Progressions Worksheet

1. The number of terms in the series $101 + 99 + 97 + ... + 47$ is

(a) 25 (b) 28

(c) 30 (d) 20

2. n^{th} term of the series $3.8 + 6.11 + 9.14 + 12.17 + ...$ will be

(a) $3n(3n+5)$ (b) $3n(n+5)$

(c) $n(3n+5)$ (d) $n(n+5)$

3. If m^{th} terms of the series $63 + 65 + 67 + 69 + ...$ and $3 + 10 + 17 + 24 + ...$ be equal, then $m =$

(a) 11 (b) 12

(c) 13 (d) 15

4. If $2x, x+8, 3x+1$ are in A.P., then the value of x will be

(a) 3 (b) 7

(c) 5 (d) – 2

5. The sum of integers from 1 to 100 that are divisible by 2 or 5 is

(a) 3000 (b) 3050

(c) 4050 (d) None of these

6. If the 9^{th} term of an A.P. is 35 and 19^{th} is 75, then its 20^{th} terms will be

(a) 78 (b) 79

(c) 80 (d) 81

7. If a, b, c, d, e are in A.P. then the value of $a + b + 4c - 4d + e$ in terms of a, if possible is **[RPET 2002]**

(a) $4a$ (b) $2a$

(c) 3 (d) None of these

8. If $a_1 = a_2 = 2, a_n = a_{n-1} - 1 (n > 2)$, then a_5 is

(a) 1 (b) -1

(c) 0 (d) -2

9. If p times the p^{th} term of an A.P. is equal to q times the q^{th} term of an A.P., then $(p+q)^{th}$ term is

(a) 0 (b) 1

(c) 2 (d) 3

10. If a_m denotes the m^{th} term of an A.P. then a_m =

(a) $\frac{2}{a_{m+k}+a_{m-k}}$ (b) $\frac{a_{m+k}-a_{m-k}}{2}$

(c) $\frac{a_{m+k}+a_{m-k}}{2}$ (d) None of these

11. If $1, \log_9(3^{1-x}+2), \log_3(4.3^x-1)$ are in A.P. then x equals

(a) $\log_3 4$ (b) $1-\log_3 4$

(c) $1-\log_4 3$ (d) $\log_4 3$

12. If the ratio of the sum of n terms of two A.P.'s be $(7n+1):(4n+27)$, then the ratio of their 11^{th} terms will be

(a) $2:3$ (b) $3:4$

(c) $4:3$ (d) $5:6$

13. The sum of the series $\frac{1}{2}+\frac{1}{3}+\frac{1}{6}+\ldots\ldots$ to 9 terms is

(a) $-\frac{5}{6}$ (b) $-\frac{1}{2}$

(c) 1 (d) $-\frac{3}{2}$

14. The sum of first n natural numbers is

(a) $n(n-1)$ (b) $\frac{n(n-1)}{2}$

(c) $n(n+1)$ (d) $\frac{n(n+1)}{2}$

15. The first term of an A.P. is 2 and common difference is 4. The sum of its 40 terms will be

(a) 3200 (b) 1600

(c) 200 (d) 2800

16. If n be odd or even, then the sum of n terms of the series $1-2+3-4+5-6+\ldots\ldots$ will be

(a) $-\frac{n}{2}$ (b) $\frac{n-1}{2}$

(c) $\frac{n+1}{2}$ (d) $\frac{2n+1}{2}$

17. If the first, second and last terms of an A.P. be $a, b, 2a$ respectively, then its sum will be

(a) $\frac{ab}{b-a}$ (b) $\frac{ab}{2(b-a)}$

(c) $\frac{3ab}{2(b-a)}$ (d) $\frac{3ab}{4(b-a)}$

18. The ratio of the sums of first n even numbers and n odd numbers will be

(a) $1:n$ (b) $(n+1):1$

(c) $(n+1):n$ (d) $(n-1):1$

19. The sum of all natural numbers between 1 and 100 which are multiples of 3 is

(a) 1680 (b) 1683

(c) 1681 (d) 1682

20. If the sum of the series $54+51+48+.....$ is 513, then the number of terms are

(a) 18 (b) 20

(c) 17 (d) None of these

21. The n^{th} term of an A.P. is $3n-1$ .Choose from the following the sum of its first five terms

(a) 14 (b) 35

(c) 80 (d) 40

22. If the first term of an A.P. be 10, last term is 50 and the sum of all the terms is 300, then the number of terms are

(a) 5 (b) 8

(c) 10 (d) 15

23. The sum of the numbers between 100 and 1000 which is divisible by 9 will be

(a) 55350 (b) 57228

(c) 97015 (d) 62140

24. The solution of the equation

$(x+1)+(x+4)+(x+7)+.....+(x+28)=155$ is

(a) 1 (b) 2

(c) 3 (d) 4

25. If S_k denotes the sum of first k terms of an arithmetic progression whose first term and common difference are a and d respectively, then S_{kn}/S_n be independent of n if

(a) $2a-d=0$ (b) $a-d=0$

(c) $a-2d=0$ (d) None of these

26. 7^{th} term of the sequence $\sqrt{2}, \sqrt{10}, 5\sqrt{2}, ...$ is

(a) $125\sqrt{10}$ (b) $25\sqrt{2}$

(c) 125 (d) $125\sqrt{2}$

27. If the $4^{th}, 7^{th}$ and 10^{th} terms of a G.P. be a, b, c respectively, then the relation between a, b, c is

(a) $b = \frac{a+c}{2}$ (b) $a^2 = bc$

(c) $b^2 = ac$ (d) $c^2 = ab$

28. If the first term of a G.P. be 5 and common ratio be -5, then which term is 3125

(a) 6^{th} (b) 5^{th}

(c) 7^{th} (d) 8^{th}

29. If $(p+q)^{th}$ term of a G.P. be m and $(p-q)^{th}$ term be n, then the p^{th} term will be

(a) m/n (b) $\sqrt{mn}$

(c) mn (d) 0

30. If $x, 2x+2, 3x+3$, are in G.P., then the fourth term is

(a) 27 (b) –27

(c) 13.5 (d) –13.5

31. If the ratio of the sum of first three terms and the sum of first six terms of a G.P. be 125 : 152, then the common ratio r is

