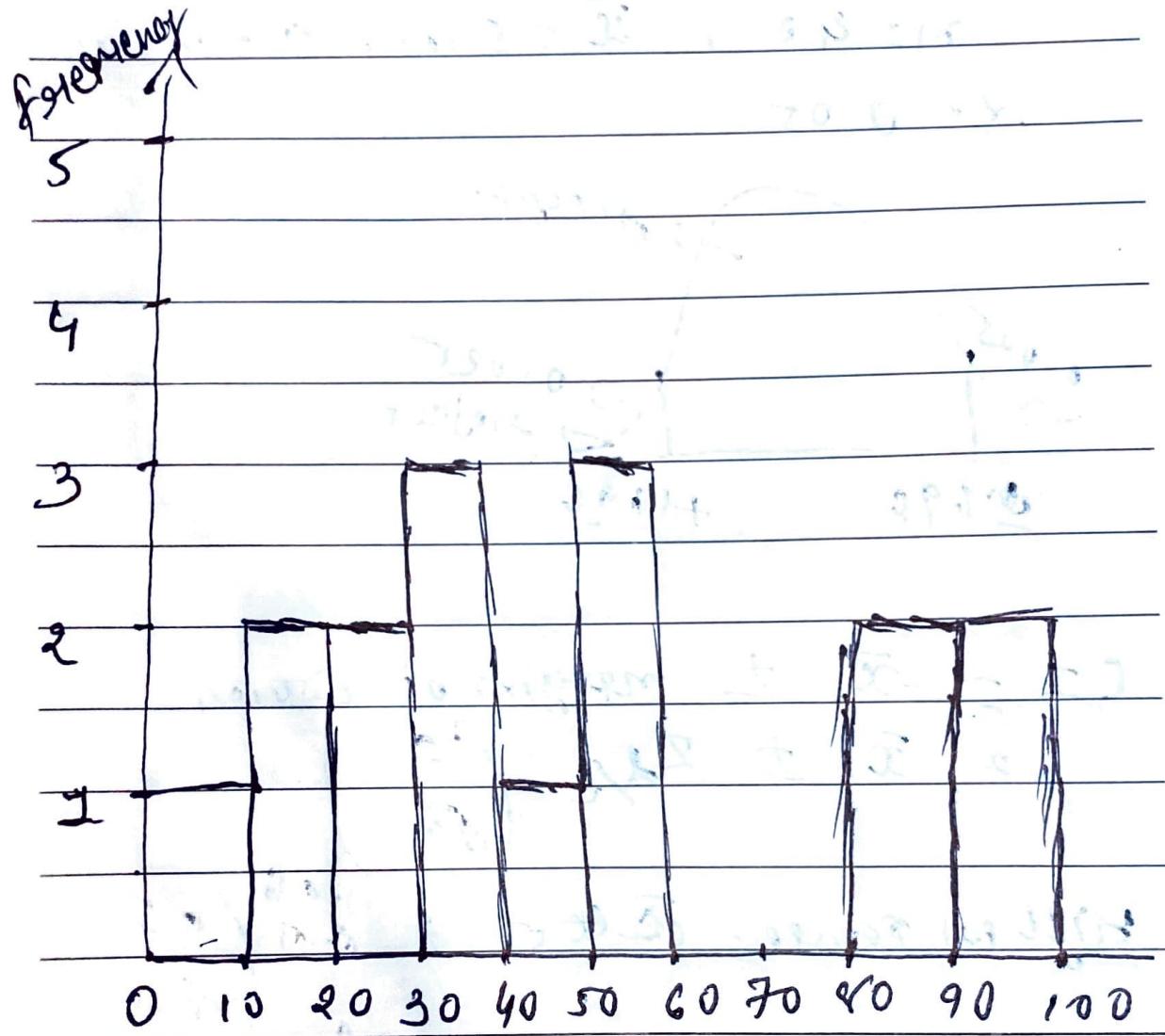


Q. 1 Plot & 2 Histogram

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



$$\text{bins} = 10$$

Q. 2

In left & right-skewed data,

what is the relationship between mean, median & mode? Draw

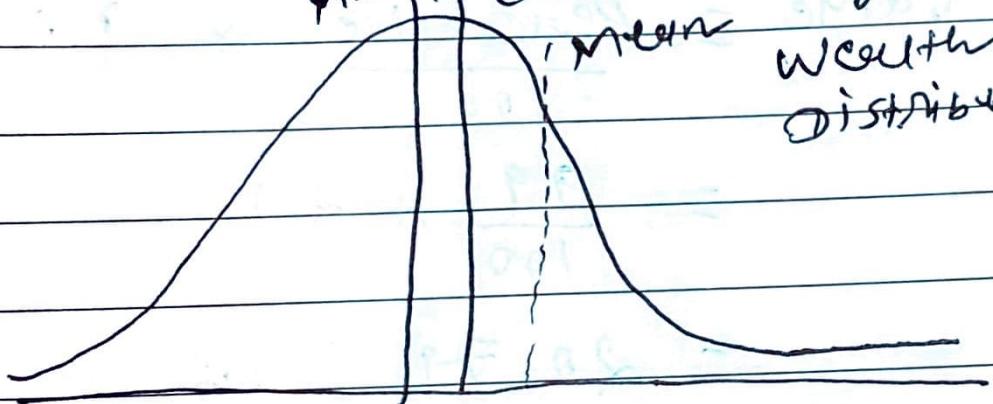
the graph to represent the same.

\* Right Skewed data.

mode > median

E.g.

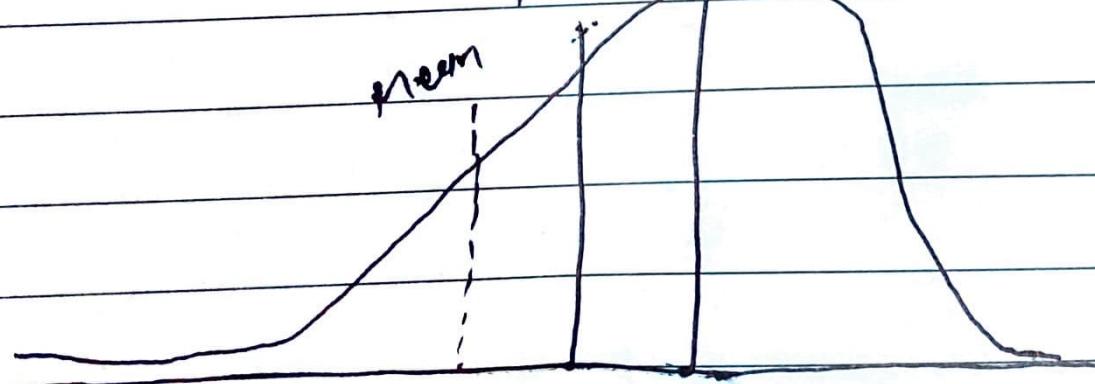
Wealth distribution



mean > median > mode.

\* Left Skewed data

mode > median > mean



mode > median > mean

E.g. Life of span of human

Q. 3

What is the value of the  
99 percentile?

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

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

$$= \frac{99}{100} \times 21$$

$$= 20.79 \text{ index}$$

$$\text{Ans.} = 12.$$

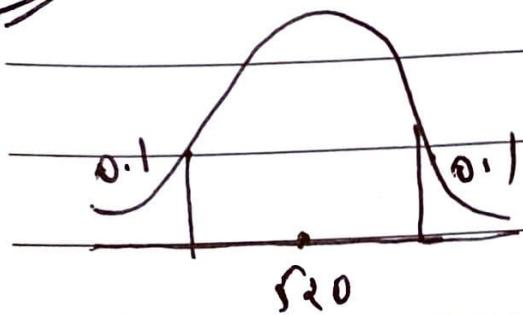
Q. 4

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 520.

