

EXCEL GUIDE

Tips & Tricks To better use Excel

Motto

Once we learn how to perform an action in Excel, we tend to continue using the same method again and again. Sometimes, we know there must be an easier way to do things, but it requires effort to find out how, so we continue to use the method that we know will get us there in the end.

This project lists a number of simple Excel tips and tricks. If you spend just a few minutes learning these tips, you are likely, in the long-term, to save hours of time developing your spreadsheets and also to produce Excel spreadsheets that have a much more professional look.

Once you start to use the following Excel tips and tricks, you will look back and wonder how you ever managed without them!

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Part 1

Not another Excel Book

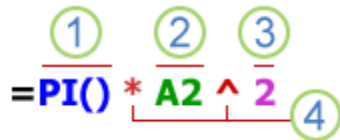
Chapter I. Excel Basics

Learn to calculate in Excel

Formulas are equations that perform calculations on values in your worksheet.

A formula **always** starts with an equal sign (=)

It can contain any or all of the following: [functions](#), references, [operators](#), and [constants](#).


=PI() * A2 ^ 2

1 Functions: A prewritten formula that, depending on a defined set of arguments, returns a value or values. **Arguments** can be: references, constants, expressions, but there are also functions that use no argument at all.

Ex: The PI() function returns the value of pi: 3.142...

The order in which they are arranged in the formula is called **syntax**.

2 References: A2 returns the value in cell A2.

3 Constants: A value that is not calculated and, therefore, does not change.

Ex: Numbers or text values entered directly into a formula, such as 2.

4 Operators: A sign or symbol that specifies the type of calculation to perform within an expression.

Ex: The ^ (caret) operator raises a number to a power, the * (asterisk) operator multiplies

Formulas in Excel can include **operators** that **combine arguments** to produce intermediate results that are used as arguments for the formula, called **expressions**.

Operators work on operands. For example, in the expression "1+3", 1 is the first operand and 3 is the second operand.

Arithmetic operator	Meaning	Example
+ (plus sign)	Addition	3+3
- (minus sign)	Subtraction/Negation	3-1-1
* (asterisk)	Multiplication	3*3
/ (forward slash)	Division	3/3
% (percent sign)	Percent	20%
^ (caret)	Exponentiation	3^2 (the same as 3*3)

Comparison operator	Meaning	Example
= (equal sign)	Equal to	A1=B1
> (greater than sign)	Greater than	A1>B1
< (less than sign)	Less than	A1<B1
>= (greater than or equal to sign)	Greater than or equal to	A1>=B1
<= (less than or equal to sign)	Less than or equal to	A1<=B1
<> (not equal to sign)	Not equal to	A1<>B1

Text operator	Meaning	Example
& (ampersand)	Connects, or concatenates, two values to produce one continuous text value	"North" & "wind" pro

Reference operator	Meaning	Example
: (colon)	Range operator, which produces one reference to all the cells between two references, including the two references	B5:B15
, (comma)	Union operator, which combines multiple references into one reference	SUM(B5:B15,D5:D15)
< > (space)	Intersection operator, returns the common cells of the two references	SUM(B5:D15 A1:D5)

Computing order

Order	Operator	Operation
1st	:	Range
2nd	<space>	Intersection
3rd	,	Union
4th	--	Negation
5th	%	Percentage
6th	^	Exponentiation
7th	* and /	Multiplication and division
8th	+ and -	Addition and subtraction
9th	&	Concatenation
10th	= < > <= >= <>	Comparison

Boolean Notions

The Boolean functions in Excel evaluate an expression to either TRUE or FALSE, called truth values. In Boolean algebra these two values are represented by 1, respective 0.

Truth tables

x	y		x AND y	x OR y
0	0		0	0
1	0		0	1
0	1		0	1
1	1		1	1

x		NOT x
0		1
1		0

AND – tests a number of user-defined conditions and returns a result of:

- **TRUE** if ALL of the conditions evaluate to TRUE

Or

- **FALSE** otherwise (i.e. if ANY of the conditions evaluate to FALSE)

Syntax: **AND (logical_test1, [logical_test2], ...)**

The arguments, logical_test1, [logical_test2], etc, are conditions that evaluate to either TRUE or FALSE.

Note that any numeric values, except zero are treated as the logical value TRUE, and the value zero is treated as the logical value FALSE.

Examples

Formulas:

	A	B	C
1	5	10	=AND(A1>0, A1<B1)
2	5	10	=AND(A2>0, A2<B2, B2>12)
3	5	10	=AND(A3<0, A3>B3, B3>12)

Results:

	A	B	C
1	5	10	TRUE
2	5	10	FALSE
3	5	10	FALSE

Note that, in the above example spreadsheet:

- the function in cell C1 evaluates to TRUE, as BOTH of the supplied conditions are TRUE
- the function in cell C2 evaluates to FALSE, as the third condition, B2>12, is FALSE
- the function in cell C3 evaluates to FALSE, as ALL of the supplied conditions are FALSE

OR – tests a number of supplied conditions and returns either:

- **TRUE** if ANY of the conditions evaluate to TRUE

Or

- **FALSE** otherwise (i.e. if ALL of the conditions evaluate to FALSE)

Syntax: **OR (logical_test1, [logical_test2], ...)**

The logical_test arguments are one or more conditions that evaluate to either TRUE or FALSE.

Note that any numeric values, except zero are treated as the logical value TRUE, and the value zero is treated as the logical value FALSE.

Examples

Formulas:

	A	B	C
1	5	10	=OR(A1>0, A1<B1)
2	5	10	=OR(A2>0, A2>B2, B2>12)
3	5	10	=OR(A3<0, A3>B3, B3>12)

Results:

	A	B	C
1	5	10	TRUE
2	5	10	TRUE
3	5	10	FALSE

Note that, in the above examples:

- the function in cell C1 evaluates to TRUE, as BOTH of the supplied conditions are TRUE
- the function in cell C2 evaluates to TRUE, as the first condition, A2>0, is FALSE

- the function in cell C3 evaluates to FALSE, as ALL of the supplied conditions are FALSE

NOT – receives a logical value and simply returns the opposite logical value.

If supplied with the value TRUE, the Not function returns FALSE and if supplied with the value FALSE, the function will return the value TRUE.

Syntax: **NOT (logical)**

Examples

Formulas:

	A	B
1	=NOT(TRUE)	
2	=NOT(B1=1)	
3	=NOT(ISBLANK(B1))	

Results:

	A	B
1	FALSE	
2	TRUE	
3	FALSE	

Chapter II. Excel Decisional Functions

IF – returns one value if a condition you specify evaluates to TRUE and another value if it evaluates to FALSE

Syntax: **IF(logical_test, value_if_true, value_if_false)**

logical_test - The condition that is to be tested and evaluated as either TRUE or FALSE

value_if_true - The result returned if the supplied logical_test evaluates to TRUE

value_if_false - The result returned if the supplied logical_test evaluates to FALSE

Nesting the Excel If Function

The IF function is frequently 'nested' in Excel. I.e. the value_if_true or the value_if_false argument is replaced with another call to the IF function.

Excel 2007 and Excel 2010 allow up to 64 levels of nesting. For Example, the following formula has 8 levels of nesting:

```
=IF(A1=1,"red", IF(A1=2,"blue", IF(A1=3,"green", IF(A1=4,"brown",
IF(A1=5,"purple", IF(A1=6,"orange", IF(A1=7,"yellow",
IF(A1=8,"grey", IF(A1=9,"pink", "black" ) ) ) ) ) ) ) ) ) ) ) ) )
```

If you do find yourself using multiple levels of nesting, you should probably consider other Excel functions that can be used to obtain the same result more succinctly.

Example 1

The following example shows the Excel If function applied to two sets of numbers. In this example, the logical_test checks whether the corresponding value in column B is equal to 0, and the function returns:

	A	B	C	D
1	5	4	=IF(B1=0, "div by zero", A1/B1)	- returns the value 1.25
2	5	0	=IF(B2=0, "div by zero", A2/B2)	- returns the text string "div by zero"

Example 2

The logical_test within the Excel If function can be any type of expression that returns a TRUE or FALSE result. The following example shows some more examples of the function, using different types of logical_test.

	A	B	C
1	5	=IF(A1>=0, A1, -A1)	- returns the value 5
2	-5	=IF(A2>=0, A2, -A2)	- returns the value 5
3	0	=IF(ISERROR(1/A3), 1, A3)	- returns the value 1
4	test	=IF(LEN(A4)<>0, 1, 0)	- returns the value 1

Example 3

The following example shows nesting of the Excel If function. The value_if_true argument is a further IF function, therefore:

- If the value in column B is equal to 0, a further call to 'If' is made, to test the value in column C
- If the value in column B is not equal to zero, the function returns the value in column A divided by the value in column B

	A	B	C	D	E
1	5	4	1	=IF(B1=0, IF(C1=0, "div by zero", A1/C1), A1/B1)	- returns the value 1.25
2	5	4	1	=IF(B2=0, IF(C2=0, "div by zero", A2/C2), A2/B2)	- returns the value 1.25
3	5	0	1	=IF(B3=0, IF(C3=0, "div by zero", A3/C3), A3/B3)	- returns the value 5
4	5	0	0	=IF(B4=0, IF(C4=0, "div by zero", A4/C4), A4/B4)	- returns text string "div by zero"

IFERROR – tests whether the *value* expression is an error. IFERROR returns *value_if_error* if the expression is an error or *value* of the expression if it is not an error.

Syntax: **IFERROR (value,value_if_error)**

Value - The initial value or expression that should be tested

Value_if_error - Value or expression to be returned if the initial Value argument returns an error

Examples

Formulas:

	A	B	C
1	Beth	Class 1	=IFERROR(VLOOKUP("Jim", A1:B5, 2 FALSE), "not found")
2	Bob	Class 2	=IFERROR(VLOOKUP("Mary", A1:B5, 2 FALSE), "not found")
3	Alf	Class 2	
4	Jim	Class 3	
5	Ann	Class 3	

Results:

	A	B	C
1	Beth	Class 1	Class 3
2	Bob	Class 2	not found
3	Alf	Class 2	
4	Jim	Class 3	
5	Ann	Class 3	

SUMIF – finds values in a supplied array, that satisfy a given criteria, and returns the sum of the corresponding values in a second supplied array

Syntax: **SUMIF (range, criteria, [sum_range])**

Range - An array of values (or range of cells containing values) to be tested against the criteria

Criteria - The condition to be tested against each of the values in range

[sum_range] - An optional array of numeric values (or cells containing numbers) which are to be added together, if the corresponding range entry satisfies the supplied criteria

Examples

	A	B	C	D	E
1		Date	Value		
2	2000	8/1/2000	10.5	2000	
3	2003	5/12/2003	7.2		
4	2000	3/12/2000	200		
5	2001	7/30/2001	5.4		
6	2000	2/28/2000	8.1		
7					
8					
9					
10					

Based on the Excel spreadsheet above:

=Sumif(A2:A6, D2, C2:C6)	would return 218.6
=Sumif(A:A, D2, C:C)	would return 218.6
=Sumif(A2:A6, 2003, C2:C6)	would return 7.2
=Sumif(A2:A6, ">=2001", C2:C6)	would return 12.6

SUMIFS – finds values in one or more supplied arrays, that satisfy a set of criteria, and returns the sum of the corresponding values in a further supplied array.

Syntax: **SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2],...)**

sum_range - An array of numeric values (or cells containing numbers) which are to be added together, if the corresponding range entries satisfy all the supplied criteria

criteria_range1, [criteria_range2], ... - Arrays of values (or ranges of cells containing values) to be tested against the respective criteria1, criteria2, ... (The supplied criteria_range arrays must all have the same length as the sum_range)

criteria1, [criteria2], ... - The conditions to be tested against the values in criteria_range1, [criteria_range2], ...

The function can handle up to 127 pairs of criteria_range and criteria arguments. Each of the supplied criteria can be either:

- a numeric value (which may be an integer, decimal, date, time, or logical value) (eg. 10, 01/01/2008, TRUE), or
- a text string (eg. "Name", "Thursday"), or
- an expression (eg. ">12", "<>0")

and can be supplied to the function either directly, as a reference to a cell, or as a value returned from another function or formula.

Note that if your criteria is a text string or an expression, this must be supplied to the function in quotes.

Also note that the Excel Sumifs function is not case-sensitive. So, for example, the text strings "TEXT" and "text" will be considered to be equal.

Example

To find the sum of sales in the North area during quarter 1:

=SUMIFS(D2:D13, A2:A13, 1, B2:B13, "North")

In this example, the Excel Sumifs function identifies rows where:

- The value in column A is equal to 1

And

- The entry in column B is equal to "North"

and calculates the sum of the corresponding values from column D.

This formula finds the sum of the values \$223,000 and \$125,000 (from cells D2 and D3), which gives the result **\$348,000**.

	A	B	C	D
1	Quarter	Area	Sales Rep.	Sales
2	1	North	Jeff	\$223,000
3	1	North	Chris	\$125,000
4	1	South	Carol	\$456,000
5	2	North	Jeff	\$322,000
6	2	North	Chris	\$340,000
7	2	South	Carol	\$198,000
8	3	North	Jeff	\$310,000
9	3	North	Chris	\$250,000
10	3	South	Carol	\$460,000
11	4	North	Jeff	\$261,000
12	4	North	Chris	\$389,000
13	4	South	Carol	\$305,000

SUMPRODUCT – returns the sum of the products of the corresponding values in two or more supplied arrays

Syntax: **SUMPRODUCT (array1, array2, [array3], ...)**

array1, array2, ... - where the array arguments are arrays of numeric values, which may be supplied to the function directly, or as one or more cells or ranges of cells containing numeric values. All of the supplied arrays must be of equal length and non-numeric values in the supplied arrays are treated as the value zero.

Examples

Formulas

	A	B	C
1	Array 1	Array 2	Sumproduct
2	1	5	=SUMPRODUCT(A2:A4, B2:B4)
3	2	6	=SUMPRODUCT(A2:A4, B2:B4, {2;4;1})
4	3	4	=SUMPRODUCT(A2:A4, B2:B4, {2;4;"text"})

Results

	A	B	C	D
1	Array 1	Array 2	Sumproduct	
2	1	5	29	= 1x5 + 2x6 + 3x4
3	2	6	70	= 1x5x2 + 2x6x4 + 3x4x1
4	3	4	58	= 1x5x2 + 2x6x4 + 3x4x0
5				(note "text" is treated as 0)

Chapter III. Excel Math & Statistical Functions

MOD – returns the remainder of a division between two supplied numbers.

Syntax: **MOD (Number, Divisor)**

The arguments are:

<i>Number</i>	The number to be divided
<i>Divisor</i>	The value that divides the <i>Number</i> argument

These arguments can be supplied to the function either as simple numbers, as references to cells containing numbers, or as values returned from other functions. This is shown in the examples below.

Examples

The following spreadsheets show simple examples of the Excel Mod function. The format of the function is shown in the spreadsheet on the left and the results are shown in the spreadsheet on the right.

Formulas				Results			
	A	B	C		A	B	C
1			=MOD(6, 4)	1			2
2			=MOD(6, 3)	2			0
3	6	2.5	=MOD(A3, B3)	3	6	2.5	1
4	6	1.333	=MOD(A4, B4)	4	6	1.333	0.668
5			=MOD(ROW(), 2)	5			1

ROMAN – converts an Arabic number to Roman - i.e. for a supplied number, the function returns a text string depicting the roman numeral form of the number.

