Stem and Leaf Plots

Unit 12 Lesson 3

Students will be able to:

Create Stem and Leaf Plots to display data sets

Summarize numerical data

Key Vocabulary:

Stem and leaf plots

Median

Range

Mode

A stem and leaf plot uses the digits of data values to organize a data set.

Stem and leaf plots have data placed into order from lowest to highest.

The stem and leaf plot shows how data are distributed.

Stem and Leaf Plots

- Each data is broken into **a stem** (digit or digits on the left of the vertical line) and **leaf** (digit or digits on the right of the vertical line).

- The stems all represent tens place in stem and leaf plot.

- The leaves all represent ones place in stem and leaf plot.

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Stem and Leaf Plots

Use the following steps to construct a stem and leaf plot:

Step 1: Order the data from least to greatest.

Step 2: Identify the stems and leaves.

Step 3: Order the stems from least to greatest.

Step 4: Write the leaves next to their stems.

Step 5: Order the leaves from least to greatest.

Step 6: Write the key. The key explains what the stems and leaves represent.

Sample Problem 1: Make a stem and leaf plot to display the data.

a) The data below show the test scores for one student during a semester.

75   82   54   64   54   78   84   92   65

Sample Problem 1: **Make a stem and leaf plot to display the data.**

a) The data below show the test scores for one student during a semester.

75   82   54   64   54   78   84   92   65

Step 1:

Order the data.   54   54   64   65   75   78   82   84   92

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Stem and Leaf Plots

Sample Problem 1: **Make a stem and leaf plot to display the data.**

a)   **Step 2 , 3:**
Stems : 5   6   7   8   9

Step 4, 5, 6 :

Stem	Leaf	
5	4	4
6	4	5
7	5	8
8	2	4
9	2	

Key: 6 | 4 means   64

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Sample Problem 1: **Make a stem and leaf plot to display the data.**

b)   3.1   1.2   2.2   5.4   2.7   1.1   3.5   3.9   2.4   5.8

Sample Problem 1: **Make a stem and leaf plot to display the data.**

b)   3.1   1.2   2.2   5.4   2.7   1.1   3.5   3.9   2.4   5.8

Step 1:
Order the data.
1.1   1.2   2.2   2.4   2.7   3.1   3.5   3.9   5.4   5.8

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Sample Problem 1: **Make a stem and leaf plot to display the data.**

b) **Step 2 , 3:**
This data set has one decimal place and the stem-and-leaf plot does not show decimals. Remember, the leaves show the last digit and the stem shows all the digits before. To show decimal notation, we will state as much in the key.
Stems : 1   2   3   4   5

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Sample Problem 1: **Make a stem and leaf plot to display the data.**

b) **Step 4, 5, 6 :**

Stem	Leaf		
1	**1**	**2**	
2	**2**	**4**	**7**
3	**1**	**5**	**9**
4			
5	**4**	**8**	

Key: 2 | 4 means 2.4

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Sample Problem 1: **Make a stem and leaf plot to display the data.**

b) Notice, in this stem-and-leaf plot we referred to our key to tell others this plot deals with decimal numbers. The stem contains the ones digit and the leaf contains the tenths digit.
Also, we put a value for 4 in the stem, but left the leaf empty since there were no occurrences in the data set

Sample Problem 1: **Make a stem and leaf plot to display the data.**

c)   220   220   200   320   260   250   340   370 110

Sample Problem 1: Make a stem and leaf plot to display the data.

c) **Step 1:**
Order the data.
110   200   220   220   250   260   320   340   370

Sample Problem 1: **Make a stem and leaf plot to display the data.**

c) **Step 2 , 3:**
Since every number in our data set ends in zero, we need to find a way to plot the data in our stem and leaf plot. In this case, let's make the tens digit our leaf and our hundreds digit our stem.

