Summary

- Once we find the correlation coefficient using product moment method, we need to interpret it. We use mainly two tools to interpret the correlations coefficient
    - Probable error
    - Coefficient of Determination

- After the calculation of coefficient of correlation, the next thing is to find out the extent to which it is dependable. For this purpose, the probable error of the coefficient of correlation is calculated.
    - If the value of r is less than the probable error, there is no evidence for correlation.
    - If the value of r is more than six times of the probable error, it is significant correlation.

- The *coefficient of determination,* r^2, is useful because it gives the proportion of the variance (fluctuation) of one variable that is predictable from the other variable. It is a measure that allows us to determine how certain one can be in making predictions from a certain model/graph. The *coefficient of determination* is such that $0 \leq r^2 \leq 1$, and denotes the strength of the linear association between *x* and *y*.

- Sometimes a Coefficient of Correlation is interpreted by finding out the Unexplained Variance. The ratio of unexplained variance to total variance is called the Coefficient of non-determination.

- The *coefficient of determination* is a measure of how well the regression line represents the data. If the regression line passes exactly through every point on the scatter plot, it would be able to explain all of the variation. The further the line is away from the points, the less it is able to explain.

- In many (but not all) instances where r^2 is used, the predictors are calculated by ordinary least–squares regression: that is, by minimizing SS_{err}. In this case r-squared increases as we increase the number of variables in the model (r^2will not decrease). This illustrates a drawback to one possible use of r^2, where one might try to include more variables in the model until "there is no more improvement". This leads to the alternative approach of looking at the adjusted r^2. The explanation of this statistic is almost the same as r^2 but it penalizes the statistic, as extra variables are included in the model.

- r^2 does not indicate whether: there is cause and effect dependence, correct regression was used etc.