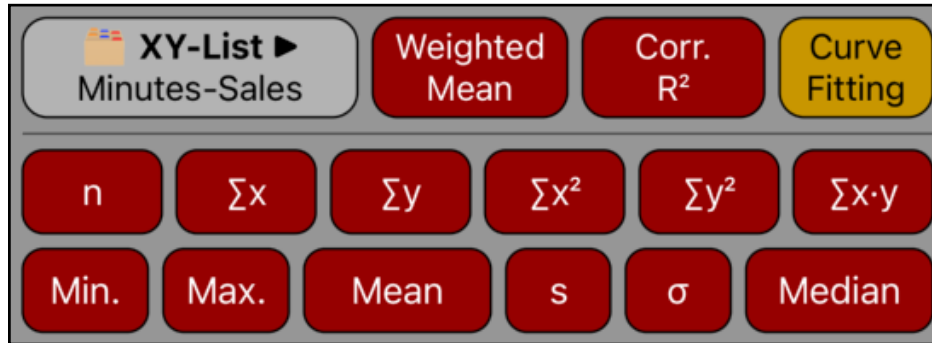


(X,Y) List Statistics Worksheet



This worksheet perform basic statistical calculations over a previously created list, which is in the form of : “X” value and “Y” value (a “(X,Y) List”).

[📁 List ▶] [📄 New] [📝 Edit] [> Load] [🗑 Delete]	Statistics action menu. Shows the “(X,Y) List Editor” to create a new list. Shows the Editor to edit the current selected list. Shows a menu to load an existing “(X,Y) List”. Deletes the current “(X,Y) List”.
[Curve Fitting]	Opens the “(X,Y) List Curve Fitting” worksheet.
[n]	Shows the number of samples of the current list.
[Σx]	Calculates the sum of the “X” values.
[Σy]	Calculates the sum of the “Y” values.
[Σx²]	Calculates the sum of the squares of the “X” values.
[Σy²]	Calculates the sum of the squares of the “Y” values.
[Σx·y]	Calculates the sum of the product of the “X” and “Y” values.
[Weighted Mean]	Calculates the weighted mean of “X” values with “Y” weights.
[Corr. R²]	Calculates the linear regression correlation coefficient.
[Min.]	Calculates the minimum of “X” or “Y” values.
[Max.]	Calculates the maximum of “X” or “Y” values.
[Mean]	Calculates the average of “X” or “Y” values.
[s]	Calculates the standard deviation of “X” or “Y” values.
[σ]	Calculates the Population standard deviation of “X” or “Y” values.
[Median]	Calculates the median of “X” or “Y” values.

Example:



For the last six weeks the following data was collected: minutes of advertising purchased in local radio and the corresponding total sales:



Week	Minutes	Sales
1	2	1,400.00
2	1	920.00
3	3	1,100.00
4	5	2,265.00
5	6	2,890.00
6	4	2,200.00

Create the list and calculate all the statistical values including in this worksheet.

Solution:

The first step is to create the data list:

Keystrokes	Comment
[ List ►]  New	Show the “(X,Y) List Editor” to create a new List.
[Add] Type 2 in “X” value [Enter] 1400 in “Y” value [Enter]	Enters the X_1 , Y_1 values.
[Add] Type 1 in “X” value [Enter] 920 in “Y” value [Enter]	Enters the X_2 , Y_2 values.
[Add] Type 3 in “X” value [Enter] 1100 in “Y” value [Enter]	Enters the X_3 , Y_3 values.
[Add] Type 5 in “X” value [Enter] 2265 in “Y” value [Enter]	Enters the X_4 , Y_4 values.
[Add] Type 6 in “X” value [Enter] 2890 in “Y” value [Enter]	Enters the X_5 , Y_5 values.
[Add] Type 4 in “X” value [Enter] 2200 in “Y” value [Enter]	Enters the X_6 , Y_6 value.

Keystrokes	Comment
[ List ►]  Name...	Shows a Name entry form to name the list.
Type “Minutes-Sales” and [Done]	Name the list “Minutes-Sales”
[Save]	Save the list and close the editor view.

Now that the samples list was created you can proceed to calculate the statistical values:

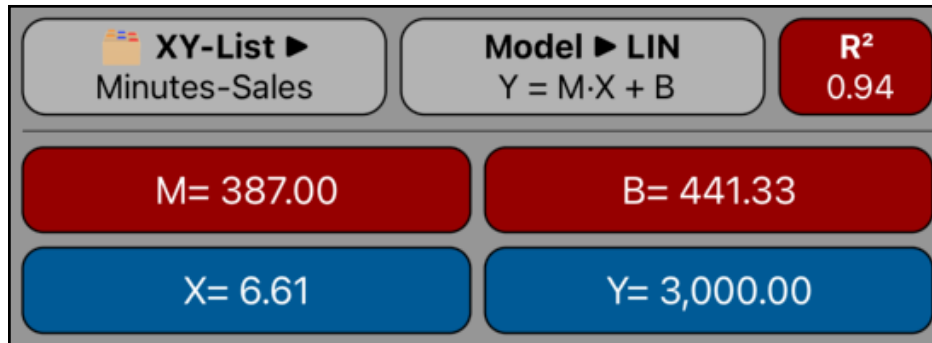
Keystrokes	Comment
[Mean] X values [Mean] Y values	Mean of “X” values: X-mean = 3.50 Mean of “Y” values: Y-mean = 1,795.83
[s] X values [s] Y values	Standard deviation of “X” values. Sx = 1.87 Standard deviation of “Y” values. Sy = 773.13
[σ] X values [σ] Y values	Population standard deviation of “X” values. $\sigma_x = 1.71$ Population standard deviation of “Y” values. $\sigma_y = 705.76$
[Median] X values [Median] Y values	Median of the “X” values. X-median = 3.50 Median of the “Y” values. Y-median = 1,800.00
[n]	Number of samples. n = 6.00
[Σx] [Σy]	Sum of “X” values. $\Sigma x = 21.00$ Sum of “Y” values. $\Sigma y = 10,775.00$
[Σx^2] [Σy^2]	Sum of squares of X values. $\Sigma x^2 = 91.00$ Sum of squares of Y values. $\Sigma y^2 = 22,338,725.00$
[$\Sigma x \cdot y$]	Sum of the product of “X” and “Y” values. $\Sigma x \cdot y = 44,485.00$
[W.m]	Weighted Mean. W.m = 4.13
[R^2]	Correlation coefficient. $R^2 = 0.94$

With the above list:

1. What regression model best fits the data ?
2. With best model, what is the estimated Sales for 8 minutes advertising?
3. How many Minutes are estimated to obtain \$3,000 sales?

Solution:

Touch the [**Curve Fitting**] button to show the “(X,Y) List Curve Fitting” worksheet.



The menu opens with the default “Linear” regression model calculated with the current X,Y-List (“Minutes-Sales”)

Now we can answer the questions:

Keystrokes	Comment
[Model ▶] Best Fit	1) Compares the fitting correlation coefficient (R^2) for all the available models and pick the best one (closer to 1). Result: “ Linear ” model with the equation $Y = M \cdot X + B$
8 [X][Y]	2) Enter the 8 minutes advertising and calculates the estimated sales. Result -> Y = 3,537.33
3000 [Y][X]	3) Enters the \$3,000 required sales and calculates the estimated minutes of advertising. Result-> X = 6.61