

Three Methods of Finding Line of Best Fit

Manually using the median-median (median fit) line

The line of 'best' fit can be found using a couple of different procedures. The first procedure produces a reasonable line called the median-median line. Before attempting this method it is wise to look closely at the scatterplot to be sure the relationship between the variables is linear. The steps (NCTM, 1988) for finding the median-median line are as follows:

1. Separate the data into three groups of equal size according to the values of the horizontal coordinate.
2. Find the summary point for each group based on the median x-value and the median y-value.
3. Find the equation of the line (Line L) through the summary points of the outer groups.
4. Slide L one-third of the way to the middle summary point.
 - a. Find the y-coordinate of the point on L with the same x-coordinate as the middle summary point.
 - b. Find the vertical distance between the middle summary point and the line by subtracting y-values.
 - c. Find the coordinates of the point P one-third of the way from the line L to the middle summary point.
5. Find the equation of the line through the point P that is parallel to line L .

Using Appleworks spreadsheet

Open a blank spreadsheet worksheet in Appleworks. Enter your x-values in one column and your y-values in the next adjacent column.

Use your mouse to highlight all the values in both columns.

Use your mouse to pull down the Script menu  and scroll down to Linear Regression and click on it.

A pop-up window will appear with the slope, intercept, and correlation values.

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Using a graphing calculator

A line of best fit can be found using linear regression on a graphing calculator. The steps used to do this on the CASIO 9850 + are as follows:

- Main Menu: Scroll over the Stat Icon and press **(EHE)** or Press **(Z)**.
Use the cursor keys to scroll to see all six lists.
- Clear Data: Place the cursor on the list you wish to enter data values. If a data set is present in L₁ (List 1), move the cursor up to highlight L₁, press **(F6)**, then **(F4)** (DEL-A, delete all), then **(F1)** (YES).
- Enter Data: Type in the *x*-values and press **(EHE)** after each. Type in the matching *y*-values and press **(EHE)** after each.
- Graph: Press **(F1)** (GRPH), to go to the statistics graph options. Press **(F6)** (SET), to define graph types and data lists to be used.
Use the cursor keys to scroll down to Graph Type. Press **(F1)** (Scatter) to select. Cursor down to Xlist and press **(F1)**, move to YList and press **(F2)**. Frequency should be 1. Make any necessary changes and press **(EHT)**.
Press **(F4)** (SEL) to turn on draw mode. Press **(F6)** (DRAW) to create and view the scatterplot.
- Best-Fit Line: press **(F2)** Med (Median fit) then **(F6)** (DRAW) to see line, equation is $y=ax+b$ and you will see *a* and *b* on the screen.
press **(F1)** X, (least square method) then **(F6)** (DRAW) to see line, equation is $y=ax+b$ and you will see *a* and *b* on the screen.
The display gives the value for: "*a*" - the slope of the line
"*b*" - the *y*-intercept of the line
"*r*" - the correlation coefficient