Difference between variance, covariance, and correlation is:

* *Variance* is a measure of variability from the mean
* *Covariance* is a measure of relationship between the variability (the variance) of 2 variables. This measure is scale dependent because it is not standardized.
* *Correlation/Correlation coefficient* is a measure of relationship between the variability (the variance) of 2 variables. This measure is standardized and is not scale dependent.

Covariance is a measure of relationship between 2 variables. It measures the degree of change in the variables, i.e. when one variable changes, will there be the same/a similar change in the other variable.

A correlation coefficient will always be between -1 and 1. The closer the value is to -1 or 1, the strong the relationship, the closer to 0 then the weaker it is. If the correlation coefficient value is positive, it means as one variable increase so does the other, and if the correlation coefficient value is negative, it means as one variable increases the other decreases. If the correlation coefficient is negative, the way to see which variable increases/decreases is to plot the data.

**difference between Correlation and Covariance**

• Both correlation and covariance are measures of relation between two random variables. Correlation is the measure of strength of the linearity of the two variables and covariance is a measure of the strength of the correlation.

• Correlation coefficient values are a value between -1 and +1, whereas the range of covariance is not constant, but can either be positive or negative. But if the random variables are standardized before calculating the covariance then covariance is equal to the correlation and has a value between -1 and +1.