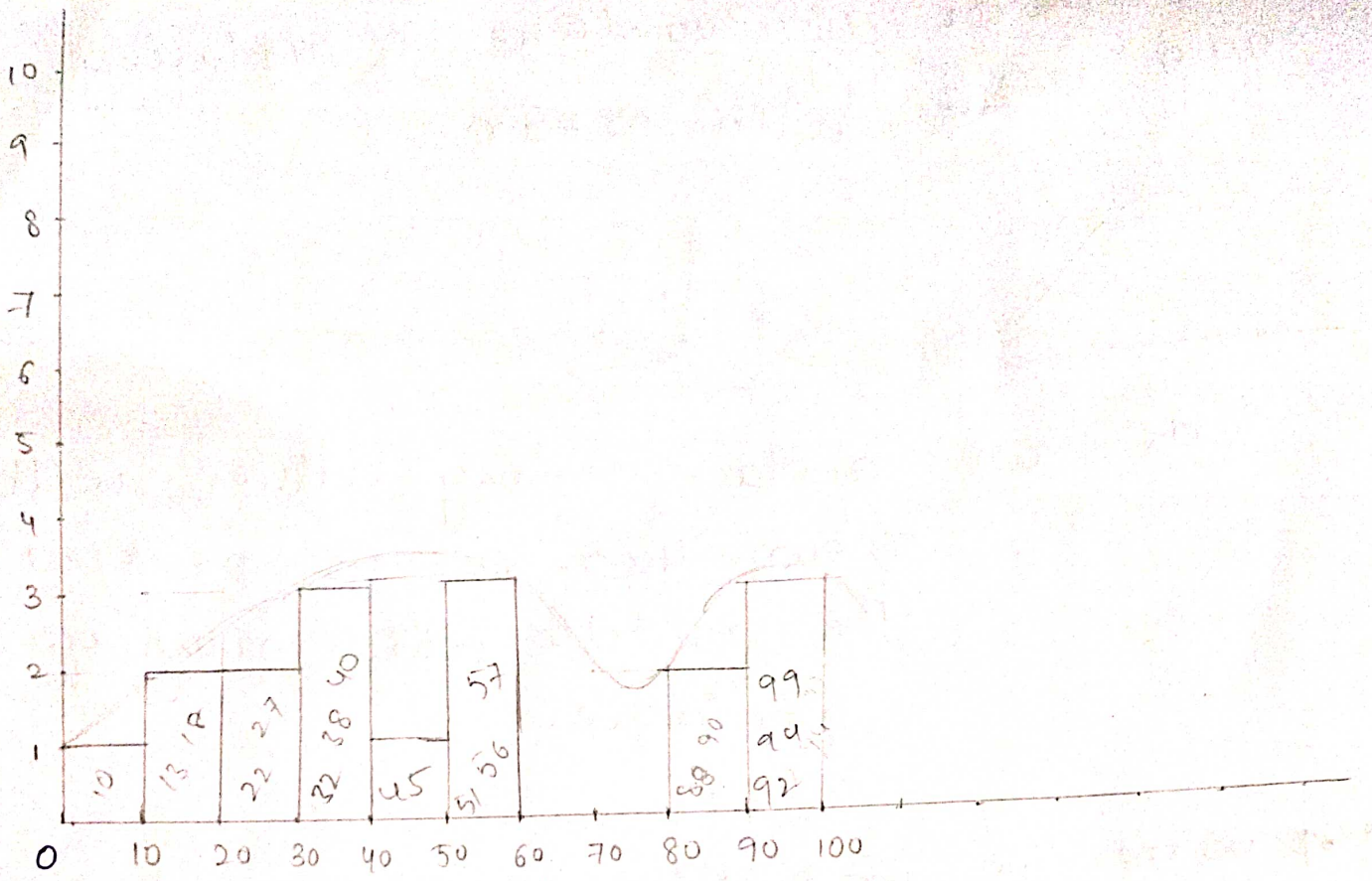
(1)



Bins = 10

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

(2) $\sigma = 100$ $n = 25$ $\bar{x} = 520$ CI = 80%

$\alpha = 1 - 0.80$
$= 0.2$

z test because population sd is given

⇒ point estimation + margin of error

$$= \bar{x} \pm Z_{\alpha/2}\left[\frac{\sigma}{\sqrt{n}}\right]$$

$$\text{Lower fence} = \bar{x} - Z_{\alpha/2}\left[\frac{\sigma}{\sqrt{n}}\right]$$

