

Descriptive Statistics

Making Stem Plot

What is the **Stem Plot** of a sample?

It is a graphical summary for a set of **sorted numerical** sample. It shows a picture of the distribution of numerical values by displaying the actual values of the data.

How do we construct the **Stem Plot** of a sample?

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- ▶ Sort the data from smallest to largest.
 - ▶ Split each observation into a **stem** and a **leaf**.
 - The **leaf** is the last digit in the observation.
 - The **stem** is all digits that precede the leaf in the observation.

How do we display the **Stem plot** of a sample?

A typical stem plot clearly shows the stems and leaves separated by a vertical line.

Let's look at an example.

Stem Plot Sample Key: $5|4 = 54$, $10|2 = 102$

Stem(tens)		Leaf(units)
5		4 5 6 9
6		0 0 8
10		2

Example:

A sample of 40 exams in a math class was randomly taken. Scores are given below:

58	72	100	62	74	53	99	66	75	70
61	55	98	61	57	98	69	69	81	61
78	63	87	67	87	70	77	57	57	90
71	80	70	57	69	64	55	56	56	77

Construct the stem plot with key notation for this sample.

Solution:

We begin by sorting these exam scores in **ascending order**.

53	55	55	56	56	57	57	57	57	58
61	61	61	62	63	64	66	67	69	69
69	70	70	70	71	72	74	75	77	77
78	80	81	87	87	90	98	98	99	100

Now we identify the leaf of each observation which is the last digit and the rest of the digits are the stem.

For the number 75, the leaf is 5 , and 7 is the stem,

and for the number 90, the leaf is 0 , and 9 is the stem.

Solution Continued:

Now we can use the sorted data to construct the **stem plot**.

Stem Plot of Exam Scores Key: $5|3 = 53$, $10|0 = 100$

Stem(tens)	Leaf(units)
5	3 5 5 6 6 7 7 7 7 8
6	1 1 1 2 3 4 6 7 9 9 9
7	0 0 0 1 2 4 5 7 7 8
8	0 1 7 7
9	0 8 8 9
10	0