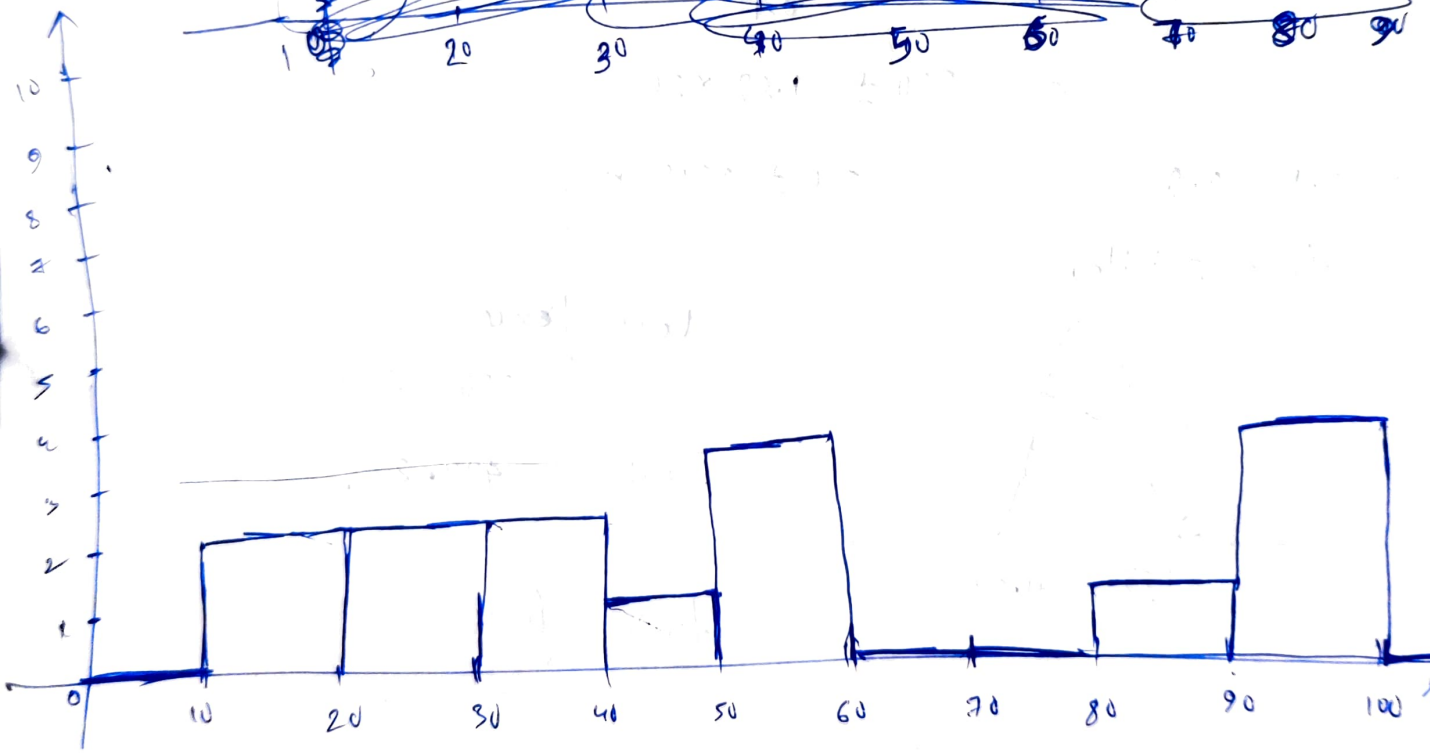
g) Plot a histogram,

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

Sol:



Q) 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 mean.

Sol:

$$\sigma = 100,\ n = 25,\ \bar{x} = 520,\ CI = 80\% = 0.8$$

$$\therefore \alpha = 1 - CI = 1 - 0.8 = 0.2$$

$$ME = \bar{x} \pm Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$= 520 \pm Z_{0.1} \times \frac{100}{5}$$

$$= 520 \pm Z_{0.1} \times 20$$

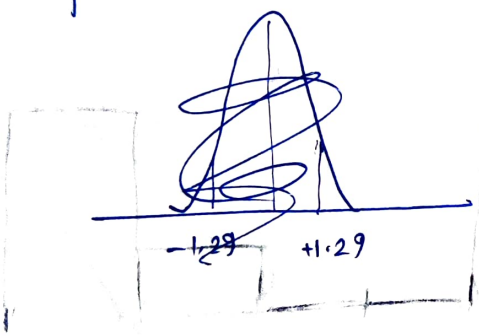
$$= 520 \pm 1.29 \times 20$$

$$= 520 \pm 25.8$$

520.0
25.8
545.8

$1 - 0.1 = 0.9$

from z-table,



Lower fence

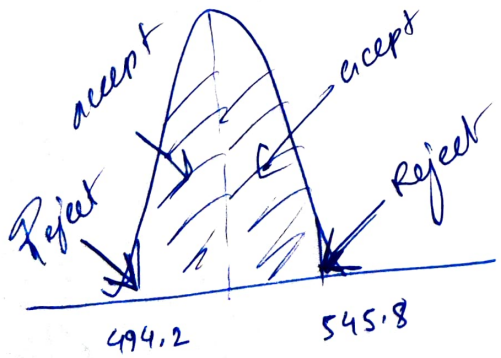
$= 520 - 25.8$

$LF = 494.2$

higher fence

$= 520 + 25.8$

$hf = 545.8$



Q) A car believes that the percentage of citizen in the city ABC that owns a vehicle is 60% or less. A sales manager disagrees with this. He conducted a hypothesis testing surveying 250 residents and found that 170 residents responded 'YES' to owning a vehicle.

(a) State the null and 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.

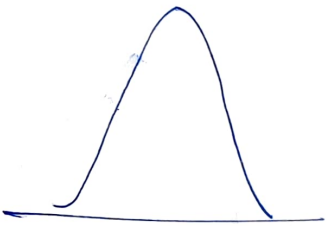
Sol:

$$P_0 = 60\% = 0.6$$

$$q_0 = 1 - P_0 = 1 - 0.6 = 0.4$$

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

.68
25|170
150
200



$$\alpha = 10\% = 0.1$$

Null hypo, H_0 :- Yes 60% or less owns

Alt hypo, H_1 :- No 60% or less owns

One-tail test

$$df = n - 1 = 250 - 1 = 249$$

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

Sol: Value at 99 percentile = $\frac{99}{100} \times 21$

$= 20.79$

99
21
99
198 ×
2079

19.8
5 | 99
5
49
45
40
40

$\frac{99}{100} \times 20$
5

39
2 | 39 (19.5
2
19
18
10

99 percentile value $\Rightarrow$ 0.99×10

$= 9.9$

8