Answers for Lesson 11-3 Exercises

1. yes; 2; 16, 32

2. no

3. yes; −2; 16, −32

4. yes; −1; −1, 1

5. yes; 0.4; 0.256, 0.1024

6. yes; 0.1; 0.0007, 0.00007

7. yes; $-\frac{1}{3}; \frac{2}{9}, -\frac{2}{27}$

8. no

9. yes; 1.5; 50.625, 75.9375

10. yes; −5; 1250, −6250

11. yes; 6; −1296, −7776

12. no

13. $a_n = 5 \cdot (-3)^{n-1}$; 5, −15, 45, −135, 405

14. $a_n = 0.0237 \cdot 10^{n-1}$; 0.0237, 0.237, 2.37, 23.7, 237

15. $a_n = \frac{1}{2}\left(\frac{2}{3}\right)^{n-1}; \frac{1}{2}, \frac{1}{3}, \frac{2}{9}, \frac{4}{27}, \frac{8}{81}$

16. $a_n = 0.5^{n-1}$; 1, 0.5, 0.25, 0.125, 0.0625

17. $a_n = 100(-20)^{n-1}$; 100, −2000, 40,000, −800,000, 16,000,000

18. $a_n = 7 \cdot 1^{n-1}$; 7, 7, 7, 7, 7

19. $a_n = 1024(0.5)^{n-1}$; 1024, 512, 256, 128, 64

20. $a_n = 4(0.1)^{n-1}$; 4, 0.4, 0.04, 0.004, 0.0004

21. $a_n = 10(-1)^{n-1}$; 10, −10, 10, −10, 10

22. 67.5 or −67.5

23. 1530 or −1530

24. $\frac{4}{15}$ or $-\frac{4}{15}$

25. 1.5 or −1.5

26. 3.75 or −3.75

27. 6 or −6

28. geometric; 720, 1440

29. arithmetic; 125, 150

30. geometric; 3, −3

31. arithmetic; 50, 55

32. geometric; −80, 160

33. geometric; 0.125, 0.0625

34. neither; 20, 26

35. either; 2, 2

36. neither; 25, 36

37. 6561, 2187, 729, or −6561; 2187, −729

38. 7.5, 22.5, 67.5, or -7.5, 22.5, -67.5

39. 10, 8, 6.4, or -10, 8, -6.4

40. -6.64, -11.02, -18.30, or 6.64, -11.02, 18.30

41. **a–d.** Answers may vary. Sample:

a. 3 and 12; 6

b. 3, 6, 12; 2

c. 768

d. 48; 5th term

42. 768

43. 12,288

44. 786,432

45. 201,326,592

46. 3×4^{16} or 12,884,901,888

47. $3(4^{n-1})$

48. 4

49. 16

50. 2.5

51. 10

52. $-\frac{1}{6}$

53. $-\frac{2}{3}$

54. Both the common difference and the common ratio are used to find the next term in a sequence, but a common difference is added and a common ratio is multiplied.

55. \$142.79, \$613.59, \$28.62, \$58.92, \$105.82, \$262.94

56. **a.** $d, \frac{1}{2}d, \frac{1}{4}d, \frac{1}{8}d, \frac{1}{16}d, \frac{1}{32}d$

b. Yes; the common ratio is $\frac{1}{2}$.

c. $a_n = a_{n-1} \cdot \frac{1}{2}, a_1 = d$

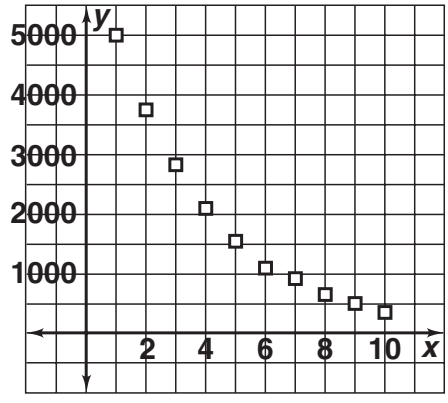
57. Both arithmetic and geometric sequence explicit formulas use the first term a_1, $n - 1$, and a common term. The recursive formulas both use a_{n-1} and a common term.

58. a. 5000, 3750, 2812.5, 2109.38, 1582.03

b. $\frac{3}{4}$

c. 375.42 cm^3

d.



e. The common ratio $\frac{3}{4}$ is less than one, so the graph is decreasing.

59. 7 **60.** 128