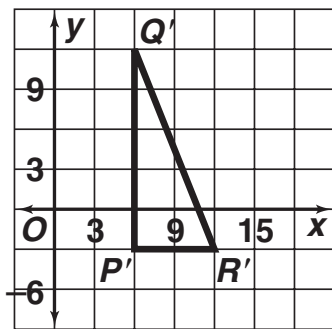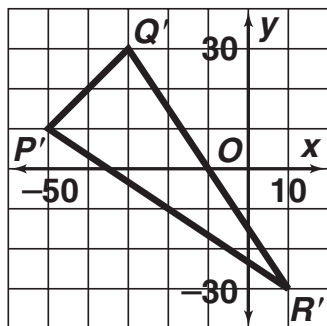## Answers for Lesson 9-5, pp. 500–503 Exercises

1. enlargement; center $A$, scale factor $\frac{3}{2}$

2. enlargement; center $C$, scale factor 3

3. enlargement; center $R$, scale factor $\frac{3}{2}$

4. reduction; center $K$, scale factor $\frac{1}{3}$

5. reduction; center $L$, scale factor $\frac{1}{3}$

6. enlargement; center $M$, scale factor 2

7. reduction; center $(0, 0)$, scale factor $\frac{1}{2}$

8. enlargement; center $(0, 0)$, scale factor 2

9. enlargement; center $(0, 0)$, scale factor $\frac{3}{2}$

10. 121.94 in.          11. 512 in.

12. 67.5 in.           13. 1.25 ft

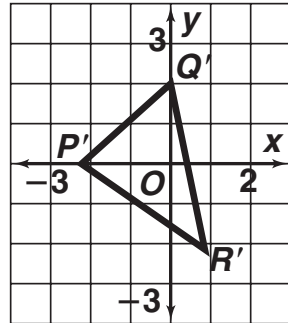14. about 0.35 in.

15. $P'(6, -3), Q'(6, 12), R'(12, -3)$



16. $P'(-50, 10), Q'(-30, 30), R'(10, -30)$

**17.** $P'\left(-\frac{9}{4}, 0\right), Q'\left(0, \frac{9}{4}\right), R'\left(\frac{3}{4}, -\frac{9}{4}\right)$



**18.** $D'(2, -10)$

**19.** $L'(-15, 0)$

**20.** $A'(-9, 3)$

**21.** $T'(0, 18)$

**22.** $M'(0, 0)$

**23.** $N'(-0.4, -0.7)$

**24.** $F'\left(-1, -\frac{2}{3}\right)$

**25.** $B'\left(\frac{1}{8}, -\frac{1}{15}\right)$

**26.** $Q'\left(6\sqrt{6}, \frac{3\sqrt{2}}{2}\right)$

**27.** $Q'(-9, 12), W'(9, 15), T'(9, 3), R'(-6, -3)$

**28.** $Q'(-6, 8), W'(6, 10), T'(6, 2), R'(-4, -2)$

**29.** $Q'\left(-\frac{3}{2}, 2\right), W'\left(\frac{3}{2}, \frac{5}{2}\right), T'\left(\frac{3}{2}, \frac{1}{2}\right), R'\left(-1, -\frac{1}{2}\right)$

**30.** $Q'\left(-\frac{3}{4}, 1\right), W'\left(\frac{3}{4}, \frac{5}{4}\right), T'\left(\frac{3}{4}, \frac{1}{4}\right), R'\left(-\frac{1}{2}, -\frac{1}{4}\right)$

