Linear regression equation

y=a + bx

x and y are two variables on the regression line.

b = Slope of the line.

a = y-intercept of the line.

x = Values of the first data set.

y = Values of the second data set.

$$a\,(intercept) = \frac{\sum y \sum x^2 - \sum x \sum xy}{(\sum x^2) - (\sum x)^2}$$

$$b\,(slope) = \frac{n\sum xy - (\sum x)(\sum y)}{n\sum x^2 - (\sum x)^2}$$

Question: Find linear regression equation for the following two sets of data:

x	y
2	4
4	9
6	3
8	12

Solution:

x	y	x^2	xy
2	4	4	8
4	9	16	36
6	3	36	18
8	12	64	96
∑x = 20	∑y = 28	$\sum x^2$ = 120	∑xy = 158

n = 4

Caclualte; a(intercept) = 2.5

Caclualte; b(islope) = 0.9

Linear regression is given by: y = a + bx

y = 2.5 + 0.9x