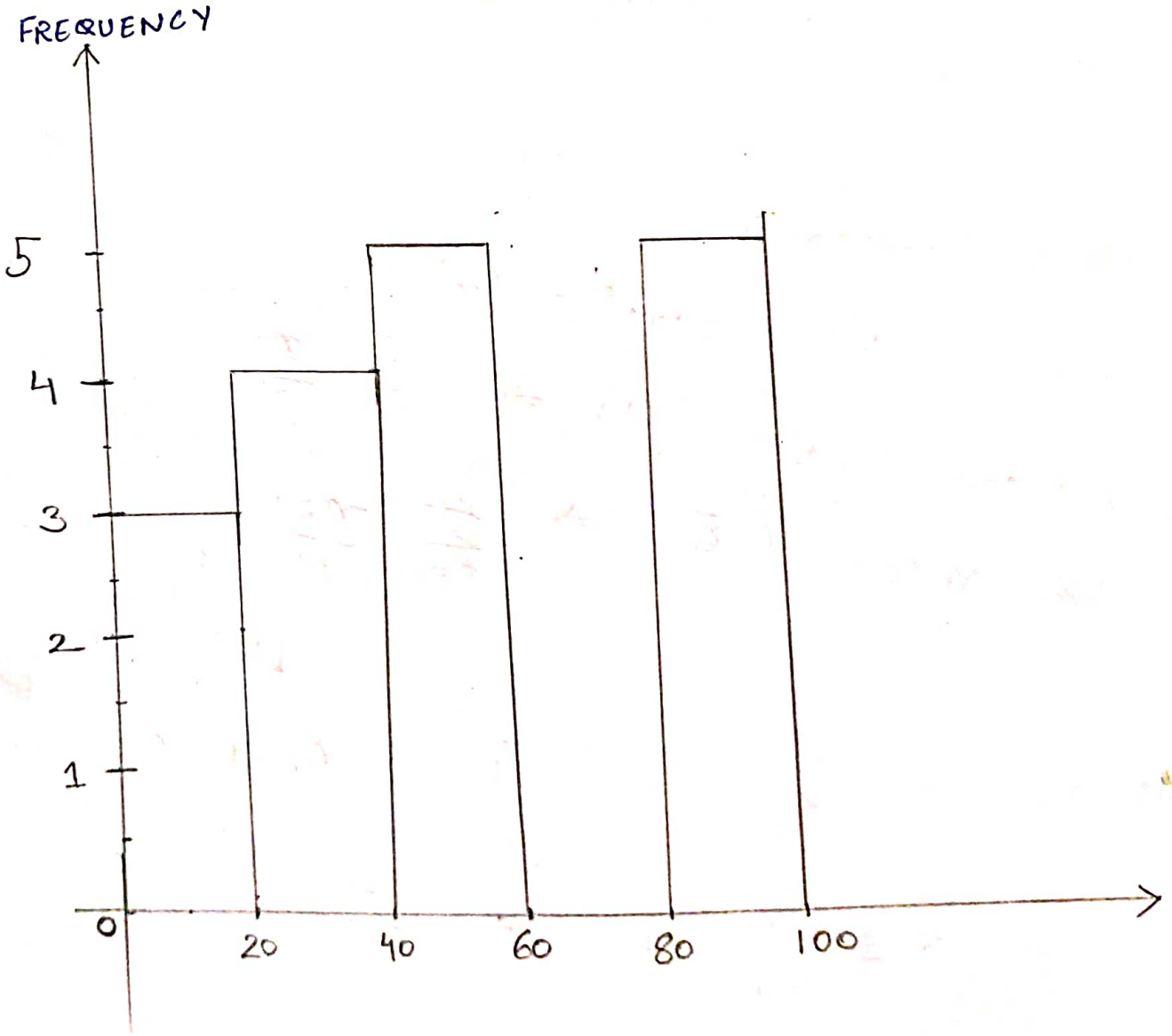
Assignment

Que.1) Plot a Histogram

{10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99}

Bins = 5

Bin Size = 20.



92) We have $\sigma = 100$, $\bar{x} = 520$, $n = 25$.

Assuming $\bar{x} \pm$ Margin of Error = Parameter.

$Z_{\alpha/2} \Rightarrow Z_{\frac{0.2}{2}}$

$= Z_{0.1}$

$1 - CI$ = Significance

$1 - 0.8 = 0.2\ (\alpha)$.

Entire Area = 1, So, $1 - 0.1 = 0.9$.

Nearest value is = 1.29.

