

Assignment of sta. 25-2

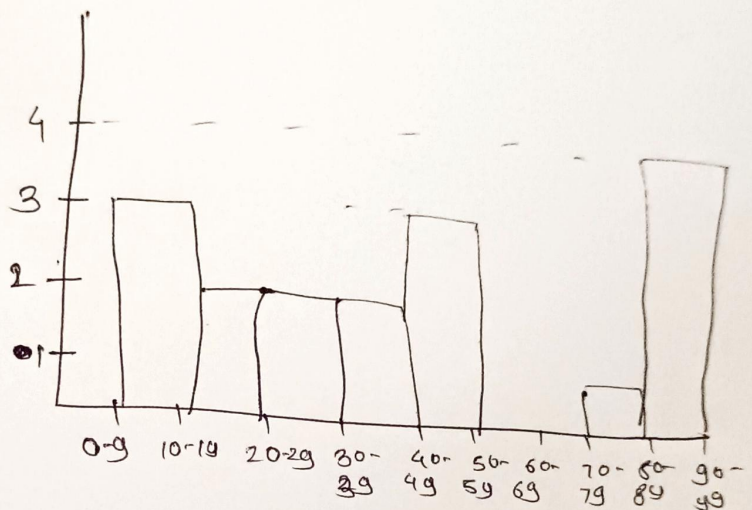
Q1 Plot Histogram

10, 13, 18, 22, ~~24~~ 27, 32, 38, 40, 45, 51, 56, 57
58, 88, 90, 92, 94, 99

→ Bins = 10 of $0-100$

$$\frac{100}{10} = 10$$

Bin limit	Frequency
1) 0-9	0
2) 10-19	3
3) 20-29	2
4) 30-39	2
5) 40-49	2
6) 50-59	3
7) 60-69	0
8) 70-79	0
9) 80-89	1
10) 90-99	4

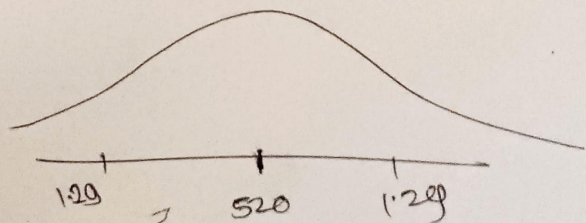
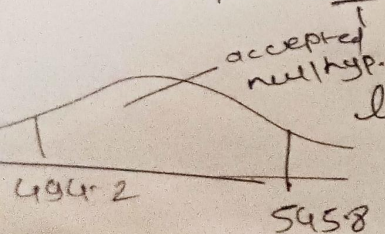


Q2 → $\sigma = 100$ $n = 25$ $\bar{x} = 520$

C.I 80%.

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

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



$$\begin{aligned} \text{lower fence} &= \bar{x} - Z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \\ &= 520 - 1.29 \frac{100}{\sqrt{25}} \\ &= 494.2 \end{aligned}$$

Q4 → 99 percentile = ?

For 99 percentile

$$\text{Value} = \frac{99}{100} \times 20$$

$$= 19.8^{\text{th}} \text{ Index}$$

$$= \frac{11+12}{2}$$

$$= \underline{\underline{11.5}}$$

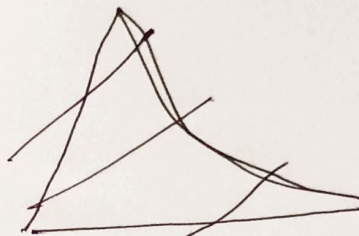
Q5 → ~~IN~~



① Symmetrical distribution
(Normal distn)

