Que 1) Plot a histogram,

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

Que 2) In a quant test of the CAT Exam, the population standard deviation is known to be 100. A sample of 25 tests taken has a mean of 520. Construct an 80% CI about the mean.

Que 3) A car believes that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A sales manager disagrees with this. He conducted a hypothesis testing surveying 250 residents & found that 170 residents responded yes to owning a vehicle.

a) State the null & alternate hypothesis.
b) At a 10% significance level, is there enough evidence to support the idea that vehicle owner in ABC city is 60% or less.

Que 4) 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

Que 5) In left & right-skewed data, what is the relationship between mean, median & mode?

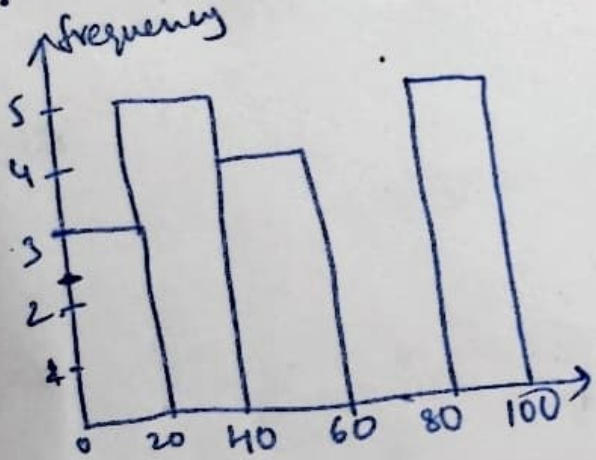
Draw the graph to represent the same.

Assignment-1

6g] 10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99

Bin = 5

Binsize = 20



Assignment-4

Q) In a quant test of the CAT exam, the population standard deviation is known to be 100. A sample of 25 tests taken has a mean of 520. Construct an 80% CI about the mean?

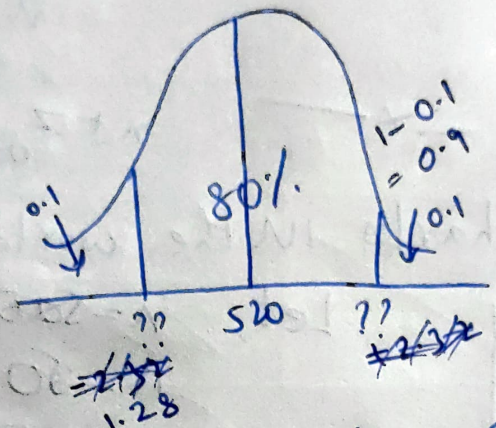
Given,

$\sigma = 100$

$n = 25$

$CI = 80\%$

$\mu = 520$



$SI = 1 - CI$

$= 1 - 80\%$

$= 1 - \frac{80}{100} = 1 - 0.8$

$= 0.2$

wkt,

Parameter = Point Estimate $\pm$ Error

$= \bar{x} \pm z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$ 4 → using z-table $z_{0.1} \Rightarrow -2.32$

$= 520 \pm z_{0.1} \frac{100}{\sqrt{25}}$

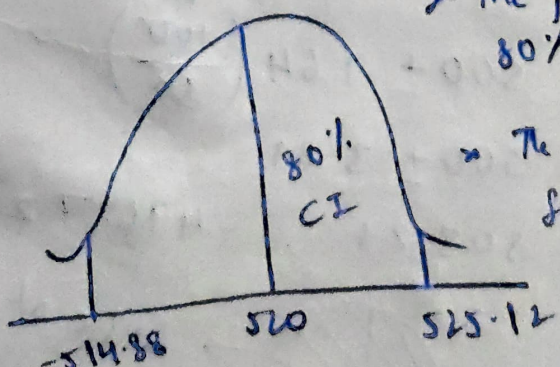
Upper fence $= 520 + 1.28(4)$

$= 525.12$

Lower fence $= 520 - 1.28(4)$

$= -514.88$

So,



* The points which falls in 80% Accepts Null Hypothesis

* The points which falls outside follows Alternate Hypothesis.

Assignment-5

Q) A car company believes that the percentage of citizens in city ABC that owns vehicle is 60% or less. A sales Manager disagrees with this. He conducted a hypothesis testing surveying 250 residents & found that 170 residents responded yes to owing a vehicle

a) state null and alternate hypothesis?
b) At 10% significance level, is there enough evidence to support the idea that vehicle owner in ABC city is 60% or less.

Sol)

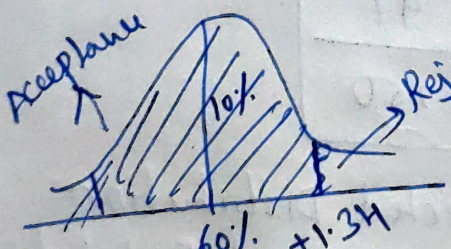
$n = 250$
$x = 170$
$SI = 10\%$.

