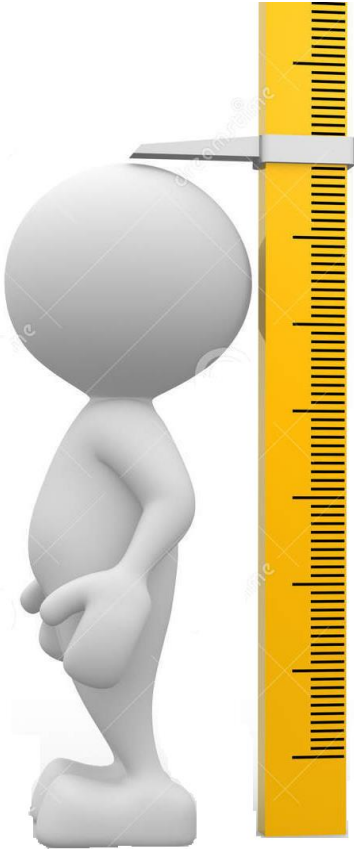




Correlation

Examples



More height more weight

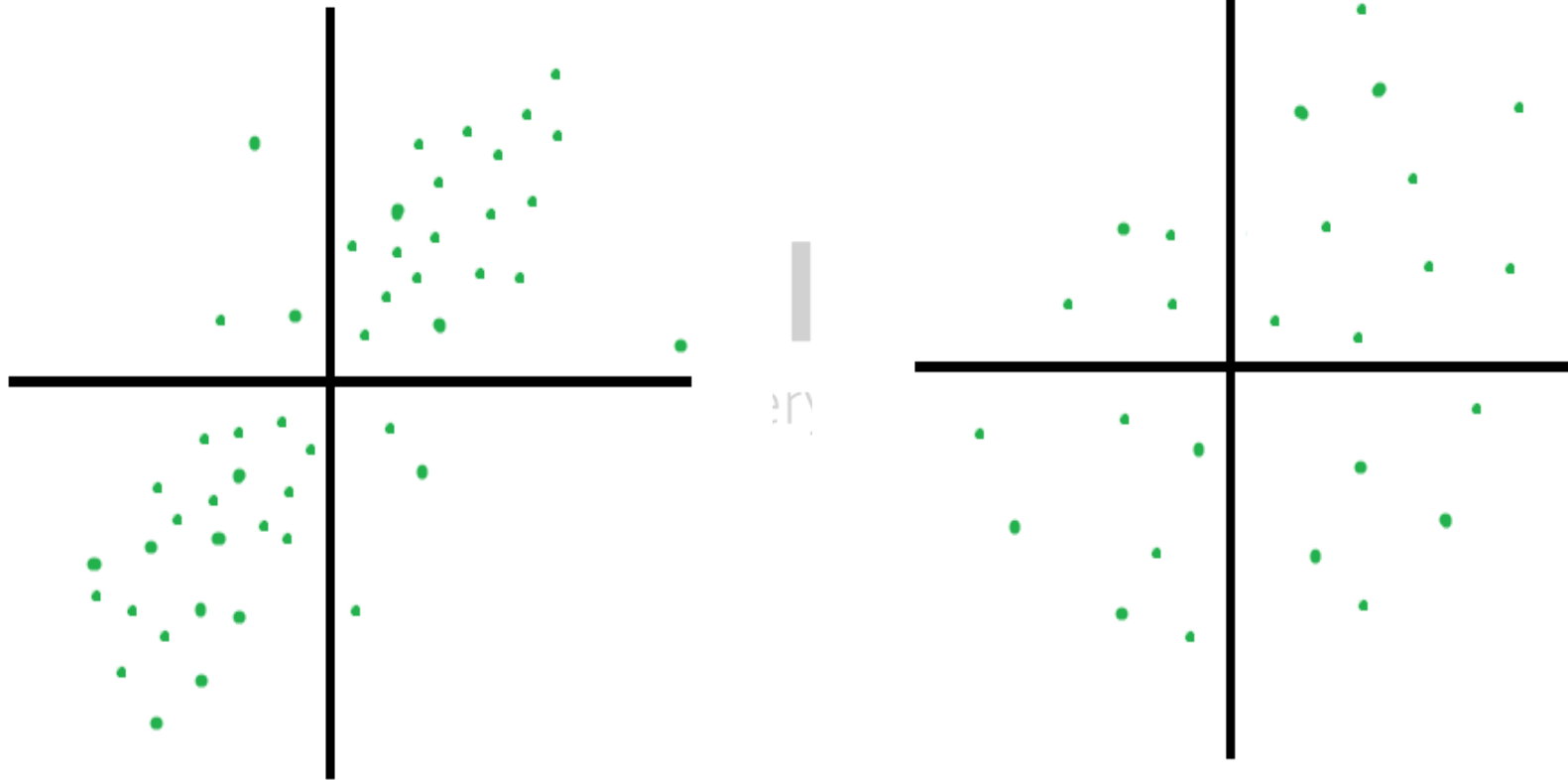


More hours into study more marks

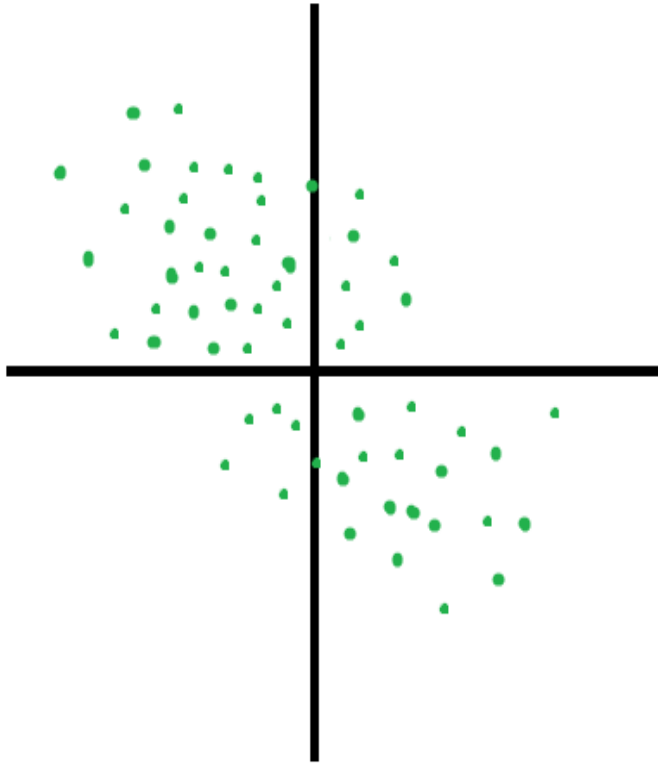


More the age of the car lesser the value

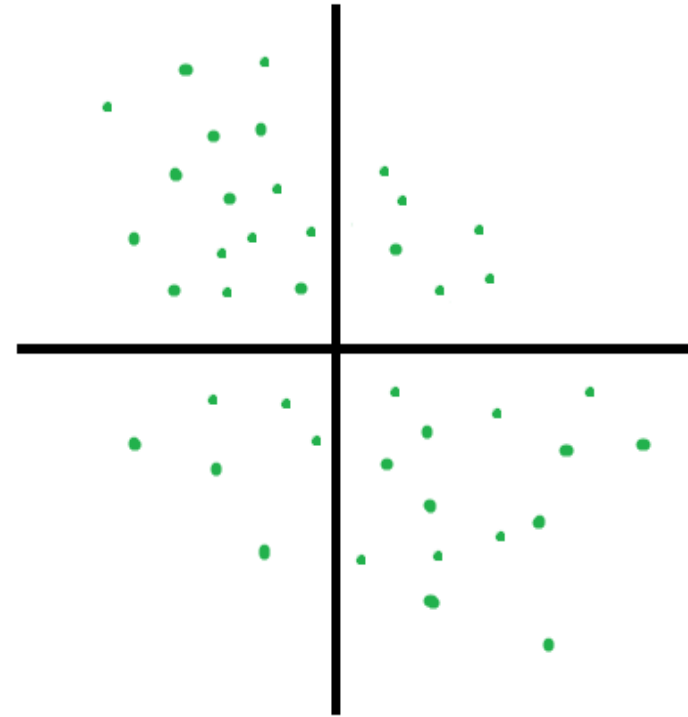
Scatter Plots



Scatter Plots



analyti
n everything



Correlation

- It is used to determine the relationship between two variables.
- It is denoted by r
- The value ranges from -1 to 1. Here 0 means no correlation

Correlation

- $R = \frac{\text{cov}(X,Y)}{S_x, S_y}$
- The covariance shows how much of these variables vary with each other. While the standard deviation shows how much these variables vary apart from each other.
- $\text{Cov}(X,Y) = \frac{\sum (X - \mu)(Y - v)}{n - 1}$

Calculating Covariance and Correlation

- Calculate covariance for the following data set: x: 2.1, 2.5, 3.6, 4.0 (mean = 3.1), y: 8, 10, 12, 14 (mean = 11)
- Calculate the standard deviation for x and y
- Divide covariance by multiplication of standard deviation of x and y

Properties of the correlation coefficient

- If the data falls perfectly in the positive direction then the value of $r=1$ and if the data falls in the negative direction, $r=-1$.
- R lies within 1 and -1.
- Data that is not correlated at all has r value of 0.
- R-square is known as the coefficient of determination and can be interpreted in the terms of %