# Welcome to Excel, fairly detailed step by step into
# (There are shorter versions, for quick reference, later, and detailed tutorials)

Don't worry, I have links to plenty of videos and specific instructions coming up… let's just first get acquainted.

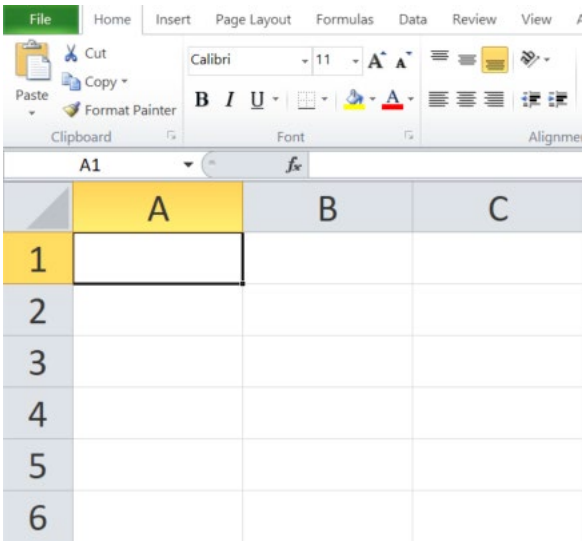
If Word is to manipulate words and sentences, Excel is to manipulate numbers and formulas. A formula is just how excel does math, such as 1+1= is a formula, and 2 is the solution. Excel can also graphically represent numbers, using graphs and charts, to make it easier to glance and see what the numbers really mean. Excel can also sort numbers, and do rudimentary database functions, but more on databases MUCH later.

## Excel is a table

A table is simply rows and columns, whose intersection is called a cell, hence the name, Excel.

Columns are indicated by Letters, and Rows are indicated by Numbers, so the very first cell, at the top left, has an *address* of Column A/Row 1, or just A1. We call this *address* the **cell reference**.

Below you see cell A1 is selected; note the border around the cell,
and the *A1* reference displays under the standard Cut Copy and Paste group on the ribbon.




If you type your name in A1, the contents align to the left, just as Microsoft Word defaults to left align. This alignment can be changed, of course.

If you type a number in A1, the contents align to the right.

Think about how you would do math on paper, you line up the one's column, tens column, etc., which is right aligned.

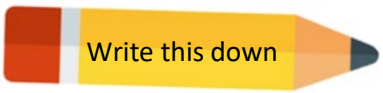
```
   1
  10
+ 100
 111
```

But, Excel can also do math using formulas.

## Simple Formulas to let Excel do math.

You and I would probably state a math problem as:
"one plus one equals something, " or 1+1=

But Excel and many calculators sort of restate this using variations on what is called reverse Polish notation, so Excel wants you to say:
"something equals one plus one, " or =1+1.



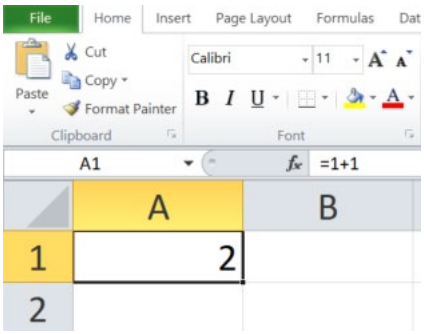

When using Excel, if you want to do math, you start with the equal sign, =.

Try it, in Excel, select a cell, such as A1, then type =1+1, then hit the Enter key.

## What just happened?

Unlike Word, which shows you everything that is going on, the so called What You See Is What You Get, or WYSIWYG, **Excel hides the formula, and displays the results.**

If you click back on cell A1, to the right of the Cell reference it will display the formula.




← This area is called the Formula bar. Ignore the odd *fx* for now.

So we now have a conundrum. If you type the number 2 in a cell, and type =1+1 in another cell, the results look identical. But there is a quick trick to tell Excel to show you the question, not the result.

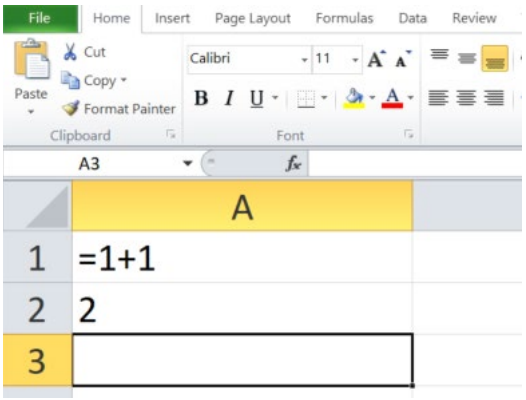
## How to view ALL the formulas

Press the Control Key down, hold it down, and with another hand press the ` key, and let go.

