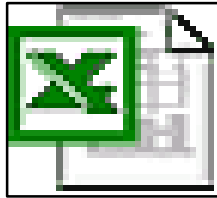# Mathematics LBS 4

Spreadsheet Mathematics: Statistics and Graphing

Lab 2:   Finding the Mean, Median, & Mode

Microsoft Excel Logo and all screens captured by permission of Microsoft

Goal   To use Excel to find the Mean, Median, and Mode of a set of data.

Learning Outcomes   After completing this section, the student should be able to

- enter data onto an Excel spreadsheet
- sort the data from smallest to largest by using the "sort" function
- use the "Paste Function" to find the Mean, Median, and Mode of a set of data
- save the spreadsheet for further analysis

Prior Learning Before attempting this unit it is expected that the student has

- completed Lab 1 of "Spreadsheet Math" and/or knows how to enter and format data in an Excel Spreadsheet
- completed the Statistics Module in LBS-4 Mathematics
- learned how to calculate the mean, median, and mode by hand

Contents

- Review of Measures of Central Tendency
- Using Excel to sort data
- Using Excel's "Paste function" to find Mean, Median, and Mode
- Hand - in Assignment

Spreadsheet Math

Lab 2:   Finding the Mean, Median & Mode

New Words: Sort, Autosum (Σ), Paste Function (f_n) and Data Analysis

Review of Measures of Central Tendency

Mean:
The arithmetic mean is the most common measure of central tendency used to describe a set of data. More commonly known as the average it is found by adding the values of the data and dividing by the number of data.

Median:
The median is a measure of central tendency that describes the middle of the set of data. It is found by arranging values in order from smallest to largest and locating the middle figure.

Mode:
The mode is the most frequently occurring value in a set of data.

Using Excel to Sort and Analysis Data

1. A large taxicab company has a fleet of 45 cabs. The following are the number of litres of gasoline each cab used last month.

123	132	130	119	106	97	154	162	154	132	121	109
123	115	130	125	144	115	107	132	144	128	129	113
129	99	122	139	123	125	115	145	150	142	119	145
139	141	146	132	127	122	106	135	149			

2. Open **Excel.** (See Lab 1 if you have forgotten how to open **Excel**)

3. Enter the above data into your worksheet, using Column A for the cab # and column B for the # of litres of gasoline. (see sample below). Check to see that you have entered the data exactly as given. Edit any cell if necessary.

4. In order to better organize and describe your data it is best to rearrange your data and list values in order from smallest to largest. **Excel** will do this for you. First, select the data you wish to **sort.** (B2:B46).

5. Then **__Click on__** the **sort** button $\left[\dfrac{\mathbf{A}}{\mathbf{Z}} {\downarrow} \right]$ on the tool bar . Note what happens to your values.

