

## Descriptive Statistics With The TI-83

The TI-83 calculator will directly give you many of the common descriptive statistics for a data set. The statistics given directly are:

- Mean:  $\bar{X}$
- Sample standard deviation:  $S_x$
- Population standard deviation:  $\sigma_x$
- Number of data values:  $n$
- Median
- Minimum data value
- Maximum data value
- Quartile 1:  $Q_1$
- Quartile 3:  $Q_3$
- $\sum x$

### Example

The table below gives the number of moons for each planet in the solar system.

| <u>Planet</u> | <u>Number of Moons</u> |
|---------------|------------------------|
| Mercury       | 0                      |
| Venus         | 0                      |
| Earth         | 1                      |
| Mars          | 2                      |
| Jupiter       | 16                     |
| Saturn        | 23                     |
| Uranus        | 19                     |
| Neptune       | 9                      |
| Pluto         | 2                      |

First enter the data into list  $L_1$ .

| L1        | L2    | L3    | 1 |
|-----------|-------|-------|---|
| 0.0000    | ----- | ----- |   |
| 0.0000    |       |       |   |
| 1.0000    |       |       |   |
| 2.0000    |       |       |   |
| 16.0000   |       |       |   |
| 23.0000   |       |       |   |
| 19.0000   |       |       |   |
| L1(1) = 0 |       |       |   |

Press STAT again, and highlight CALC and select 1:1-Var Stats. Press ENTER and the command 1-Var Stats will appear on the screen. Then tell the calculator to use the data in list  $L_1$  by pressing the 2<sup>nd</sup> key and 1 key for list  $L_1$ .

|                |       |                |
|----------------|-------|----------------|
| EDIT           | TESTS | 1-Var Stats L1 |
| 1:1-Var Stats  |       |                |
| 2:2-Var Stats  |       |                |
| 3:Med-Med      |       |                |
| 4:LinReg(ax+b) |       |                |
| 5:QuadReg      |       |                |
| 6:CubicReg     |       |                |
| 7:QuartReg     |       |                |

Press ENTER and the next two screens contain the descriptive statistics for the moon data. Note the arrow ↓ on the last line. This tells you to use the down arrow key to display more results. Scroll down to see the rest of the results for the moon data.

|   |  |
|---|--|
| <pre> 1-Var Stats x̄=8.0000 Σx=72.0000 Σx²=1236.0000 Sx=9.0830 σx=8.5635 ↓n=9.0000 </pre> | <pre> 1-Var Stats ↑n=9.0000 minX=0.0000 Q1=.5000 Med=2.0000 Q3=17.5000 maxX=23.0000 </pre> |
|---|--|

To find the range, take the maximum value (maxX) and subtract the minimum value (minX). You can find the mode by sorting the data in ascending order and scanning the sorted list to see which value occurs most often. To sort the data, press STAT, highlight EDIT and select 2:SortA( which stands for sort in ascending order. Press ENTER and the SortA command appears on the screen. Type in L<sub>1</sub> (you don't have to put a right parenthesis, but I do) and press ENTER. The command DONE appears on the screen. Press STAT and EDIT to return to list L<sub>1</sub> and notice that the data is now sorted in ascending order. A scan of the moon data shows that 0 and 2 are the modes.

| <pre> 2nd 2nd CALC TESTS 1:Edit... 2:SortA( 3:SortD( 4:ClrList 5:SetUpEditor </pre> | <pre> SortA(L1) Done </pre> | <table border="1"> <thead> <tr> <th>L1</th> <th>L2</th> <th>L3</th> <th>1</th> </tr> </thead> <tbody> <tr> <td>0.0000</td> <td>-----</td> <td>-----</td> <td></td> </tr> <tr> <td>0.0000</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1.0000</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2.0000</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2.0000</td> <td></td> <td></td> <td></td> </tr> <tr> <td>9.0000</td> <td></td> <td></td> <td></td> </tr> <tr> <td>16.0000</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">L1(1)=0</td> </tr> </tbody> </table> | L1 | L2 | L3 | 1 | 0.0000 | ----- | ----- |  | 0.0000 |  |  |  | 1.0000 |  |  |  | 2.0000 |  |  |  | 2.0000 |  |  |  | 9.0000 |  |  |  | 16.0000 |  |  |  | L1(1)=0 |  |  |  |
|---|-----------------------------|---|----|----|----|---|--------|-------|-------|--|--------|--|--|--|--------|--|--|--|--------|--|--|--|--------|--|--|--|--------|--|--|--|---------|--|--|--|---------|--|--|--|
| L1  | L2                          | L3  | 1  |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |
| 0.0000  | -----                       | -----   |    |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |
| 0.0000  |                             |   |    |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |
| 1.0000  |                             |   |    |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |
| 2.0000  |                             |   |    |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |
| 2.0000  |                             |   |    |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |
| 9.0000  |                             |   |    |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |
| 16.0000   |                             |   |    |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |
| L1(1)=0   |                             |   |    |    |    |   |        |       |       |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |        |  |  |  |         |  |  |  |         |  |  |  |

To leave the data screen, press 2<sup>nd</sup> QUIT.