+ 

(The ~ is on the same key, usually top left on your keyboard.)

You should now see where numbers have been typed, and where formulas where entered.




Press the same keys [Ctrl]+[`] again to go back to the regulars display.

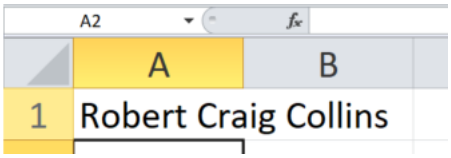
## Yes, you can edit a formula.

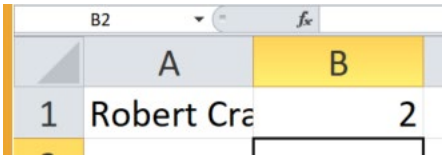
If you change your mind about a formula, select the cell where the formula is, and type in a new formula, or go to the Formula bar and correct the formula there.

## Truncation.

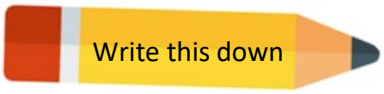
If you type a long sentence into a cell and hit the Enter key, you will see the words sort of flow over the cells to the right. But if there is something in the cell the right, it will truncate the words.

Below, in A1 I typed Robert Craig Collins, and hit the enter key.
Then I went to B1 and just typed another character, such as an A, or ? or 2. Excel cuts off the part of the name that did not fit in the cell, in order to display B2.




I think you can forcast an issue tnow, if you type a long number such as 55555555555 in A1… if might only display 555.




### means the number is too big to display in the column.

To prevent you from being confused about if a number has been truncated, Excel won't even try to display the number, instead it will fill the cell with numbers signs, such as ###### to indicate there is not enough room in the column to display the number.

## Resizing a column in Excel.

Just as in all things Microsoft, there are hundreds of ways to do something, let me show you three ways to resize a column.

1. Float your mouse between Column A and Column B until the cursor changes to 
When it does, click the left mouse button and drag to the right to resize the column.
This works resizing rows, as well.

2. Right click Column A, and select Column width… type in the number of typed characters you want that column to hold, Robert Craig Collins is like 20 characters, so I could resize it to 25 and the name would fit.

3. Float your mouse between Column A and Column B until the cursor changes to 
When it does, double click the spot to *auto-size* the column, now it will hold the longest item in the column.NOTE: You cannot resize an individual cell, only an entire column.

## Other math you can do with Excel.

We have already done addition, =1+1.
Subtractions =2-1
Multiplication =2*2 (asterisk, not x)
Division =1/2 (one half, or ½, is actually 1 divided by 2, after all)
Exponents =2^10 (^, the caret, is the shifted 6); read this as 2 raised to the 10th power, or 1024
(this is why a kilobyte is actually 1024 bytes, not 1000 bytes)

You can use the parenthesis to control sequence,
such as =(1+1)*2 would first add 1+1 for 2, then multiply that by 2 to get 4 for the solution.

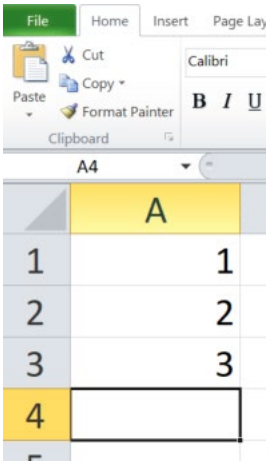
=1+(1*2) would first multiply 1 and 2 to get 2, then add 1 to get 3 for the solution.

You can actually put parenthetical phrases inside of other parenthesis; each ( ) pair get color coded, to help you keep track… but that is a bit advanced for us right now.

## AutoSum

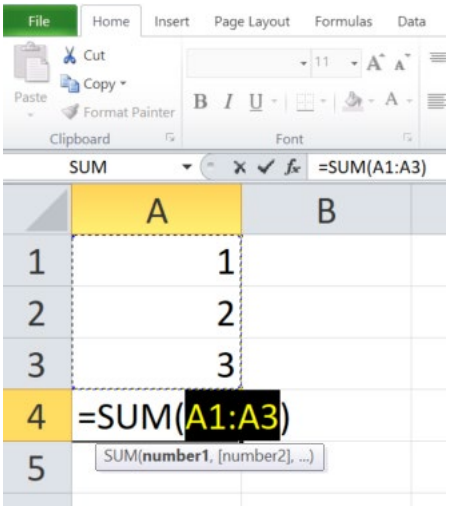
Excel loves to add, so much in fact there is a button to do it. Try this

Fill in the following in Excel




Make sure your A4 is selected. Click the ∑ button, often top right on the Home ribbon 


You should see the following




This is telling you if you hit the Enter key, Excel will automatically sum the range… that is it will sum from A1 through A3.

