Mean and Median

1. The mean value of a variable is defined as the sum of all the values of the variable divided by the number of values.

2. The mean of ungrouped or raw data is given by Mean $= \bar{x} = \dfrac{sum\,of\,observations}{Number\,of\,observations}$.

3. If x_1, x_2, x_3...., x_n are n values of a variable X, then the arithmetic mean of these values is given by:

   Mean $(\bar{x}) = \dfrac{1}{n} \sum\limits_{i=1}^{n} x_i$

   If a variate X takes values x_1, x_2, x_3...., x_n with corresponding frequencies f_1, f_2, f_3... f_n respectively, then arithmetic mean of these values is given by

   Mean $(\bar{x}) = \dfrac{\sum f_i x_i}{\sum f_i}$

   This gives the mean for ungrouped frequency distribution.

4. Median is the value of middle most observation(s).

5. The median is calculated only after arranging the data in ascending order or descending order.

   Median $= \begin{cases} \text{If } n \text{ is odd, then median} = \left(\dfrac{n+1}{2}\right)^{th} \text{observation} \\[4mm] \text{If } n \text{ is even, then median} = \left(\dfrac{\left(\dfrac{n}{2}\right)^{th} observation + \left(\dfrac{n}{2}+1\right)^{th} observation}{2}\right) \end{cases}$