

## Chapter 7 Project

## What's My Average?

An activity to investigate the relationships among different measures of central tendency.

If you are a college student, then grades are important to you. They determine whether or not you are eligible for scholarships or getting into a particular college or program of choice. It is important to be able to calculate your grade point average in a class and to be able to determine the score you need on a test to reach your desired average. Professors have many different ways of calculating your average for a class. Measures of average are often referred to as measures of central tendency. For this project, you will be working with two of these measures, the **mean** and the **median**.

Recall that the **mean** of a set of data is found by adding all the numbers in the set and then dividing by the number of data values. The **median** is the middle number once you arrange the data in order from smallest to largest. If there is an even number of data values, then the median is the mean of the two middle values. The median separates the data into two parts such that 50% of the data values are less than the median and 50% are above the median.

Jonathan and Tristen are two students in Dr. Hawkes Math 230 class. Currently, Dr. Hawkes has given 5 tests and the students' scores are listed below.

Jonathan	Tristen
24	80
98	84
86	88
96	72
96	81

- Calculate the mean and median of Jonathan's grades.
- Calculate the mean and median of Tristen's grades.
- Compare the two measures of *average* for each student.
  - Are the mean and median similar for Jonathan?
  - Are the mean and median similar for Tristen?
  - Based on the **mean**, who has the best *average* in the class?
  - Based on the **median**, who has the best *average* in the class?
- In your opinion, which student has the most consistent test scores? Explain your reasoning.
- If each student had scored 2 points higher on each test, how would this affect
  - The mean of their grades?
  - The median?
- Dr. Hawkes is planning on giving one more test in the class. His grading scale is as follows.
 

A	93-100
B	85-92
C	74-84
D	69-76
F	Below 69

  - What is the lowest score each student can make on the test and still end up with a grade of C for the class (based on the **mean** of all test scores)?
  - Who has to make the higher grade on the last test to get a C, Jonathan or Tristen?
  - If the last test counts double (equivalent to two test grades) what is the lowest score each student can make on the test in order to make a B in the class (based on the **mean** of all test scores)? (Do not round the mean.)
  - If the last test counts double, who has to make the higher grade on the last test to get a B, Jonathan or Tristen?
- Based on the work you have done in questions 1-6, which measure do you think is the *best* measure of a student's *average* grade, the mean or the median? (Explain your reasoning by looking at this question from both Jonathan and Tristen's point of view.)