LESSON	**Practice A**
9-3	*Arithmetic Sequences and Series*

Determine whether the sequence is arithmetic. If it is, find the common difference. Then find the next term. If the sequence is not arithmetic, write *not arithmetic*.

1. 14, 23, 32, 41, 50, 59, 68, ...

    a. Find the differences between consecutive terms.   _____

    b. If the sequence is arithmetic, write the common difference.   _____

    c. If the sequence is arithmetic, add the common difference to
       the last term to get the next term.   _____

2. 7.1, 10.6, 14.1, 17.6, 21.1, 24.6, ...

    a. If the sequence is arithmetic, write the common difference.   _____

    b. If the sequence is arithmetic, find the next term.   _____

3. 111, 99, 87, 75, 63, 51, 39, 27, 15, ...

    a. If the sequence is arithmetic, write the common difference.   _____

    b. If the sequence is arithmetic, find the next term.   _____

4. 2, −4, 6, −8, 10, −12, 14, −16, 18, −20, ...

    a. If the sequence is arithmetic, write the common difference.   _____

    b. If the sequence is arithmetic, find the next term.   _____

Find the 11th term of each arithmetic sequence.

5. 33, 29, 25, 21, 17, ...

    a. Find the common difference.   _____

    b. Substitute the first term for a_1 and the common
       difference for d in the formula $a_n = a_1 + (n - 1)\, d$.   _____

    c. Simplify.   _____

6. 10, 3, −4, −11, −18, ...

7. $\dfrac{2}{3}, \dfrac{4}{3}, 2, \dfrac{8}{3}, \dfrac{10}{3}, 4, \cdots$

_____   _____

Write the missing terms of each arithmetic sequence.

8. 8.2, __, __, __, 23, ...

    a. Use $a_n = a_1 + (n - 1)\, d$ to find d, the common difference.   _____

    b. Use the common difference and the formula to find
       a_2, a_3, and a_4.   _____

9. 9, __, __, __, __, 10, ...

    a. Identify the common difference.   _____

    b. Use the common difference to find the missing terms.   _____

     Holt McDougal Algebra 2

3. $1 + 5 + 25 + 125; = 156$

4. $(2^1 + 1) + (2^2 + 1) + (2^3 + 1); = 3 + 5 + 9 = 17$

5. $[2(3^2) - 1] [2(4^2) - 1] + [2(5^2) - 1]; = 17 + 31 + 49 = 97$

6. Quadratic; 9; $\dfrac{9(10)(19)}{6}; = 285$

7. Constant; 12; 12(6); $= 72$

8. Linear; 10; $\dfrac{10(11)}{2}; = 55$

Challenge

1. 5

2. 3.5

3. 3.178571429

4. 3.162319422

5. 3.16227766

6. 3.16227766

7. 450

8. 165

9. 30

10. 15

11. $450 + 165 + 30 + 15 + 660$

12. $10 + 35 + 90 + 187 + 338 = 660$

13. $1 + 3 + 6 + 10 + 15 = 35$

14. $\displaystyle\sum_{k=1}^{n} \dfrac{k(k+1)}{2} = \dfrac{n(n+1)(n+2)}{6}$

15. $\dfrac{5 \cdot 6 \cdot 7}{6} = 35$

Problem Solving

1. a. $a_k = 4(0.9)^{k-1}$

   b. $\displaystyle\sum_{k=1}^{8} 4(0.9)^{k-1}$

   c. 22.8 mm

2. a. $a_k = 4(0.9)^{k-1} + \dfrac{1}{2}$

   b. $\displaystyle\sum_{k=1}^{8} 0.5 + 4(0.9)^{k-1}$

   c. 26.8 mm

   d. 7 weeks

3. C

4. G

Reading Strategy

1. a. $k + 5$

   b. 1 and 4

c. $6 + 7 + 8 + 9$

2. a. 7 k

   b. 1 and 5

   c. $7 + 14 + 21 + 28 + 35$

3. a. 1 and 6

   b. $\displaystyle\sum_{k=1}^{6} k - 2$

4. a. 1 and 5

   b. $\displaystyle\sum_{k=1}^{5} 8k + 1$

9-3 ARITHMETIC SEQUENCES AND SERIES

Practice A

1. a. 9, 9, 9, 9, 9, 9

   b. 9

   c. 77

2. a. 3.5

   b. 28.1

3. a. –12

   b. 3

4. a. Not arithmetic

5. a. –4

   b. $a_n = 33 + (11 - 1)(-4)$

   c. –7

6. –60

7. $\dfrac{22}{3}$

8. a. 3.7

   b. 11.9, 15.6, 19.3

9. a. 0.2

   b. 9.2, 9.4, 9.6, 9.8

Practice B

1. –17; –44

2. Not arithmetic

3. $\dfrac{1}{2}; \dfrac{33}{10}$

4. Not arithmetic

5. 142

6. –0.7

7. –30.1

8. 49.75

9. 17, 31, 45

10. 5, 14

11. 18, 29, 40, 51

12. 29, 23, 17, 11, 5, –1

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