5 3.  $x = 2.25, y = 3$

4. *Sample answer:* Dividing segments proportionally means that the longer part of one segment divided by the smaller part of the same segment is proportional to the longer part of another segment divided by the smaller part of that segment. Dividing segments equally means that the two parts of each segment have the same measure.

### Challenge Practice

1.  $\angle EGC \cong \angle FED$  by Corresponding  $\sphericalangle$  thm.  $\angle FED \cong \angle DEC$  is given.

By Transitive prop.  $\angle EGC \cong \angle DEC$ .

$\angle DEC \cong \angle ECG$  by Alt. int.  $\sphericalangle$  thm.

By Transitive prop.  $\angle EGC \cong \angle ECG$ .

So,  $\triangle GEC$  is isosceles because  $\overline{EG} \cong \overline{EC}$ .

2.  $\frac{AB}{BC} = \frac{EA}{EC}$  by Thm. 6.7 and  $\frac{AG}{GE} = \frac{AC}{CD}$

by Thm. 6.4. Use Prop. of Proportions to get

$$\frac{AG + GE}{GE} = \frac{AC + CD}{CD}$$

By substitution you get  $\frac{AE}{GE} = \frac{AD}{CD}$ .

Substitute again to get  $\frac{AE}{CE} = \frac{AD}{CD}$ .

$$\frac{AB}{BC} = \frac{AE}{CE} \text{ so } \frac{AD}{CD} = \frac{AB}{CB}$$

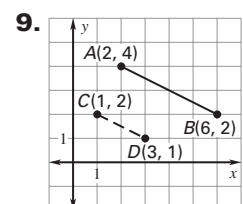
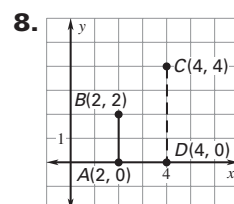
3. 3 4. 4 5.  $\sqrt{73}$  6. a. 4 b. 3 c.  $45\frac{1}{3}$

7. 10 in.

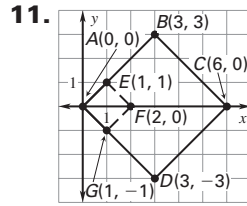
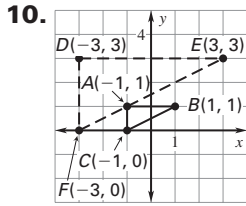
## Lesson 6.7

### Practice Level A

1. enlargement 2. reduction 3. enlargement  
 4. reduction 5.  $C(2, 2), D(6, 2)$   
 6.  $C(3, 3), D(6, 9)$  7.  $C(0, 0), D(-15, 10)$

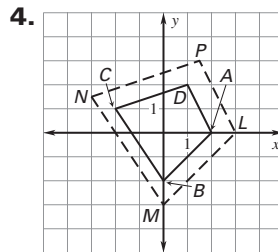
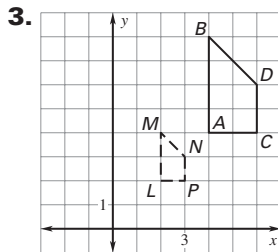
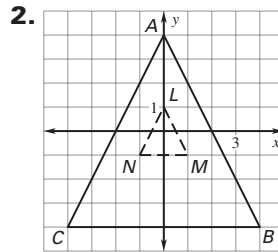
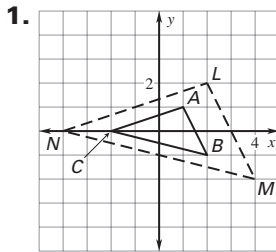


# Lesson 6.7, continued



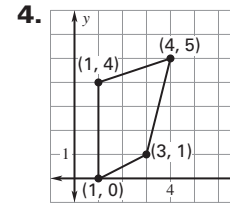
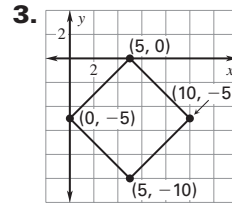
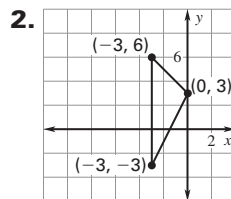
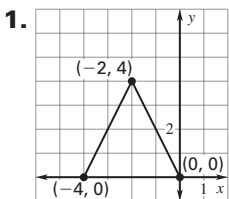
12. 3    13.  $\frac{2}{3}$     14. 5    15. reduction;  $\frac{1}{3}$   
 16. enlargement;  $\frac{5}{2}$     17. reduction;  $\frac{1}{3}$   
 18. enlargement;  $\frac{4}{3}$     19. dilation    20. translation  
 21. no; The new screen is not similar to the old screen, because  $\frac{15}{9} \neq \frac{20}{6}$ .    22. yes; The dilation is an enlargement with a scale factor of 3.

### Practice Level B



5. reduction;  $x = 1, y = 2, z = 1$   
 6. enlargement;  $m = 16, n = 20$   
 7. enlargement;  $x = 3, y = 2, z = 3$   
 8. reduction;  $m = 2, n = 1.5$     9. dilation  
 10. reflection    11. dilation    12. translation    13. 8  
 14. a. 2;  $\frac{1}{4}$     b.  $\frac{1}{2}$     c. The scale factor in part (b) is the product of the scale factors in part (a).

### Practice Level C

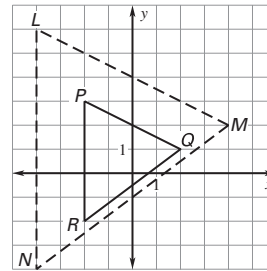


5. reduction;  $\frac{6}{7}$     6. enlargement;  $\frac{4}{3}$     7. no    8. no  
 9. image of  $M: (-\frac{2}{3}, \frac{4}{3})$ , of  $N: (\frac{4}{3}, \frac{8}{3})$ , of  $L: (4, 0)$   
 10. image of  $G: (-5, 5)$ , of  $H: (0, 15)$ ,  
 of  $I: (20, \frac{25}{2})$ , of  $J: (15, \frac{5}{2})$   
 11. original coordinates for  $M: (0, 9)$ ,  
 for  $N: (6, 12)$ , for  $L: (12, 0)$   
 12. original coordinates for  $I: (1, \frac{1}{3})$ , for  $G: (\frac{5}{3}, \frac{7}{3})$ ,  
 for  $H: (3, 1)$

13. a. 12 in. by 18 in.    b.  $\frac{3}{1}$     c. 3 in. on the right and left sides, 4 in. on the top and bottom sides

### Review for Mastery

1.  $L(-4, 6), M(4, 2), N(-4, -4)$



2.  $L(1, 0), M(1, 1), N(2, 2)$

