

DELTA MATH SCIENCE PARTNERSHIP INITIATIVE

M³ Summer Institutes

(Math, Middle School, MS Common Core)

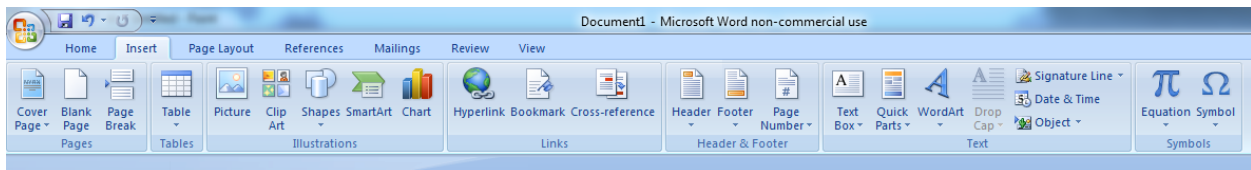
Introduction to Word and Excel

Word processor and spreadsheet programs are “free” software that comes with most new computers and must be used in any mathematics class. Topics and ideas that can be use in math classes will be explained herein.

This class will assume and use Microsoft software as these are the most common programs on the market to date.

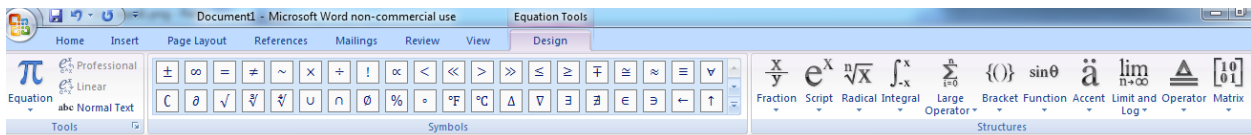
The Equation Editor is a great tool for obvious reasons and helps make documents for future use and makes these documents easy to edit.

To input an equation select **Insert** from the top main line at the top. This will cause the menu bar at the top of the page to change to the following:

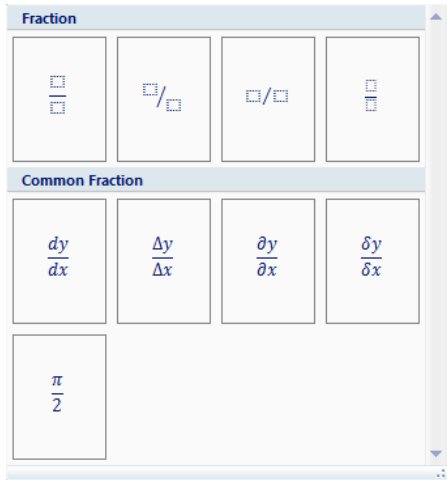


At the far right of the menu bar are two very important options: Equation and Symbol.

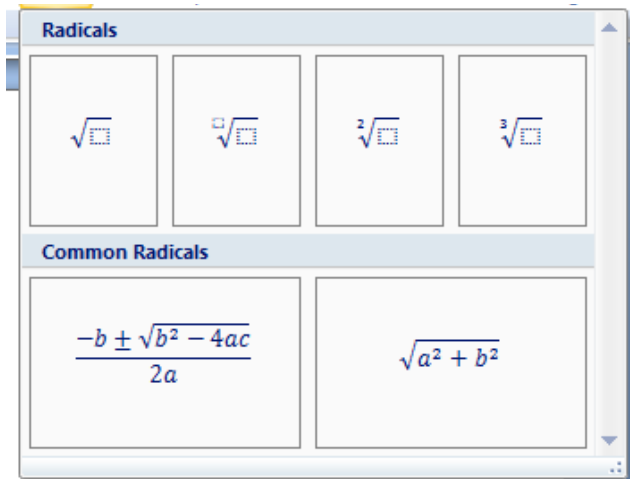
Let us select Equation first to understand what we will get. Notice that the menu bar has changed to this:



Most of these built-in functions are not useful in the middle, nor high school grades, but many options are usable – fractions come to mind. The pop-up menu for fractions is listed below to illustrate what we are able to do.

