CASIO®

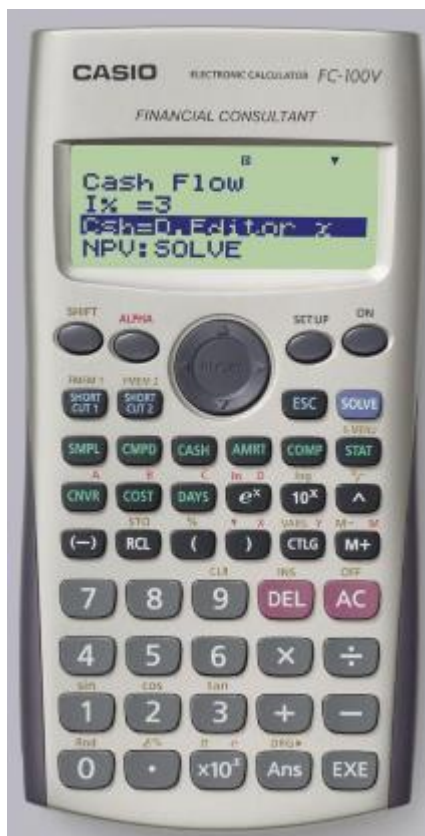# *FINANCIAL CONSULTANT*
FC-100/200V
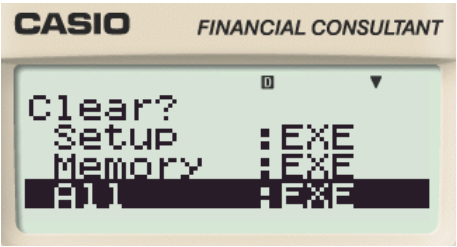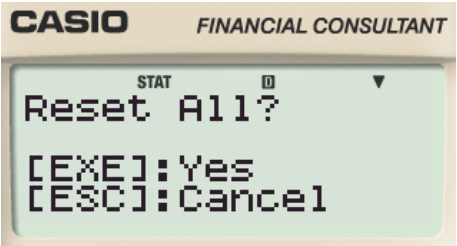
Statistical Calculations

NB: Clearing the Calculator Memory
It is very important that you remember to clear your calculator's memory every time, before you start entering in new data, to ensure you don't get incorrect results.

1. Press ![SHIFT] ![CLR 9] (to use the CLR function) 2. Scroll down, using the down arrow ![down] on the REPLAY key, to **All : EXE**	**CASIO** *FINANCIAL CONSULTANT* Clear? 　Setup　　:EXE 　Memory　:EXE 　All　　　:EXE
3. ![EXE] & ![EXE] to confirm.	**CASIO** *FINANCIAL CONSULTANT* STAT Reset All? [EXE]:Yes [ESC]:Cancel
4. ![AC]	**CASIO** *FINANCIAL CONSULTANT* Reset All Press [AC] key

*NOTE***:** It is also possible to clear only the SET UP or Variable (A, B, C, D, X, Y) Memories by selecting the appropriate option: **Setup : EXE** or **Memory : EXE** respectively.

CALCULATION OF DESCRIPTIVE STATISTICS

Ungrouped Data – Example 1

The data set below was generated from a sample of 20 call operators in a particular South African company. The number of calls each operator received was recorded over a randomly selected 15 minute period & are shown below:
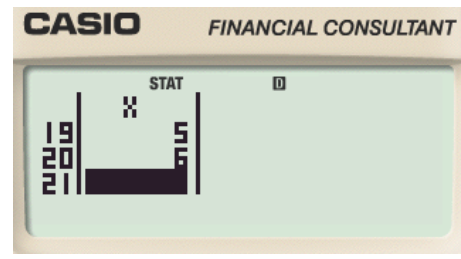
	7	8	2	5	7	6	8	7	3	5
	6	7	7	10	4	8	9	6	5	6

Setting the calculator MODE to enter Data:
In order to be able to enter in values of a <u>single random variable</u>, we need to get the calculator into the correct statistical mode:

1. ![STAT] 2. Since you want to enter values of a single variable 　Press ![EXE] to select **1-VAR**.	**CASIO** *FINANCIAL CONSULTANT* Type 　1-VAR:EXE 　A+BX :EXE 　_+CX²:EXE

Entering Data: Example 1	CASIO FINANCIAL CONSULTANT

STAT

7 EXE 8 EXE 2 EXE 5 EXE 7 EXE 6 EXE 8 EXE 7 EXE 3 EXE 5 EXE
6 EXE 7 EXE 7 EXE 1 0 EXE 4 EXE 8 EXE 9 EXE 6 EXE 5 EXE 6 EXE

NOTE: The order in which you enter the data values is not important.
However, always make sure that you have entered in all the data values.
In Example 1, you know that there are 20 data values.
It is easy to check whether you entered in all the values as the last data item should be alongside the number 20.

