



Regression and Correlation

Q#2: Consider the following data

x	1	2	3	4	4	5	6	7
y	20	19	18	17	16	15	14	13

For the data given, find:

(a)

1. sum of x values (Σx)
2. sum of y values (Σy)
3. sum of product of values (Σxy)
4. mean of x values (\bar{x})
5. mean of y values (\bar{y})

(b)

1. Regression Constant ' a '
2. Regression Coefficient ' b '
3. Coefficient of correlation ' r '

(c)

1. The estimated value of y if $x = 4.5$
2. The estimated value of x if $y = 16.5$

Solution:

(a)

- Press **MENU** and select **6** and then **2**.
- Enter your x and y values data by entering values and **≡** after each value in their respective columns.
- After entering the data, press **OPTN** and select **3**

You will have the desired values as follows.

$\Sigma x = 4$ $\Sigma x^2 = 32$ $\Sigma y^2 = 156$ $\sigma^2 x = 3.5$ $\sigma x = 1.870828693$ $S^2 x = 4$	$sx = 2$ $n = 8$ $\bar{y} = 16.5$ $\Sigma y = 132$ $\Sigma y^2 = 2220$ $\sigma^2 y = 5.25$	$\sigma y = 2.291287847$ $S^2 y = 6$ $sy = 2.449489743$ $\Sigma xy = 494$ $\Sigma x^3 = 848$ $\Sigma x^2 y = 2302$
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(b)

- Press **MENU** and select **6** and then **2**.
- Enter your x and y values data by entering values and **≡** after each value in their respective columns.
- After entering the data, press **OPTN** and select **4**



You will have the desired values as follows.

$y=a+bx$ $a=21.35714286$ $b=-1.214285714$ $r=-0.991460134$

(c)

- Press **MENU** and select **6** and then **2**.
- Enter your x and y values data by entering values and **=** after each value in their respective columns.
- After entering the data, press **OPTN** **▼** **1**
- Now select **OPTN** **▼** **4** **5** to enter \hat{y} .
- As the value of x must be entered before \hat{y} , so press **◀** and enter the value i.e. 4.5 and press **=**

$4.5\hat{y}$	15.89285714
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For estimated value of x repeat the process but select 4th option instead of 5th.

$4.5\hat{y}$	15.89285714
$16.5\hat{x}$	4