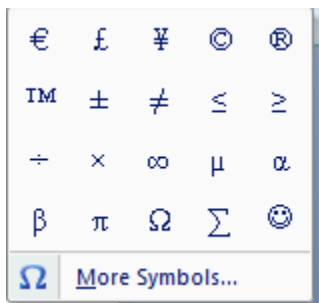


The first row of this option allows you to select several different forms of fractions.

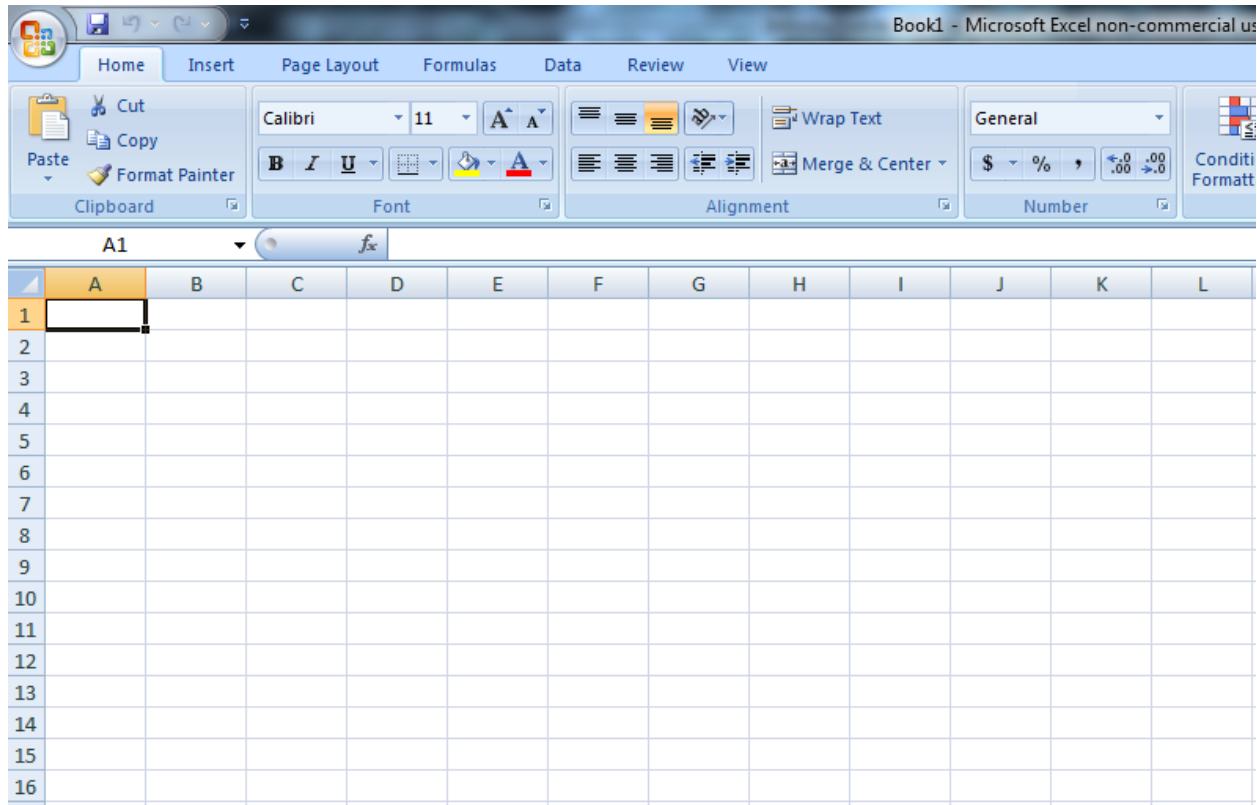


Radicals are sometimes required and here are some samples of what you can do.

Of more importance to you might be the symbols that can be dropped into a document.

