

How can you create back to back stem-and-leaf plots?

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Back to back stem-and-leaf plots are a method of organizing and displaying numerical data in a compact and easily interpretable manner. This type of plot involves creating two separate stem-and-leaf plots, one for each group or category being compared, and placing them side by side with a shared vertical axis. The stems represent the leading digits of the data values, while the leaves represent the trailing digits. By using this method, the data from two different groups can be compared and analyzed simultaneously. To create back to back stem-and-leaf plots, one must first organize the data into two separate groups and then construct the plots using a common scale and format. This allows for a quick and efficient comparison between the two groups, making it a useful tool for data analysis.

Create Back to Back Stem-and-Leaf Plots

A is a type of plot that displays data by splitting up each value in a dataset into a "stem" and a "leaf."

For example, suppose we have the following dataset:

Dataset: 12, 14, 18, 22, 22, 23, 25, 25, 28, 45, 47, 48

If we define the first digit in each value as the "stem" and the second digit as the "leaf" then we can create the following stem and leaf plot:

| Stem | Leaf |
|------|-------------|
| 1 | 2 4 8 |
| 2 | 2 2 3 5 5 8 |
| 3 | |
| 4 | 5 7 8 |

Key: 4|7 = 47

An extension of the stem-and-leaf plot is the back to back stem-and-leaf plot, which can be used to display values for two datasets.

This tutorial explains how to create a back to back stem-and-leaf plot along with how to use it to answer questions about two datasets.

How to Create a Back to Back Stem-and-Leaf Plot

Suppose we have the following two datasets that show the number of points scored by members of two basketball teams:

Mavericks: 2, 4, 8, 12, 12, 12, 15, 19, 23, 25, 31, 35, 38

Lakers: 6, 6, 7, 12, 13, 15, 16, 20, 22, 24, 28, 30, 31

To create a back to back stem-and-leaf plot for these datasets, we can create a single "stem" that represents the first digit in each value and a set of "leaves" that branch off to each side of the stem that represent the second digit in each value:

| Lakers | | Mavericks |
|---------|---|-----------|
| 7 6 6 | 0 | 2 4 8 |
| 6 5 3 2 | 1 | 2 2 2 5 9 |
| 8 4 2 0 | 2 | 3 5 |
| 1 0 | 3 | 1 5 8 |

The points scored by the members of the Mavericks are shown on the right side of the stem and the points scored by the members of the Lakers are shown on the left side of the stem.

Notice that there are 13 individual values shown on each side of the stem, which represent the 13 data values for each dataset.

A back to back stem-and-leaf plot is useful because it allows us to easily visualize the distribution of values in two datasets at the same time and quickly compare two

distributions.

How to Interpret a Back to Back Stem-and-Leaf Plot

| Lakers | | Mavericks |
|---------|---|-----------|
| 7 6 6 | 0 | 2 4 8 |
| 6 5 3 2 | 1 | 2 2 2 5 9 |
| 8 4 2 0 | 2 | 3 5 |
| 1 0 | 3 | 1 5 8 |

Question 1: What is the range for number of points scored for each team?

Recall that the range is the difference between the largest and smallest value.

Range for the Mavericks: $38 - 2 = 36$
 Range for the Lakers: $31 - 6 = 25$

Question 2: What is the mode for number of points scored for each team?

Recall that the mode is the value that occurs most often.

Mode for the Mavericks: 12 Mode for the Lakers: 6

Question 3: What is the median for number of points scored for each team?

Recall that the median is the "middle" value in a dataset.

Median for the Mavericks: 15 Median for the Lakers: 16

Question 4: Which team had more players score 20 or more points?

**Players who scored 20 or more for the Mavericks: 5
Players who scored 20 or more for the Lakers: 6**

The Lakers had more players score 20 or more points.

Question 5: Which team had the highest-scoring player?

**Highest scorer for the Mavericks: 38
Highest scorer for the Lakers: 31**

The Mavericks had the highest-scoring player.