A range is just a group of cells. You specify the range from top left to bottom right, and put a : in between.

In this case Excel suggested a range of A1:A3; if this was not the correct range, simply drag your mouse to highlight the correct range. You could even have clicked B7, hit the ∑, then drag your mouse over A1:A3 if you did not want the sum to be displayed right next to the numbers.

Note: Excel prefers to auto sum the numbers above the selected cell, or to the right of the selected cell.

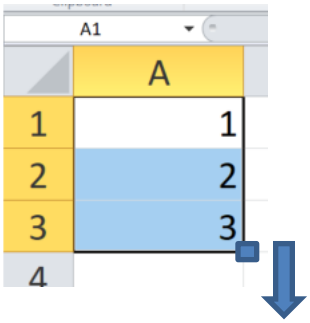
PS AutoSum is a function. More on other functions in a bit.

## Cool trick, Excel keeps ALL formula solutions up to date

In the example above, 1+2+3 would be 6. If you change A1 from 1 to a 5, Excel automatically will re-sums, and would calculate 5+2+3 and show the sum as 10.

## AutoFill

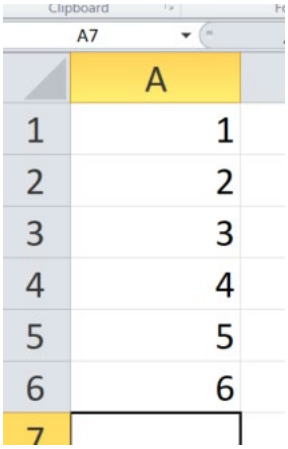
If instead of hitting ∑ auto-sum above, if you selected A1 through A3, you would see a little box at the lower right.




If you pull that box down two or three cells (the box is called the auto-fill handle), you will se my favorite Excel trick.

**Autofill continues a sequence or pattern in the selection.**

So if you drag the autofill handle down three spots, you would wind up with



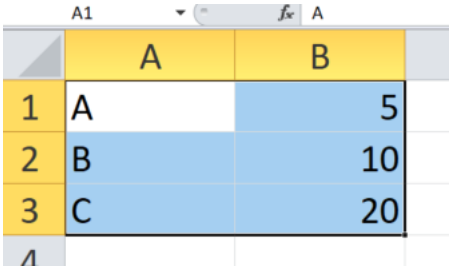

Note, if the sequence was 1, 3, 5 it would continue filling in odd numbers. It even previews what it will do.

If the selection was A, B, C it would repeat A, B, C, A, B, C… as there is no real numerical sequence to letters (Months yes, they have a sequence; letters, no).

## Making a simple chart.

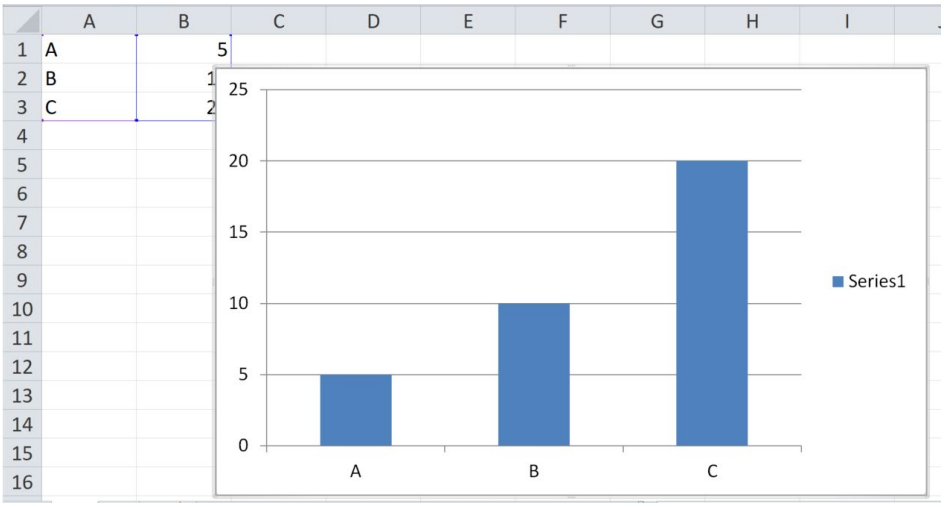
Type in the following, then select the entire range by clicking in the middle of A1, and dragging over and down to envelop A1:B3

Note the first cell selected is still selected, it is just a different color… pay more attention to the border.




Select the Insert Tab; while you could select Recommended Chart, I will select Column Chart, and then just pick the default column chart... we can experiment with other chart types later.

Note: A column chart lets you compare items side by side, while a pie chart shows a distribution of a population.




You can probably image a chart would be much easier to compare values, especially if there were more than 3.

