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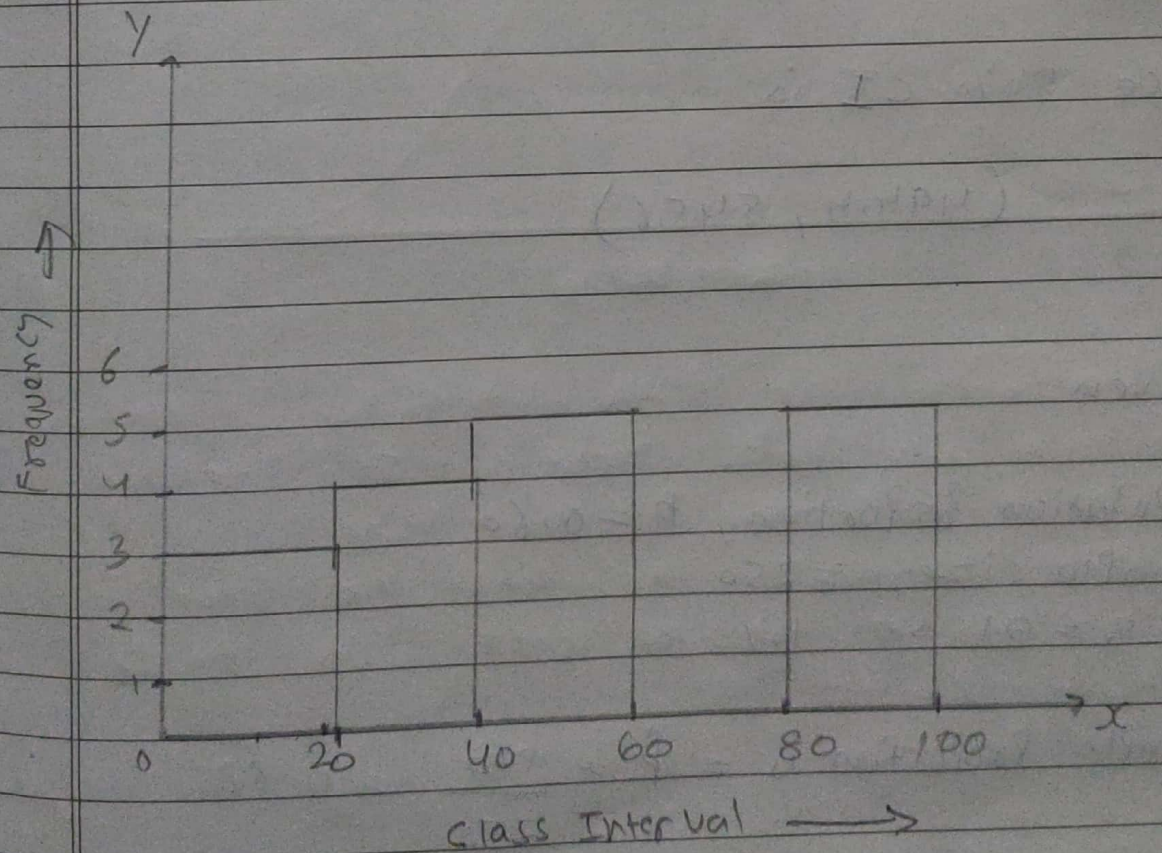
Assignment : (STATISTICS)

Q1) {10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99}

bin = 5 | bin size = 20

Class Interval	Tally	Frequency
0 - 20	III	3
20 - 40	IIII	4
40 - 60	IIII	5
60 - 80		0
80 - 100	IIII	5
		17 Total



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Q2 $\bar{X}$ (mean) = 520, Population standrd deviation (σ) = 100, $n = 25$

Here, Population standard deviation is known so, we will use z statistics to make CI

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

$$520 \pm 1.28 \times \frac{100}{\sqrt{25}}$$

$$520 \pm 1.28 \times \frac{100}{5}$$

Hence 80% CI is

$$(494.4, 545.6)$$

Q3 Given

(a) Population Proportion, $p = 0.60$
Sample size, $n = 250$
$\alpha = 0.1$ or 10%.

Sample Proportion is $= \hat{p} = \frac{170}{250} = 0.68$

Hypothesis

$H_0: p > 0.6$
(Claim) $H_1: p \leq 0.6$ (Left tailed Test)

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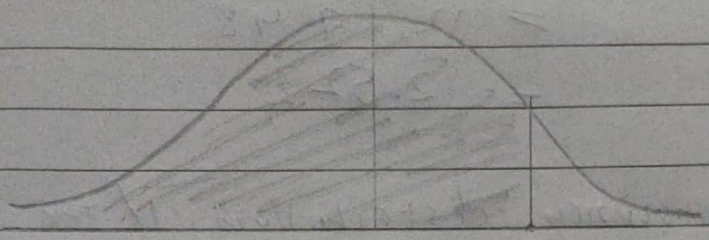
(b)

$$\text{Test statistics} = \frac{\hat{p} - p}{\sqrt{\frac{p(1-p)}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}}$$



$$= 2.5819$$

$$\therefore P(Z < 2.5819)$$

$$0.99506$$

Since, P-value > 0.1
So, we fail to reject the null hypothesis

Hence, we can conclude that there is not sufficient evidence that the Percentage of reside in BSP own vechical is 60% or less.

