MEASURES OF LOCATION & SPREAD

measures of central tendency

- How do you know when to use the best measurement in a particular situation:
  - mode = when there are repeats
  - mean = uses all pieces of data but extreme values may effect
  - median = usually used when there are extreme values (outliers or skews)

The mean can be found in different ways depending on situation:

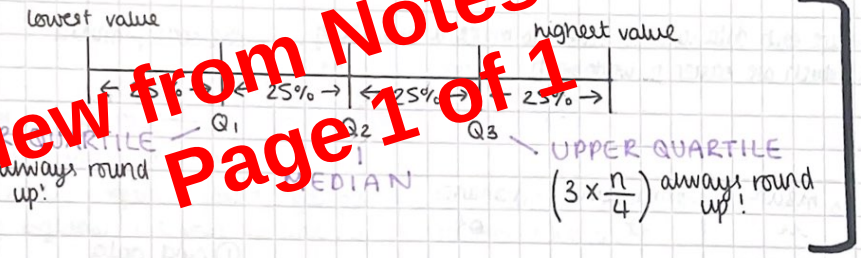
$$\bar{x} = \frac{\Sigma x}{n} \quad \text{or} \quad \bar{x} = \frac{\Sigma xf}{\Sigma f}$$

[mean is either symbolised as $\bar{x}$ or μ]

other measures of location

You can calculate other measures of location such as quartiles and [illegible]

discrete data



- When data is presented in a grouped frequency table, you can use the technique interpolation to estimate the median, quartiles and percentiles. When using this method you assume the data values are evenly distributed.

Interpolation: inside the range of data (reliable)
Extrapolation: outside the range of data (unreliable)

[For grouped continuous data, or data in a cumulative frequency table, don't add 1.]

General 'Formula':

$$\frac{(Q_1, Q_2 \text{ or } Q_3) \text{ value} - \text{cf LB value}}{\text{cf UB value} - \text{cf LB value}} = \frac{(Q_1, Q_2 \text{ or } Q_3) - \text{LB group value}}{\text{UB group value} - \text{LB group value}}$$

Find what Q_1, Q_2 or Q_3 is first!

measures of spread

A measure of spread sometimes refered as 'measures of dispersion' or 'measures of variation'

- Range = max value - min value
- Interquartile Range (IQR) = Q_3 (Upper Quartile) - Q_1 (Lower Quartile)