

TI-Nspire Activity: *Linear Regression* ($y = mx + b$)

By: Sandi Dabbs

Activity Overview

In this activity students begin by generating a scatter plot from a set of data. In the next part, they must use an existing set of data to generate a scatter plot and then use the data analysis to find the linear regression equation and the r value. Keystrokes are listed in the student worksheet and are relatively simple.

Concepts

- Scatter Plot
- Line of Best Fit
- Regression Equation
- r value

Teacher Preparation

Load the 15LinearRegression.tns file onto all of the student handhelds. Students should be able to use the student worksheet and progress through the activity at their own rate. Teachers need to have discussed scatter plot, least-squares line, and r value.


The Classroom.

Hand out the student worksheet.

Guide the students to open the document 15LinearRegression.tns.

On 

Home 

My Documents 

Open the folder containing the document and then open the document.

1.5 Linear Regression

*Notes Page.

  to insert the new page.

Select Lists and Spreadsheets 

Title each column and enter the data.

$x = 6, 4, 1, 5, 4, 4, 9, 8, 5, 2, 7, 1, 6, 3, 2, 4$

$y = 7, 6, 2, 5, 6, 4, 8, 8, 6, 3, 8, 3, 6, 4, 1, 3$

1.2

Students should create this page.

Insert a List and Spreadsheet page and enter the following data into the page.

$x = 6, 4, 1, 5, 4, 4, 9, 8, 5, 2, 7, 1, 6, 3, 2, 4$

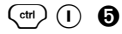
$y = 7, 6, 2, 5, 6, 4, 8, 8, 6, 3, 8, 3, 6, 4, 1, 3$

A	x	B	y	C	D
1	6	7			
2	4	6			
3	1	2			
4	5	5			
5	4	6			
6	4	4			

Review the Data

1.3

Insert a Data and Statistics page and make a scatter plot of the data.



Assign a value to the x-axis.

Move the cursor to the bottom of the screen “click to add variable”

Select “x”

Move the cursor to the left of the screen “click to add variable”

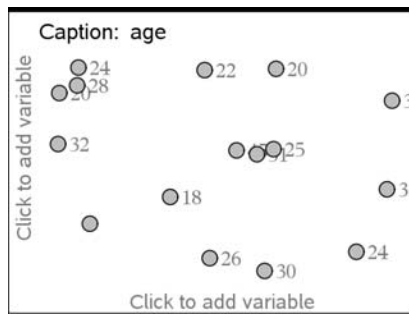
Select “y”

Insert a Data and Statistics page and create a scatter plot of the data.

Use x on the bottom and y on the left.

Do you see any type of correlaton?

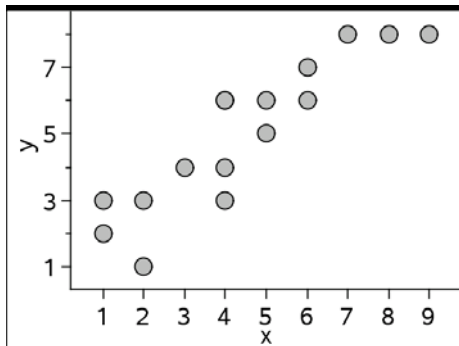
Positive, Negative, None?



Students should generate this page.

1.4

Do you see any type of correlation? _____



1.5

Look at the data on the next page.

1.6

A	age	B	cd
1	18	12	
2	20	15	
3	20	18	
4	22	12	
5	24	10	
6	24	8	
B	18		

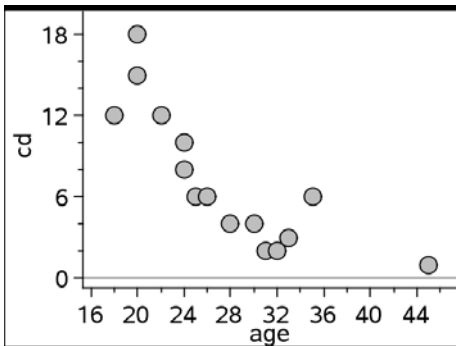
Insert a data page to make a scatter plot.
 Which variable should go on the bottom?
 Which variable should go on the left?

