(1) The Mean for the grouped data can be forended by

(i) The direct method $\bar{x} = \dfrac{\sum f_i x_i}{\sum f_i}$

(ii) The assumed mean method

$$\bar{x} = a + \dfrac{\sum f_i d_i}{\sum f_i} \quad \text{where } d_i = x_i - a$$
$$a \text{ is assumed mean}$$

(iii) The Step deviation method

$$\bar{x} = a + \dfrac{\sum f_i d_i}{\sum f_i} \times h \quad \text{where } u_i = \dfrac{x_i - a}{h}$$
$$h \text{ is class site.}$$

(2) The mode for the grouped data can be found by using the formula:

$$Mode = l + \left(\dfrac{f_1 - f_0}{2f_1 - f_0 - f_2} \right) \times h$$

l = lower limit of the modal class
f_1 = frequency of the modal class
f_0 = frequency of the preceding class of modal class
f_2 = frequency of the succeeding class of modal class
h = Size of the class interval.

Modal Class — class interval with highest frequency.

(3) The median of the grouped data can be found by using the formula.

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

l = lower limit of the median class

N = Number of observation

cf = cumulative frequency of class interval preceeding median class

f = frequency of median class

h = class size

Median class — class whose cumulative frequency is greater than $\frac{N}{2}$

(4) Empirical Relation between mean, mode and Median

Mode = 3 Median − 2 Mean

(5) Cumulative Frequency : is running total frequencies. It is the sum of all the previous frequencies up to the current point.

Cumulative frequency curve (or Ogive) :

There are two types of cumulative frequency curve (ogive):

(i) More than type cumulative frequency curve

(ii) Less than cumulative frequency curve.

(i) More then type cumulative frequency curve :

1. In the graph, put the lower limit on the x-axis

2. Mark the cumulative frequency on the y-axis.

3. Plot the points (x,y) using lower limit (x) and their corresponding cumulative frequency (y)

4. Join the points by a smooth free hand curve. It looks like an upside down S.

(ii) Less then type Cumulative frequency Curve

1. In the graph, put the upper limit on the x-axis

2. Mark the cumulative frequency on the y-axis

3. Plot the points (x,y) using upper limits (x) and their corresponding cumulative frequency (y).

4. Join the points by a smooth freehand curve. It looks like an elongated S.

Cumulative Graph can also be used to calculate the Median of given data. If you draw both the curves on the same graph, the point at which they intersect, the corresponding value on the x-axis, represents the median of the given data set.