4) 90 ... 16) 85 — 68 ... 87.. } First 4, we can accept the H_0 bcz majority gs weight loss

1 Sample paired t test

t test

⇒ H_0:- your batch students can't able to score → 90M

H_A:- No My batch students are able to score → 90

Ex:-

B1	B2	B3	B4	B5
63	75	92	47	81
62	88	98	58	75
58	83	88	63	78
73	65	89	70	85
80	73	95	68	70
avg:- 65	78	92	59	80

Anova:-

Analysis of Variance

If One Sample proved means we can reject the H_0.

Ex:- In the 2000 indian census the age of individual in a small town where found to be the following.

In the year 2000

less than 18	18 - 35	>35
20%	30%	50%

In 2010 Age of $n = 500$ individuals were sampled below are the results.

In the year 2010

less than 18	18 - 35	> 35
121	288	91.

using $\alpha = 0.05$ would you calculate the population distribution of ages has changed in the last ten years.

H_0 :- 2010 sense ratio is same as 2000 senses

H_A :- No 2010 sense ratio is not same as 2000.

Chi-square test :-

χ^2 > chi-square table value with DOF means $3-1=2$ you can reject Else accept

CI = 95%
$\alpha = 005$

	< 18	18-35	> 35
2000y	20 %	30%	50%
2010y sample 500	121	288	91. observed
	100	150	250 Expected

$\chi^2 > 5.991$ then reject H_0

$$\chi^2 = \sum_{i=1}^{n} \frac{(f_o - f_e)^2}{f_e} = \frac{(\text{observed} - \text{Expected})^2}{\text{Expected.}}$$

$$= \frac{(121-100)^2}{100} + \frac{(288-150)^2}{150} + \frac{(91-250)}{250}$$

$$= \frac{(-21)^2}{100} + \frac{(138)^2}{150} + \frac{(-159)^2}{250}$$

$$= 4.41 + 126.96 + 101.124$$

$$= 232.494$$

$\chi^2 = 232 > 5.991$ so we can reject H_0

Correlation:-

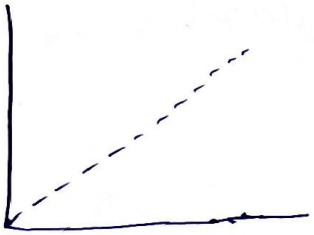
To check the relationship b/w two numerical features / column we use correlation.

There are 3 types of correlation.

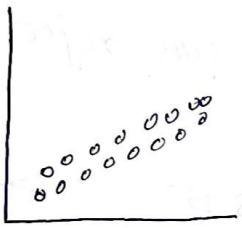
→ +ve correlation $x\uparrow\ y\uparrow$ Ex:- Exp↑ Sal↑

→ -ve correlation $x\uparrow\ y\downarrow$ Ex:- weight↑ mpg↓

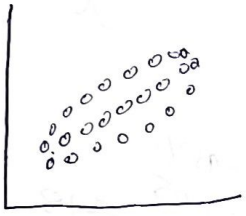
→ No correlation. $x\uparrow\ y\uparrow\downarrow$ Ex:- weight Sal



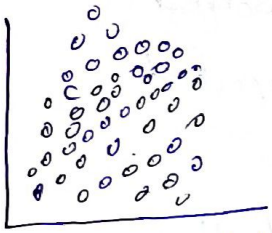
100% +ve corr.



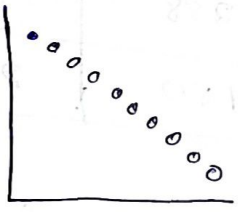
Strong +ve corr



Weak -ve corr



no correlation



100% -ve corr

=> There are 2 types of corelation formulas

=> Pearson corelation

=> spherman corelation

=> The correlation ranges from -1 to +1.

=> If correlation value is near to +1 is a +ve corr.

=> If corr value is near to -1 is called as -ve corr

=> If value is near to 0 is called as no or 0 corr.