$$\therefore b = \frac{n\Sigma XY - \Sigma X \Sigma Y}{n\Sigma X^2 - (\Sigma X)^2}$$

$$= \frac{10(491415) - (495)(1024)}{10(27225) - (495)^2}$$

$$= -\frac{15430}{27225}$$

$$b = -0.567$$

$$a = \bar{Y} - b\bar{X}$$

$$a = 102.4 + 0.567(49.5)$$

$$a = 130.46$$

$$\hat{Y} = a + bX$$

$$= 130.46 - 0.567X$$

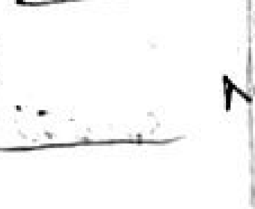
Due to change in X, Y is decreasing 0.567 un

Correlation:-

1:- "Linear association b/w two variables is called correlation."

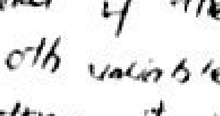
→ It is denoted by "r". & its ranges from -1 to +1.

→ +1 for perfect +ve, upward trend



-1 for perfect -ve, downward trend

0 for no relationship.



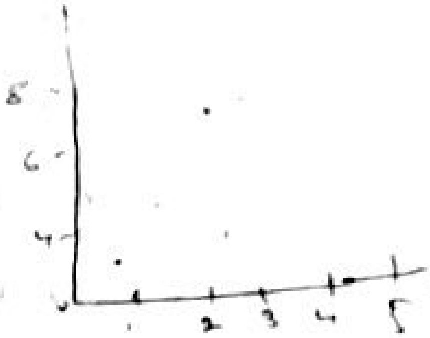
NO

$$r = \frac{n\Sigma XY - \Sigma X \Sigma Y}{\sqrt{[n\Sigma X^2 - (\Sigma X)^2][n\Sigma Y^2 - (\Sigma Y)^2]}}$$

2:- Eq:- Two variables are said to be correlated if they tend to simultaneously vary in some direction. If both variable are tend to increase or decrease in some direction then it is +ive correlation & if one variable are increase & other one decreases then -ve correla...

ons- Example Num 10.1:-

	Y	XY	X^2	Y^2
1	2	2	1	4
2	5	10	4	25
3	3	9	9	9
4	8	32	16	64
5	7	35	25	49
15	25	88	55	151



$$r = \frac{n\Sigma XY - \Sigma X \Sigma Y}{\sqrt{[n\Sigma X^2 - (\Sigma X)^2][n\Sigma Y^2 - (\Sigma Y)^2]}}$$

$$= \frac{5(88) - (15)(25)}{\sqrt{[5(55) - (15)^2][5(151) - (25)^2]}}$$

$$= \frac{65}{80.6225}$$

$$r = 0.80$$

So, it is a strong +ve linear relationship.

3- Difference b/w Correlation & Regression.

In correlation both variables are random variables, i.e there is no distinction b/w dependent variables & independent variables.

But in regression, we are interested in determining the dependence of one variable on other variable