



# Two (X,N) Lists Statistics Worksheet



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

[  <b>X-List ▶</b> ]	Select a previously created (X,N) List for the ‘X’ variable.
[  <b>Y-List ▶</b> ]	Select a previously created (X,N) List for the ‘Y’ variable.
[ <b>Curve Fitting</b> ]	Opens the “ <b>Two (X,N) Lists Curve Fitting</b> ” worksheet.
[ <b>N</b> ]	Number of samples in the “X” and “Y” lists (minimum value of both).
[ <b>Σx</b> ]	Calculates the sum of the “X” values.
[ <b>Σy</b> ]	Calculates the sum of the “Y” values.
[ <b>Σx<sup>2</sup></b> ]	Calculates the sum of the squares of the “X” values.
[ <b>Σy<sup>2</sup></b> ]	Calculates the sum of the squares of the “Y” values.
[ <b>Σx·y</b> ]	Calculates the sum of the products of “X” and “Y” values.
[ <b>Corr.</b> ]	Calculates the correlation coefficient of “X” and “Y” values.
[ <b>G.St.Dev.</b> ]	Calculates the standard deviation of “X” values with “Y” frequencies.
[ <b>W. Mean</b> ]	Calculates the weighted mean of the “X” values with “Y” weights.

### 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 “(X,N) 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. <b><math>R^2 = 0.94</math></b>
[ G.St.Dev. ]	Calculates the standard deviation. <b>G.SD = 1.63</b>
[ W. Mean ]	Calculates the weighted mean. <b>W.Mean = 4.13</b>
[ N ]	Calculates the Number of samples. <b>N = 6</b>
[ $\Sigma x$ ]	Calculates the sum of the ‘Minutes’. <b><math>\Sigma x = 21.00</math></b>
[ $\Sigma y$ ]	Calculates the sum of the ‘Sales’. <b><math>\Sigma y = 10,775.00</math></b>
[ $\Sigma x^2$ ]	Calculates ‘Minutes’ sum of squares. <b><math>\Sigma x^2 = 91.00</math></b>
[ $\Sigma y^2$ ]	Calculates ‘Sales’ sum of squares. <b><math>\Sigma y^2 = 22,338,725.00</math></b>
[ $\Sigma x \cdot y$ ]	Calculates ‘Minutes’ times ‘Sales’ sum. <b><math>\Sigma x \cdot y = 44,485.00</math></b>