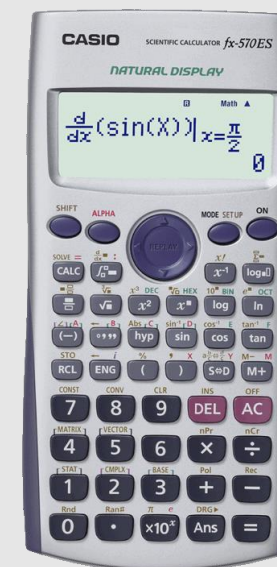




Calculator

CASIO fx-570 ES PLUS



Elias Zintzaras, M.Sc., Ph.D.

*Professor in Biomathematics-Biometry
Department of Biomathematics
School of Medicine
University of Thessaly*

*Institute for Clinical Research and Health Policy Studies
Tufts University School of Medicine
Boston, MA, USA*

*Theodoros Mprotsis, MSc, PhD
Teacher & Research Fellow
(<http://biomath.med.uth.gr>)
University of Thessaly
Email: tmprotsis@uth.gr*



Basic operations

- Statistical and regression calculations: **MODE – 3**
- General calculations: **MODE – 1**
- Power on: **ON**, Power off: **SHIFT-AC**

1: COMP	2: CMPLX
3: STAT	4: BASE-N
5: EQN	6: MATRIX
7: TABLE	8: VECTOR

Operation	Description
COMP	General calculations
CMPLX	Complex number calculations
STAT	Statistical and regression calculations
BASE-N	Calculations involving specific number systems (binary, octal, decimal, hexadecimal)
EQN	Equation solution
MATRIX	Matrix calculations
VECTOR	Vector calculations



Inputting – Deleting - Editing MODE 3 (STAT) – 1 (1 – VAR)

All the following calculations are performed in STAT Mode

- Inputting data
 - **SHIFT – 1 – 1 – 1**
 - Enter a value and press =
- Deleting a line
 - Move the cursor to the cell that contains the data you want to delete and press: **DEL**
- Change the data in a cell
 - Move the cursor to the cell that contains the data you want to change and press =

```
1: Type      2: Data
3: Edit      4: Sum
5: Var       6: MinMax
7: Distr
```

```
STAT      0
|-----|
| X      |
|-----|
|-----|
```

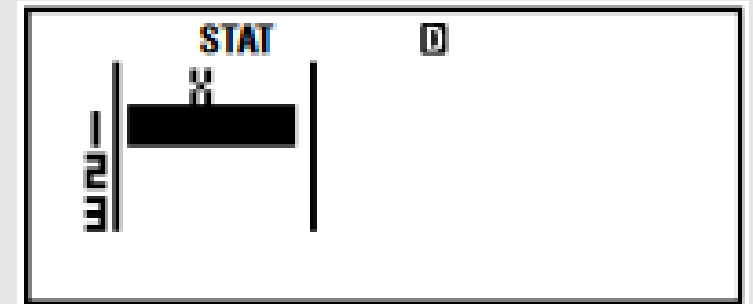
Single Variable Statistics



Inputting – Delete all MODE 3 (STAT) – 1 (1 – VAR)

All the following calculations are performed in STAT Mode

- Insert a new entry in a specific line
 - I'm already in data mode, otherwise, I press: **SHIFT-1-1-1**
 - Move the cursor to the location you want to insert the line and press:
SHIFT – 1 – 3 – 1
 - Enter the new value and press =
- Delete all STAT contents
 - In the STAT editor, perform the following operation:
SHIFT – 1 – 3 – 2



Single Variable Statistics



Calculations

All the following calculations are performed in STAT Mode

To obtain statistical values, **press AC** and then recall the statistical variable.

- Calculation of $\sum x^2$, $\sum x$, where
 $\sum x^2$ = sum of squares of the observations and
 $\sum x$ = sum of the observations
 - **SHIFT – 1 – 3 and 1 $\hat{=}$ 2 respectively, and =**
- Calculation of n , \bar{x} , σ_x , s_x , where
 n = number of observations
 \bar{x} = mean
 σ_x = standard deviation of the population
 s_x = standard deviation of the sample
 - **SHIFT – 1 – 4 and 1 or 2 or 3 or 4 respectively, and =**



Calculations

Attention:

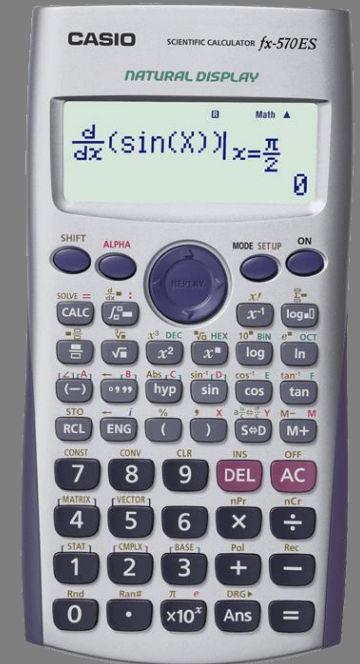
After each calculation, press **AC** to proceed to the next calculation.

To return to data mode: **SHIFT – 1 – 2**

Note:

To erase memory (when "M" is displayed): **SHIFT – 9 – 2**, then press = and **AC**.

Exercises with Solutions





Exercise

1. The age and serum triglyceride values of 11 healthy men are :

Subject	Age	Triglyceride values
1	12	28
2	12	52
3	18	106
4	24	87
5	26	300
6	26	90
7	27	61
8	33	99
9	35	80
10	38	130
11	40	50

Calculate the following:

- Mean
- Variance
- Standard Deviation
- Standard Error
- Median
- The Quartiles Q_1 and Q_3
- Range



Solutions

Required	Age	Triglyceride values
Mean	26.454	98.454
Variance	92.872	5308.871
Standard Deviation	9.637	72.862
Standard Error	2.906	21.969
Median	26	87
Q_1	18	52
Q_3	35	106
Range	28	272



Exercises

2. In the pathology clinic of a provincial hospital, a sample of 12 patients was collected, and their sugar values are:

Subject	Sugar values
1	203
2	148
3	95
4	89
5	115
6	139
7	360
8	77
9	153
10	222
11	112
12	600

Calculate:

- Mean
- Variance
- Standard Deviation
- Standard Error
- Median
- The Quartiles Q_1 and Q_3
- The Range
- Which quantities best describe the clinic in terms of the patients' sugar values?
- If the value of 600 is omitted, which quantities would be appropriate for describing the sample?



Solutions

Required	Sugar values
Mean	192.75
Variance	22.503
Standard Deviation	150.01
Standard Error	43.304
Median	143.5
Q_1	103.5
Q_3	212.5
Range	523