

Algebra 1  
6.6 (10.2 in bk) Predict with Linear Models

Line of best fit - the line that most closely follows a trend in data.

Linear regression - the process of finding the line of best fit. Usually called this when performed on a graphing calculator.

Linear Regression on the TI-nspire

Create a List of your Data

- Start a new document - choose Lists & Spreadsheet
- put a label into the top of column A and B (ex: x & y or L1 & L2)
- Enter your x-values into the 1st column and y-values into the 2nd column.

Create a Scatter Plot of your Data

- Go Home
- Select Data & Statistics from the picture icons at the bottom of the screen.
- Go to the edges of the screen where it says Click to add variable and click it and select the name for the columns of x's for the bottom one and select the name for the column of y's for the left side of the screen.

Perform a linear regression in the Spreadsheet Window

- Go back to the Spreadsheet
- Hit Menu 4 (Statistics) then 1 (Stat Calculations) then 3 (Linear Regression  $mx + b$ )
- Choose the name of the 1st column from step 2 into the XList and the name of the 2nd column from step 2 into the YList, hit Enter

Put the Regression Line onto your Graph

- Go back to the Graph
- Hit Menu 4 (Analyze) then 6 (Regression) then 1 (Show Linear  $mx + b$ )

Trace the Graph to interpolate

- While still on the Graph
- Hit Menu 4 (Analyze) then A (Graph Trace)
- use your left and right arrow keys to move to the ordered pair needed to answer the question.

**Example 2** Given latitudes and average temperatures in degrees Celsius for several cities, use your calculator to find an equation for the line of best fit. Then interpret the correlation coefficient and use the line of best fit to estimate the average temperature of another city using the given latitude.

A

City	Latitude	Average Temperature (°C)
Barrow, Alaska	71.2°N	-12.7
Yakutsk, Russia	62.1°N	-10.1
London, England	51.3°N	10.4
Chicago, Illinois	41.9°N	10.3
San Francisco, California	37.5°N	13.8
Yuma, Arizona	32.7°N	22.8
Tindouf, Algeria	27.7°N	22.8
Dakar, Senegal	14.0°N	24.5
Mangalore, India	12.5°N	27.1

Estimate the average temperature in Vancouver, Canada at 49.1°N.

4.6°C

B

City	Latitude	Average Temperature (°F)
Fairbanks, Alaska	64.5°N	30
Moscow, Russia	55.5°N	39
Ghent, Belgium	51.0°N	46
Kiev, Ukraine	50.3°N	49
Prague, Czech Republic	50.0°N	50
Winnipeg, Manitoba	49.5°N	52
Luxembourg	49.4°N	53
Vienna, Austria	48.1°N	56
Bern, Switzerland	46.6°N	59

Estimate the average temperature in degrees Fahrenheit in Bath, England, at 51.4°N.

48° - 49° F

# Homework:

pg 371; 15-18