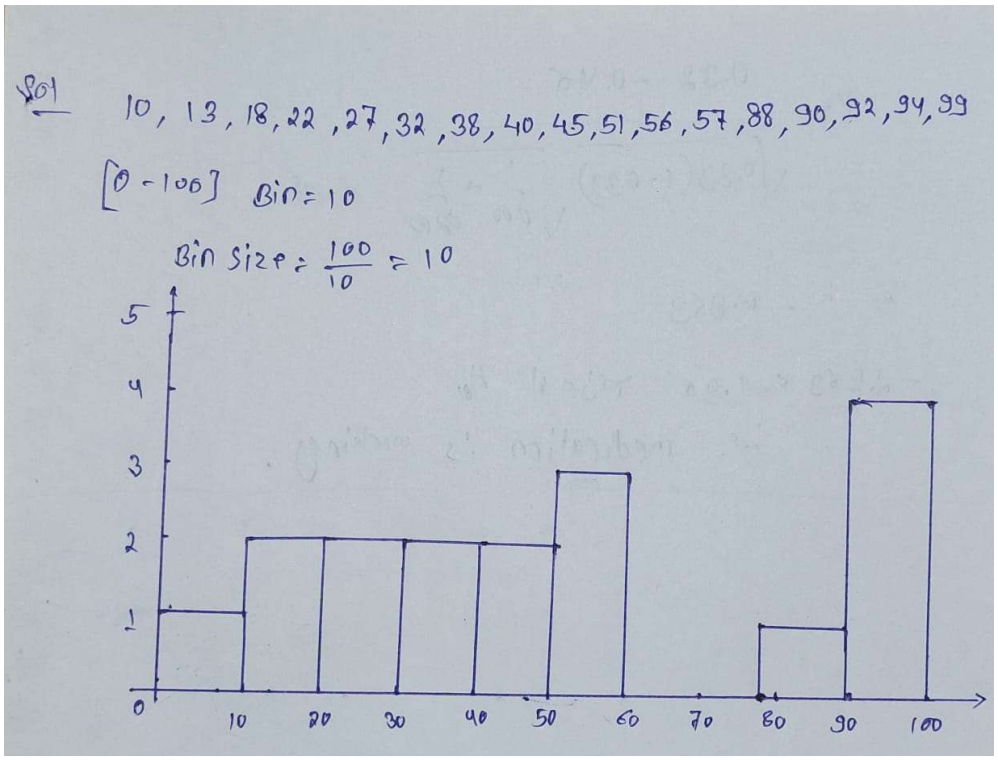
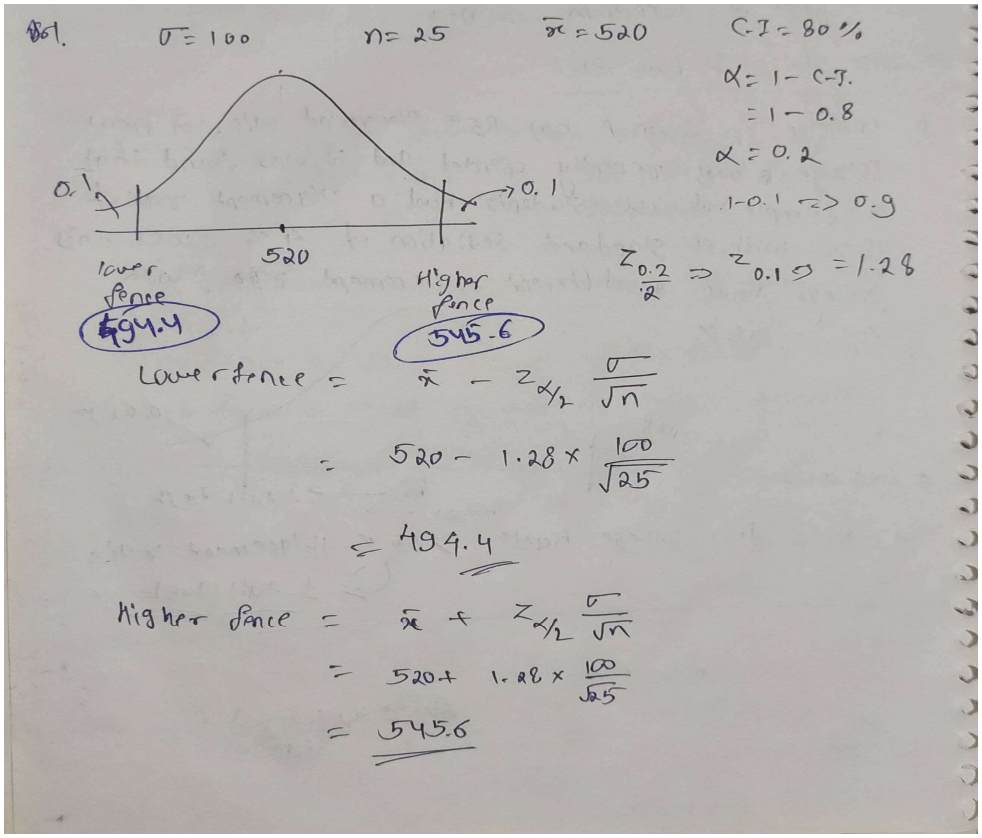
Que 1) Plot a histogram,

