Stem & Leaf Plots

TI-Nspire™   Investigation   Student   20 min

Introduction

A Stem and Leaf plot is a device for representing quantitative data in a visual way without loss of information. A range of data sets have been included in this activity. The focus of this activity is on understanding how the Stem and Leaf plot displays information and how information can be gleaned from this representation.

Open the TI-nspire file: "Stem and Leaf Plots".

Page 1.1 contains information on the data sets.

Page 1.2 contains information about syntax and limitations.

Read through this information then navigate to page 1.3
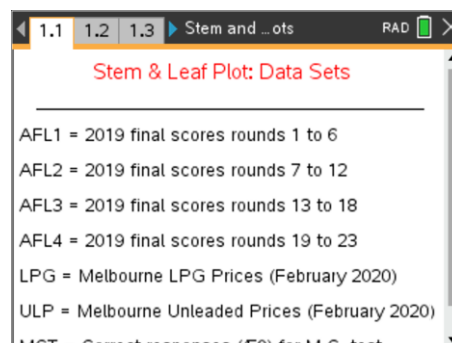
The first data set to be used is the Multiple Choice Test (MCT) response data. This data contains the results for students completing a multiple choice test, the scores are marked out of 50.
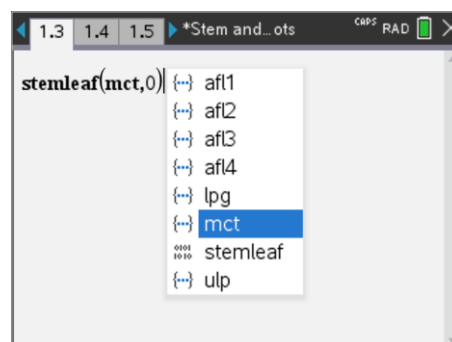
To generate a Stem and Leaf plot either type the command (Program name) or select StemLeaf from the Variable menu. [VAR]

Once this item has been selected, complete the syntax:

Stemleaf(mct,0)

Then press [enter] to see the Stem and Leaf plot and [esc] to exit.

Use the Stem and Leaf plot to answer the following questions.

The following questions relate to the Stem and Leaf plot for the Multiple Choice Test data.

Question: 1.

What value does each number in the Stem represent?

Question: 2.

How many students obtained a perfect score of 50?

Question: 3.

How many students attempted the test? (Received a score)

Question: 4.

To allow for the fact that students could guess some of the answers (multiple choice), the teacher set the pass mark at 30. How many students passed the test?

Question: 5.

What was the most common test score(s)? (Mode)

Author: Peter Fox

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Question: 6.

What as the median study score?

Question: 7.

The teacher decided to grade the papers according to the following table. Determine the quantity of students that received each grade:

| Score Range	<25	25 – 29	30 – 34	35 - 39	40 – 44	45 – 50
Grade	F	E	D	C	B	A
Quantity of Students						

Question: 8.

In relation to the grading scale provided in Question 7, discuss how the Stem and Leaf plot could be reconstructed so as to make it quicker and easier to extract the letter grade data.

The Multiple Choice Test data can also be converted to a dot-plot.

Navigate to page 1.4 and put MCT as the variable on the x axis.

If a Dot Plot is not displayed, use the [menu] to change the Plot Type to Dot Plot or use the Window/Zoom option to zoom in on the data.
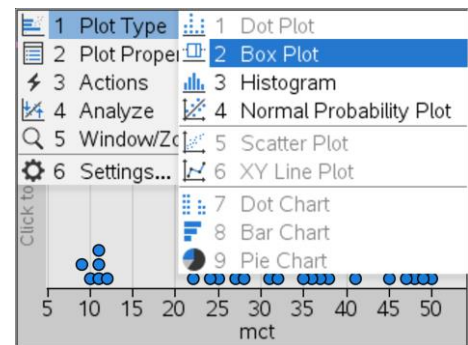
Question: 9.

Compare the information available from the dotplot with that contained in the Stem and Leaf plot.

A histogram is another way of displaying the data.

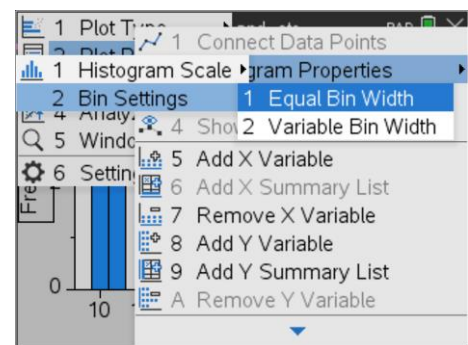Use the **menu** to change the **Plot Type** to a **Histogram**.

The histogram will use the default settings based on the data and window settings. Use the **menu** to change the 'bin width':

    Menu > Plot Properties > Bin Settings > Equal Bin Width

Once the histogram is generated, change the window settings:

    Menu > Window/Zoom > Window Settings

    Xmin = 0, Xmax = 60, Ymax = 60

Question: 10.

Compare the histogram to the Stem and Leaf plot.

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The following questions relate to the Stem and Leaf plot for the ULP data.

The ULP data represents pricing information collected for a series of service stations located within a 6km radius of a particular suburb in Melbourne in February 2020. Run the stemleaf program: stemleaf(ulp,0).

Question: 11.

What value do the numbers in the Stem represent for the ULP data?

Question: 12.

What value do the number in the Leaf represent for the ULP data?

Question: 13.

Why are there blanks leaves adjacent to some of the Stem values? Why might this be required?

Question: 14.

What do you notice about much of the Leaf data?

Question: 15.

What is the range of prices in this area during the data collection period?

Question: 16.

Discuss the distribution of the data and its practical implications.

The following questions relate to the Stem and Leaf plot for the LPG data.

The LPG data represents pricing information collected for a series of service stations located within a 6km radius of a particular suburb in Melbourne in February 2020. Run the stemleaf program: stemleaf(lpg,0).

Question: 17.

What do you notice about the distributin of LPG prices compared with ULP?

Question: 18.

Which fuel type offers the more consistent or predicable fuel price, LPG or ULP?

The following questions relate to the Stem and Leaf plot for the AFL data.

The AFL1, AFL2, AFL3 and AFL4 data sets relate to full time scores for every team in every match across the 2019 football season. AFL1 represents the first 6 rounds, AFL2 the second 6 rounds and so on.

Question: 19.

Explore all four data sets using a Stem and Leaf plot and **comment** on the spread of scores throughout the 2019 season. Explain why the entire season is not represented on a single Stem and Leaf plot and identify any other information from the data.