# Answers for 4.8

*For use with pages 276–280*

## 4.8 Skill Practice

**1.** Subtract 1 from each $x$-coordinate and add 4 to each $y$-coordinate.

**2.** The image is congruent to the original figure.

**3.** translation

**4.** rotation

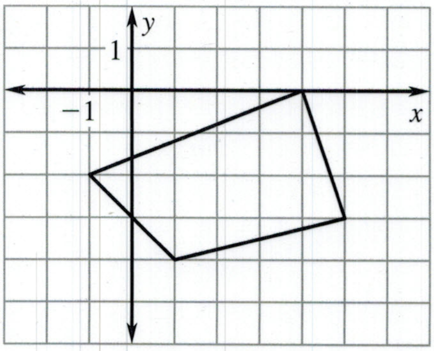
**5.** reflection

**6.** yes

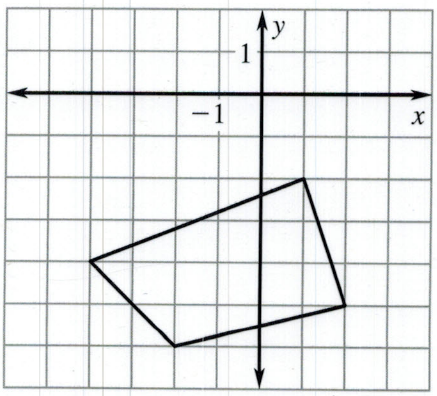
**7.** no

**8.** yes

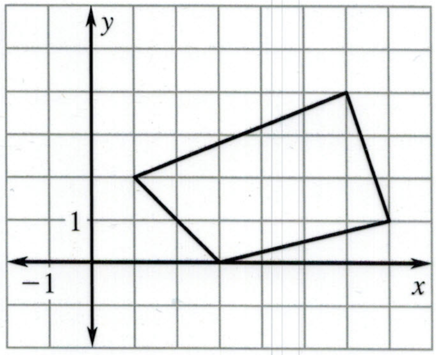
**9.**



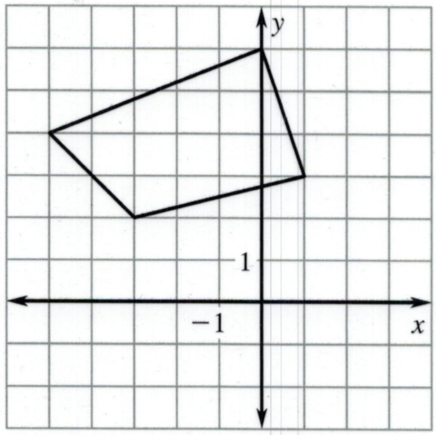

**10.**




**11.**




**12.**



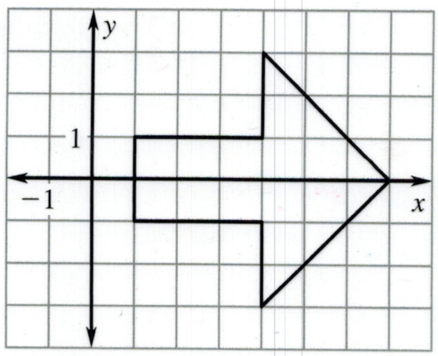

**13.** $(x, y) \rightarrow (x - 4, y - 2)$

**14.** $(x, y) \rightarrow (x + 6, y + 3)$

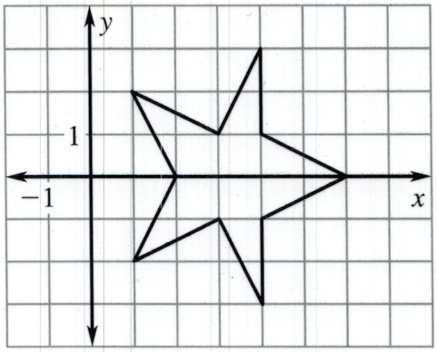
**15.** $(x, y) \rightarrow (x + 2, y - 1)$

