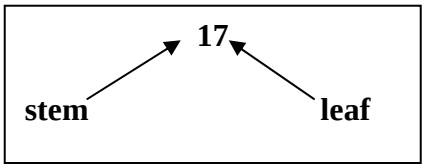
Stem and Leaf Plots Examples

1. A stem and leaf plot is a method used to organize statistical data. The greatest common place value of the data is used to form the stem. The next greatest common place value is used to form the leaves.



2. **EXAMPLE**: Make a stem and leaf plot of the algebra test scores given below. Then complete each question.

56, 65, 98, 82, 64, 71, 78, 77, 86, 95, 91, 59, 69, 70, 80, 92, 76, 82, 85, 91, 92, 99, 73

1st put the scores in numerical order.

56, 59, 64, 65, 69, 70, 71, 73, 76, 77, 78, 80, 82, 82, 85, 86, 91, 91, 92, 92, 95, 98, 99

Since the data range from 56 to 99, the stems range from 5 to 9. To plot the data, make a vertical list of the stems. Each number is assigned to the graph by pairing the units digit, or leaf, with the correct stem. The score 56 is plotted by placing the units digit, 6, to the right of stem 5.

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

a. What type of graph does a stem and leaf plot represent when turned vertically? **Histogram**

b. What was the lowest score on the algebra test? **56**

c. What was the highest score on the algebra test? **99**

d. In which interval did most students score? **90 to 99**

3. **EXAMPLE**: Make a stem and leaf plot of the history test scores given below. Then complete each question.

65, 82, 73, 91, 95, 86, 78, 69, 80, 88

1st put the scores in numerical order.

65, 69, 73, 78, 80, 82, 86, 88, 91, 95

Since the data range from 65 to 95, the stems range from 6 to 9. To plot the data, make a vertical list of the stems. Each number is assigned to the graph by pairing the units digit, or leaf, with the correct stem. The score 65 is plotted by placing the units digit, 5, to the right of stem 6.

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

   a. What was the lowest score on the history test? **65**

   b. What was the highest score on the history test? **95**

   c. In which interval did most students score? **80 to 89**

4. Data with more than two digits can be rounded to two digits before plotting or can be truncated to two digits. To truncate means to cut off. For a stem and leaf plot, you would truncate everything after the second digit.

The number 355 would round to 36	**355 ➔ 36**
The number 355 would truncate to 35	**355 ➔ 35**

   a. To what does 389 round? **39**

   b. To what does 389 truncate? **38**

5. A back-to-back stem and leaf plot is sometimes used to compare two sets of data or rounded and truncated values of the same data. In a back-to-back plot, the same stem is used for the leaves of both plots.

6. **EXAMPLE**: Estimated populations of counties in California are listed below. Make a back-to-back stem and leaf plot of the populations comparing rounded values and truncated values.

County	Pop. (thousands)	County	Pop (thousands)
Butte	149	San Bernardina	893
Contra Costa	657	San Francisco	679
Fresno	515	San Mateo	588
Kern	403	Santa Barbara	299
Marin	223	Santa Cruz	188
Sacramento	783	Sonoma	300

Put data into order. Then round and truncate to two digits.

POPULATION IN THOUSANDS		
Normal	Rounded (2 digits)	Truncated (2 digits)
149	15	14
188	19	18
223	22	22
299	30	29
300	30	30
403	40	40
515	52	51
588	59	58
657	66	65
679	68	67
783	78	78
893	89	89

Using rounded data, 2|2 represents 215,000 – 224,999 people

Using truncated data, 2|2 represents 220,000 – 229,999 people

Rounded		Truncated
9 5	1	4 8
2	2	2 9
0 0	3	0
0	4	0
9 2	5	1 8
8 6	6	5 7
8	7	8
9	8	9

7. **EXAMPLE**: The enrollments of several small colleges are listed below. Make a back-to-back stem and leaf plot of enrollments comparing rounded values and truncated values. Then answer each question

College	Enrollment
Miller Business School	**1342**
Capital College	**1685**
Para Professional Institute	**1013**
Parke College	**2350**
State Community	**3781**
Fashion Institute	**1096**
College of Art and Design	**1960**
Franklin Community College	**3243**

Put data into order. Then round and truncate to two digits.

