

Section 9.2

TERMINOLOGY

9.2

For each of the following terms, provide 1) a definition in your own words, 2) the formal definition (as provided by your text or instructor), and 3) an example of the term using a drawing or problem. A sample filled-out form is available in the Introduction.

Mean

Your definition	
Formal definition	
Example	

Median

Your definition	
Formal definition	
Example	

Mode

Your definition	
Formal definition	
Example	

READING AND SELF-DISCOVERY QUESTIONS**9.2**

1. What is another name for the mean? **the average**
2. What process do you use for finding the mean of a group of numbers?
Find the sum of the numbers and divide by the number (amount) of numbers.
3. What process do you use for finding the median in a set of numbers with an odd number of members?
Arrange the numbers in order and then pick the number that has the same number of items above or below it. If there is an even number of items, take the average of the two middle numbers.
4. How would you explain to another student how to find the median of a set of numbers with an even number of members?
If there is an even number of items, the average of the two middle two numbers will be the median.
5. The mode of a set of numbers only appears in what situation?
The mode of a set of numbers is the number(s) that appears most often. There can be two or more modes. A set of numbers with each value occurring only once is said to have *no mode*.

CRITICAL THINKING QUESTIONS**9.2**

1. What is a real life example of when the mean is the best measure for data? Explain your answer.
Student answers will vary. A sample answer is: Major league batting averages. There are no extreme values.
2. What is a real life example of when the mode is the best measure for data? Explain your answer.
Student answers will vary. An example is: Students' favorite classes. The one(s) that occurs most is/are the most popular.
3. What is a real life example of when the median is the best measure for data? Explain your answer.
Student answers will vary. An example is: Salaries of company employees. There are usually one or two salaries that are very high in comparison with other salaries.
4. When would the median and mode be the same number? Use an example and be sure to explain your answer.
**The median and the mode would be the same if there are a lot of numbers that are the same in the middle of an ordered set of data.
2, 3, 4, 4, 4, 5, 6**

5. Why must values be ordered from smallest to largest before you can find the median value?

The median is the value that has the same number of values above and below it (in order). The values have to be placed in order before this can be determined.

6. Explain in your own words how you can remember:

a) Mean is the average

Student answers will vary.

b) Median is the value that has the same number of values above it as below it

Student answers will vary.

c) Mode is the number or numbers that occur most often

Student answers will vary.

DEMONSTRATE YOUR UNDERSTANDING

9.2

1. Complete the following table. Show your calculations.

Data	Mean	Median	Mode
Test scores: 84, 73, 81, 73	$\frac{84 + 73 + 81 + 73}{4}$ $= 77.75$	$\frac{73 + 81}{2} = 77$	73

2. Create a set of data in which the mean and median are the same value but the mode is different.

Data	Mean	Median	Mode
32, 34, 35, 37, 37	35	35	37
Student answers will vary; above is a model answer.			

3. Create a set of data in which the median and mode are the same value but the mean is different.

Data	Mean	Median	Mode
2, 3, 35, 35, 37, 40	$\frac{152}{2} = 76$	35	35
Student answers will vary; above is a model answer.			

4. Write a set of data such that the mean, median and mode are all different values.

Data	Mean	Median	Mode
2,2,5,6,7	$\frac{22}{5} = 4.4$	5	2
Student answers will vary; above is a model answer.			

IDENTIFY AND CORRECT THE ERRORS

9.2

In the second column, identify the error(s) you find in the following worked solution and describe the error made. Solve the problem correctly in the third column.

Problem	Describe Error	Correct Process
Find the mode, mean, and median for the following information: Shoe sizes in a class: 4, 5, 6, 7, 7, 7, 7, 8, 8, 8, 8, 8, 9, 12	Student miscounted the number of items in the list. Miscounted the number of 8's or 7's.	Mode = 8 – the number that appears most often in the list. Mean = $104/14 \approx 7.43$ – the number of items is 14 Median = $\frac{7+8}{2} = 7.5$
Worked Solution <i>(What is wrong here?)</i>		
Mode = 7 Mean = $104 \div 13 = 8$ Median = 7		