CBSE Class 10 Mathematics
NCERT Revision Notes
CHAPTER 05
ARITHMETIC PROGRESSIONS

1. **Arithmetic Progressions**
2. **nth Term of an AP**
3. **Sum of First n Terms of an AP**
4. **Miscellaneous Questions**

1. **Sequence:** A set of numbers arranged in some definite order and formed according to some rules is called a sequence.
2. **Progression:** The sequence that follows a certain pattern is called progression.
3. **Arithmetic Progression:** A sequence in which the difference obtained by subtracting any term from its preceding term is constant throughout, is called an arithmetic sequence or arithmetic progression (A.P.).

The general form of an A.P. is a, a+d, a + 2d, ... (a : first term, d = common difference).
The terms of A.P. is denoted by $a, a_2, a_3, \ldots \ldots \ldots, a_n$.

1. **General Term:** If 'a' is the first term and 'd' is common difference in an A.P., then n^{th} term (general term) is given by $a_n = a + (n-1)\,d$.

Sum of n Terms of an A.P. : If 'a' is the first term and 'd' is the common difference of an A.P., then sum of first n terms is given by
$$S_n = \frac{n}{2}\{2a + (n-1)\,d\}$$
If 'l' is the last term of a finite A.P. then the sum is given by $S_n = \frac{n}{2}\{a + l\}$

(i) If a_n is given, then common difference $d = a_n - a_{n-1}.$

(ii) If S_n is given, then n^{th} term is given by $a_n = s_n - s_{n-1}$

(iii) If a, b, c are in A.P., then 2b = a + c.

(iv) If a sequence has n terms, its rth term from the end $= (n - r + 1)^{th}$ term from the beginning.