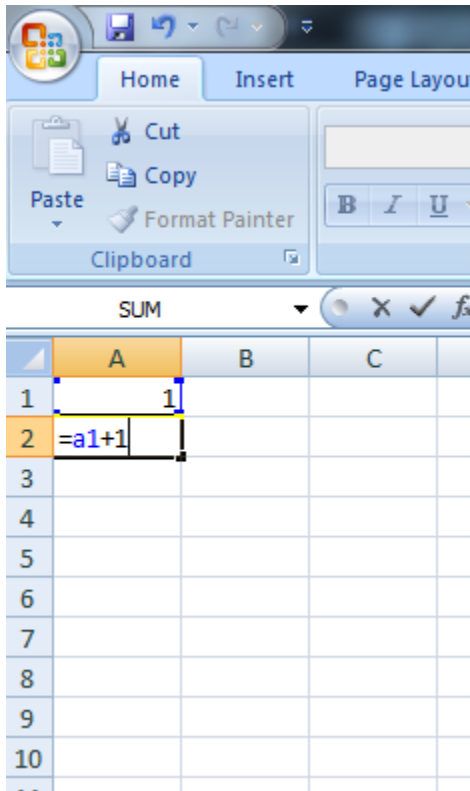


Excel for Beginners



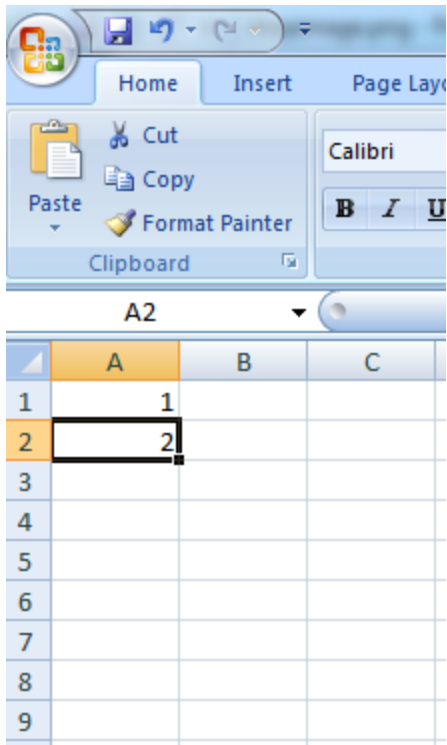
Notice that the columns are headed by letters and the rows by numbers. Any location in the spreadsheet is given by a column reference and then a row reference, such as C4.

One of the great stories handed down in mathematics is that of a student in the 1700's being asked to add the first hundred natural numbers. The story is one of Gauss and how he added the one hundred numbers. How would you do this problem? How long would it take for you to do this even with a calculator? Let's see how to do this with a spreadsheet.



In cell A1 place a “seed” value of one. If we need to type in all of the values to be added this will be no better than a calculator. Thus in cell A2 type in a formula by starting with an equal sign.

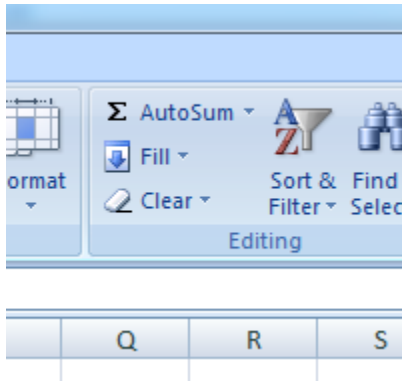
Typing a1+1 tells the software to take the value from cell a1 and add one to it. Press enter after typing this in and wow the number two appears.



The knob at the bottom right of the cell is now the part of the spreadsheet of interest. This knob if selected allows a user to click and hold down on the knob and drag. This will allow the cells under the formula to be filled-in with similar formulas.

After dragging down and filling in several cells go back and change the value in cell A1 to another value and watch what happens.

Drag the formula down till the last number is 100, after placing a one back in cell A1. Next use the auto sum feature to add the first hundred positive integers.



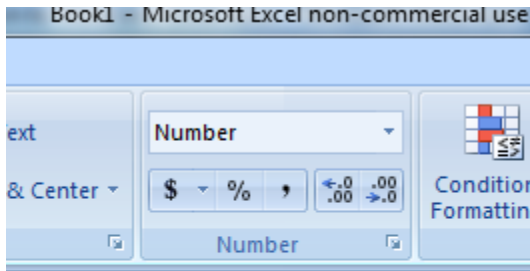
The auto sum feature is found on the home menu at the right.

What types of questions should you ask your students in a lab where they have done this much work so far?

New column: Next to the A-column in column B create a column of values that are three times the values to the left.

In C-column create values that are exactly two more than those to the left. Notice this is a function where the inputs are in the far left column and outputs are found in the right column.

