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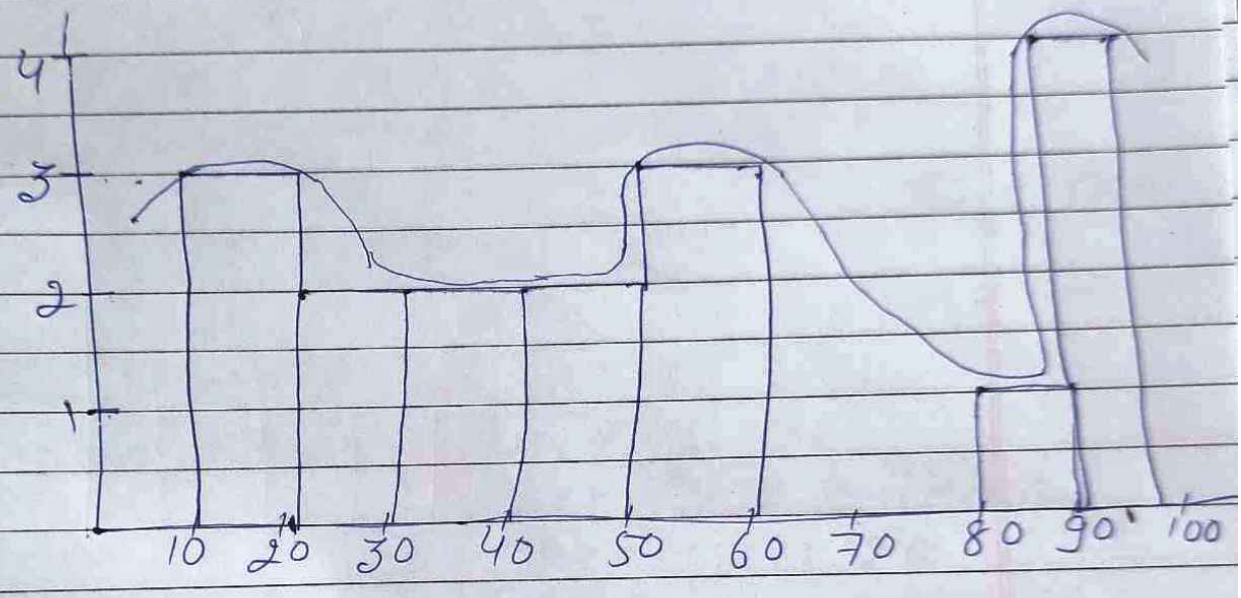
Assign ment

Plot a Histogram

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

Bins = 10



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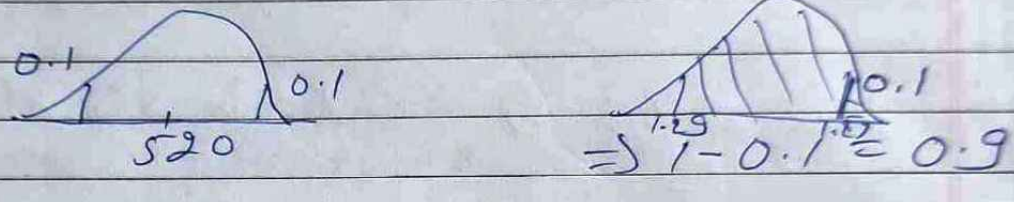
2. In a quant test of the CAT exam, the population Standard deviation is known to be 100. A sample of 25 test taken has a mean of 520. Construct an 80% CI about the mean

