

## Linear Regression

x	y	xy	x <sup>2</sup>
5	1	5	25
6	3	18	36
7	2	14	49
8	4	32	64
9	5	45	81
<u>35</u>	<u>15</u>	<u>114</u>	<u>255</u>

$$Y = bX + a$$

$$a = \frac{(\sum X)(\sum X^2) - (\sum X)(\sum XY)}{n(\sum X^2) - (\sum X)^2}$$

$$b = \frac{n(\sum XY) - (\sum X)(\sum Y)}{n(\sum X^2) - (\sum X)^2}$$

Putting the values in eqn (a), we get

$$a = \frac{(15)(255) - (35)(114)}{(5)(255) - (35)^2}$$



$$a_2 = \frac{3825 - 3990}{1275 - 1225}$$

$$a_2 = -165/50$$

$$a_2 = -3.3$$

Putting the values in eq (6), we get

$$b_2 = \frac{(5)(114) - (35)(15)}{(5)(255) - (35)^2}$$

$$b_2 = \frac{720 - 525}{1275 - 1225}$$

$$b_2 = \frac{195}{50}$$

$$b_2 = 3.9$$

Putting the values in eq (V)  
we get

$$y = 3.9x + (-3.3)$$

$$y = 3.9x - 3.3$$