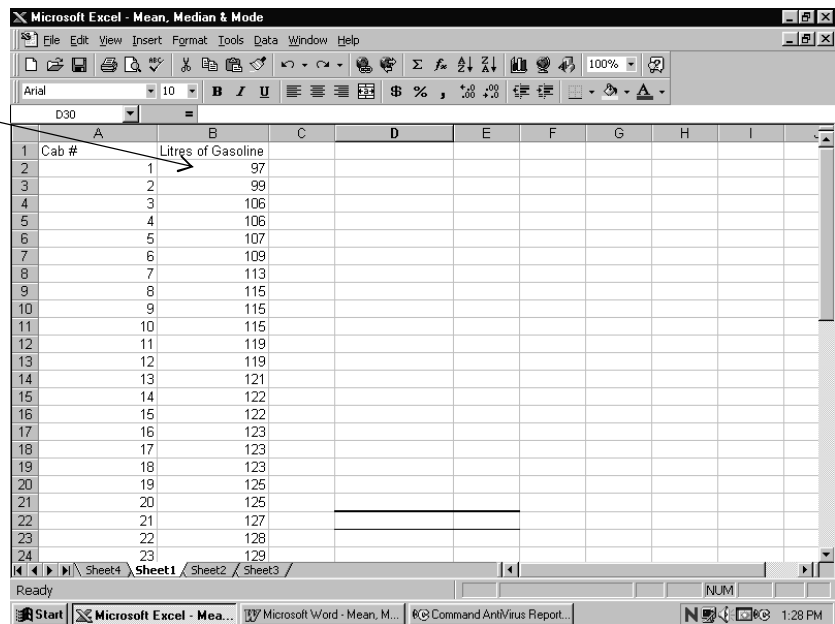**Sort Data A to Z**

Select Data B2:B46
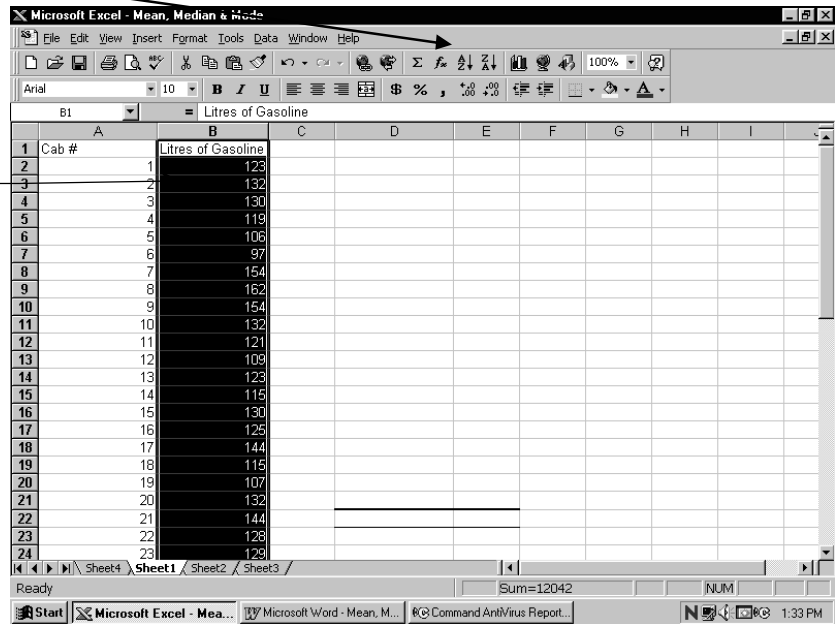
Data will be arranged from smallest to largest value.

Numbers are arranged smallest to largest

Spreadsheet Math: Statistics and graphing, Lab 2, Mean, Median and Mode

Descriptive Statistics

Once the data is arranged from smallest to largest, it is easier to describe it.
We can pick out the smallest number. **The minimum value** is 97.
The largest value or the **maximum value** is 162.
The range of the data is 162 – 97 = 65

Measurements of Central Tendency

The Median: Since there are 45 cabs the middle number will be the 23rd. value.
By looking at the sorted data we know that the **median** is 129.

The Mode: is the value that occurs most frequently. By looking at the sorted data
we see that 132 occurs 4 times. Therefore the **Mode** is 132.

The Mean: The mean or average can be found by adding the values and dividing
by 45. **Excel** has an **Autosum (Σ) button** that will automatically add a column
of numbers and place the total at the bottom. To find the total go to **cell B47,**
then **Click on the autosum button.** The numbers to be added will appear
(B2:B46). Click again and the total will appear in cell **B47.** You can divide this
total by the number of pieces of data, 45, to find the **mean = 5794 ⸴ 45 = 128.76**

Autosum
(B2:B46)

Active Cell
B47

Using Excel's Paste Functions (f_n) to Find Mean, Median & Mode

Select a cell in which you wish to print the mean. (Click on cell B49 to make it active.)

1. **Click on the Paste Function (f_n)** button on the toolbar. A window will open.

2. Select **statistical** in the left column and **average** in the right column. Then **Click OK.** Another window will open in which you can select the data you want to find the mean for.

3. Make sure that you have included all the data and only the data (Do not include the total) **Select B2 : B46. Click OK.** The average should appear in the active cell **B49.**

