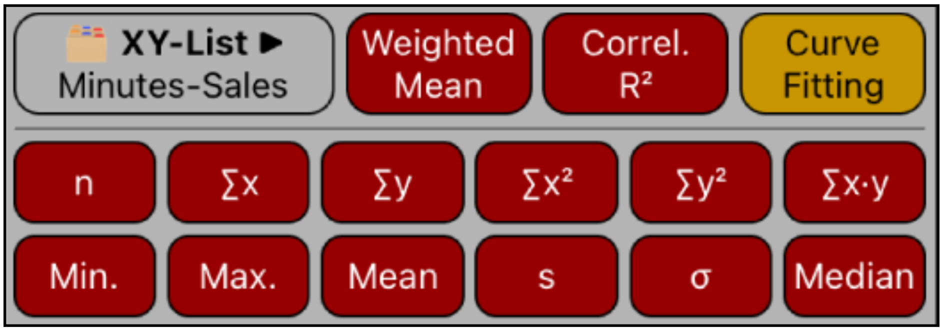
(X,Y) List Statistics Worksheet



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 ▶]	Statistics action menu.
New	Shows the “**(X,Y) List Editor**” to create a new list.
Edit	Shows the Editor to edit the current selected list.
> Load	Shows a menu to load an existing “(X,Y) List”.
Delete	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.
[∑x]	Calculates the sum of the “X” values.
[∑y]	Calculates the sum of the “Y” values.
[$\sum x^2$]	Calculates the sum of the squares of the “X” values.
[$\sum y^2$]	Calculates the sum of the squares of the “Y” values.
[∑x·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. R^2]	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.

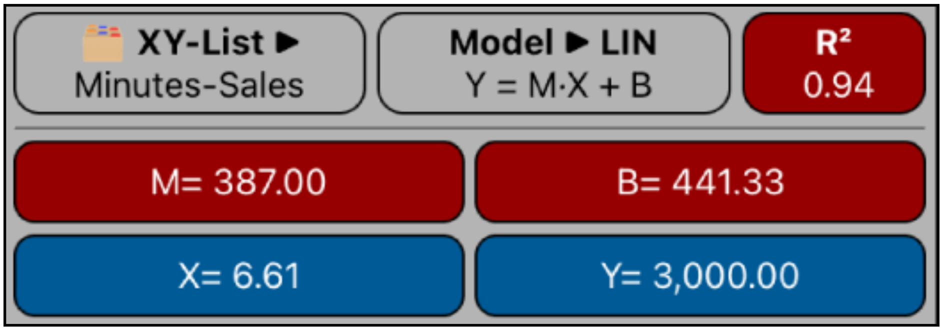
Now that the samples list was created you can proceed to calculate the statistical values:

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. **σx = 1.71** Population standard deviation of "Y" values. **σy = 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**
[∑x] **[∑y]**	Sum of "X" values. **∑x = 21.00** Sum of "Y" values. **∑y = 10,775.00**
[$\sum x^2$] **[$\sum y^2$]**	Sum of squares of X values. **$\sum x^2$ = 91.00** Sum of squares of Y values. **$\sum y^2$ = 22,338,725.00**
[∑x·y]	Sum of the product of "X" and "Y" values. **∑x·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·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**