Syntax: **ROMAN (number, [form])**

Where the arguments are as follows:

number	- The number that is to be converted to a Roman numeral (must be an integer between 0 and 1999)
[form]	- An optional argument that specifies the form of the Roman numeral returned This can take any of the following values: 0 - Classic form 1 - More Concise 2 - More Concise 3 - More Concise 4 - Simplified form TRUE - Classic form FALSE- Simplified form If the [form] argument is omitted, it takes on the default value of 0 (denoting the classic form is used).

TIP! If any of the arguments are input as decimal values, they will be truncated to integers. If the supplied number is < 0 or > 3999, it will not be recognized as a number.

Examples

The following spreadsheet shows example of the Excel Roman function used to convert the number 9999 to different forms of Roman numerals. The spreadsheet on the left shows the format of the function, and the spreadsheet on the right shows the result.

Formula		Result	
	A		A
1	=ROMAN(9999, 0)	1	MCMXCIX
2	=ROMAN(9999, 1)	2	MLMVLIV
3	=ROMAN(9999, 2)	3	MXMIX
4	=ROMAN(9999, 3)	4	MVMIV
5	=ROMAN(9999, 4)	5	MIM

ROUND – rounds a supplied number up or down, to a specified number of decimal places.

Syntax: **ROUND(Number, Num_Digits)**

The arguments are:

<i>Number</i>	The initial number
<i>Num_Digits</i>	The number of decimal places to round the supplied <i>Number</i> to.

The *Number* and *Num_Digits* arguments can be supplied as either simple numbers, references to cells containing numbers, or as values returned from other functions or formulas.

Examples

The following spreadsheets show the Excel Round function used with several different argument values:

Formulas			Results		
	A	B		A	B
1		=ROUND(100.9, 0)	1		101
2	5.28	=ROUND(A2, 1)	2	5.28	5.3
3	5.9999	=ROUND(A3, 3)	3	5.9999	6
4	99.5	=ROUND(A4, 0)	4	99.5	100
5	-6.3	=ROUND(A5, 0)	5	-6.3	-6
6	-100.5	=ROUND(A6, 0)	6	-100.5	-101
7	-22.45	=ROUND(A7, 1)	7	-22.45	-22.5

TIP! It is often a good idea to use the ROUND function when comparing two numbers in Excel, especially if the numbers are the result of multiple mathematical calculations. This is because multiple calculations may result in the introduction of rounding errors, which may

cause small inaccuracies in the numbers stored in Excel.

For example, the decimal 5.1 may, due to rounding errors, be stored in cell A1 of your spreadsheet, as 5.100000000000001. When compared to the exact value 5.1, the value in cell A1 will not be equal to the exact value 5.1.

ROUNDDOWN – rounds a supplied number down, towards zero, to a specified number of decimal places.

Syntax: **ROUNDDOWN(Number, Num_Digits)**

The arguments are:

<i>Number</i>	The initial number
<i>Num_Digits</i>	The number of decimal places to round the supplied <i>Number</i> down to.

The *Number* and *Num_Digits* arguments can be supplied as either simple numbers, references to cells containing numbers, or as values returned from other functions or formulas.

Examples

The following spreadsheets show the Excel Rounddown function used with different *Num_Digits* values on both positive and negative numbers:

Formulas			Results		
	A	B		A	B
1	Number	Rounddown	1	Number	Rounddown
2	333.9999	=ROUNDDOWN(A2, 2)	2	333.9999	333.99
3	333.9999	=ROUNDDOWN(A3, 1)	3	333.9999	333.9
4	333.9999	=ROUNDDOWN(A4, 0)	4	333.9999	333
5	-333.9999	=ROUNDDOWN(A5, 1)	5	-333.9999	-333.9
6	-333.9999	=ROUNDDOWN(A6, 2)	6	-333.9999	-333.99

The above examples show how the Rounddown function will always round towards zero, to the specified number of decimal places. - ie. If the supplied *Number* is positive, it is rounded down, but if the number is negative it is rounded up (towards zero).

ROUNDUP - rounds a supplied number up, away from zero, to a specified number of decimal places.

Syntax: **ROUNDUP(Number, Num_Digits)**

Where the arguments are:

<i>Number</i>	The initial number
<i>Num_Digits</i>	The number of decimal places to round the supplied <i>Number</i> up to.

Examples

The following spreadsheets show the Excel Roundup function used with different *Num_Digits* values on both positive and negative numbers:

Formulas			Results		
	A	B		A	B
1	Number	Roundup	1	Number	Roundup
2	333.1111	=ROUNDUP(A2, 2)	2	333.1111	333.12
3	333.1111	=ROUNDUP(A3, 1)	3	333.1111	333.2
4	333.1111	=ROUNDUP(A4, 0)	4	333.1111	334
5	-333.1111	=ROUNDUP(A5, 1)	5	-333.1111	-333.2
6	-333.1111	=ROUNDUP(A6, 2)	6	-333.1111	-333.12

The above examples show how the Roundup function will always round away from zero, to the specified number of decimal places. - ie. If the supplied *Number* is positive, it is rounded up, but if the number is negative it is rounded down (away from zero).

SUBTOTAL - performs a specified calculation (eg. the sum, product, average, etc.) for a supplied set of values.

Syntax: **SUBTOTAL (Function_num, Ref1, [Ref2], ...)**

Where the arguments are:

Function_num - A number that denotes the calculation type (eg. sum, product, average, etc.)

Function	function_num (include hidden values)	function_num (ignore hidden values)
AVERAGE	1	101
COUNT	2	102
COUNTA	3	103
MAX	4	104
MIN	5	105
PRODUCT	6	106
STDEV	7	107
STDEVP	8	108
SUM	9	109
VAR	10	110
VARP	11	111

Ref1, [Ref2], ... - One or more references to cells containing the values that the calculation is to be performed on.

Note that the option to include hidden cells does not apply to cells that have been filtered out using the Autofilter. Filtered out cells are not included in any Subtotal calculations. This is illustrated in the examples below.

Examples

The Subtotal function is used to calculate the sum and the average monthly sales per team. All of the cells in the range of sales figures are visible, so all values are included in the subtotal calculations:

Formulas					Result				
	A	B	C	D		A	B	C	D
1	Month	Team	Sales	Total Sales (All Teams) :	1	Month	Team	Sales	Total Sales (All Teams)
2	Jan	Team 1	\$45,000	=SUBTOTAL(9, C2:C10)	2	Jan	Team 1	\$45,000	\$45,000
3	Jan	Team 2	\$36,000	Average Sales (All Teams) :	3	Jan	Team 2	\$36,000	Average Sales (All Teams)
4	Jan	Team 3	\$55,000	=SUBTOTAL(1, C2:C10)	4	Jan	Team 3	\$55,000	\$55,000
5	Feb	Team 1	\$39,000		5	Feb	Team 1	\$39,000	
6	Feb	Team 2	\$47,000		6	Feb	Team 2	\$47,000	
7	Feb	Team 3	\$61,000		7	Feb	Team 3	\$61,000	
8	Mar	Team 1	\$41,000		8	Mar	Team 1	\$41,000	
9	Mar	Team 2	\$52,000		9	Mar	Team 2	\$52,000	
10	Mar	Team 3	\$38,000		10	Mar	Team 3	\$38,000	

AVERAGE - returns the arithmetic mean of a list of supplied numbers.

Syntax: **AVERAGE (number1, [number2], ...)**

Where the number arguments are a set of one or more numeric values, or arrays of numeric values, for which you want to calculate the average - these values can be supplied directly to the function, or as one or more cells or ranges of cells containing numeric values.

AVERAGE vs. AVERAGEA

The AVERAGE Function is very similar to the AVERAGEA function. The only difference between these two functions is the way in which logical values or text values within arrays or references are treated in the calculation of the arithmetic mean. This is shown in the table below:

	AVERAGE Function	AVERAGEA Function
Logical values or text representations of numbers, typed directly into the list of arguments	ARE counted (TRUE=1, FALSE=0)	ARE counted (TRUE=1, FALSE=0)
Text that cannot be interpreted as a number, typed directly into the list of arguments	#VALUE! error	#VALUE! error
Logical values, within arrays or reference arguments	Ignored	ARE counted (TRUE=1, FALSE=0)
Text (including empty text "", text representations of numbers, or other text), within arrays or reference arguments	Ignored	Counted as zero
Empty cells	Ignored	Ignored

Examples

The following spreadsheet shows the Excel Average function used to calculate the arithmetic mean of the set of values in cells A1-A5. Although the same 5 values are provided to each of the functions in cells B1-B4, in each case, the values are provided to the function in different ways.

Formulas:

	A	B
1	8	=AVERAGE(A1:A5)
2	7	=AVERAGE(8, 7, 9, 6, 10)
3	9	=AVERAGE(A1, A2, A3, A4, A5)
4	6	=AVERAGE(A1:A3, {6, 10})
5	10	

Results:

	A	B
1	8	8
2	7	8
3	9	8
4	6	8
5	10	

COUNT - returns the number of numeric values in a supplied set of cells or values. This count includes both numbers and dates.

Syntax: **COUNT (value1, [value2], ...)**

value1, value2, ... - one or more values or references to cell ranges.

Numbers and dates are always counted as numeric values by the Excel Count function. However, text representations and logical values are counted differently, depending on whether they are supplied as a value in a range of cells, or if they are supplied directly to the function.

The table below summarizes which values are and which are not treated as numeric values by the Excel Count function:

	Value Within a Range of Cells	Value Supplied Directly to Function
Numbers	ARE counted	ARE counted
Dates	ARE counted	ARE counted
Logical Values	NOT counted	ARE counted
Text Representations of Numbers & Dates	NOT counted	ARE counted
Other Text	NOT counted	NOT counted
Errors	NOT counted	NOT counted

Example 1 - Values Supplied from a Range of Worksheet Cells

The following spreadsheet shows several examples of the Excel Count function, with the values supplied to the function as one or more ranges of cells.

Formulas:

	A	B	C
1	5	0	=COUNT(A1:B5)
2	text		=COUNT(A1:A5, B1)
3	FALSE		=COUNT(A1:A5, A1:B1)
4	01/01/2010		
5	#N/A	10	

Results:

	A	B	C
1	5	0	4
2	text		3
3	FALSE		4
4	01/01/2010		
5	#N/A	10	

In the above example:

- The numbers and the date, 01/01/2010 are counted by the function.
- The text value "text", the logical value FALSE, and the error value #N/A are not counted by the function.
- The example in cell C3 uses two ranges that intersect, and both ranges include the cell A1. In this case, Excel counts the cell A1 (which DOES contain a numeric value) twice - once for each range that it is contained in.

Example 1 - Values Supplied Directly to the Excel Count Function

The following spreadsheet shows several examples of the Excel Count function, with the values supplied directly to the function.

Formulas:

	A
1	=COUNT(100, DATE(2010,1,1))
2	=COUNT("100", "01/01/2010", FALSE)
3	=COUNT("text", #N/A)

Results:

	A
1	2
2	3
3	0

Note, in the above example:

- The number 100 and the date 01/01/2010 are counted by the function.
- The text representations of the number "100" & the date, "01/01/2010", and the logical value FALSE, are counted by the function.
- The text string "text" and the error #N/A are not counted by the function.

COUNTA - returns the number of non-blanks in a supplied set of cells and/or values.

Syntax: **COUNTA (value1, [value2], ...)**

value1, value2, ... - one or more values or references to cell ranges.

Note that, if a cell contains an empty text string or a formula that returns an empty text string, this cell is counted as a non-blank by the Counta function.

Examples

Formulas:

	A	B	C
1	1		=COUNTA(A1:A6)
2	2	TRUE	=COUNTA("text", 1, 2)
3	#N/A		=COUNTA(A1:A6, B1:B2)
4			=COUNTA("text", {1,2,3}, A1:A6)
5			
6	text		

Results:

	A	B	C
1	1		4
2	2	TRUE	3
3	#N/A		5
4			8
5			
6	text		

COUNTBLANK - returns the number of blank cells in a supplied range of cells.

Syntax: **COUNTBLANK (range)**

The range argument specifies the range of cells in which you want to count blank cells.

Note that, if a cell contains an empty text string or a formula that returns an empty text string, this cell is counted as a blank by the Countblank function.

Examples

Formulas:

	A	B	C	D
1	1 text			=COUNTBLANK(A1:B5)
2	2	TRUE		
3				
4	4	6		
5		5		

Results:

Gives the result 3

Formulas:

	A	B	C	D
1	1 text			=COUNTBLANK(A3:D5)
2	2	TRUE		
3				
4	4	6		
5		5		

Results:

Gives the result 9

COUNTIF - returns the number of cells (of a supplied range), that satisfy a given criteria.

Syntax: **COUNTIF (range, criteria)**

Where the arguments are:

range - The range of cells that should be tested against the supplied criteria and counted if the criteria is satisfied.

criteria - A user-defined condition that is tested against each of the cells in range:

- a numeric value (which may be an integer, decimal, date, time, or logical value) (eg. 10, 01/01/2008, TRUE)
- a text string (eg. "Text", "Monday")
- an expression (eg. ">12", "<>0")

Examples

Formulas:

	A	B	C	D
1	Sunday	07-Sep-2008	0	TRUE
2	Monday	08-Sep-2008	2.1	TRUE
3	Wednesday	10-Sep-2008	2	TRUE
4	Thursday	11-Sep-2008	3	FALSE
5	Wednesday	17-Sep-2008	2.5	FALSE
6	Tuesday	23-Sep-2008	3	FALSE
7	Wednesday	24-Sep-2008	6	FALSE
8	Sunday	05-Oct-2008	4	FALSE
9	Saturday	11-Oct-2008	0	FALSE
10				
11	=COUNTIF(A1:A9, "Wednesday")			
12	=COUNTIF(A1:A9, "<>Wednesday")			
13	=COUNTIF(B1:B9, ">01/10/2008")			
14	=COUNTIF(C1:C9, 0)			
15	=COUNTIF(C1:C9, ">=3")			
16	=COUNTIF(D1:D9, TRUE)			

Results:

	A	B	C	D
1	Sunday	07-Sep-008	0	TRUE
2	Monday	08-Sep-2008	2.1	TRUE
3	Wednesday	10-Sep-2008	2	TRUE
4	Thursday	11-Sep-2008	3	FALSE
5	Wednesday	17-Sep-2008	2.5	FALSE
6	Tuesday	23-Sep-2008	3	FALSE
7	Wednesday	24-Sep-2008	6	FALSE
8	Sunday	05-Oct-2008	4	FALSE
9	Saturday	11-Oct-2008	0	FALSE
10				
11	3			
12	6			
13	2			
14	2			
15	4			
16	3			

The example below shows the COUNTIF function used to identify duplicates in a column containing reference numbers. Note that the function in this example is written so that it highlights only the second, third, etc instance of a duplicate value. - It does not highlight the first instance of the value.

MAX - returns the largest value from a supplied set of numerical values.

Syntax: **MAX(number1, [number2], ...)**

The number arguments are a set of one or more numeric values, or arrays of numeric values, which you want to return the largest value of.

If an argument is supplied to the function as a reference to a cell, or an array of cells, the Max function will ignore blank cells, and text or logical values contained within the supplied cell range. However, logical values and text representations of numbers that are supplied directly to the function will be included.

Example

Formulas:			Results:		
	A	B		A	B
1	4	=MAX(A1:A5)	1	4	5
2	3		2	3	
3	1		3	1	
4	5		4	5	
5	2		5	2	

MAXA - function returns the largest value from a supplied set of numerical values, while counting text and the logical value FALSE as the value 0 and counting the logical value TRUE as the value 1.

