Most useful formulas and functions

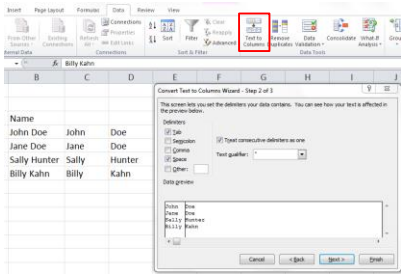
The formulas described below are commonly used formulas. Specifically, these formulas facilitate robust model structures that improve the efficiency and flexibility of your analysis.

a) Text to Column
b) Find
c) Iferror
d) Vlookup
e) Sumifs, Countifs, Averageifs
f) Dropdown lists
g) Pivot tables
h) Data tables

e.g.

a) Text to column

This function helps you quickly transform your data into a new format. E.g. if you had first and last names separated by a space in a column, you can split this column into two by using the text to column function. Note what was done in the data.



b) FIND(find_text, within_text, [start_num])

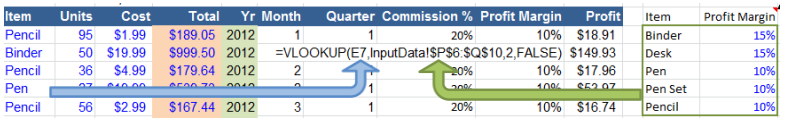
This allows you to find particular texts in a string. E.g. If cellA1 = "Mr Jones", then FIND("Mr",A1) will give 1. This allows easy transformations of data.

c) IFERROR(value, value_if_error)

Leaving #N/A or #DIV/0! in your workbook is sloppy. It automatically discredits you. Use IFERROR to turn an error result of a formula to something else. However, make sure that the errors being transformed are acceptable.

d) VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

This is a commonly used function that allows you to look up the entry in a reference table. The formula can be written as VLOOKUP(**what you want to look up**, **from where**, which column you want back). E.g. for each item, I want the profit margin from the [InputData]!P6:Q10, with the margin % being the second column.



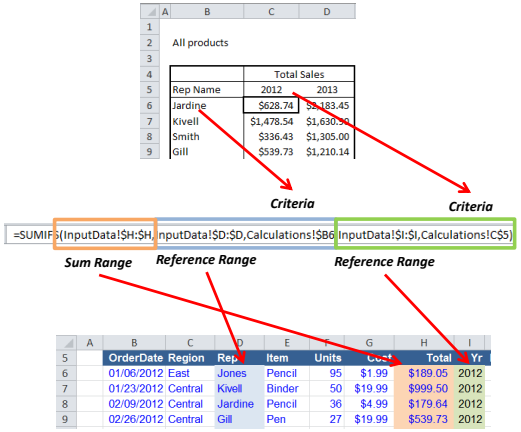
Item	Units	Cost	Total	Yr	Month	Quarter	Commission %	Profit Margin	Profit
Pencil	95	$1.99	$189.05	2012	1	1	20%	10%	$18.91
Binder	50	$19.99	$999.50	2012	=VLOOKUP(E7,InputData!$P$6:$Q$10,2,FALSE)				$149.93
Pencil	36	$4.99	$179.64	2012	2		20%	10%	$17.96
Pen	27	$19.99	$539.73	2012	2	1	20%	10%	$53.97
Pencil	56	$2.99	$167.44	2012	3	1	20%	10%	$16.74

Item	Profit Margin
Binder	15%
Desk	15%
Pen	10%
Pen Set	10%
Pencil	10%

The optional "FALSE" at the end of the function means you only want exact matches to return.

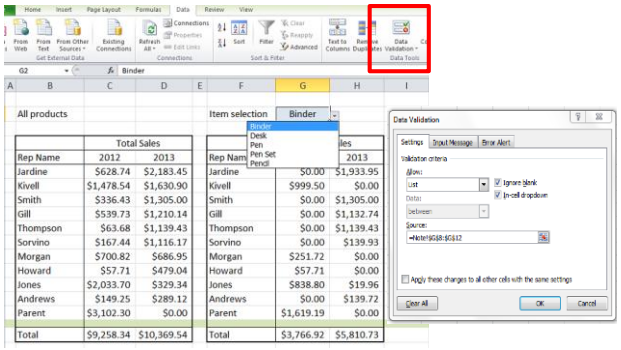
e) SUMIFS(sumrange,criteriarange1,criteria1…), Countifs and Averageifs

These are versatile formulas that allow you to summarize large amounts of data. The example below is summing the **Total** field if **Rep** is Jardine and the **Yr** is 2012. Note that these functions without the ending **s, Sumif, Countif** and **Averageif** are simpler but allow only one criterion.



f) Dropdown lists

This function used in combination with Countifs/Sumifs will allow you to create automatically updating tables. So in the example below, instead of having five tables for each of the items, the user can select which item should be summarized in the table. This allows flexible summarization of the data.