04 Arranging observation in the ascending order we get :

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

there, $n = 20$

$$P_{99} = \left(\frac{99(n+1)}{100}\right)^{th} \text{ value of the observation}$$

$$P_{99} = \left(\frac{99 \times 21}{100}\right)^{th} \text{ value of the observation}$$

$$= 20.79^{th} \text{ value of the observation.}$$

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$= 20^{th}$ observation $+ 0.79\,(21^{st} - 20^{th})$ observation

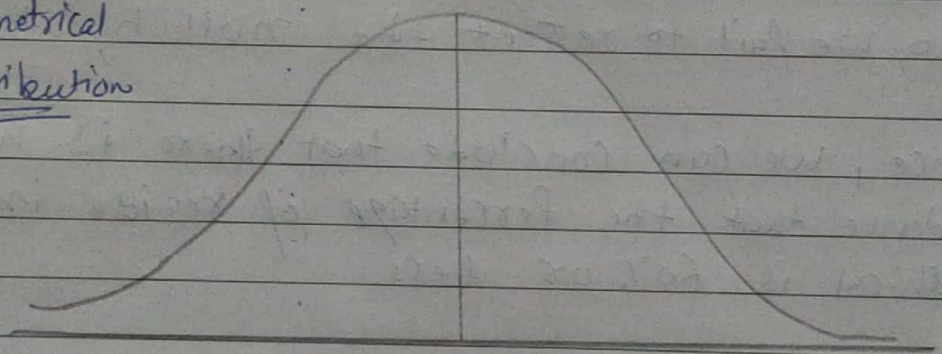
$= 12 + 0.79(0-12) = 12 - 0.79 \times 12$

$= 12 - 9.48$

$= 2.52$

Q5 In symmetrical frequency distribution, if the frequency curve or histogram is folded about the ordinate at the mean, the two halves so obtained will ~~cant~~ coincide with each other

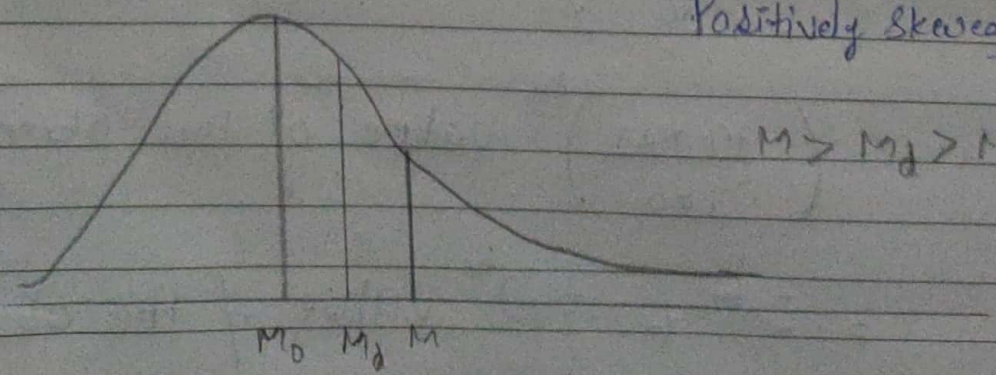
Symmetrical Distribution



$M \simeq M_o \simeq M_d$

The frequency curve of the distribution is Not a symmetrical bell-shaped curve but it is stretched more to one side than to the other.
A frequency distribution for which the curve has a longer tail toward the right is said to be positively skewed

Positively skewed distribution



$M > M_d > M_o$

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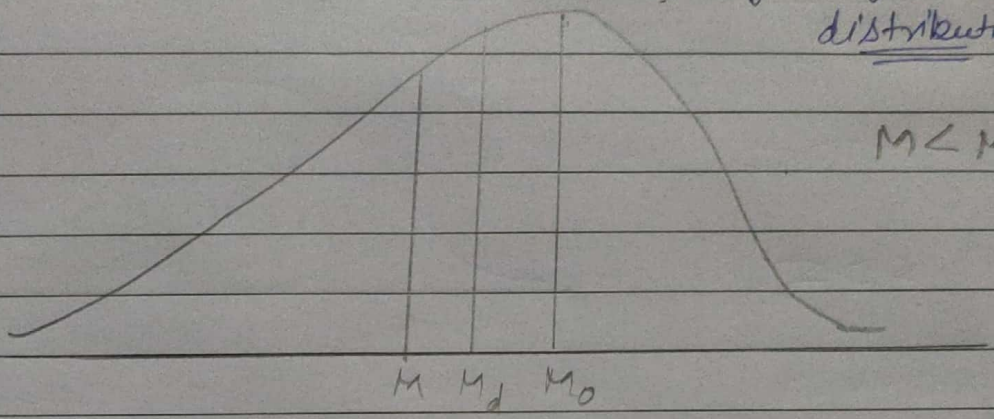
if the longer tail lies toward the left, it is said to be negatively skewed

Negatively skewed distribution



$M < M_d \leq M_o$

The value of mean (M), median (M_d) and mode (M_o) fall at different points i.e. they do not coincide

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