CBSE Class 10 Mathematics
Revision Notes
CHAPTER 14
STATISTICS

1. **Mean** : The mean for grouped data can be found by :

(i) The direct method = $\bar{X} = \frac{\sum fixi}{\sum fi}$

(ii) The assumed mean method

$\bar{X} = a + \frac{\sum fidi}{\sum fi}$

Where $d_i = x_i - a.$ a = Provisional mean

(iii) The step deviation method

$X = a + \frac{\sum fiui}{\sum fi} \times h, \quad where \quad U_l = \frac{X_i - a}{h}$

2. **Mode** : The mode for the grouped data can be found by using the formula :

$mode = l + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right] \times h$

l = lower limit of the modal class.

f_1 = frequency of the modal class.

f_o = frequency of the preceding class of the modal class.

f_2 = frequency of the succeeding class of the modal class.

h = size of the class interval.

Modal class - class interval with highest frequency.

3. **Median** : Median of continuous series is:

(i) $\left(\frac{\mathrm{N}}{2}\right)^{th}$ term (if number of terms are odd)

(ii) $\frac{1}{2}\left[\left(\frac{\mathrm{N}}{2}\right)^{th}\text{term} + \left(\frac{\mathrm{N}}{2}+1\right)^{th}\text{term}\right]$ (if number of terms are even]

(iii) The median for the grouped data can be found by using the formula :

$$median = l + \left[\frac{n/2 - Cf}{f}\right] \times h$$

l = lower limit of the median class.

n = number of observations.

Cf = cumulative frequency of class interval preceding the median class.

f = frequency of median class.

h = class size.

4.**Empirical Formula** : Mode = 3 median - 2 mean.

5.**Cumulative frequency curve or an Ogive** :

(i) Ogive is the graphical representation of the cumulative frequency distribution.

(ii) Less than type Ogive :

• Construct a cumulative frequency table.

• Mark the upper class limit on the x-axis.

(iii) More than type Ogive :

• Construct a frequency table.

• Mark the lower class limit on the x-axis.

(iv) To obtain the median of frequency distribution from the graph :

• Locate point of intersection of less than type Ogive and more than type Ogive :

Draw a perpendicular from this point on x-axis.

• The point at which it cuts the x-axis gives us the median.