Syntax: **MAXA (number1, [number2], ...)**

The number arguments are a set of one or more numeric values, or arrays of numeric values, that you want to return the largest value of.

Excel MAXA vs. Excel MAX

The MAXA function is very similar to the MAX function. The only difference is when an argument is supplied to the function as a reference to a cell or an array of cells. In this case the Max function ignores logical and text values, while the Maxa function counts the logical value TRUE as 1, the logical value FALSE as 0 and text values as 0.

Example

Formulas:

	A	B	C
1			=MAXA(1, 5, 10)
2	-1		=MAXA(A2, TRUE)
3	-5	FALSE	=MAXA(A3:B3)
4	-10	text	=MAXA(A4, B4)
5			=MAXA(A2:A5)

Results:

	A	B	C	D
1			10	
2	-1		1	- TRUE is counted as the value 1
3	-5	FALSE	0	- FALSE is counted as the value 0
4	-10	text	0	- "text" is counted as the value 0
5			-1	- empty cells A1 & A5 are ignored

MIN - returns the smallest value from a supplied set of numerical values.

Syntax: **MIN(number1, [number2], ...)**

The number arguments are a set of one or more numeric values, or arrays of numeric values, that you want to return the smallest value of.

If an argument is supplied to the function as a reference to a cell, or an array of cells, the Min function will ignore blank cells, and text or logical values contained within the supplied cell range. However, logical values and text representations of numbers that are supplied directly to the function will be included in the calculation.

Excel MIN vs. Excel MINA

The MINA Function is very similar to the MIN Function. The only difference is when an argument is supplied to the function as a reference to a cell or an array of cells. In this case the MIN function ignores logical and text values, while the Mina function counts the logical value TRUE as 1, the logical value FALSE as 0 and text values as 0.

Examples

Formulas:

	A	B
1	4	=MIN(A1:A5)
2	3	
3	1	
4	5	
5	2	

Results:

	A	B
1	4	1
2	3	
3	1	
4	5	
5	2	

MINA - returns the smallest value from a supplied set of numerical values, while counting text and the logical value FALSE as the value 0 and counting the logical value TRUE as the value 1.

Syntax: **MINA(number1, [number2], ...)**

the number arguments are a set of one or more numeric values, or arrays of numeric values, that you want to return the smallest value of.

Examples

Formulas:

	A	B	C
1			=MINA(1, 5, 10)
2	6		=MINA(A2, TRUE)
3	2	FALSE	=MINA(A3:B3)
4	3	text	=MINA(A4, B4)
5			=MINA(A1:A5)

Results:

	A	B	C	D
1			1	
2	6		1	- TRUE is counted as the value 1
3	2	FALSE	0	- FALSE is counted as the value 0
4	3	text	0	- "text" is counted as the value 0
5			2	- empty cells A1 & A5 are ignored

MODE – returns the statistical mode (the most frequently occurring value) of a list of supplied numbers. If there are 2 or more most frequently occurring values in the supplied data, the function returns the lowest of these values

Syntax: **MODE(number1, [number2], ...)**

where the number arguments are a set of one or more numeric values, or arrays of numeric values, for which you want to calculate the mode. Text and logical values within a supplied array are ignored by the function.

Examples

Formulas:			Results:		
	A	B		A	B
1	2	=MODE(A1:A10)	1	2	4
2	2	=MODE(A1:A5, 4, 4, 4, 5, 5)	2	2	4
3	3	=MODE({2,2,3,3}, A5:A10)	3	3	4
4	3		4	3	
5	4		5	4	
6	4		6	4	
7	4		7	4	
8	4		8	4	
9	5		9	5	
10	5		10	5	

MODE Function – Common Problem

The Mode function returns the wrong value, or returns the #VALUE! error, even though the supplied values all appear to be numeric.

Possible Reason & Solution

Text values, including text representations of numbers, are ignored by the Mode function. Therefore, this problem may arise if the values in the supplied array are text representations of numbers, instead of actual values (read more about Excel data types on the [Excel Formatting page](#))

This problem can be solved by converting all array values into numeric values. To do this:

1. Use the mouse to select the cells you want to convert (this must not span more than one column)
2. From the **Data** tab at the top of your Excel workbook, select the **Text to Columns ...** option
3. Make sure the **Delimited** option is selected and click **next**
4. Make sure all the delimiter options are unselected and then click **next** again
5. You should now be offered a selection of Column Data Formats. Select **General** and click the **Finish** button

Note that the Text to Columns only converts values; it will not change the data type of a cell containing a function.

Chapter IV. Data Reference & Reference Functions

Reference in Excel

In Excel there are two types of cell references, these are Relative and Absolute.

Relative References

By default, Excel cell references are relative references. This means that a simple cell reference, used within an Excel cell, will be adjusted when copied to other cells.

For example, in the spreadsheet on the left-hand side below, cell E1 contains a reference to cell A1. The spreadsheet on the right shows the result of cell E1 being copied to cells F1-G1 and cells E2-G3. It is seen that:

- when copied from column E, into the columns F and G, the reference to cell A1 adjusts to reference cells in columns B and C
- when copied from row 1, into the rows 2 and 3, the reference to cell A1 adjusts to reference cells in rows 2 and 3

	A	B	C	D	E
1	3	12	21		=A1
2	5	15	26		
3	7	16	27		
4	9	18	29		

	A	B	C	D	E	F	G
1	3	12	21		=A1	=B1	=C1
2	5	15	26		=A2	=B2	=C2
3	7	16	27		=A3	=B3	=C3
4	9	18	29		=A4	=B4	=C4

Absolute References

The relative referencing feature that is used by default for Excel cell references is useful for functions and formulae, as we frequently require cell references used in a formula to adjust when copied to other cells.

However, there are occasions when we need Excel cell references to remain constant when copied to other cells. In this case, we can use the **\$** symbol before a column or row reference, to change a cell reference into an absolute cell reference. This is shown in the example below, in which the \$ sign is added to the reference A1 that is contained in the cell E1, changing this reference to \$A\$1.

As shown in the spreadsheet on the right, when the reference =\$A\$1 is copied to cells F1-G1 and E2-G3, the reference remains constant:

	A	B	C	D	E
1	3	12	21		=\$A\$1

	A	B	C	D	E	F	G
1	3	12	21		=\$A\$1	=\$A\$1	=\$A\$1

2	5	15	26	= \$A\$1 = \$A\$1 = \$A\$1
3	7	16	27	= \$A\$1 = \$A\$1 = \$A\$1
4	9	18	29	= \$A\$1 = \$A\$1 = \$A\$1

Absolute and relative referencing can be mixed within a single cell reference. For example in the example below, the reference =**\$**A1 uses absolute referencing for the column and relative referencing for the row. The result of this is that the row reference adjusts as cell E1 is copied into rows 2 and 3, but the column reference remains constant (referring to column A) when cell E1 is copied to other columns. The results of this are shown in the spreadsheet on the right below.

	A	B	C	D	E	F	G
1	3	12	21		=A1	=A1	=A1
2	5	15	26		=A2	=A2	=A2
3	7	16	27		=A3	=A3	=A3
4	9	18	29		=A4	=A4	=A4

A further example of mixed absolute and relative Excel cell references is shown in the example below. In this case, the reference =A\$1 in cell E1, uses relative referencing for the column and absolute referencing for the row. The results obtained by copying cell E1 into adjacent cells are shown in the spreadsheet on the right below:

	A	B	C	D	E	F	G
1	3	12	21		=A\$1=B\$1=C\$1		
2	5	15	26		=A\$1=B\$1=C\$1		
3	7	16	27		=A\$1=B\$1=C\$1		
4	9	18	29		=A\$1=B\$1=C\$1		

References to Ranges

The relative and absolute referencing rules apply to ranges, as well as to individual Excel cell references. For example:

The reference \$A1:\$E1 becomes:

\$A1:\$E1 when copied across to other columns

\$A2:\$E2 when copied down by one row

The reference A\$1:A5 becomes:

B\$1:B5 when copied across to the right by one column

A\$1:A6 when copied down by one row

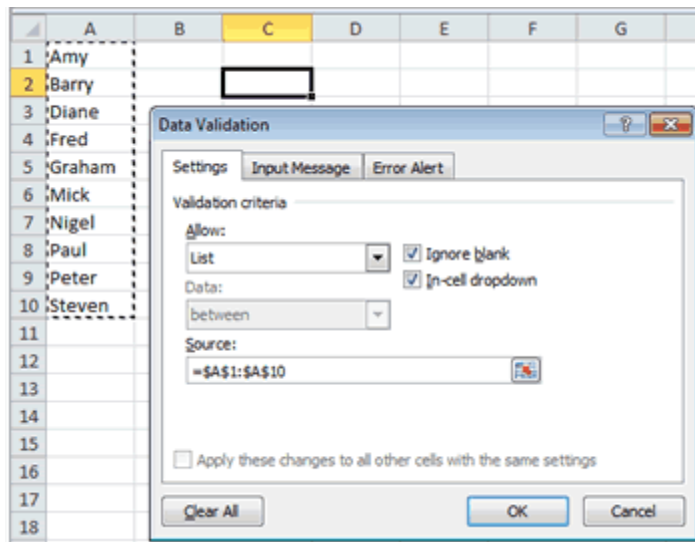
The reference A\$1:C\$3 becomes:

B\$1:D\$3 when copied across to the right by one column

A\$1:C\$3 when copied to any other row

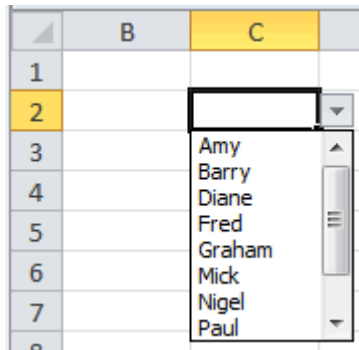
Named Ranges & Dropdown Lists

The simplest kind of Excel drop down list is created using the Excel data validation options. To do this:

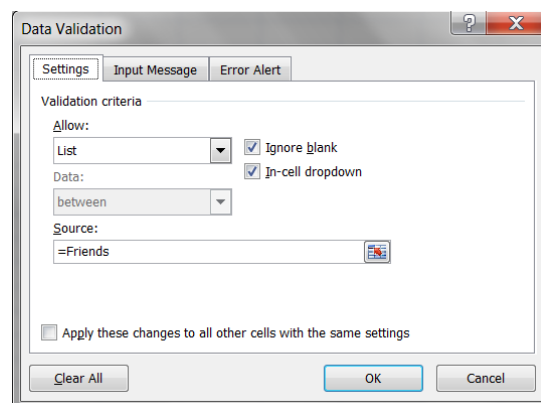
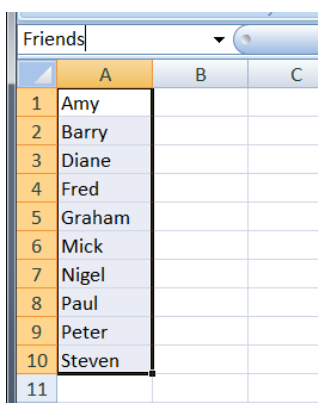


1. Enter your possible options values into a column (cells A1 to A10) - you can always hide this column later if you don't want it visible.
2. Select the cell (or cells) that you want your drop-down list to appear in
3. In the **Data** Tab from the top of the spreadsheet and then select **Data Validation > Data_ Validation...**
4. The Validation menu will appear. Within this menu:
 - i. In the first box, select the option 'List'. This should cause further options to appear.
 - ii. Ensure the option 'In-cell dropdown' is ticked

- iii. In the 'Source' option box, enter the range of cells where you typed in your original list of options (eg. \$A\$1:\$A\$10).
- iv. Click OK. The dropdown list for cell C2 should now look like this:



The range selected for the dropdown list can be named. To name a range, select all the range, go to the Name box that appears at the left end of the Formula bar, type the name you want for the range and press Enter:



This way, in the Data Validation window, you can just type `=Friends` in the Source box, to create the dropdown list.

Excel Lookup and Reference Functions

VLOOKUP – 'looks up' a given value in the left-hand column of a data array (or table), and returns the corresponding value from another column of the array.

Syntax: **VLOOKUP (lookup_value, table_array, col_index_num, [range_lookup])**

where the arguments are:

lookup_value	-	The value that you want to look for, in the left-hand column of the supplied data array
--------------	---	---

table_array	-	The data array or table, that you want to search the left hand column of, for the supplied lookup_value
col_index_num	-	The column number, within the supplied array, that you want the corresponding value to be returned from
[range_lookup]	-	<p>An optional logical argument, which can be set to TRUE or FALSE, meaning :</p> <p>TRUE - if the function cannot find an exact match to the supplied lookup_value, it should use the closest match below the supplied value (Note: If range_lookup is set to TRUE, the left-hand column of the table_array must be in ascending order)</p> <p>FALSE - if the function cannot find an exact match to the supplied lookup_value, it should return an error</p>

Example 1

In the spreadsheet below, columns A and B list an inventory of grocery items, and their prices, and cell E2 of the spreadsheet shows a simple example of the Vlookup function being used to look up the price of an item from the inventory.

	A	B	C	D	E
1	Item Description	Cost (\$)		Current Item:	Current Item Cost (\$)
2	Tinned Tomatoes	\$0.90		Cornflakes	=VLOOKUP(D2, A:B, 2, FALSE)
3	Tinned Tuna	\$1.50			
4	Cornflakes	\$3.50			
5	Shortcake Biscuits	\$1.00			
6	Toothpaste	\$4.10			
7	Tinned Baked Beans	\$0.99			
8	White Sliced Bread	\$0.80			
9	.	.			

The above Vlookup function returns the price for "Cornflakes", which is **\$3.50**.

In this example:

- the lookup_value is the text string "Cornflakes", which is located in cell D2
- the table_array is columns A-B of the spreadsheet
- the col_index_num is set to 2, to denote that the value returned should be taken from column 2 of the table_array
- the range_lookup argument is set to FALSE, to indicate that we only want a result to be returned if an exact match to the lookup_value is found

Example 2

In the spreadsheet below, columns A-C list the grades that are assigned to examination marks lying within the ranges 0-44%, 45%-54%, etc.

Cell F2 shows the score of 52% that was achieved by the student "Anne" in an examination. The Vlookup function in cell G2 looks up this score in column A of the spreadsheet and returns the associated grade from column C. Note that, in this example, if the exact score of 52% is not found in column A, we want, instead, to use the nearest value below this score.

	A	B	C	D	E	F	G
1	Lower	Upper	Grade		Name	Score	Grade
2	0%	44%	F		Anne	52%	=VLOOKUP(F2, A2:C7, 3, TRUE)
3	45%	54%	E				
4	55%	64%	D				
5	65%	74%	C				
6	75%	84%	B				
7	85%	100%	A				

The above Vlookup function returns the grade for the score 52%, which is **E**.

