

Chapter 6 / Example 10

Statistics and box plot from a list of data

- Using your GDC, find the median and upper and lower quartiles for this data set:
37, 43, 43, 44, 44, 46, 46, 47, 47, 47, 47, 48, 51, 52, 53, 54
- Show this data on a box plot.
- Determine whether 37 is an outlier.

Press **[stat]** 1:Edit and press **[enter]**

Type the numbers 37, 43, 43, 44, etc. in the first column. Press **[enter]** or **[↓]** after each number to move to the next cell.

Note: If the list contains other numbers, you can clear it by pressing **[stat]** 4:ClrList and press **[enter]**. The home screen displays ClrList. Press **[2nd]** **[1]** **[L1]** and press **[enter]**. Press **[stat]** 1:Edit and press **[enter]** to return to the table.

L1	L2	L3	L4	L5	1
37					
43					
43					
44					
44					
46					
46					
47					
47					
47					
47					

L1(1)=37

To calculate statistics for this dataset

Press **[stat]** and **[▶]** to access the CALC menu.

Select 1:1-Var Stats and press **[enter]**.

Leave FreqList empty.

Navigate to Calculate and press **[enter]**.

1-Var Stats	
List:	L1
FreqList:	
Calculate	

The GDC displays a list of statistics for the data.

Scroll down to see the median and quartiles.

1-Var Stats	
\bar{x} =	47.17647059
Σx =	802
Σx^2 =	38150
Sx =	4.433329648
σx =	4.300961508
n=	17
minX=	37
↓Q1=	44

The lower quartile 'Q₁' is 44

The upper quartile 'Q₃' is 51.5

The median is 47

1-Var Stats	
↑Sx=	4.433329648
σx =	4.300961508
n=	17
minX=	37
Q1=	44
Med=	47
Q3=	51.5
maxX=	54

Press **[2nd]** **[f1]** **[stat plot]**.

Press **[enter]**.

STAT PLOTS	
1:Plot1...	Off
2:Plot2...	Off
3:Plot3...	Off
4:PlotsOff	
5:PlotsOn	

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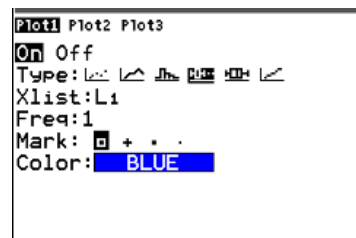
Statistics and box plot from a list of data

Navigate through the list using \blacktriangleright \blacktriangleleft \blacktriangleup \blacktriangledown keys.

Select Type: $\text{+}\cdot\cdot$, Xlist: L_1 and Freq: 1. Choose any color.

Press enter after each choice.

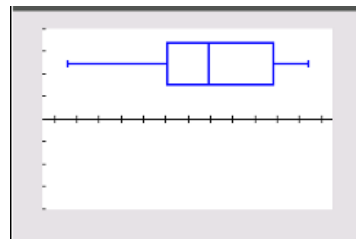
To enter L_2 press 2nd 2 $[L_2]$



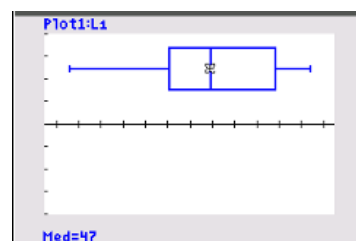
Press f3 zoom 9:ZoomStat.

The GDC displays a box plot of the data.

Since the plot type was with outliers shown, and there are none in the display, you can conclude that 37 is not an outlier. This is further demonstrated below.



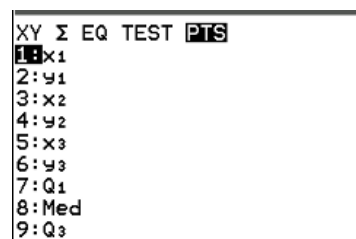
Press f4 trace and use \blacktriangleright \blacktriangleleft to move the cursor across the box plot with the touchpad. The display will change to show the maximum and minimum values, the quartiles and the median.



Press 2nd quit to enter the home screen.

Press vars 5:Statistics... and use \blacktriangleright to navigate to PTS.

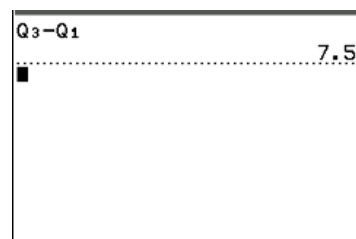
The statistics that you calculated earlier are all stored as variables.



To calculate the interquartile range Use $\text{IQR} = Q_3 - Q_1$.

Select Q_3 and Q_1 from the list to enter the calculation.

The interquartile range is 7.5



To determine whether 37 is an outlier us $Q_1 - 1.5(\text{IQR})$

Select Q_3 and Q_1 from the list to enter the calculation

$Q_1 - 1.5 (Q_3 - Q_1)$.

$32.75 < 37$, so 37 is not an outlier.

