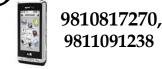**Class – X**   **Assignment (Chapter-5)**   **Arithmetic Progression**

1. The 8th term of an Arithmetic Progression (A.P.) is 37 & its 12th term is 57. Find the A.P.
2. Find the sum of first 25 terms of an A.P. whose nth term is given by $t_n = 7 - 3n.$
3. Which term of Arithmetic Progression 3, 10, 17… will be 84 more than its 13th term?
4. The 8th term of an Arithmetic Progression (A.P.) is -23 & its 12th term is -39. Find the A.P.
5. The 8th term of an Arithmetic Progression (A.P.) is 32 & its 12th term is 52. Find the A.P.
6. The 10th term of an Arithmetic Progression (A.P.) is 47 & its 15th term is 72. Find the A.P.
7. The nth term of an Arithmetic Progression (A.P.) is given by $t_n = 4n - 5.$ Find the sum of the first 25 terms of the given A. P.
8. The 10th term of an Arithmetic Progression (A.P.) is 44 & its 15th term is 64. Find the A.P.
9. The nth term of an Arithmetic Progression (A.P.) is given by $t_n = 5n - 3.$ Find the sum of the first 20 terms of the given A. P.
10. The nth term of an Arithmetic Progression (A.P.) is given by $t_n = 7n + 1.$ Find the sum of the first 30 terms of the given A. P.
11. The 10th term of an Arithmetic Progression (A.P.) is 57 & its 15th term is 87. Find the A.P.
12. If m times the mth term of an A. P. is equal to n times its nth term. Find the $(m + n) \, Th$ term of an A. P.
13. Find the sum of first 15 terms of an A. P. whose nth term is $9 - 5n.$
14. If the sum of nth term of an A. P. is given by $5n^2 + 3n$. Find the nth term of an A. P.
15. Find the number of terms of an A. P. : 54, 51, 48,….. So that their sum is $513.$
16. If the nth term of an A. P. is $(2n + 1)$. Find the sum of nth terms of an A. P.
17. Find the sum of all two digits odd positive numbers.
18. The 8th term of an A. P. is zero. Prove that 38th term is triple of its 18th term.
19. Find the sum of all two digits positive numbers divisible by 3.
20. If 5th term of an A. P. is zero, show that 33th term is 4 times its 12th term.
21. Find the sum of 51 terms of the A. P. whose 2nd term is 2 and 4th term is 8.
22. The sum of first n terms of an A. P. is given by $S_n = 3n^2 - n$. Determine the A. P. and its 25th term.

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23. The sum of 3 nos. in A. P. is 27 and their product is 405. Find the nos.

24. The sixth term of an A. P. is -10 and the tenth term is -26. Determine the 15th term of the A. P.

25. Find the sum of all the natural nos. less than 100 which are divisible by 6.

26. How many terms are there in an A. P. whose first term and 6th term are -12 & 8 respectively and sum of all its terms is 120?

27. In an A. P. the sum of the first n terms is $\frac{5n^2}{2} + \frac{3n}{2}$. Find its 20th term.

28. In an A. P., the sum of its first n terms is $n^2 + 2n$. Find its 18th term.

29. The first term, common difference and last term of an A. P. are 12, 6 and 252 respectively. Find the sum of all terms of this A. P.

30. Which term of the A. P.: 21, 42, 63, 84, ….. is 420?

31. The first term of an A. P. is 5 and its 100th term is -292. Find the 50th term of the A. P.

32. The first term of an A. P. is -2 and its 10th term is 16. Find the 50th term of the A. P.

33. Find the sum of all multiples of 5 lying between 101 & 999.

34. The third term of an A. P. is 1 and its 6th term is -11. Find the 15th term and rth term of the A. P.

35. The third term of an A. P. is p and its 4th term is q. Find the 10th of the A. P

36. Determine k so that $k + 2, 4k - 6\ and\ 3k - 2$ are the three consecutive terms of an A. P.

37. Determine k so that $4k + 8, 2k^2 + 3k + 6\ and\ 3k^2 + 4k + 4$ are the three consecutive terms of an A. P.

38. If 5 times the 5th term of an A. P. is equal 10 times is 10th term, show that 15th term is zero.

39. If in an A. P., the 24th term is twice the 10th term, show that 36th term is twice the 16th term.

40. Which term of the A. P. 5, 2, -1 … is -22?

41. The pth term of an A.P. is q and the qth term is p. find the $(p + q)th\ term$ of the A.P.

42. The sum of 5th and 7th term is 52 and the 10th term is 46. Find the A. P.

43. If 9th term of an A. P. is zero, show that 29th term is twice its 19th term.

44. Show that the sum of first n even natural numbers is equal to $(1 + \frac{1}{n})$ times the sum of the first n odd natural numbers.

45. The sum of n terms of a sequence is $3n^2 + 4n$. Find the nth term and show that the sequence is in A. P.

46. If S_n denotes the sum of n terms of an A. P., whose common difference is d, show that $d = S_n - 2S_{n-1} + S_{n-2}$.

47. If S_1, S_2, S_3 are the sum of three different A. P.'s, whose first term of each is being unity and the respective common difference being 1, 2, 3; prove that $S_1 + S_3 = 2S_2$.

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48. If the pth term of an A. P. is $\frac{1}{q}$ and the qth term is $\frac{1}{p}$, show that the sum of pq term is $\frac{1}{2}(pq+1)$.

Answers:

1. $2, 7, 12, 17 \dots$
2. -800
3. $25th\ term$
4. $5, 1, -3, -7 \dots$
5. $-3, 2, 7 \dots$
6. $2, 7, 12, 17$
7. 1175
8. $8, 12, 16, 20 \dots$
9. 990
10. 3285
11. $3, 9, 15, 21 \dots$
13. -465
14. $10n - 2$
15. $18\ or\ 19$
16. $n(n + 2)$
17. 2475
19. $1,665$
21. $3,774$
22. 146
23. $(3, 9, 15)\ or\ (15, 9, 3)$
24. -46
25. 816
26. 12
27. 99
28. 38
29. 5412
30. $20th\ term$
31. -142
32. 26
33. 98450
34. $-47, 13 - 4r$
35. $7q - 6p$
36. 3
37. $0, 2$
40. $10th\ term$
41. 0
42. $1, 6, 11, 16 \dots$
45. $6n + 1$

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