4. **Repeat** the above steps to find the **Median and Mode.** Make sure you first select an empty cell in which to print each of these statistics and label them.
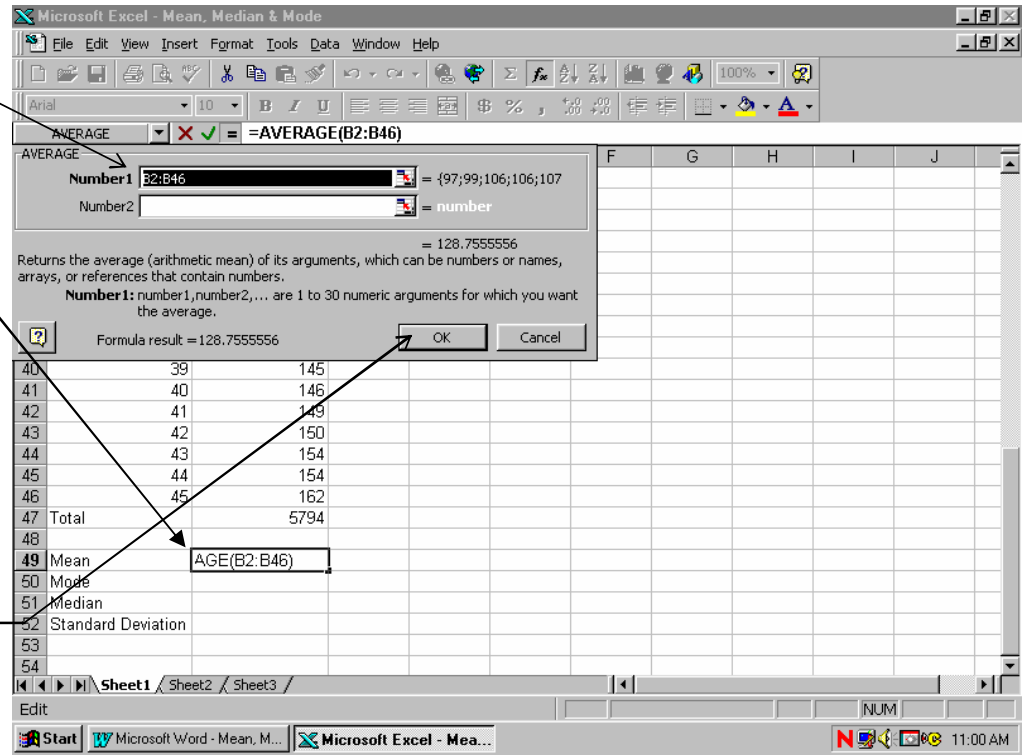

Using Excel's Paste Function:

Paste function

Select Statistical and Average
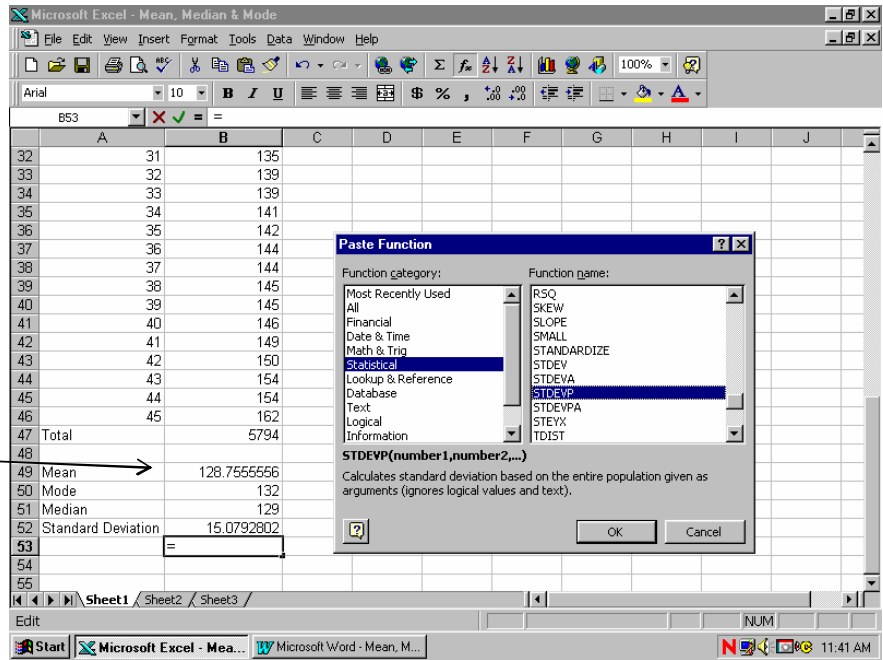
Select Active Cell B49

Click OK

Make sure that all data is included **B2:B46**

Click OK

Check to see if your answers for the Mean, Median, and Mode are the same as you calculated earlier from the sorted data. Also check your answers with the picture below.

Check Answers

Hand in Assignment:

1. On your Excel Worksheet **,** *Click on* Sheet 2 Tab at the bottom of the worksheet. You will go to a new worksheet.

2. Enter the following marks received by students in a college Math test.

   57. 67, 89, 45, 88, 67, 75. 52, 99, 67, 73, 84, 22, 79, 80, 66, 74,

3. Use the **Paste Function** to find the **Mean, Median, and Mode** of the class marks.

4. **Save and Print** your worksheet and **hand it in**. (If you have trouble saving or printing see Lab 1.)