

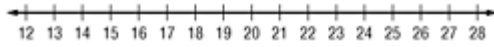
## Lesson 2-5

### Example 1 Create a Line Plot

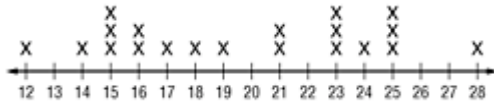
Draw a line plot for the data.

12 15 18 21 15 16 17 25 28 24 23 25 21 16 23 19 14 15 25 23

**Step 1** The value of the data ranges from 12 to 28, so construct a number line containing those points.



**Step 2** Then place an  $\times$  above a number each time it occurs.



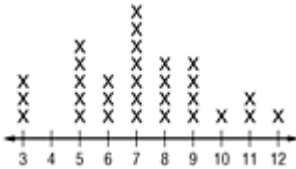
### Example 2 Use a Line Plot to Solve a Problem

The following is a list of sums found when rolling 2 dice.

5 5 3 11 7 6 6 7 7 9 7 11 9 3 10  
9 5 8 7 7 6 8 9 8 12 8 5 7 5 3

a. **Make a line plot of the data.**

The lowest value is 3, and the highest value is 12, so use a scale that includes those values. Place an  $\times$  above each value for each occurrence.



b. **Which sum occurs most frequently?**

Looking at the line plot, the sum of 7 occurs most frequently.

**Example 3 Create a Stem-and-Leaf Plot**

Use the data below to make a stem-and-leaf plot.

2.6 6.8 4.6 2.4 5.1 3.7 8.9 5.3 4.1 2.4 2.4 4.2 3.5 4.4 3.1 3.6  
7.2 3.9 5.4 5.5 5.5 3.9 4.3 2.0 4.0 7.0 3.7 4.4 6.5 6.7 5.9 2.1

The greatest common place value is the ones, so the digits in the ones place are the stems.

Stem	Leaf
2	0 1 4 4 4 6
3	1 5 6 7 7 9 9
4	0 1 2 3 4 4 6
5	1 3 4 5 5 9
6	5 7 8
7	0 2
8	9

2|0 = 2.0

**Example 4 Back-to-Back Stem-and-Leaf Plot**

Jane wants to compare the air qualities of select U.S. metropolitan areas. The data below lists the number of days in 1998 and 1999 that 31 areas failed to meet acceptable air quality standards.

<b>1998</b>	50 76 51 7 7 28 5 17 6 67 10 38 0 56 8 1
	10 17 6 37 17 39 95 27 23 12 33 0 3 29 47
<b>1999</b>	61 88 40 5 12 23 1 15 6 81 18 50 0 27 5 0
	16 24 1 32 12 23 93 38 29 2 16 0 1 22 39

Source: *The World Almanac*

**a. Make a stem-and-leaf plot to compare the data.**

To compare the data, we can use a back-to-back stem-and-leaf plot. Since the data represent similar measurements, the plot will share a common stem.

1999											1998									
6	5	5	2	1	1	1	0	0	0	0	0	0	1	3	5	6	6	7	7	8
				8	6	6	5	2	2	1	0	0	2	7	7	7				
			9	7	4	3	3	2	2	2	3	7	8	9						
						9	8	2	3	3	3	7	8	9						
								0	4	7										
								0	5	0	1	6								
								1	6	7										
									7	6										
						8	1	8	8											
							3	9	9	5										

1|0 = 10

**b. What is the difference between the highest number of days in each class?**

$$95 - 93 = 2$$

- c. **Which year has the highest number of days that failed to meet acceptable air quality standards?**

1998 has 11 data points above 30 days while 1999 has 9 data points above 30 days. 1998 seems to have a higher number of metropolitan areas with a greater number of days that failed to meet acceptable air quality standards.

**Example 5 Analyze Data**

**Which measure of central tendency best represents the data?**

The mean is about 59.8.      Add the data and divide by 19.  
 The median is 60.7.      The middle value is 60.7.  
 The mode is 57.0.      The most frequent value is 57.0

Either the median or the mean best represent the set of data since both measures are located in the center of the data. In this instance, the mode is too low.

Stem	Leaf
57	0 0 0 1 2
58	1 3 4
59	8
60	7 8
61	1 1 2 3 6
62	4 5 9

57|0 = 57.0

**Example 6 Determine the Best Measure of Central Tendency**

**The following is a list of the 15 largest lakes in the United States and Canada by surface area in square miles. Which measure of central tendency best represents the data?**

Source: *The World Almanac*

31,820	3,058	9,094	11,170	1,950
1,800	2,086	12,000	23,010	7,520
1,870	1,817	9,930	22,400	2,444

The mean is 9464.6.      Add the data and divide by 15.  
 The median is 7520.      The middle value is 7520.  
 There is no mode.      There is no value that is frequent.

The median can be used to represent the data. The mean may be too high because of the extreme value 31, 820.