Answers for Lesson 10-4, pp. 555–558 Exercises

1. $1 : 2; 1 : 4$

2. $4 : 3; 16 : 9$

3. $2 : 3; 4 : 9$

4. $3 : 5; 9 : 25$

5. 24 in.^{2}

6. 56 m^2

7. 59 ft^2

8. 439 m^2

9. 384

10. $47.20

11. $1 : 2; 1 : 2$

12. $5 : 2; 5 : 2$

13. $7 : 3; 7 : 3$

14. $3 : 4; 3 : 4$

15. $4 : 1; 4 : 1$

16. $1 : 10; 1 : 10$

17. $3 : 1; 9 : 1$

18. $2 : 5; 4 : 25$

19. $2 : 3; 4 : 9$

20. $7 : 4; 49 : 16$

21. $6 : 1; 36 : 1$

22. C

23. While the ratio of lengths is $2 : 1$, the ratio of areas is $4 : 1$.

24. 0.3 cm^2

25. 252 m^2

26. $x = 2$ cm, $y = 3$ cm

27. $x = 2\sqrt{2}$ cm, $y = 3\sqrt{2}$ cm

28. $x = 4$ cm, $y = 6$ cm

29. $x = \frac{8\sqrt{3}}{3}$ cm, $y = 4\sqrt{3}$ cm

30. $x = 4\sqrt{2}$ cm, $y = 6\sqrt{2}$ cm

31. $x = 8$ cm, $y = 12$ cm

32. $2\frac{1}{4}$ in. by 12 in.; 3 in. by 16 in.

33. **a.** Check students' work.

   b. Check students' work.

   c. Estimates may vary. Sample: 205 m^2

34. Ratio of small to large is 1 : 2.

35. a. $\frac{5}{2}$ **36. a.** $\frac{8}{3}$ **37. a.** $\frac{2}{1}$

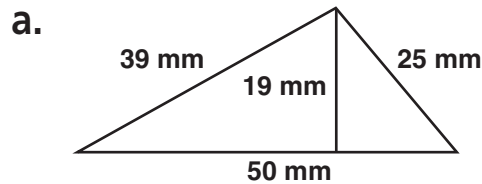   **b.** $\frac{25}{4}$ **b.** $\frac{64}{9}$ **b.** $\frac{4}{1}$

38. Answers may vary. Sample: The proposed playground is more than adequate. The number of students has approx. doubled. The proposed playground would be four times larger than the original.

39. Answers may vary. Sample:

a.

b. 114 mm; 475 mm^2

c. 456 yd; 7600 yd^2

40. a. $6\sqrt{3}$ cm^2

    b. $54\sqrt{3}$ cm^2; $13.5\sqrt{3}$ cm^2; $96\sqrt{3}$ cm^2

41. Always; ~ rectangles with = perimeters have a similarity ratio of 1, so they are ≅.

42. Sometimes; a 1-by-8 rect. and 2-by-4 rect. have the same areas, but are not ~.

43. Never; if they were ≅, both measures would be the same. If they were ~, but not ≅, their areas would not be =.

44. Sometimes; if they are ≅, they have = areas and are ~.