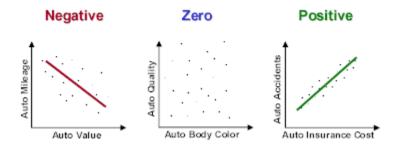# Lesson 13 – *Correlation*

In statistical correlations we are looking to see if there is a connection of some sort between two variables, in other words is there a statistical relationship.   For example, is there a relationship between someone's height and their age? Is there a relationship between the numbers of hours a student studies and their marks? The relationships can be either positive or negative.

In order to evaluate whether there is a relationship we create scatter plots. These scatter plots tell us the degree of relationship between the variables and the direction.

Direction: If one variable increase as the other variable increases then there is a positive correlation. If one variable decreases as the other variable increases then there is a negative correlation.

Examples of Scatter Plots

Degree: There is a perfect correlation if the scatter plot points are in a straight line. If the points are scattered randomly there is no correlation. The degree is also evaluated using the correlation coefficient.

Correlation Coefficient

The correlation coefficient is the calculated degree of correlation between two variables. This coefficient is denoted by the letter *r*. This number is between -1 and 1. When there is no relationship then r=0. The closer the r value is to 1 or -1 the stronger the correlation.

Correlation Coefficient
Shows Strength & Direction of Correlation