Stems : 1   2   3

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Sample Problem 1: **Make a stem and leaf plot to display the data.**

c) **Step 4, 5, 6 :**

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

Key: 2 | 0 means 200

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Sample Problem 2: **List the data given by the stem-and-leaf plot.**

a)

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

Key: 1 |0 means 10

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Stem and Leaf Plots

Sample Problem 2: **List the data given by the stem-and-leaf plot.**

a)

Stem	Leaf
1	0 0 4
2	1 6
3	1 1 4 8
4	2 3 3
5	8
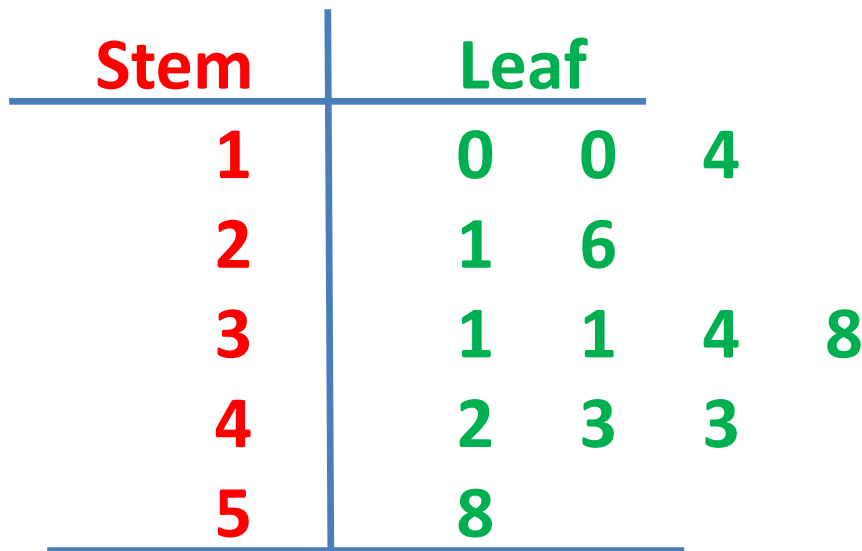
Key: 1 | 0 means 10

10   10   14   21   26   31   31   34   38   42   43   43   58

Stem and Leaf Plots

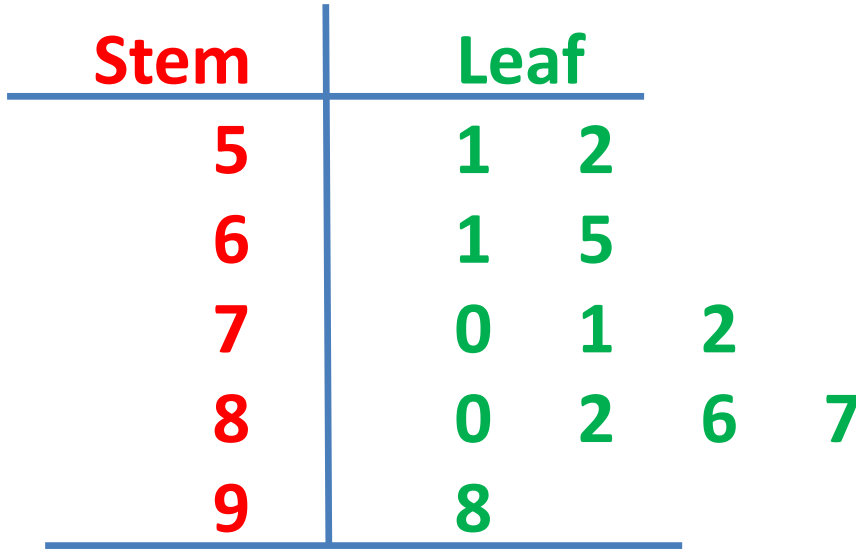**Sample Problem 2:** List the data given by the stem-and-leaf plot.

b)

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

Key: 5 |1 means 5.1

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Sample Problem 2: **List the data given by the stem-and-leaf plot.**

b)

