

Using Texas Instruments TI-83 Plus



Statistical calculations

Learning Skills

Introduction:

This sheet will teach you how to use the Texas instrument TI-83 Plus calculator to perform statistical operations.

These graphics calculators operate their statistics functions on lists. So you need to be able to put the information into a list and then get the calculator to calculate the various statistics.

Guidebooks for other models are available from the Texas instruments web page at <http://education.ti.com>

Any further queries please contact Support Central.

This sheet will teach you to:

- Put your calculator into statistical mode
- Enter observations
- Display the descriptive statistics
- Enter group data
- Perform linear regression

1. Entering data into lists

You can enter data into lists by using the statistical list editor

Example 1.1 Store 5,6,7,8 into List 1 (L1)

Press	Result
<div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">STAT</div>	This displays the following EDIT CALC TESTS 1: Edit... Displays the stat list editor 2: SortA (Sorts a list in ascending order 3: SortD(Sorts list in descending order 4: ClrList Deletes all elements of a list 5: Set UpEditor Stores lists in stat list editor
Now press <div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">ENTER</div>	Lists appear under headings L1, L2, L3 etc
To enter data into List 1 press the required entry number then <div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">ENTER</div> Until all numbers have been entered	L1 5 6 7 8

Now your data is entered and ready to be used for calculations of statistics.

2. Display the Descriptive Statistics

Press	Result
<div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">STAT</div> <div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">→</div> <div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">ENTER</div> </div> <div style="border: 1px solid black; display: inline-block; padding: 2px 10px;">ENTER</div>	1 – Var Stats $\bar{x} = 6.5$ $\sum x = 26$ $\sum x^2 = 174$ $s_x = 1.290994449$ $\sigma_x = 1.118033989$ n=4

3. Entering observations from a frequency table

Example 3.1:

Enter the following table into your calculator

score	Frequency
10	12
12	5
13	9
16	7

Enter the scores in L1 as before

Enter the frequency scores in L2

Press	Result
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin: 2px;">STAT</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">→</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">ENTER</div> </div>	1 – Var Stats
<p>You now need to enter</p> <div style="display: flex; justify-content: space-around; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 5px; margin: 2px;">2nd</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">1</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">,</div> <div style="border: 1px solid black; padding: 5px; margin: 2px;">2nd</div> </div> <div style="border: 1px solid black; padding: 5px; margin: 2px; width: fit-content;">2</div>	1 – Var Stats L ₁ , L ₂
<div style="border: 1px solid black; padding: 5px; margin: 2px; width: fit-content;">ENTER</div>	1- Var Stats $\bar{x} = 12.39394$ $\sum x = 409$ $\sum x^2 = 5233$ $s_x = 2.263009527$ $\sigma_x = 2.228457735$ n = 33

4. Entering Grouped data

To enter grouped data you first have to find the midpoint of each group. This is done by adding together the lowest and highest value from each group and then dividing it by two. We then use these as our observations.

Example 5.1:

group	frequency
> 0 up to and including 10	25
>10 up to and including 20	33
>20 up to and including 30	21
>30 up to and including 40	30

To find the midpoint of each group:

$$(0+10)/2=5$$

$$(10+20)/2=15$$

$$(20+30)/2=25$$

$$(30+40)/2=35$$

Enter as per the previous example to get the following results, all of which will be approximations as we are using the midpoint as an approximation

$$\bar{x} = 20.138$$

$$s_x = 11.27$$

$$\sigma_x = 11.20$$

5. Linear Regression Mode


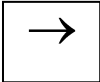

Once again information needs to be entered via lists

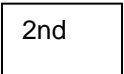
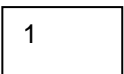

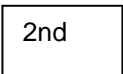
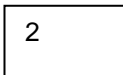
X score (Independent variable)	Y Score (Dependent variable)
5	20
8	18
6	22
7	28
10	27

Enter the X scores in L1

Enter the Y scores in L2

Then go

   to number 4: Lin Reg(ax+b)

Press ENTER     

Press ENTER

On the screen will come up

LinReg	
y=ax + b	
a = 0.94595	the slope of the regression line
b = 16.1892	the y – intercept of the regression line
$r^2 = 0.17425$	the co-efficient of determination
r = 0.41744	the correlation co-efficient

These numbers have all been rounded off.

When you have finished your regression question it is important to get out of that mode before doing any other calculations.

6. For more information

Visit our Learning Skills website at <http://www.csu.edu.au/division/studserv/learning/index.html>

Other useful websites are available at:

<http://education.ti.com>

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