In this example:

- the lookup_value is the value 52%, which is located in cell F2
- the table_array is the range A2-C7 of the spreadsheet
- the col_index_num is set to 3, to denote that the value returned should be taken from column 3 of the table_array
- the range_lookup argument is set to TRUE, to indicate that, if an exact match to the lookup_value is not found, we want to use the closest value below the lookup_value

Vlookup Function – Common Errors

- #N/A - Occurs if the Vlookup function fails to find a match to the supplied lookup_value
The cause of this will generally depend on the supplied [range_lookup] argument:
- if [range_lookup] = TRUE
(or is omitted) - the #N/A error is likely to be because the smallest value in the left-hand column of the table_array is greater than the supplied lookup_value
- if [range_lookup] = FALSE - the #N/A error is likely to be because an exact match to the lookup_value is not found in the left-hand column of the table_array

- #VALUE! - Occurs if either:
- The supplied col_index_num argument is < 1 or is not recognised as a numeric value
- or
- The supplied range_lookup argument is not recognised as TRUE or FALSE

- #REF! - Occurs if either:

- the supplied col_index_num argument is greater than the number of columns in the supplied table_array

or

- the formula has attempted to reference cells that do not exist. This can be caused by relative referencing errors when the Vlookup is copied to other cells.

HLOOKUP – 'looks up' a given value in the top row of a data array (or table), and returns the corresponding value from another row of the array.

Syntax: HLOOKUP (lookup_value, table_array, row_index_num, [range_lookup])

The arguments are:

- | | | |
|----------------|---|---|
| lookup_value | - | The value that you want to look for, in the first row of the supplied data array |
| table_array | - | The data array or table, that you want to search the first row of, for the supplied lookup_value |
| row_index_num | - | The row number, within the supplied array, that you want the corresponding value to be returned from |
| [range_lookup] | - | An optional logical argument, which can be set to TRUE or FALSE, meaning :

TRUE - if the function cannot find an exact match to the supplied lookup_value, it should use the closest match below the supplied value

(Note: If range_lookup is set to TRUE, the top row of the table_array must be in ascending order)

FALSE - if the function cannot find an exact match to the supplied lookup_value, it should return an error |

Example 1

Cells A2-F6 of the spreadsheet below, show the exam scores for 5 students in 4 different subjects. If you want to look up a specific score (eg. Biology) for one of the students (eg. Ed), this can be done using the Hlookup function, as shown in cell B10 of the spreadsheet.

In the example below, the formula is shown in cell B10 of the spreadsheet on the left, and the result is shown in the spreadsheet on the right.

Formulas:

	A	B	C	D	E	F
1	Exam Results Table					
2		Ann	Cara	Colin	Ed	Frank
3	Math	58%	90%	67%	76%	80%
4	French	61%	71%	59%	59%	76%
5	Physics	75%	45%	39%	52%	69%
6	Biology	39%	55%	77%	61%	45%
7						
8	Individual Student Score					
9	Student :	Biology Score :				
10	Ed	=HLOOKUP(A10, A2:F6, 5, FALSE)				

Results:

	A	B	C	D	E	F
1	Exam Results Table					
2		Ann	Cara	Colin	Ed	Frank
3	Math	58%	90%	67%	76%	80%
4	French	61%	71%	59%	59%	76%
5	Physics	75%	45%	39%	52%	69%
6	Biology	39%	55%	77%	61%	45%
7						
8	Individual Student Score					
9	Student :	Biology Score :				
10	Ed	61%				

In the above example, the Hlookup function searches through the top row of the *table_array* (the range A2-A6), to find a match for the *lookup_value* (the name "Ed", in cell A10). When the name 'Ed' is found, the function returns the corresponding value from the 5th row of the *lookup_table*.

	A	B	C	D	E	F
1	Exam Results Table					
2		Ann	Cara	Colin	Ed	Frank
3	Math	58%	90%	67%	76%	80%
4	French	61%	71%	59%	59%	76%
5	Physics	75%	45%	39%	52%	69%
6	Biology	39%	55%	77%	61%	45%

This is illustrated on the right. The function finds the name 'Ed' in the top row of the *table_array* and then returns the value from the 5th row of the *table_array*.

If we change the name in the individual spreadsheet from 'Ed' to 'Cara', the Hlookup functions would automatically recalculate the functions to display the exam results for Cara.

Example 2

Cells A1-F3 of the spreadsheet below, show body types relating to body mass index (BMI), for the ranges 0 - 18.4, 18.5 - 24.9, 25.0 - 29.9 and over 30.

Cell C6 shows the user's current BMI, which is 23.5, and cell C7 shows the Hlookup function that is used to look up the body type that relates to this BMI.

	A	B	C	D	E	F
1	BMI :	min	0	18.5	25	30
2		max	18.4	24.9	29.9	
3	Body Type:		Underweight	Normal Weight	Overweight	Obese
4						
5						
6	My Current BMI:		23.5			
7	My Body Type:		=HLOOKUP(C6, C1:F3, 3, TRUE)			

The Hlookup function in the above spreadsheet returns the result "Normal Weight", which is the correct body type for a BMI of 23.5.

Note that, in this example, the `range_lookup` argument is set to `TRUE`, to tell that function that, if it cannot find an exact match to the supplied `lookup_value`, it should use the closest match below this value. Therefore, for all BMIs up to and including 18.4 the function would return "Underweight", for all BMIs between 18.5 and 24.9, the function would return "Normal Weight", etc.

Hlookup Function – Common Errors

-
- #N/A - Occurs if the Hlookup function fails to find a match to the supplied `lookup_value`
- The cause of this will generally depend on the supplied `range_lookup`:
- if `range_lookup` = `TRUE` - the #N/A error is likely to be because the smallest value in the lookup row is greater than the supplied `lookup_value` (or is omitted)
- if `range_lookup` = `FALSE` - the #N/A error is likely to be because an exact match to the `lookup_value` is not found in the lookup row
-
- #VALUE! - Occurs if either:
- The supplied `row_index_num` argument is < 1 or is not recognised as a numeric value
- or
- The supplied `range_lookup` argument is not recognised as `TRUE` or `FALSE`
-
- #REF! - Occurs if the supplied `row_index_num` argument is greater than the number of rows in the supplied `table_array`

INDEX Function

The Array format – is used when you want to look up a reference to a cell within a single range.

Syntax: **INDEX (array, row_num, [column_num])**

The arguments are:

- | | |
|-------|---|
| array | - The specified array or range of cells |
|-------|---|

row_num	-	Denotes the row number of the specified array If set to zero or blank, this defaults to <u>all</u> rows in the supplied array
column_num	-	Denotes the column number of the specified array If set to zero or blank, this defaults to <u>all</u> columns in the supplied array

The function is best explained through the following examples:

Example 1

In the following example, the Index function returns a reference to row 5 of the supplied range, which is cell **C5**. This evaluates to the value **8**

Formula

	A	B	C	D
1	=INDEX(C1:C5, 5)		4	
2			5	
3			6	
4			7	
5			8	

Result

	A	B	C	D
1	8		4	
2			5	
3			6	
4			7	
5			8	

Example 2

In the following example, the Index function returns a reference to row 5 and column 2 of the supplied range, which is cell **D5**. This evaluates to the value **3**

Formula

	A	B	C	D
1	=INDEX(C1:D5, 5, 2)		4	6
2			5	3
3			6	9
4			7	5
5			8	3

Result

	A	B	C	D
1	3		4	6
2			5	3
3			6	9
4			7	5
5			8	3

Example 3

In the following example, as the supplied col_num is set to 0, the Index function returns a reference to all of row 5 of the supplied range, which is the range **C5:D5**.

The sum of this range evaluates to the value **11**

Formula

Result

	A	B	C	D
1	=SUM(INDEX(C1:D5, 5, 0))		4	6
2			5	3
3			6	9
4			7	5
5			8	3

	A	B	C	D
1	11		4	6
2			5	3
3			6	9
4			7	5
5			8	3

Array Formulas:

To input an array formula, you need to first highlight the range of cells for the function result. Type your function into the first cell of the range, and press CTRL-SHIFT-Enter.

Example 4

In the following example, the supplied row_num is set to 0, and so the Index function returns a reference to all of column 2 of the supplied range. I.e. the function returns a reference to the range **D1:D5**.

In this case, the function is input into cells A1:A5, as an Array Formula. Therefore, the values of the five cells returned by the Index function are displayed in cells A1:A5.

Formula

	A	B	C	D
1	=INDEX(C1:D5, 0, 2)		4	6
2			5	3
3			6	9
4			7	5
5			8	3

Result

	A	B	C	D
1	6		4	6
2	3		5	3
3	9		6	9
4	5		7	5
5	3		8	3

The Reference Format – is used to extract references from ranges that are made up of many areas.

Syntax: **INDEX (reference, row_num, [column_num], [area_num])**

Where the arguments are:

reference - The specified range of cells

Note: If multiple areas are input directly into the function, the individual areas should be separated by commas and surrounded by brackets - ie. (A1:B2, C3:D4, etc)

row_num	-	Denotes the row number of the specified array If set to zero or blank, this defaults to <u>all</u> rows in the supplied array
column_num	-	Denotes the column number of the specified array If set to zero or blank, this defaults to <u>all</u> columns in the supplied array
area_num	-	If the initial specified range is made up of more than one area, the area_num argument specifies the number of the area to be used (Note that the areas are numbered by the order they are specified)

This form of the Index function is illustrated in the following examples:

Example 1

In the following example, the Index function returns a reference to row 4 and column 2 of the 1st area (ie. C1:D5) in the supplied range. This is cell **D4**. This evaluates to the value **5**

Formula

	A	B	C	D
1	=INDEX((C1:D5, B7:C8, B10:D12), 4, 2, 1)		4	6
2			5	3
3			6	9
4			7	5
5			8	3
6				
7		4	6	
8		5	7	
9				
10		5	6	1
11		4	3	5
12		7	1	2

Result

	A	B	C	D
1	5		4	6
2			5	3
3			6	9
4			7	5
5			8	3
6				
7		4	6	
8		5	7	
9				
10		5	6	1
11		4	3	5
12		7	1	2

Example 2

In the following example, the Index function returns a reference to row 3 and column 1 of the 3rd area (ie. B10:D12) in the supplied range. This is cell **B12**, which evaluates to the value **7**

Formula

	A	B	C	D
1	=INDEX((C1:D5, B7:C8, B10:D12), 3, 1, 3)		4	6
2			5	3
3			6	9
4			7	5
5			8	3
6				
7		4	6	
8		5	7	
9				
10		5	6	1
11		4	3	5
12		7	1	2

Result

	A	B	C	D
1	7		4	6
2			5	3
3			6	9
4			7	5
5			8	3
6				
7		4	6	
8		5	7	
9				
10		5	6	1
11		4	3	5
12		7	1	2

Example 3

In the following example, as the supplied col_num is blank, the Index function returns a reference to all of row 3 of the 3rd area (ie. B10:D12) of the supplied range. This is the range **B12**. The sum of this range evaluates to the value **10**.

Formula

	A	B	C	D
1	=SUM(INDEX((C1:D5, B7:C8, B10:D12), 3, 0, 3))		4	6
2			5	3
3			6	9
4			7	5
5			8	3
6				
7		4	6	
8		5	7	
9				
10		5	6	1
11		4	3	5
12		7	1	2

Result

	A	B	C	D
1	10		4	6
2			5	3
3			6	9
4			7	5
5			8	3
6				
7		4	6	
8		5	7	
9				
10		5	6	1
11		4	3	5
12		7	1	2

Index Function – Common Errors

- #REF! - Occurs if either:
- the supplied row_num argument is greater than the number of rows in the supplied range
 - the supplied col_num argument is greater than the number of columns in the

supplied range

- the supplied area_num argument is greater than the number of areas in the supplied range

#VALUE! - Occurs if any of the supplied row_num, col_num or area_num arguments are not numeric values

INDIRECT – the function takes a text string and converts this into a cell reference.

Excel does not understand the text string "B1" to mean a reference to the cell B1. Therefore, if you extract or build up a reference to a cell or range using text, you will need to use the INDIRECT function to convert this into a reference that Excel can understand.

Syntax: **INDIRECT(Ref_text, A1)**

The arguments are:

<i>Ref_text</i>	- The text describing the reference
<i>A1</i>	- An optional logical argument that defines the style of the <i>Ref_text</i> reference. This can be either : <ul style="list-style-type: none"> • True - to denote that the reference is in A1 style • False - to denote that the reference is in R1C1 style If this argument is omitted, it takes on the default value "True"

Examples

The following spreadsheets show simple examples of the Excel INDIRECT function. The format of the function is shown in the spreadsheet on the left and the results are shown in the spreadsheet on the right.

	A	B	C	D	E
1	=INDIRECT("C1")		8	9	0
2	=INDIRECT("D" & 4)		3	4	5
3	=INDIRECT("E" & ROW())		9	1	3
4	=SUM(INDIRECT("C1:E1"))		4	6	2

	A	B	C	D	E
1	8		8	9	0
2	6		3	4	5
3	3		9	1	3
4	17		4	6	2

Note that, in the above examples:

- Although the Excel INDIRECT function always returns a cell (or range) reference, in cells A1 - A3, the cells are evaluated and it is this value that is shown in the cell.
- In cell A3, the ROW function has been used to return the reference to the current row number (ie. 3), and use this to form part of the cell reference.

- In cell A4, the INDIRECT function returns a reference to the range C1:E1, which has been fed into the Excel SUM function. This SUM therefore evaluates to the sum of $8 + 9 + 0 = 17$

MATCH – the function finds the relative position of a value in a supplied array. This can be either an exact match or the position of the closest match (above or below), if an exact match is not found.

Syntax: **MATCH(lookup_value, lookup_array, [match_type])**

The arguments are:

lookup_value	- The value that you want to look up
lookup_array	- The data array that is to be searched
[match_type]	<p>- An optional logical argument, which can set to 1, 0 or -1 to return the following results :</p> <p>1 - if the function cannot find an exact match, it should use the closest match below the lookup_value. (If this option is used, the lookup_array must be in ascending order).</p> <p>0 - if the function cannot find an exact match, it should return an error. (If this option is used, the lookup_array does not need to be ordered).</p> <p>-1 - if the function cannot find an exact match, it should use the closest match above the lookup_value. (If this option is used, the lookup_array must be in descending order).</p> <p>If the [match_type] argument is omitted from the function, this is set to 1 by default.</p>

The Match function can be used to match numeric values, logical values, or text strings.

Note that, when used with text strings, the function is NOT case-sensitive. So, for example, the text strings "TEXT" and "text" will be considered to be a match.

It is also useful to know the wildcards that can be used with text strings, when the [match_type] argument is set to 0 (requiring an exact match). These are:

Wildcards

- ? - replaces any single character
- * - replaces any number of characters

These are shown in the examples below.

Example 1

Formulas:

	A	B
1	cccc	=MATCH("aaaa", A1:A5, 0)
2	dddd	=MATCH("?eee", A1:A5, 0)
3	aaaa	=MATCH("*b", A1:A5, 0)
4	bbbb	
5	eeee	

Results:

	A	B	C
1	cccc	3	- returns position 3
2	dddd	5	- matches "eeee" so returns position 5
3	aaaa	4	- matches "bbbb" so returns position 4
4	bbbb		
5	eeee		

As the [match_type] argument set to 0, the text strings in the lookup_array (cells A1-A5) do not need to be ordered.

In this case the function only returns a result if an exact match to the lookup_value is found. Otherwise, the function returns an error.

Example 2

The following spreadsheet also shows the Excel MATCH function used with the [match_type] argument set to 0, but in this case the function is used to look up numeric values.

Formulas:

	A	B
1	7	=MATCH(4, A1:A6, 0)
2	2	=MATCH(8, A1:A6, 0)
3	4	=MATCH(10, A1:A6, 0)
4	1	
5	8	
6	11	

Results:

	A	B	C
1	7	3	- returns position 3
2	2	5	- returns position 5
3	4	#N/A	- no exact match - returns error
4	1		
5	8		
6	11		

Example 3

Here, the [match_type] argument is set to 1, so the data in the lookup_array must be in ascending order, and the function returns the position of the exact match to the lookup_value if this is found, or the position of the closest value below the lookup_value if an exact match is not found.

