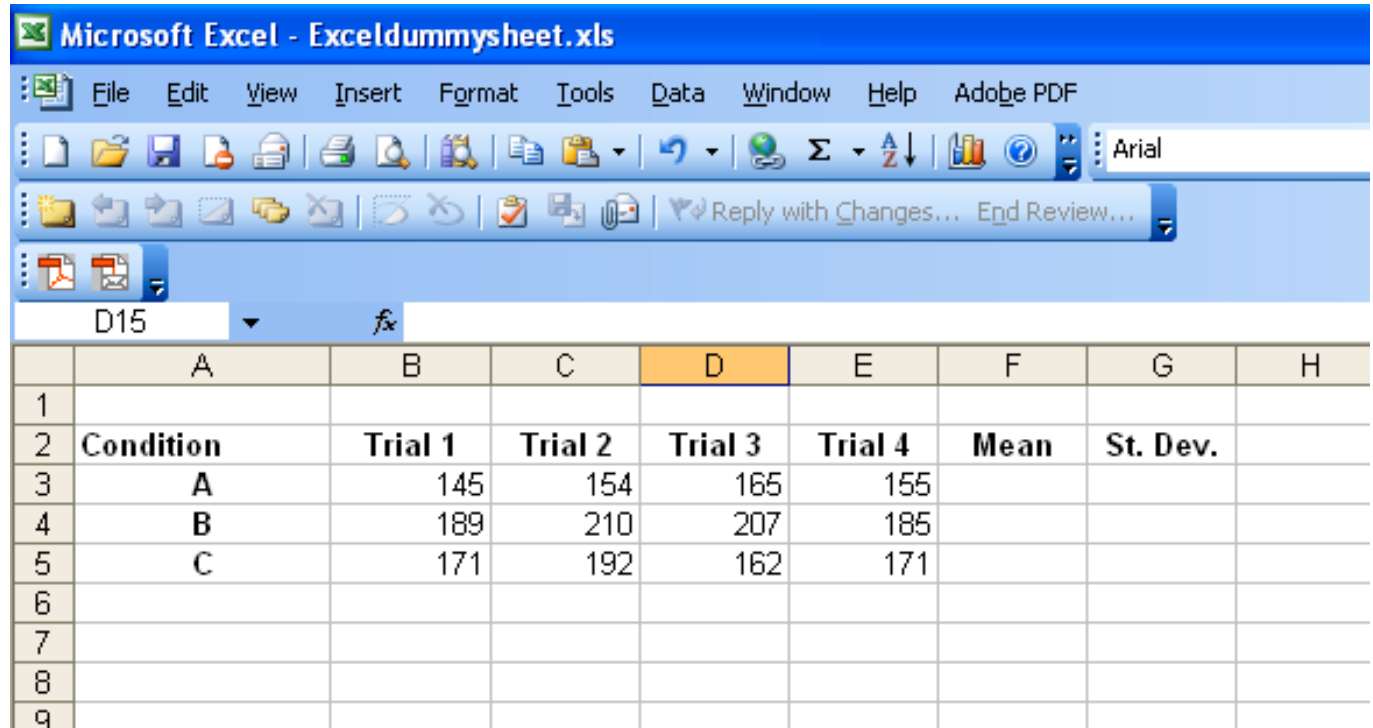


# Graphing using Microsoft Excel

## Tutorial #2- Calculating Mean and Standard Deviation

1. Open Microsoft Excel (see tutorial #1).
2. Enter data on the spreadsheet as the example shown here
3. Label columns for Mean and for Standard deviation as shown below.



The screenshot shows a Microsoft Excel spreadsheet titled "Exceldummysheet.xls". The spreadsheet has columns labeled A through H and rows 1 through 9. The data is organized as follows:

|   | A                | B              | C              | D              | E              | F           | G               | H |
|---|------------------|----------------|----------------|----------------|----------------|-------------|-----------------|---|
| 1 |                  |                |                |                |                |             |                 |   |
| 2 | <b>Condition</b> | <b>Trial 1</b> | <b>Trial 2</b> | <b>Trial 3</b> | <b>Trial 4</b> | <b>Mean</b> | <b>St. Dev.</b> |   |
| 3 | A                | 145            | 154            | 165            | 155            |             |                 |   |
| 4 | B                | 189            | 210            | 207            | 185            |             |                 |   |
| 5 | C                | 171            | 192            | 162            | 171            |             |                 |   |
| 6 |                  |                |                |                |                |             |                 |   |
| 7 |                  |                |                |                |                |             |                 |   |
| 8 |                  |                |                |                |                |             |                 |   |
| 9 |                  |                |                |                |                |             |                 |   |

In this data set, four trials (labeled Trial 1 through Trial 4) were carried out under each of three conditions (labeled A through C)

