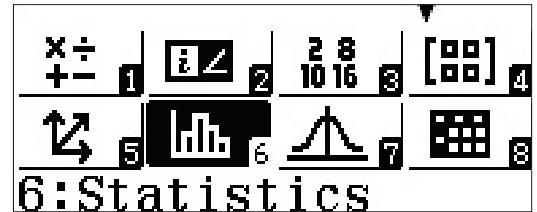


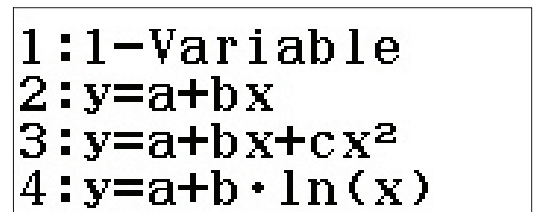
# STATISTICS

The **fx-991EX** can calculate several one-variable statistics, and also analyze relationships between two data sets using various regression models.

From the Main Menu, use the arrow keys to highlight the Statistics icon, then press **≡** or press **6**.



On the resulting menu, select **1** for "1-Variable" statistics.

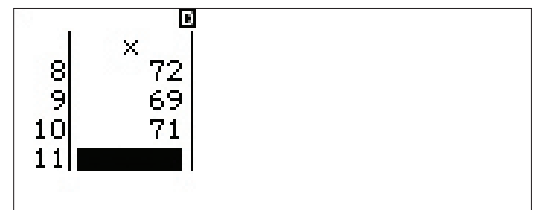
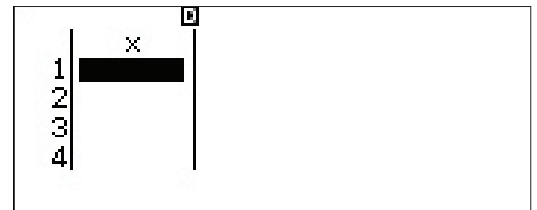


A data entry screen appears.

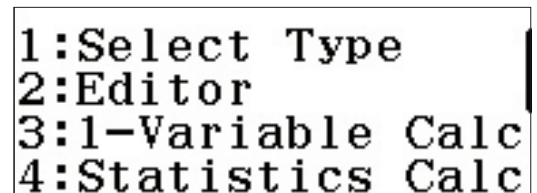
This example uses the following list of some students' heights, given in inches: 70.5, 74, 67, 71, 71, 72, 73.5, 72, 69, 71.

Enter data by typing in each value one at a time, with each followed by the **≡** key.

**7 0 . 5 ≡**, **7 4 ≡**, etc.



To calculate the 1-Variable statistics for this data set, press **OPTN 3** (1-Variable Calc).



# STATISTICS

13 different 1-variable statistics have been calculated, 6 of which appear on the first screen. Press  $\blacktriangledown$  one or more times to reveal additional statistics:

```

x̄      =71.1
Σx     =711
Σx²    =50589.5
σ²     =3.74
σ      =1.933907961
s²     =4.155555556
    
```

```

sx     =-2.08851798
n      =10
min(x) =67
Q1     =70.5
Med    =71
Q3     =72
    
```

```

max(x) =74
    
```

These statistics have each been stored inside the fx-991EX as variables, in case you should wish to use them in further calculations.

Press **AC** to return to the data entry screen.

```

      x
8 | 72
9 | 69
10| 71
11| █
    
```

Enter the Option menu by pressing **OPTN**.

```

1:Select Type
2:Editor
3:1-Variable Calc
4:Statistics Calc
    
```

Select item **4** (Statistics Calc) to enter the Statistics calculation area.

```

                                Statistics
                                1-Variable
    
```

Press **OPTN**, and then the down arrow ( $\blacktriangledown$ ) once to reveal the different categories of statistical variables.

```

1:Summation
2:Variable
3:Min/Max
4:Norm Dist
    
```

For instance, to calculate the interquartile range (IQR), press

**3** (Min/Max) **4** ( $Q_3$ ) **=** **OPTN**  $\blacktriangledown$  **3** (Min/Max) **2** ( $Q_1$ ) **=**.

```

1:min(x)  2:Q1
3:Med     4:Q3
5:max(x)
    
```

```

Q3-Q1
                                1.5
    
```

## FREQUENCY TABLES

If the data comes from a frequency table, ClassWiz can be set up to input the data values in one column, and the frequencies in another.

To access the set-up menu, press **SHIFT** **MENU** (SET UP).

```

1:Input/Output
2:Angle Unit
3:Number Format
4:Engineer Symbol
    
```

Press the down arrow (**▼**) to reach the second page and **3** to select the Statistics settings.

```

1:Fraction Result
2:Complex
3:Statistics
4:Spreadsheet
    
```

Press **1** to turn the Frequency option On.

```

Frequency?
1:On
2:Off
    
```

The Statistics Calculation area appears again. Even though nothing appears to have happened, the setting has indeed changed.

```

Q3-Q1 1.5
    
```

To access the Data entry area, press **OPTN** **3** (Data).