Hence,

Lower Fence :-

$(520) - (1.29)\left(\frac{100}{5}\right)$

$\Rightarrow$ 494.2

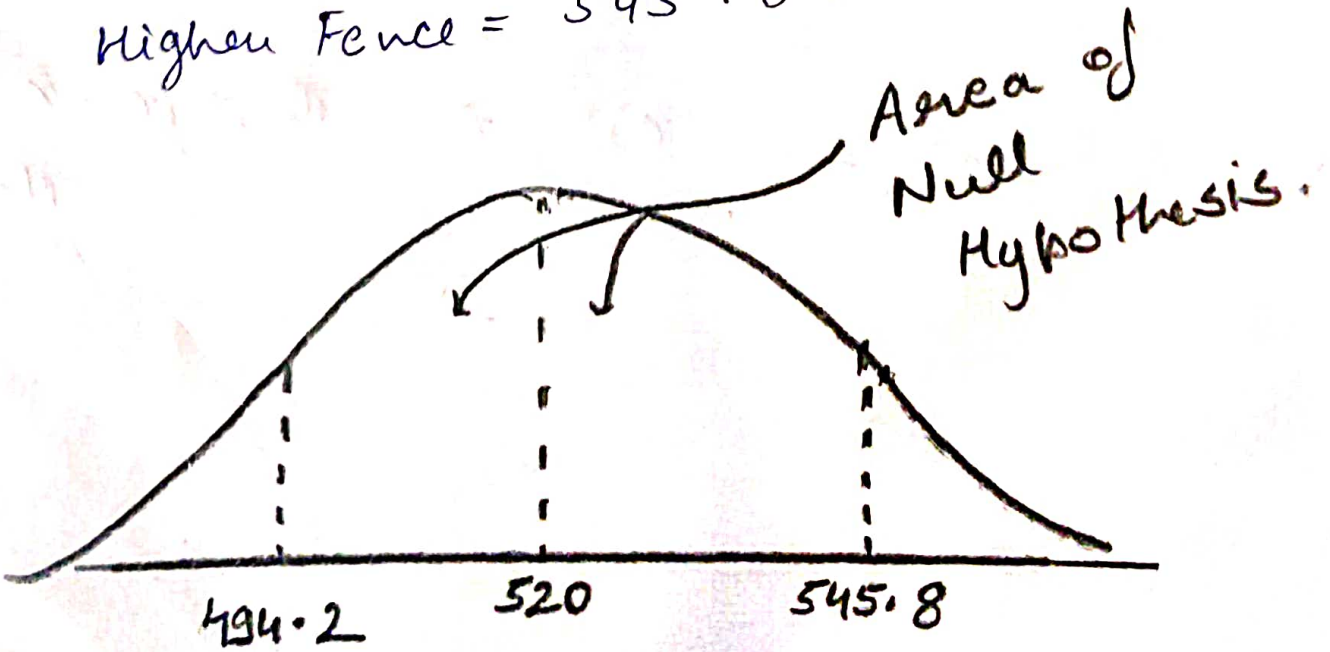
Higher Fence :-

$520 + (1.29)\left(\frac{100}{5}\right)$

$= 545.8$

$\therefore$ Lower Fence = 494.2

Higher Fence = 545.8.



9.3

Null Hypothesis $\Rightarrow H_0 \Rightarrow p_0 \leq 60\%$ or 0.6

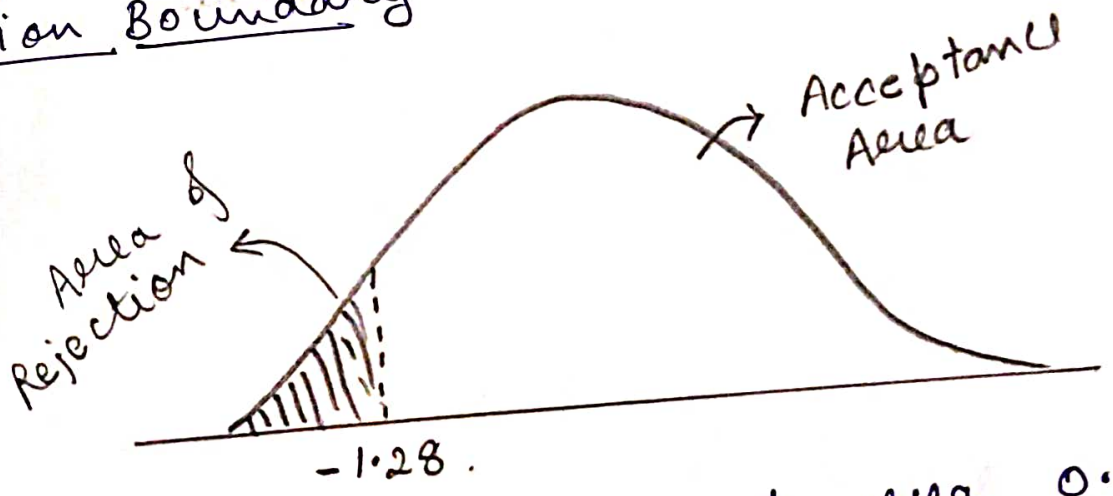
Alternat Hyp $\Rightarrow$ $p_1 \geq 60\%$ or 0.6.

∵ We have to prove that vehicle owned is 60% or less we will use One-Tail Test.

