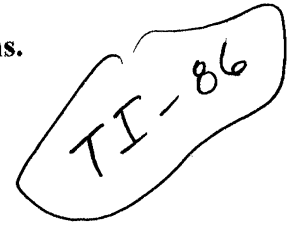


TI-86 Keystroke Guide for Statistics

To enter lists of data and do statistical calculations.



Names of keys are shown in brackets, e.g. [ENTER].

Names of menu choices are shown in capital letters, e.g. EDIT.

Names of functions are shown in double quotes, e.g. "OneVa".

Names of variables are shown in single quotes, e.g. 'A1'.

To create a new list of data:

- * To enter the statistics mode: hit the [2nd] key, then the [STAT] key (second use of the [+] key).
- * Choose EDIT on the menu - hit the [F2] key.
- * Move cursor to top of screen - use the [UP ARROW] ; then move to the right - use the [RIGHT ARROW] - until you come to a blank column. (Don't enter data into the xStat, yStat, or fStat columns, if you want to save the lists.)
- * Choose a name like 'A' for the list and type it in - you will already be in alpha mode at that point. Hit the [ENTER] key. (If you get an error message, choose another name, like 'A1' or any name.)
- * Enter the data by scrolling down with the [DOWN ARROW] or the [ENTER] key.

When done entering data, simply hit the [EXIT] key.

To find the mean and standard deviation, etc.:

- * Re-enter the statistics mode, as above, in order to get the main stat menu.
- * Choose CALC on the menu - [F1] key.
- * Choose the "OneVa" function on the secondary menu - [F1] key again.
- * Then type the name of the list you created. You will have to hit the [ALPHA] key first.
- * Hit [ENTER].

The screen will now show the statistical results:

) (\bar{x}) is the sample mean.

Σx is the sum of the data.

Σx^2 is the sum of the squares of the data.

 Sx is the sample standard deviation.

σx is the population standard deviation.

 You will also see the median and the quartiles, etc., as you scroll down.

To find the line or curve that best fits a scatterplot of data involving matched pairs of data:

- * Enter two lists of paired data as above, named e.g. 'A' and 'B' - where 'A' is the variable that you would plot on the horizontal axis and 'B' is the variable you would plot on the vertical axis.
- * Re-enter the statistics mode, as above, in order to get the main stat menu.
- * Choose CALC on the menu - [F1] key.
- * To get a straight line of best fit, choose the "LinR" function on the secondary menu - [F3] key.
- * Or, if you want a different kind of curve to model the data, choose "LnR" (logarithmic), "ExpR" (exponential), "PwrR" for any power function x^n , "SinR" (sine wave), "LgstR" (logistic curve), "P2Reg" (quadratic function), "P3Reg" (cubic function), etc.
- * Then type the names of the lists you created, separated by a comma. So, your screen should now read "LinR A,B" with the horizontal variable first.
- * Hit [ENTER].

The screen will now show the statistical results, for linear regression:

$y=a+bx$ (where the slope is 'b' and the intercept is 'a').

a=_____

b=_____

corr=_____ This is the correlation between A and B, which shows how good the straight line fit is to the data. Values close to ± 1 show a good correlation - and the model is useful.

To graph the scatterplot of data:

- * Enter the statistics mode, in order to get the main stat menu.
 - * Choose PLOT on the menu - [F3] key.
 - * Choose PLOT1 on the new menu - [F1] key. (Or choose PLOT2 or PLOT3.)
 - * Turn that plot ON - hit [ENTER].
 - * Scroll down once, with the [DOWN ARROW].
 - * Hit [ENTER] in order to choose the scatterplot format.
 - * Type the name you made up for the horizontal variable, e.g. 'A'. Hit [ENTER].
 - * Type the name you made up for the vertical variable, e.g. 'B'. Hit [ENTER].
 - * Choose the mark that shows the data points, then hit [ENTER].
 - * Hit [EXIT] twice, to return to the general screen.
- * Enter the graphing mode - hit [GRAPH]. * Choose "y(x)=" - hit [F1].
 - * The plot that you activated should now show as being highlighted. De-select any other functions that show in your "y(x)=" list.
 - * Change the x and y limits in the WINDOW of your screen in order to see all of the points.
 - * Display the scatterplot by choosing GRAPH - hit [2nd] [F5].

