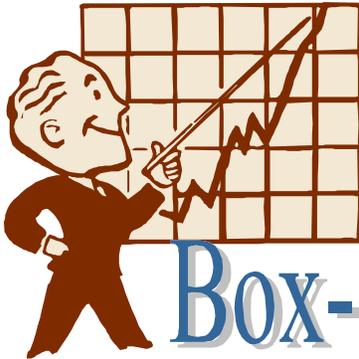


Name _____
Section _____

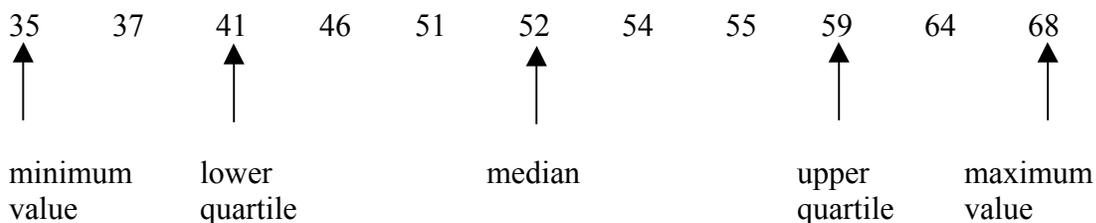
How-to Activity for your Graphing Calculator



Box-and-Whisker Plot

A **box-and-whisker plot** is a visual way of showing median values for a set of data. Quartiles are three numbers that divide a data set into four equal parts. The lower quartile represents one quarter of the data from the left and the upper quartile represents three quarters of the data from the left. The five important numbers in a box-and-whiskers plot are the minimum and maximum values, the lower and upper quartiles, and the median.

For example, suppose we ask each student in the class to guess how many marbles are in a jar. If we put their responses in order, we could divide the data as follows:



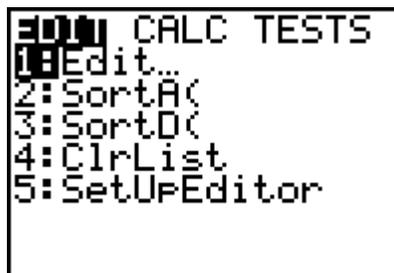
Remember, if there is an odd number of data points, the median is the middle point (assuming the data is arranged in order). If there is an even number of data points, the median is the point halfway between the two middle data points. The lower quartile is the median of the lower half of the data and the upper quartile is the median of the upper half of the data.

Example: Make a box-and-whisker plot for the number of points scored by the high school basketball team on each game this season.

79 65 82 66 74 54 93 74
48 52 79 85 78 70 84 76

Follow the steps to prepare a box-and-whisker plot for this data:

- 1) Turn your graphing calculator on by pressing the **[ON]** key.
- 2) Press the **[STAT]** key. Use the arrow keys **[←]** and **[→]** to highlight **EDIT**.
- 3) Press **[ENTER]**.



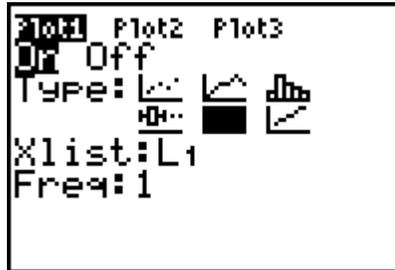
- 4) The screen should say L1 at the top with ----- underneath it. Start entering your data (in any order), pressing **[ENTER]** after each one. If there is already data here, follow steps 15 and 16 to clear the data and then start again at step 2.

L1	L2	L3	1
79	-----	-----	
48			
65			
52			
82			
79			
66			
L1(1)=79			

- 5) Press **[2nd]** and then **[Y=]** to get **STAT PLOTS** on your screen. Use the arrow keys **[←]** and **[→]** to highlight **Plot1**. Press **[ENTER]**.
- 6) Use the arrow keys **[←]** and **[→]** to highlight **ON**. Press **[ENTER]**.

7) Press \blacktriangledown to select **TYPE**. Press \blacktriangleright to select the box-and-whisker plot.