Insert a Data and Statistics page to make a scatter plot.

① ⑤

Which variable should go on the bottom? _____

Which variable should go on the left? _____



Students should generate this page.

1.7

Use Linear Regression to find the least-squares line.

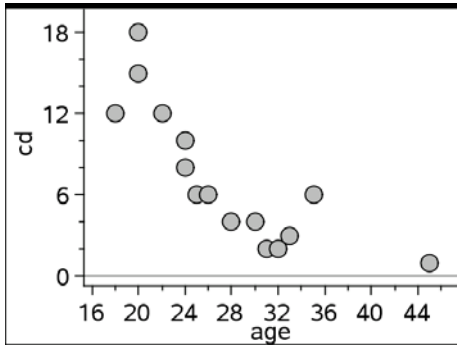
Menu, analyze, regression, Linear ($mx + b$)

④ ⑥ ①

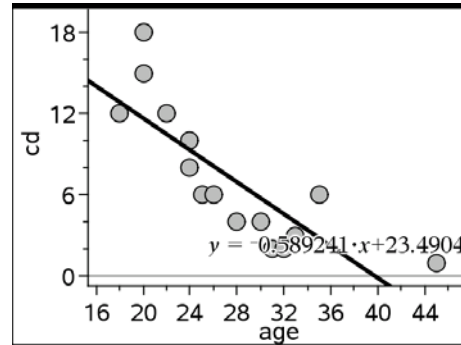
Use Linear Regression to find the Least-Squares line.

What is the equation of the line?

Insert a calculator page to find the r value.



Scatter Plot



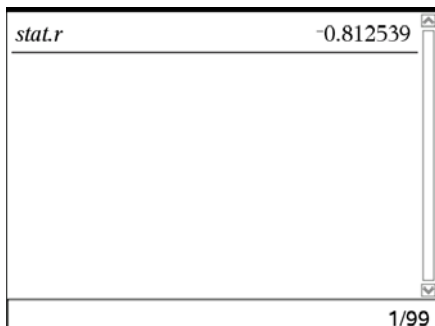
Scatter Plot with equation

What is the equation of the line?

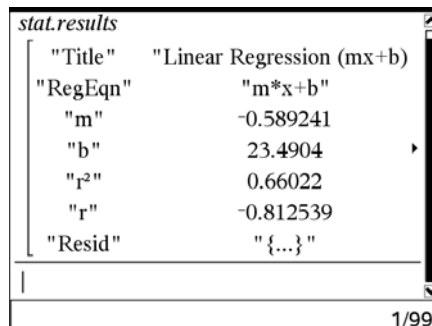
Insert a calculator page and find the r value.



Use either "Stat.r" enter or you may use menu, statistics, stat results, enter.



Information using stat.r



Information using stat results

Students should generate this page.

What does the r value tell you about the correlation?

The Document

These are the pages which appear in the original document. Students will be inserting additional pages.

Insert a List and Spreadsheet page and enter the following data into the page.

x = 6, 4, 1, 5, 4, 4, 9, 8, 5, 2, 7, 1, 6, 3, 2, 4
 y = 7, 6, 2, 5, 6, 4, 8, 8, 6, 3, 8, 3, 6, 4, 1, 3,

Insert a Data and Statistics page and create a scatter plot of the data.

Use x on the bottom and y on the left.

Do you see any type of correlaton?

Positive, Negative, None?

Look at the data on the next page.

A	age	B	cd	C	D
•					
1		18		12	
2		20		15	
3		20		18	
4		22		12	
5		24		10	
6		24		8	
7		25		6	
C2					

Insert a data page to make a scatter plot.

Which variable should go on the bottom?

Which variable should go on the left?

Use Linear Regression to find the Least-Squares line.

What is the equation of the line?

Insert a calculator page to find teh r value.

What does the r value tell you about the correlation?