

LESSON
5-2

Practice A
Series and Summation Notation

Use summation notation to write each series.

1. $2 + 4 + 8 + 16 + 32 + 64$

a. Find a rule for the k th term.

b. Write the notation for the first 6 terms.

2. $-6 - 5 - 4 - 3 - 2$

3. $4 + 7 + 10 + 13 + 16 + 19$

4. $2 + 8 + 18 + 32$

5. $-3 + 9 - 27 + 81 - 243$

6. $16 + 12 + 8 + 4 + 0 - 4 - 8$

7. $-1 - 4 - 9 - 16 - 25$

Expand each series. Then evaluate.

8. $\sum_{k=3}^7 2k^2$

a. Expand by replacing k .

b. Simplify.

9. $\sum_{k=1}^4 \frac{2}{k}$

a. Expand. _____

b. Simplify. _____

10. $\sum_{k=5}^{10} (k - 7)$

a. Expand. _____

b. Simplify. _____

11. $\sum_{k=2}^4 5(2^k)$

a. Expand. _____

b. Simplify. _____

12. $\sum_{k=21}^{25} 3(20 - k)$

a. Expand. _____

b. Simplify. _____

Solve.

13. Tracy deposits \$16 into her savings account each week.

a. Write a series to represent how much she will have deposited in n weeks.

b. Write a series to represent how much she will have deposited in one year.

c. How much will she have deposited in one year?

Reading Strategies

- Each term value is 1 less than the term number; $a_n = n - 1$.
- Each term value is twice the term number; $a_n = 2n$.
- Each term value is 5 plus 4 times the previous term number; $a_n = 5 + 4(n - 1) = 4n + 1$.
- Each term is 75 minus 9 times the previous term number; $a_n = 75 - 9(n - 1) = 84 - 9n$.
- 46, 49, 52, 55
- 12, -19, -26, -33 7. 65, 77, 89, 101

13. a. $\sum_{k=1}^n 16$

b. $\sum_{k=1}^{52} 16$

c. \$832

Practice B

1. $\sum_{k=1}^5 (-2)^k$

2. $\sum_{k=1}^4 \left(\frac{1}{10}\right)^k$

3. $\sum_{k=1}^6 (5k - 11)$

4. $\sum_{k=1}^6 \frac{1}{3k}$

5. $\sum_{k=1}^5 (6k + 1)$

6. $\sum_{k=1}^7 (-1)^k$

7. a. $1 + \frac{5}{4} + \frac{6}{4} + \frac{7}{4} + 2$

b. $7\frac{1}{2}$

8. a. $\frac{1}{5} + 1 + 5 + 25$

b. $31\frac{1}{5}$

9. a. $4 - 8 + 16 - 32 + 64$

b. 44

10. a. $10 + 8 + 6 + 4 + 2 + 0 - 2 - 4 - 6 - 8$

b. 10

11. 27

12. 820

13. 385

14. a. $\sum_{k=1}^n 3^k$

b. $\sum_{k=1}^7 3^k$

c. 3279

Practice C

1. $\sum_{k=1}^5 3(2^k)$

2. $\sum_{k=1}^7 \frac{3}{2k}$

3. $\sum_{k=1}^7 (-1)^{k-1}$

4. $\sum_{k=1}^5 \left(\frac{1}{10}\right)^{k-2}$

5-2 SERIES AND SUMMATION NOTATION

Practice A

1. a. $a_k = 2^k$

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

2. $\sum_{k=1}^5 (k - 7)$

3. $\sum_{k=1}^6 (3k + 1)$

4. $\sum_{k=1}^4 (2k^2)$

5. $\sum_{k=1}^5 (-3)^k$

6. $\sum_{k=1}^7 (20 - 4k)$

7. $\sum_{k=1}^5 -(k^2)$

8. a. $18 + 32 + 50 + 72 + 98$

b. 270

9. a. $2 + 1 + \frac{2}{3} + \frac{1}{2}$

b. $4\frac{1}{6}$

10. a. $-2 - 1 + 0 + 1 + 2 + 3$

b. 3

11. a. $20 + 40 + 80$

b. 140

12. a. $-3 - 6 - 9 - 12 - 15$

b. -45