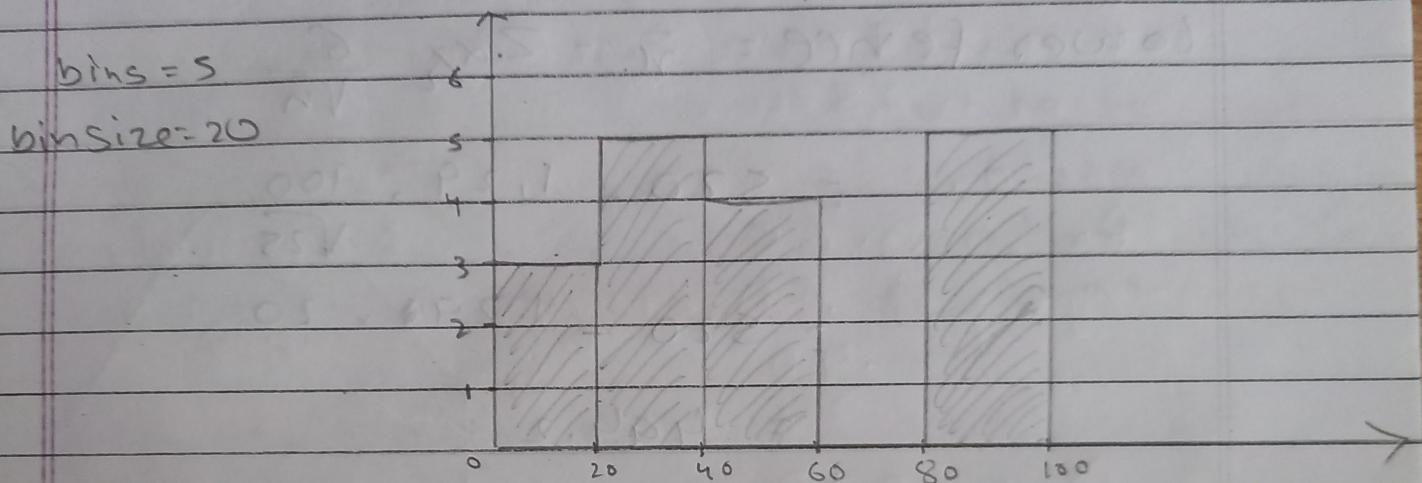


Q1. Plot a histogram

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



Q2. In a quant test of the CAT Exam, the population standard deviation is known to be 100. A sample of 25 test taken has a mean of \$20. Construct an 80% CI about the mean.