Enrollment		
Normal	**Rounded (2 digits)**	**Truncated (2 digits)**
1013	**10**	**10**
1096	**11**	**10**
1342	**13**	**13**
1685	**17**	**16**
1960	**20**	**19**
2350	**24**	**23**
3243	**32**	**32**
3781	**38**	**37**

Back-to-back stem and leaf plot

Rounded		Truncated
7 3 1 0	**1**	**0 0 3 6 9**
4 0	**2**	**3**
8 2	**3**	**2 7**

a. What range of student enrollment is represented by 2|4? **2350 - 2449**

b. What range of student enrollment is represented by 1|9? **1900 - 1999**

Name:_____
Date:_____
Class:_____

Stem and Leaf Plots Worksheet

Truncate each number to two digits.

1. 456,876
2. 34,591
3. 1,234
4. 1,234,567

Write the stems that would be used to plot each set of data.

5. 23, 45, 56, 12, 27, 56, 37
6. 8, 11, 23, 37, 31, 42, 59
7. 230, 456, 784, 245, 745, 357
8. 4.5, 6.1, 5.8, 9.8, 4.1, 3.2

Use the stem and leaf plot to answer these questions.

History Test Scores

Stem	Leaf
6	1 1 4 6 7 8
7	2 3 5 7 9
8	1 3 5 6 6 7 7 8 9
9	0 0 3 4 6 8 9 9
10	0 0

9. What is the best test score?
10. How many students took the test?
11. How many students scored 90?
12. What is the lowest score?
13. Find the difference between the high and low scores.

Use the ages of the people who attended a gymnastics meet to complete 14 – 17.

AGES: 12, 17, 15, 14, 19, 17, 13, 16, 15, 16, 17, 18, 24, 23, 28, 45, 48, 36, 12, 23, 15, 14, 13, 15, 17, 18, 19, 15, 15, 16, 16, 16, 16, 17

14. Make a stem and leaf plot of the data.
15. How many people attended the meet?
16. What are the ages of the youngest and oldest persons attending?
17. Which age group was more widely represented?

The stem and leaf plot below gives the truncated average weekly incomes (in hundreds of dollars) of several families.

Stem	Leaves
1	9 9
2	1 5
3	1 1 3 4 9 9
4	0 2 9
5	5
6	1 2

18. What was the highest weekly income?

19. What was the lowest weekly income?

20. Find the difference between the highest and lowest weekly income.

21. How many families earn more than $500 per week?

22. What range does 4|2 represent?

Stem and Leaf Plots Worksheet Key

Truncate each number to two digits.

1. 456,876 ➔ **45**
2. 34,591 ➔ **34**
3. 1,234 ➔ **12**
4. 1,234,567 ➔ **12**

Write the stems that would be used to plot each set of data.

5. 23, 45, 56, 12, 27, 56, 37 ➔ **1, 2, 3, 4, 5**
6. 8, 11, 23, 37, 31, 42, 59 ➔ **0, 1, 2, 3, 4, 5**
7. 230, 456, 784, 245, 745, 357 ➔ **2, 3, 4, 5, 6, 7**
8. 4.5, 6.1, 5.8, 9.8, 4.1, 3.2 ➔ **3, 4, 5, 6, 7, 8, 9**

Use the stem and leaf plot to answer these questions.

History Test Scores

Stem	Leaf
6	1 1 4 6 7 8
7	2 3 5 7 9
8	1 3 5 6 6 7 7 8 9
9	0 0 3 4 6 8 9 9
10	0 0

9. What is the best test score? ➔ **100**
10. How many students took the test? ➔ **30**
11. How many students scored 90? ➔ **2**
12. What is the lowest score? ➔ **61**
13. Find the difference between the high and low scores. ➔ **39**

Use the ages of the people who attended a gymnastics meet to complete 14 – 17.

14. Make a stem and leaf plot of the data.

AGES: 12, 17, 15, 14, 19, 17, 13, 16, 15, 16, 17, 18, 24, 23, 28, 45, 48, 36, 12, 23, 15, 14, 13, 15, 17, 18, 19, 15, 15, 16, 16, 16, 16, 17

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

15. How many people attended the meet? ➔ **34**

16. What are the ages of the youngest and oldest persons attending? ➔ **12 years and 48 years**

17. Which age group was more widely represented? ➔ **teens**

The stem and leaf plot below gives the truncated average weekly incomes (in hundreds of dollars) of several families.

Stem	Leaves
1	**9 9**
2	**1 5**
3	**1 1 3 4 9 9**
4	**0 2 9**
5	**5**
6	**1 2**

18. What was the highest weekly income? ➔ **$620 - $629**

19. What was the lowest weekly income? ➔ **$190 - $199**

20. Find the difference between the highest and lowest weekly income. ➔ **$430**

21. How many families earn more than $500 per week? ➔ **3**

22. What range does 4|2 represent? ➔ **$420 - $429**