

MEASURES OF CENTRAL TENDENCY

Subject

Mathematics

Prepared By

[Instructor Name]

Grade Level

4

Overview

This lesson plan covers teaching content for;

1. Identifying mode of a given data
2. Identifying the median of a given data
3. Calculating the mean of a given data
4. Apply these measures in real life applications
5. Quantitative reasoning on measures of central tendency

Objectives

Students should be able to;

1. Find the mode of a given data
2. Identify the mode as applicable in daily life activities
3. Calculate the mean of a given data
4. Identify mean of a set of data in daily life activities
5. Solve quantitative aptitude problems on mode and mean of data.

Guided Practice

Day 2/ Lesson 2: 20 Mins

1. The median value in a set of numbers is the number in the middle.
2. The median is the value that corresponds to the

Activity Starter/Instruction

1. Pupils sometimes give the frequency of the mode instead of the mode.
2. This comes about when using frequency tables, as the pupils look to find the highest frequency, and simply write this down, instead of the number from the data.
3. Make sure that they realize the mode has to be one of the original numbers in the set of data
4. mode: the number which appears most often in a set of numbers
5. mean: the average value of a set of numbers
6. Ask students for the purpose of finding an average. Answer student questions and comments.
7. Introduce students to "measures of central tendency" and why we use them (Mean, Median, and Mode Examples).

Teacher Guide

Day 1/ Lesson 1: 15 Mins

1. Display the Visual definition for mode, pointing out the definition "the most frequent value..." and explaining that the most popular shoe size of the class would be called the mode.
2. One way to remember that the mode is the "most popular" value is that mode and most both begin with the letter combination "m-o"
3. You could point out another meaning of mode relates to fashion (as in "a la mode") since students may associate both meanings as they relate to the concept of "popular."
4. Solve: Present students with the following problem to solve:
5. Q: How can Theo use the concept of "mode" to prove that he is a valuable member of his basketball team? Here are Theo's point totals from the nine games in which he played: 6, 8, 14, 12, 11, 14, 4, 6, 14.
6. Since mode is the most popular or frequently occurring value among a set of numbers, Theo can use the modal value of

Materials Required

- Whiteboard
- Ruler
- Pencil
- Marker
- Blank sheet
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Additional Resources

- <http://www.beaconlearningcenter.com/Lessons/Lesson-1-Mode-Median-Mean>
- <https://www.visualthesaurus.com/cm/lessons/the-three-measures-of-central-tendency-statistics-mode-median-mean/>
- <https://www.universalclass.com/articles/math/statistics/how-to-calculate-mean-median-mode.htm>
- <https://www.teachervision.com/probability-statistics/mean-median-mode-mean>
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Additional Notes

middle of an ordered set of data; that is to say, exactly half the data values in a set are below the median and exactly half are above the median.

3. Collectively solve a median problem:
4. Choose something that each student in the class can individually count—such as number of pencils or markers in their desks, number of pages in a book they are reading, etc.
5. The easiest (conceptually, anyhow) method of calculating the median of a data set is to write the data in ascending order, then find the middle value.
6. If the data set has an odd number of values, the median is a clear single value; if the data set has an even number of values, there is no single middle value.
7. Instead, in this latter case, the median can be defined as the mean of the two middle values.

Guided Practice

Day 3/ Lesson 3: 15 Mins

The concept of Mean/Average

1. Explain that most people use the verb form of "to average" to describe how to find the mean value (i.e., total all the numbers and then divide by how many numbers there are).
2. One way to remember that the mean is the average of a set of numbers is to associate the two words in a sentence, such as "It's mean to call someone 'average'."
3. Present students with the following problem to solve:

Q: A teacher told the class that he would use the mean value of students' test scores to determine their final grades. If Mary scored 90, 85, 80, 85, and 100 on her exams, what will be her final grade?

Ans: Adding the test scores totals 440. 440 divided by 5 equals 88—Mary's final grade.

14 points to show off his basketball scoring record.

Guided Practice

Day 4/ Lesson 4: 30 Mins

1. Calculate the mean of the following data set:
{1, 2, 3, 4, 5, 7, 10, 15, 21, 22, 23, 24, 25, 26}
Simply use the formula for the mean μ as given above. The result is the same regardless of whether the data corresponds to a population or a sample. Note that this data set contains 14 data values.
2.
$$\mu = \frac{1+2+3+4+5+7+10+15+21+22+23+24+25+26}{14}$$
$$= \frac{188}{14} = 13.4.$$

Thus, the mean of the data set is about 13.4.
3. Consider this dataset: (45°, 48°, 51°, 53°, 55°, 57°, 62°, 63°, 69°, 101°)
4. What is the median? (If the data set has two middle numbers, in this case 55° and 57°, then the median is the number halfway between the two—56°.)
5. What is the mode? (There is no mode because no number occurs more than once.)
6. What is the mean? $(45 + 48 + 51 + 53 + 55 + 57 + 62 + 63 + 69 + 101 = 604. 604) \div 10 = 60.4^\circ$
7. Which temperature would you eliminate to make all the temperatures fit into spring? (101°)

Assessment Activity

Assessment Activity

1. 8, 9, 2, 12, 12, 10, 14, 14, 5

Mean =

Mode =

Median =

2. 15, 11, 5, 12, 12

Mean =

Mode =

Median =

3. 2, 3, 9, 11, 13, 10, 5, 4

Mean =

Mode =

Median =

Assessment Activity

Summary

Review and Closing

1. To check for understanding, have the students answer the Assessment Questions.
 2. Students should be able to define median, mode, range, and mean and the steps or operations needed to find them.
 3. successfully order data from least to greatest.
 4. Identify the mode, if any, and calculate the range from any ordered data set.
 5. Find the median of both even and odd sets of data.
 6. solve for the mean, a more complex operation that may require more practice. Lead students in the process of estimating how the mean value will change as the values change in the data set.
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