Q10:18. Practice Question

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

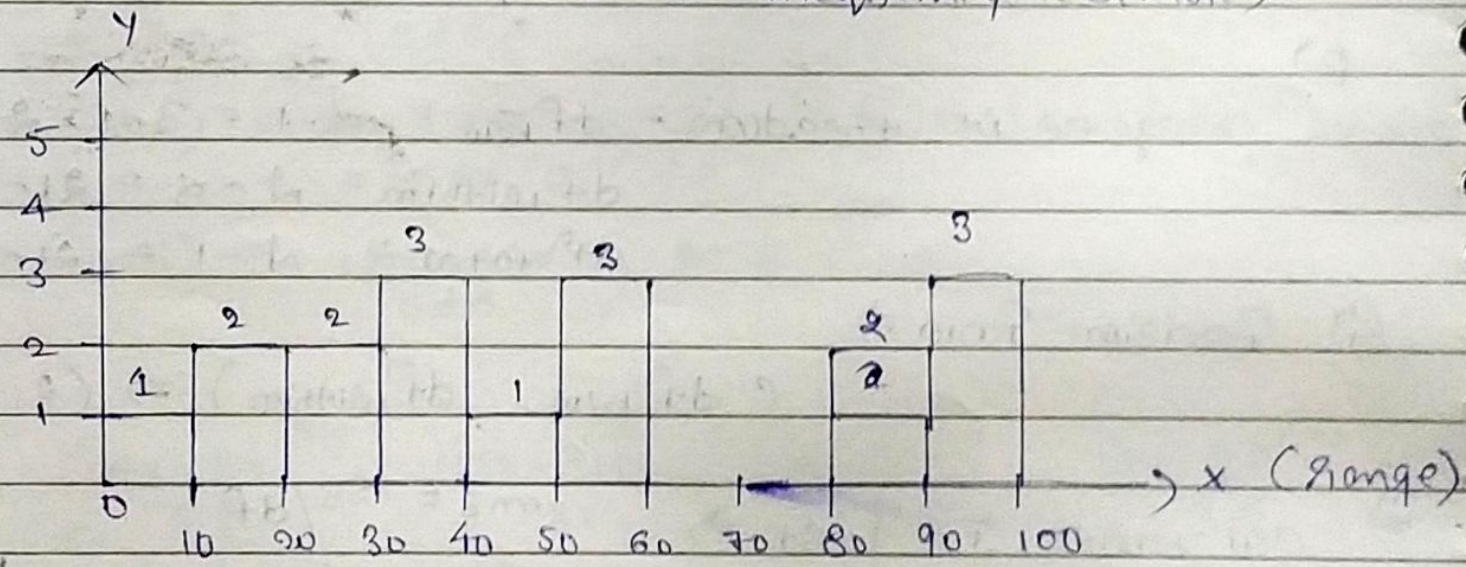
Step: 1) Arrange in increasing order

2) Bins = 10

3) Bins-size = Range ⇒ [0-100] ⇒ 100 ⇒ 10
Bins = 10

Creating Histogram:-

Y = No. of Frequency (Density)



2. $\sigma = 100$; $n = 25$, $\bar{x} = 520$, C.I. = 80%.

$\alpha = 1 - C.I.$

$= 1 - 80\% \Rightarrow 1 - 0.80 \Rightarrow 0.20$

In this, we have 8.0. of population 80, we use Z test

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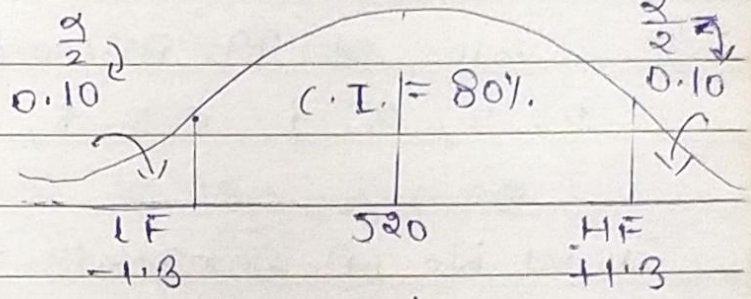
Point Estimate ± margin of error

