Chapter 5 / **Example 8**

Using summary statistics

The number of text messages sent by a group of 15 students on a one-week residential trip were: 36, 40, 12, 0, 15, 25, 25, 78, 45, 28, 18, 3, 15, 19, 20,

a Find the mean and median number of text messages.

b Find the interquartile range.

c Determine if any of the data values can be considered as outliers.

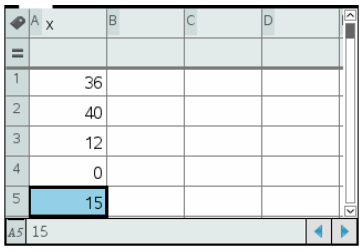
For a short list of data, there is no need to use a frequency table.

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

Type 'x' in the first cell and press enter.

Type 36, 40, 12, 0, etc. in the first column.

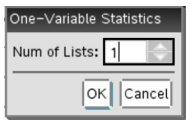
Press enter or ▼ after each number to move to the next cell.



To calculate summary statistics of the data.

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

Since the statistics refer to just one list click the touchpad on OK or press enter.



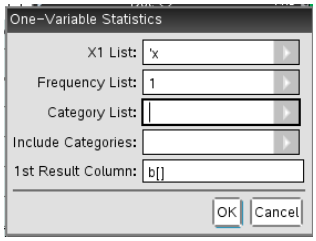
Open the drop down list with ▶ and select using ▼ and enter.

Choose 'x' for X1 List and leave Frequency List as 1.

The remaining choices remain empty.

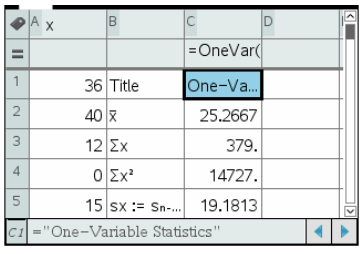
The 1st Result Column can remain as b[] as this is the second column in the spreadsheet.

Press enter or use the touchpad to click OK.



The GDC displays a list of statistics for the data.

The results show that the mean ($\bar{x}$) number of messages is 25.3.



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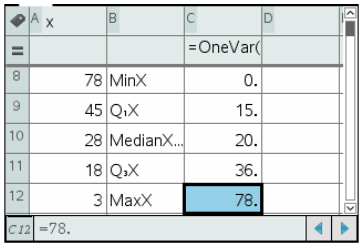
Using summary statistics

Scroll down to see the median using ▼.

The median number of messages is 20.

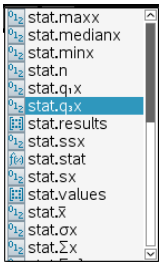
The quartiles are Q_1 and Q_3.



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.

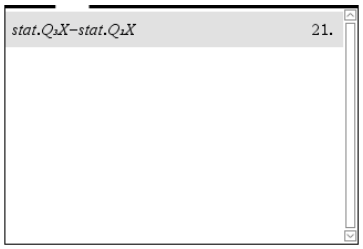
Press var del



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.

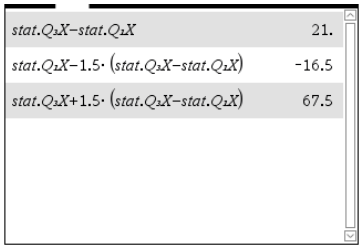
The inter quartile range is 21.



To determine whether there are any outliers use $Q_1X - 1.5(Q_3 - Q_1)$ and $Q_3X + 1.5(Q_3 - Q_1)$.

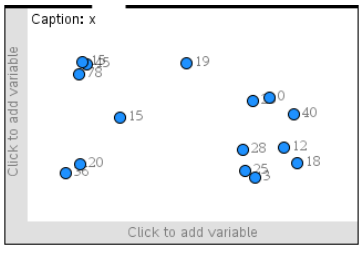
Select stat.q_3x and stat.q_1x from the list obtained by pressing var to enter these calculations.

78 > 67.55, so 78 can be considered to be an outlier.



Add a new Data & Stastistics page to your document by pressing ctrl doc (+page) 5:Add Data & Statistics.

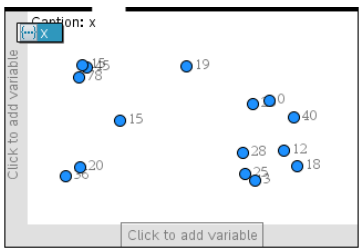
Note: *Ignore the screen display that you see when this page first opens.*



Press menu 2:Plot Properties |5: Add X Variable.

The GDC displays the two variables you created which was '*x*'.

Select '*x*' with the touchpad.



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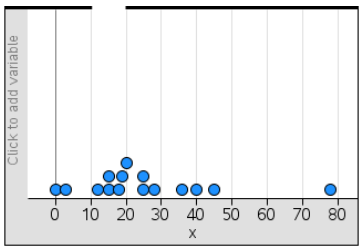
Using summary statistics

The GDC displays the values of x that you entered in the spreadsheet on the x-axis.	
Press menu 1:Plot Type | 2:Box Plot. The GDC displays a box plot of the data. The boxplot displays the point 78 as an outlier.