

Arithmetic mean:

- Algebraic sum of the deviations of a set values from their arithmetic mean is 0.

$$\begin{aligned}\sum f_i(x_i - \bar{x}) &= \sum f_i x_i - \sum \bar{x} \cdot f_i & \left[\bar{x} = \frac{1}{N} \sum f_i x_i \right] \\ &= \sum f_i x_i - \bar{x} \sum f_i \\ &= \sum f_i x_i - \bar{x} N \\ &= 0.\end{aligned}$$

- The sum of the squares of the deviations of a set of values is minimum when taken about mean.
- When single observation is missing or lost, it ~~is not~~ cannot be calculated.
- For open ended class AM cannot be calculated.
- AM is affected very much by extreme values.
- AM is not suitable for measure qualitative data.

Geometric mean:

- Used to find the rate of population growth & the rate of interest.
- If any one of the observations ~~become~~ is 0, then GM will be 0.
If any one of the observation is -ve GM becomes imaginary.

Harmonic mean:

- If any observation is 0, then it can't be calculated.

① Always $AM \geq GM \geq HM$
 $GM = \sqrt{AM \cdot HM}$

② When all observation same -
 AM, GM, HM are same.