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

Key: 5 | 1 means 5.1

5.1   5.2   6.1   6.5   7.0   7.1   7.2   8.0   8.2   8.6   8.7   9.8

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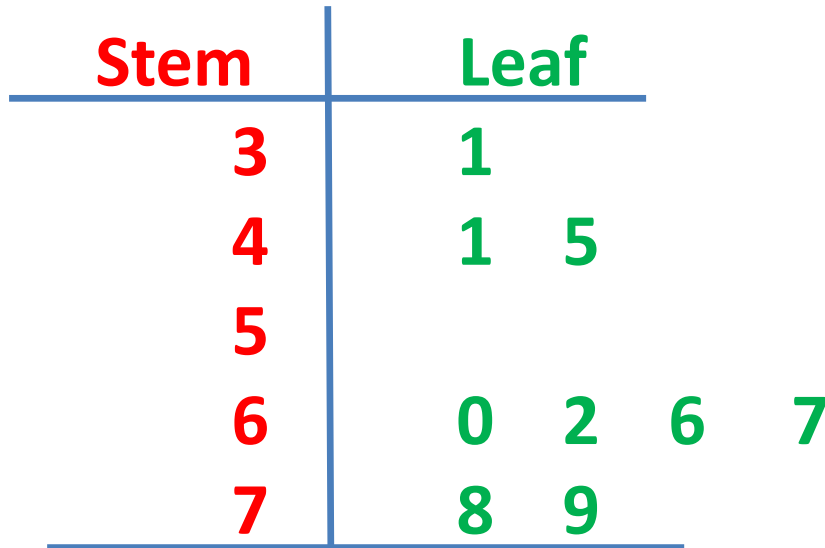**Sample Problem 2:** **List the data given by the stem-and-leaf plot.**

c)

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

Key: 6 | 0 means 600

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Sample Problem 2: **List the data given by the stem-and-leaf plot.**

c)

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

Key: 6 | 0 means 600

310   410   450   600   620   660   670   780   790

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Sample Problem 3:   **Use the stem and leaf plot to find the data and answer the questions.**

a) The stem and leaf plot shows daily low temperatures (F°)

Stem	Leaf
1	5 6
2	1 5 7
3	0 6

Key: 1 | 5 means 15 F°

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Sample Problem 3:   **Use the stem and leaf plot to find the data and answer the questions.**

a) The stem and leaf plot shows daily low temperatures (F°)

- Make an ordered list of the 7 values.

Sample Problem 3: **Use the stem and leaf plot to find the data and answer the questions.**

a) The stem and leaf plot shows daily low temperatures (F°)

- 15   16   21   25   27   30   36

Sample Problem 3: **Use the stem and leaf plot to find the data and answer the questions.**

a) The stem and leaf plot shows daily low temperatures (F°)

- Find least value, greatest value, mean, median, mode and range.

Sample Problem 3: **Use the stem and leaf plot to find the data and answer the questions.**

a) The stem and leaf plot shows daily low temperatures (F°)

- Least value : 15 F°

Greatest: value: 36 F°

Mean $= \dfrac{\mathbf{15+16+21+25+27+30+36}}{\mathbf{7}} = \mathbf{24.28 \ F^\circ}$

Median: 25 F°

Mode none

Range: 36 − 15 = 21 F°

Sample Problem 3: **Use the stem and leaf plot to find the data and answer the questions.**

a) The stem and leaf plot shows daily low temperatures (F°)

- What interval includes the most data?

Sample Problem 3: **Use the stem and leaf plot to find the data and answer the questions.**

a) The stem and leaf plot shows daily low temperatures (F°)

- Interval between 20 F° and 29 F

Making a Back-to-Back Stem and Leaf Plot

- The back-to-back stem and leaf plots are used to compare two distributions side-by-side. This type of back-to-back stem and leaf plot contains three columns, each separated by a vertical line.
- The center column contains the stems.
- The first and third columns each contain the leaves of a different distribution. The numbers for the leaves of the distribution in the left most columns are aligned to the right and are listed in order.

Sample Problem 4: **Make a back-to-back stem and leaf plot and answer the question.**

The data below show times, in minutes, those two friends spent online in the last week.

John: 35   26   30   48   56   13   38
Michael: 46   15   16   10   44   49   32

a)   Who spent the most time online in the last week?

Sample Problem 4: **Make a back-to-back stem and leaf plot and answer the question.**

John: 13   26   30   35   38   48   56

Michael: 10   15   16   32   44   46   49

Stem and Leaf Plots

Sample Problem 4: Make a back-to-back stem and leaf plot and answer the question.

John	Stem	Michael
1	0	5 6
6	2	
8 5 0	3	2
8	4	4 6 9
6	5	

Key: 8 | 4 | 4 means 48 and 44 minutes

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Stem and Leaf Plots

Sample Problem 4: **Make a back-to-back stem and leaf plot and answer the question.**

John	Stem	Michael
1	0	5 6
6	2	
8 5 0	3	2
8	4	4 6 9
6	5	

Key: 8 | 4 | 4 means 48 and 44 minutes

a) John spend the most time online last week.

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