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

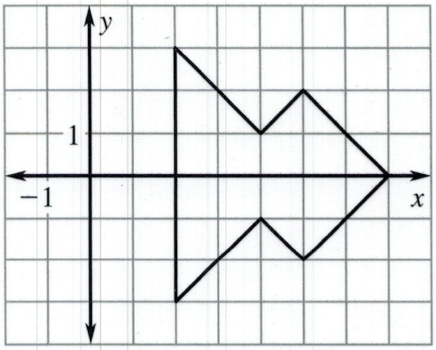
**17.**



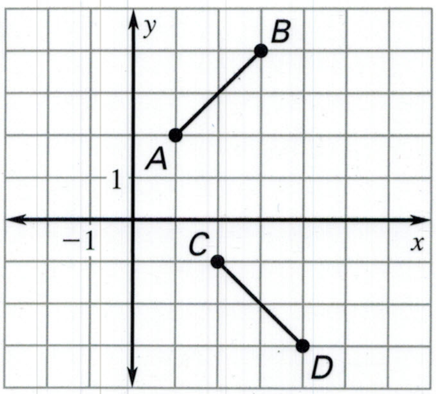
**18.**




**19.**

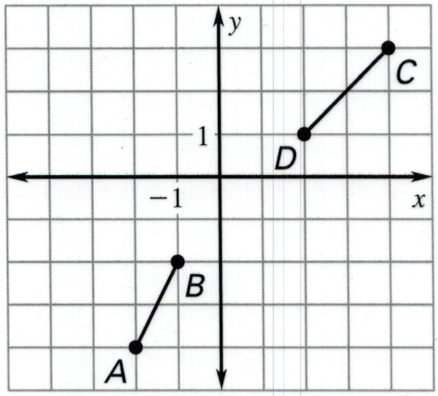



**20.**



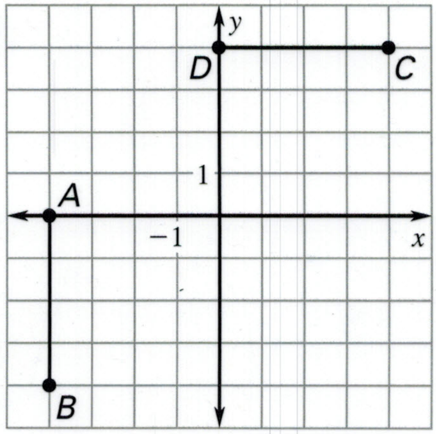

rotation; 90° clockwise

**21.**



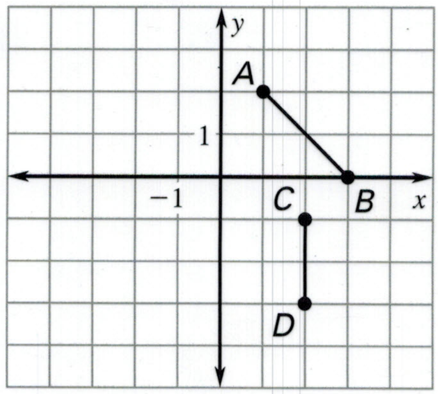

not a rotation

**22.**




not a rotation

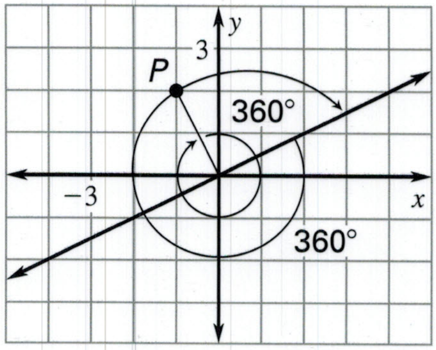
**23.**




not a rotation

**24.** The red triangle rotation segment should connect corresponding angles of the triangle; the red triangle is rotated 90° clockwise.