$\sigma = 100 \quad n = 25, \quad \bar{x} = 520. \quad CI = 80\%$

$\alpha = 1 - 0.80 = 0.2$

$Z_{\alpha/2} = Z_{0.2/2} = 0.1 = 1.29$



lower fence $= \bar{x} - Z_{\alpha/2}\, \sigma/\sqrt{n}$

$= 520 - 1.29 \times \frac{100}{5}$

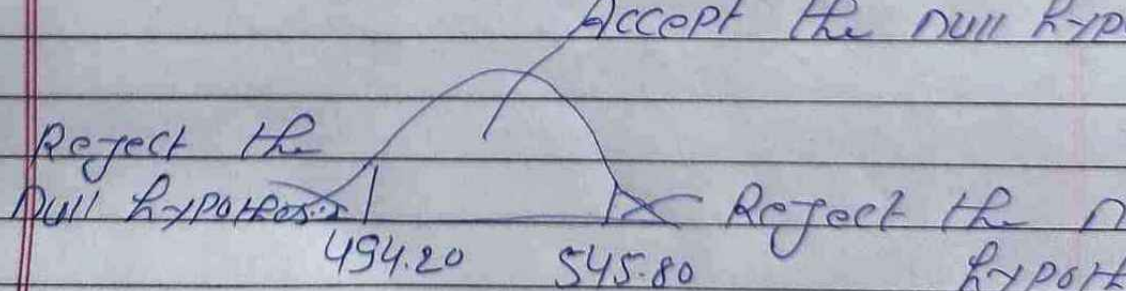
$\Rightarrow 520 - 1.29 \times 20$

$= 494.20$

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

$\Rightarrow 520 + 1.29 + 20$

$= 545.80$



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5. A Car believes that the percentage of citizen in city ABC that owns a vechile is 60% or less. A Sales manager disagree with this. He conducted a hypothesis testing surveying 250 resident & found that 170 residents respond yes to owing a vechile.

(a) State the null & alternate hypothesis

(b) At 10% significance level, is there any evidence to reject the hypothesis

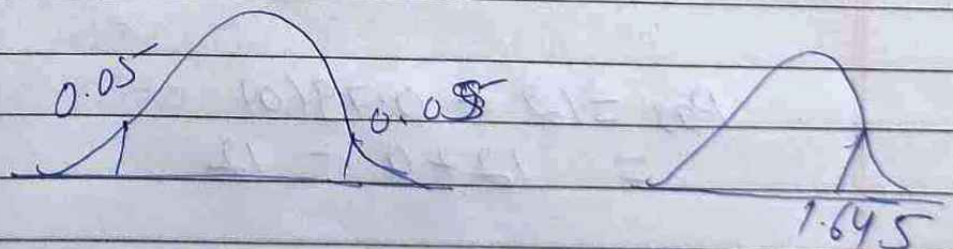
$H_0 : P \leq 0.60$ $\quad n = 250$ $\quad \alpha = 0.10$

$H_1 : P > 0.60$ $\quad x = 170$ $\quad CI = 0.90$

$P_0 = 0.60$ $\quad q_0 = 1 - 0.60$

$= 0.40$

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



~~P-value~~ $= 1.64 + 1.64$

$$Z = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.60 \times 0.40}{250}}}$$

$= 2.58$

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2.58 < 1.645 { Reject the null hypothesis }

P value > Significance { Accept the null hypothesis }

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

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

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

$$\Rightarrow \frac{2079}{100} = 20.79 - \text{index}$$

$$P_{99} = 12 + 0.79(0)$$
$$= 12 + 0 = 12$$

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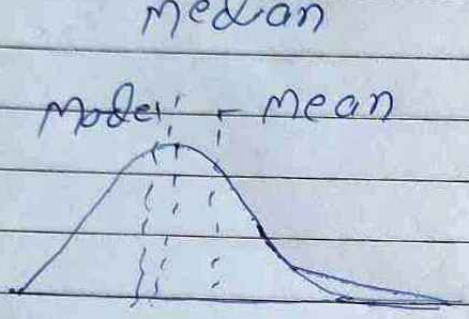
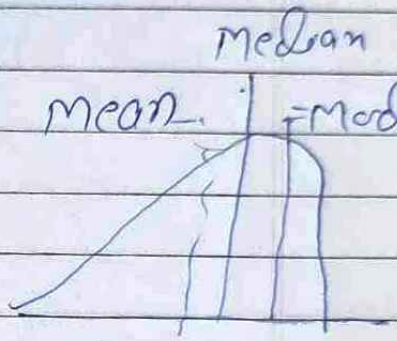
5. In left & Right Skewed data, what is the relationship between Mean, Median, Mode ? Draw the graph to represent the same.



Positive or Right Skewed



Negative ~~and~~ or left Skewed.

Right Skewed Distribution
Eg:- Wealth distribution
Distribution of Point Scored

left Skewed :-
Human Life Cycle

Relationship :-
Right Skewed - Mean > Median > Mode
left Skewed - mode > Median > Mean