⑧. Given

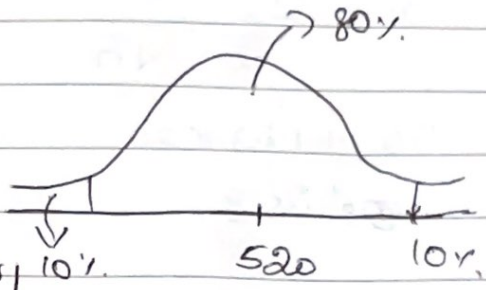
Population Standard deviation

$\sigma = 100$

Sample, $s = 25$

Mean, $\bar{x} = 520$

CI = 80%.



[We use Z-test because,

Point Estimate ± Margine of Error

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

↳ Std error

α = Significant value

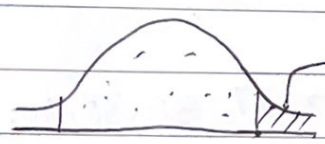
1 − 80%

= 0.2 ✓

$\alpha = 0.2$.

$$Z_{\frac{0.2}{2}} = Z_{0.1}$$

$1 - 0.1 = 0.9$ → use Z table



~~.90142~~

$1 - 0.1 = 0.9 \rightarrow$ ~~.9[illegible]4~~

1.29

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

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

$$= 520 - 1.29 \times 20$$

$520 - 1.29 \times 20$

$520 - 25.8$

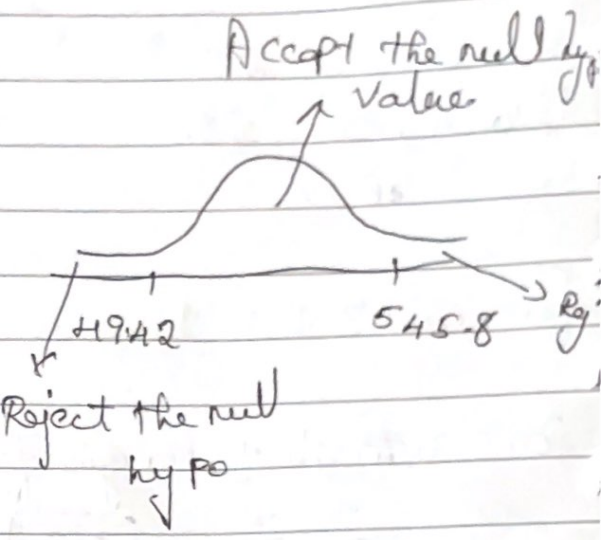
$= 494.2$

Higher fence

$$\bar{x} + \frac{z_{\alpha}}{2} \frac{\sigma}{\sqrt{n}}$$

$520 + 1.29 \times 20$

545.8

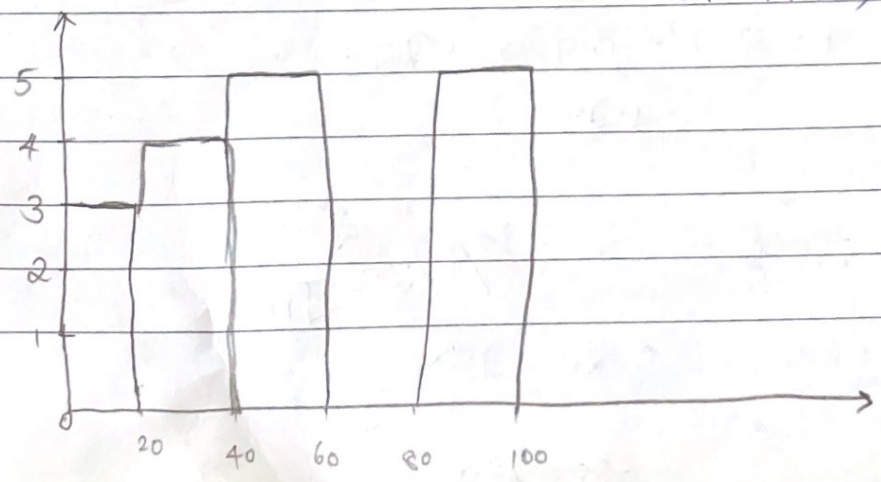


(4) 99% Percentile

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

$$= \frac{99}{100} \times 20 = \frac{99}{5} = 19.8 \longrightarrow \text{Index position}$$

(1) Histogram : Plot {10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99}



③ Null hypo $H_0 : P_0 \geq 60\%$

$H_1 : P_0 \neq$

$n = 250$

$x = 170$

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

if P_0 is given $q_0 = 1 - P_0 = 1 - 0.6 = 0.4$

significant is 10%

$\alpha = \frac{0.10}{2} = 0.05$ ~~$1 - 0.10 = \frac{0.9}{2} = 0.45$~~

Z-test for one tail

~~$1 - 0.45 = 0.55$~~

$1 - 0.05 = 0.95$

-1.65

Z-test with propotion

$$\frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.6 \times 0.4}{250}}} = \frac{0.08}{\sqrt{\frac{0.6 \times 0.4}{250}}}$$

$= 2.581$

$\simeq 2.581$

Conclusion:

We need to Accept the null hypo

$$2.581 \geq -1.68$$

So,

(5) In Skewed right the Mean is often greater than Median.

whereas in left the Mean is less than the Median

* The Mode is equal to the three times difference between the Median and two times to the Mean