$$\bar{X} = \$20 \quad S.D = 100$$

2 - test

$$n = 25$$

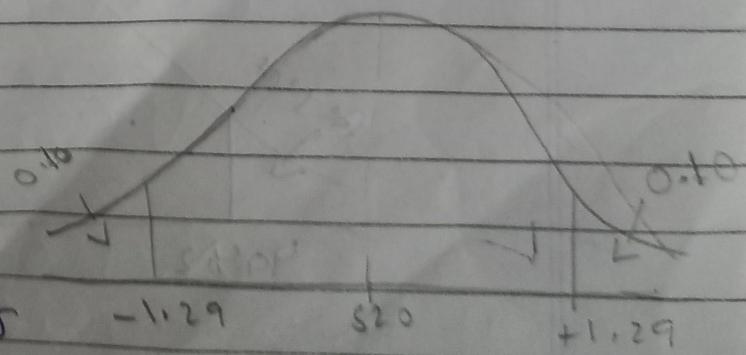
$$C.I = 80\%$$

$$\alpha = 1 - 0.80 \\ = 0.20$$

point estimate

\pm margin of error

$$\bar{X} \pm Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$



Teacher's Signature

$$Z_{\alpha/2} = Z_{0.20} = Z_{0.10}$$

$$= 1.29$$

$$\xrightarrow{0.10 - 0.90}$$

$$\text{lower fence} = \bar{x} - Z_{\alpha/2} \frac{6}{\sqrt{n}}$$

$$= 520 - 1.29 \times \frac{100}{\sqrt{25}}$$

$$= 520 - 1.29 \times 20$$

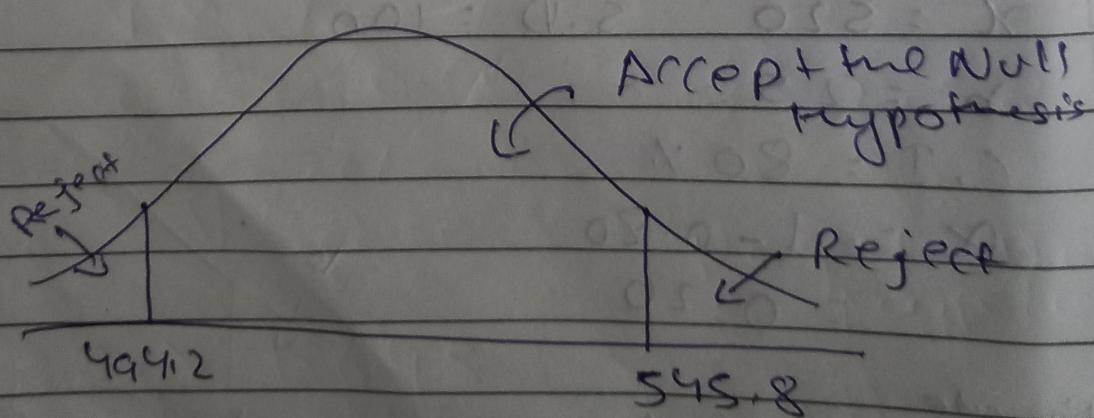
$$= 494.2$$

$$\text{Higher fence} = \bar{x} + Z_{\alpha/2} \frac{6}{\sqrt{n}}$$

$$= 520 + 1.29 \frac{100}{\sqrt{25}}$$

$$= 520 + 1.29 \times 20$$

$$= 545.8$$



Q3

$$H_0: p \leq 0.60$$

$$H_1: p > 0.60$$

$$n = 250 \quad x = 170$$

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

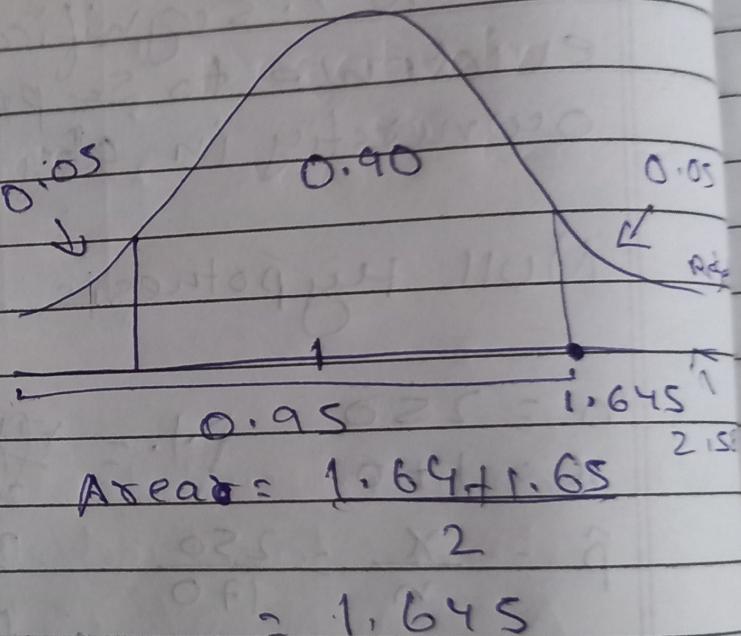
one tail test

$$p_0 = 0.60$$

$$q_0 = 1 - 0.60 \\ = 0.40$$

$$\alpha = 0.10$$

$$1 - \alpha \\ = 1 - 0.10 \\ = 0.90$$



$$Z\text{ test} = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}}$$

$$= \frac{0.68 - 0.60}{\sqrt{\frac{0.60(0.40)}{250}}} \approx 2.58$$

Reject null hypothesis

$$2.58 > 1.645$$

At 10% significant level there is enough evidence to reject the null hypothesis that the vehicle ownership in city ABC is less than or equal to 60%. It is more than 60%.

