



Problem of the Week

Problem A and Solution

Healthy Eating

Problem

Ms. Morgan's health class is discussing healthy eating choices. She asked 9 of her students to write down how many servings of fruits or vegetables they eat every day. The following chart shows the results.

Servings of Fruits or Vegetables per Day

Student's Name	Number of Servings
Vlad	3
Tessa	2
Shaheed	4
Maja	2
Mike	3
Braydon	2
Priya	6
Juan	2
Layla	3

Given this data, what is the *median* (the number in the middle of the data when arranged in order) and the *mode* (the most common number) for the number of servings of fruits or vegetables consumed in a day by these students in Ms. Morgan's health class?

Solution

One way to solve this problem is to list the numbers of servings in sorted order:

$$2, 2, 2, 2, \textcircled{3}, 3, 3, 4, 6$$

Since there are 9 data values, then the middle number is the 5th value of the sorted list. In the list above we have circled the middle number. So the median of the data is 3.

Also, the number that appears most often is 2. So 2 is the mode of the data.



Teacher's Notes

Students may ask, “What is the average on a test?”, so they can judge how their own grade is measured against other students’ results. When they ask that question, they probably are asking about the *mean* value of the set of test marks. The *mean* is calculated by adding the numbers in the set of data together and dividing the sum by the size of the set. The mean of a set can be strongly influenced by extreme data values, so some would argue that the *median* is a better point of comparison.

For example, if the marks the class were: 70, 72, 73, 75, 100, then the *mean* would be $(70 + 72 + 73 + 75 + 100) \div 5 = 78$. In this case, four marks appear “below average”, whereas if we compare the results to the median (73), now only two marks are “below average” and most marks are close to the average. With this data set, the median probably describes the overall results of the class better than the mean.

There are two cases to consider when calculating the median of a set of numbers. When there are an odd number of values in the data set, when the data is arranged in order the middle number is the median. When there an even number of values in the data set, the mean of the two middle numbers is the median value.