

* Explain key statistical concepts.

* 1. Mean (Average).

↳ the mean is the average value in the data.

↳ formula:- $\text{Mean} = \frac{\sum X}{N}$

↳ Mean symbol is \bar{x} .

* 2. median (middle value).

↳ the median is the middle value of the data.

↳ if odd number of values then the median is middle value.

↳ but if even number of values then the sum of 2 middle number and divide by 2

↳ Median symbol is M.

* 3. Mode.

→ the mode is the most frequently value in the data.

* 11. Skewness

- ↳ Measures asymmetry of distribution.
- ↳ Positive skew :- tail is right (higher values).
- ↳ Negative skew :- tail is left (lower values).
- ↳ zero skew :- symmetrical (like a Normal distribution).

* 5. Kurtosis

- ↳ Measures 'peakiness' of distribution.
- ↳ High kurtosis :- sharp peak.
- ↳ Low kurtosis :- flat peak.
- ↳ In normal distribution kurtosis :- 3

* 6. Standard Deviation (σ)

- measures spread of the data
- ↳ How far the values from mean.
- ↳ the symbol of standard deviation is (σ)
- formula: $\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N}}$

* To variance.

→ The square of the standard Deviation

↳ formula:- $\text{Var} = (\sigma)^2$

* So Quartiles.

↳ Quartiles is divide in to four parts

1) Q_1 : - 25% of values

2) Q_2 : - 50% of values

3) Q_3 : - 75% of values

4) Q_4 : - 100% of values

Q_1 : - 25th percentile

Q_2 : - 50th percentile

Q_3 : - 75th percentile

* 9. Percentiles.

- ↳ Percentiles divide data into 100 equal parts

* 10. Probability.

- How likely something is to happen.

↳ formula :- $P(x) = \frac{\text{Number of ways it can happen}}{\text{Total Number of outcomes}}$

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* 11. Correlation.

- Measures relationships between two variables

↳ Positive correlations:- As one increases, the other increases.

↳ Negative correlations:- As one increases, the other decreases.

↳ No correlation.

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Normal Distribution.

- ↳ Bell - shaped curve.
- ↳ Mean, Median, Mode are the same.