

4.4 Line of best fit

keywords: *pearson moment product correlation coefficient,*
linear regression,
spearman's rank coefficient.

Suppose you want to do a linear regression on the following table:

x	2	5	8	15.5	16.2	14	12	13	2.5	1	0.5	-3
y	9	-6	-7	-28	-15	-20	-15	-20.3	9	4.1	6	12.1


4.4.1 Enter the data

Create a new document and select Add Lists & Spreadsheet, and fill the list A with the x -values, and the list B with the y -values:

The screenshot shows a TI-NSPIRE CX spreadsheet with columns A, B, C, and D. Row 1 contains the values 2, 9, and empty cells for C and D. Row 2 contains 5, -6, and empty cells. Row 3 contains 8, -7, and empty cells. Row 4 contains 15.5, -28, and empty cells. Row 5 contains 16.2, -15, and empty cells. The status bar at the bottom shows 'A1 2'.


	A	B	C	D
1	2.	9.		
2	5.	-6.		
3	8.	-7.		
4	15.5	-28.		
5	16.2	-15.		

4.4.2 Find \bar{x} and \bar{y}


Press  and select Statistics > Stat Calculations > Two-Variable Statistics, and fill the parameters as follows:

The dialog box 'Two-Variable Statistics' has the following fields: X List: a[], Y List: b[], Frequency List: 1, Category List: (empty), Include Categories: (empty), and 1st Result Column: (empty). There are OK and Cancel buttons at the bottom right.

Two-Variable Statistics	
X List:	a[]
Y List:	b[]
Frequency List:	1
Category List:	
Include Categories:	
1st Result Column:	
OK Cancel	

Press . The results are displayed in the table and should be $\bar{x} = 7.23$ and $\bar{y} = -5.93$

4.4.3 Compute the line of best fit

- ① Press  and select Statistics > Stat Calculations > Linear Regression (ax+b).
- ② Choose the parameters as follows:

Linear Regression (a+bx)


X List:	a[]
Y List:	b[]
Save RegEqn to:	f1
Frequency List:	1
Category List:	
Include Categories:	

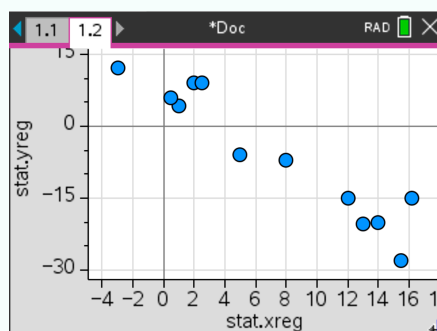
OK Cancel

- ③ Press  and the following result should appear:

	=LinRegB
Title	Linear R...
RegEqn	a+b*x
a	8.12106
b	-1.94409
r ²	0.90294

4.4.4 Graph the line of best fit with the data

- ① Press  and select Add Data & Statistics.
- ② In the y-axis name, select '**stat.yreg**'. In the x-axis name, select '**stat.xreg**'.



③ choose an appropriate window to have all the points fit nicely in the screen. Here, we chose **Xmin=-5**, **Xmax=18**, **Ymin=-30** and **Ymax=15** (since the minimal x -value is -3 , we chose a slightly smaller **Xmin=-5**)

④ Press  and select Analyze > Regression > Show Linear (ax+b). Press .