Formulas:

	A	B
1	4	=MATCH(6, A1:A6, 1)
2	6	=MATCH(8, A1:A6, 1)
3	7	=MATCH(15, A1:A6, 1)
4	10	
5	11	
6	16	

Results:

	A	B	C
1	4	2	- returns position 2
2	6	3	- returns position 3 (nearest value below 8)
3	7	5	- returns position 5 (nearest value below 15)
4	10		
5	11		
6	16		

Note that the [match_type] argument could have been omitted from the functions in this spreadsheet, as this argument takes the value 1 by default.

Match Function – Common Errors

#N/A - Occurs if the match function fails to find a match for the lookup_value. This may be either :

if [match_type] = 0 - an exact match for the lookup_value is not found within the lookup_array

if [match_type] = 1 - the first value in the lookup_array is larger than the lookup_value (or is omitted) (note that, if the array is in ascending order, this means there is no closest match below or equal to the lookup_value)

if [match_type] = -1 - the first value in the lookup_array is smaller than the lookup_value (and therefore, if the array is in descending order, there is no closest match above or equal to the lookup_value)

If you have checked that you have the correct match_type argument value and that the lookup_value (or a closest match) exists in the lookup_array, it may be that the match has failed because either:

- there are unseen spaces in either the lookup_value or the values in the lookup_array

or

- the lookup_value and the data in the lookup_array have different data types

Either of these cause the lookup_value and the values in the lookup_array to be seen by Excel as containing different values, and will therefore cause the Match function to fail.

Common Match Function Problem - The Excel Match function returns the wrong result

Possible Reason: If your Excel Match function simply returns the wrong result, this is likely due to the lookup_array not being ordered correctly.

Check the following:

1. Make sure the [match_type] argument is set to the correct value (Note that if this argument is omitted, it will default to 1)
2. If you have set the [match_type] argument to 1 or -1, check that the lookup_array is correctly ordered:
 - if [match_type] is set to 1, the lookup_array should be in ascending order
 - if [match_type] is set to -1, the lookup_array should be in descending order

ROW – returns the first row number within a supplied reference, or if no reference is supplied, the function returns the number of the current row in the currently active Excel spreadsheet.

Syntax: **ROW ([reference])**

Examples

Formulas:

	A	B
1	=ROW()	=ROW()
2	=ROW()	=ROW()
3	=ROW(E7)	=ROW(G9)

Results:

	A	B
1	1	1
2	2	2
3	7	9

COLUMN – returns the first column number within a supplied reference, or if no reference is supplied, the function returns the number of the current column in the currently active Excel spreadsheet.

Syntax: **COLUMN ([reference])**

Examples

Formulas:

	A	B	C
1	=COLUMN()	=COLUMN()	=COLUMN(E6)
2	=COLUMN()	=COLUMN()	=COLUMN(G2)

Results:

	A	B	C
1	1	2	5
2	1	2	7

Chapter V. Text Functions

CLEAN – removes the non-printable characters, represented by numbers 0 to 31 of the 7-bit ASCII code, which are often found at the start of data that has been imported into Excel from other applications.

Syntax: **CLEAN (text)**

The 'text' argument can be supplied to the function either directly, as a text string returned from another formula, or a reference to a cell containing text.

Examples

	A	B	C
1	clean text	=CLEAN(A1)	- Has non-printable characters at start
2	clean text	=CLEAN(A2)	- Has non-printable characters at end
3	clean text	=CLEAN(A3)	- Has additional non-printable characters in the middle
4	clean text	=CLEAN(A4)	- Has non-printable characters at the start, end & in the middle

CONCATENATE – joins together a series of supplied text strings or other values, into one combined text string.

Syntax: **CONCATENATE (text1, [text2], ...)**

The text arguments are a set of one or more text strings or other values that you want to join together.

Examples

Formulas:

	A	B	C	D
1	Forename	Surname	DOB	Combined Details
2	Jane	SMITH		=CONCATENATE(A2, " ", B2)
3	John	DAY		=CONCATENATE(A3, " ", B3)
4	Paul	JONES	02/02/87	=CONCATENATE(A4, " ", B4, " ", TEXT(C4,"dd/mm/yy"))

Results:

	A	B	C	D
1	Forename	Surname	DOB	Combined Details
2	Jane	SMITH		Jane SMITH
3	John	DAY		John DAY
4	Paul	JONES	02/02/87	Paul JONES, DOB: 02/02/87

TIP! The operator **& (ampersand)** performs the same operation as CONCATENATE function, following this syntax: **= A2&" "&B2**

LEN – returns the length of a supplied text string.

Syntax: **LEN (text)** where the text argument is the text string that you want to find the length of.

Examples

Formulas

	A	B
1	Test String 1	=LEN(A1)
2	Test String 2	=LEN(A2)
3		=LEN(A3)

Results

	A	B	C
1	Test String 1	13	
2	Test String 2	15	- extra spaces are counted
3		0	- empty string has length 0

LEFT – returns a specified number of characters from the start of a supplied text string.

Syntax: **LEFT(text, [num_chars])**

The function arguments are:

text - The original text string

[num_chars] - An optional argument that specifies the number of characters to be returned from the start of the supplied text. If omitted, the [num_chars] argument takes on the default value of 1

Examples

Formulas

	A	B
1	Original Text	=LEFT(A1)
2	Original Text	=LEFT(A2, 4)
3	5 years	=LEFT(A3, 1)

Results

	A	B	C
1	Original Text	O	- num_chars argument defaults to 1
2	Original Text	Orig	
3	5 years	5	- text string containing the digit 5

MID – returns a specified number of characters from the middle of a supplied text string.

Syntax: **MID (text, start_num, num_chars)**

The function arguments are:

text - The original text string.

start_num - An integer that specifies the position of the first character that you want to be returned.

num_chars - An integer that specifies the number of characters (beginning with *start_num*), to be returned from the supplied text.

Examples

Formulas

	A	B
1	Original Text	=MID(A1, 7, 1)
2	Original Text	=MID(A2, 7, 4)
3	255 years	=MID(A3, 3, 1)

Results

	A	B	C
1	Original Text	a	
2	Original Text	al T	
3	255 years	5	- text string containing the digit 5

RIGHT – returns a specified number of characters from the end of a supplied text string.

Syntax: **RIGHT (text, [num_chars])**

The function arguments are:

text - The original text string

[num_chars] - An optional argument that specifies the number of characters to be returned from the end of the supplied text
If omitted, the [num_chars] argument takes on the default value of 1

Examples

Formulas

	A	B
1	Original Text	=RIGHT(A1)
2	Original Text	=RIGHT(A2, 4)
3	The Number 5	=RIGHT(A3, 1)

Results

	A	B	C
1	Original Text	t	- num_chars argument defaults to 1
2	Original Text	Text	
3	The Number 5	5	- text string containing the digit 5

UPPER – converts all characters in a supplied text string to upper case.

Syntax: **UPPER (text)**

The text argument is the original text string that you want to convert to upper case.

Examples

Formulas

Results

	A	B
1	test	=UPPER(A1)
2	TEST	=UPPER(A2)
3	Test	=UPPER(A3)
4	test 332	=UPPER(A4)

	A	B
1	test	TEST
2	TEST	TEST
3	Test	TEST
4	test 332	TEST 332

LOWER – converts all characters in a supplied text string to lower case.

Syntax: **LOWER (text)**

The text argument is the original text string that you want to convert to lower case.

Examples

Formulas

	A	B
1	TEST	=LOWER(A1)
2	test	=LOWER(A2)
3	Test	=LOWER(A3)
4	TEST 332	=LOWER(A4)

Results

	A	B
1	TEST	test
2	test	test
3	Test	test
4	TEST 332	test 332

TRIM – takes a supplied text string and removes any spaces, except for single spaces between words or characters.

Syntax: **TRIM (text)**

The 'text' argument can be supplied to the function either directly, as a text string returned from another formula, or a reference to a cell containing text.

Examples

	A	B
1	=TRIM(" trim text")	- Has spaces at start
2	=TRIM("trim text ")	- Has spaces at end
3	=TRIM("trim text")	- Has spaces in the middle
4	=TRIM(" trim text ")	- Has extra spaces at the start, end and in the middle

SEARCH – returns the position of a specified character or string within a supplied text string.

Syntax: **SEARCH (search_text, within_text, [start_num])**

The function arguments are:

<i>search_text</i>	-	The character or text string that you wish to search for
<i>within_text</i>	-	The text string that is to be searched
<i>[start_num]</i>	-	An optional argument that specifies the position of the character from which the search should begin. If omitted, this takes on the default value of 1 (i.e. begin the search at the start of the within_text string)

Examples

Formulas:

	A	B
1	Original Text	=SEARCH("t", A1)
2	Original Text	=SEARCH("t", A2)
3	Original Text	=SEARCH("i", A3)
4	Original Text	=SEARCH("i", A4, 4)

Results:

	A	B
1	Original Text	10
2	Original Text	10
3	Original Text	3
4	Original Text	5

Formulas:

	A	B	C
1	Jane SMITH	Shorthand, Typing, Visual Basic, Excel	=SEARCH("Typing", B1)
2	Julie BROWN	Presentation Skills, Management Training	=SEARCH("Typing", B2)
3	Dan TAYLOR	Microsoft Office, typing	=SEARCH("Typing", B3)
4	James JONES	Typing, HTML Programming	=SEARCH("Typing", B4)

Results:

	A	B	C
1	Jane SMITH	Shorthand, Typing, Visual Basic, Excel	12
2	Julie BROWN	Presentation Skills, Management Training	#VALUE!
3	Dan TAYLOR	Microsoft Office, typing	19
4	James JONES	Typing, HTML Programming	1

The SEARCH function is not case-sensitive. If you want to perform a case-sensitive search, use the Excel **FIND** function instead: **FIND (search_text, within_text, [start_num])**

REPT – returns a supplied text string, repeated a specified number of times.

Syntax: **REPT (Text, Number_times)**

The arguments are:

<i>Text</i>	-	The string to be repeated
<i>Number_times</i>	-	The number of times that the supplied Text is to be repeated. Note :

- If Number_times is zero, the function returns an empty string
- If Number_times is a decimal, it is truncated to an integer

Examples

Formulas

	A	B
1		=REPT("o", 12)
2		=REPT("o", 0)
3	*/-	=REPT(A3, 5)
4		= "<!-- " & REPT("*" , 8) & " -->"

Results

	A	B
1		oooooooooooooooo
2		
3	*/-	*/- */- */- */- */-
4		<!-- ***** -->

Chapter VI. Date & Time Functions

TODAY – returns the current date.

The function has no arguments and therefore, the syntax of the function is simply

Syntax: **TODAY ()**

Examples

Formulas:

	A	B
1		=TODAY()
2	31-Dec-2009	=TODAY() - A2

Results:

	A	B
1		06-Jan-2011
2	31-Dec-2009	371

NOW – returns the current date and time.

The function has no arguments and therefore, the syntax of the function is

Syntax: **NOW ()**

The NOW function updates every time your Excel worksheet is refreshed, and so any cells containing the function will be continually changing.

Examples

The following example shows use of the NOW function, combined with the If function, to highlight when an appointment is due.

Formula:		
	A	B
1	Appointment Due:	
2	16-Nov-2010 17:00	=IF(A2-NOW() < 1/24, "!!! Due within 1 hr !!!", "Not yet due")
Result at 15:59 hrs on 16-Nov-2010:		
	A	B
1	Appointment Due:	
2	16-Nov-2010 17:00	Not yet due
Result at 16:01 hrs on 16-Nov-2010:		
	A	B
1	Appointment Due:	
2	16-Nov-2010 17:00	!!! Due within 1 hr !!!

The above alert formula could be made more sophisticated by adding more conditions to the IF function, to highlight when the appointment time has been passed, etc.

The above appointment alert will only work if your spreadsheet is being continually updated. While the spreadsheet is unused, the contents of cell B2 will stay the same as at the last evaluation.

DATE – returns an Excel date, according to integers representing a year, month and day.

Syntax: **DATE (year, month, day)**

The function arguments are integer values, representing the year, month and day of the date to be returned.

Examples

Formulas:

	A	B	C	D
1	Day	Month	Year	Date
2				=DATE(2001, 1, 2)
3	31	5	1998	=DATE(C3, B3, A3)
4	21	5	1984	=DATE(C4, B4, A4)
5	45	1	2010	=DATE(C5, B5, A5)

Results:

	A	B	C	D
1	Day	Month	Year	Date
2				02/01/2001
3	31	5	1998	31/05/1998
4	21	5	1984	21/05/1984
5	45	1	2010	14/02/2010

TIME – accepts three integer arguments representing hours, minutes and seconds, and returns an Excel time.

Syntax: **TIME (hour, minute, second)**

The hour, minute and second arguments are integer values that can be supplied to the function either directly, as values returned from other formulas, or as references to cells containing integers.

Examples

Formulas:

	A	B	C	D	E
1	Hrs	Mins	Secs		Time
2					=TIME(5, 44, 32)
3					=TIME(2+3, 44, 32)
4	5	21	55		=TIME(A4, B4, C4)
5	0	0	73		=TIME(A5, B5, C5)

Results:

	A	B	C	D	E
1	Hrs	Mins	Secs		Time
2					05:44:32
3					05:44:32
4	5	21	55		05:21:55
5	0	0	73		00:01:13

DATEVALUE – converts a text representation of a date, into an Excel date.

Syntax: **DATEVALUE(date_text)**

The date_text argument is a text string representing a date.

Note that the Datevalue function follows simple rules that are the same as if you type a date directly into a cell. These are:

If just a date and month are provided, the date returned will have the current year
The default settings for the year are that one- and two-digit years are interpreted as follows:

- The numbers 0 through to 29 are interpreted as the years 2000 to 2029
- The numbers 30 through to 99 are interpreted as the years 1930 to 1999

Examples

These rules are illustrated in the Datavalue examples below:

Formulas:

	A
1	=DATEVALUE("01/01/1929")
2	=DATEVALUE("01/01/29")
3	=DATEVALUE("01/01/30")
4	=DATEVALUE("1/1/9")
5	=DATEVALUE("1/1")

Results:

	A	B
1	10594	- represents the date 01/01/1929
2	47119	- represents the date 01/01/2029
3	10959	- represents the date 01/01/1930
4	39814	- represents the date 01/01/2009
5	40544	- represents the date 01/01/2011

WORKDAY.INTL – returns a date that is a supplied number of working days (excluding weekends and holidays) ahead of a given start date. The function allows the user to specify which days are counted as weekends.

Syntax: **WORKDAY.INTL (start_date, days, [weekend], [holidays])**

Where the arguments are as follows:

start_date - The initial date, from which to count the number of workdays

days - The number of workdays to add onto start_date

[weekend] - An optional argument, which specifies which weekdays should be counted as weekends. This can be either a number or a string. These are explained below:

Possible number values for the

Possible string values for the

[weekend] argument are:

[weekend]	days counted as weekend
1 (or omitted)	Sat & Sun
2	Sun & Mon
3	Mon & Tue
4	Tue & Wed
5	Wed & Thu
6	Thu & Fri
7	Fri & Sat
11	Sunday only
12	Monday only
13	Tuesday only
14	Wednesday only
15	Thursday only
16	Friday only
17	Saturday only

[weekend] argument consist of a series of seven 0's and 1's which represent the seven weekdays, starting from Monday.

