

Title of Book: Martha Blah Blah
Author: Susan Medoaugh
Publisher/Year: Sandpiper, 1996
ISBN: 978-0-395-90118-2

Grade Levels for Recommended Use: 3-5

TEKS: 3.8 Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. The student is expected to: (A) summarize a data set with multiple categories using a frequency table, dot plot, pictograph, or bar graph with scaled intervals

4.9 Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. The student is expected to: (A) represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions; and

5.9 Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. The student is expected to: (A) represent categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots.

Brief Summary: When Martha the dog eats alphabet soup, the letters go to her brain instead of her stomach, allowing her to speak. To increase profit, the new owner of the soup company decides to layoff many of the workers, leaving the cans of soup without all the letters of the alphabet. It's up to Martha to set things right.

Materials needed: Adding machine tape (2 ft strip with the letters of the alphabet written on it in the order of their frequency – etao ni srhldcu pf mwy bg vk qx jz – letters that are grouped and underlined have the same frequency), notebook paper, pencils

Suggested Activity:

1. Read *Martha Blah Blah* by Susan Medoaugh.
2. Ask student if they think there are any letters that could have been left out of the soup that wouldn't make a difference to Martha's speech and to explain why. Would there be any letters that they think *have* to be in the soup? Why?
3. Ask the students if they have any ideas as to how we could figure out which letters are used the most and the least. Discuss student ideas.
4. Explain to students that one way of collecting data is to make tally marks to keep track of the number of items being counted and that the resulting information is called a *frequency distribution*. Discuss with students what the words *frequency* and *distribution* mean.
5. Write the following sentence on the board: *Throughout human history, people have been measuring all kinds of things.* Tell students that you are going to show

- them how to make a frequency distribution to find which letters are used the most and least in this sentence.
6. List the letters of the alphabet in order either vertically or horizontally on the board. Show students how to go one letter at a time through the sentence and make tally marks next to/under each alphabet letter you listed on the board. Continue until all letters have been recorded with a tally mark.
 7. Ask students what they notice.
 8. List the letters in order from greatest use to least use horizontally across the board. If any letters are used equally, place them next to each other and draw a line under them to indicate that they are equal.
 9. Explain to students that recording the data from one sentence is only a small sample and to get a more accurate measure (more reliable conclusion) of which letters are used the most and the least we would have to analyze more sentences.
 10. Give each student a sheet of notebook paper. Have each student choose a sentence out of a book, record it at the top of their paper, make a list of the alphabet, and tally up the letters in their sentence.
 11. Have each student report the number of tally marks for each letter of their sentence and add those numbers to the list already on the board.
 12. After each student has reported his/her finding, total up each letter's tally marks and record the final number above the letter.
 13. Make a second list of the letters in order from greatest use to least use. If any letters are used equally, place them next to each other and draw a line under them to indicate that they are equal.
 14. Compare the two lists and discuss any differences.
 15. Display the adding machine tape and compare the class' results to those on the adding machine tape. Explain that the order listed on the adding machine tape was compiled by the United States Army. Ask students why the Army would need to know such information (answer: code breaking and when Samuel Morse invented Morse code the letters used most often needed the easiest codes).
 16. Ask students if they can think of an instance of when the frequency of letter use would be important in their lives (Ex: Scrabble letter points).
 17. Closure - Write the following sentences on the board: *This is Odd. Do you know why? Can you try to find out?* Ask students what they notice about the sentences (answer: there is no E).

References: Lesson adapted from:

Bresser, R. (2004). *Math and literature, grades 4-6 (2nd ed.)*. Sausalito, CA: Math Solutions.

Adapted by: Kimberly Jones (2018)