4.4 Line of best fit

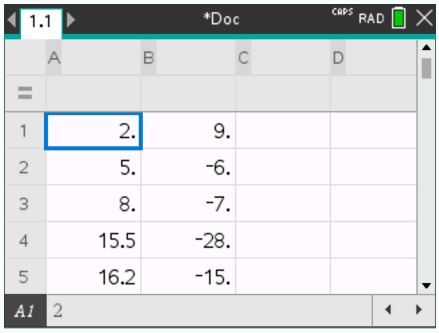
keywords: *pearson moment product correlation coefficient, linear regression, spearman's rank coefficient.*

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

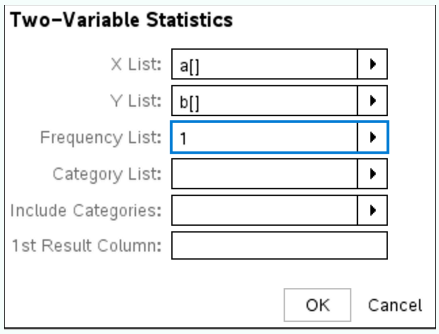
4.4.1 Enter the data

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:



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

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

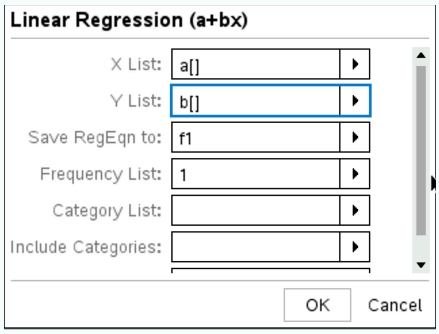


Press enter. The results are displayed in the table and should be $\bar{x} = 7.23$ and $\bar{y} = -5.93$

4.4.3 Compute the line of best fit

① Press menu and select Statistics > Stat Calculations > Linear Regression (ax+b).

② Choose the parameters as follows:



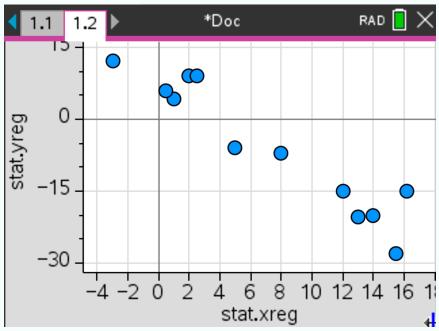
③ Press enter and the following result should appear:

	=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 ctrl 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 menu and select Analyze > Regression > Show Linear (ax+b). Press enter .