(a) $\frac{3}{5}$ (b) $\frac{5}{3}$

(c) $\frac{2}{3}$ (d) $\frac{3}{2}$

32. If the 5^{th} term of a G.P. is $\frac{1}{3}$ and 9^{th} term is $\frac{16}{243}$, then the 4^{th} term will be

(a) $\frac{3}{4}$ (b) $\frac{1}{2}$

(c) $\frac{1}{3}$ (d) $\frac{2}{5}$

33. The 20^{th} term of the series $2\times4+4\times6+6\times8+.....$ will be

(a) 1600 (b) 1680

(c) 420 (d) 840

34. The first and last terms of a G.P. are a and l respectively; r being its common ratio; then the number of terms in this G.P. is

(a) $\frac{\log l - \log a}{\log r}$ (b) $1 - \frac{\log l - \log a}{\log r}$

(c) $\frac{\log a - \log l}{\log r}$ (d) $1 + \frac{\log l - \log a}{\log r}$

35. If the 10^{th} term of a geometric progression is 9 and 4^{th} term is 4, then its 7^{th} term is

(a) 6 (b) 36

(c) $\frac{4}{9}$ (d) $\frac{9}{4}$

36. The 6^{th} term of a G.P. is 32 and its 8^{th} term is 128, then the common ratio of the G.P. is

(a) – 1 (b) 2

(c) 4 (d) – 4

37. If the n^{th} term of geometric progression $5, -\frac{5}{2}, \frac{5}{4}, -\frac{5}{8}, \ldots$ is $\frac{5}{1024}$, then the value of n is

(a) 11 (b) 10

(c) 9 (d) 4

38. The third term of a G.P. is the square of first term. If the second term is 8, then the 6^{th} term is

(a) 120 (b) 124

(c) 128 (d) 132

39. Fifth term of a G.P. is 2, then the product of its 9 terms is

(a) 256 (b) 512

(c) 1024 (d) None of these

40. If the sum of an infinite G.P. be 9 and the sum of first two terms be 5, then the common ratio is

(a) 1/3 (b) 3/2

(c) 3/4 (d) 2/3

41. The sum of 100 terms of the series $.9 + .09 + .009 \ldots\ldots$ will be

(a) $1 - \left(\frac{1}{10}\right)^{100}$ (b) $1 + \left(\frac{1}{10}\right)^{100}$

(c) $1 - \left(\frac{1}{10}\right)^{106}$ (d) $1 + \left(\frac{1}{10}\right)^{100}$

42. The value of $0.\dot{2}\dot{3}\dot{4}$ is

(a) $\frac{232}{990}$ (b) $\frac{232}{9990}$

(c) $\frac{232}{990}$ (d) $\frac{232}{9909}$

43. If the sum of three terms of G.P. is 19 and product is 216, then the common ratio of the series is

(a) $-\frac{3}{2}$ (b) $\frac{3}{2}$

(c) 2 (d) 3

44. The sum of the series $6+66+666+.....$upto n terms is

(a) $(10^{n-1}-9n+10)/81$ (b) $2(10^{n+1}-9n-10)/27$

(c) $2(10^{n}-9n-10)/27$ (d) None of these

45. The sum of first two terms of a G.P. is 1 and every term of this series is twice of its previous term, then the first term will be

(a) 1/4 (b) 1/3

(c) 2/3 (d) ¾

46. If the sum of n terms of a G.P. is 255 and n^{th} terms is 128 and common ratio is 2, then first term will be

(a) 1 (b) 3

(c) 7 (d) None of these

47. If the geometric mean between a and b is $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$, then the value of n is

(a) 1 (b) –1/2

(c) 1/2 (d) 2

48. If in a geometric progression $\{a_n\}, a_1=3, a_n=96$ and $S_n=189$ then the value of n is

(a) 5 (b) 6

(c) 7 (d) 8

49. Three numbers are in G.P. such that their sum is 38 and their product is 1728. The greatest number among them is

(a) 18 (b) 16

(c) 14 (d) None of these

50. The sum of infinity of a geometric progression is $\frac{4}{3}$ and the first term is $\frac{3}{4}$. The common ratio is

(a) 7/16 (b) 9/16

(c) 1/9 (d) 7/9

Answers:

1.(b) 2. (a) 3.(c) 4. (c) 5. (b) 6. (b) 7.(d) 8.(b) 9.(a) 10. (c) 11. (b) 12. (c) 13. (d) 14. (d) 15. (a) 16. (a, c) 17. (c) 18. (c) 19. (b) 20. (a) 21. (d) 22. (c) 23. (a) 24. (a) 25. (a) 26. (d) 27.(c) 28. (b) 29. (b) 30. (d) 31. (a) 32. (b) 33. (b) 34. (d) 35.(a) 36. (b 37. (a) 38. (c) 39. (b) 40. (d) 41. (a) 42. (a) 43. (b) 44.(b) 45. (b) 46. (a) 47. (b) 48. (b) 49. (a) 50. (a)