

# Arithmetic mean

\* When the sum of numbers divided by the total number of terms, we get Arithmetic mean.

\* mean is denoted by the symbol ' $\bar{x}$ '.

\* We study mean, median and mode in three different series -

1) Individual series - if there are  $N$  terms like  $x_1, x_2, x_3, \dots, x_n$ . then the formula

$$\bar{x} = \frac{\sum x}{N} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{N}$$

Where,  $\sum$  (sigma) = the sum of

Ex. The monthly income of five persons are 4000, 4500, 5000, 6500, 7000. and if we want to know their average income.

$$\bar{x} = \frac{\sum x}{N}$$

$$\therefore \bar{x} = \frac{4000 + 4500 + 5000 + 6500 + 7000}{5}$$

$$= \frac{27000}{5}$$

$$\bar{x} = 5400 \text{ will be average income.}$$



\* This is the direct method of calculating Average and we can calculate average of every individual data simply with this formula.

\* Unit of mean will be same as the unit of variables.

\* Short-cut method.

$$\bar{x} = a + \frac{\sum dx}{N}$$

Where,

$a$  = assumed mean.

$\sum dx$  = Sum of deviations from assumed mean.

$N$  = The Number of terms.

Ex. The monthly income of five persons are 4000, 4500, 5000, 6500, 7000. Find arithmetic mean with short-cut method.