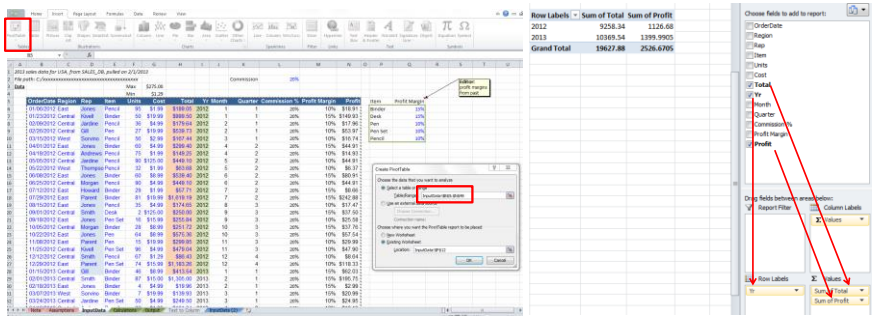
g) **Pivot tables**

These are powerful yet easy to use data summary tool in MS Excel. Pivot tables can be used summarize data in a multitude of formats without needing to write complex formulas.

Here are a few tips on how to get the most out of pivot tables:

Setting up

When creating pivot tables, it's a good habit to extend the Data Range specification well below the current input data, so that future updates will be automatically included in the pivot table, allowing automation. Play around with the table format to find the most interesting and easy to understand format.

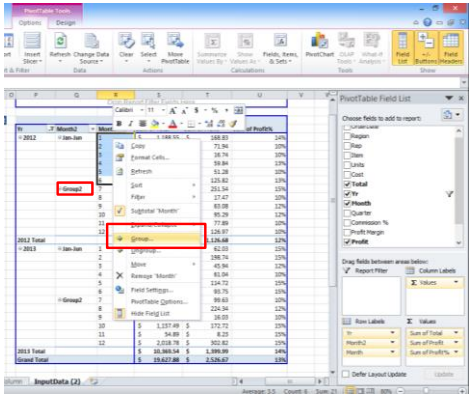


Double click any data cell

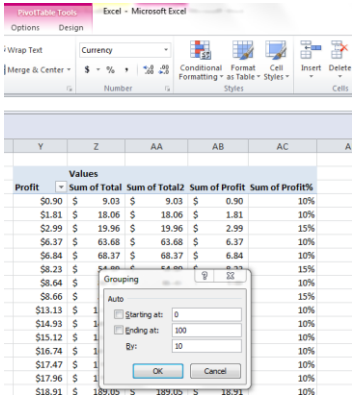
This will bring up the underlying data lines, which can be helpful in investigating specific issues.

Grouping categories

Categories can be grouped to create a more concise presentation of the data. Highlight categories you want to group => right click => click Group => rename the new group.

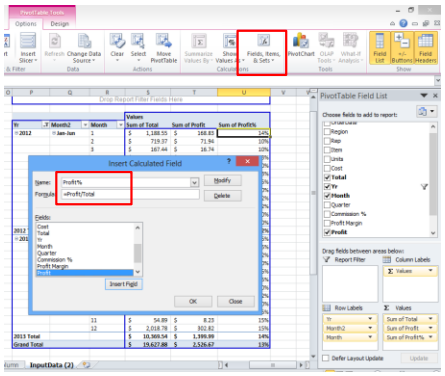


If you have numbers as your row or column labels, you can create bands by Grouping as described above and selecting the banding criteria, e.g. from 0 up to 100, by bands of 10.



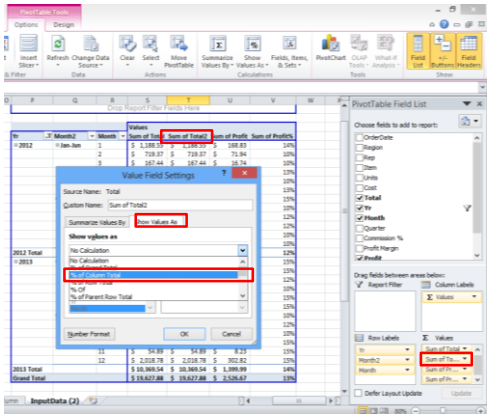
Formulas in pivot table

Go to Pivot Table options => Fields, Items & Sets => Calculated Field => name the formula => enter in the formula



Changing summarization format in the pivot table

Change the summarization displayed in the pivot table clicking the field of interest on the right bottom of the Field List => click Value Field Setting => pick from "Summarize Values By" => "Show Value As".



h) **Data tables**

These take a bit of getting used to, but are extremely useful in scenario testing.

Highlight the sensitivity testing table, as shown in example below => Go to Data => What-if analysis => Data Table => The two variables you are testing will be in the rows and columns around a sensitivity testing table. The top left corner of the table is the formula you're testing.

In the example below, I'm testing what happens to the ratio between total commission paid and total profits paid at different commission %'s and profit margins. The Commission vs Profit of **25%** is the formula being tested. It is total commission paid divided by total profit, calculated in another tab based on cells D2 and D3. The row heading is profit margin. The column heading is commission %.