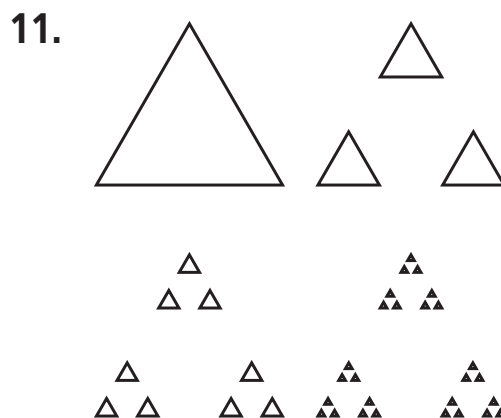


Answers for Lesson 11-1 Exercises

1. Subtract 3; 65, 62, 59.
2. Multiply by 2; 128, 256, 512.
3. Add one more to each term (add 3, add 4, add 5, etc.); 25, 33, 42.
4. Add 3; 16, 19, 22.
5. Divide by 10; 0.001, 0.0001, 0.00001.
6. Multiply by $\frac{1}{2}$; $\frac{1}{64}$, $\frac{1}{128}$, $\frac{1}{256}$.
7. Multiply by -2 ; -128 , 256 , -512 .
8. The n th term is the preceding term multiplied by n ; 720, 5040, 40,320.
9. Every odd-numbered term is 0, and every even-numbered term is $\frac{1}{n-1}$; $0, \frac{1}{7}, 0$.



12. $a_n = a_{n-1} + 1, a_1 = -2; 3$
13. $a_n = a_{n-1} - 2, a_1 = 43; 33$
14. $a_n = \frac{a_{n-1}}{2}, a_1 = 40; \frac{5}{4}$
15. $a_n = a_{n-1} - 5, a_1 = 6; -14$
16. $a_n = \frac{a_{n-1}}{4}, a_1 = 144; \frac{9}{16}$
17. $a_n = a_{n-1} \cdot \frac{1}{2}, a_1 = \frac{1}{2}; \frac{1}{64}$
18. $a_n = n + 3; 15$
19. $a_n = \frac{1}{n+1}; \frac{1}{13}$
20. $a_n = 3n + 1; 37$
21. $a_n = 4n - 1; 47$
22. $a_n = \frac{n-6}{2}; 3$
23. $a_n = n^2 + 1; 145$

Answers for Lesson 11-1 Exercises (cont.)

24. recursive; 3, 9, 21, 45, 93
25. explicit; 0, 1, 3, 6, 10
26. explicit; $-24, -21, -16, -9, 0$
27. recursive; $-2, 6, -18, 54, -162$
28. explicit; $-6, -18, -38, -66, -102$
29. explicit; 3, 9, 19, 33, 51
30. explicit; 5, 10, 15, 20, 25
31. recursive; 340, 323, 306, 289, 272
32. 15, 26, 40
33. 20, 23; $a_n = 3n + 2$; explicit OR
 $a_n = a_{n-1} + 3, a_1 = 5$; recursive
34. 96, 192; $a_n = 3 \cdot 2^{n-1}$; explicit OR
 $a_n = 2a_{n-1}, a_1 = 3$; recursive
35. 216, 343; $a_n = n^3$; explicit
36. 4096, 16,384; $a_n = 4^n$; explicit OR
 $a_n = 4a_{n-1}; a_1 = 4$, recursive
37. 144, 169; $a_n = (n + 6)^2$; explicit OR
 $a_{n+1} = a_n + 2n + 13; a_1 = 49$, recursive
38. $-1, 1$; $a_n = -1(a_{n-1}), a_1 = -1$; recursive OR
 $a_n = (-1)^n$; explicit
39. $-1, -\frac{1}{2}$; $a_n = \frac{a_{n-1}}{2}, a_1 = -16$; recursive OR $a_n = \frac{-32}{2^n}$;
explicit
40. $-47, -40$; $a_n = a_{n-1} + 7, a_1 = -75$; recursive OR
 $a_n = -82 + 7_n$; explicit
41. $-11, -19$; $a_n = a_{n-1} - 8, a_1 = 21$; recursive OR
 $a_n = 29 - 8n$; explicit

Answers for Lesson 11-1 Exercises (cont.)

42. a_{n-2}, a_{n+2}

43. Answers may vary. Sample: A recursive formula requires that the previous term be known to find a given term. An explicit formula only requires the number of the term.

44. a-c. Answers may vary. Sample:

a. $1, -2, 4, -8, \dots$

b. $a_n = -2(a_{n-1}), a_1 = 1; a_n = (-2)^{n-1}$

c. $-524,288$

45. $28, 53, 89, 138$

46. $24, 78, 240, 726$

47. $25, 36, 49, 64$

48. $54, 128, 250, 432$

49. $\frac{16}{5}, \frac{25}{6}, \frac{36}{7}, \frac{49}{8}$

50. $\frac{5}{6}, \frac{6}{7}, \frac{7}{8}, \frac{8}{9}$

51. a. 25 boxes

b. 110 boxes

c. 9 levels

52. $a_n = 10 \cdot 2^{n-1}$

53. $a_n = -n - 4$

54. $a_n = -2 \cdot \left(\frac{1}{2}\right)^{n-1}$

55. $a_n = 1 + 4(n - 1)$

56. a. $a_n = a_{n-1} + 5, a_1 = 25; a_n = 20 + 5n$

b. \$40

c. $a_n = (a_{n-1} + \$20) \cdot 1.005, a_1 = \40.20

d. 6.5%

57. a. 15, 21

b. $a_n = a_{n-1} + n, a_1 = 1$

c. Yes; the formula yields the same values as the recursive formula.