In order to check whether you have entered the data correctly,

Scroll up ▲ the list of data entries.
Should you need to make a change:
I.   Select the data item you would like to edit
II.   Enter the item's new value

EXE
III.   Confirm the change using

Frequency Table Data – Example 2

A survey was taken on Maple Avenue. In each of 20 randomly selected homes, people were asked how many cars were registered to their households. The results were recorded & tabulated in the frequency table below:

Number of cars (x)	Frequency
0	4
1	6
2	5
3	3
4	2

Entering Frequency Table Data: Example 2

1. Clear the calculator memory (**page 1**)	SHIFT CLR 9
2. In order to enter in frequency values, we need to enter into the SET UP menu.	SET UP

|	
3. Scroll down [▼] to **STAT**	**CASIO** FINANCIAL CONSULTANT **Payment:End** Date Mode:365 dn:CI Date Input:MDY
4. If the calculator is set to **Off**: Press [EXE] & [EXE] to select **1 : On**. This will now enable you to enter data values and their frequencies.	**CASIO** FINANCIAL CONSULTANT Fix:Off Sci:Off Norm:1 **STAT:On**
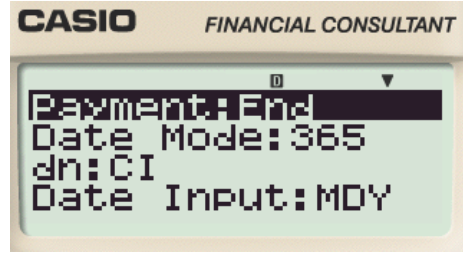
5. [STAT] [EXE] to enter values of a single variable.	**CASIO** FINANCIAL CONSULTANT
	
	    STAT
	   X FREQ
	1
	2
	3
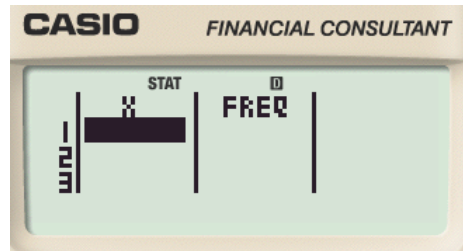
6. First enter in the actual data values:

[0] [EXE] [1] [EXE] [2] [EXE] [3] [EXE] [4] [EXE]

7. Then scroll down [▼] & across [▶] to the FREQ column to get to the number 1 entry and enter the frequencies:

[▼] [▶] [4] [EXE] [6] [EXE] [5] [EXE] [3] [EXE] [2] [EXE]

NOTE: In order to enter in **GROUPED DATA**, follow steps 1 to 5.
Enter the **midpoints (20, 60, 100, 140, 180)** of each interval in the X column (step 6)
& then enter the frequencies for each group (step 7)

Lawn size (m^2), x	**Frequency**
$0 \leq x < 40$	256
$40 \leq x < 80$	212
$80 \leq x < 120$	149
$120 \leq x < 160$	80
$160 \leq x < 200$	58
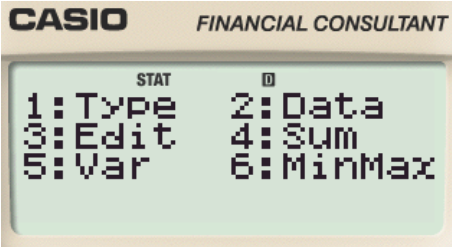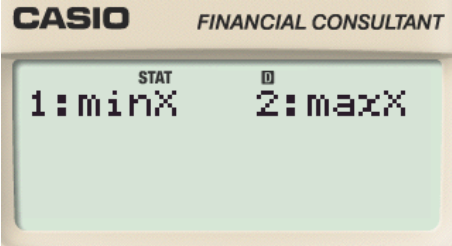
Getting Descriptive Statistics from the Calculator (for all types of data entered):

1. When you have finished entering your Data
[AC]
 	
STAT appears at the top of the screen to indicate that the calculator is still in statistics MODE.
	CASIO FINANCIAL CONSULTANT
	