$$= 520 - Z_{\frac{0.2}{2}}\left[\frac{100}{\sqrt{25}}\right]$$

$$= 520 - Z_{0.1}\left[\frac{100}{\sqrt{25}}\right]$$

$1 - 0.1 = 0.9$

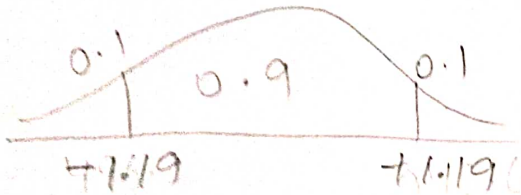
$= 520 - 1.19 \times 20$

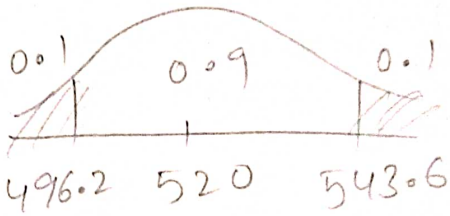
$= 496.2$

$0.9 = 0.90147$

Higher Fence $= 520 + 1.19 \times 20$

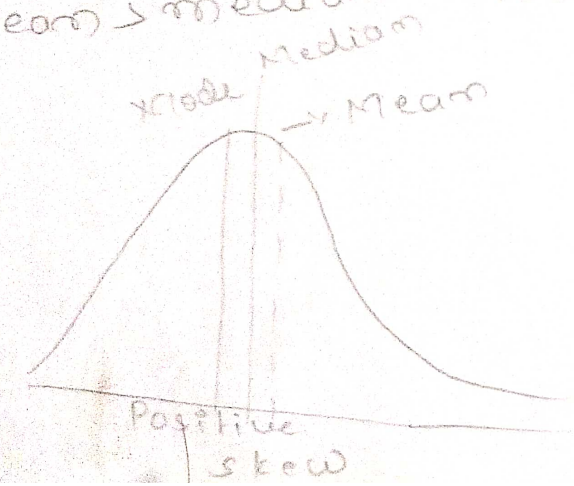
$= 543.6$



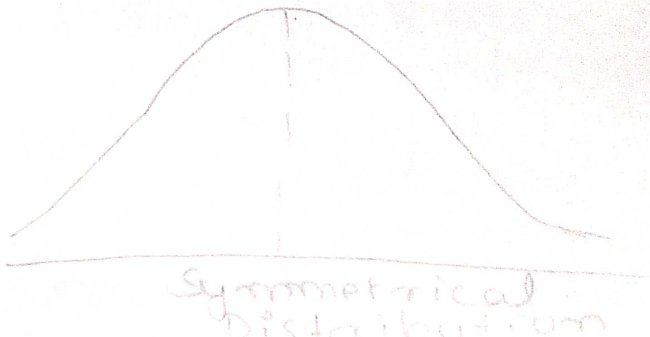


different units bringing down to same scale

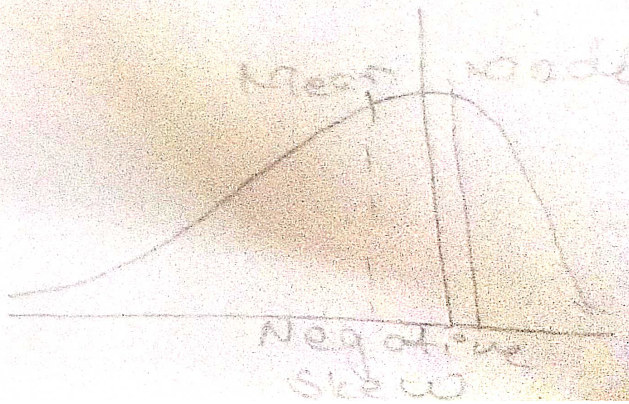
Mean > median > Mode



≈ Mean
≈ Median
≈ Mode



Mean < Median < Mode



(4) $= \frac{99}{100} * (20+1)$

$\frac{\text{Percentile}}{100} * (n+1)$

$= 20.79$

Value = 12

* A car company believes that the percentage of residents in city ABC that owns a vehicle is 60% or less. A sales manages disagrees with this. He conducts a hypothesis testing surveying 250 residents and found that 170 responded yes to owing a vehicle.

a. State null and Alternative hypothesis

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

one tail

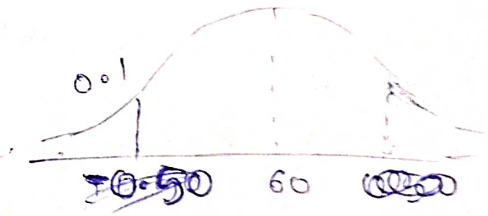
$H_0 : \mu \geq 60\%$ $\quad n = 250$ $\quad x = 170$

$H_1 : \mu < 60\%$ $\quad - 10\% \Rightarrow 90\%$ CI

$\alpha = 0.1$ $\quad \alpha = 0.1$ LS

$P_0 = 0.60$

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



$q_0 = 1 - P_0 = 1 - 0.60$

$= 0.4$

$= 40\%$

$z\ test = \frac{\hat{p} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.60 \times 0.4}{250}}} = \frac{0.08}{\sqrt{\frac{0.24}{250}}} = \frac{0.08}{0.03098}$

$= 2.582311 \Rightarrow$

P value

0.9951

$2.582 > -0.50$ Accept. $\quad 0.9951 < 0.1$