

Chapter 5: Statistical Reasoning

5.1: Exploring Data

Measures of central tendency

- **Mean: add all the values together and divide by the number of values**
- **Median: put the values in order and find the middle value**
- **Mode: the most frequent value**

Example 1: Test scores of 10 randomly chosen students are as follows:

24, 37, 48, 53, 60, 60, 71, 78, 84, 99

(a) Find the mean

(b) Find the median

(c) Find the mode

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Outlier: data significantly different from the others

Example 2: Test scores for Jack and Rose in Math 2201 are given below:

Jack: 87%, 91%, 92%, 85%, 24%

Rose: 97%, 86%, 95%, 79%, 84%

(a) Determine the mean, median, and mode for each student

(b) Are the students marks similar or different for the most part?

(c) Which measure of central tendency is very different for the two students? Why?

The mean is most affected by the outliers.

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Dispersion: a measure that varies by the spread among the data in a set; dispersion has a value of 0 if all the data in a set is identical, and it increases in value as the data becomes more spread out

One way to examine the dispersion of a set is to look at the range:

Range: largest value - smallest value

Example 3: Using Jack & Rose's test scores, calculate the range for each person

Range is of limited use as a measure of dispersion, because it reflects information about extreme values but not necessarily about "typical" values.

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