

# Correlation

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What is Correlation?

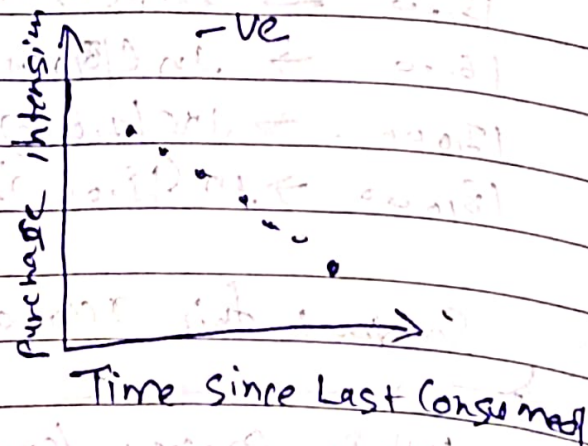
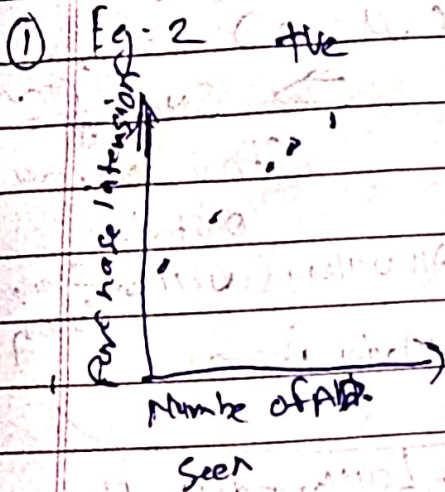
It's a relationship between two quantitative variable (eg. ht, wt)

Eg:

X  
Height

Y  
Weight

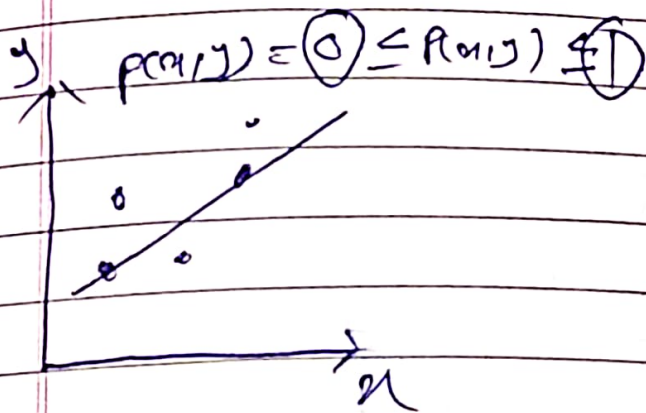
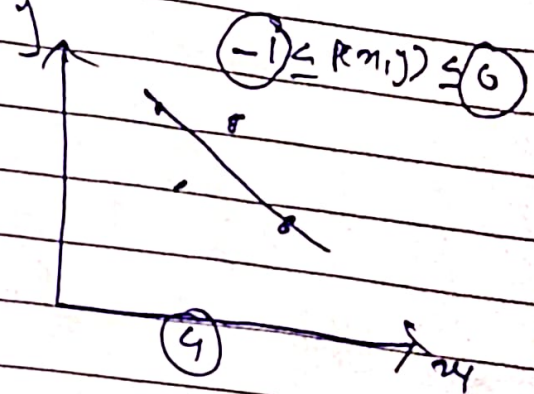
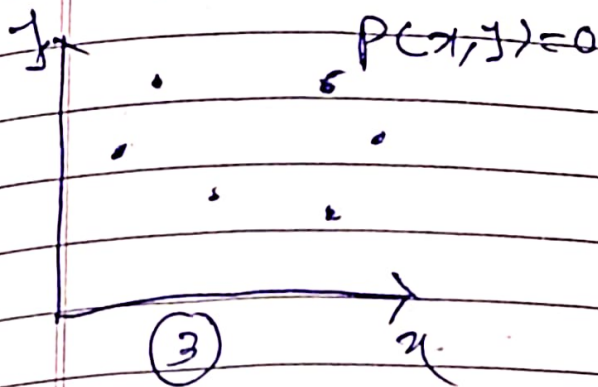
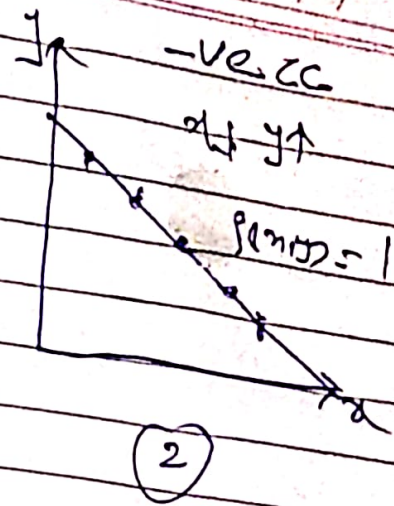
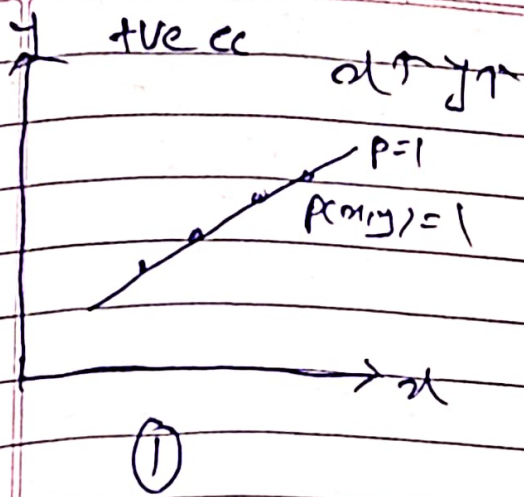
$\text{Cor}(x, y) = \uparrow \uparrow$  the  
 $\uparrow \downarrow$  -ve



$$\text{Co-Variance} = \text{Cor}(x, y) = \frac{1}{n} \sum_{i=1}^n (x_i - \mu_x)(y_i - \mu_y)$$

$$\text{Pearson CC} = \rho(x, y) = \frac{\text{Cor}(x, y)}{\sigma_x \sigma_y}$$

$$\rho(x, y) \rightarrow -1 \leq \rho \leq 1$$



Q. What is Use of Correlation?

It's use for Feature Selection.

E.g:  $P(x,y)=1 \rightarrow$  It's says that  $x$  &  $y$  are same.

So, we can drop  $x$  or  $y$ .