Chapter 6 / **Example 10**

Statistics and box plot from a list of data

a 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, 53, 54

b Show this data on a box plot.

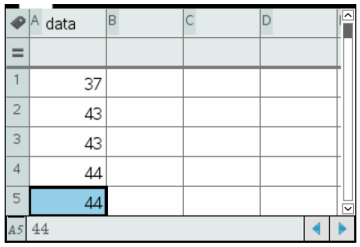
c Determine whether 37 is an outlier.

Open a new document and add a Lists & Spreadsheet page.

Type 'score' in the first cell.

Type the numbers 37, 43, 43, 44, etc. in the first column.

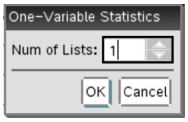
Press enter or ▼ after each number to move to the next cell.



To calculate an estimate of the mean of the ages represented in the table

Press menu 4:Statistics | 1:Stat Calculations | 1:One-Variable Statistics…

Click the touchpad on OK or press enter



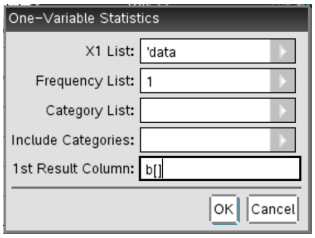
Open the drop down lists with ▶ and select using ▼ and enter

Choose 'data' for X1 List.

The next two choices remain empty

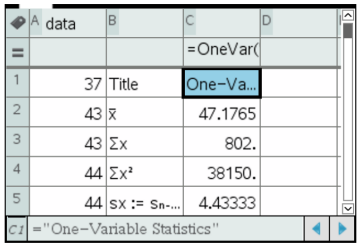
Change the 1st Result Column to b[] as this is the next free column in the spreadsheet.

Press enter or use the touchpad to click OK.



The GDC displays a list of statistics for the data.

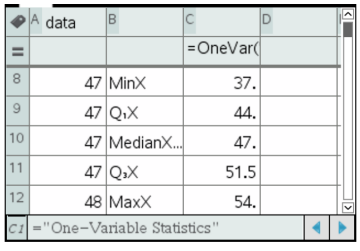
Scroll down to see the median and quartiles.



The lower quartile 'Q_1X' is 44

The upper quartile 'Q_3X' is 51.5

The median is 47



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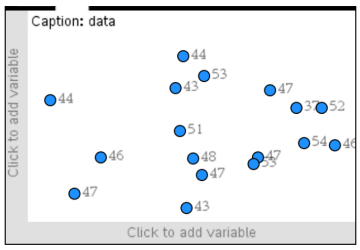
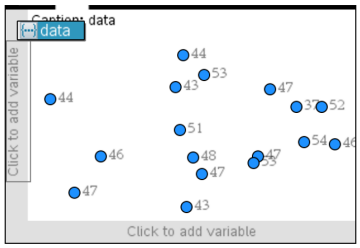
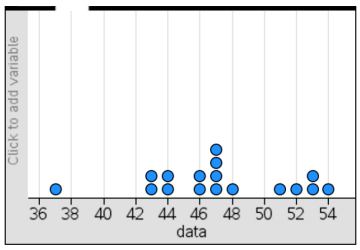
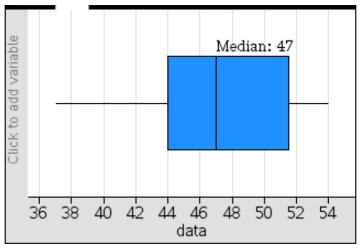
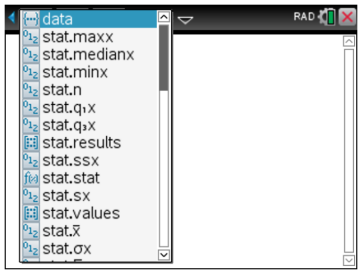
Add a new Data & Statistics page to your document by pressing ctrl doc (+page) 5:Add Data & Statistics. ***Note:*** *Ignore the screen display that you see when this page first opens.*	
Press menu 2:Plot Properties |5: Add X Variable The GDC displays the variable you created in the spreadsheet: 'data'. Select 'data' with the touchpad.	
Press menu 1:Plot Type | 2:Box Plot.	
The GDC displays a box plot of the data. 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.	
Add a new Calculator page to your document by pressing ctrl doc (+page) 1:Add Calculator. The statistics that you calculated earlier are all stored as variables. Press var	

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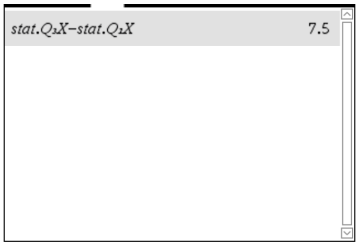
Statistics and box plot from a list of data

To calculate the interquartile range Use IQR = $Q_3X - Q_1X$. Select stat.q_3x and stat.q_1x from the list obtained by pressing var to enter the calculation stat.Q_3X − stat.Q_1X. The interquartile range is 7.5	
To determine whether 37 is an outlier use $Q_1X - 1.5(IQR)$ Select stat.q_3x and stat.q_1x from the list obtained by pressing var to enter the calculation stat.Q_1X-1.5(stat.Q_3X-stat.Q_1X). 32.75 < 37, so 37 is not an outlier.