Q4. value of 99 percentile?

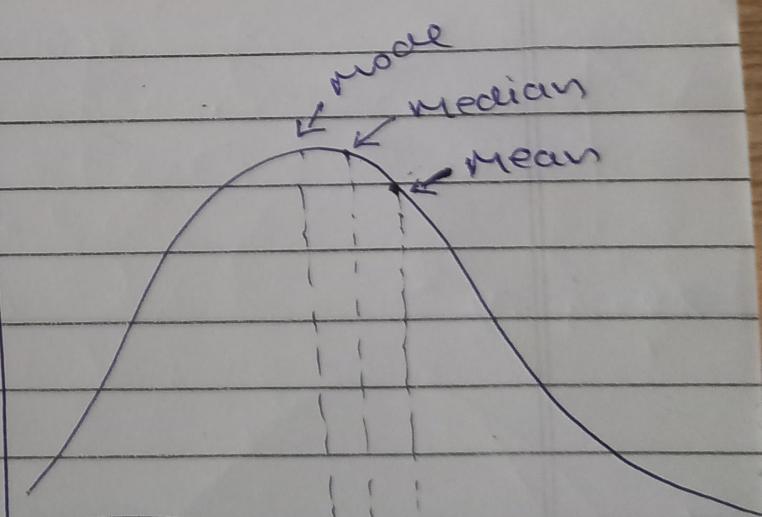
2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12

$$\text{99 percentile} = \frac{99}{100} \times 21 \\ = 20.79 \text{ th Index.}$$

value = 12

Q5. In left & right-skewed data, what is the relation b/w mean, median & mode? Draw the graph to represent the same.

In case of
Right skewed
distribution, the
mean is always
greater than
median and
median is always
greater than
mode



positively skewed

$\text{mean} > \text{median} > \text{mode}$ Right skewed

In negatively skewed distribution

the mean is

always lesser than

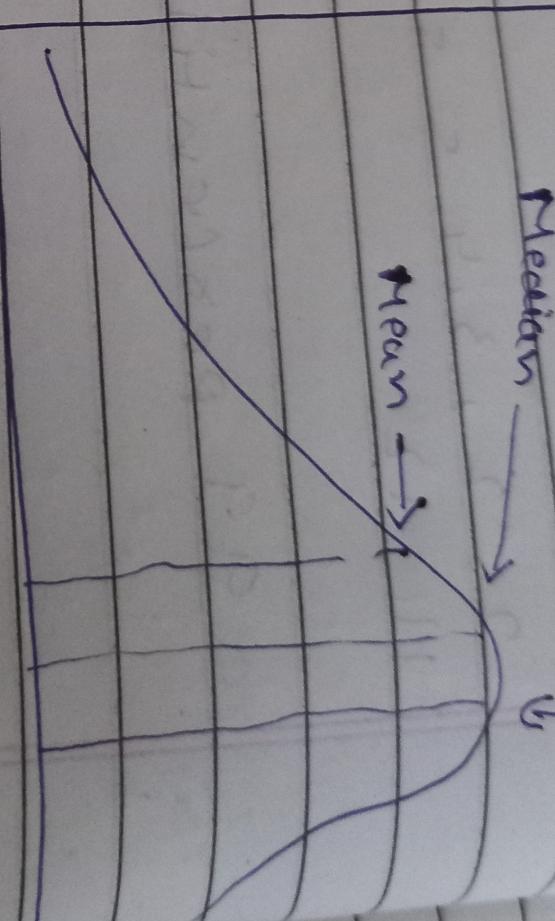
median and the

median is always

lesser than the

mode.

mean < median < mode


negatively skewed