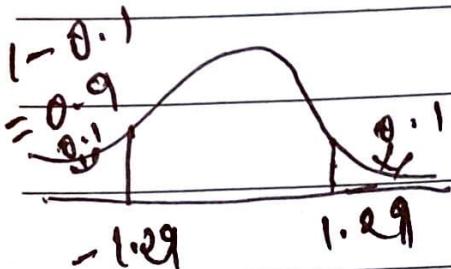
Construct an 80% CI about the mean.

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

$Z$  test



$$\begin{aligned} d &= 1 - CI \\ &= 1 - 0.80 \\ &= 0.20 \end{aligned}$$



$$\frac{Z_{0.9}}{2} = Z_{0.1} = 1.29$$

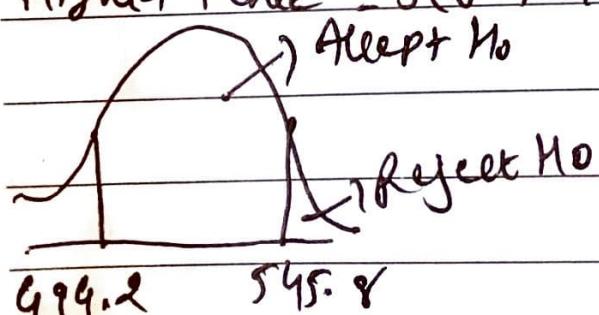
$$\text{Lower fence} = \bar{x} - Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

ans.

$$= 520 - 1.29 \frac{100}{\sqrt{25}} = 494.2$$

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

545.8



## ~~Ques~~ Assignment

\* A car company believes that the percentage of residents in city ABC that own a vehicle is 60% or less. A sales manager disagrees with this. He conducts a hypothesis testing surveying 250 residents and found that 170 responded yes. to owning a vehicle.

q) State  $H_0$  &  $H_1$ ,

b) At 10% significance level, is there enough evidence to support the idea that vehicle ownership in city ABC is 60% or less.

Ans:-

= Z test & 1-tail test

$$H_0: p \leq 60\%$$

$$H_1: p > 60\%$$

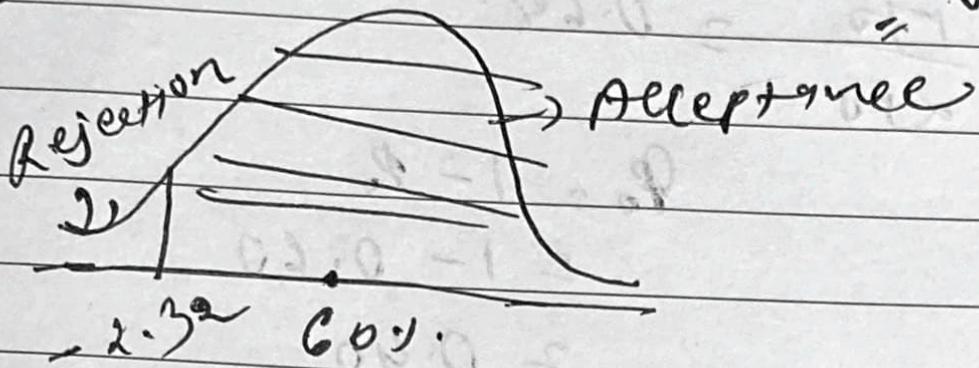
$$n = 250, x = 170$$

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

$$P_0 = \begin{aligned} & g_0 = 1 - P_0 \\ & = 1 - 0.60 \\ & = 0.40 \end{aligned}$$

$$\text{Z}_2 \alpha = 1 - \Phi(0.90) \\ = 0.10$$

3)



$$\text{Z test with proportion} = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$

$$= \frac{0.68 - 0.60}{\sqrt{\frac{0.60 \times 0.40}{250}}} \\ = \frac{0.08}{\sqrt{0.00096}} \\ = \frac{0.08}{0.0309} \\ = 2.59$$