**31.** $Q'(-1.8, 2.4), W'(1.8, 3), T'(1.8, 0.6), R'(-1.2, -0.6)$

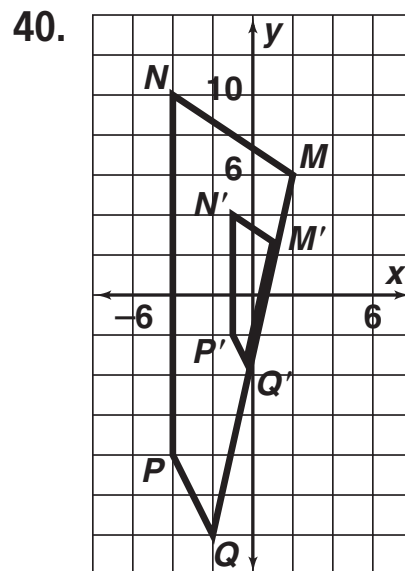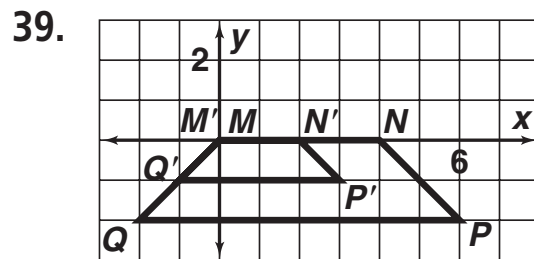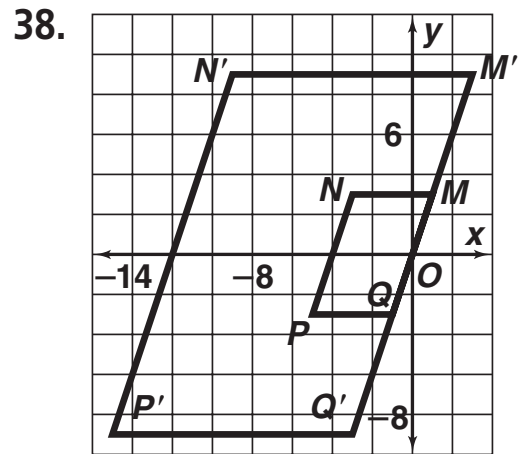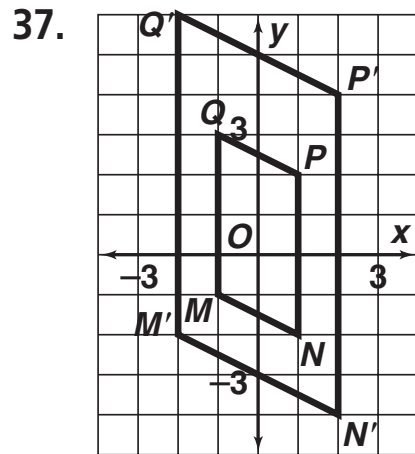**32.** $Q'(-2.7, 3.6), W'(2.7, 4.5), T'(2.7, 0.9), R'(-1.8, -0.9)$

**33.** $Q'(-30, 40), W'(30, 50), T'(30, 10), R'(-20, -10)$

**34.** $Q'(-300, 400), W'(300, 500), T'(300, 100), R'(-200, -100)$

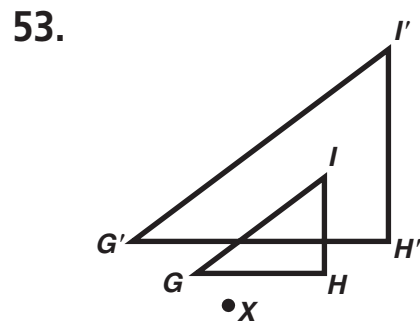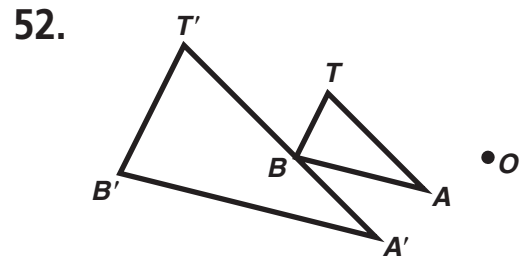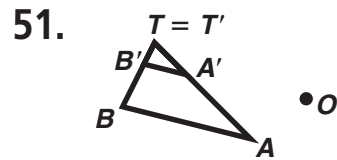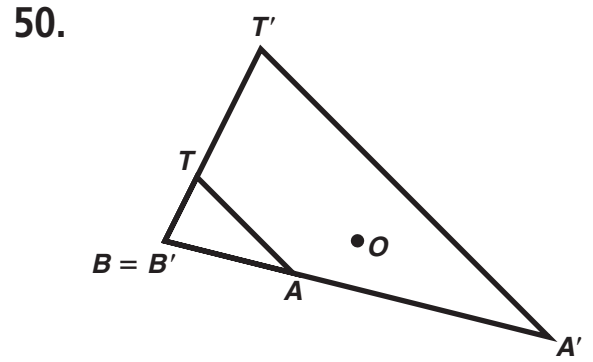**35.** The image has side lengths 10 in. and $\angle$ measures 60.

