PROGRESSIONS

1. If A,G,H denote the A.M. G.M. and H.M of two positive numbers then their descending order is _____
2. If there are 'n' Arithmetic means between 'a' and 'b' then the common difference d = _____
3. Sum to infinity terms of the G.P. $1, \frac{1}{3}, \frac{1}{9}, -----\infty$ is _____ (June 2009)
4. $1^3+2^3+3^3$+----------$+10^3$ = _____
5. If there are 'n' G.M's inserted between a and b then the common ratio 'r' is _____
6. The n^{th} term of the series 1.2+2.3+3.4+-------- is _____ (March 2008)
7. If a,b,c are in G.P then a/b = _____
8. If $t_n = \frac{n}{n+1}$ then t_{2008} = _____
9. The G.M of 3 and 27 is _____
10. If 3,4,6 are in H.P then the fourth term is _____ (March 2008)
11. If the sum of first 'n' natural numbers is 66 then 'n' = _____
12. 1+2+3+--------+ 100 = _____
13. If x,y,z are in A.P then 2y = _____
14. The sum of 'n' terms of the series (a+1) + (a+2) + (a+3) +------is _____ (June 2010)
15. n^{th} term of A.P. is $(2n^2+2n+3)$ then the second term is _____ (March 2010)
16. The arithmetic mean of $(a-b)^2$ and $(a+b)^2$ = _____
17. In a H.P.
    $\frac{1}{x+3}, \frac{1}{x}, \frac{1}{x-3}, ------$ then $\frac{1}{x-21}$ is _____ term.
18. If a_1, a_2, a_3, -------- and b_1, b_2, b_3, ... are in A.P then $a_1 - b_1$, $a_2 - b_2$, $a_3 - b_3$ are in _____ progression.
19. Sum of the first 'n' odd natural numbers is _____
20. The number of multiples of 9 between 1 and 1000 is _____
21. If $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in H.P then c = _____
22. The 10th term of the series
    $x + \frac{4x}{3} + \frac{5x}{3} + -----$ is _____
23. K+2, 4K-6 and 3K-2 are in A.P. then K = _____
24. The n^{th} term of A.P is 3n+1 and the sum of 'n' terms is _____
25. If $\frac{-2}{7}$ x $\frac{16}{7}$ are in A.P. then x = _____
26. The first term of a G.P is 3 and 6^{th} term is 96 then its common ratio is _____
27. If a,b,c are in A.P then b+c, c+a, a+b are in _____
28. The arithmetic mean of $\frac{1}{a}, \frac{1}{b}$ is _____
29. The two geometric means inserted between 2, 16 are _____
30. g_1, g_2, g_3 are G.M's between a and b then $g_1 g_3$ = _____
31. In an A.P $S_n = 2n^2 + 5n$ then t_4 = _____
32. The 'n'th term of G.P is $2(0.2)^{n-1}$ its third term is _____
33. The first term of an A.P is –1 and common difference is –3 then 12^{th} term is _____
34. 1 + 8 + 27 +---------- + n^3 = _____
35. If A.M = 2, G.M = 8, then H.M = _____
36. If TanA, TanB, TanC are in A.P. then CotA, CotB, CotC are in _____ progression.
37. $\frac{p}{q}$ form of $1.\overline{56}$ is _____
38. If a,b,c are 3 consecutive terms of an A.P then K^a, K^b, K^c are 3 consecutive terms of _____
39. The relation between Σn & Σn^3 is _____
40. The n^{th} term of 13,8,3,-2, ------ is _____
41. If a,b are positive numbers then A.M, G.M, H.M, are in _____ progression.
42. Sum of the squares of the first 'n' natural numbers is _____
43. In an A.P, if 4 times of 4th term is equal to 5 times of 5th term then _____ term is zero.
44. The n^{th} term of the series a, ar, ar^2, ar^3 -------is _____
45. The sum of 'n' terms of the G.P $3, 3^2, 3^3$, ------ is 120 then n = _____
46. 7^{th} term of the series $1, \frac{-1}{2}, \frac{1}{4}, --$ is _____
47. Sum of the 5 terms in the series 1.2 + 2.3 + 3.4 + ------- is _____
48. If |r| < 1, then the sum to infinite terms of the series $a+ar+ar^2$+------+ ∞ = _____
49. The n^{th} term of an A.P is 2n+5 then the common difference is _____
50. If 'a' is the first term and 'd' is the common difference of an A.P then 15^{th} term of corresponding H.P is _____.
51. In a G.P $S_n = \frac{\left(1-(-2)^n\right)}{3}$ then t_n = _____

