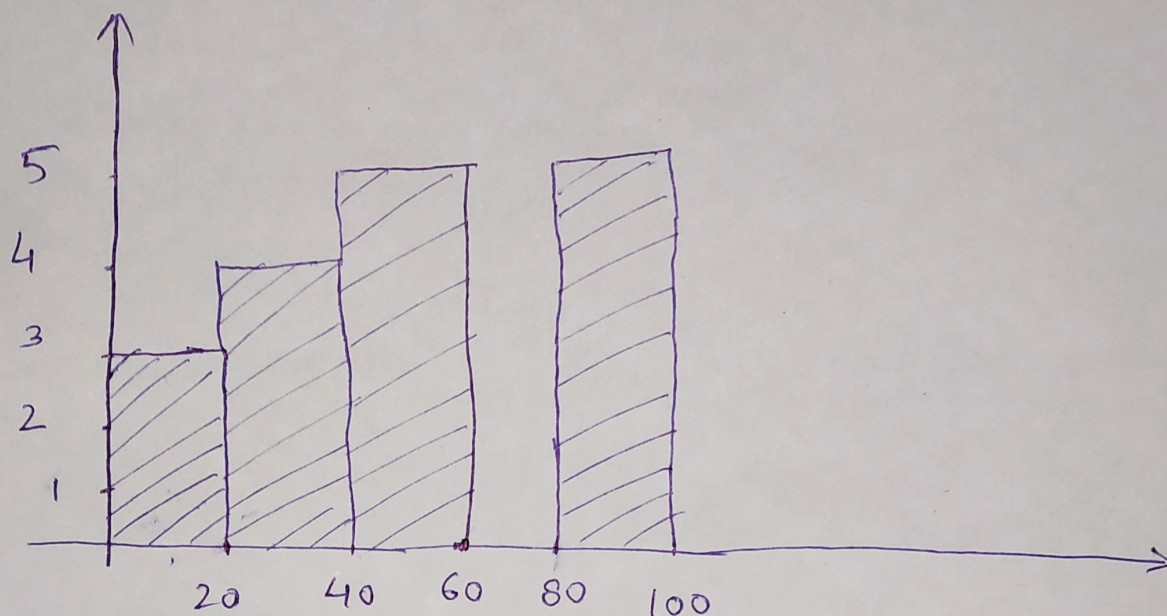


Assignment-1 Histogram is plotted as below:



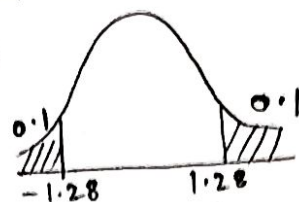
Assignment-2) $\sigma = 100$, $n = 25$, $\bar{x} = 520$

Significance value = $\alpha = 1 - \text{C.I.}$

$$= 1 - 0.80$$

$$= 0.20$$

$$\frac{\alpha}{2} = 0.10$$



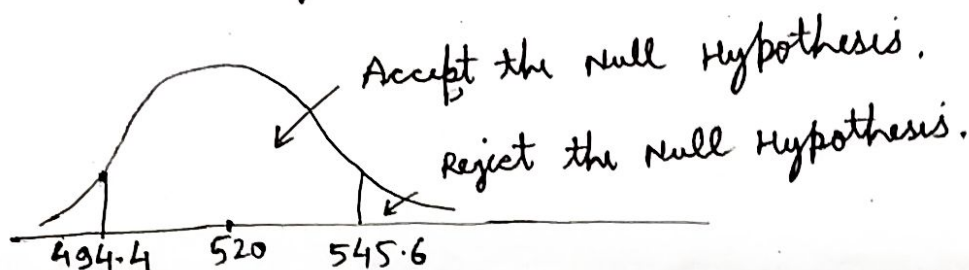
$$\text{Lower fence} = \text{Point Estimate} - Z_{\frac{\alpha}{2}} \cdot \frac{\sigma}{\sqrt{n}}$$

$$= \bar{x} - Z_{\frac{0.2}{2}} \cdot \frac{100}{\sqrt{25}}$$

$$= 520 - (1.28 \times 20)$$

$$= 494.4$$

$$\text{Higher fence} = 545.6$$



Assignment. 3) $P_0 = \frac{60}{100} = 0.6$, $n = 250$, $\hat{p} = \frac{170}{250} = 0.68$

a) Null Hypothesis - Percentage of citizens in city ABC that owns a vehicle is 60% or less.

