

Lesson 2 Reteach

Sequences

An **arithmetic sequence** is a list in which each term is found by adding the same number to the previous term. 1, 3, 5, 7, 9, ...

$$\begin{array}{ccccccc} & \nearrow & \nearrow & \nearrow & \nearrow & & \\ & +2 & +2 & +2 & +2 & & \end{array}$$

Example 1

Describe the relationship between terms in the arithmetic sequence 17, 23, 29, 35, ... Then write the next three terms in the sequence.

$$\begin{array}{ccccccc} 17, & 23, & 29, & 35, & \dots & \text{Each term is found by adding 6 to the previous term.} \\ \nearrow & \nearrow & \nearrow & & & & \\ +6 & +6 & +6 & & & & \end{array}$$

$$35 + 6 = 41$$

$$41 + 6 = 47$$

$$47 + 6 = 53$$

The next three terms are 41, 47, and 53.

Example 2

MONEY Brian's parents have decided to start giving him a monthly allowance for one year. Each month they will increase his allowance by \$10. Suppose this pattern continues. What algebraic expression can be used to find Brian's allowance after any given number of months? How much money will Brian receive for allowance for the 10th month?

Make a table to display the sequence.

| Position | Operation | Value of Term |
|----------|--------------|---------------|
| 1 | $1 \cdot 10$ | 10 |
| 2 | $2 \cdot 10$ | 20 |
| 3 | $3 \cdot 10$ | 30 |
| n | $n \cdot 10$ | $10n$ |

Each term is 10 times its position number. So, the expression is $10n$.

How much money will Brian receive after 10 months?

$10n$ Write the expression.

$10(10) = 100$ Replace n with 10

So, Brian will receive \$100 after 10 months.

Exercises

Describe the relationship between terms in the arithmetic sequences.

Write the next three terms in the sequence.

1. 2, 4, 6, 8, ...
+2; 10, 12, 14

2. 4, 7, 10, 13, ...
+3; 16, 19, 22

3. 0.3, 0.6, 0.9, 1.2, ...
+0.3; 1.5, 1.8, 2.1

4. 200, 212, 224, 236, ...
+12; 248, 260, 272

5. 1.5, 2.0, 2.5, 3.0, ...
+0.5; 3.5, 4.0, 4.5

6. 12, 19, 26, 33, ...
+7; 40, 47, 54

7. **SALES** Mama's bakery just opened and is currently selling only two types of pastry. Each month, Mama's bakery will add two more types of pastry to their menu. Suppose this pattern continues. What algebraic expression can be used to find the number of pastries offered after any given number of months? How many pastries will be offered in one year? **$2n$; 24**

Lesson 2 Skills Practice

Sequences

Describe the relationship between the terms in each arithmetic sequence.

1. 3, 6, 9, 12... **+3**

2. 1, 3, 5, 7, ... **+2**

3. 1, 2, 3, 4, ... **+1**

4. 0, 7, 14, 21, ... **+7**

5. 2, 5, 8, 11, ... **+3**

6. 5, 10, 15, 20, ... **+5**

7. 0.3, 0.6, 0.9, 1.2, ... **+0.3**

8. 1, 10, 19, 28, ... **+9**

9. 6, 18, 24, 30, ... **+6**

10. 0.5, 2.5, 4.5, 6.5, ... **+2**

11. 3, 7, 11, 15, ... **+4**

12. 0, 4.5, 9, 13.5, ... **+4.5**

13. 11, 22, 33, 44, ... **+11**

14. 16, 21, 26, 31, ... **+5**

Give the next three terms in each sequence.

15. 3, 6, 9, 12, ... **15, 18, 21**

16. 18, 21, 24, 27, ... **30, 33, 36**

17. 7, 10, 13, 16, ... **19, 22, 25**

18. 4, 8, 12, 16, ... **20, 24, 28**

19. 0, 7, 14, 21, ... **25, 35, 42**

20. 7, 12, 17, 22, ... **27, 32, 37**

21. 5, 7, 9, 11, ... **13, 15, 17**

22. 5, 15, 25, 35, ... **45, 55, 65**

23. 21, 42, 63, 84, ... **105, 126, 147**

24. 1.1, 2.2, 3.3, 4.4, ... **5.5, 6.6, 7.7**

25. 0.5, 1.0, 1.5, 2.0, ... **2.5, 3.0, 3.5**

26. 1.7, 1.9, 2.1, 2.3, ... **2.5, 2.7, 2.9**

27. 0.5, 1.5, 2.5, 3.5, ...
4.5, 5.5, 6.5

28. 0.1, 0.2, 0.3, 0.4, ...
0.5, 0.6, 0.7