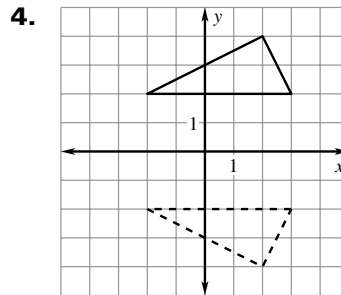
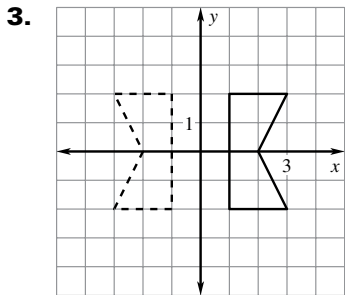
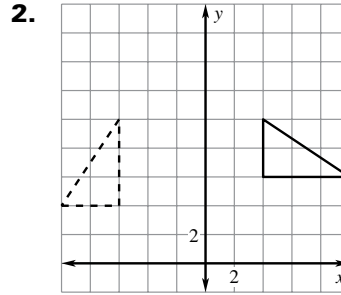
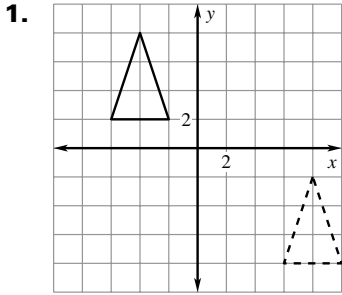


**LESSON**  
**4.8**

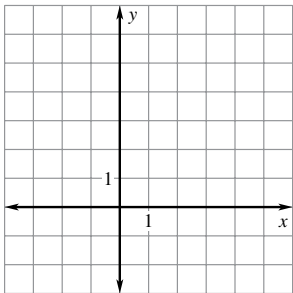
**Practice A**

For use with pages 283–291

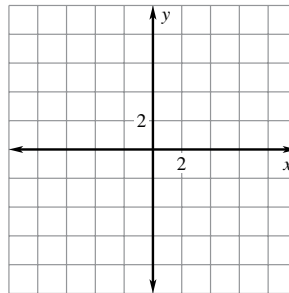
**Name the type of transformation shown.**



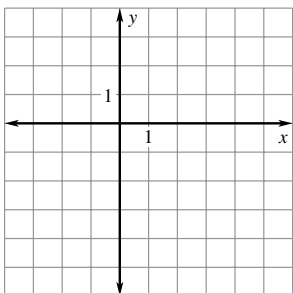
5. Figure  $ABC$  has vertices  $A(-3, 3)$ ,  $B(1, -1)$ , and  $C(0, 5)$ . Sketch  $ABC$  and draw its image after the translation  $(x, y) \rightarrow (x + 4, y + 2)$ .



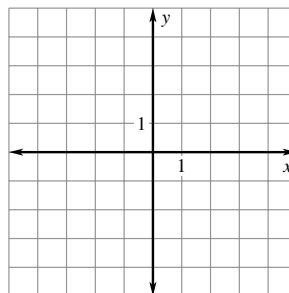
6. Figure  $ABC$  has vertices  $A(4, 2)$ ,  $B(2, 6)$ , and  $C(6, 6)$ . Sketch  $ABC$  and draw its image after the translation  $(x, y) \rightarrow (x - 6, y - 3)$ .



7. Figure  $ABCD$  has vertices  $A(0, -5)$ ,  $B(0, -2)$ ,  $C(-3, 2)$ , and  $D(-2, -4)$ . Sketch  $ABCD$  and draw its image after the translation  $(x, y) \rightarrow (x + 5, y + 1)$ .



8. Figure  $ABCD$  has vertices  $A(3, -4)$ ,  $B(4, -1)$ ,  $C(3, -2)$ , and  $D(1, -3)$ . Sketch  $ABCD$  and draw its image after the translation  $(x, y) \rightarrow (x - 6, y + 5)$ .



**LESSON**  
**4.8**

**Practice A** *continued*  
For use with pages 283–291

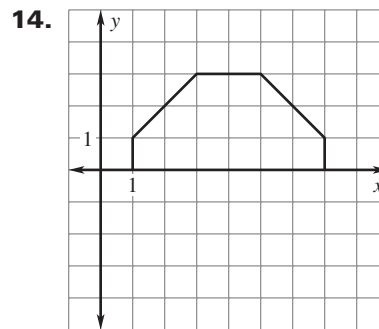
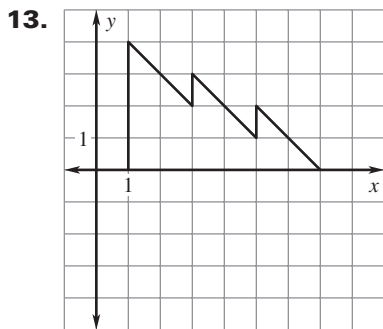
**Use coordinate notation to describe the translation.**

9. 5 units to the right, 3 units down      10. 9 units to the left, 7 units up

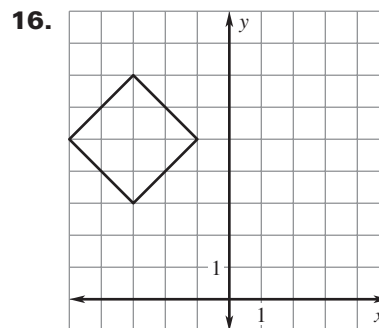
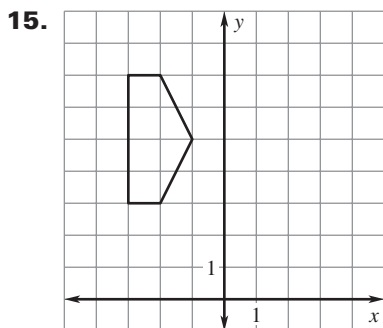
**Complete the statement using the description of the translation. In the description, points (2, 3) and (4, 2) are two vertices of a triangle.**

11. If (2, 3) translates to (10, -4), then (4, 2) translates to   ?  .  
12. If (2, 3) translates to (-1, 8), then (4, 2) translates to   ?  .

