Statistical Data Analysis.

Page No.
Date

★ Calculate mean, median, mode, range, IQR, variance & SD

20, 24, 25, 36, 35, 32, 33

(I) Mean $= \frac{20+24+25+36+35+32+33}{7}$

$= \frac{205}{7}$

$= 29.28$

(II) Median =

20 24 25 32 33 35 36

median = 32.

(III) mode :- None

(IV) Range = max - min

= 36 - 20

= 16

(V) IQR = $Q_3 - Q_1$

= 35 - 24

= 11

x	$x-\bar{x}$	$(x-\bar{x})^2$
20	-9.28	86.11
24	-5.28	27.87
25	-4.28	18.31
36	6.72	45.15
35	5.72	32.71
32	2.72	7.39
33	3.72	13.83
		231.37

(VI) SD = $S = \sqrt{\frac{\Sigma(x-\bar{x})^2}{n-1}} = \sqrt{\frac{231.37}{7-1}}$

$= \sqrt{\frac{231.37}{6}}$

$= \sqrt{38.56}$

$S = 6.20$

Page No.
Date

Variance = $S^2 = (6.20)^2$

= 38.44

Page No.
Date

★ Descriptive Statistics

- The study of numerical and graphical ways to describle and display your data is called descriptive statistics.

★ measure of Central Tendency.

- This is the center of the distribution of data
- It describes the location of data and concentrates where data is located.
- Three measures widely used:-
  (i) mean
  (ii) median
  (iii) mode.

★ Outliers

- Outliers are extreme behaviours.
- An outlier is a data point that differs significantly from other observations.

★ Measure of Dispersion

- The dispersion is the "Spread of Data".
- It measures how far the data is spread.
- These dispersions of data can be measured by
  (i) Inter-Quartile Range (IQR)
  (ii) Range
  (iii) Standard Deviation
  (iv) Variance.

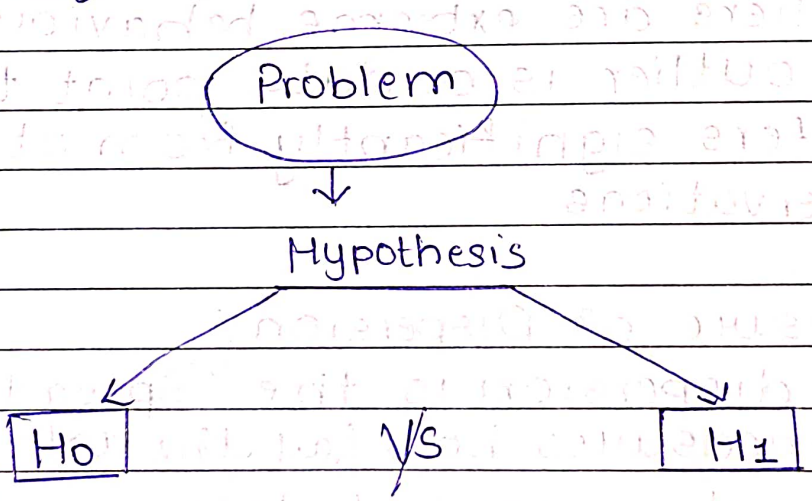
Page No.
Date

★ Inferential Statistics

- This method is used for making conclusions about population from the data sample by using the null and alternative hypotheses that are subjected to random variation.

★ Hypothesis Testing

- It is a part of statistics in which we make assumptions about the population parameter. i.e to accept or reject the assumption.
- Example-
  A teacher assumes that 50% of his college ~~class~~ students come from lower middle class families.



- Hypothesis testing is defined in two terms
  (i) Null Hypothesis [Ho]
  (ii) Alternate Hypothesis [H1 or Ha]

(i) Null Hypothesis

⟹ In which we assume that sample observations are purely by chance. Denoted by Ho.

Ex :- ... Extra class.....

(ii) Alternate Hypothesis

⟹ In which we assume that sample observations are not purely by chance. They are affected by some random situation. Denoted by H1 or Ha

Ex..... Extra class.....

★ Critical Value

- Denoted by C and it is a value in distribution beyond which leads to rejection of Null Hypothesis. It is compared to test statistics.

★ Test-Statistic.

- Denoted by t and is dependent on the test that we run. It is deciding factor to reject or accept Null Hypothesis.