Pre-Calc **Name:** _____

Practice -- Arithmetic Sequences and Series

1. Find the 100th term of the sequence 15, 12.3, 9.6, 6.9….

2. Find the 120th term of the sequence -4, 2, 8, 14 ….

3. Find the common difference of the sequence

a) $\frac{2}{5}, \frac{11}{15}, \frac{16}{15}, \frac{7}{5}, \cdots$ **b)** $\frac{7}{6}, \frac{5}{3}, \frac{13}{6}, \frac{8}{3}, \cdots$

c) -10, -6,-2, 2, . . . **d)** -10.3, -6.5, -2.7, 1.1, . . .

4. Find the 90th term of the defined by the explicit formula $t_n = -2n + 3$.

5. Which term in the sequence 1, 4, 7,….is 88?

6. Which term in the sequence 1, 5, 9,….is 181?

7. Find the sum of the series 38 + 34 + 30 + . . . +2.

8. Find the sixth term of the sequence defined by the recursive formula
$t_n = 3t_{n-1} + 2n$ with $t_1 = 5$.

9. Find the 80th term of the defined by the explicit formula $t_n = -2n + 3$.

10. Find of the sum first 60 terms of the series 2 + 5 + 8 + 11...

11. Find of the sum first 50 terms of the series 2 + 5 + 8 + 11...

12. Find the sum of the series 34 + 30 + 26 + . . . +2.

13. Evaluate

a. $\sum_{n=1}^{5} 3n$ **b.** $\sum_{n=1}^{80} 2 - n$

c. $\sum_{n=3}^{24} 1 - 2n$ **d.** $\sum_{n=1}^{5} 7$

14. Find the fifth term of the sequence defined by the recursive formula
$t_n = 5t_{n-1} + 1$ with $t_1 = 10$.

15. A large amphitheater has 85 rows of seats with 20 seats in the first row, 24 seats are in the second row, 28 in
the third row and so on.

a. How many seats are in row 72?
b. How many seats are in the theater?
c. How many seats are there in rows 32 through 64?

16. Logs are stored in a pile with 58 logs in the first layer, 55 in the second layer, 52 in the third, and so on. There are 20 layers of logs. How many logs are in the pile? How many logs are in layers 8 through row 14? How many logs are in row 7?

17. A grocery clerk sets up a display of 12-pack cartons of cola. There are 15 cartons at the base of the triangle and one at the top. How many cartons of cola are needed for the complete display?

18. A large asteroid crashed into a moon of a planet, causing several boulders from the moon to be propelled into space toward the planet. Astronomers were able to measure the speed of one of the projectiles. The distance (in feet) that the projectile traveled each second, starting with the first second, was given by the arithmetic sequence 26, 44, 62, 80, ... Find the total distance that the projectile traveled in seven seconds.

19. Viola makes gift baskets for Valentine's Day. She has 13 baskets left over from last year, and she plans to make 12 more each day. If there are 15 work days until the day she begins to sell the baskets, how many baskets will she have to sell?