KEY

1. $A \geq G \geq H$

2. $\frac{b-a}{n+1}$
3. 3/2
4. 3025
5. $\left(\frac{b}{a}\right)^{\frac{1}{n+1}}$
6. n(n+1)
7. b/c
8. 2008/2009
9. 9

10. 12
11. 11
12. 5050
13. (x+z)
14. $\frac{n}{2}(2a+(n+1))$

15. 15
16. a^2+b^2
17. 9^{th} term
18. Arithmetic
19. n^2
20. 111
21. 2b-a
22. 4x
23. k = 3
24. $\frac{3n^2+5n}{2}$
25. x = 1
26. 2
27. Arithmetic progression
28. $\frac{a+b}{2ab}$
29. 4&8
30. g_2^2
31. 19
32. 0.08
33. –34
34. $\frac{n^2(n+1)^2}{4}$
35. 32
36. Harmonic
37. 155/99
38. Geometric
39. $\Sigma n^3 = (\Sigma n)^2$
40. 18-5n
41. Geometric
42. $\frac{n(n+1)(2n+1)}{6}$
43. 9^{th} term
44. $a.r^{n-1}$
45. 4
46. 1/64
47. 70
48. a/1–r
49. 2
50. $\frac{1}{a+14d}$
51. $(-2)^{n-1}$

Important Questions

4 Marks

1. If the sum of the first ‘n’ natural numbers is s_1, and that of their squares s_2 and cubes s_3, show that $9S_2^2 = S_3(1+8S_1)$?
2. Find the sum of ‘n’ terms of the series 0.5+0.55+0.555+----- n terms?
3. Insert 6 H.M’s between 2/3 and 2/31.
4. The A.M,G.M and H.M of two numbers are A,G,H respectively show that $A \geq G \geq H$?
5. Find the sum to ‘n’ terms of the series 1.3+3.5+5.7+-----?
6. If 7 times the 7^{th} term of an A.P is equal to 11 times the 11^{th} term, show that the 18^{th} term of it is zero?

2 Marks

1. Insert 4 arithmetic means between 3 and 33
2. The 8^{th} term of an A.P is 17 and the 19^{th} term is 39 Find 25^{th} term?
3. If g_1, g_2, g_3 are three geometric means between m and n. Show that $g_1 g_3 = g_2^2 = mn$
4. Determine the 12^{th} term of a G.P where 8^{th} term is 192 and common ratio is 2?
5. Which term of the A.P.10,8,6..... is -28?
6. Find the sum to 'n' terms of the series 51+49+47+.....?
7. Find the 15th term of the A.P (x+y), (x-y),(x-3y), ...?

1 Mark

1. Find the sum to infinity of the G.P.?
   $\frac{-3}{4}, \frac{3}{16}, \frac{-3}{64}, \ldots\ldots\ldots\infty$
2. Find the n^{th} term of G.P 100, –110, 121, ...?
3. If K+2, 4K–6 and 3K–2 are in A.P find K?
4. In Arithmetic progression a = –3030, l = –1530 and n = 51 find 5_n?
5. Find the 17^{th} term in a series if $t_n = \frac{n(n+3)}{(n+2)}$?
6. Find the 12^{th} term of the progression 10,17,24 .....?
7. First term in A.P is 'a' and common difference is 'd' write general term of A.P.?
8. In G.P a = 2 , r = $\sqrt{2}$ find s_{12}?
9. Find the Harmonic mean of 6 and 12.?
10. Write the fractional form of $0.\overline{423}$?