

# Make a Conjecture

A conjecture is a statement that might be true but has not been proven. Your group's goal is to come up with a conjecture relating two things and to collect and analyze the numeric evidence to support your conjecture or cast doubt on it.

In this activity you'll review the measures and graphs you have learned. Along the way, you will be faced with questions that statisticians face every day.

Step 1: Your group should select two books on different subjects or with different reading levels. Flip through the books, but do not examine them in depth. State a conjecture comparing these two books. Your conjecture should deal with a quantity that you can count or measure—for example, "The history book has more words per sentence than the math book."

Step 2: Decide how much data you'll need to convince yourself and your group that the conjecture is true or doubtful. Design a way to choose data to count or measure. For example, you might use your calculator to randomly select a page or a sentence.

Step 3: Collect data from both books. Be consistent in your data collection, especially if more than one person is doing the collecting. Assign tasks to each member of your group.

Step 4: Find the mean, median, and mode, range, five-number summary, and IQR for each of the two data sets.

Step 5: Create a dot plot or stem-and-leaf plot for each set of data.

Step 6: Make box plots for both data sets above the same horizontal axis.

Step 7: Make a histogram for each data set. Be sure that you have used descriptive units for all of your measures and clearly labeled your axes and plots before going on to the next step.

Step 8: Choose one or two of the measures and one pair of graphs that you feel give the best evidence for or against your conjecture. Prepare a brief report or a poster.

Include

- Your conjecture.
- Tables showing all the data you collected.
- The measures and graphs that seem to support or disprove your conjecture.
- Your conclusion about your conjecture.

Step 9: In Step 2, you thought about your design for data collection and you might have used random numbers. In Step 3, you practiced consistency in collecting data. In Steps 4, 5, and 6, you were asked to find many measures and graphs, even though you used only a few of these in your final argument. Write a paragraph explaining how a failure at any one of these steps might have changed your conclusion.