To graph the line of best fit:

- * Enter the graphing mode - hit [GRAPH].
- * Choose "y(x)=" - hit [F1].
- * Type in the equation that the calculator gave earlier. In the case of linear regression, you want to have: $y1=a+bx$. Finally, graph both the scatterplot and the regression line (or curve) together.

Result Variables	1-Var Stats	2-Var Stats	Other	Result Variables	1-Var Stats	2-Var Stats	Other
mean of x values	\bar{x}	\bar{x}		correlation coeff			corr
pop std dev of x	σ_x	σ_x		y-intercept of reg eq			a
sample std dev of x	Sx	Sx		slope of reg eq			b
mean of y values		\bar{y}		regression/fit coeff			a, b
pop std dev of y		σ_y		number of data pts	n	n	
sample std dev of y		Sy		min of x values	minX	minX	
sum of x values	Σx	Σx		max of x values	maxX	maxX	
sum of x ² values	Σx^2	Σx^2		min of y values	minY	minY	
sum of y values		Σy		max of y values		maxY	
sum of y ² values		Σy^2		median	Med		
sum of x * y		Σxy		1st quartile			Qrt11
regression equation			RegEq	3rd quartile			Qrt13
polynomial, LgstR , and SinR coeff's			a (y-int) b (slope)	polynomial LgstR , and SinR reg coeff's			PRegC

These words are abbreviated in the table:

pop = population

std dev = standard deviation

coeff = coefficient

int = intercept

reg eq = regression equation

pts = points

min = minimum

max = maximum

The first quartile (**Qrt11**) is the median of the points between **minX** and **Med** (median). The third quartile (**Qrt13**) is the median of the points between **Med** and **maxX**.

When you calculate a logistic regression, **1** is stored to **tolMet** (**tolMe**) if the TI-86 internal tolerance was met before the calculator arrived at a result; if not met, **0** is stored to **tolMet**.

PRegC is the only statistical result variable calculated for a polynomial regression.

The result for a polynomial regression, sinusoidal regression, or logistic regression is stored in **PRegC** (polynomial/regression coefficients). **PRegC** is a list containing the coefficients for an equation. For example, for **P3Reg**, the result **PRegC**={3 5 -2 7} would represent $y=3x^3+5x^2-2x+7$.

Results of a Statistical Analysis

When you perform a statistical analysis, the calculated results are stored in the result variables and the data from the lists used in the analysis are stored to **xStat**, **yStat**, and **fStat**. If you edit a list or change the type of analysis, all statistical variables are cleared.

One- and two-variable statistical functions share the result variables.

The STAT VARS (Statistical Variables) Menu

CALC	EDIT	PLOT	DRAW	VARS
\bar{x}	σx	Sx	\bar{y}	σy

[2nd] [STAT] [F5]

▶	Sy	Σx	Σx^2	Σy	Σy^2
▶	Σxy	RegEq	corr	a	b
▶	n	minX	maxX	minY	maxY
▶	Med	PRegC	Qrt11	Qrt13	tolMe

The statistical variables are calculated and stored as shown in the table on the next page.

You can use ALPHA keys, alpha keys, and the CHAR GREEK menu to enter some result variables.

To paste a result variable to the cursor location, either select the variable from the STAT VARS menu or select the variable from the VARS STAT selection screen.

- ◆ To use a result variable in an expression, paste it to the appropriate cursor location.
- ◆ To display the value of a result variable, paste it to the home screen and press [ENTER].
- ◆ To store results to another variable after a calculation, paste the result variable to the home screen, press [STO▶], enter a new variable, and then press [ENTER].