CBSE

ARITHMETIC PROGRESSION WS 5

Class 10 - Mathematics

1. Determine the A.P. whose fourth term is 18 and the difference of the ninth term from the fifteenth term is 30. **[2]**
2. The first term of an AP is –5 and the last term is 45. If the sum of the terms of the AP is 120, then find the number of terms and the common difference. **[2]**
3. Find the 11th term of the AP: $-3, \frac{1}{2}, 2, \ldots\ldots$ **[2]**
4. Ramkali required ₹2500 after 12 weeks to send her daughter to school She saved Rs.100 in the first week and increased her weekly saving by ₹20 every week. Find whether she will be able to send her daughter to school after 12 weeks. What value is generated in the above situation? **[2]**
5. Which term of the A.P 21, 18, 15, . . . is – 81? Also, is any term 0? Give reason for your answer. **[2]**
6. If the n^{th} term of an A.P is pn + q, find its common difference. **[2]**
7. Find number of terms in the A.P 7,11,15,..., 139 **[2]**
8. For what value of **n**, are the n^{th} terms of the APs: 9, 7, 5, ... and 15, 12, 9, ... the same? **[2]**
9. Write the first five terms of the sequence whose nth term is: $A_n = n^2 - n + 1$ **[2]**
10. Is -150 a term of the AP 17, 12, 7, 2 .....? **[2]**
11. Write the first five terms of the sequence whose nth terms are: $A_n = 2n^2 - 3n + 1$ **[2]**
12. Find the middle term of the A.P. 6, 13, 20,....,216. **[2]**
13. The angles of a triangle are in A.P. The greatest angle is twice the least. Find all the angles. **[2]**
14. Which term of the arithmetic progression 5,15, 25, ... will be 130 more than its 31^{st} term? **[2]**
15. Show that the sequence defined by $a_n = 4n + 5$ is an A.P. Also, find its common difference. **[2]**
16. Write the first five terms of the sequence whose nth term is: $A_n = \frac{2n-3}{6}$ **[2]**
17. Find the middle term of the A.P. 213, 205 ,197,....37. **[2]**
18. Which term of the sequence $17, 16\frac{1}{5}, 15\frac{2}{5}, 14\frac{3}{5}, \ldots$ is the first negative term? **[2]**
19. Which term of the AP 5, 9, 13, 17,..... is 81? **[2]**
20. Find the values of a, b and c, such that the numbers a, 10, b, c, 31 are in A.P. **[2]**
21. Find the middle term of the A.P. 6,13,20,..., 216. **[2]**
22. Which term of the A.P. : 65, 61, 57, 53, ... is the first negative term? **[2]**
23. For A.P. show that $a_p + a_{p+2q} = 2a_{p+q}$ **[2]**
24. Find the 37th term of the A.P $6, 7\frac{3}{4}, 9\frac{1}{2}, 11\frac{1}{4}, \ldots$ **[2]**
25. Kanika was given her pocket money on Jan 1st, 2008. She puts Rs. 1 on day 1, Rs. 2 on day 2, Rs. 3 on day 3, and continued doing so till the end of the month, from pocket money into her piggy bank. She also spent Rs. 204 of her pocket money, and found that at the end of the month she still had Rs. 100 with her. How much was her pocket money for the month? **[2]**
26. A sequence is given by $a_n = n^2 - 1$, $n \in N$. Prove that it is not an AP. **[2]**
27. An A.P. consists of 60 terms. If the first and the last terms be 7 and 125 respectively, find 32nd term. **[2]**

28. Find the sum of n terms of an A.P. whose n^{th} terms is given by $a_n = 5 - 6n$. **[2]**

29. Find the n^{th} term. Given a = first term = 7, d = common difference = 3, n = 8,a_n= the n^{th} term = ? **[2]**

30. Which term of the Arithmetic Progression -7, -12, -17, -22, ... will be –82? Is –100 any term of the A.P.? Give reason for your answer. **[2]**

31. The sum of three numbers of an AP is 27 and their product is 405. Find the numbers. **[2]**

32. In the AP, 38, ? , ? , ? , –22, find the missing terms? **[2]**

33. The 19^{th} term of an A.P. is equal to three times its sixth term. If its 9^{th} term is 19, find the A.P. **[2]**

34. The n^{th} term of an AP is given as $a_n = 2n + 3$. Find its 6^{th} term and 20^{th} term. **[2]**

35. Find n. Given a = first term = -18.9, d = common difference = 2.5, a_n = the nth term = 3.6, n = ? **[2]**

36. The fifth term of an A.P is 26 and its 10th term is 51. Find the A.P. **[2]**

37. How many natural numbers are there between 1 and 1000 which are divisible by 5 but not by 2? **[2]**

38. Write the first five terms of the sequence whose nth term is: $A_n = \frac{n-2}{3}$ **[2]**

39. Find the 15^{th} term of an AP whose first term is 17 and fourth term is 44. **[2]**

40. Find the 25th term of the A.P.$-5, \frac{-5}{2}, 0, \frac{5}{2}, ...$ **[2]**

41. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year. Find the production during 8th year. **[2]**

