Name: _____ Date: _____

Chapter 6 Practice Test

For questions 1 to 5, select the best answer.

1. Which formula represents the general term of an arithmetic sequence?

A $t_n = ar^{n-1}$

B $t_n = a + (n-1)d$

C $s_n = \dfrac{a(r^n - 1)}{r - 1}$

D $s_n = \dfrac{n}{2}[2a + (n-1)d]$

2. Given the general term $t_n = 3n + 5$, which is the first four terms of the sequence?

A 3, 5, 7, 9
B 1, 3, 5, 7
C 8, 11, 14, 17
D 5, 8, 11, 14

3. Which sequence is geometric?

A 1, 2, 3, 4, 5, …
B 2, 4, 6, 8, …
C 2, 4, 8, 16, …
D 1, 2, 3, 5, 8, …

4. Which formula is the general term of a geometric sequence with $t_1 = 5$ and $t_2 = 10$?

A $t_n = 5(2)^{n-1}$

B $t_n = 5n$

C $S_2 = 15$

D $S_n = 5(2^n - 1)$

5. The first four terms for the recursion formula $t_1 = 8, t_n = t_{n-1} + n^2$ are

A 8, 4, 9, 16
B 1, 4, 9, 16
C 1, 9, 17, 25
D 8, 12, 21, 37

6. Expand each power of a binomial using Pascal's triangle.

a) $(x + 4)^4$ **b)** $(3x - 2)^3$
c) $(x + y)^6$ **d)** $(x^2 - 1)^5$

7. a) Create a geometric and an arithmetic sequence that start with the terms 1, 2, …
b) For each sequence you created in part a), state the general term.
c) For each sequence you created in part a), find the sum of the first six terms.

8. Write the first five terms for each sequence.

a) $t_1 = 7, t_n = 3t_{n-1} - 4$

b) $f(n) = -n^2 + 5n + 5$

c) $t_n = 8 + 2n$

d) $t_n = \dfrac{1}{3}(3)^{n-1}$

e) $f(n) = -n - 5$

f) $t_1 = 1, t_2 = 2, t_n = \dfrac{t_{n-2}}{t_{n-1}}$

9. Use each sequence from question 8.
i) Graph the sequence.
ii) State whether the sequence is arithmetic, geometric, or neither.

10. Determine the number of terms in each sequence.

a) $\dfrac{5}{81}, \dfrac{10}{27}, \dfrac{20}{9}, \dfrac{40}{3}, \ldots, 2880$

b) −14, −6, 2, 10, …, 58

c) 14, 17, 20, 23, …, 956

d) $18, 9, \dfrac{9}{2}, \dfrac{9}{4}, \ldots, \dfrac{9}{128}$

11. Consider the series 4 + 8 + 16 + 32 + … + 1024.
a) Determine the number of terms.
b) Determine the sum of the series.
c) Explain how you can use the sum of the series to find the sum of terms 4 through 8.

12. By finding the total for each plan, determine which plan has the greater amount paid out.
Plan A: \$1 000 000 + 10% interest at the end of one month
Plan B: \$0.01 on day 1 of the month, \$0.02 on the second day, \$0.04 on the third day, and this continues to double each day for 30 days

978-0-07-000985-1

Name: _____ Date: _____

13. Determine the sum of each series.

a) $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\cdots+t_{14}$

b) $400 + 420 + 440 + \cdots + 620$

c) $3 + 6 + 12 + 24 + 48 + \cdots + 1536$

d) $14 + 10 + 6 + 2 \cdots -70$

14. Fill in the missing terms of the arithmetic sequences.

a) ____, 11, ____, 7, ____

b) ____, –3, ____, 3, ____

c) 5, ____, ____, 11, ____

15. Fill in the missing terms of the geometric sequences.

a) ____, 12, 48, ____, ____

b) ____, ____, ____, –40, 20

c) ____, 1500, 2250, 3375, ____

16. A swimmer swims 3 lengths of a pool on Monday. Each successive day, she swims 2 more lengths of the pool. In total, how many lengths will she swim during the first week?

17. The first row of a movie theatre has 34 seats. Each successive row has 4 more seats than the row before it. If there are 20 rows in the theatre, what is the seating capacity of the theatre?

18. An assembly line worker can expect to earn $36 000, with a raise of 5% each year. How much can the worker expect to earn after 10 years of working at the company?

978-0-07-000985-1