**25.** Yes; take any point or any line segment and rotate 360°.




**26.** (2, 2) **27.** (3, 4)

**28.** (−1, 0) **29.** (2, 3)

**30.** (3, 5) **31.** (13, −5)

**32.** The corresponding sides of each triangle are congruent therefore the triangles are congruent.

**33.** $\overline{UV}$ **34.** $\overline{AV}$

**35.** $\triangle DST$ **36.** $\triangle XYC$

**37.** $m = 3, n = 11, a = 2,$
$g = 2, h = \frac{1}{4}$

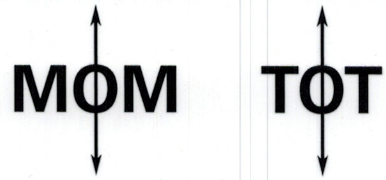
### 4.8 Problem Solving

**38. a.** The designer can reflect the layout over the horizontal line.

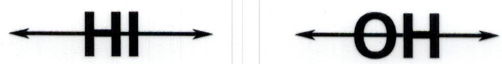
**b.** 4 ft

**39.** 90° clockwise,
90° counterclockwise

**40. a.** *Sample answer:* MOM, TOT




**b.** *Sample answer:* HI, OH




**41. a.** $(x, y) \to (x - 1, y + 2)$

**b.** $(x, y) \to (x + 2, y - 1)$

**c.** No; the translation needed does not match a knight's move.

**42.** The slopes of $\overline{BC}$ and $\overline{EF}$ are both $-1$ and the slopes of $\overline{AB}$ and $\overline{DE}$ are both 1. Therefore, $\overline{AB} \perp \overline{BC}$ since the product of their slopes is $-1$. Similarly, $\overline{DE} \perp \overline{EF}$. Thus $\triangle ABC$ and $\triangle DEF$ are right triangles. Using the distance formula, $BC = EF = \sqrt{2}$ and $AC = DF = \sqrt{10}$. So, $\overline{BC} \cong \overline{EF}$, $\overline{AC} \cong \overline{DF}$. By the HL Congruence Theorem, $\triangle ABC \cong \triangle DEF$. Therefore, $\triangle DEF$ is a congruence transformation of $\triangle ABC$, described by the notation $(x, y) \to (x - 5, y + 1)$.

**43.** B

**44.** (1, 4), (1, 1), (3, 1); no; the final image would have a different rotation segment.

### 4.8 Mixed Review

**45.** $-\dfrac{a}{b}$

**46.** $b$

**47.** $a + b$

**48.** $b$

**49.** $2a$

**50.** $\sqrt{a^2 + b^2}$

**51.** *Sample answer:* $\overline{RS} \cong \overline{UV}$, $\overline{ST} \cong \overline{VW}$, $\overline{TR} \cong \overline{WU}$

### 4.5–4.8 Mixed Review of Problem Solving

**1. a.** reflection in the $y$-axis

**b.** rotation of 90° counterclockwise

**c.** reflection in the $x$-axis

**d.** Rotate figure A 90° clockwise and 180°.

**2.** No; the given angle is not the included angle.

**3.** The length of the side forming the 34° angle with side measuring 8 centimeters, the angle the third side makes with the side measuring 8 centimeters, or the angle the third side makes with the side forming the 34° angle with the side measuring 8 centimeters

**4.** Yes; yes; $\angle ACD$ and $\angle BCE$ are vertical angles so they are congruent which makes $\triangle ACD \cong \triangle BCE$ by SAS. Since $\triangle ACD \cong \triangle BCE$, $\overline{AD} \cong \overline{BE}$ by corr. parts of $\cong$ ⚠ are $\cong$.

**5. a.** In $\triangle ABC$, it is given that $\overline{AB} \cong \overline{CB}$, therefore $\angle BCE \cong \angle BAE$ by the Base Angles Theorem.

**b.** *Sample answer:* $\triangle ABE \cong \triangle CBE$ by AAS. $\overline{CE} \cong \overline{AE}$ by corr. parts of $\cong$ ⚠ are $\cong$. $\triangle FAE \cong \triangle DCE$ by ASA and therefore $\overline{AF} \cong \overline{CD}$ by corr. parts of $\cong$ ⚠ are $\cong$.

**6.** 7;