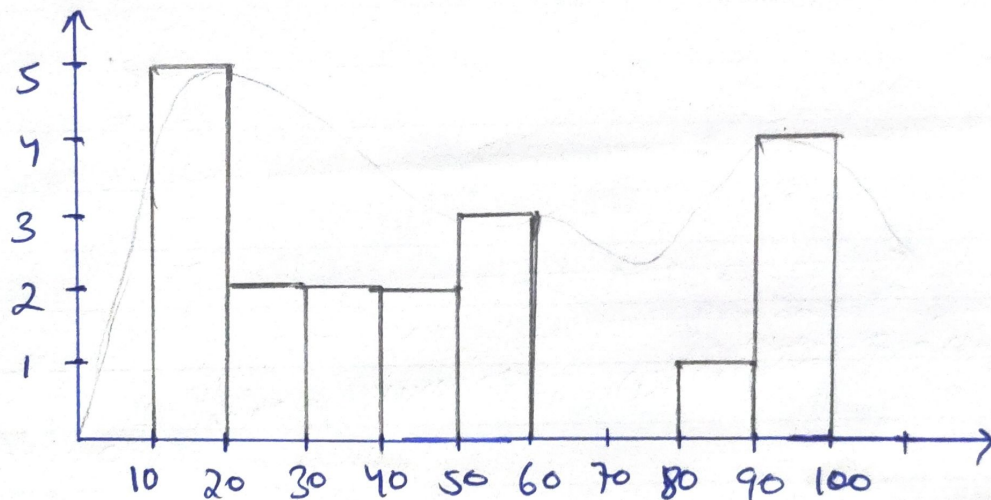


Assignment - 1
Statistics

Name - Kartike Raj
Course - Full stack D.A
email ID - kartikeraaj25@gmail.com

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

$$\text{Bins} = 10, \text{ Bin Size} = \frac{100}{10} = 10$$

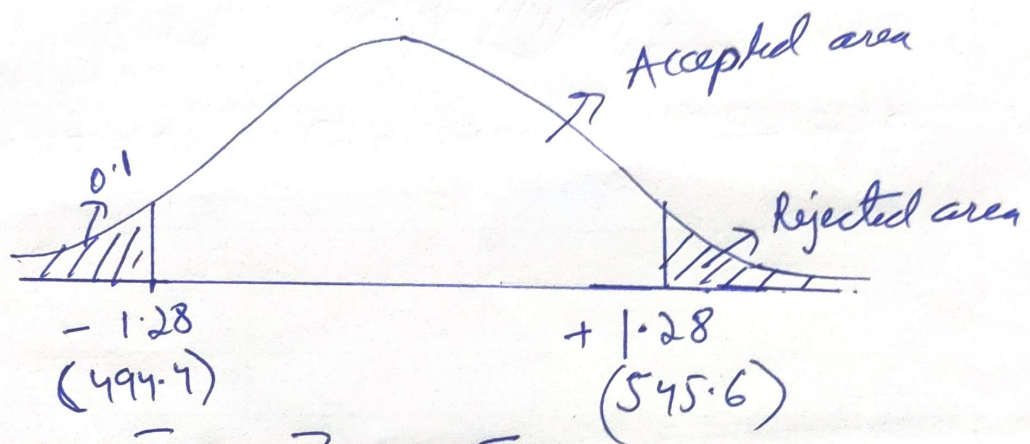


Answer 2) Given $\sigma = 100$ $C.I. = 80\% = 0.80$
 $n = 25$
 $\bar{x} = 520$
 $\alpha = 1 - 0.80 = 0.20$

C.I value = Point estimation \pm Margin of error

$$Z_{\alpha/2} = Z_{0.2/2} = Z_{0.1}$$

$Z_{0.1} = 1.28$ with the help of Z table



$$\begin{aligned} \text{Lower fence} &= \bar{x} - Z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \\ \text{Value} &= 520 - 1.28 \times \frac{100}{\sqrt{25}} \\ &= 494.4 \end{aligned}$$

$$\begin{aligned} \text{Higher fence} &= \bar{x} + Z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \\ \text{Value} &= 520 + 1.28 \times \frac{100}{\sqrt{25}} \\ &= 545.6 \end{aligned}$$

