Name: _____ Date: _____

Chapter 7 Prerequisite Skills

BLM 7–1

Linear and Exponential Growth

1. a) Graph the equation $y = -2x + 4$. What type of relationship is this?
b) Identify the slope and the y-intercept.
c) Make a table of values for $x \in \{0, 1, 2, 3, 4, 5\}$.
d) Calculate the first differences and describe their pattern.

2. a) Graph the equation $y = 5(2)^x$. What type of relationship is this?
b) Identify the y-intercept.
c) Make a table of values for $x \in \{0, 1, 2, 3, 4, 5\}$.
d) Calculate the first and second differences and describe any patterns you see.
e) Divide consecutive terms to find the common ratio, and describe their pattern.

Direct Variation and Partial Variation

3. Determine whether each relation is a direct variation or a partial variation. Explain.
a) $y = 2x + 2$ **b)** $y = 25x$
c) $y = 40x + 40$ **d)** $y = x$

4. A gym membership at the local community centre has an initial cost of $100 and a monthly fee of $25.
a) Write an equation that relates the total cost, C, in dollars, to the number of months, m, of the membership.
b) State the fixed part and the variable part of the relation.
c) Graph the relation.
d) Determine the slope and vertical intercept of the graph.
e) What do the slope and vertical intercept mean in the context of this word problem?

Arithmetic Sequences and Series

5. a) Explain why the sequence $-3, 1, 5, 9, \ldots$ is arithmetic.
b) Determine the first term, a, and the common difference, d.
c) Write the formula for the general term of the sequence.

6. The formula for the general term of an arithmetic sequence is $t_n = 3n - 2$.
a) Write the first five terms of the sequence.
b) Determine the first term, a, and the common difference, d.

7. Determine the sum of the series $1 + 4 + 7 + 10 + 13 + \ldots + 94$.

Geometric Sequences and Series

8. a) Explain why the sequence $\frac{1}{2}, 1, 2, 4, 8, \ldots$ is geometric.
b) Determine the first term, a, and the common ratio, r.
c) Write the formula for the general term of the sequence.

9. The formula for the general term of a geometric sequence is $t_n = 5 \times (3)^{n-1}$.
a) Write the first five terms of the sequence.
b) Determine the first term, a, and the common ratio, r.

10. Determine the sum of the series $3 + 6 + 12 + 24 + \ldots + 6144$.

11. The sum of the first eight terms of a geometric series is 199.128 75. The common ratio is $\frac{1}{2}$. Determine the first term.

Solve Equations

12. Solve.
a) $400 = -200 + 12n$
b) $300 = I + 4(16)$
c) $1000 = P[1 + 0.05(12)]$
d) $3795.96 = 3000(1 + i)^6$
e) $1500 = \frac{90}{x+1}$
f) $500 = 400x^4$

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