

# Study Guide and Intervention

6SDAP1.1, 6SDAP1.2

## Line Plots

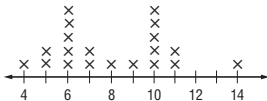
A **line plot** is a diagram that shows the frequency of data on a number line.

**Example 1** **SHOE SIZE** The table shows the shoe size of students in Mr. Kowa's classroom. Make a line plot of the data.

Shoe Sizes			
10	6	4	6
5	11	10	10
6	9	6	8
7	11	7	14
5	10	6	10

**Step 1** Draw a number line. Because the smallest size is 4 and the largest size is 14, you can use a scale of 4 to 14 and an interval of 2.

**Step 2** Put an "x" above the number that represents the shoe size of each student.



**Example 2** Use the line plot in Example 1. Identify any clusters, gaps, or outliers and analyze the data by using these values. What is the range of data?

Many of the data cluster around 6 and 10. You could say that most of the shoe sizes are 6 or 10. There is a gap between 11 and 14, so there are no shoe sizes in this range. The number 14 appears removed from the rest of the data, so it would be considered an outlier. This means that the shoe size of 14 is very large and is not representative of the whole data set.

The greatest shoe size is 14, and the smallest is 4. The range is  $14 - 4$  or 10.

### Exercises

**PETS** For Exercises 1–3 use the table at the right that shows the number of pets owned by different families.

Number of Pets			
2	1	2	0
3	1	1	2
8	3	1	4

1. Make a line plot of the data.



2. Identify any clusters, gaps, or outliers. **Sample answer: Many of the data cluster around 1 and 2. There is a gap between 4 and 8. 8 is an outlier.**

3. What is the range of the data? **8**

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6SDAP1.4

## Measures of Central Tendency and Range

The **mean** is the sum of the data divided by the number of data items. The **median** is the middle number of the ordered data, or the mean of the middle two numbers. The **mode** is the number (or numbers) that occur most often. The mean, median, and mode are each **measures of central tendency**.

**Example** The table shows the number of hours students spent practicing for a music recital. Find the mean, median, and mode of the data.

$$\text{mean} = \frac{3 + 12 + 10 + \dots + 12}{20} = \frac{160}{20} \text{ or } 8.$$

To find the median, the data must be ordered.

0, 1, 2, 3, 3, 5, 6, 7, 8, 8, 8, 9, 10, 10, 11, 12, 12, 12, 15, 18

$$\frac{8 + 8}{2} = 8$$

To find the mode, look for the number that occurs most often. Since 8 and 12 each occur 3 times, the modes are 8 and 12.

Numbers of Hours Spent Practicing				
3	12	10	8	7
18	11	12	10	3
8	6	0	1	5
8	2	15	9	12

### Exercises

Find the mean, median, and mode for each set of data. Round to the nearest tenth if necessary.

1. 27, 56, 34, 19, 41, 56, 27, 25, 34, 56  
**mean, 37.5; median, 34;**  
**mode, 56**

2. 7, 3, 12, 4, 6, 3, 4, 8, 7, 3, 20  
**mean, 7; median, 6; mode, 3**

3. 1, 23, 4, 6, 7, 20, 7, 5, 3, 4, 6, 7, 11, 6  
**mean, 7.9; median, 6;**  
**mode, 7 and 6**

4. 3, 3, 3, 3, 3, 3, 3  
**mean, 3; median, 3; mode, 3**

5. 2, 4, 1, 3, 5, 6, 1, 1, 3, 4, 3, 1  
**mean, 2.8; median, 3; mode, 1**

6. 4, 0, 12, 10, 0, 5, 7, 16, 12, 10, 12, 12  
**mean, 8.3; median, 10; mode, 12**

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6SDAPI.3, 6SDAPI.1

**Stem-and-Leaf Plots**

In a **stem-and-leaf plot**, the data are organized from least to greatest. The digits of the least place value usually form the **leaves**, and the next place value digits form the **stems**.

**Example** Make a stem-and-leaf plot of the data below. Then find the range, median, and mode of the data.  
42, 45, 37, 46, 35, 49, 47, 35, 45, 63, 45

Order the data from least to greatest.

35, 35, 37, 42, 45, 45, 45, 46, 47, 49, 63

The least value is 35, and the greatest value is 63. So, the tens digits form the stems, and the ones digits form the leaves.

range: greatest value - least value =  $63 - 35$  or 28

median: middle value, or 45

mode: most frequent value, or 45

Stem	Leaf
3	5 5 7
4	2 5 5 5 6 7 9
5	
6	3

$6 | 3 = 63$

**Exercises**

Make a stem-and-leaf plot for each set of data. Then find the range, median, and mode of the data.

1. 15, 25, 16, 28, 1, 27, 16, 19, 28

Stem	Leaf
0	1
1	5 6 6 9
2	5 7 8 8

$$215 = 25$$

The range is 27. The median is 19. The mode is 16 and 28.

2. 1, 2, 3, 2, 3, 1, 4, 2, 5, 7, 12, 11, 11, 3, 10

Stem	Leaf
0	1 1 2 2 2 3 3 3 4 5 7
1	0 1 1 2

$110 = 10$

The range is 11. The median is 3. The mode is 2 and 3.

3. 3, 5, 1, 17, 11, 45, 17

Stem	Leaf
0	1 3 5
1	1 7 7
2	
3	
4	5

$$415 = 45$$

The range is 44. The median is 11. The mode is 17.

4. 4, 7, 10, 5, 8, 12, 7, 6

Stem	Leaf
0	4 5 6 7 7 8
1	0 2

$$110 = 10$$

The range is 8. The median is 7. The mode is 7.