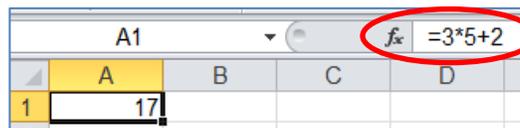


## PART I: Formulas

### Basics

It's easy to generate your own formulas in Excel. Here are a few simple rules you need to keep in mind when creating a formula:

- Always start a formula with an equals sign. This tells Excel that the data entered is to be calculated
- Use these symbols to denote math operators: plus +, minus -, multiply \*, divide /, parentheses (), greater than >, less than <, exponent ^
- Order of Operations: Excel follows the basic math order of operations:
  1. (Parentheses)
  2. Exponents<sup>2</sup> (in Excel, expressed as ^2)
  3. Multiplication \* and Division /
  4. Addition + and Subtraction -



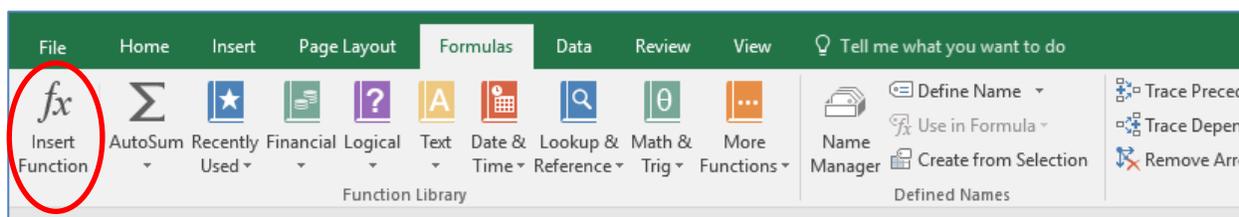
Therefore, =3\*5+2 gives 17, whereas =3\*(5+2) is 21. If two operations are at the same level, Excel will perform the math left to right: =8/2\*6 gives 24.

### Absolute Value

Using the copy-fill function saves a lot of time. But Excel's best guess of what to copy in a formula might not work out as expected. If a formula is copied in which Excel is instructed to multiply a cell value (say B7) by another cell value (say D9), the formula (=B7\*D9) when copied one row down will multiply the cell one row lower by the row lower of the second value (=B8\*D10). However, you might want all the values in your B column to always multiply by D9. To achieve this, you must tell Excel that the D9 value is an Absolute Value. It must not change even as other values are copied and filled.

- Absolute Value is expressed using dollar signs before the row letter and column number: \$D\$9
- You can choose to have only the absolute value apply to either the row or the column, but most commonly it is applied to both

### Excel Functions

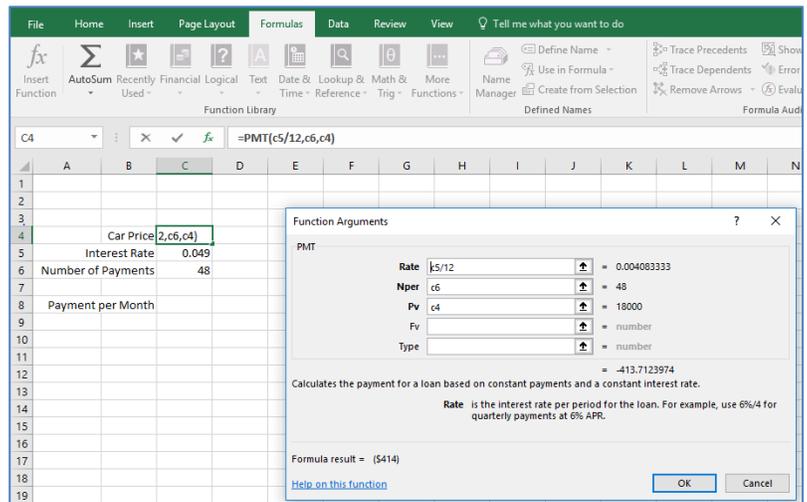


There are an enormous number of formulas built into Excel. You can search them by going to the **Formulas Tab** and clicking on **Insert Function**. You can then search for one of Excel's existing formulas so you don't need to create it for yourself.

Note that there is a brief explanation of what the function does at the bottom of the dialogue box. In the example shown, the PMT (payment) function is selected; it is described as “calculat[ing] the payment for a loan based on constant payments and a constant interest rate”.

To use a function like this one, first enter your raw data into a range of cells. You can then use the cell addresses in the **Function Arguments** dialogue box that opens when you select the function (instead of entering the values directly into the arguments).

The advantage of doing this is you can change the data (say, interest rate) without re-entering all the data to get your new total monthly payment.

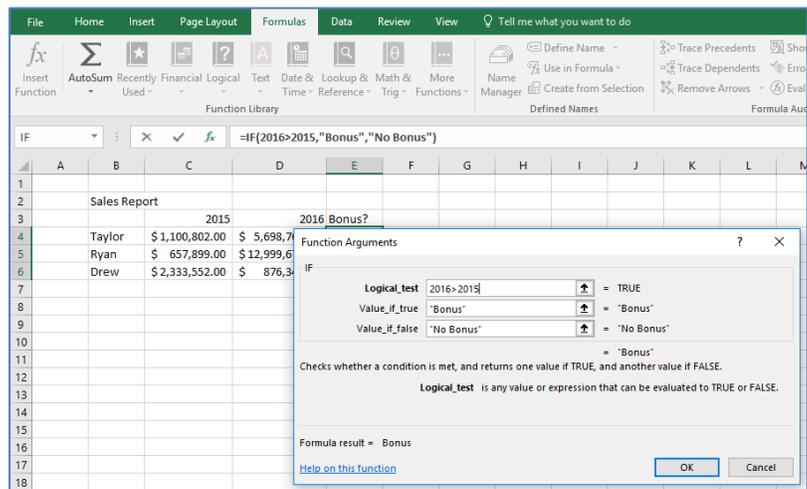


### Excel Functions: IF

A really popular Excel function is the IF logical test. It’s useful in lots of ways. For example, say you wanted to issue bonuses only to the salespeople who had greater sales in 2016 compared to 2015, you could use the IF function to tell you who deserves a cheque.

