2-7b Graphing Calculator Investigation

A Follow-Up of Lesson 2-7

Sharp EL-9900

What You'll Learn
Represent a data set in a box-and-whisker plot.

Box-and-Whisker Plots

The monthly mean temperatures for Burlington, Vermont, are shown. You can display the data in a **box-and-whisker plot**.

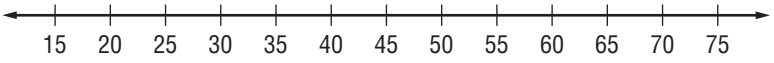
Monthly Normal Temperatures (°F)												
	J	F	M	A	M	J	J	A	S	O	N	D
Burlington, VT	16	18	31	44	56	65	71	68	59	48	37	23

ACTIVITY 1

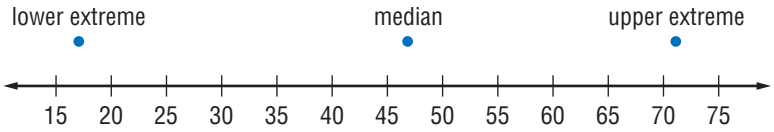
STEP 1 Write the data shown in the table from least to greatest.

16 18 23 31 37 44 48 56 59 65 68 71

STEP 2 Draw a number line that includes all of the data.



STEP 3 Mark the least and greatest number as the *lower extreme* and *upper extreme*. Find and label the median.

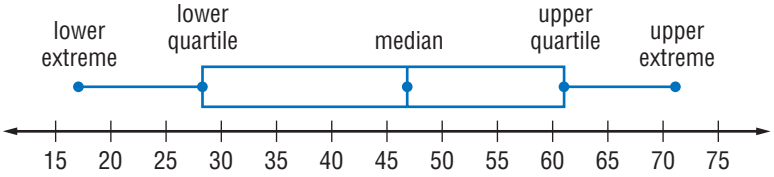


STEP 4 The median of a data set separates the set in half. Find the medians of the lower and upper halves.

16 18 23 31 37 44 48 56 59 65 68 71

$\frac{23 + 31}{2} = 27$ median $\frac{59 + 65}{2} = 62$

Label these values as *lower quartile* and *upper quartile*. Draw a *box* around the quartile values, and *whiskers* that extend from each quartile to the extreme data points.



STUDY TIP

Interquartile Range The interquartile range is the difference between the upper and the lower quartile.

You can also use an EL-9900 graphing calculator to make a box-and-whisker plot.

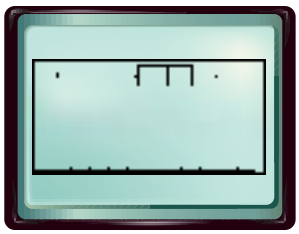
ACTIVITY 2

Use the temperature data from Activity 1.

STEP 1 Enter the data into the calculator's memory. Press STAT ENTER to see the lists. Then enter the data by entering each number and pressing ENTER.

STEP 2 Choose the graph. Press STAT PLOT to display the menu. Choose the first plot by pressing ENTER. Press ENTER to turn PLOT1 on. Use the arrow keys and ENTER to select X for the data, L1 for ListX, and 1 for the frequency. To set the graph to a modified box-and-whisker plot, place the cursor on GRAPH and press STAT PLOT ALPHA [E] 4.

STEP 3 Press WINDOW to choose the display window. Choose appropriate range settings for the x values. The window 0 to 75 with a scale of 5 includes all of this data.



STEP 4 Display the graph by pressing GRAPH. In order to see the important parts of the graph, press TRACE and use the arrow keys to see the values.

Your Turn

a. Use the Internet or another source to find the monthly normal temperatures for a city in your state. Draw a box-and-whisker plot of the data. Then, use a graphing calculator to display the data.

STUDY TIP

Clear Memory
Before entering data in a table, be sure to clear any exisitng data. To clear the calculator's memory, position the cursor at the top of each table and press ▲ DEL ENTER.

EXERCISES

1. **Draw** a box-and-whisker plot for the set of data below.

Baseball Games Won by Teams in National League, 2002															
95	94	79	67	65	95	85	73	72	69	65	97	86	85	82	76

Source: *The World Almanac*

2. **Describe** the data values that are located in the box of a box-and-whisker plot.
3. **MAKE A CONJECTURE** Write a sentence describing what the length of the box of the box-and-whisker plot tells you about the data set.