

• mode can be obtained from histogram

Mean

* $AM = \bar{x}$:-

→ Individual series = → Discrete series = → Continuous series =

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

$$\bar{x} = \frac{\sum fx}{\sum f}$$

$$\bar{x} = \frac{\sum fx}{\sum f} \quad [x = \text{middle value}]$$

→ combined mean =

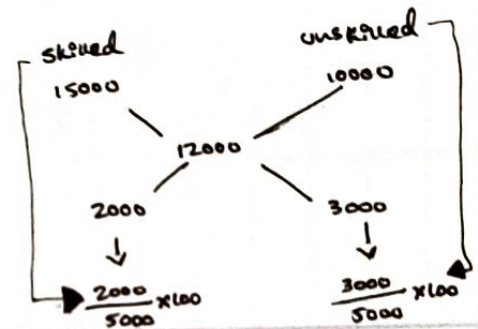
$$\bar{x}_{12} = \frac{n_1 \bar{x}_1 + n_2 \bar{x}_2}{n_1 + n_2}$$

→ corrected mean =
$$\frac{n\bar{x} - \text{wrong} + \text{correct}}{n}$$

$$\bar{x}_{123} = \frac{n_1 \bar{x}_1 + n_2 \bar{x}_2 + n_3 \bar{x}_3}{n_1 + n_2 + n_3}$$

$$\left[\begin{array}{l} \text{mean} - \text{mode} = 3 (\text{mean} - \text{median}) \\ \text{mode} = 3 \text{ median} - 2 \text{ mean} \end{array} \right]$$

Trick for



→ Properties of AM

• If all the observations are constant then the AM also will be same.
eg: 10, 10, 10 $AM = 10$

• The sum of deviations of all value from AM is zero.

• AM is affected due to origin and scale.

• If we make any changes in value, it will affect the AM also.

• The Algebraic sum of deviations of observation taken from AM is zero (0)

→ Demerits

→ Merits

• AM is rigidly defined

~~mean cannot be calculated for qualitative data.~~

• it is based on all observations

• it is capable of being treated mathematically.

• It cannot determined graphically

• AM cannot be calculated for qualitative data.

• It is too much affected by extreme observation.

• AM cannot be computed when class intervals have open end class.

↓
Demerits of median

* Harmonic mean :- It is the reciprocal of the mean of the reciprocal of n observations-

- It is used to find Average speed
- It is called ratio Avg-
- It can't be calculated if any of the observation is zero.
- HM of $1\frac{1}{2}, 1\frac{1}{3}, \dots, \frac{1}{n}$ is $\frac{2}{n+1}$

$$HM = \frac{n}{\sum \frac{1}{x}}$$

