

## 2.4 Box Plots

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### Learning Objectives:

In this section, you will:

- Represent the five-number summary of data using a boxplot

**Box plots** (also called box-and-whisker plots or box-whisker plots) give a good graphical image of the concentration of the data. They also show how far the extreme values are from most of the data.

A box plot is constructed from five values, **5-Number Summary**: the minimum value, the first quartile, the median, the third quartile, and the maximum value. We use these values to compare how close other data values are to them.

It is important to start a box plot with a scaled number line. Otherwise the box plot may not be useful.

### Example 1

Consider, this dataset.

1; 1; 2; 2; 4; 6; 6.8; 7.2; 8; 8.3; 9; 10; 10; 11.5

#### Using the graphing calculator to find the 5-Number Summary:

- Enter data into the list editor (Press STAT 1:EDIT). If you need to clear the list, arrow up to the name L1, press CLEAR, and then arrow down.
- Put the data values into the list L1.
- Press STAT and arrow to CALC.
- Press 1:1-VarStats.
- Enter L1. Press ENTER.
- Use the down and up arrow keys to scroll.

5-number summary:

Construct a box plot:

#### Using the graphing calculator to graph box plot:

- Enter data into the list editor (Press STAT 1:EDIT). If you need to clear the list, arrow up to the name L1, Press CLEAR, and then arrow down.
- Clear equations. Press y= and clear.
- Configure plot. Press 2nd and y=.
- Select 1:Polt 1 and Press ENTER.
- Select On and Press ENTER.
- Type: Select the box plot picture and Press ENTER
- Xlist: Enter L1
- Freq: Enter 1
- Color: Select a color
- Press Zoom and Select 9:ZoomStat

### Example 2

Graph a box plot for the data values shown.

10; 10; 10; 15; 35; 75; 90; 95; 100; 175; 420; 490; 515; 515; 790

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For more information and examples see online textbook OpenStax Introductory Statistics pages 96-100.

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