Secondary Math III **Name: _____**
Unit 6 Test Retake **Period: _____**
Sequences & Series

Mulitiple Choice. Choose the best answer. There is only one correct answer for each problem.

1. What is the sum of the first 68 even natural numbers?

2. Vince receives $70 for his birthday. He deposits the money in a savings account and then saves an additional $20 each month. He decides to calculate how much total money he will have saved after 5 months. This situation is best modeled by a series or a sequence? Arithmetic or Geometric?

3. Becky buys a car for $10500. She expects the value of the car to decrease by 25% each year. She wants to figure out the car's value after 7 years. This situation is best modeled by a series or a sequence? Arithmetic or Geometric?

4. Write a recursive formula to represent the 3rd term in the sequence.

5. Compute the series $1 + \frac{2}{3} + \frac{4}{9} + \frac{8}{27} + \cdots$

6. A cold virus infects 8 students at school in the same day. In the following days, the number of students infected with the virus increases at a rate of 9% each day. How many new students are infected on the 12^{th} day?

7. Is the sum of the following infinite geometric series finite or infinite?

$$\sum_{i=1}^{\infty} \left(\frac{7}{2}\right)^{i}$$

8. Given the sequence $-10, -3, 4, 11, 18, 25, \ldots$..what is the 50^{th} term?

9. Sandra starts a savings plan in which she deposits an increasing amount in the bank each month. The first month she deposits \$50, the second month she deposits \$53, the third month she deposits \$56, and so on. If she continues saving at this rate, how much will she deposit during the 20^{th} month?

10. Compute a geometric series with 8 terms, a common ratio of 3, and a first term of 4.

11. What is the 30^{th} term in the arithmetic sequence for which $a_1 = 4$ and $d = 3$?

12. The number 73 is what term in the arithmetic sequence $-5, -2, 1, \ldots$?

13. What is the common ratio for the geometric sequence $3, 15, 75, 375, \ldots$?

14. What is the 6^{th} term in the geometric sequence in which $a_1 = 2$ and $r = 7$

15. What is the sum of the infinite geometric sequence series in which $a_1 = -7$ and $r = \frac{3}{5}$

16. What is the sum of the infinite geometric series $3 + 1 + \frac{1}{3} + \ldots$?

17. What is the 1^{st} term of the infinite geometric series for which $S_\infty = 120$ and $r = \frac{3}{4}$

18. Evaluate

$$\sum_{i=1}^{25} 4i + 2$$

19. Use sigma notation to express the series $7 - 14 + 28 - 56 + 112$

20. Write an expression for the nth term of the sequence.

$$-3, 1, 5, 9, 13, \ldots$$