…(1)

If , , … are n pairs of the variables X and Y in a bivariate distribution, then,

…(2)

…(3)

Substituting values from equation (3) in (2) we get,

..(4)

Where,

‘r’ is the correlation coefficient

‘x’ and ‘y’ are the two variables,

‘dx’ is the deviation from x-mean of the x variable,

‘dy’ is the deviation from y-mean of the y variable

is the sum of the products of the deviations,

is the sum of the squares of the deviation of x variable,

is the sum of the squares of the deviation of y variable,