To use it, go to the **Formulas** tab and click **Insert Function**. Search for the IF function and then complete the dialogue box presented.

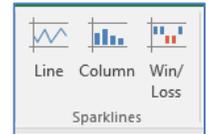
The IF function presents a logical test; it then gives a value if true and another value if false. In this dataset, we see that the logical test being performed is to test if the 2013 sales total is greater than the 2012 sales total. If the answer is yes, the word “Bonus” will appear in column E. If the answer is no, then “No Bonus” will populate.



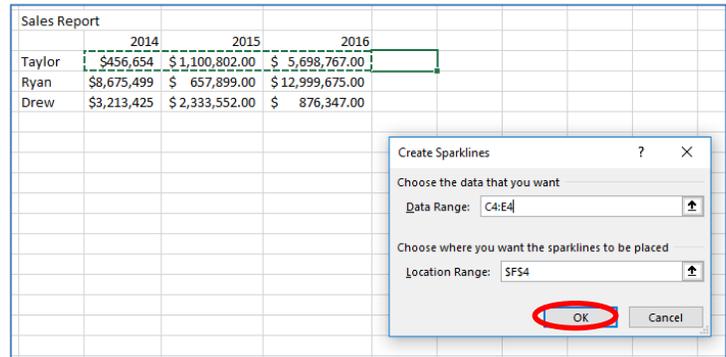
## PART II: Visual Analysis

### Sparklines

Sparklines provide a quick and easy way to look at data. This tool is found in the Insert tab, and has its own group.



Sparklines are particularly handy for quickly comparing rows of data and are very intuitive to use. Suppose you have the quarterly sales figures for all your sales agents and you want to see how they compare to one another. Simply select the cell you want the Sparkline to appear in, and then click on the **Line** tool in the Sparklines group of the Insert tab.



Select the range of tools to be included in your mini-graph, and then click OK.

Copy and fill the populated cell to the appropriate ones below it, and you have a set of graphs comparing the quarterly performance of your sales staff.

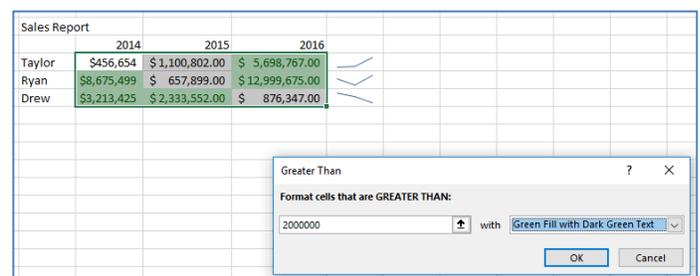
Sales Report				
	2014	2015	2016	
Taylor	\$456,654	\$ 1,100,802.00	\$ 5,698,767.00	
Ryan	\$8,675,499	\$ 657,899.00	\$ 12,999,675.00	
Drew	\$3,213,425	\$ 2,333,552.00	\$ 876,347.00	

Note that you get a contextual tool set when you are using Sparklines, allowing you to indicate high and low points, change to column instead of line, change colour, and so on.

### Conditional Formatting:

Conditional Formatting is a terrific visual analysis tool that allows you to see into your data right in its table.

This tool is found in the **Styles** group of the Home tab. Conditional Formatting options include highlighting cells above a certain value (pictured); highlighting the top ten, or top 10%; showing how the values relate to each other in terms of colour, with red being the bottom third, yellow the middle third and green the top third; and you can even add an icon - say an arrow - showing if a cell has a higher value, neutral relation, or lower value than the other values in the range.



## **PART III: Learn More**

There are lots of resources to explore.

### **Library Resources**

Google **North Vancouver City Library** or type **nvcl.ca** into the URL bar.

- Click on **Using the Library**, then on **Technology Training** (under Services), and **Computer Classes**. Scroll to **Intro to Excel** then click on **Class Resources**.
- Try a tutorial on Lynda.com, accessible for free on the library website: [www.nvcl.ca/databases](http://www.nvcl.ca/databases) > **Lynda.com**. Type "Excel basics" into the search bar and try a class
- Read more on Safari Books Online: [www.nvcl.ca/databases](http://www.nvcl.ca/databases)> **Safari Books Online**. Type "Excel 2016" into the search bar to find a book
- Look for books on the third floor at Row 26, Dewey **005.54**
- Set an appointment with a staff member by completing an [online request form](#), calling 604 982 3941, or emailing [techconnect@cnv.org](mailto:techconnect@cnv.org)

### **Other Resources**

- There are free online tutorials at <http://www.gcflearnfree.org/excel2010/>
- Visit Microsoft online for more information <https://support.office.com/en-us/excel>
- **Help Button**, upper right of spreadsheet (also available in File tab)