# Finding mean and standard deviation values

4. Click on the box below “Mean”
5. Click of the “fx”
6. In the pop-up window, select AVERAGE, then click “OK”

The screenshot shows the Microsoft Excel interface. The spreadsheet data is as follows:

|   | Condition | Trial 1 | Trial 2 | Trial 3 | Trial 4 | Mean | St. Dev. |
|---|-----------|---------|---------|---------|---------|------|----------|
| 3 | A         | 145     | 154     | 165     | 155     | =    |          |
| 4 | B         | 189     | 210     | 207     | 185     |      |          |
| 5 | C         | 171     | 192     | 162     | 171     |      |          |

The 'Insert Function' dialog box is open, showing the following options:

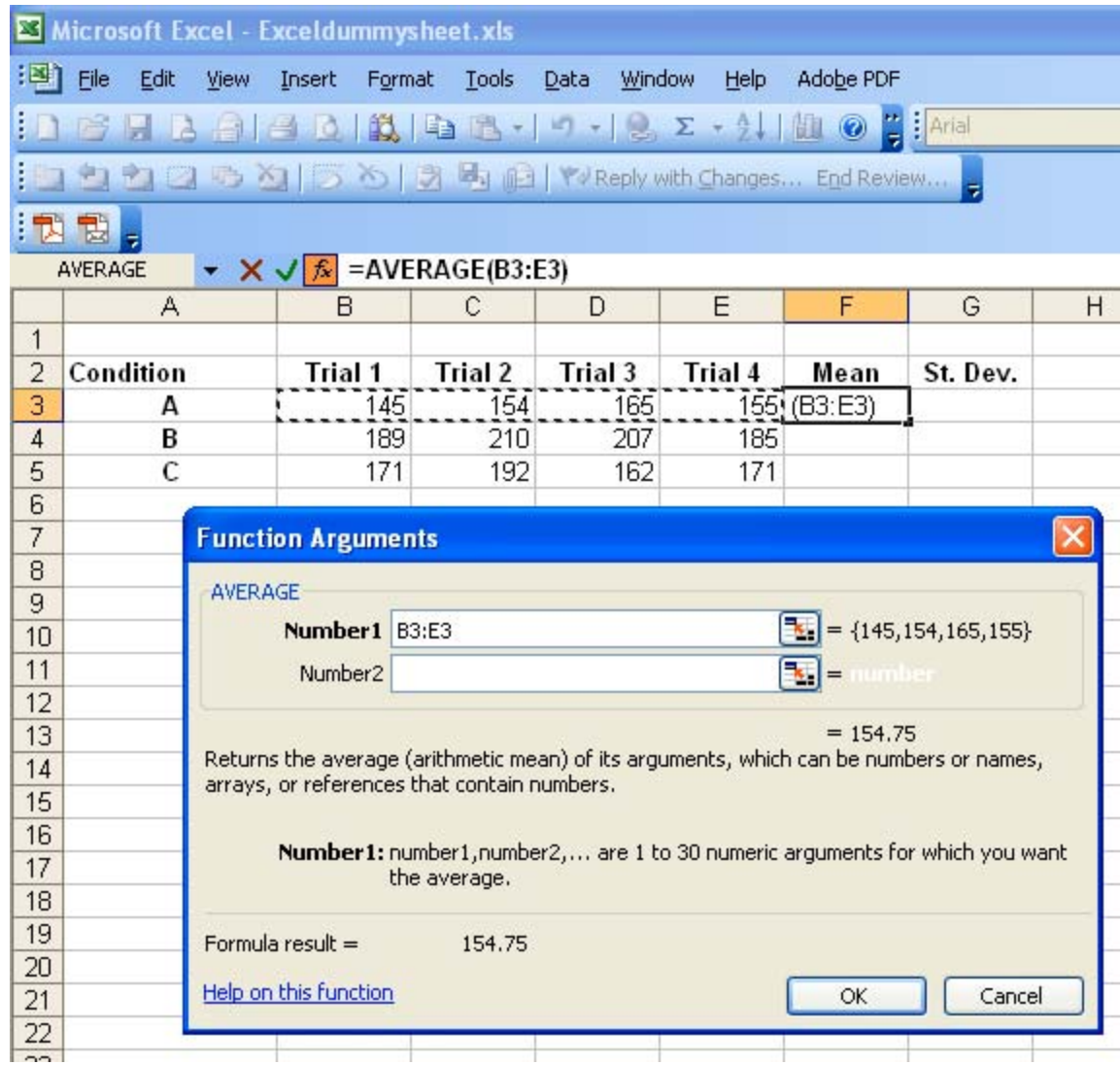
- Search for a function: Type a brief description of what you want to do and then click Go
- Or select a category: Most Recently Used
- Select a function: AVERAGE (highlighted)
- Other functions listed: SUM, STDEV, IF, HYPERLINK, COUNT, MAX
- Function description: **AVERAGE(number1,number2,...)** Returns the average (arithmetic mean) of its arguments, which can be numbers or names, arrays, or references that contain numbers.
- Buttons: OK, Cancel

## Microsoft Excel

7. Ignore the new pop-up window, and simply select the data of which you wish to determine the average. Do this by left clicking, holding, and dragging over the appropriate boxes.

