


Grade 8 Mathematics

Data Analysis, Probability, and Discrete Math:

Lesson 8

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol () by them.

Purpose of Lesson 8:

- In this lesson, the tutor and the students will
 - ✓ organize and display data using stem-and-leaf plots.

Equipment/Materials Needed:

- Copies of Student Sheet 116
- Paper and pencils
- Chalkboard

Preparations before beginning Lesson 8:

- Run one copy of Student Sheet 116 for each student.
- Have paper and pencils available.

Lesson 8: Data Analysis, Probability, and Discrete Math

Say:

In some of the other lessons in Data Analysis, you looked at displays of data, such as bar graphs, circle graphs, pictographs, and tables. In this lesson, you will learn to display data in a different way. A *Stem-and-leaf plot* is another display of data.

Say:

Stem-and-leaf plots allow you to see the least and greatest values in a set of data easily. They also allow you to check quickly how many pieces of data fall into various ranges. They allow you to see which data value occurs most frequently.

 Write these scores on the board.

89	65	99	98	88
89	72	92	96	84
78	89	85	87	84
70	90	82	60	82


Say:

Suppose these scores are the test scores on the last science test. Your teacher wants to get an idea of how the class performed on the test. A stem-and-leaf plot will allow her to see the scores in an ordered way.

 Draw this table on the board.

stem	leaf
8	9
6	5

once.

 Have one student call out the scores. As the student calls out the scores, write the ten's digit in the column marked stem, and the one's digit in the column marked leaf. You write the ten's digit only

 Continue with the plot.

stem	leaf
6	5 0
7	2 8 0
8	9 8 9 4 9 5 7 4 2 2
9	9 8 2 6 0

Say:

It is usually wise to rearrange the plot so that the leaves are in numerical order.

stem	leaf
6	0 5
7	0 2 8
8	2 2 4 4 5 7 8 9 9 9
9	0 2 6 8 9

Say:

When you make a stem-and-leaf plot, you should make sure that you write the numbers directly below one another. This order makes it easier to compare the numbers. You should also put a key or legend with the plot so that someone else can understand what your graph is about. The key $8 | 2$ represents a score of 82.

Ask the following questions.

What do the numbers in the stem represent? (the ten's digit of each score)

What do the numbers in the leaf represent? (the one's digit of each score)

What is the lowest score in the class? (60) What is the highest score in the class? (99) What is the range of scores? (the difference in highest and lowest scores, 60 to 99, or 39 points) Which score is the mode? (99)

Remember that the *mode* is the data that occur most often. Suppose someone made a 100 on the test. How would you show this score?

stem	leaf
10	0

This chart shows 10 tens and no ones. Suppose someone made a six (6) on the test, how would you show this score?

stem	leaf
0	6

This chart shows zero (0) tens and six (6) ones. The *median* is the middle score. How many scores are in the plot? (20) The median would be the score that is halfway between the 10th and 11th scores. Which is the 10th score? (85) Which is the 11th score? (87) The median would be 86.

🕒 Give students Student Sheet 116.

Answers:

1.

stem	leaf
6	2 8 5
7	5 6 4 8
8	5 7 5 2 5 5 7 3 4
9	1 3 2 4 3

2. organized

stem	leaf
6	2 5 8
7	4 5 6 8
8	2 3 4 5 5 5 5 7 7
9	1 2 3 3 4

3. 85°F; mode
4. from 62°F to 94°F
5. 62°F
6. 94°F
7. 1 day
8. 2 days
9. 9 temperatures
10. 85°F

🕒 Have one student summarize today's lesson. Stem-and-leaf plots are a way to get a quick picture of the distribution of data.

Student Sheet 116 (Data Analysis: Lesson 8)

The following are the high temperatures (in Fahrenheit degrees) for a three-week period in Alexandria.

75°	76°	85°	87°	85°	62°	68°
65°	74°	78°	82°	85°	91°	93°
92°	85°	87°	94°	93°	83°	84°

1. Draw a stem-and-leaf plot for the temperatures.
2. Organize your plot in numerical order.
3. Which temperature occurred most often? What is this measure called?
4. What was the range of temperatures?
5. What was the lowest high temperature?
6. What was the highest high temperature?
7. How many days had a high temperature of 68°?
8. How many days had a high temperature of 93°?
9. How many high temperatures were in the 80's?
10. What was the median temperature?