

1) Median of ungrouped data

or arranging ~~data~~ in ascending order

if  $n = \text{even}$

[  $n = \text{no of obs}$  ]

$$\text{Median} = \frac{\left(\frac{n}{2}\right)^{\text{th}} \text{ term} + \left(\frac{n}{2} + 1\right)^{\text{th}} \text{ term}}{2}$$

if  $n = \text{odd}$

$$\text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ term}$$

2) Median of grouped data.

(a) discrete

if  $n = \text{even}$

$$\text{Median} = \frac{\frac{n}{2}^{\text{th}} + \left(\frac{n}{2} + 1\right)^{\text{th}} \text{ term}}{2}$$

$n = \text{odd}$

$$\text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ term}$$

where  $n = \sum f_i$ .

(b) Continuous

$$\text{Calc median class} = \left(\frac{\sum f_i}{2}\right)$$

$$\text{Median} = l + \frac{\left(\frac{n}{2} - cf\right)}{b_0} \times h$$

$l = \text{lower limit}$

$n = \text{no of obs. } (\sum f_i)$

$h = \text{class size.}$

$cf = \text{cumm freq of class preceding median class.}$

$b_0 = \text{freq of median class}$

3) mean Deviation.

Let  $A$  be the central value about which mean deviation is to be calculated.

$$M D (A) = \frac{1}{n} \sum_{i=1}^n |x_i - A|$$

We call  $|x_i - A|$  as deviation of a particular element from  $A$ .

Hence mean of all such deviation is mean deviation.