You can click the border of the chart to move it, or click on Series 1 to change the title. More on automatically setting values and adding more information later.

### Basic Formatting

Go back to column B, select B1:B3, the locate the [$] button in the middle of the Home tab on the ribbon.
We won't spend much time on formatting, as it is identical to Word formatting, but later you can explore Conditional Formatting.

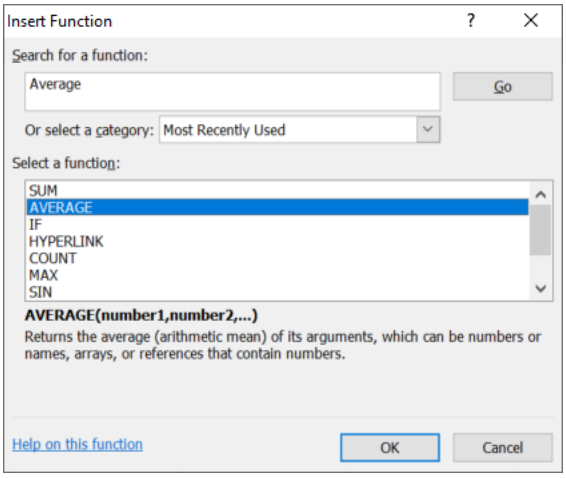
If you don't like the $ format, **right click the selection, and go to Format Cells**. I'll wait, you might want to explore here for a while.

## What is a function?

You may recall that AutoSum was a function. I define a function as a compound or complex formula.

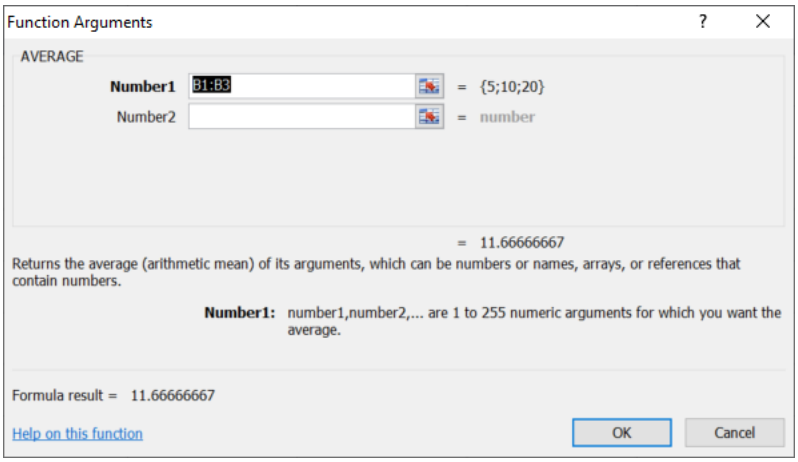
Image the numbers we used above, 5, 10, and 20. How would you average those numbers?
First you would sum the numbers (35)
then you would count the number of values (3), and
then you would divide the sum by the count (11.66666).

Why not let Excel handle this set of compound steps? Click some cell, you could click B4, if you want to make it easy. Click the ***fx*** button there by the formula bar. You could search for Average, but it is usually listed right there… click it.




Then click OK.

It will offer to average the numbers above… again you could use your mouse to select a different range if the offered selection is not what you want.

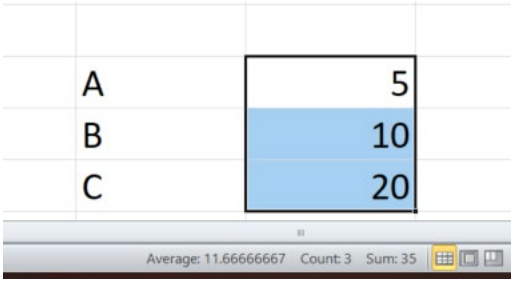


Click OK to insert the Average in B4.

Other useful functions include MAX for highest value in a range, MIN for the lowest value in a range, etc.
More on Functions is available.

### Sneaky shortcut for average.

Highlight a range numbers, then look at the very bottom of the screen, it will offer the average, sum, and count.




Note: I defined a function as a compound or complex formula, if you have ever tried to calculate interest on a home loan, you know what complex is… but Excel prompts you for duration, amount, interest rate, and does the work for you.

## Changing views

On the bottom of the screen, right side, there is a zoom control. To the left of the zoom control are buttons to change views. You have been in normal view… to see headers and page breaks click the Page Layout button. More on print selection in the advanced topics.

## Preview of Advanced Topics

What if
Using references from other worksheets
Charts
adding Titles, customization, multiple selections, Spark charts
Managing sheets
Freeze
Sorting Data
Absolute References
Conditional Formatting
If function
Intro to Other functions
Time and date
OLE
Pivot tables
Protecting workbooks
Printing ranges
Putting it together