	    STAT
	
	              0

2. To access the menu of descriptive statistics **SHIFT** **S-MENU** **STAT** (to access the S-MENU)	**CASIO** FINANCIAL CONSULTANT STAT D 1:Type 2:Data 3:Edit 4:Sum 5:Var 6:MinMax
3. **5** for the **Var** sub-menu. **1 :** number of values in the data set. **2 :** sample mean. **3 : POPULATION** standard deviation. **4 : SAMPLE** standard deviation.	**CASIO** FINANCIAL CONSULTANT STAT D 1:n 2:x̄ 3:xσn 4:xσn-1

NOTE: It is very important that you distinguish between a sample and a population.
- If the data set represents a **SAMPLE** of the population
  use **4** to calculate the standard deviation.
- If the data set represents the entire **POPULATION**
  use **3** to calculate the standard deviation.

4. **4** for the **Sum** sub-menu.	**CASIO** FINANCIAL CONSULTANT STAT D 1:Σx² 2:Σx
5. **6** for the **MinMax** sub-menu.	**CASIO** FINANCIAL CONSULTANT STAT D 1:minX 2:maxX

LINEAR REGRESSION CALCULATIONS

Linear Regression Data – Example 3
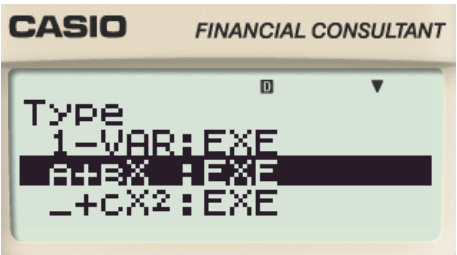
A chemist wants to maximise the copper yield from a particular chemical reaction.
She decides to measure the yield (in grams) at various temperatures (°C):

| Temperature	150	150	150	200	200	200	250	250	250	300	300	300
Yield	77	77	78	84	85	84	89	89	90	95	95	96

Entering Data for Paired Variables: Example 3

|	
1. Clear the calculator memory **(page 1)** *This action will turn the FREQ column OFF*	**SHIFT** **CLR** **9**
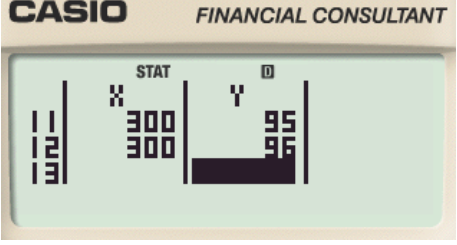
2. **STAT** & scroll down ▼ to **A+BX**	CASIO FINANCIAL CONSULTANT Type 1-VAR:EXE A+BX :EXE _+cX²:EXE
3. **EXE** Your screen should have 2 columns, X and Y	CASIO FINANCIAL CONSULTANT STAT X Y

4. First, enter the X values (this case Temperature is the independent variable as we are interested in predicting the Yield given a certain temperature):

[1] [5] [0] [EXE] [1] [5] [0] [EXE] [1] [5] [0] [EXE] [2] [0] [0] [EXE] [2] [0] [0] [EXE]
[2] [0] [0] [EXE] [2] [5] [0] [EXE] [2] [5] [0] [EXE] [2] [5] [0] [EXE] [3] [0] [0] [EXE]
[3] [0] [0] [EXE] [3] [0] [0] [EXE]
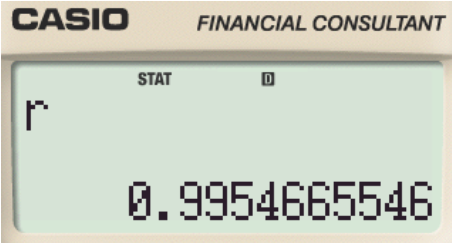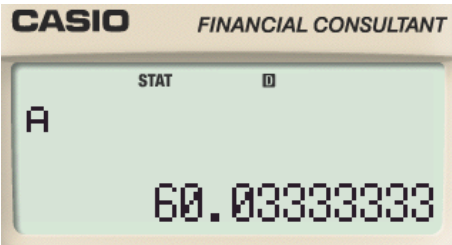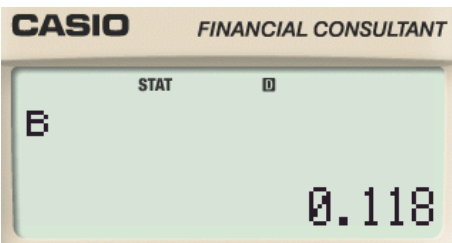
5. Then scroll down ▼ & across ▶ to the Y column and enter the Yield values:

[▼] [▶] [7] [7] [EXE] [7] [7] [EXE] [7] [8] [EXE] [8] [4] [EXE] [8] [5] [EXE] [8] [4] [EXE]
[8] [9] [EXE] [8] [9] [EXE] [9] [0] [EXE] [9] [5] [EXE] [9] [5] [EXE] [9] [6] [EXE]
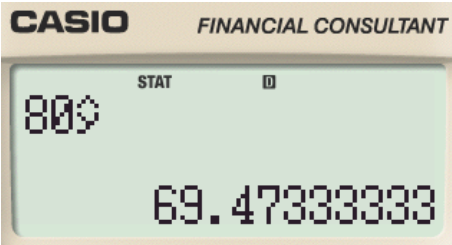
NOTE: It is important that you enter the data in the correct matched pairs (i.e. the first X value, 150 should correspond with the first Y value, 77). The order in which the pairs are entered is not important but the **order within the pairs is very important.**	CASIO FINANCIAL CONSULTANT STAT X Y 11 300 95 12 300 96 13

Calculation of the correlation coefficient, intercept & slope: Example 3	
1. **AC** **SHIFT** **S-MENU STAT**	CASIO FINANCIAL CONSULTANT STAT 1:Type 2:Data 3:Edit 4:Sum 5:Var 6:MinMax 7:Reg

2. **7** for the **Regression** sub-menu.	CASIO FINANCIAL CONSULTANT STAT D 1:A 2:B 3:r 4:x̂ 5:ŷ
3. **3** **EXE** will calculate the Correlation coefficient - **r**	CASIO FINANCIAL CONSULTANT STAT D r 0.9954665546
4. **SHIFT** **S-MENU STAT** **7** **1** **EXE** will calculate the Y-intercept value – **A**	CASIO FINANCIAL CONSULTANT STAT D A 60.03333333
5. **SHIFT** **S-MENU STAT** **7** **2** **EXE** will calculate the Gradient - **B**	CASIO FINANCIAL CONSULTANT STAT D B 0.118

Using the values of **A** & **B** you can get the equation of the regression line:

$$y = 60,033 + 0,118x$$

To obtain an estimated Yield $\hat{y}$ for a Temperature of 80 ºC	
1. Enter the x-value **8** **0** 2. **SHIFT** **S-MENU STAT** **7**	CASIO FINANCIAL CONSULTANT STAT D 1:A 2:B 3:r 4:x̂ 5:ŷ

3. [5] [EXE]	**CASIO** FINANCIAL CONSULTANT STAT D 80◊ 69.47333333
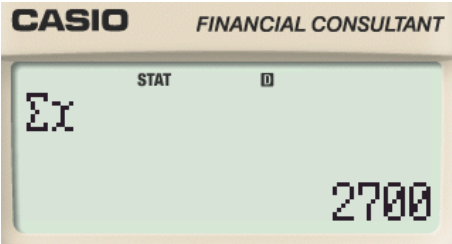
To obtain the sum of the X or Y values

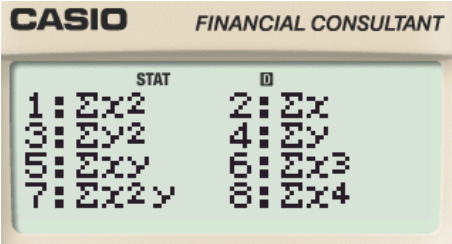|	
1. [SHIFT] [STAT S-MENU] [4] for the **Sum** sub-menu.	**CASIO** FINANCIAL CONSULTANT STAT D 1: Σx2 2: Σx 3: Σy2 4: Σy 5: Σxy 6: Σx3 7: Σx2y 8: Σx4
2. To calculate the sum of the X data [2] [EXE]	**CASIO** FINANCIAL CONSULTANT STAT D Σx 2700

STAT Input Precautions

The number of data values you can input depends on
- the type of statistical data you selected &
- the statistical Display setting of the calculator's SET UP screen

Statistic Type \ Statistical Display	OFF (No FREQ column)	ON (FREQ column)
Single-variable	80 lines	40 lines
Paired-variable	40 lines	26 lines

To switch the calculator off:

[AC OFF]

[SHIFT] [AC]