The Antics of Statistics

Overview	Math Concepts	Materials
Students learn/review some of the different measures of statistics and see how to use those measures to analyze a data set. Students also participate in a discussion about how statistics can be used to achieve a variety of results.	• statistics • data analysis • reasoning	• TI-30XS MultiView™

Activity

Discuss the measures of central tendency (mean, median, and mode), and demonstrate how they can be used to make a concise statement about a group of data.

Imagine the following situation: I want a new car charger for my cell phone. I've shopped around and found the following prices at 10 different stores:

$9.34, $9.99, $9.99, $9.99, $10.39, $12.79, $13.49, $13.99, $13.99, $22.90

Engage the students in a discussion about a reasonable range of prices and what they think the average, or mean, price is. Expect many to say $9.99.

Let's use our TI-30XS MultiView calculators to see what the average price is.

The average price for the charger is $12.69, and the median price is $11.59. However, the mode is $9.99. Why is there such a difference in the measures of central tendency?

Discuss how the outlier of $22.90 skews all the measures of central tendency.

In this example, which of the measures of central tendency most accurately describes the range of prices?

(Answer: mode)

Follow these steps:

1. Press [data].

2. Enter the prices in L_1: 2.99 ⊙ 9.34 ⊙ ....

3. Continue until you've input the last price, then press ⊙ to move to L_2.

4. Enter the frequencies in L_2: 1 ⊙ 3 ⊙ 1 ⊙ ....

5. Press [2nd] [stat].

6. Press enter for 1-variable statistics.

7. Press enter on L_1, then ⊙ ⊙ ⊙ enter to select L_2 as the frequency, then ⊙ enter to calculate.

8. The calculator should display this:

```
                    DEG
1-VAR STATS
DATA: L1 L2 L3
FRQ: ONE L1 L2 L3
              CALC
```

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Show the students how statistics can be utilized many different ways depending on how the person interpreting the data wants to present them.

Statistics can be misleading. Consider this example:

On a particular Friday, at five different gas stations, the prices of a gallon of gas were as follows:
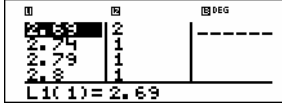
$2.69, $2.69, $2.74, $2.79, $2.80, $3.59

Who might want to use the fact that the average price of a gallon of gasoline was $2.88? Who might want to say that the median gas price was $2.77?

The screen should display this:

Let them discuss the different statistics and how they can be used to different people's advantages. A hotel may want to use the mean of $2.90 because they can charge hotel guests a higher fuel surcharge. A chamber of commerce may want to use the median of $2.77 to make living in that town appear more affordable.

Be sure to explain the calculator's notation to the students.

The screen should display this:

When you use the TI-30XS MultiView to analyze statistics, it is crucial to make sure everything has been entered correctly. The 'n' represents the total number of prices entered. If we only entered 5 different prices, why does n = 6?

The Antics of Statistics

Name _____

Date _____

The manufacturer's suggested retail price (MSRP) for a 1 gB MP3 player is $99.99. However, at different stores, the same brand MP3 player sells for anything between $62.95 and $129.99. Believe it or not, this large price variation happens with most retail items!

By collecting all the prices this MP3 player sells for, then analyzing the mean, median, mode, and range, one can make conclusions about the data.

Directions: You try it! Select a specific item, and then find the cost of that item at 10 different stores. When you shop, be sure to get the price for the exact same item each time (same brand, color, size, memory, etc.).

1. Selected item: _____

2. Record your data on price and frequency. Round to the nearest dollar.

Price	Frequency

3. Estimate the average price mentally. (*no* calculator!)

4. Now, input the data into your TI-30XS MultiView™ calculator. What is the average price?

5. How was the actual average price different from your estimate? What caused your estimate to be off, if at all?

6. Is mean, median, or mode the best way to describe your data set? Explain.