Each 1 denotes a day that should be counted as a weekend and each 0 represents a working day.

For example,

0000100 - denotes Fridays only counted as weekend days

0001100 - denotes Thursdays and Fridays counted as weekend days

0000111 - denotes Fridays, Saturdays and Sundays counted as weekend days

The string "1111111" is not valid.

[holidays] - An optional argument, which specifies an array of dates (in addition to weekends) that are not to be counted as working days

Note that the **start_date** and **[holidays]** arguments should be input as either:

- References to cells containing dates, or
- Dates returned from formulas

If you attempt to input these date arguments as text, Excel may misinterpret them, due to different date systems, or date interpretation settings.

Examples

Formulas:

	A	B	C	D	E
1	Start Date:	01-Dec-2010		25 workdays after 1st Dec 2010:	
2	Holidays:	27-Dec-2010		=WORKDAY.INTL(B1, 25)	- No Holidays; weekends Sat & Sun
3		28-Dec-2010		=WORKDAY.INTL(B1, 25, 1, B2:B4)	- Excl. holidays in cells B2-B4; weekends
4		03-Jan-2011		=WORKDAY.INTL(B1, 25, "0000111")	- No Holidays; weekends Fri, Sat & Sun

Results:

	A	B	C	D	E
1	Start Date:	01-Dec-2010		25 workdays after 1st Dec 2010:	
2	Holidays:	27-Dec-2010		05/01/2011	- No Holidays; weekends Sat & Sun
3		28-Dec-2010		10/01/2011	- Excl. holidays in cells B2-B4; weekends
4		03-Jan-2011		13/01/2011	- No Holidays; weekends Fri, Sat & Sun

- In the example in cell D2 the holidays array has been omitted. Therefore the calculation excludes Saturdays and Sundays but includes all other weekdays, including the holidays at Christmas and New Year.
- In the example in cell D3 the [weekend] argument is 1 (specifying weekends on Saturdays and Sundays) and the holidays array (in cells B2 - B4) is provided to the Workday.Intl function. Therefore the calculation excludes Saturdays and Sundays and the listed Christmas and New Year holidays.
- In the example in cell D4 Fridays, Saturdays and Sundays are specified as weekends, but no holiday array has been supplied to the function. Therefore the calculation excludes Fridays, Saturdays and Sundays but includes all other weekdays, including the holidays at Christmas and New Year.

Note also that, as recommended by Microsoft, in all three calls to the Workday.Intl function, the start_date and [holidays] arguments have been supplied as cell references.

Common Errors - WORKDAY.INTL Function

#NUM! - Occurs if either:

- the supplied start_date plus the supplied days argument results in an invalid date
- or
- the supplied [weekend] argument is invalid (see above explanation of this argument)

#VALUE! - Occurs if either:

- the supplied start_date or any of the values in the supplied [holidays] array are not valid dates
- or
- the supplied days argument is non-numeric

DAYS360 – returns the number of days between 2 dates, based on a 360-day year (12 x 30 months).

Syntax: **DAYS360 (Start_date, End_date, [Method])**

The arguments are as follows:

Start_date - The start of the period

End_date - The end of the period

[Method] - An optional logical argument, which gives the method to be used in the calculation. This can be either:

FALSE (or omitted) - US (NASD) method used

or

TRUE - European method used

US vs. European Method

US Method:

- If start date is last day of month it is set to 30th of that month
- If end date is last day of month, then:
 - If start date is last day of month the end date is set to the 1st of the following month
 - Otherwise, the end date is set to 30th of that month

European Method:

- If start date is last day of month it is set to 30th of that month
- If end date is last day of month, then it is set to 30th of that month

Note that the **Start_date** and **End_date** arguments should be input as either:

- References to cells containing dates, or
- Dates returned from formulas

If you attempt to input the *Start_date* and *End_date* as text, there is a chance that Excel may misinterpret this due to different date systems, or date interpretation settings.

Warning: Although you can input the dates as serial numbers, this is not recommended as the serial numbers may vary across different computer systems.

Examples

Formulas

	A	B
1	01/01/2010	=DAYS360(A1, A2)
2	31/01/2010	=DAYS360(A1, A2, TRUE)
3	01/02/2010	=DAYS360(A1, A3, FALSE)
4		=DAYS360(A3, DATE(2010, 2, 2))

Results

	A	B
1	01/01/2010	30
2	31/01/2010	29
3	01/02/2010	30
4		1

In the above example:

- In the function in cells B1 and B4 the *Method* argument has been omitted. Therefore, the US (NASD) method is used.
- In cells B2, the *Method* is set to TRUE, so the European method is used. Note that this gives a different result from the function in cell B1, which uses the same two dates with the US (NASD) method.

Note also that, as recommended by Microsoft, in all four calls to the Days360 function, the *Start_date* and *End_date* arguments have been supplied as either cell references or the return values from functions.

Chapter VII. Data Types & Data Conversion

Data Types

There are 3 general types of data that can be stored in a cell:

- text
- a logical value
- a number

Text values will always be represented as simple text.

Logical values are displayed as either **TRUE** or **FALSE**.

However, numbers can be displayed in many different ways in an Excel Cell. As illustrated above, a numeric value may represent a date, a time, a percentage, a currency, etc.

This is illustrated by the spreadsheet below, which shows different ways of formatting Excel cells containing numeric values.

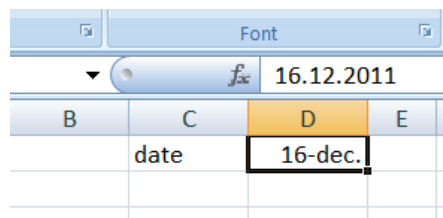
	A	B	C
1		Formatted Value	Underlying Value
2	A number formatted as a percentage:	59%	0.59
3	A number formatted as a currency:	\$54.27	54.27
4	A number formatted as a date:	01 August 2008	39661
5	A number formatted as a time:	12:27 PM	0.51875
5	A number formatted as a fraction:	1 3/4	1.75

How Excel aligns the data (by default — it can be changed) depends on the type of data:

- **Text:** Excel aligns text to the left side of the cell. If the text is too wide to fit, Excel extends that data past the cell width if the next cell is blank. If the next cell is not blank, Excel displays only enough text to fit the cell width. Widening the column displays additional text.
- **Number:** If the data is a whole value, such as 34 or 5763, Excel aligns the data to the right side of the cell.

TIP! If a value displays as scientific notation (such as 1.2345E+11) or number signs (#####), it means the value is too long to fit into the cell. You need to widen the column.

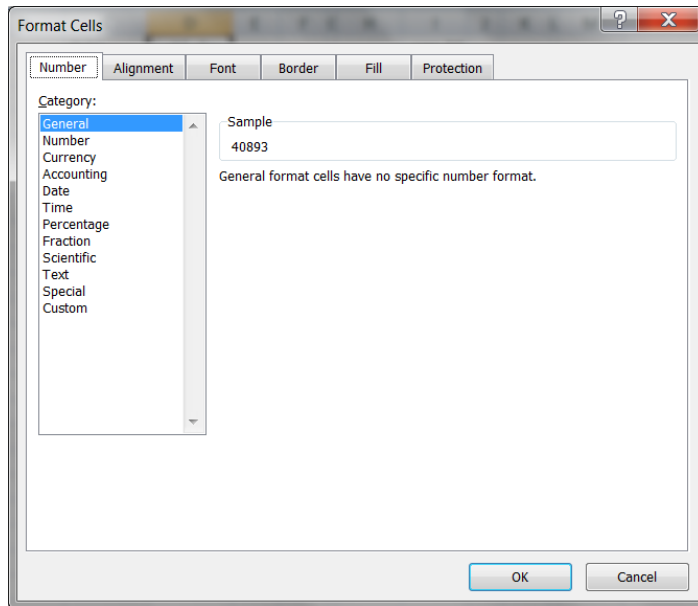
- **Date:** If you enter a date, such 12/16, Dec 16, or 16 Dec, Excel automatically returns 16-Dec in the cell, but the Formula bar displays the entire date.



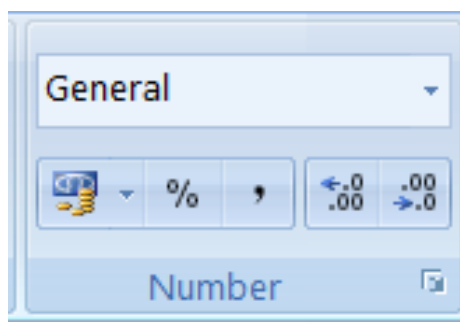
Data Conversion

More specifically, the data entered in a cell can take as many forms as listed in **Format Cells** tab: General, Number, Currency, Accounting, Date, Time, Percentage, Text etc.

To change the type of data entered in a cell, you can right click the cell, go to Format Cells, and then select the most appropriate format from the list:

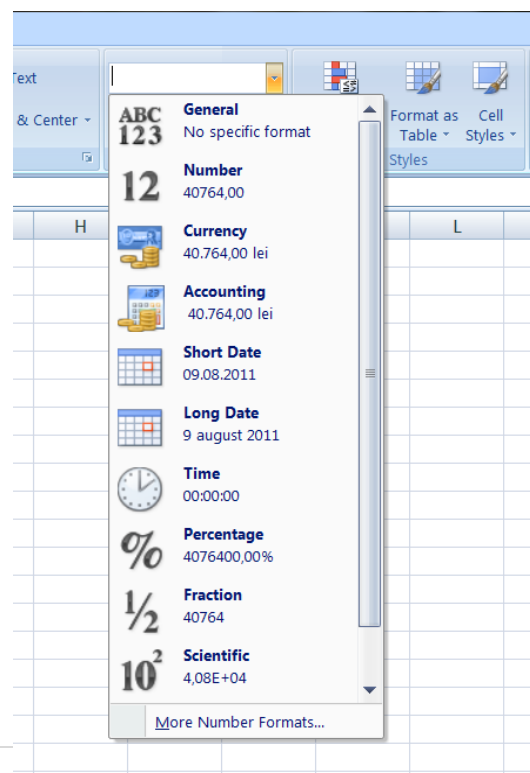


You may find these features summarized, under Number section, in the Home tab Ribbon:



Here you have shortcuts for Currency, Percentage and Accounting types, as well as for increasing or decreasing the number of decimals.

From the dropdown list you can select the type you want:



Functions to Convert Excel Data Types

BAHTTEXT – converts a number into Thai text, with the suffix "Baht".

Syntax: **BAHTTEXT (number)**

Examples

Formulas:

	A	B
1		=BAHTTEXT(35)
2	26	=BAHTTEXT(A2)

Results

	A	B
1		สามสิบห้าบาทถ้วน
2	26	ยี่สิบหกบาทถ้วน

DOLLAR – rounds a supplied number to a specified number of decimal places and then converts this into text, using a currency format.

Syntax: **DOLLAR (Number, [Decimals])**

Where the arguments are:

<i>Number</i>	-	The number to be converted into a text string
<i>[Decimals]</i>	-	An optional numerical argument which specifies the number of decimal places to be shown after the decimal point <ul style="list-style-type: none"> -If <i>Decimals</i> is omitted, it takes on the default value of 2 -If <i>Decimals</i> is negative, the supplied <i>Number</i> is rounded up to the left of the decimal point -If <i>Decimals</i> is a decimal (rather than an integer), it is truncated to an integer

Examples

Formulas

	A	B
1		=DOLLAR(123.591)
2	123.591	=DOLLAR(A2)
3	123.591	=DOLLAR(A3, 1)
4	123.591	=DOLLAR(A4, 0)
5	123.591	=DOLLAR(A5, -1)
6	123.591	=DOLLAR(A6, -2)

Results

	A	B
1		£123.59
2	123.591	£123.59
3	123.591	£123.6
4	123.591	£124
5	123.591	£120
6	123.591	£100

Note that the Excel Dollar function uses the currency that is set as the default on your computer. The above examples use UK pounds sterling (£).

FIXED – rounds a supplied number to a specified number of decimal places and then converts this into text.

Syntax: **FIXED (Number, [Decimals], [No_commas])**

Where the arguments are:

- Number* - The number to be converted into a text string
- [Decimals]* - An optional numerical argument which specifies the number of decimal places to be shown after the decimal point
 Note :
 -If *Decimals* is omitted, it takes on the default value of 2
 -If *Decimals* is negative, the supplied *Number* is rounded up to the left of the decimal point
 -If *Decimals* is a decimal (rather than an integer), it is truncated to an integer
- [No_commas]* - An optional logical argument which specifies if the returned text should separate thousands by commas. Possible values are :
 TRUE -Commas are not included in the resulting text
 FALSE-Commas are included in the resulting text
 If the *[No_commas]* argument is omitted, it takes on the default value of *FALSE*.

Examples

Formulas

	A	B
1		=FIXED(123.591)
2	123.591	=FIXED(A2)
3	123.591	=FIXED(A3, 1)
4	123.591	=FIXED(A4, 0)
5	123.591	=FIXED(A5, -1)
6	123.591	=FIXED(A6, -2)

Results

	A	B
1		123.59
2	123.591	123.59
3	123.591	123.6
4	123.591	124
5	123.591	120
6	123.591	100

TIP! Once a number has been converted, using the **DOLLAR** and **FIXED** functions, it is stored in Excel as text. Therefore, it cannot be used in numeric calculations. If you want to be able to use the numbers in calculations, you may prefer to keep the values as numbers in Excel and just change the formatting into the required numeric format.

TEXT – converts a supplied value into text, in a user-specified format.

Syntax: **TEXT (value, format_text)**

The function arguments are:

value - A numeric value, that you want to be converted into text

format_text - A text string that defines the formatting that you want to be applied to the supplied value. The format definitions that can be used in the Excel Text function are shown in the table below:

0	- Forces the display of a digit in its place
#	- Display digit if it adds to the accuracy of the number (but don't display if a leading zero or a zero at the end of a decimal)
.	- Defines the position that the decimal place takes
d	- Day of the month or day of week d = one or two digit representation (eg. 1, 12) dd = 2 digit representation (eg. 01, 12) ddd = abbreviated day of week (eg. Mon, Tue) dddd = full name of day of week (eg. Monday, Tuesday)
m	- Month (when used as part of a date) m = one or two digit representation (eg. 1, 12) mm = two digit representation (eg. 01, 12) mmm = abbreviated month name (eg. Jan, Dec) mmmm = full name of month (eg. January, December)
y	- Year yy = 2-digit representation of year(eg. 99, 08) yyyy = 4-digit representation of year(eg. 1999, 2008)
h	- Hour h = one or two digit representation (eg. 1, 20) hh = two digit representation (eg. 01, 20)
m	- Minute (when used as a part of a time) m = one or two digit representation (eg. 1, 55) mm = two digit representation (eg. 01, 55)
s	- Second s = one or two digit representation (eg. 1, 45) ss = two digit representation (eg. 01, 45)
AM/PM	- Indicates that a time should be represented using a 12-hour clock, followed by "AM" or "PM"

Examples

Formulas:

	A	B
1	Value	Formatted Value
2	39803	=TEXT(A2, "dd/mm/yyyy")
3	0.75	=TEXT(A3, "hh:mm")
4	36.3636	=TEXT(A4, "0.00")
5	0.5555	=TEXT(A5, "0.0%")
6	567.9	=TEXT(A6, "£#,##0.00")
7	44567.9	=TEXT(A7, "#,##0.00")
8	-5	=TEXT(A8, "+ \$#,##0.00;- \$#,##0.00; \$0")
9	5	=TEXT(A9, "+ \$#,##0.00;- \$#,##0.00; \$0")
10	0	=TEXT(A10, "+ \$#,##0.00;- \$#,##0.00; \$0.00")

Results:

	A	B
1	Value	Formatted Value
2	39803	21/12/2008
3	0.75	18:00
4	36.3636	36.36
5	0.5555	55.6%
6	567.9	£567.90
7	44567.9	44,567.90
8	-5	- \$5.00
9	5	+ \$5.00
10	0	\$0.00

Wildcard Characters

The wildcards can be used when you work with functions that take text arguments and you may need to replace some characters.

