Regression algorithm :-

→ Linear Regression :-

Before getting into linear regression lets understand the important terms / terminology,

→ Dependent Variable :-

⇒ Variable to predict

⇒ Also, target variable

→ Independent Variable :-

⇒ Variable to estimate dependent variable.

⇒ Also, predictor variable

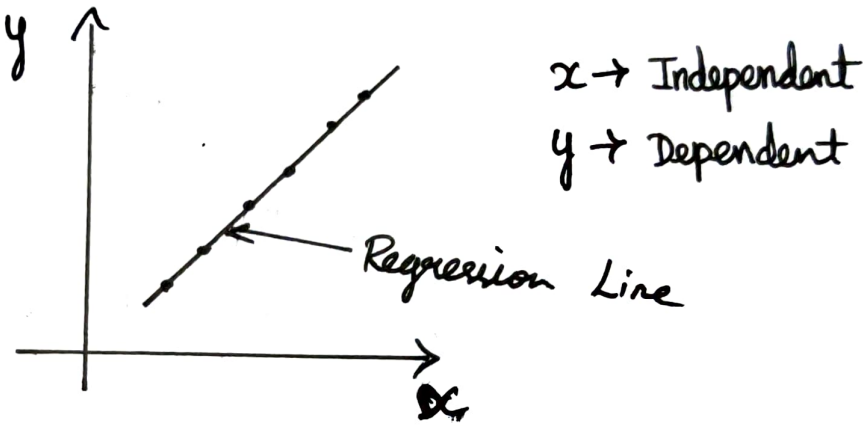
→ Outlier :-

⇒ Observation that differs significantly from other observation.

Lets get into linear regression algorithm,

Linear regression is applicable only when there is one independent variable (x) and one dependent variable (y). [Simple linear regression].

Graph of linear regression looks like this,



Mathematical Approach :-

The simple linear regression equation is given by,

$$y = mx + c$$

y → dependent variable
m → slope
x → independent variable
c → intercept

The value of 'm' & 'c' can be calculated by using,

Pearson's correlation coefficient

$$c = \frac{(\Sigma y)(\Sigma x^2) - (\Sigma x)(\Sigma xy)}{n(\Sigma x^2) - (\Sigma x)^2}$$

$$m = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{n(\Sigma x^2) - (\Sigma x)^2}$$

(or)

$$c = \bar{y} - m\bar{x}$$

$$m = \frac{\sum_{i=1} (x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1} (x_i - \bar{x})^2}$$