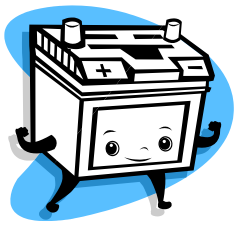
Date _____ Foundations Math 11

5.1 Exploring Data

Sometimes, comparing the mean, median and mode is not enough to compare data.

Paul needs a new battery for his car. He is trying to decide between two different brands. Both brands are the same price. He obtains data for the lifespan, in years, of 30 batteries of each brand, as shown below.

Measured Lifespans of 30 Car Batteries (years)										
Brand X					Brand Y					
5.1	7.3	6.9	4.7	5.0	5.4	6.3	4.8	5.9	5.5
6.2	6.4	5.5	5.7	6.8	4.7	6.0	4.5	6.6	6.0
6.0	4.8	4.1	5.2	8.1	5.0	6.5	5.8	5.4	5.1
6.3	7.5	5.0	5.7	8.2	5.7	6.8	5.6	4.9	6.1
3.3	3.1	4.3	5.9	6.6	4.9	5.7	6.2	7.0	5.8
5.8	6.4	6.1	4.6	5.7	6.8	5.9	5.3	5.6	5.9



1. Describe how the data in each set is distributed. Describe any similarities and differences between the two sets of data.

2. Calculate the mean, median and mode for each battery type.

3. Define dispersion.

4. Explain why the mean and median do not fully describe the difference between the two brands of batteries. Explain what additional information can be learned from the range of the data.

5. Is the mode useful to compare in this situation? Explain.

6. Suppose that one battery included in the set of data for brand Y is defective, and its lifespan is 0.5 years instead of 5.9 years. Could this affect Paul's decision? How?

Statistical calculations involving large data sets can be time consuming. To use the graphing calculator to calculate mean and median:

1. You must enter the data into your calculator. There are two ways to do this:

   a) 2^{nd} {1, 2, 3, 4, 5, 5} sto 2^{nd} L1

   b) STAT EDIT 1 Edit… enter data down the appropriate column using down arrow key or ENTER button.

2. To get your calculator to now calculate the mean and median:

   STAT CALC 1: 1-Var Stats 2^{nd} L1 ENTER.

   What is your calculator telling you?

   $\bar{x}$= $\sum x$= n=

   Use your down arrow:

   Med=

In Summary

Key Ideas

- Measures of central tendency (mean, median, mode) are not always sufficient to represent or compare sets of data.
- You can draw inferences from numerical data by examining how the data is distributed around the mean or the median.

Need to Know

- To compare sets of data, the data must be organized in a systematic way.
- When analyzing two sets of data, it is important to look at both similarities and differences in the data.