

## 5 Arithmetic Progression

Q→ What is AP?

Ans. → whose common difference is same.

$a \rightarrow$  first term

$n \rightarrow$  number of terms

$n^{\text{th}}$  term  $\rightarrow a_n$

$d \rightarrow$  common difference

$l \rightarrow$  last term

Sum of  $n$  terms  $\rightarrow S_n$

$$* [a_n = a + (n-1).d]$$

$n^{\text{th}}$  term

$$* [S_n = \frac{n}{2} [2a + (n-1)d]]$$

Sum of  $n$  terms \*

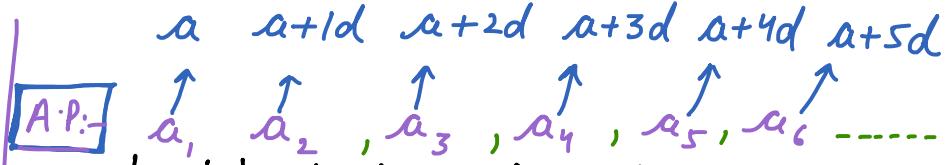
$$[S_n = \frac{n}{2} (a+l)]$$

$$a_1 = S_1$$

$$a_2 = S_2 - S_1$$

$$a_3 = S_3 - S_2$$

$$* [a_n = S_n - S_{n-1}]$$



$$d = a_2 - a_1$$

$$d = a_3 - a_2$$

$$d = a_4 - a_3$$

$6^{\text{th}}$  term  $\rightarrow a_6$

$7^{\text{th}}$  term  $\rightarrow a_7$

$n^{\text{th}}$  term  $\rightarrow a_n$

Sum of 3 terms =  $S_3$

Sum of 5 terms =  $S_5$

Sum of  $n$  terms =  $S_n$

odd :-

3 terms

$$a-d, a, a+d$$

5 terms

$$a-2d, a-d, a, a+d, a+2d$$

7 terms

$$a-3d, a-2d, a-d, a, a+d, a+2d, a+3d$$

**even** :-

4 terms

$$a - 3d$$

$$a - d$$

$$a + d$$

$$a + 3d$$

6 terms

$$a - 5d, a - 3d, a - d, a + d, a + 3d, a + 5d$$