



Example: We know that sum of first n natural no. is $= \frac{n(n+1)}{2}$

With this result we can deduce easily that the sum of first 100 natural numbers is 5050.

b) **Induction:**

The process of establishing a valid general result from particulars is called Induction

The principal of Mathematical Induction is used to establish the validity of a general result involving natural numbers.

Mathematical Induction

INTRODUCTION:

Some time it is very difficult for us to prove a mathematical statement or formula by direct method. In such cases we adopt an indirect method, known as the method of **Mathematical Induction**.

Principal of Mathematical Induction:

The statement of $P(n)$ by mathematical Induction consists of the following three steps:

Step No.1: (Verification Step)

In this step the mathematical statement is verified to be true for smallest permissible positive integral value of n such that :

$$N = 1, 2, 3 \text{ etc}$$

Step No.2: (Assumption Step)

At this stage the statement is assumed to be true for $n = k$, where k is any positive integer greater than the permissible lowest value of n . So it is assumed that

$$P(k) \text{ is true}$$