Answers for Lesson 9-5, pp. 500-503

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. $P'(-50,10), Q'(-30,30), R'(10, -30)$
Answers for Lesson 9-5, pp. 500-503 Exercises (cont.)

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

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. $F'(1, -\frac{2}{3})$  

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

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

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

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

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 measures 60.

36. B
37.  

38.  

39.  

40.  

41. Check students’ work.  

42. Use a scale factor of \( \frac{2}{3} \).  

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.
Answers for Lesson 9-5, pp. 500-503 Exercises (cont.)

49. \[ \triangle TBA \sim \triangle T'B'A' \]
50. \[ \triangle TBA \sim \triangle T'B'A' \]

51. \[ \triangle T = \triangle T' \]
52. \[ \triangle T = \triangle T' \]

53. \[ \triangle GHI \sim \triangle G'H'I' \]

54. 12
55. 60 cm
56. \( \frac{9}{256} \text{ ft}^2 \)

57. False; a dilation doesn’t map a segment to a \( \cong \) 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 \( \triangle \) are \( \sim \).
Answers for Lesson 9-5, pp. 500-503 Exercises (cont.)

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. 

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 \( \overline{AF'} \) 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.