The wildcards are:

- ? - matches any single character
- * - matches any sequence of characters
- ~ - if you do actually want to find the ? or * character, type the ~ symbol before this character in your search.

Wildcards are commonly used in decisional and lookup functions where arguments are text-related criteria: MATCH, IF, SUMIF, SUMIFS, COUNTIF etc.

MATCH Function Example

	A	B	C	D	E
1	OrderID	Quantity	Unit Cost	Total Cost	
2	IBM	2	\$7.23	\$14.46	
3	Microsoft	4	\$5.00	\$20.00	
4	HP	3	\$3.50	\$10.50	
5	Nvidia	12	\$2.99	\$35.88	
6					
7					
8					

Based on the Excel spreadsheet above:

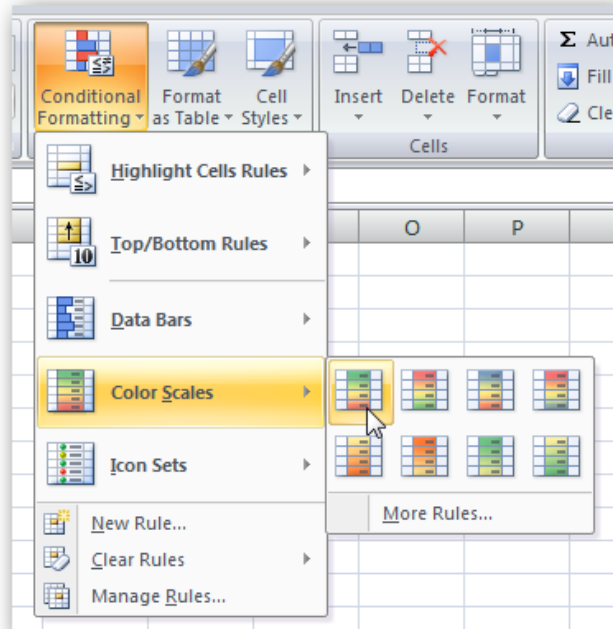
=Match("I?M", A2:A5, 0)	would return 1
=Match("M*t", A2:A5, 0)	would return 2
=Match("M?t", A2:A5, 0)	would return #N/A

Chapter VIII. Working with 2d data (tables)

Conditional Cell Formatting

If you are working on a spreadsheet and want to be able to quickly see differences in numbers at a glance, you can use the new Conditional Cell Formatting feature. With this you can change the background of a cell based on the data in the cell, almost like an inline chart.

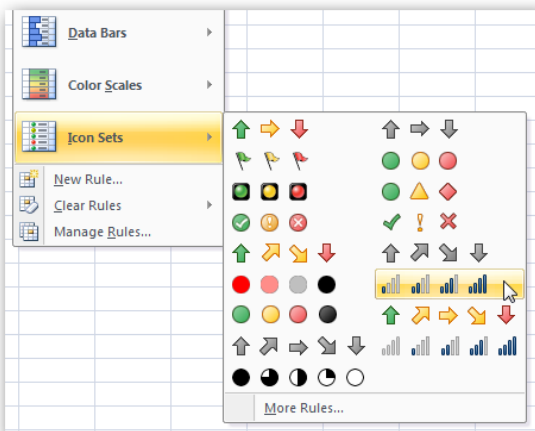
Once you select the cells that you want to format, you can find the Conditional Formatting drop-down on the Home ribbon, which gives you loads of pre-set rules to choose from, like color scales.



This will automatically color the items based on the range they are in:

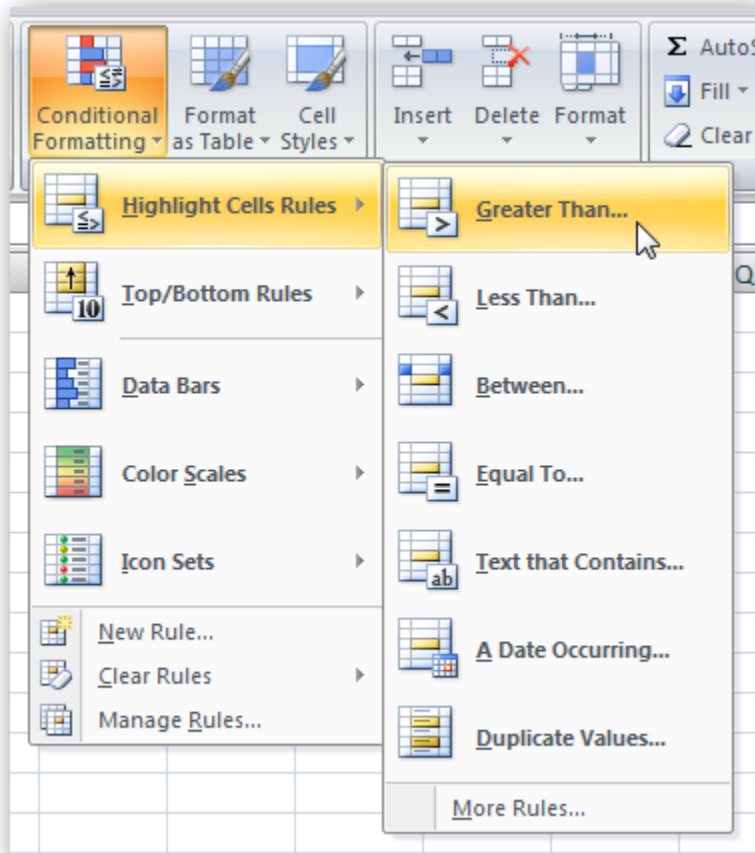
	A	B
1		
2	123	
3	12	
4	321	
5	555	
6	35412	
7	1244	
8	999	
9		

You can also choose to use icons instead:

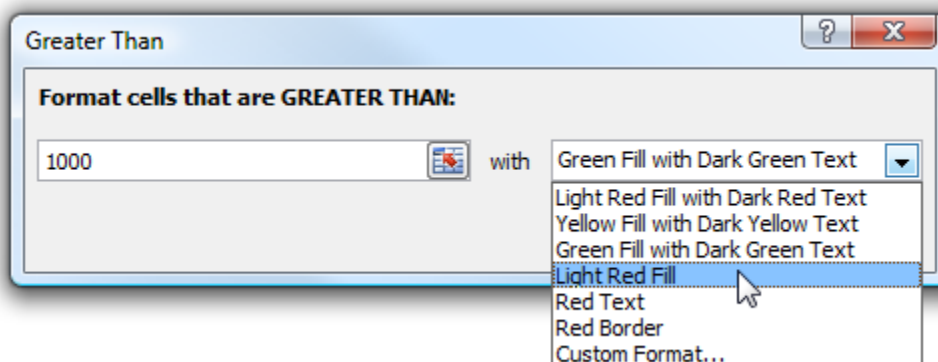


	A	B
1		
2	123	
3	12	
4	321	
5	555	
6	35412	
7	1244	
8	999	
9		

You can create your own rule to color only cells that fit within a certain range, or greater than a certain number.



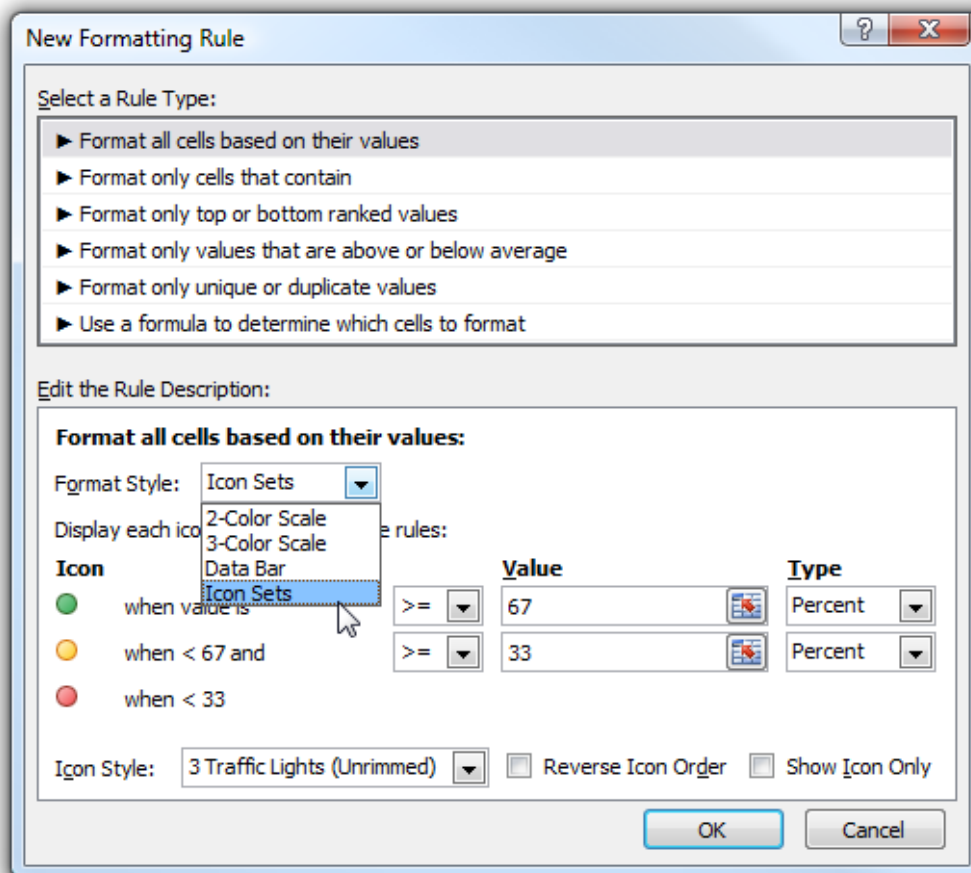
This rule will only color cells greater than a certain amount, with the color you specify.



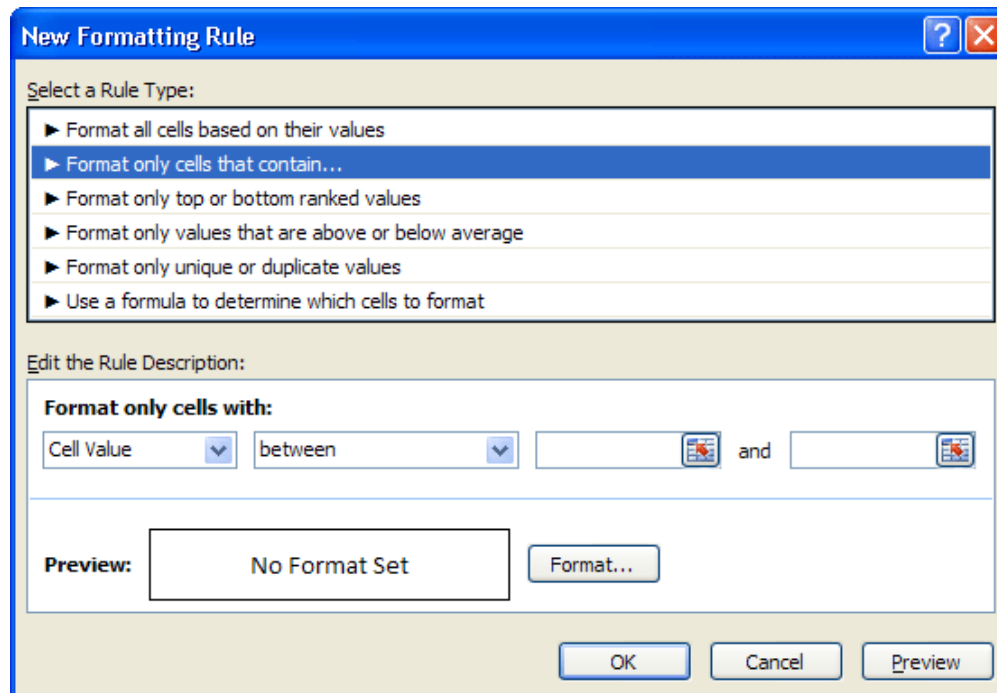
This can be very useful, and you should note that you can apply a second rule to the same range. For instance, I added a second rule that colored items larger than 2000 with green instead of red.

	A	B
1		
2	123	
3	12	
4	321	
5	555	
6	35412	
7	1244	
8	999	
9		

You can even create a completely customized rule by choosing the New Formatting Rule option.

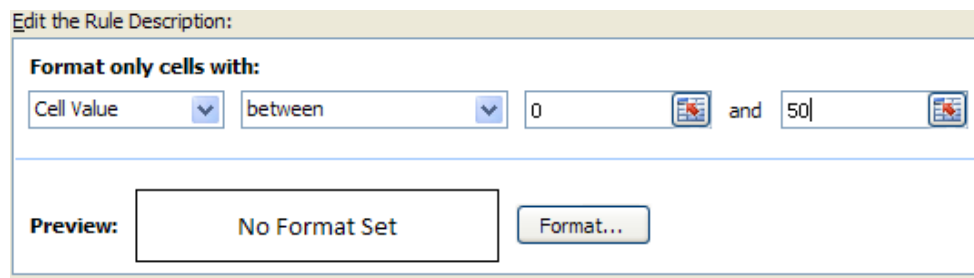


A second option, Format only cells that contain. This will allow you to set up your values. When you click this option, the dialogue box changes to this:

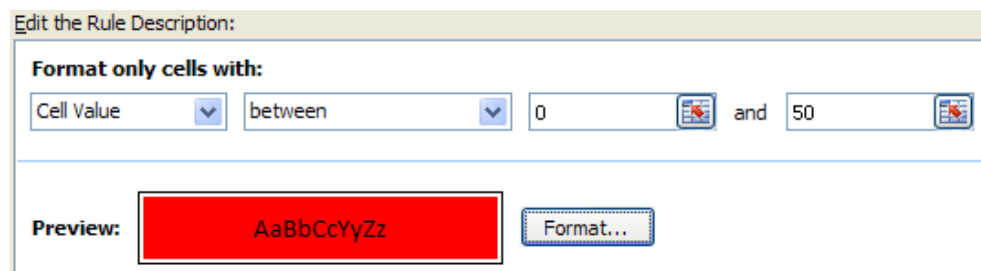


The part you're interested in is the bottom part, under the heading **Edit the Rule Description**. It says **Cell Value** and **Between**, in the drop down boxes. You only need to type a value for the two boxes that are currently blank in the image above. You can then click the **Format** button to choose a color.

