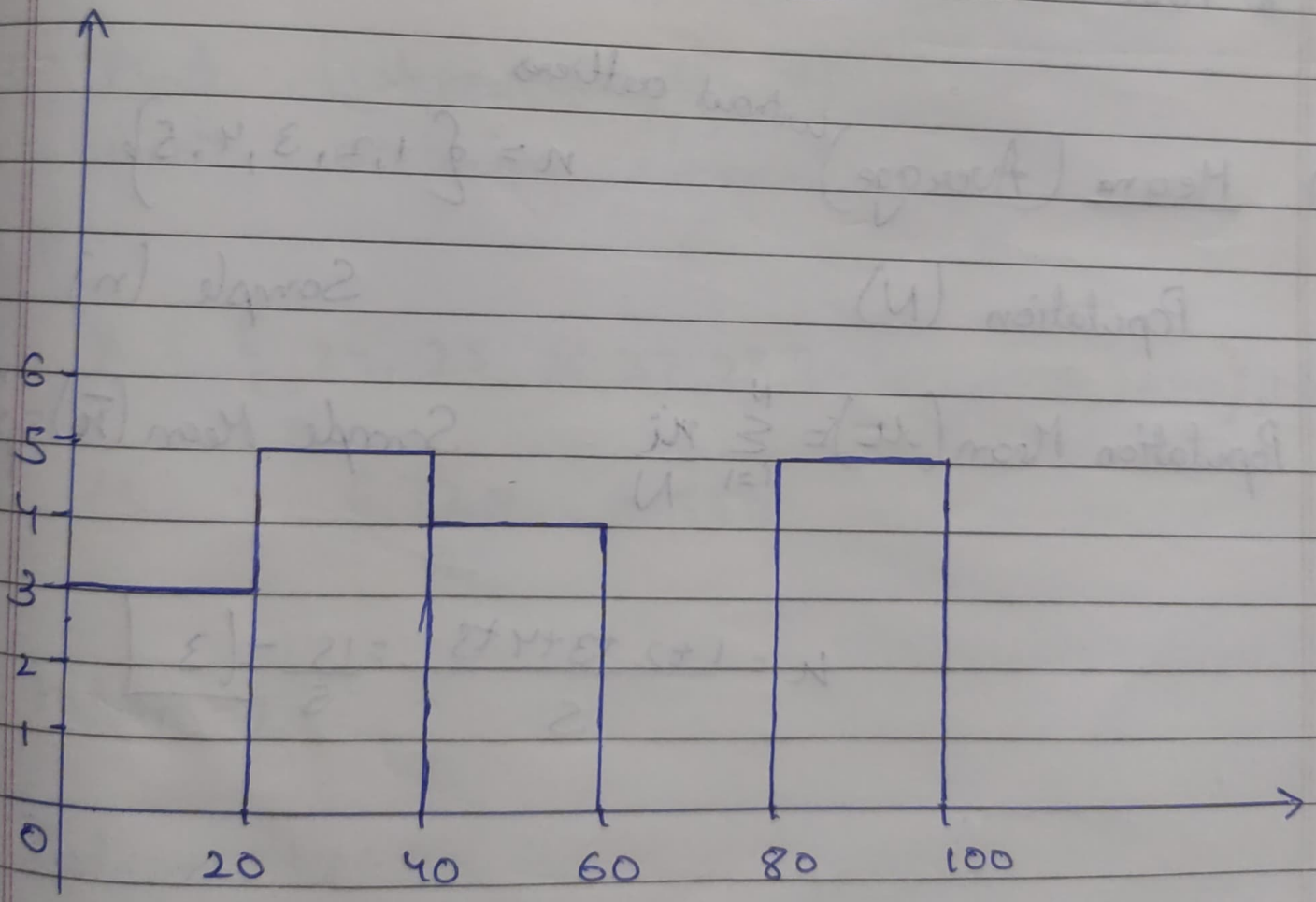
Statistics

Assignment - 1

Q1 Eg :- 10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99

bins = 5 binsize = 20

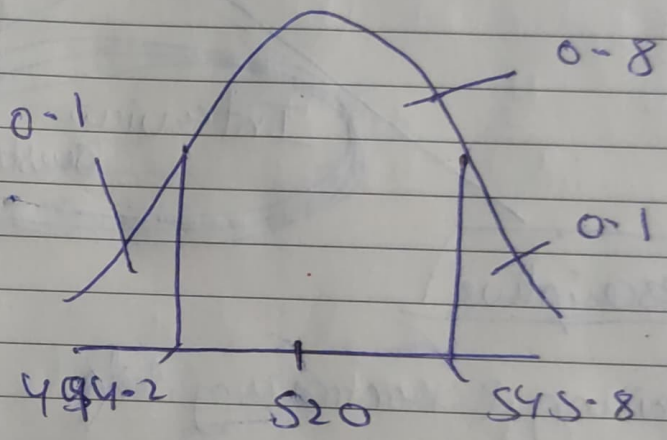


80

σ^2 $\sigma = 100$, $n = 25$, $\bar{x} = 520$

Significance Level = 1 − 08

= 0·2



Margin of Error $= Z_{\frac{0.2}{2}} \times \frac{100}{\sqrt{25}}$

$= 2_{0.1} \times 20$

[Whole area]

