

## Data Display

### Stem-and-Leaf Plots

**Introduction:** There are many ways to organize and display data. A stem-and-leaf plot is a display used when the purpose is to order a data set and visually represent the data points in an orderly sequence.

**Instruction:** In a stem-and-leaf plot, each data value has two parts, a *stem* and a *leaf*. The *leaf* is the last digit in the data value. The *stem* is the remaining digit or digits. The *leaf* of 28 is 8 and the *stem* is 2. All numbers represented in the data set must have an equal number of digits, so a zero might have to be inserted for a place value with no digit. The key to the stem-and-leaf plot identifies the place values represented by the digits.

**Example 1:** Display the data from the following chart using a stem-and-leaf plot.

**Time spent on homework during the week (in minutes)**

	M	T	W	Th	F	S
<b>Jerry</b>	25	15	12	36	27	34
<b>Jeannie</b>	22	10	15	18	20	18
<b>Judy</b>	10	12	18	19	20	11

Step 1: Order the stems from the least to the greatest. Since the numbers range from 10 to 36, the least stem is 1 and the greatest stem is 3.

```

1 |
2 |
3 |
  
```

Step 2: Write the leaves next to their stems.

```

1 | 5 2 0 5 8 8 0 2 8 9 1
2 | 5 7 2 0 0
3 | 6 4
  
```

Step 3: Order the leaves from least to greatest and add a key.

```

1 | 0 0 1 2 2 5 5 8 8 8 9
2 | 0 0 2 5 7
3 | 4 6
  
```

Key: 2|2 = 22

**Q:** How many times did one of the three students spend exactly 18 minutes on homework?

**A:** 3 times

**Q:** What was the longest time spent on homework by a student on any day?

**A:** 36 minutes

**Q:** How many times did one of the students spend more than 30 minutes on homework?

**A:** 2 times

**Example 2:** Display the data from the following chart using a stem-and-leaf plot.

**Family Trips Out of Town During the Year**

	2012	2013	2014	2015	2016	2017
<b>Pete</b>	8	12	22	9	10	14
<b>Perry</b>	6	10	7	4	11	9
<b>Penny</b>	12	10	18	14	8	16

Step 1: Order the stems from the least to the greatest. Since the numbers range from 4 to 22, the least stem is 0 and the greatest stem is 2. Recall that all numbers represented in the data set must have an equal number of digits, so a zero might have to be inserted for a place value with no digit.

```

0 |
1 |
2 |
  
```

Step 2: Write the leaves next to their stems.

```

0 | 8 9 6 7 4 9 8
1 | 2 0 4 0 1 2 0 8 4 6
2 | 2
  
```

Step 3: Order the leaves from least to greatest and add a key.

```

0 | 4 6 7 8 8 9 9
1 | 0 0 0 1 2 2 4 4 6 8
2 | 2
  
```

Key: 1|4 = 14

**Q:** How many times did one of the three students travel out of town 8 times during the year?

**A:** 2 times

**Q:** What was the greatest number of times a student traveled out of town in one year?

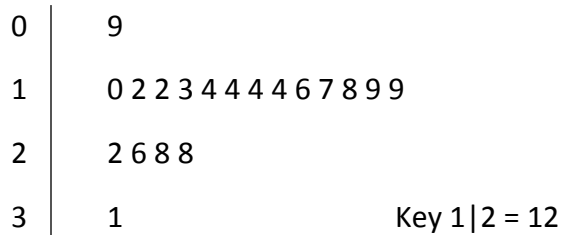
**A:** 22 times

**Q:** What is the most frequently occurring number for trips in one year?

**A:** 10

### Example 3

This stem-and-leaf plot displays the time, in minutes, required for the 19 students in a class to complete an obstacle course and a two-mile run.



**Q:** How many students completed the obstacle course and run in 14 minutes?

**A:** 4

**Q:** How much time did it take the fastest student to complete the obstacle course and run?

**A:** 9 minutes

**Q:** How much time did it take the slowest student to complete the obstacle course and run?

**A:** 31 minutes

**Q:** How much time did it take the tallest student to complete the obstacle course and run?

**A:** The question can't be answered from this data.

### Extend the Problem

**Q:** Find the mean, median, mode, and range of the data in example 3. Round all answers to the nearest tenth.

**A:** 17.7; 16; 14; 22