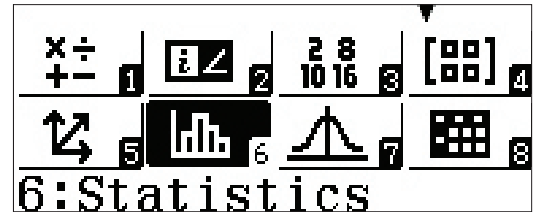


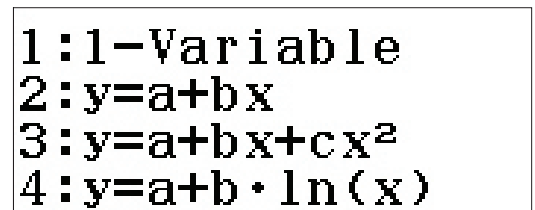
# STATISTICS

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  $\square$  or press  $\boxed{6}$ .



On the resulting menu, select  $\boxed{1}$  for "1-Variable" statistics.

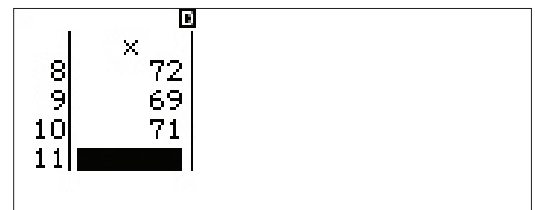
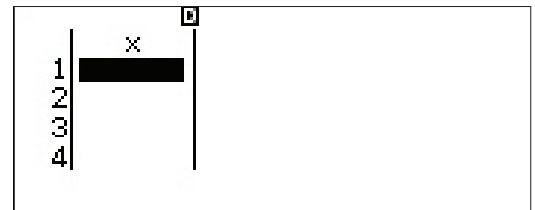


A data entry screen appears.

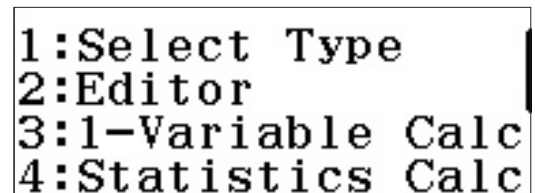
This example uses the following list of some students' heights, given in inches: 70.5, 74, 67, 71, 71, 72, 73.5, 72, 69, 71.

Enter data by typing in each value one at a time, with each followed by the  $\square$  key.

$\boxed{7} \boxed{0} \boxed{\cdot} \boxed{5} \square$ ,  $\boxed{7} \boxed{4} \square$ , etc.



To calculate the 1-Variable statistics for this data set, press  $\square$   $\boxed{3}$  (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:

```

 $\bar{x}$       =71.1
 $\Sigma x$    =711
 $\Sigma x^2$  =50589.5
 $\sigma^2 x$  =3.74
 $\sigma x$    =1.933907961
 $s^2 x$     =4.155555556
    
```

```

sx      =2.03851798
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).

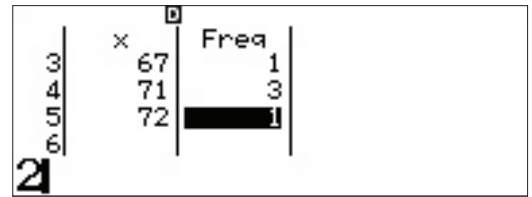
```

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

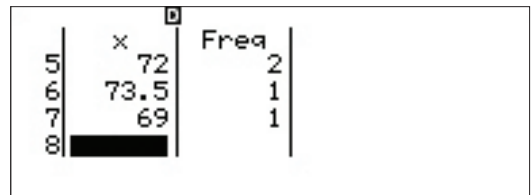
Notice a second column for frequencies now appears and the previous data set has been erased.

	$\times$	Freq
1		
2		
3		
4		

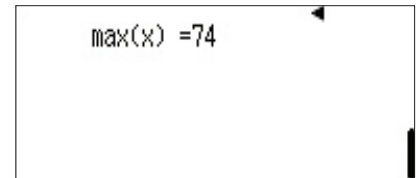
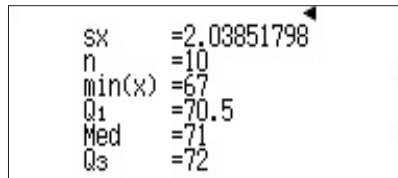
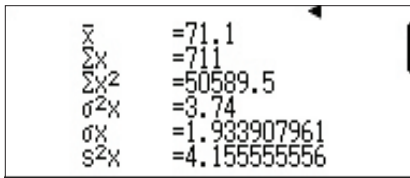
Enter the same 10 students' height used previously making use of the Frequency column. As each data point is inputted, ClassWiz automatically assigns a default Frequency of 1. Edit a Frequency by using the arrow keys to highlight it, then typing a new Frequency followed by  $\text{=}$ .



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.



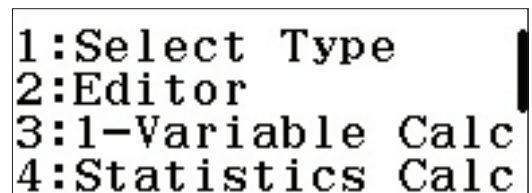
(Notice, the statistics are identical to those previously found.)



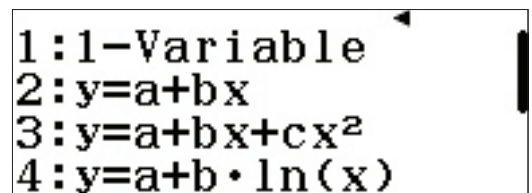
## REGRESSIONS

To calculate a linear regression, press

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

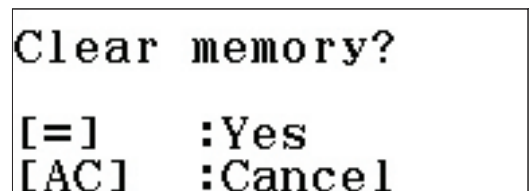


Select option  $\text{2}$  ( $y=a+bx$ ).



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).