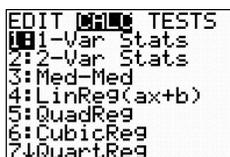


# Finding Line of Best Fit Using “Q-Points”

Cindy Johnson

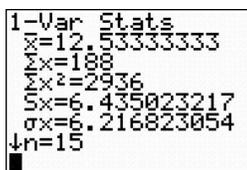
- 1) Have students collect data for a scatter plot and have them enter the data into [L1] and [L2]. You could also have each student contribute one data point using Navigator, and then send the entire list back to the kids.
- 2) Have students find the five number summary for [L1]. To do this, push the **[STAT]** key and then arrow right one place to “CALC.”



```
EDIT  [STAT]  TESTS
1:1-Var Stats
2:2-Var Stats
3:Med-Med
4:LinReg(ax+b)
5:QuadReg
6:CubicReg
7:QuartReg
```

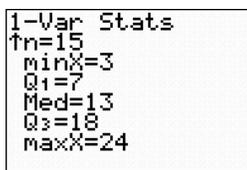
Figure 1

You want to choose “1-Var Stats” from the menu and push **[ENTER]**. This will show “1-Var Stats” on your home screen. Enter [L1] after this command to get the statistics for your first list. Then push **[ENTER]**. You will need to arrow down to the second half of the screen to find your five number summary.



```
1-Var Stats
x=12.53333333
Σx=188
Σx²=2936
Sx=6.435023217
σx=6.216823054
n=15
```

Write down the values for  $Q_1$  and  $Q_3$ .



```
1-Var Stats
n=15
minX=3
Q1=7
Med=13
Q3=18
maxX=24
```

Figure 2

- 3) Repeat this process in Step 2 for [L2] and write down  $Q_1$  and  $Q_3$  for List 2.
- 4) You are going to use a combination of your quartile points (Q-Points) to help calculate the line of best fit.

If the data has a positive correlation, your Q-Points are going to be:  
 $([L1]Q_1, [L2]Q_1)$  and  $([L1]Q_3, [L2]Q_3)$

If the data has a negative correlation, your Q-Points are going to be:  
 $([L1]Q_1, [L2]Q_3)$  and  $([L1]Q_3, [L2]Q_1)$

These points give students their  $(x_1, y_1)$  and  $(x_2, y_2)$  for calculating the slope and finding the equation of the line.

5) Have students put their equation into the  $\boxed{Y=}$  menu and graph the line of best fit along with the scatter plot.

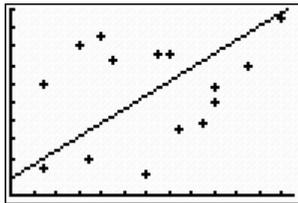


Figure 3

6) Once students have graphed their line of best fit, use the Navigator to do a screen capture and discuss the different lines, scales, etc. that are shown on the student's calculators.