$n = 250$ $\quad \bar{x} = \frac{170}{250} = 0.68$ $\quad CI = 0.9$

Significance Level $(\alpha) = 0.1$

Decision Boundary



Since -1.28 is the closest to area 0.1.

Now,

$$Z = \frac{\hat{p} - p_0}{\sqrt{p_0 q_0}} \times \sqrt{250}$$

$q_0 = 1 - p_0$

$q_0 = 1 - 0.6$

$q_0 = 0.4$

$$Z = \frac{0.68 - 0.6}{\sqrt{0.6 \times 0.4}} \times \sqrt{250}$$

$$= \frac{0.08}{0.489} \times 15.811$$

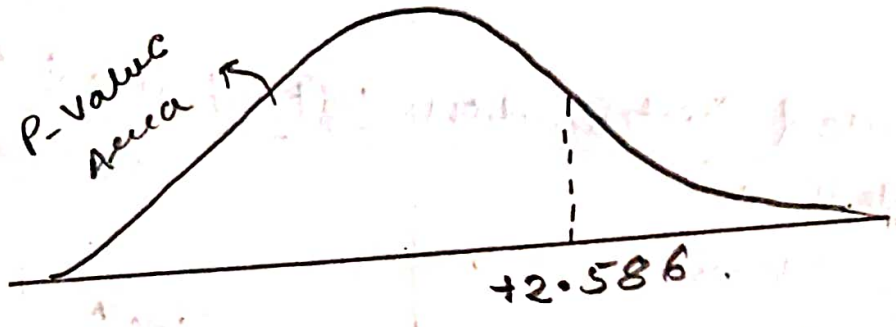
$\therefore \quad Z = 2.586.$

$\because \quad Z \Rightarrow 2.586 > -1.28$

We accept the Null Hypothesis and hence vehicle owned are 60% or less.

$\Rightarrow$ With p-Value,

$Z = 2.586.$



Area = 0.99506 = p-value.

Significance Value (α) = 0.1

$\therefore \quad p\text{-value} > \alpha$

$(0.99506) > 0.1$

We accept the null hypothesis.

Vehicle owned are 60% or less.

Q.4

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

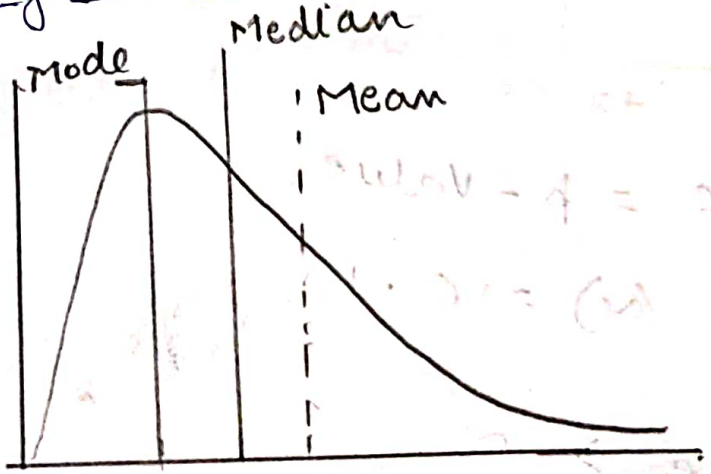
$= \frac{99}{100} \times 20 = \frac{99}{5} = 19.8$ (Index)

$\frac{20}{5}$

∴ 99 Percentile Value is = 11

Q.5

Right Skewed Distribution

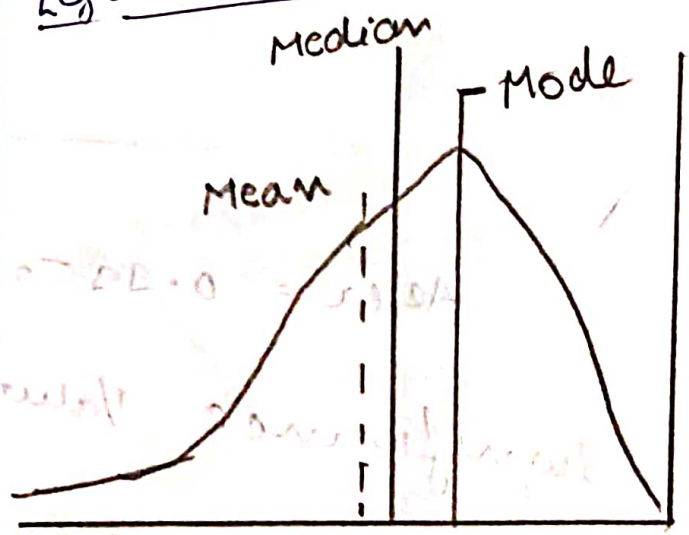


eg:- Wealth Distribution over the world.

Relationship b/w Mean, Median & Mode :-

Mean > Median > Mode

Left Skewed Distribution



eg:- Life span of Human Beings.

Relationship :-

Mode > Median > Mean