Null Hypothesis $H_0 : P_0 \leq 60\%$
Alternate Hypothesis $H_1 = P_0 > 60\%$

$q_0 = 1 - P_0 = 1 - 0.6 = 0.4 (40\%)$

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

$\alpha = 1 - SI = 1 - 0.1 = 0.9$



$$\text{z-test} = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}}$$

$$= \frac{0.68 - 0.6}{\sqrt{\frac{(0.6)(0.4)}{250}}}$$

$$= \frac{0.08}{\sqrt{\frac{0.24}{250}}}$$

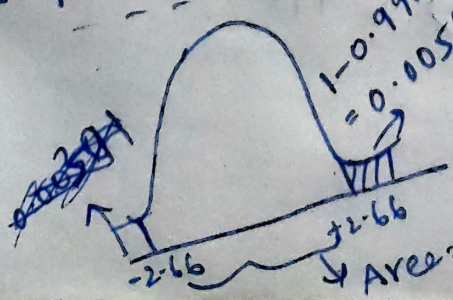
$$= \frac{0.08}{0.030}$$

$$= 2.66$$

Using z-table,

$2.66 > 1.34$ {Reject Null Hypothesis}.

Using P-Value



P-Value $= 0.0056 < 0.9$
{Reject}

{Another method}.

— × —

Assignment

Q) what is the value of 99 percentile

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

$$\text{Percentile} = \frac{\text{Value below } n}{n} \times 100$$

$$\text{Value} = \frac{\text{Percentile}}{100} \times n$$

$$= \frac{99}{100} \times 20 = 0.99 \times 20$$

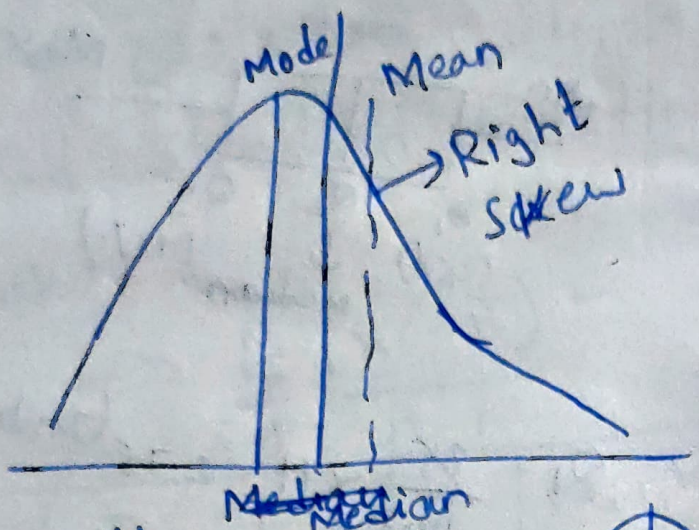
$$= 19.8$$

↳ Index

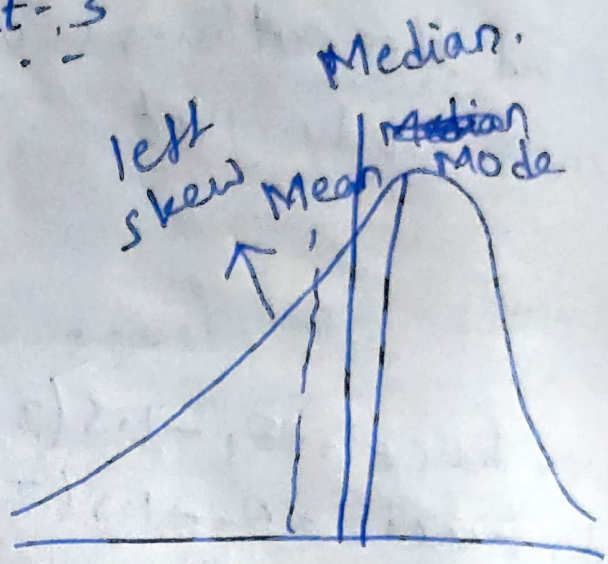
$$\text{Value} = \frac{19^{th}_{\text{index}} + 20^{th}_{\text{index}}}{2} = \frac{11+12}{2} = \frac{23}{2} = 11.5$$

Assignment-3

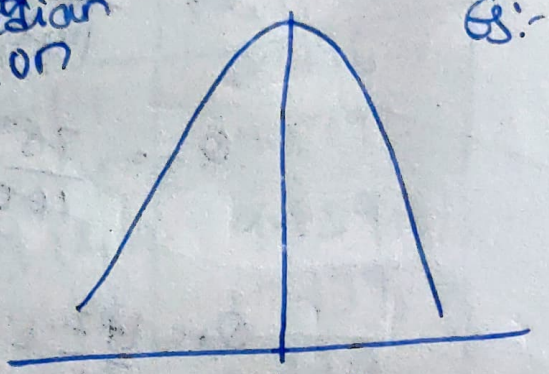
Q)



Eg:- Wealth Distribution



Eg:- Life span.



Symmetric Distribution.

Right skew Mean > Median > Mode

left skew Mode > Median > Mean

—x—