



Two (X,N) Lists Statistics Menu



This menu allows to perform basic statistic calculations over two previously created lists, which must be in the form of : sample value and its frequency (a “**(Value, Frequency) List Editor**”).

[ X-List ►]	Menu to create, edit or load a “(X, N) List” assigned to the “X” variable.
[ Y-List ►]	Menu to create, edit or load a “(X, N) List” assigned to the “Y” variable.
[Curve Fitting]	Opens the “Curve Fitting” menu.
[Corr.]	Calculates the correlation coefficient of “X” and “Y” values.
[G.St.Dev.]	Calculates the standard deviation of “X” values with “Y” frequencies.
[W. Mean]	Calculates the weighted mean of the “X” values with “Y” weights.
[N]	Number of samples in the “X” and “Y” lists (minimum value of both).
[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 products of “X” and “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	1,400.0
2	1	920.0
3	3	1,100.0
4	5	2,265.0
5	6	2,890.0
6	4	2,200.0

Create the required data list and calculate all the statistical values included in the menu.





Solution :

With the “(Value, Frequency) List Editor”, create the “Minutes” and “Sales” lists.



Creation of the “Minutes” list

Keys	Comment
[ List ►]  New	Creates a new empty list.
[Add] 2 [Enter] [Add] 1 [Enter] [Add] 3 [Enter] [Add] 5 [Enter] [Add] 6 [Enter] [Add] 4 [Enter]	Enters the Minutes #1 in the list. Enters the Minutes #2 in the list. Enters the Minutes #3 in the list. Enters the Minutes #4 in the list. Enters the Minutes #5 in the list. Enters the Minutes #6 in the list.
[ List ►]  Name...	Shows a Name entry form to name the list
Type “Minutes” [Done]	Name the list “Minutes”
[Save]	Save the “Minutes” list

Creation of the “Sales” list

[ List ►]  New	Creates a new empty list.
[Add] 1400 [Enter] [Add] 920 [Enter] [Add] 1100 [Enter] [Add] 2265 [Enter] [Add] 2890 [Enter] [Add] 2200 [Enter]	Enters the Minutes #1 in the list. Enters the Minutes #2 in the list. Enters the Minutes #3 in the list. Enters the Minutes #4 in the list. Enters the Minutes #5 in the list. Enters the Minutes #6 in the list.
[ List ►]  Name...	Shows a Name entry form to name the list
Type “Sales” [Done]	Name the list “Sales”
[Save]	Save the “Sales” list

Now, perform the required statistics calculations:

[ X-List ►]	Select the “Minutes” list for “X” variable.
[ Y-List ►]	Select the “Sales” list for “Y” variable.
[Corr.]	Calculates correlation. $R^2 = 0.94$
[G.St.Dev.]	Calculates the standard deviation. G.SD = 1.63
[W. Mean]	Calculates the weighted mean. W.Mean = 4.13
[N]	Calculates the Number of samples. N = 6
[Σx]	Calculates the sum of the ‘Minutes’. $\Sigma x = 21.00$
[Σy]	Calculates the sum of the ‘Sales’. $\Sigma y = 10,775.00$
[Σx^2]	Calculates ‘Minutes’ sum of squares. $\Sigma x^2 = 91.00$
[Σy^2]	Calculates ‘Sales’ sum of squares. $\Sigma y^2 = 22,338,725.00$
[$\Sigma x \cdot y$]	Calculates ‘Minutes’ times ‘Sales’ sum. $\Sigma x \cdot y = 44,485.00$