Stats Features

Probability Features:

Go into the Probability menu by pressing [2ND] [5] [7].

! is Factorial. ! Returns, $1 \cdot 2 \cdot 3 \cdots (n-1) \cdot n$, e.g. $5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$.

You try 18!.

nPr(is the number of permutations of n items taken r at a time.

You try **nPr(6,2)**.

nCr(is the number of combinations of n items taken r at a time.

You try **nCr(6,2)**.

From statistics the formula for the standard deviation is

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

Store the following values into lists.

list1	1	2	3	4	5	6	7	8
list2	63	76	78	79	84	89	91	95

Enter the following. Use the store key [STO ▷]

$\{1, 2, 3, 4, 5, 6, 7, 8\} \rightarrow$ list1

$\{63, 76, 78, 79, 84, 89, 91, 95\} \rightarrow$ list2

Go into the List menu by pressing [2ND] [5] [3].

The features in the **List** menu include:

sum which sums all the elements of a list.

You try: **sum(list1)**

product which multiplies all the elements of a list.

You try: **product(list2)**

SortA which sorts the list in ascending order. You try: **SortA(list2)**

SortD which sorts the list in descending order. You try: **SortD(list2)**

dim(which returns the number of elements in a list.

You MUST type: **dim(list2)**

We can now define the standard deviation of list2 as

$$\sqrt{}(\textbf{sum}((\ \textbf{list2}\ - \textbf{sum}(\ \textbf{list2}\ )/\textbf{dim}(\ \textbf{list2}\ )) \wedge 2)/(\textbf{dim}(\ \textbf{list2}\ ) - 1))$$

Use the Stats/List editor to get the two variable results for list1 and list2 and compare your answers. Use these two variable results to manually calculate linear regression. The formula for the slope in linear regression is given by

$$m \ = \ \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2}$$

Also, perform linear regression on **list1**, **list2** to check your result.