**36.** B

**37.**



**38.**



**39.**



**40.**



**41.** Check students' work.

**42.** Use a scale factor of $\frac{2}{5}$.

**43.** $I'J' = 10; H'J' = 12$

**44.** $HJ = 12; I'J' = 5.25$

**45.** $HI = 32; I'J' = 7.5$

**46.** The perimeter is doubled but the area is multiplied by 4.

**47.** $x = 3; y = 60$

**48.** 60, 60; the two triangles are similar, so corresponding angles are congruent.

**49.**



**50.**



**51.**



**52.**



**53.**



**54.** 12

**55.** 60 cm

**56.** $\frac{9}{256}$ ft$^2$

**57.** False; a dilation doesn't map a segment to a ≅ segment unless the scale factor is 1.

**58.** False; a dilation does not change orientation.

**59.** False; a dilation with a scale factor greater than 1 is an enlargement.

**60.** True; the image and preimage are similar, so the corresponding ∡s are ≅.

**61.** False; if the center of dilation is on the preimage, it is also on the image.

**62.** Each vertex is 1 ft from the light.

**63.** Connect corresponding points $A$ and $A'$ and $B$ and $B'$. Extend $\overline{AA'}$ and $\overline{BB'}$ until they intersect at the center of dilation. The scale factor is the length of $\overline{A'B'}$ divided by the length of $\overline{AB}$.

**64. a., c.**
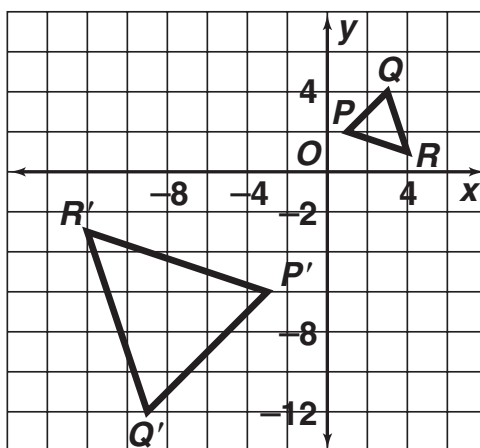


**b.** $P'(-3, -6)$, $Q'(-9, -12)$, $R'(-12, -3)$

**65. a.** $P'(-1, -2)$, $Q'(-3, -4)$, $R'(-4, -1)$

**b.** Each point of the $\triangle$ is reflected in the origin, which is the point of reflection. Two figures are symmetrical with respect to a pt. $P$ if $P$ is the midpoint of each segment that connects two corr. points of the figures.

**66.** Construct small square $D'E'F'G'$ so that $\overline{D'G'}$ is on $\overline{AC}$ (with $D'$ between $A$ and $G'$), $E'$ is on $\overline{AB}$, and $F'$ is inside $\triangle ABC$. Draw $\overrightarrow{AF'}$ to meet $\overline{BC}$ at $F$. Through $F$ construct the line $\parallel$ to $\overline{AC}$. Label its point of intersection with $\overline{AB}$ as $E$. Through $E$ and $F$ construct the lines $\perp$ to $\overline{AC}$. Label their points of intersection with $\overline{AC}$ as $D$ and $G$ respectively. $DEFG$ is the desired square.