

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 two columns, A and B. Column A contains the x-values: 2, 5, 8, 15.5, 16.2. Column B contains the y-values: 9, -6, -7, -28, -15. The cursor is in cell A1, which contains the value 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 for Two-Variable Statistics is shown. The X List is set to a[], the Y List is set to b[], and the Frequency List is set to 1. The Category List, Include Categories, and 1st Result Column fields are empty. The OK and Cancel buttons are 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:	

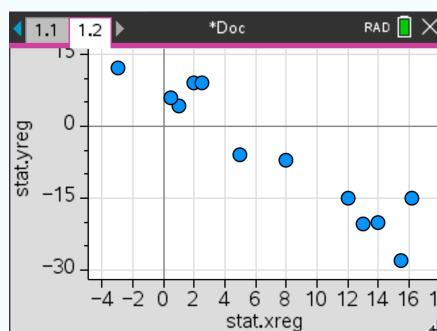
OK Cancel

- 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 .

