

CHAPTER 05**Arithmetic Progressions** **n^{th} term of an A.P:**

Let $a_1, a_2, a_3 \dots$ be an A.P.

Whose first term a_1 is 'a' and the common difference is 'd'. Then

Second term $a_2 = a_1 + d = a + d = a + (2-1)d$

Third term $a_3 = a_2 + d = (a + d) + d = a + 2d = a + (3 - 1)d$

Fourth term $a_4 = a_3 + d = (a + 2d) + d = a + 3d = a + (4 - 1)d$

Now, looking at the pattern, we can say that the n^{th} term

$$a_n = a + (n - 1)d$$

So, the n^{th} term of A.P with first term 'a' and common difference 'd' is given by $a_n = a + (n - 1)d$.

Note:

- a_n is also called the general term of the A.P.

- If there are 'n' terms in the A.P, then a_n represents the last term, which is sometimes also denoted by ' l ' $= a + (n - 1)d$, where
 a = First term and
 d = Common difference of the A.P.