42. Find the next five terms of the sequence given by: $a_1 = 4$, $a_n = 4a_{n-1} + 3$, $n > 1$ **[2]**

43. Ramkali saves ₹5 in the first week of a year and then increased her weekly savings by ₹1.75. If in the nth week, her weekly savings becomes ₹20.75, then find n. **[2]**

44. How many three-digit natural numbers are divisible by 9? **[2]**

45. Which term of the sequence 114, 109, 104, ... is the first negative term? **[2]**

46. Write the first five terms of the sequence defined by $a_n = (-1)^{n-1} \cdot 2^n$ **[2]**

47. Which term of the AP: 53, 48, 43,... is the first negative term? **[2]**

48. Find the value of the middle term of the following AP: - 6, - 2, 2, ...,58. **[2]**

49. The sum of 4^{th} and 8^{th} terms of an A.P. is 24 and the sum of 6^{th} and 10^{th} terms is 44. Find the A.P. **[2]**

50. The nth term of a sequence is 3n - 2. Is the sequence an A.P.? If so, find its 10th term. **[2]**

51. In an AP, the first term is 12 and the common difference is 6. If the last term of the AP is 252, find its middle term. **[2]**

52. Two A.P's have the same common difference. The first term of one of these is 3, and that of the other is 8. What is the difference between their **[2]**

    i. 2nd terms?

    ii. 4th terms?

    iii. 10th terms?

    iv. 30th terms?

53. How many terms are there in the A.P: 12x, 10x, 8x, ..., -2x? **[2]**

54. Find the 25th term of the A.P $5, 4\frac{1}{2}, 4, 3\frac{1}{2}, 3, \ldots$ **[2]**

55. Find the next five terms of the sequence given by: $a_1 = -1$, $a_n = \frac{a_{n-1}}{n}, n \geq 2$ **[2]**

56. Find the 15^{th} term from the end (towards first term) of the A.P. 3, 8, 13, ..., 253. **[2]**

57. If the 10^{th} term of an A.P. is 52 and 17^{th} term is 20 more than the 13^{th} term, find the A.P. **[2]**

58. The first term of an A.P. is - 7 and the common difference 5. Find its 18th term and the general term. **[2]**

59. If the n^{th} terms of two A.P.s 23, 25, 27, ... and 5, 8, 11, 14, ... are equal, then find the value of n. **[2]**

60. Check whether 301 is a term of the given list of numbers: 5, 11, 17, 23,...? **[2]**

61. If 10 times the 10^{th} term of an A.P. is equal to 15 times the 15^{th} term, show that 25^{th} term of the A.P. is zero. **[2]**

62. If a, b, c are the p^{th}, q^{th} and r^{th} terms of an AP, then prove that a (q–r) + b (r–p) + c (p–q) = 0. **[2]**

63. Find the 9th term from the end of the A.P. 5, 9, 13, ..., 185. **[2]**

64. Write the first five terms of the sequence whose nth term is: $A_n = 3^n$ **[2]**

65. Which term of the AP 3, 15, 27, 39, ... will be 120 more than its 21st term? **[2]**

66. If the n^{th} term of a progression is (4n - 10) show that it is an A.P. Find its 16th term. **[2]**

67. Find the 18th term of the A.P $\sqrt{2}, \sqrt{18}, \sqrt{50}, \sqrt{98}, ...$ **[2]**

68. In a certain A.P. the 24^{th} term is twice the 10^{th} term. Prove that the 72nd term is twice the 34^{th} term. **[2]**

69. Find whether 0 (zero) is a term of the A.P. 40, 37, 34, 31,.... **[2]**

70. The 8^{th} term of an Arithmetic Progression (AP) is 37 and its 12^{th} term is 57. Find the AP. **[2]**

71. What is the 5th term from the end of the AP 2, 7,12,..., 47? **[2]**

72. Three numbers are in A.P. If the sum of these numbers be 27 and the product 648, find the numbers. **[2]**

73. If five times the fifth term of an A.P. is equal to eight times its eighth term, show that its 13th term is zero. **[2]**

74. Write the first five terms of the sequence whose nth term is: $A_n = \frac{n(n-2)}{2}$ **[2]**

75. Find the value of p for which the numbers 2p-1,3p+1,11 are in AP. Hence, find the numbers. **[2]**