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.

Sol. (1) Null Hypothesis, $H_0: P_0 \geq 60\%$

$H_1: P_0 < 60\%$

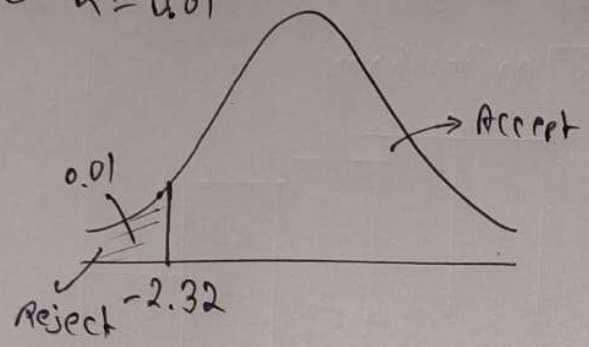
$n = 250 \quad x = 170$

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

$Q_0 = 1 - P_0$

$= 1 - 0.6 = 0.4$

(2) $\alpha = 0.01$



(3) Z-test with proportion

$$Z\ test = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 Q_0}{n}}} \Rightarrow \frac{0.68 - 0.60}{\sqrt{\frac{0.6 \times 0.4}{250}}}$$

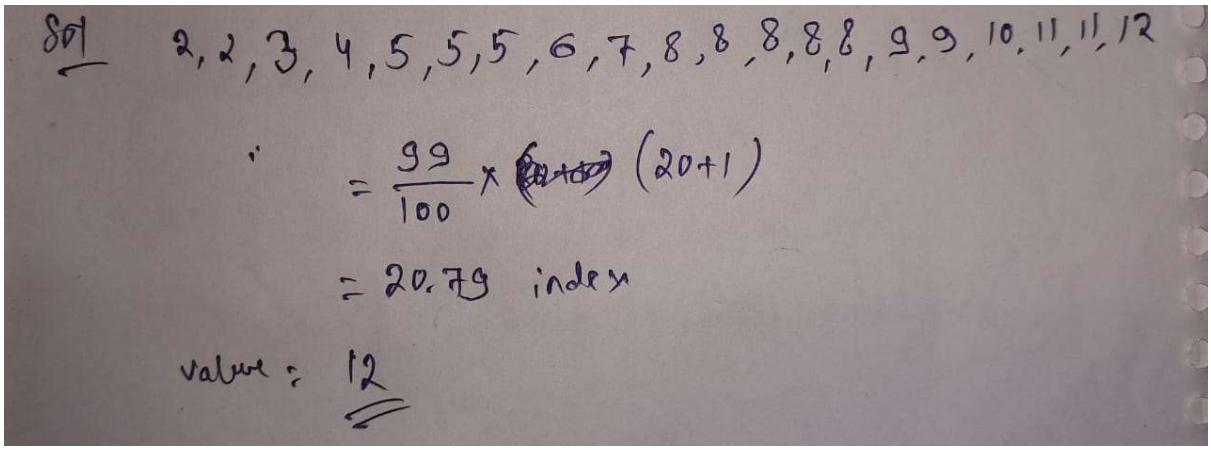
$= 2.581$

$2.581 > -2.32$, Accept the Null Hypothesis.

~~Prog~~ enough evidence

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.