

WORKSHEET-ARITHMETIC PROGRESSIONS

1. In an A.P. , $a = 1, a_n = 20$, and $S_n = 399$ then find the value of n .
2. Justify why 0 cannot be a term of the A.P. 31, 28, 25, 22,
3. The 26th, 11th and last terms of an A.P are 0, 3, and $-\frac{1}{5}$ respectively. Find the common difference and the number of terms.
4. If the 9th term of an A.P. is zero, then prove that its 29th term is twice its 19th term.
5. The angles of a triangle are in an A.P.. The greatest angle is twice the least. Find all the angles of the triangle.
6. Find the 12th term from the end of the A.P. -2, -4, -6,, -100.
7. Which term of the A.P 53, 48, 43, is the first negative term ?
8. How many numbers lie between 10 and 300, which divided by 4 and leave a remainder 3?
9. Find the sum of all the 11 terms of an A.P whose middle most term is 30.
10. Find the sum of the last ten terms of the A.P. 8, 10, 12,, 126.
11. The eighth term of an A.P. is half its second term and the eleventh term exceeds one-third of its fourth by 1. Find the 15th term.
12. Find the sum of integers between 100 and 200, which are not divisible by 7.
13. If S_n denotes the sum of first n terms of an A.P. then prove that $S_{12} = 3(S_8 - S_4)$.
14. If m times the m^{th} term is equal to n times the n^{th} term, then prove that $(m + n)^{\text{th}}$ term is equal to zero.
15. Find the sum of n terms of the A.P. $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$
16. In an A.P. , if the sum of m terms is equal to n and the sum of n terms is equal to m , then prove that the sum of $(m+n)$ terms is $-(m+n)$.
17. If $S_m = S_n$ in an A.P. then show that $S_{(m+n)} = 0$.
18. Show that $(a - b)^2, (a^2 + b^2)$, and $(a + b)^2$ are in A.P.
19. If 5 times the 5th term is equal to 12 times the 12th term then prove that 17th term is 0.
20. Along a road lie an odd number of stones placed at intervals of 10m. These stones have to be assembled around the middle stone. A person can carry only one stone at a time. A man carried the job with one of the end stones by carrying them in succession. In carrying all the stones he covered a distance of 3km. Find the number of stones.