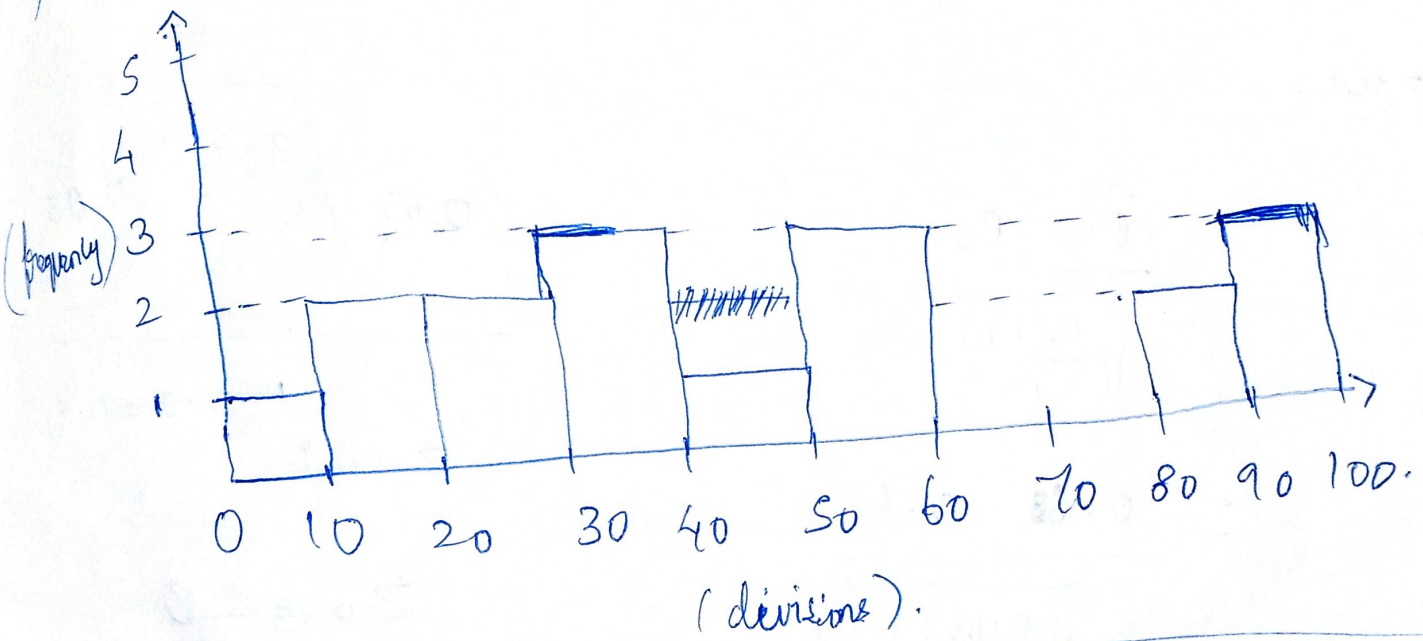
Assignments - Statistics.

1) Histogram.



2) $\sigma = 100$, $n = 25$, $\bar{x} = 520$ C.I = 80%. ($\alpha = 0.2$)

Z-test:

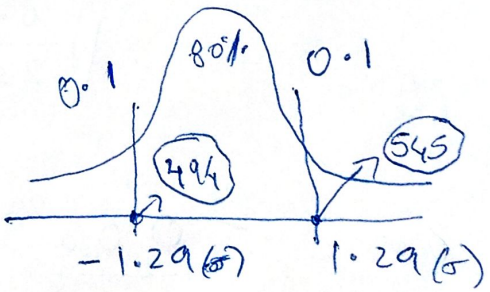
$$C.I = \bar{x} \pm z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

Positive end =>

$$520 + 1.29\left(\frac{100}{\sqrt{25}}\right) = 545.8$$

Negative end =>

$$520 - 1.29\left(\frac{100}{\sqrt{25}}\right) = 494.2$$



$z_{0.1} = 1 - 0.1$

$= 0.90$

$z_{table}(0.90) = 1.29.$

3) hypothesis: let "P" be probability of vehicle owners owning a car in population

