

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 **MENU** 2 **STAT** to display the List Editor screen.

Type the numbers 37, 43, 43, 44, etc. in the first column. Press **EXE** after each number to move to the next cell.

Note: If the list contains other numbers, you can clear it by pressing **F4** DEL-ALL.

	List 1	List 2	List 3	List 4
SUB				
1	37			
2	43			
3	43			
4	44			
				44
TOOL EDIT DELETE DEL-ALL INSERT >				

To calculate statistics for this dataset

Press **F6** > **F6** > **F2** CALC.

Press **F6** SET

Press **▼** to scroll down to 1 Var Freq and press **F1** 1

Press **EXIT**

1Var	XList	:List1
1Var	Freq	:1
2Var	XList	:List1
2Var	YList	:List2
2Var	Freq	:1
1 LIST		

Press **F1** 1-VAR.

The GDC displays a list of statistics for the data. Scroll down to see the median and quartiles.

1-Variable	
\bar{x}	=47.1764705
Σx	=802
Σx^2	=38150
σx	=4.3009615
sx	=4.43332964
n	=17

The lower quartile 'Q1' is 44

The upper quartile 'Q3' is 51.5

The median is 47

1-Variable	
n	=17
minX	=37
Q1	=44
Med	=47
Q3	=51.5
maxX	=54

Press **EXIT** twice and Press **F1** GRAPH.

Press **F6** .SET

Press **▼** to scroll down to Graph Type and press **F2** MedBox.

Press **▼** to scroll down to Frequency and press **F1** 1

Press **▼** to scroll down to Outliers and press **F1** On.

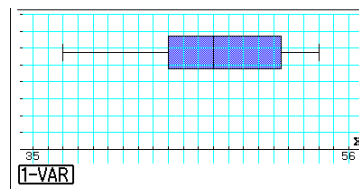
StatGraph1	
Graph Type	:MedBox
XList	:List1
Frequency	:1
Outliers	:On
Box	:Black
Whisker	:Black
1 LIST	

Chapter 6 / **Example 10****Statistics and box plot from a list of data**

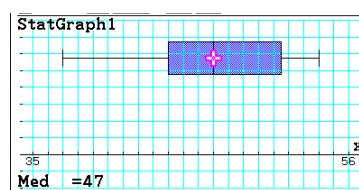
Press **EXIT** and then press **F1** GRAPH1

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 **SHIFT** **F1** TRACE and use **▶** **◀** 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.



The CG50 stores some of the variables from one variable statistics ($n, \bar{x}, \Sigma x, \Sigma x^2, \sigma x, s_x, n, \min X, \max X$) that can be used in calculations, but not Q_1, Q_3 , etc.

To calculate the interquartile range Use $IQR = Q_3 - Q_1$.

$$Q_3 - Q_1 = 51.5 - 44 = 7.5$$

The inter quartile range is 7.5

To determine whether 37 is an outlier use $Q_1 - 1.5(IQR)$

Select Q_3 and Q_1 from the list to enter the calculation

$$Q_1 - 1.5(IQR) = 44 - 1.5(7.5) = 32.75$$

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