$$\bar{x} \pm z_{\frac{\alpha}{2}} \left[\frac{\sigma}{\sqrt{n}}\right]$$

$$520 \pm (1.3)\left[\frac{100}{\sqrt{25}}\right]$$

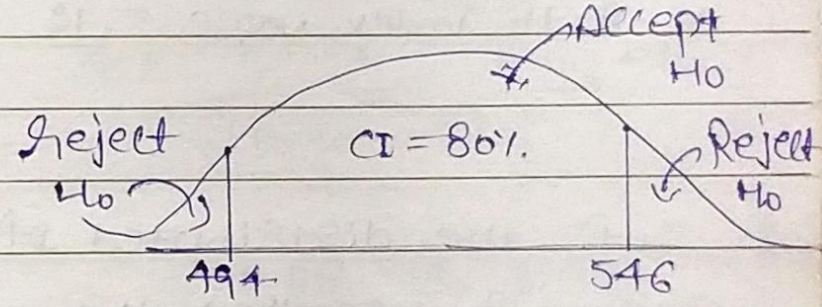
$$LF = 520 - (1.3)\left(\frac{100}{\sqrt{25}}\right) \Rightarrow 494$$

$$HF = 520 + (1.3)\left(\frac{100}{\sqrt{25}}\right) \Rightarrow 546$$



$1 - 0.10 \Rightarrow 0.90$

By using z-table $\Rightarrow 1.3$



If the value is b/w the 494 - 546 then Accept the H_0. Otherwise, Reject H_0

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(3)

1) $H_0: P \leq 0.60$

$H_a: P > 0.60$

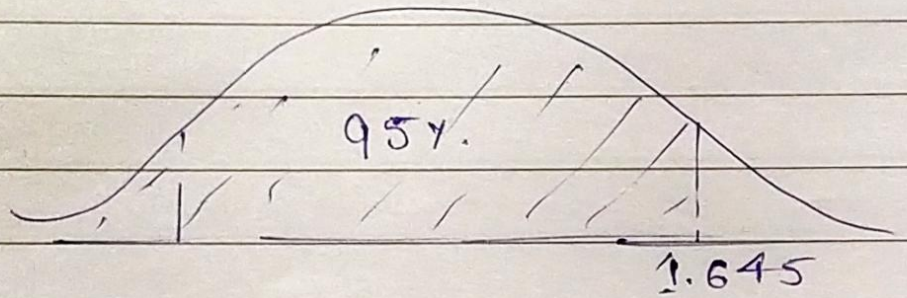
2) $n = 250, \quad X = 170$

$\hat{P} = \frac{X}{n} \Rightarrow \frac{170}{250} \Rightarrow 0.68$

$P_0 = 0.60, \quad q_0 = 0.40$

$\alpha = 0.10$

3)



$$Z_c = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} \Rightarrow \frac{0.68 - 0.60}{\sqrt{\frac{0.60(0.40)}{250}}}$$

$$\Rightarrow \frac{0.08}{0.030} \Rightarrow 2.58$$

4) Conclusion: $1.645 < 2.58$

So, we reject the null H_0. It mean sales managers saying right that there 60% of more people that own a vehicle

4. value at 99 percentile = ?

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

Total No. of Datapoints = 20

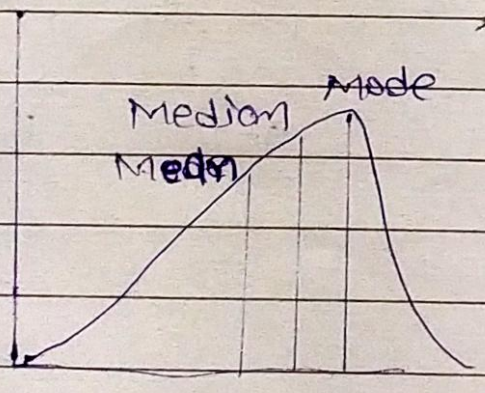
$$\text{Value} = \frac{\text{Percentile}}{100} \times (n+1) \Rightarrow \frac{99}{100} \times (20+1) \Rightarrow 20.79$$

at 20th Index value = 12

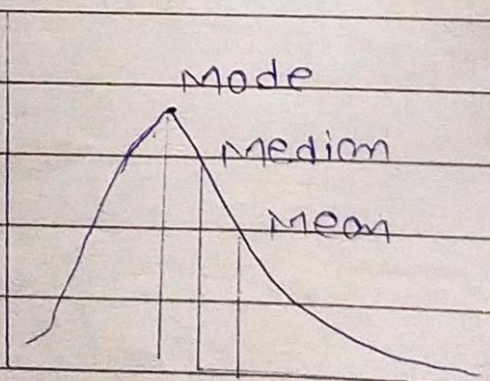
Index No.

5. If the distributed of data is skewed to the left, the mean is less than the median, which is often less than the mode.

If the distribution of data is skewed to the right, the mode is often less than the median, which is less than the mean.



Left - Skewed



Right Skewed