

CLASS X
ARITHMETIC PROGRESSION

1. The 7th term of an AP is 32 and its 13th term is 62. Find the A.P.
2. The 8th term of an AP is 37 and its 12th term is 57. Find the A.P.
3. The 10th term of an AP is 44 and its 15th term is 64. Find the A.P.
4. Find the sum of the first 25 terms of an A.P., whose nth term is given by $a_n = 7 - 3n$.
5. Find the sum of the first 30 terms of an A.P., whose nth term is given by $a_n = 4n - 5$.
6. If the sum of first n terms of an A.P. is given by $S_n = 3n^2 + 2n$, find its nth term.
7. If m times the mth term of an A.P. is equal to n terms of its nth term, find its (m + n)th term.
8. How many terms of the A.P.: 3,5,7,.....must be taken so that the sum is 120?
9. If the sum of first n terms of an A.P. is given by $S_n = 4n^2 - 3n$, find its nth term.
10. If the sum of first n terms of an A.P. is given by $S_n = 2n^2 + 5n$, find its nth term.
11. Find the sum of the first 18 terms of an A.P., whose nth term is given by $a_n = 9 - 5n$.
12. Find 10th term from the end of the A.P. 4,9,14,.....,254.
13. Find the number of terms of the A.P. 54, 51, 48,.....so that their sum is 513.
14. Find the sum of all two-digit odd positive numbers.
15. The 8th term of an A.P. is equal to zero. Prove that its 38th term is triple of its 18th term.
16. Which term of the A.P. 5, 9,13,..... is 81? Also find the sum $5 + 9 + 13 + \dots + 81$.
17. How many terms are there in an A.P. whose first term and 6th term are - 12 and 8 respectively and the sum of all terms is 120?
18. The first term, common difference and the last term of an A.P. are 12, 6 and 252 respectively. Find the sum of all terms of the A.P.
19. Which term of the A.P. 21, 42, 63, is 420?
20. How many terms of the sequence 18, 16, 14, should be taken so that their sum is zero?
21. The 6th and 17th terms of an A.P. are 19 and 41 respectively. Find the 40th term.
22. If 12th term of an A.P. is - 13 and the sum of first terms is 24, what is the sum of first 10 terms?
23. Find the middle term(s) in the A.P. 20, 16, 12,, - 176.
24. If five times the 5th term of an AP is equal to ten times the 10th term, show that its 15th term is zero.
25. In an AP, the 24th term is twice the 10th term. Prove that the 36th term is twice the 16th term.
26. Check, if 50 is a term of the A.P. 4, 7, 10, 13, or not. If yes, find which term it is.
27. The 5th term of an A.P. is 1 whereas its 31st term is - 77. Which term of the A.P. is - 17?
28. The sum of the 5th and 7th terms of an AP is 52 and the 10th term is 46. Find the A.P.
29. If the 9th term of an A.P. is zero. Prove that its 29th term is twice its 19th term.
30. An AP consists of 21 terms. The sum of the three terms in the middle is 129 and of the last three is 237. Find the A.P.
31. How many three - digit natural numbers are divisible by 3?
32. The 2nd and 6th terms of an A.P. are 9 and 25 respectively, find the 24th term and n such that a_n is 10.
33. How many terms are there in the A.P. 39, 44, 49, 54, ... , 134, 139?
34. Which term of the A.P. 68, 64, 60, 56, is zero?
35. Find the sum of the first n odd natural numbers. Hence find $1+3+5+ \dots + 101$.
36. Obtain the sum of the 56 terms of an A.P., whose 19th and 38th are 52 and 148 respectively.
37. The sum of the first 55 terms of an A.P. is 3300. Find the 28th term.
38. Which term of the A.P. 122, 116, 110, is the first negative term? (IMP)
39. Which term of the A.P. 41, 38, 35, is the first negative term? (IMP)
40. The sum of first four terms of an A.P. is 24 and the sum of next four terms is 56. Find the A.P.
41. The taxi fare is Rs 14 for the first kilometer and Rs 2 for each additional kilometer. What will be the fair for 10 kilometers?
42. Mangala started doing physical exercise 10 minutes for the first day. She will increase the time of exercise by 5 minutes per day,till she reaches 45 minutes per day. How many days are required to reach 4 minutes?
43. A village has 4000 literate people in the year 2001 and this number increase by 400 per year. How many literate people will be there till the year 2010?
44. Babubhai borrows Rs 4000 and agrees to repay with a total interest of Rs 500 in 10 installments, each installment being less than the preceding installment by Rs 10. What should be the first and the last installment? (Hint: $S_n = Rs\ 4000 + Rs\ 500 = Rs\ 4500$)
45. On the first of April every year, a person buys N.S.C. of values exceeding that of his last year's purchase by Rs 500. After 10 years he finds that the total values of certificates purchased by him is Rs 42500. Find the certificate purchased in (i) the first year (ii) the fifth year.