ARITHMETIC PROGRESSION

- Arithmetic progression (A.P.) :- An A.P. is a list of numbers in which each term is obtained by adding a fixed number to the preceding term except the first term.
- This fixed number is called the common difference of the A.P.
- If a is first term and d is common difference of an A.P. , then the A.P is a , a+d , a+2d , 2+3d .....
- The nth term of an a.p is denoted by a_n and a_n= a+(n-1) d , where a = first term and d = common difference.
- n^{th} term from the end = l – (n-1) d , where l = last term.
- Three terms a-d , a , a+d are in A.P with common difference d.
- Four terms a-3d , a-d , a+d ,a+3d are in A.P with common diff. 2d .
- The sum of first n natural number is $\frac{n(n+1)}{2}$
- The sum of n terms of an A.P with first term a and common difference d is denoted by s_n = $\frac{n}{2}${ 2a+(n-1) d } also , s_n = $\frac{n}{2}$(a+l) where , l = last term.
- a_n = s_n-s_{n-1}. Where a_n=n^{th} term of an A.P
- D = a_n-a_{n-1}. Where d = common difference of an A.P.

Problems

1. Show that the sequence defined by t_n=4_n+7 is an AP.

2. Find the number of terms for given AP :7,13 ,19,25,.....,205.

3. The 7th term of an AP is 32 and it 13th term is 62. Find AP.

4. Find the sum of all two digit odd positive nos.

5. Find the value of 'x' for AP. 1+6+11+16+....+X=148.

6. Find the 10th term from the end of the AP 8,10,12,…126.

7. The sum of three numbers of AP is 3 and their product is -35.Find the numbers.

8. A man repays a loan of Rs3250 by paying Rs20 in the first month and then increase the payment by Rs15 every month .How long will it take him to clear the loan ?

9. The ratio of the sums of m and n terms of an AP is m^2 :n^2 .show that the ratio of the mth and nth terms is (2m-1) : (2n-1).

10. In an AP , the sum of first n terms is $\frac{3n^2}{2} + \frac{5n}{2}$, Find it 25th term.