What is the function?



Formatting cells with numbers in them is often required and these menu options can be found on the home tab menu bar.

H	I	J	K

LET'S EXERCISE OUR PROBLEM SOLVING ABILITY!

SPREADSHEET PROBLEMS

According to George Bodner, "If you know what to do when you read a question it is an exercise, not a problem."

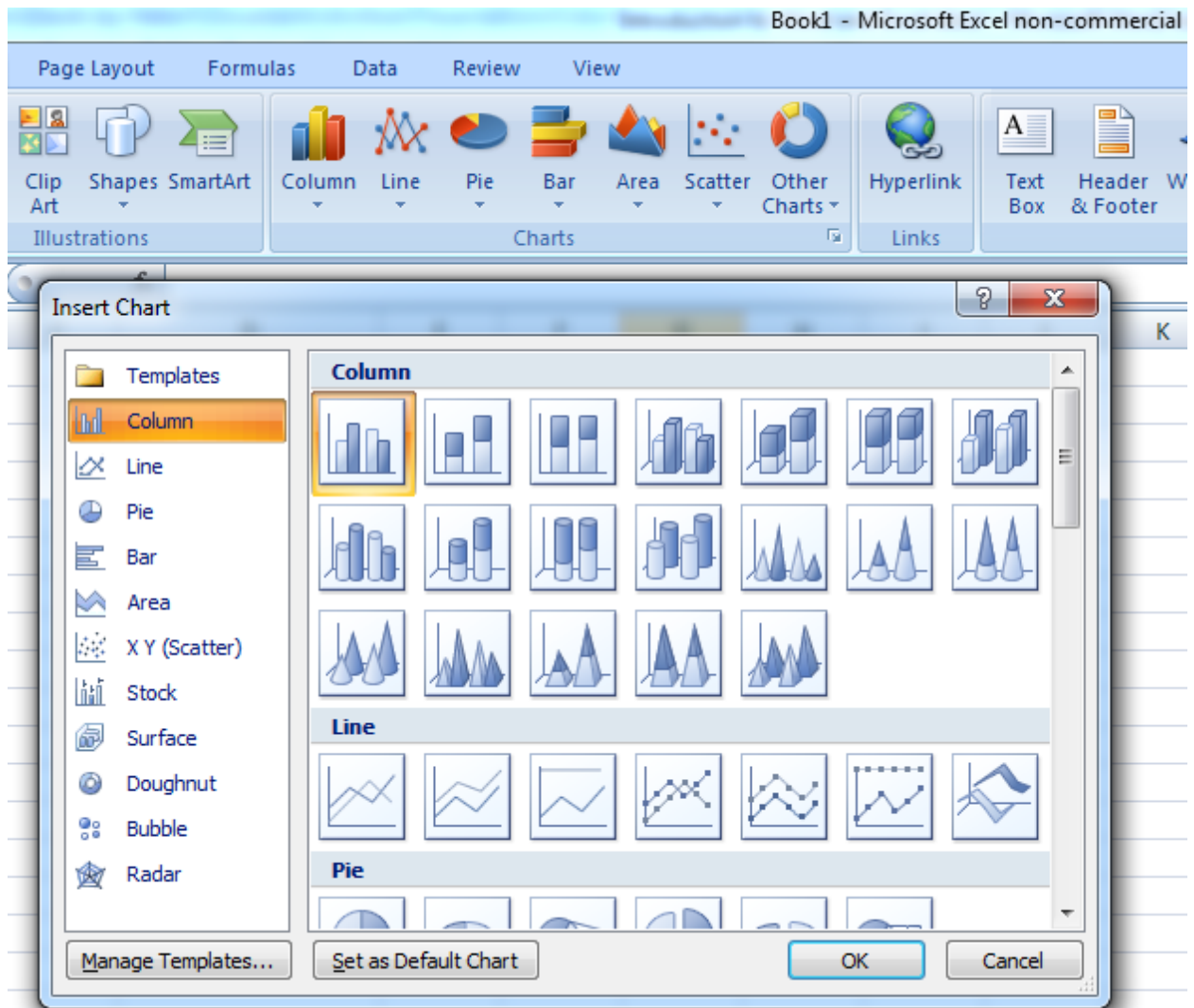
The key to using a spreadsheet is to have only one guessing column, and all other columns dependant on that guessing column.