Any thing > 545.6	Confidence interval between
Any thing < 494.4	
	494.4 to 545.6

^ reject

Answer 3) Given

$$P_0 = 60\% = 0.6$$

$$q_0 = 1 - 0.6 = 0.4$$

$$n = 250$$

$$x = 170$$

$$\alpha = 0.1$$

① Step \rightarrow hypothesis

$$H_0: P_0 \leq 60\% \text{ Citi. Citizens own vehicle or less}$$

$$H_1: P_0 > 60 \text{ more than } 60\% \text{ Citizens own vehicles}$$

②

$$C.I = 1 - \alpha = 0.90$$

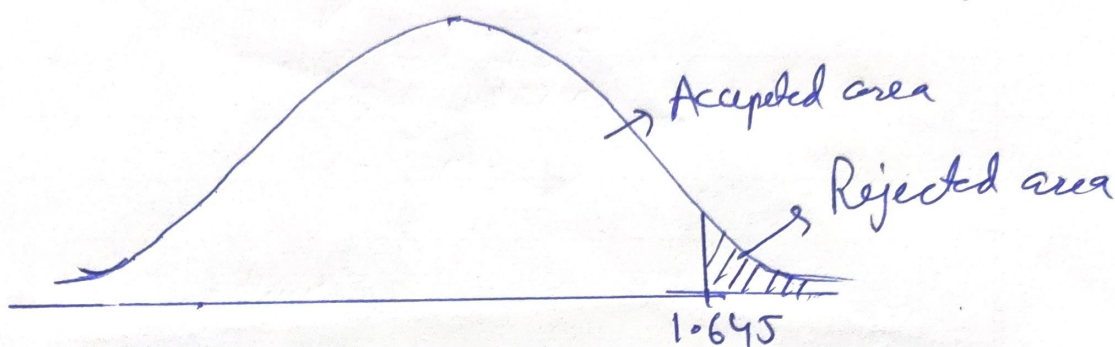
$$\hat{p} = \frac{x}{n} = \frac{170}{250} = 0.68$$

③ Z proportion test

$$Z = \frac{\hat{p} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}} = 2.66$$

④ Decision Boundary \rightarrow

Single tail \rightarrow
2-Test



$Z_{0.1} = +1.645$ by using z table

⑤ Conclusion

$$1.645 > 0.266$$

\therefore Null hypothesis Accepted

Answer 4)

$$n = 20$$

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

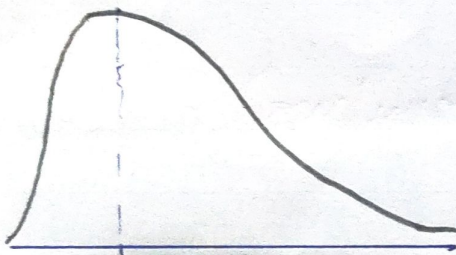
$$= \frac{99}{100} (20+1) = \frac{99}{100} \times 21$$

$$= [20.79] \rightarrow \text{Index}$$

So from the data given the 20.71^{th} index
is 12

So 99 percentile value is 12

Answer 5)

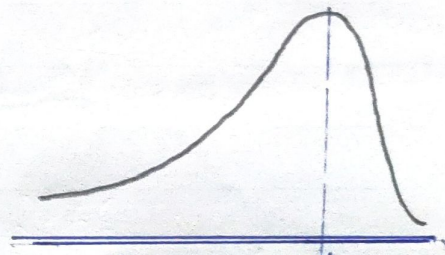


~~Right Skewed~~
Right Skewed

Mean > Median > Mode

Mean high ↑

Mode low ↓



~~Left Skewed~~
Left Skewed

Mode > Median
↳ Mean

Mean low ↓

Mode high ↑