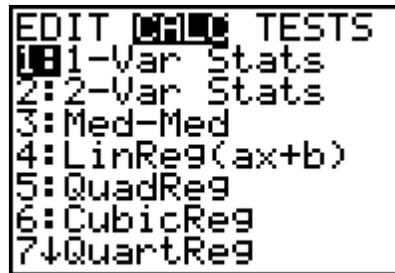
Press ENTER .



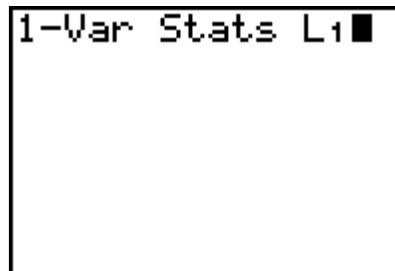
8) Press STAT .

9) Press \blacktriangleright to select **CALC**. Use the arrow keys \blacktriangleleft and \blacktriangleright to select **1-Var Stats**.

Press ENTER .



10) The screen will read **1-Var Stats**. Press 2^{nd} and then 1 to make **L1** appear on the screen.



11) Press ENTER . The mean, the sum of all the data, and some other statistics will be displayed. Press \blacktriangledown to see the rest of the statistics.

12) Record the following information from your screen here:

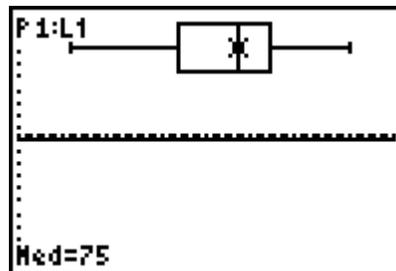
lower quartile (Q1)	
median (med)	
minimum value (minX)	
upper quartile (Q3)	
maximum value (maxX)	

13) Press **WINDOW**. Round down from your minimum value from the table above and enter it after **Xmin** on the screen. Press \downarrow and round up from the maximum value from the table above after **Xmax** on the screen.

```

WINDOW
Xmin=40
Xmax=100
Xscl=1
Ymin=-10
Ymax=10
Yscl=1
Xres=1
    
```

14) Press **GRAPH** and then **TRACE**. Use \leftarrow and \rightarrow to trace the minimum value, lower quartile, median, upper quartile, and maximum value.



15) When finished you will want to clear out the data you entered. To clear list 1, press **STAT** and then \downarrow three times to select **CLRLIST**. Press **ENTER**.

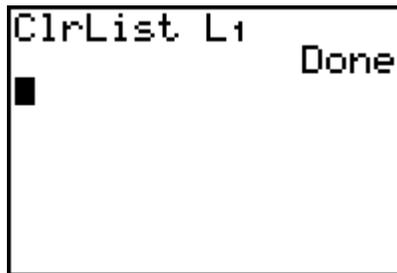
```

[STAT] CALC TESTS
1:Edit...
2:SortA(
3:SortD(
4:ClrList
5:SetUpEditor
    
```

16) Press **2nd** and **1** to make **L1** appear on the screen. Press **ENTER**.



17) When the screen reads **DONE**, press **2nd** and **ON** to turn the calculator off.

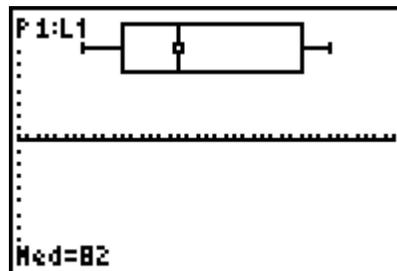


Now You Try It!

Example: Make a box-and-whisker plot for the following test scores in our class.

96 76 80 89 95 98
75 78 82 94 72

Use your graphing calculator to make a box-and-whiskers plot. Your box-and-whiskers plot should look like this:



Check if you got the values in this table:

lower quartile (Q1)	72
median (med)	76
minimum value (minX)	82
upper quartile (Q3)	95
maximum value (maxX)	98

Written by Ellen Navitsky, Kutztown University, 2002