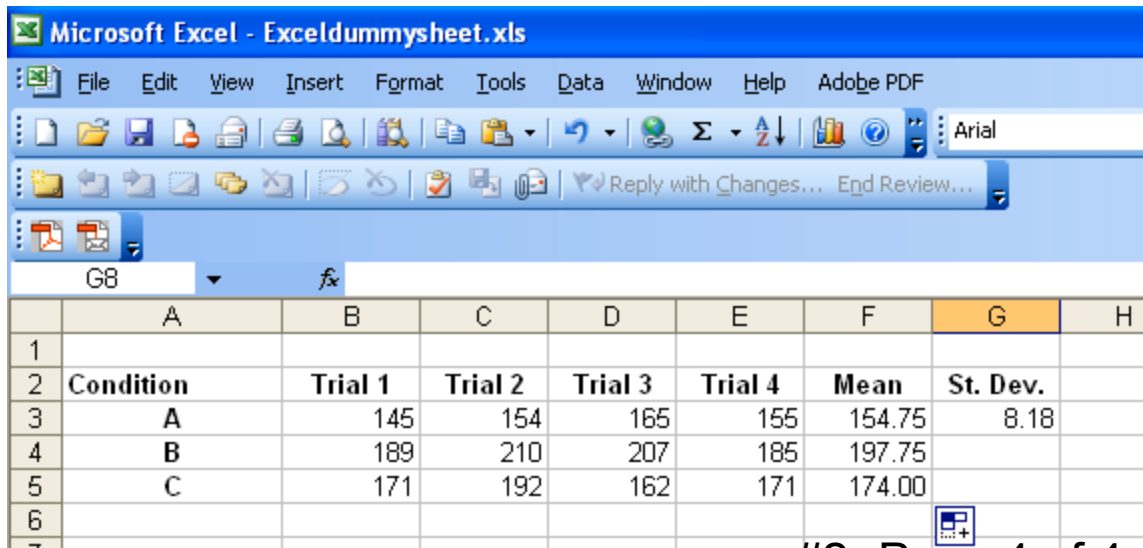
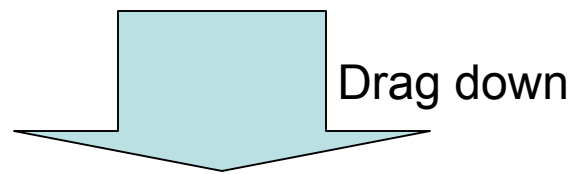
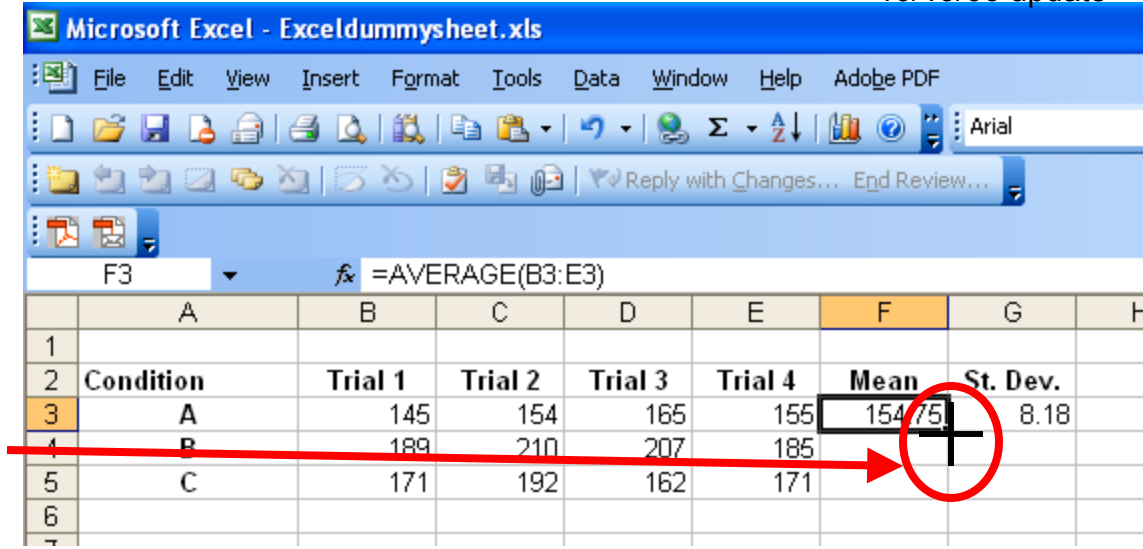
8. Select OK. The mean value will appear.

**To determine standard deviation of this same data follow the same steps as above, except choose STDEV in step 6.**



Note that the data does not have to be in this format. You can use this technique to find the average and standard deviation of numbers arranged in both rows and columns

9. Rather than following this procedure for all rows of data, simply select the first cell in the column, and move your mouse pointer over the lower right corner until a cross appears. Now, simply left click (but don't release) and drag down to the complete the table.



**Now use the same procedure to determine the standard deviation for all rows of data**