$\rightarrow 1 - 0.1 = 0.9$ [Area Under the Curve]

$Z = 1.29$

Lower fence $= 520 - 1.29 \times 20$

$= 520 - 25.8$

$= 494.2$

Higher fence $= 520 + 25.8$

$= 545.8$

Pvalue = 0.0

car
1 Tail

Page No.
Date :

Q3 A Car Company believes that the percentage of residents in city ABC that owns a vehicle is 60% or less. A Sales Manager disagrees with this. He conducts a Hypothesis testing surveying 250 residents and found that 170 responded yes to owning a vehicle

a.) At 10% significance level, is there enough evidence to support the idea that vehicle ownership in city ABC is 60% or less.

$n = 250 \quad x = 170$

Solu $H_0: P_0 \leq 60$

$P_0 \neq 60$

$\hat{P} = \frac{x}{n} = \frac{170}{250} = 0.68.$

$P_0 = 0.60, \quad q_0 = 0.40.$

$\alpha = 0.1$

[redacted]

2 tailed Table $\rightarrow \pm 1.29$

$Z\text{Test} = \frac{0.68 - 0.60}{\sqrt{\frac{0.60 \times 0.40}{250}}} = \frac{0.08}{\sqrt{\frac{0.24}{250}}} = \frac{0.08}{0.30}$

$= 0.266$

↓

Accept.

Q4 99 percentile

{2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12}

Percentile Rank of n = $\frac{\text{No. of values below } n}{n+1} \times 100$

$$n = \frac{99 \times 21}{100}$$

$$= 20.75$$

Since there is no 21st Index.

Therefore, 12 is the value at 99 percentile.

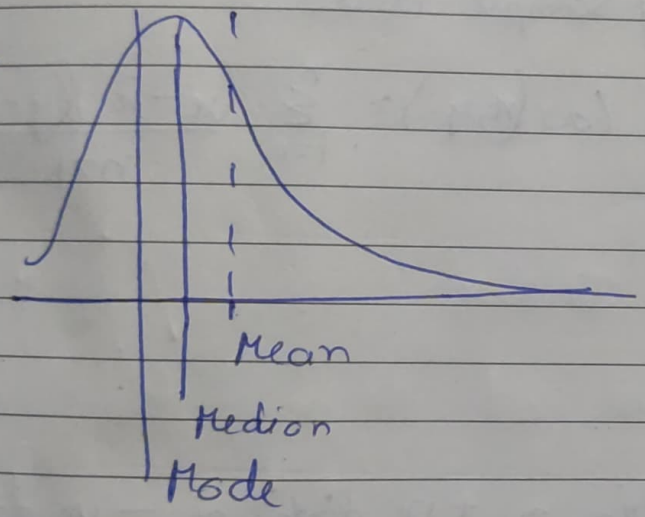
⇒ Relationship of Mean, Median & Mode is Right Skewed and Left Skewed Distribution.

Q5

In Right Skewed

Mean > Median > Mode

Graph



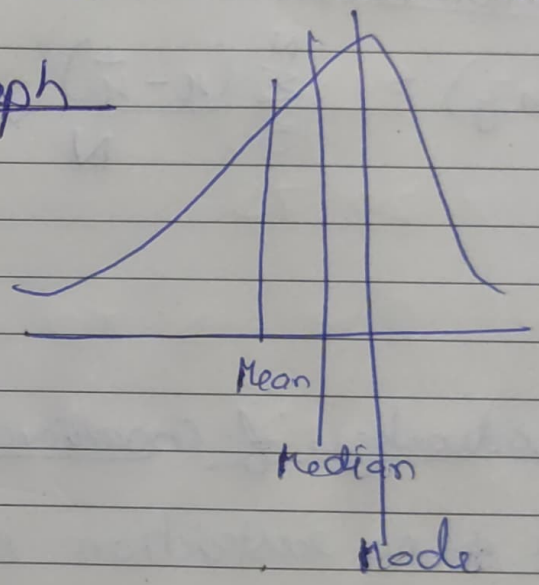
* In Right skewed, we can clearly see Mean is greater than the Median and Mode.

* Eg:- Life span of Human

In left Skewed

Mean < Median < Mode

Graph



* In left Skewed we can see Mean is smaller than the Median and mode.

* Eg:- Wealth