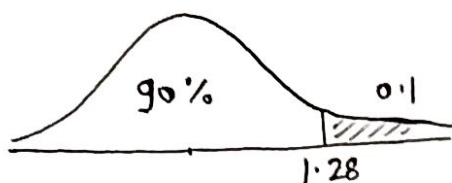
Alternate Hypothesis - Percentage of citizens in city ABC that owns a vehicle is more than 60%.

$$\text{b) } Z\text{-Score} = \frac{\hat{p} - P_0}{\sqrt{\frac{P_0(1-P_0)}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}} = 1.98$$

According to problem statement, it is one tail test.

Conclusion: As $1.28 < 1.98$, Null Hypothesis is Rejected at 90% C.I.

Hence, there is no enough evidence to support the idea that vehicle owner in city ABC is 60% or less.



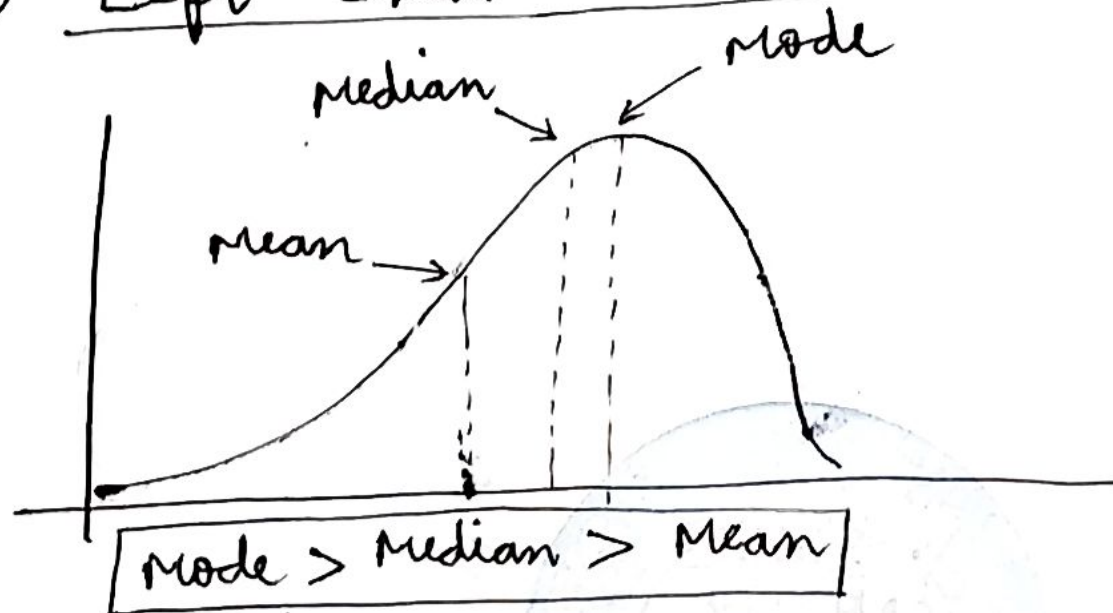
Assignment - 4) 2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10,
11, 11, 12

$$\begin{aligned}\text{Index of } 99^{\text{th}} \text{ Percentile} &= \frac{99}{100} \times (20+1) = \frac{99}{100} \times 21 \\ &= 20.79\end{aligned}$$

Hence, value of 99 percentile = 12.

Assignment - 5)

i) Left skewed data



ii) Right Skewed data