$H_0 \Rightarrow$ Null hypothesis $\Rightarrow$ $P = 60\%$

$H_1 \Rightarrow$ Alternate hypothesis $\Rightarrow$ $P > 60\%$

Sample $(n) = 250$

Sample $(\hat{P}_0) = 170/250 = 68\%$

~~CI = 10%~~ $\Rightarrow$ $\alpha = 10\% = 0.10$ ~~(90% C.I)~~

Z test:

$$Z = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0(1-P_0)}{n}}}$$

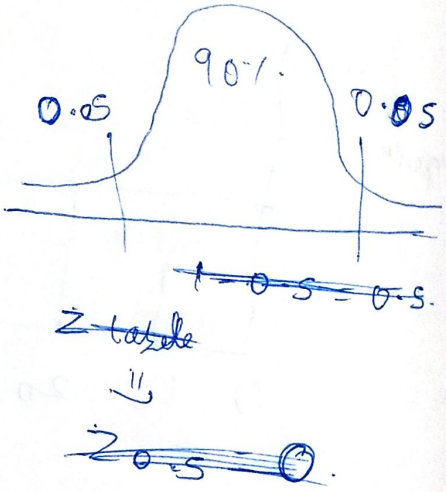
$$= \frac{0.68 - 0.60}{\sqrt{\frac{0.60(1-0.6)}{250}}}$$

$$= \frac{0.08}{\sqrt{\frac{0.24}{250}}}$$

$$= \frac{0.08}{0.03}$$

$$= 2.66$$

$\Rightarrow 2.66 > 1.65$



~~1 - 0.05 = 0.95~~

~~Z table~~

$\Rightarrow$

~~$Z_{0.5}$~~

$1 - 0.05 = 0.95$

$Z_{0.95} = \pm 1.65$

∴ null hypothesis is rejected.

(ii) more than 60% of population owns vehicle

4) 99 percentile value formula $\Rightarrow \frac{99}{100}(n+1)$

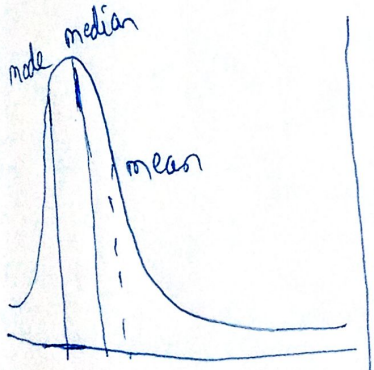
$= \frac{99}{100}(20+1)$

$= \frac{99}{100}(21)$

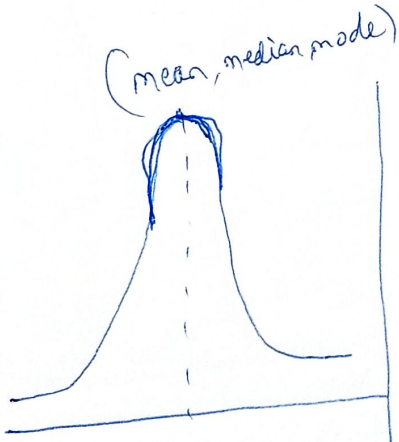
$= 20.79$ (index).

$\Rightarrow 12$

5) relation between mean, median & mode.



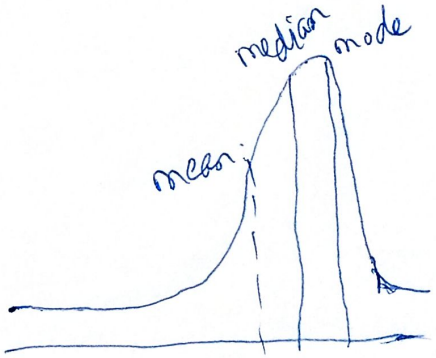
- left skewed
- Positively skewed.
- mean > median > mode
- wealth distribution (log normal)



Symmetrical.

mean = median = mode

Height of Population



right skewed
negatively skewed.

mode > median > mean.

Working professionals (age wise).