

4-7

Practice

Form G

Arithmetic Sequences

Describe the pattern in each sequence. Then find the next two terms of the sequence.

1. 3, 6, 12, 24, ...

Each term is twice the previous term; 48, 96

2. 9, 15, 21, 27, ...

Each term is six more than the previous term; 33, 39

3. 1.5, 2.25, 3, 3.75, ...

Each term is 0.75 more than the previous term; 4.5, 5.25

4. 9.9, 8.8, 7.7, 6.6, ...

Each term is 1.1 less than the previous term; 5.5, 4.4

5. 1.5, 4.5, 13.5, 40.5, ...

Each term is 3 times the previous term; 121.5, 364.5

6. 40, 20, 10, 5, ...

Each term is half the previous term; 2.5, 1.25

7. 7, 11, 15, 19, ...

Each term is 4 more than the previous term; 23, 27

8. 67, 60, 53, 46, ...

Each term is 7 less than the previous term; 39, 32

9. 12, 7, 2, -3, ...

Each term is 5 less than the previous term; -8, -13

Tell whether the sequence is arithmetic. If it is, identify the common difference.

10. 4, 8, 12, 16, ...

arithmetic; 4

11. -11, 5, 0, 6, ...

not arithmetic

12. 4, 8, 16, 32, ...

not arithmetic

13. 12, 23, 34, 45, ...

arithmetic; 11

14. 2, 4, 7, 9, ...

not arithmetic

15. 1, 3, 9, 27, ...

not arithmetic

16. -16, -11, -6, -1, ...

arithmetic; 5

17. -9, -4.5, -0.5, 4, ...

not arithmetic

18. -7, -14, -21, -28, ...

arithmetic; -7

19. $0, \frac{1}{3}, \frac{2}{3}, 1, \dots$

arithmetic; $\frac{1}{3}$

20. 5, 10, 15, 20, ...

arithmetic; 5

21. 2, 20, 200, 2000, ...

not arithmetic

22. You have a gift card for a coffee shop worth \$90. Each day you use the card to get a coffee for \$4.10. Write an explicit formula to represent the amount of money left on the card as an arithmetic sequence. What is the value of the card after buying 8 coffees?

$$A(n) = 90 - 4.1n; \$57.20$$

23. You start a savings account with \$200 and save \$30 each month. Write an explicit formula to represent the amount of money you invest into your savings account as an arithmetic sequence. How much money will you have invested after 12 months?

$$A(n) = 200 + 30n; \$560$$

4-7

Practice (continued)

Form G

Arithmetic Sequences

Find the third, fifth, and tenth terms of the sequence described by each explicit formula.

24. $A(n) = 4 + (n + 1)(-5)$

-16, -26, -51

25. $A(n) = 2 + (n + 1)(6)$

26, 38, 68

26. $A(n) = -5.5 + (n - 1)(2)$

-1.5, 2.5, 12.5

27. $A(n) = 3 + (n - 1)(1.5)$

6, 9, 16.5

28. $A(n) = -2 + (n - 1)(5)$

8, 18, 43

29. $A(n) = 1.4 + (n - 1)(3)$

7.4, 13.4, 28.4

30. $A(n) = 9 + (n - 1)(8)$

25, 41, 81

31. $A(n) = 2.5 + (n - 1)(2.5)$

7.5, 12.5, 25

Tell whether each sequence is arithmetic. Justify your answer. If the sequence is arithmetic, write a recursive and an explicit formula to represent it.

32. 1.6, 0.8, 0, -0.8, ...

arithmetic; the common difference is -0.8;
 $A(n) = A(n - 1) - 0.8;$
 $A(n) = 1.6 + (n - 1)(-0.8)$

33. 5, 10, 20, 40, ...

not arithmetic; there is a common factor, not a common difference

34. 5, 13, 21, 29, ...

arithmetic; the common difference is 8;
 $A(n) = A(n - 1) + 8;$
 $A(n) = 5 + (n - 1)(8)$

35. 51, 47, 43, 39, ...

arithmetic; the common difference is -4;
 $A(n) = A(n - 1) - 4;$
 $A(n) = 51 + (n - 1)(-4)$

36. 0.2, 0.5, 0.8, 1.1, ...

arithmetic; the common difference is 0.3;
 $A(n) = A(n - 1) + 0.3;$
 $A(n) = 0.2 + (n - 1)(0.3)$

37. 7, 14, 28, 56, ...

not arithmetic; there is a common factor, not a common difference

38. **Open-Ended** Write an explicit formula for the arithmetic sequence whose common difference is -2.5.

Answers may vary. Sample: $A(n) = 15 + (n - 1)(-2.5)$

39. **Error Analysis** Your friend writes $A(8) = 3 + (8)(5)$ as an explicit formula for finding the eighth term of the arithmetic sequence 3, 8, 13, 18, ... Describe and correct your friend's error.

The friend is finding the wrong term; $A(n) = 3 + (n - 1)(5)$ should be the explicit formula, resulting in $A(8) = 3 + (8 - 1)(5) = 38$.

40. The local traffic update is given on a radio channel every 12 minutes from 4:00 P.M. to 6:30 P.M. You turn the radio on at 4:16 P.M. How long will you wait for the local traffic update? **8 min**