**Use a reflection in the x-axis to draw the other half of the figure.**



**Reflect the figure in the y-axis.**



**Use the coordinates to graph  $\overline{AB}$  and  $\overline{CD}$ . Tell whether  $\overline{CD}$  is a rotation of  $\overline{AB}$  about the origin. If so, give the angle and direction of rotation.**

17.  $A(2, 1), B(5, 3), C(1, -2), D(3, -5)$   
18.  $A(-2, 3), B(-2, 5), C(-2, -3), D(-3, -7)$

## Lesson 4.7, continued

Statements	Reasons
14. $m\angle ABH = 90^\circ$ , $m\angle GHE = 90^\circ$ , $m\angle DEA = 90^\circ$	14. Definition of right angles
15. $m\angle ABE = m\angle ABH + m\angle HBE$ , $m\angle GHB = m\angle GHE + m\angle EHB$ , $m\angle DEH = m\angle DEA + m\angle AEH$	15. Angle Addition Postulate
16. $m\angle ABE = 60^\circ + 90^\circ$ , $m\angle GHB = 60^\circ + 90^\circ$ , $m\angle DEH = 60^\circ + 90^\circ$	16. Substitution property of equality
17. $m\angle ABE = 150^\circ$ , $m\angle GHB = 150^\circ$ , $m\angle DEH = 150^\circ$	17. Simplify.
18. $\angle ABE \cong \angle GHB \cong \angle DEH$	18. Definition of congruent angles
19. $\triangle AEB \cong \triangle GBH \cong \triangle DHE$	19. SAS Congruence Postulate
20. $\overline{AE} \cong \overline{DH} \cong \overline{GB}$	20. Corresp. parts of $\cong \triangle$ are $\cong$ .

4. a.

Stage	1	2	3	4	5
Triangles	3	9	27	81	243
Side length	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$
Area	$\frac{3\sqrt{3}}{16}$	$\frac{9\sqrt{3}}{64}$	$\frac{27\sqrt{3}}{256}$	$\frac{81\sqrt{3}}{1024}$	$\frac{243\sqrt{3}}{4096}$

b.  $T = 3^n$ ,  $L = \left(\frac{1}{2}\right)^n$ ,  $A = \left(\frac{\sqrt{3}}{4}\right)\left(\frac{3}{4}\right)^n$ ;

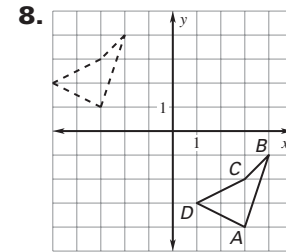
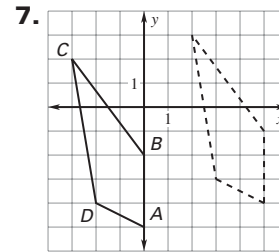
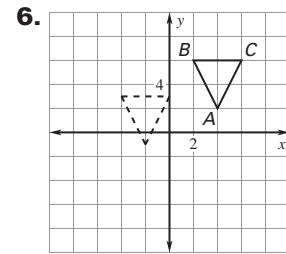
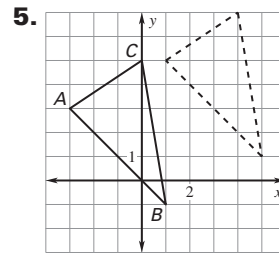
When  $n = 12$ :  $T = 531,441$ ,  $L = \frac{1}{4096}$ ,

$A = \frac{531,441\sqrt{3}}{67,108,864}$

## Lesson 4.8

### Practice Level A

- translation
- rotation
- reflection or rotation
- reflection

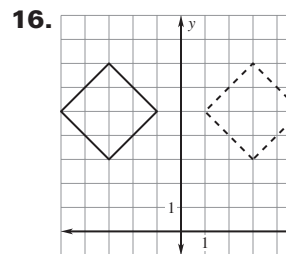
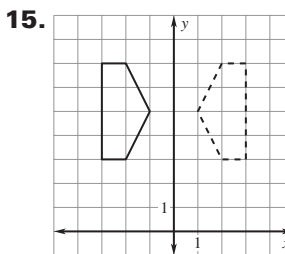
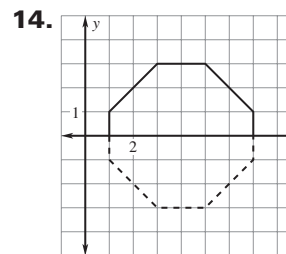
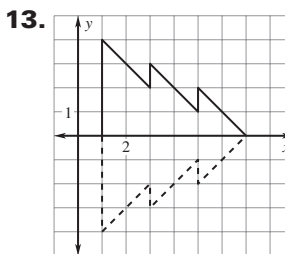


9.  $(x, y) \rightarrow (x + 5, y - 3)$

10.  $(x, y) \rightarrow (x - 9, y + 7)$

11.  $(12, -5)$

12.  $(1, 7)$



17. rotation;  $90^\circ$  clockwise    18. not a rotation

### Practice Level B

- reflection
- translation
- rotation