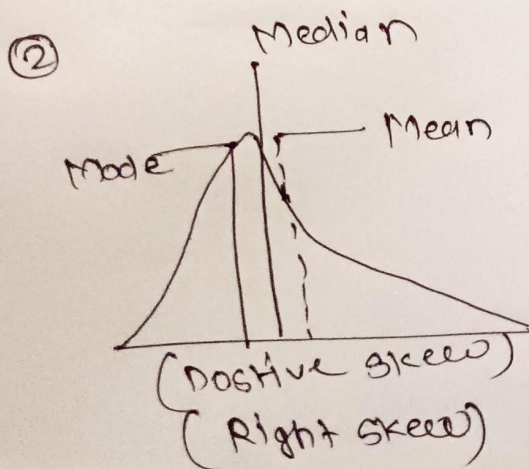
Mean \approx Mode \approx Median

② eg Age, height, weight etc.---



② difference of mean, mode, median

mean \approx median \approx mode



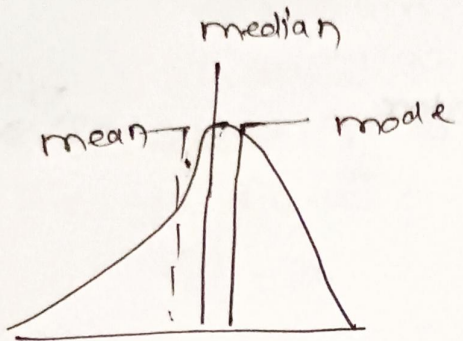
② eg ~~Age~~ Lengths of comment

② diff of mean, mode, median

~~mod~~
mean $>$ median $>$ mode

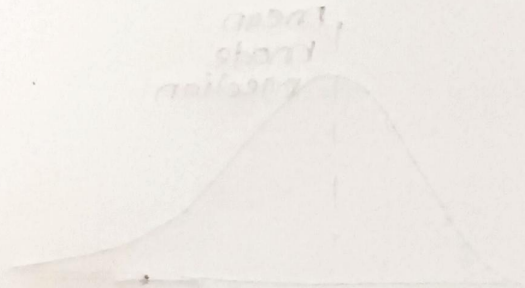
~~Latent Ig~~

③



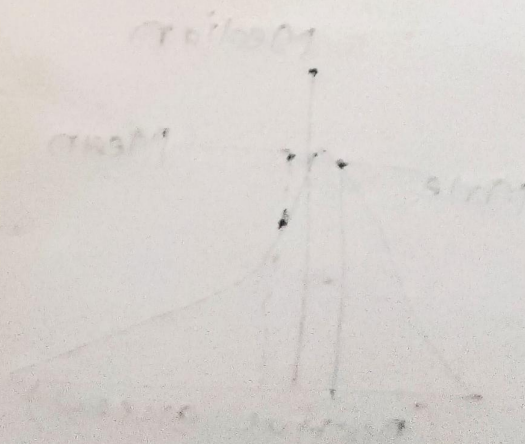
Negative
skew
(Right skew)

④ difference of mean, median, mode
 $Mode > Median > Mean$



① Symmetrical
② Right skewed
③ Left skewed

Mean, Median & Mode
Height etc.



2. A car company believes that the percentage of residents in city ABC that owns a vehicle is 60% or less. A sales ~~to another manager~~ disagrees with this. He conducts a hypothesis testing surveying 250 residents & found that 170 responded yes to owning a vehicle.

→ Great Null Hypothesis

2) At 10% significance level there enough evidence to support the idea that vehicle ownership in city ABC is 60% or less?

→

$$\textcircled{1} H_0 = 60\% \quad H_0: P_0 = 60\% \\ H_1: P_0 \neq 60\%$$

$$n = 250$$

$$\hat{p} = \frac{x}{n} = \frac{170}{250}$$

$$\textcircled{2} P_0 \quad q_0 = 1 - P_0 = 1 - 0.6 = 0.4 \\ q_0 = 0.4$$

$$\hat{p} = 0.68$$

$$\textcircled{3} \alpha = 0.10$$

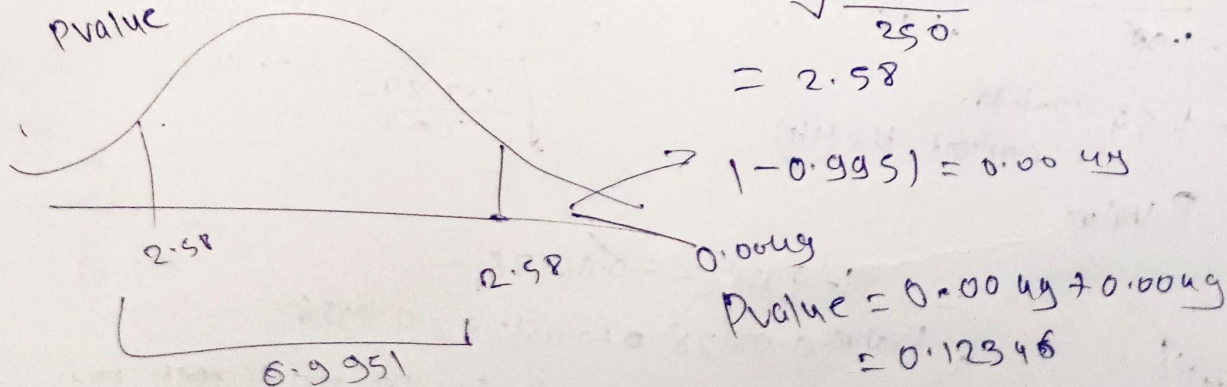
Z test with proportion

$$Z_{\text{test}} = \frac{\hat{p} - P_0}{\sqrt{\frac{P_0 q_0}{n}}}$$

$$= \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}} \\ = 2.58$$



$2.82 < 2.51$ reject null hypothesis
pvalue



pvalue > significance →

Accept the null

$$0.0088 > 0.10$$