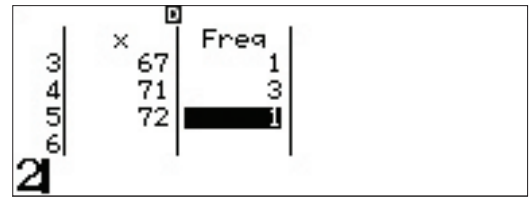
```

1:Select Type
2:1-Variable Calc
3:Data
    
```

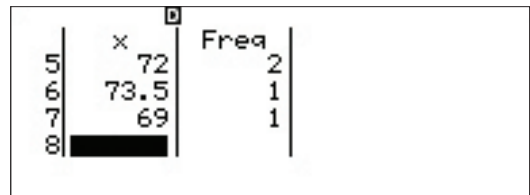
Notice a second column for frequencies now appears and the previous data set has been erased.

|   | $\times$ | Freq |
|---|----------|------|
| 1 |          |      |
| 2 |          |      |
| 3 |          |      |
| 4 |          |      |

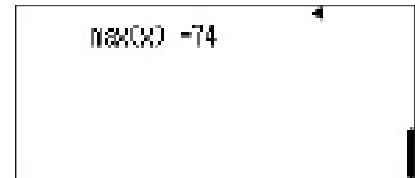
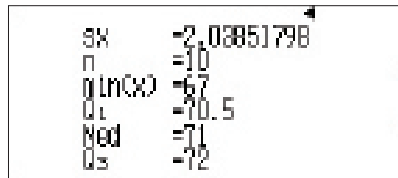
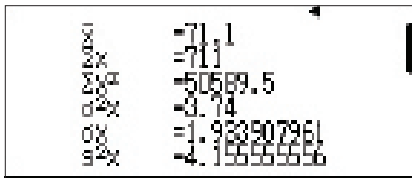
Enter the same 10 students' height used previously making use of the Frequency column. As each data point is inputted, ClassWiz automatically assigns a default Frequency of 1. Edit a Frequency by using the arrow keys to highlight it, then typing a new Frequency followed by  $\text{=}$ .



Once all of the data points (x) and frequencies (Freq) have been entered, press  $\text{OPTN}$   $\text{3}$  (1-Variable Calc) again to display the 1-Variable statistics.



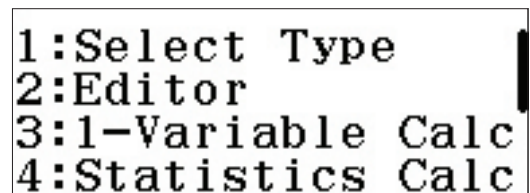
(Notice, the statistics are identical to those previously found.)



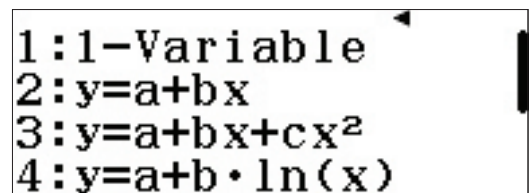
## REGRESSIONS

To calculate a linear regression, press

$\text{OPTN}$   $\text{OPTN}$   $\text{1}$  (Select Type).

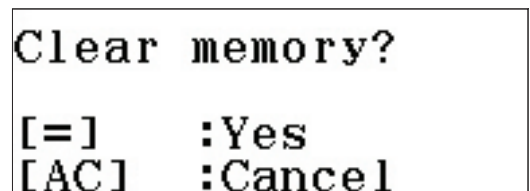


Select option  $\text{2}$  ( $y=a+bx$ ).



A reminder that changing the type of statistics will clear previous data appears.

Press  $\text{=}$  to confirm and Clear memory.



# STATISTICS

Two columns for pairwise data (ordered pairs) now appears.

Note, the Frequency (Freq) column still appears; press

**SHIFT** **MENU** (SET UP) **▼** **3** (Statistics) **2** (Off)

to remove it.

|   | x | y | Freq |
|---|---|---|------|
| 1 |   |   |      |
| 2 |   |   |      |
| 3 |   |   |      |
| 4 |   |   |      |

Input the ordered pairs (1, 1), (2, 4), (3, 9), and (4, 16). Use the arrow keys to navigate to the “y” column as necessary.

|   | x | y  |
|---|---|----|
| 2 | 2 | 4  |
| 3 | 3 | 9  |
| 4 | 4 | 16 |
| 5 |   |    |

To view 2-Variable statistics or the linear regression results,

press **OPTN** **3**.

```

1:Select Type
2:Editor
3:2-Variable Calc
4:Regression Calc
    
```

The 2-Variable statistics display calculation results for both x and y:

```

x̄      =2.5
Σx     =10
Σx²    =30
σ²x    =1.25
σx     =1.118033989
s²x    =1.666666667
    
```

```

sx     =1.290994449
n      =4
ȳ     =7.5
Σy     =30
Σy²    =354
σ²y    =32.25
    
```

```

σy     =5.678908346
s²y    =43
sy     =6.557438524
Σxy    =100
Σx³    =100
Σx²y   =354
    
```

```

Σx⁴    =354
min(x) =1
max(x) =4
min(y) =1
max(y) =16
    
```

Press **AC** **OPTN** **4** (Regression Calc) to display the linear regression results.

```

y=a+bx
a=-5
b=5
r=0.9843740387
    
```

Other regressions, including quadratic, logarithmic, exponential, and geometric, can be accessed via **OPTN** **1** (Select Type).