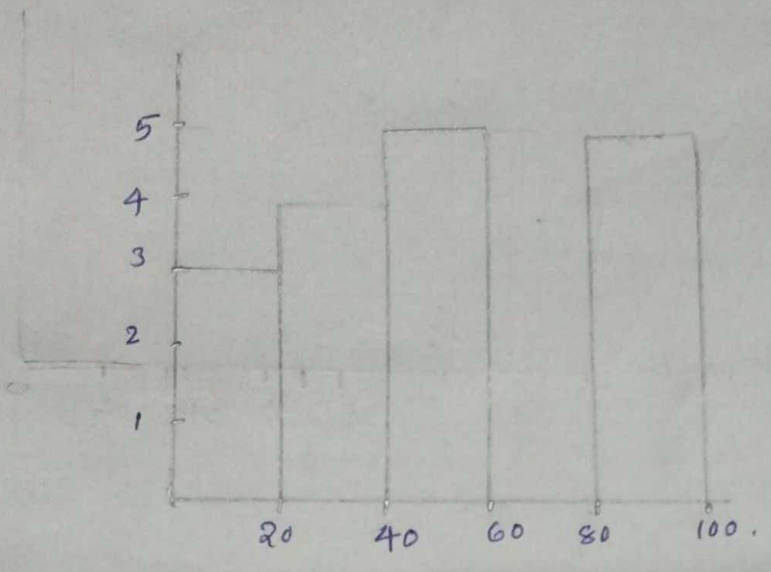
① Plotting Histogram

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

0 – 19	20 – 39	40 – 59	60 – 79	80 – 99
3	4	5	-	5



bins = 5

bin size = 20

②

$\sigma = 100$ $n = 25$ $\bar{x} = 520$

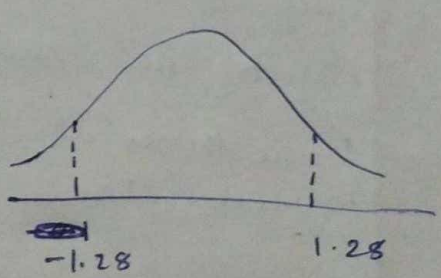
Hence Population std deviation is given we use z test

CI = 80% $\therefore \alpha = 1 - .80 = 0.2$

Point Estimate ± margine of Error

$$\bar{x} \pm z_{\alpha/2} \times \frac{\sigma}{\sqrt{n}}$$

$$520 \pm z_{0.1}$$



z value for -0.1

$\Rightarrow -1.28$

z value for 0.1

$\Rightarrow 1.282$

Higher Fence

$$\Rightarrow 520 + 1.282 \times \frac{100}{\sqrt{250}}$$

$$= 521.8108 \Rightarrow 545.8$$

Lower Fence

$$\Rightarrow 520 - 1.282 \times \frac{100}{\sqrt{250}} = 511.8892$$

$= 494.2$

$\therefore CI = (494.2, 545.8)$

③ a) $H_0 \Rightarrow P_0 \leq 60$ (Null hypothesis) $\Rightarrow$ % of citizens owns vechile is 60% or less

$H_1 \Rightarrow P_1 > 60$ (Alternate hypothesis) $\Rightarrow$ % of citizens owns vechile is more than 60%

b) $\hat{P} = \frac{x}{n} = \frac{170}{250}$ $\quad P = 0.6$

$q_0 = 1 - P \Rightarrow 1 - 60 = .40$

$$z \text{ test} \Rightarrow \frac{\hat{P} - P}{\sqrt{\frac{P_0 q_0}{n}}} \Rightarrow \frac{0.68 - 0.6}{\sqrt{\frac{.6 \times .4}{250}}} = \frac{.08}{\sqrt{\frac{.24}{250}}}$$

$= \frac{.08}{0.30} = 2.\overline{66} \Rightarrow 2.581$ $\quad -1.28$

✓ $\alpha = .10$, one Tail.

z value $\Rightarrow 1.28$

Since the z table value is less than the test stat
Reject the null hypothesis
Hence there is no evidence to support vechicle owners claim

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

99 Percentile

⇒ The Number ~~lois blow~~ is approximately equals to 12

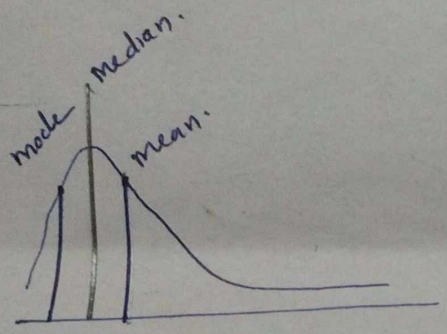
$$\text{Index} = \frac{\text{Percentile} \times (n+1)}{100}$$

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

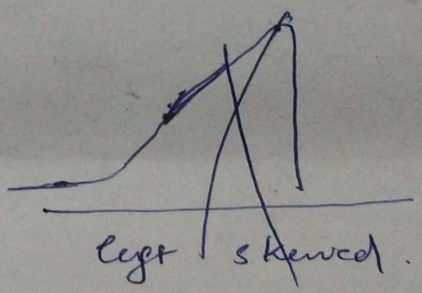
$$= 20.79$$

Number at index 20.

⑤



Right skewed

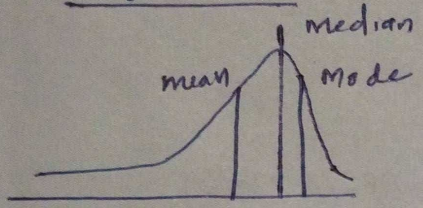


Left skewed.

In Right skewed

⇒ Mode < Median < Mean.

In left Skewed



where mean < Median < Mode.