Chapter 9 - Sequence and Series Test Review Name_____

1) Find the binomial coefficient: ${}_9C_4$

2) Find the 7th term of the geometric sequence $4, 4\sqrt{2}, 8, \ldots$

3) Evaluate: $\binom{9}{3}$

4) Find the number of terms in the finite arithmetic sequence $-5, -8, -11, \ldots, -50$.

5) Find the sum of the infinite geometric sequence, $4, 3, \frac{9}{4}, \ldots$

6) Write the 14th term of the sequence whose nth term is given by the formula $a_n = \frac{8}{n+2}$.

7) Find the 10th term of the arithmetic sequence $-10, -4, 2, \ldots$

8) Find the sum of the first 18 terms of the arithmetic sequence $-25, -19, -13, \ldots$

9) Find the sum of the first five terms of the geometric sequence $-6, 12, -24, \ldots$

10) Evaluate: ${}_{11}C_5$

11) Find the 7th term in the expansion of $(3x+y)^9$

12) Find the sum of the series $\sum_{n=1}^{4}(3n+1)$.

13) Write the 6th term of the sequence whose nth term is given by the formula $a_n = \frac{n}{n+1}$.

14) Find the formula for the nth term of the arithmetic sequence 12,9,6,...

15) Find the 5th term of the geometric sequence $6,2,\frac{2}{3},....$

16) Find the sum of the first six terms of the geometric sequence $-5-\frac{5}{2}-\frac{5}{4}-\frac{5}{8}-....$

17) Find the 35th term of the arithmetic sequence $-13,-16,-19,....$

18) Find the sum of the first six terms of the geometric sequence $1,\frac{3}{2},\frac{9}{4},....$

19) Find the sum of the first 21 terms of the arithmetic sequence 5,12,19,....

20) Find the coefficient a of the term ax^4y^3 in the expansion of $(x-2y)^7$.

21) Find the number of terms in the finite arithmetic sequence 1,7,13,...,121.

22) Find the 8th term of the geometric sequence $\frac{3}{8},\frac{3}{4},\frac{3}{2},....$

23) Find the sum of the series $\sum_{i=1}^{5} 2i$.

24) Find the sum of the first five terms of the geometric sequence 1,4,16,....

25) Find the coefficient a of the term am^7n^2 in the expansion of $(2m+n)^9$.

26) Find the 3rd term in the expansion of $(x-4)^6$.

27) Find the 30th term of the arithmetic sequence $-2,3,8,....$

28) Find the 25^{th} partial sum of the arithmetic sequence 25,21,17,....

29) Write the 5th term of the sequence whose nth term is given by the formula $a_n = \frac{(-1)^{2n-1}n}{n^2+2}$.

30) Find the fifth term in the arithmetic sequence where $a_1 = 12.75$ and the common difference $d = 0.5$.

31) Find the first term of the geometric sequence where $a_2 = 5$ and $a_3 = \frac{5}{8}$

32) Find the sum of the infinite geometric series $4 - 1 + \frac{1}{4} - ....$

33) Find the sum of the geometric series $\sum_{n=1}^{5} 2(3)^n$

34) Find the 8th term in the expansion of $(x - 2y)^{11}$

35) Find the sum of the geometric series $\sum_{n=1}^{8} \left(\frac{1}{2}\right)^n$. Round to the nearest thousandth.

36) Find the sum of the infinite geometric series $2 + \frac{4}{3} + \frac{8}{9} + ...$

37) Find the first term of the arithmetic sequence where $a_3 = 8$ and $a_7 = 16$.

38) Write $(x - 3y^2)^5$ in expanded form.

39) Find the number of terms in the finite arithmetic sequence $8, 2, -4, ..., -118$.

40) Find the coefficient a of the term am^4n^5 in the expansion of $(2m+n)^9$.

41) Find the 15^{th} partial sum of the arithmetic sequence 30, 25, 20, 15, …

42) Find the sum of the series $\sum_{n=1}^{4}\frac{(-1)^{n-1}n}{n+1}$

43) A display of cans in a grocery store consists of 20 cans in the bottom row, 18 cans in the next row, and so on in a arithmetic sequence. The top row has 4 cans. Find the total number of cans in the display.

44) A theater in the round has 52 seats in the first row, 58 seats in the second row, 64 seats in the third row, and so on in an arithmetic sequence. Find the total number of seats in the theater if there are 20 rows of seats.

Determine if the given sequence is geometric, arithmetic, or neither. Find the common ratio or common difference where applicable.

45) $5,15,45,135,\ldots$

46) $3,12,48,192,\ldots$

47) $3,12,21,30,\ldots$

48) $33,28,23,18,\ldots$

49) $1,-\frac{1}{2},\frac{1}{4},-\frac{1}{8},\ldots$

50) $1,\frac{1}{2},\frac{1}{3},\frac{1}{4},\ldots$

Answers - Chapter 9 Review Name_____

1) 126 2) 32 3) 84 4) 16

5) 16 6) $\frac{1}{2}$ 7) 44 8) 468

9) -66 10) 462 11) $2268x^3y^6$ 12) 34

13) $\frac{6}{7}$ 14) $a_n = -3n + 15$ 15) $\frac{2}{27}$

16) -9.844 17) -115 18) $\frac{665}{32}$ 19) 1575

20) $-280x^4y^3$ 21) 21 22) 48 23) 30

24) 341 25) 4608 26) $240x^4$ 27) 143

28) -575 29) $-\frac{5}{27}$ 30) 14.75

31) 40 32) $\frac{16}{5}$ 33) 726 34) $-42{,}240x^4y^7$

35) 0.996 36) 6 37) 4

38) $x^5 - 15x^4y^2 + 90x^3y^4 - 270x^2y^6 + 405xy^8 - 243y^{10}$ 39) 22

40) 2016 41) -75

42) $-\frac{13}{60}$ 43) The total number of cans is 108

44) The total number of seats is 2180

45) geometric; r=3 46) geometric; r=4 47) arithmetic; d=9

48) arithmetic; d=-5 49) geometric; $r = -\frac{1}{2}$ 50) neither