1. Judith began her savings by saving one quarter in March of 1992. For each month after that she saved 2 more quarters than she had saved the month before. If Judith continued saving quarters in this way, how much money, in dollars, would she save in the month of July 1999? What was the total amount that Judith put into her savings from March 1992 to July 1999 (including July, 1999)?

2. Whenever a cattle drive crosses Solly Shepherd's land, he charges a toll of 20_cents per riderless animal and 35 cents per cowboy and horse combination. Yesterday, as a drive was passing. Solely counted a total of 4248 legs (including riders, horses, and cattle) and 1078 heads. How much money did Solly collect?

3. Cindy wrote to 57 people and her total cost for postage was \$13.89. If it costs \$0.21 to mail a postcard and \$0.33 to mail a letter, how many postcards did she write?
4. The annual dues for the Hattiesburg Book Club are generally \$37 per person. However senior citizens pay only \$31. If the total amount of dues collected this year was \$4500, what is the **smallest** number of senior citizens that could belong to the club?
5. Hallie, for her science project, sampled arthropods in a vacant lot. She collected only spiders and beetles and collected a total of 285 creatures. She noticed that her creatures had a total of 1490 legs. How many spiders are in Hallie's collection?
6. Suppose you receive a penny the first day of July, two pennies the second day of July, four pennies the third day and so-on, always doubling the previous day's amount until the last day of the month. What total amount would you have on July 31 (after receiving double the previous day's amount)?
7. If the perimeter of a rectangle is 60 units, use a spreadsheet to find 1) all the possible lengths and widths of the rectangle (use whole numbers only), 2) find which rectangle has the greatest area, 3) print out a line graph of area as a function of width (or length) and, 4) predict the length and width of the rectangle with the largest area that has a perimeter of 64 units.
8. Sue Ellen and Angela both have \$510 in their savings account now. They opened their accounts on the same day, at which time Sue Ellen started with \$70 more than Angela. From then on, each week Sue Ellen added \$10 to her account, and Angela put in \$20 each week. How much money did Sue Ellen open her account with?
9. A bank that has been charging a monthly service fee of \$2.50 for checking accounts plus \$0.25 for each check announces that it will change its monthly fee to \$3.75 and that each check will cost \$0.10. The bank claims the new plan will save the customer money. How many checks must a customer write per month before the new plan is cheaper than the old plan?
10. Bernie has 4 times as many \$1 bills as \$5 bills. If he has a total of \$459, how much money in \$5 bills does he have?

To graph data use the Insert tab and chart component.

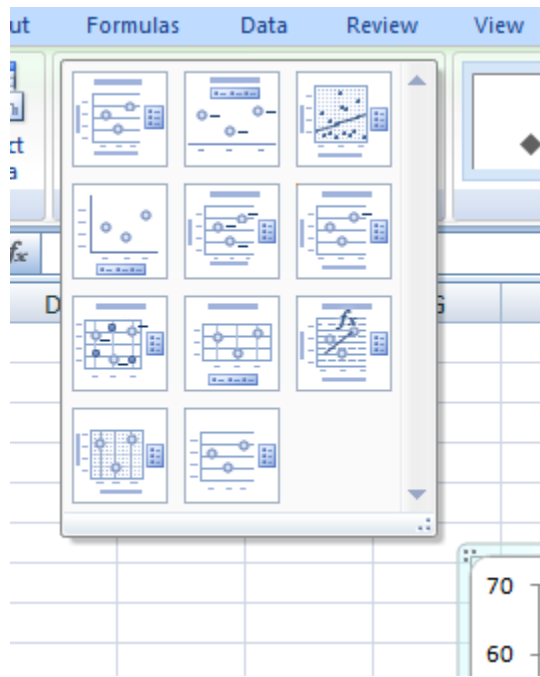


The user must know what type of data they have and what type of graph is desired – the program will not do this for you.

For bar graphs what type of data is needed?

For a pie graph what assumption is the computer going to make?

To format a graph or chart one must first double click on the chart to be modified and all format options come up across the top menu bar. Types of chart layouts are below shown.



To graph data on an x-y type axis the use the scatter plot graph not the line graph.