

Mean, Median, Mode, and Range

Purpose

Students will find the mean, median, mode, and range of a set of data and describe what each does and does not tell about the data set.

Materials

For the teacher: chalkboard, chalk

For each student: copy of Black Line Master (BLM) *Mean, Median, Mode, and Range*

Activity

A. Introduction

1. Explain to the class that sometimes it is necessary to summarize a data set with just one number. Write the data set “3, 2, 3, 3, 4, 3” on the chalkboard and ask which one number would be best to summarize it. [Students are most likely to answer 3.] Tell students that this number, the one that occurs most often, is called the *mode*.
2. Ask a group of nine or 11 students (an odd number) to line up in order of height. Ask the class which one person they would choose to represent the heights in this set. [Students should choose the middle person.] Tell them that this number, the one in the middle, is called the *median*.
3. Have one student in the set sit down, and ask the class what the middle height is now. If necessary, separate off the end students in pairs until you reach the middle pair. Tell students that, in this kind of situation, the median is halfway between the middle two values. Ask the data set to sit down.
4. Tell the class that there is another way of choosing a single number to summarize a data set. Give them a set of test scores (e.g., 90, 85, 83, 84, 93) and ask them how they would choose a single number to summarize these scores. [Students should say that you should find the average.]
5. Ask students how to find the average of the set of test scores. [Students should tell you to add them up and divide by 5.] Tell students that this value is called the *mean* and is just one of the three ways of finding an average for a data set, because the median and the mode are also types of averages.

(continued)

connecting across the curriculum



Social Studies

Have students find the age of each president when he took office and then find the mean, median, mode, and range of the ages.

EXTENDING THE ACTIVITY



Have students gather the different finish times for a variety of races, long jump measures, shotput distances, etc. Have them find the mean, median, mode, and range of the data.

Standards Links
5.2.1, 5.2.6

Activity (continued)

6. Tell the class that sometimes it is necessary to know how spread out a data set is. For example, if a tall basketball player joined the class line of heights, the median would not change much (if at all), but the difference between the largest and smallest height might increase by more than a foot. Therefore, we sometimes want to know the *range* of a data set, which is the difference between the largest and smallest values.
7. Have students practice finding the mode, median, mean, and range with the following data set: 6, 5, 25, 6, 3. [Mode: 6; median: 6; mean: 9; range: 22]

B. Individual Activity

Have students complete the BLM *Mean, Median, Mode, and Range*.

C. Class Discussion


Look through the answers to the BLM and ask questions such as:


- Why is the mean in Question 6 so different from the mode and the median?
- If you were stocking a shoe store, which average in Question 7 would you be interested in?


Questions for Review


Basic Concepts and Processes


During the activity, discuss the following questions with your students:


 How do you find the mode?

 Is there always just one mode?

 Is the mode always one of the numbers in the list?

 Have you put the numbers in order of size before trying to find the median?

 Is the median always one of the numbers in the list?

 Is the mean always one of the numbers in the list?

Name: _____

Mean, Median, Mode, and Range

Find the mean, median, mode, and range for each set.

1. 69, 74, 86, 73, 70, 69, 84

a. mean _____ b. median _____

c. mode _____ d. range _____

2. 47, 40, 48, 47, 41, 47, 45

a. mean _____ b. median _____

c. mode _____ d. range _____

3. 33, 34, 35

a. mean _____ b. median _____

c. mode _____ d. range _____

4. 11, 12, 13, 14, 15

a. mean _____ b. median _____

c. mode _____ d. range _____

5. The quiz scores from a class were: 7, 10, 6, 7, 2, 0, 20, 16, 18, 14, 24, 27, 15, 30, 14.

a. mean _____ b. median _____

c. mode _____ d. range _____

6. The ages of the people in the fifth row at the ball game were: 12, 12, 11, 5, 2, 34, 37, 50, 52, 10, 10, 12, 16, 29, 8.

a. mean _____ b. median _____

c. mode _____ d. range _____



7. There were nine people standing in line to check out at the library. Their shoe sizes were: 4, 9, 7, 5, 8, 8, 5, 11, 6.

a. mean _____ b. median _____

c. mode _____ d. range _____

8. Your scores on tests in math are 89, 95, and 76. You will be taking one more test and you want your average (mean) to be 90. What will your score have to be?

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Teacher Directions

Distribute the BLM *Mean, Median, Mode, and Range* and have students complete it individually.

Answer Key

1) a. mean 75 b. median 73
 c. mode 69 d. range 17

2) a. mean 45 b. median 47
 c. mode 47 d. range 8

3) a. mean 34 b. median 34
 c. no mode d. range 2

4) a. mean 13 b. median 13
 c. no mode d. range 4

5) a. mean 14 b. median 14
 c. mode 7 and 14 d. range 30

6) a. mean 20 b. median 12
 c. mode 12 d. range 50

7) a. mean 7 b. median 7
 c. mode 5 and 8 d. range 7

8) 100