So type 0 in the first box and 50 in the second one:

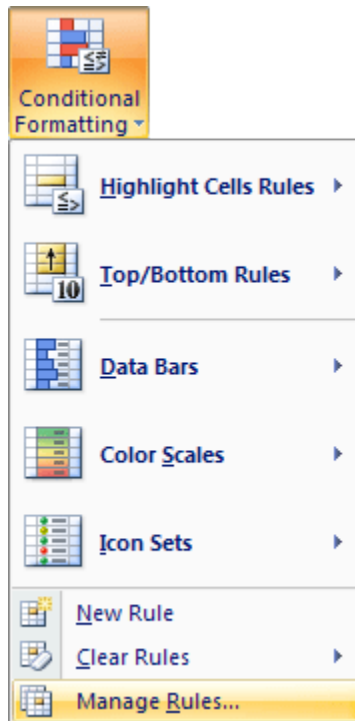


Then click the **Format** button. You'll get another dialogue box popping up. This is just the **Format Cells** one though. Click on the **Fill** tab and choose a color. Click **OK** and you should see something like this under **Edit the Rule Description**:

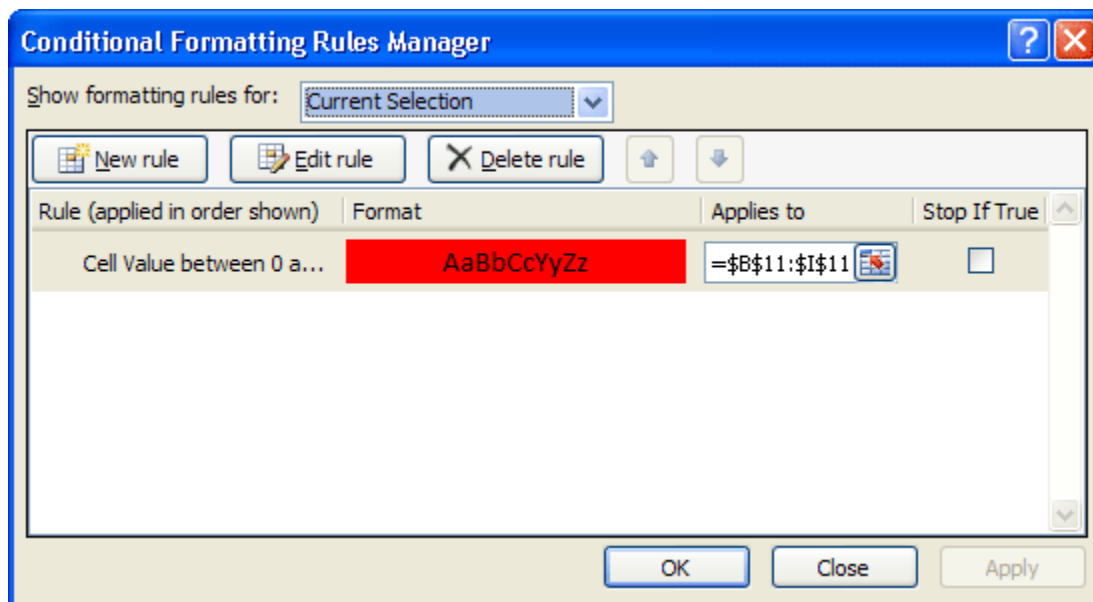


The Preview is showing the color you picked. So you've said, "If the Cell Value is between 0 and 50 then color the cell Red".

Click OK on this dialogue box to get back to Excel. You should find that one of the cells has turned red. To format the rest of the cells, click on Conditional Formatting on the Styles panel again. From the menu, click on Manage Rules:

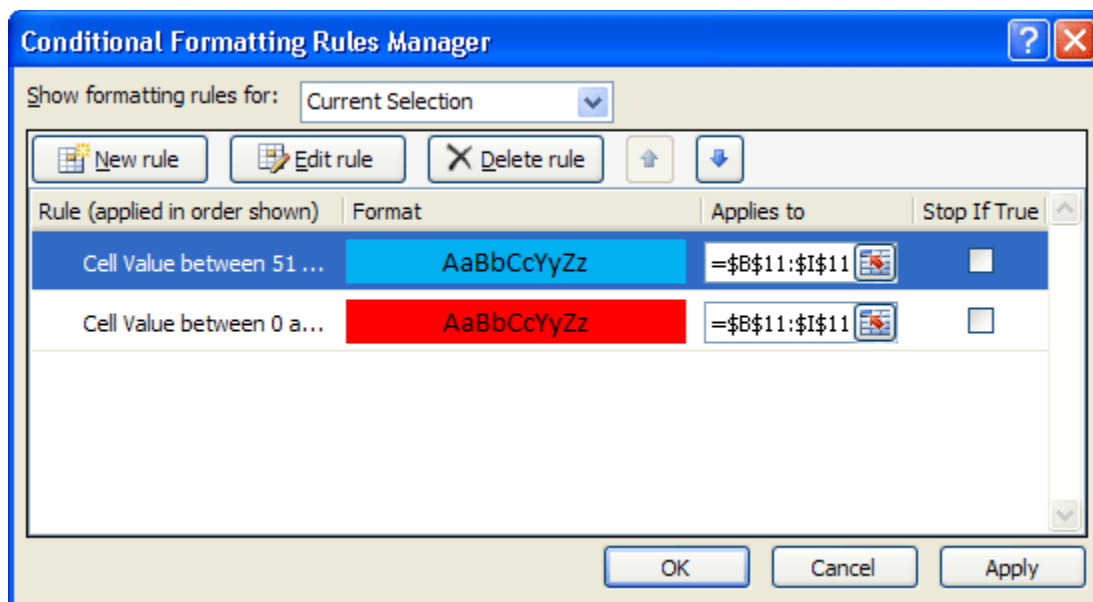


You'll get yet another complex dialogue box popping up! This one:



Your first rule is already there - Cell Value Between.

Now you can add New Rules, similar to the one you've just set up. Click the New Rule button then. You'll see the exact same dialogue boxes you used to set up the first rule. Set a new color for the next scores - 51 to 60. Choose a color, and keep clicking OK until you get back to the Rules Manager dialogue box. It should now look something like this one:

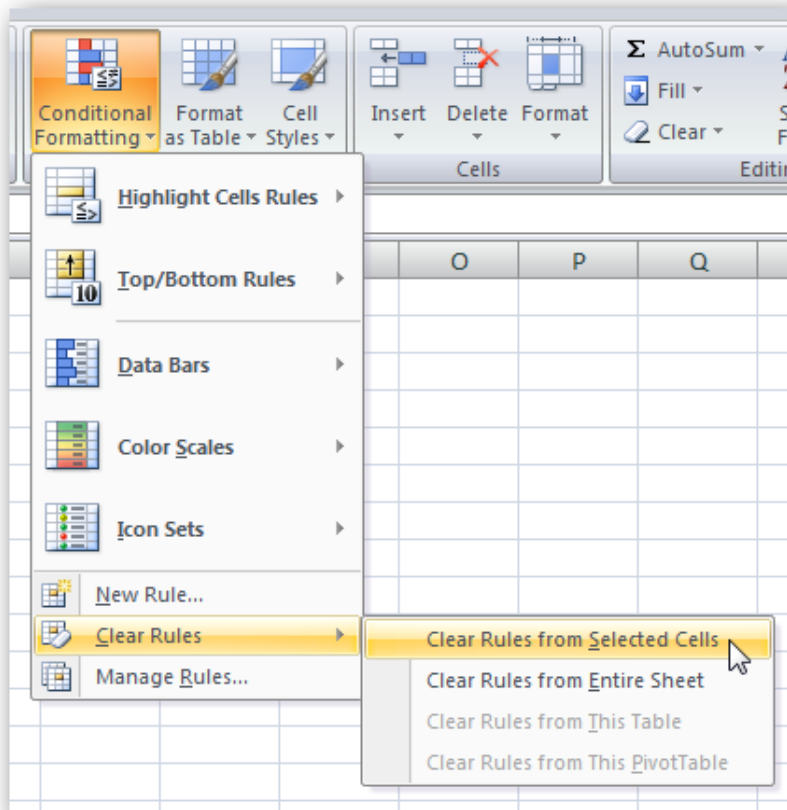


In conclusion you can set up rules that will color an excel files like this:

	A	B	C	D	E	F	G	H	I
1		Steven	Mary	Ann	Raymond	Mark	Paul	Eliza	Kelly
2	Maths	76	89	43	48	51	76	87	56
3	English	55	85	78	61	47	87	91	73
4	Science	65	82	39	58	52	65	57	45
5	History	45	91	56	72	49	56	78	56
6	Geography	51	84	54	64	47	64	67	67
7	Art	43	63	49	62	39	89	64	63
8	Computer Studies	63	95	45	59	41	92	89	52
9	French	35	91	65	26	28	51	92	56
10									
11	Overall Average	54.13	85.00	53.63	56.25	44.25	72.50	78.13	58.50
12									

Formatting your spreadsheet in this way allows you to see at a glance relevant information. In the spreadsheet above, it's obvious who's failing - just look for the red cells!

If you've applied too many rules and want to start over, just select the cells and use the Clear Rules option to remove all the formatting.



This is one of those really useful features that make Office 2007 & 2010 a lot better than the previous versions.

Pivot Tables

Excel Pivot Tables are tables that are produced by Excel, to summaries large amounts of data in a spreadsheet. This is best explained by an example.

This is how you can create a Pivot Table in Excel 2007 or Excel 2010, using an example spreadsheet of company sales figures during 2010:

	A	B	C	D	E
1	Date	Invoice Ref	Amount	Sales Rep.	Region
2	05/01/2010	2010-0001	\$33,242	Smith	North
3	07/01/2010	2010-0002	\$41,234	Barnes	South
4	08/01/2010	2010-0003	\$3,255	Brown	North
5	12/01/2010	2010-0004	\$34,124	Brown	North
6	15/01/2010	2010-0005	\$4,312	Smith	North
7	19/01/2010	2010-0006	\$41,233	Jones	South
8	22/01/2010	2010-0007	\$10,313	Smith	North
9	30/01/2010	2010-0008	\$26,001	Jones	South
10	02/02/2010	2010-0009	\$34,234	Barnes	South
11	.	.	.	.	.

For this advanced pivot table example we will create a pivot table that shows the total sales for each month of the year, broken down by sales region and sales rep.

The process for creating this Pivot Table is described below:

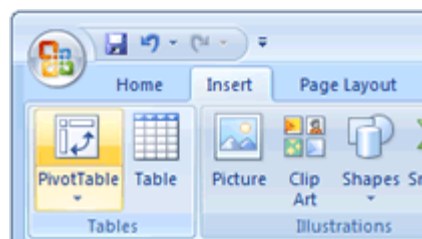
1. Select any cell within the data range *or* select the entire data range to be used in your Pivot Table.

Note: If you select a single cell in the data range, Excel will automatically identify, and select the whole data range for your Pivot Table. In order for Excel to successfully do this, the following must be satisfied:

- Each column in the data range has a header and
- The data does not contain any blank rows

	A	B	C	D	E
1	Date	Invoice Ref	Amount	Sales Rep.	Region
2	05/01/2010	2010-0001	\$33,242	Smith	North
3	07/01/2010	2010-0002	\$41,234	Barnes	South
4	08/01/2010	2010-0003	\$3,255	Brown	North
5	12/01/2010	2010-0004	\$34,124	Brown	North
6	15/01/2010	2010-0005	\$4,312	Smith	North
7	19/01/2010	2010-0006	\$41,233	Jones	South
8	22/01/2010	2010-0007	\$10,313	Smith	North
9	30/01/2010	2010-0008	\$26,001	Jones	South
10	02/02/2010	2010-0009	\$34,234	Barnes	South
11	.	.	.	.	.

- Click on the Pivot Table button, which is generally located on the left, within the 'Insert' tab.

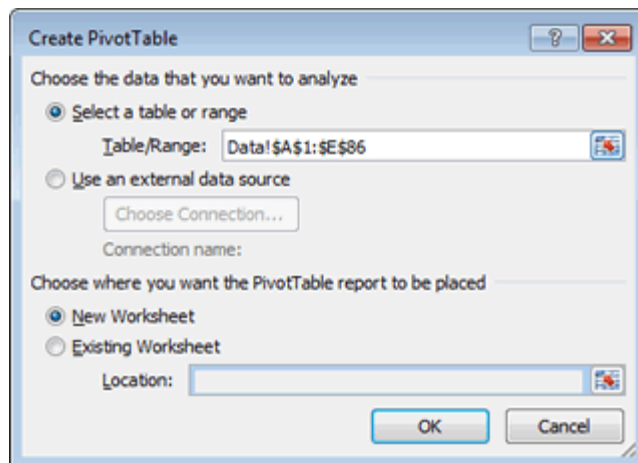


- You will be presented with the window entitled 'Create PivotTable' (shown on the right).

Make sure that the selected range is the range that you want to use for your Pivot Table.

There is also an option asking where you want the Pivot Table to be placed. If you are not sure, select the option 'New worksheet'

Click **OK**

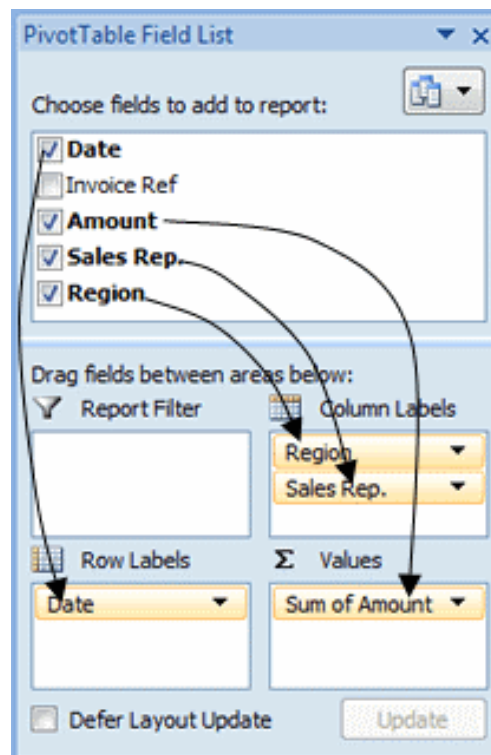


- Excel will present you with an empty Pivot Table, and a 'Pivot Table Field List', which contains the data fields for your Pivot Table. Note that these are the headers from your data spreadsheet.

We want the Pivot Table to show the sums of the sales figures for each month, broken down by region and sales rep.

Therefore, from the 'Pivot Table Field List':

- Drag the 'Date' field into the area marked 'Row Labels'
- Drag the 'Amount' field into the area marked 'Σ Values'
- Drag the 'Region' field into the area marked 'Row Labels'
- Drag the 'Sales Rep.' field into the



area marked 'Row Labels'

TIP! Going to Options > Options > Display > Classic PivotTable layout, this enables the dragging of the fields directly to the pivot.

The values field can be configured, we left click on the "Sum of Amount" go to Value Field Settings... and select the needed calculation in Summarize value field by (example give, to calculate sum, .

- The resulting Pivot Table (shown on the right) will be populated with the daily sales totals for each sales region and each sales rep.

However, we want to group the dates by month. To do this:

- Right click on any of the dates in the left hand column of the Pivot Table
- Select the option **Group...**
- A window will pop up. Select the option **Months**
(note that you can also group dates and times by other time periods, such as quarters, days, hours, etc)
- Click **OK**

The resulting Pivot Table is shown below:

	A	B	C	D	E	F	G	H
1								
2								
3	Sum of Amount	Region	Sales Rep.					
4		North		North Total	South		South Total	Grand Total
5	Date	Brown	Smith		Barnes	Jones		
6	05/01/2010		33242	33242				33242
7	07/01/2010				41234		41234	41234
8	08/01/2010	3255		3255				3255
9	11/01/2010	34124		34124				34124
10	15/01/2010		4312	4312				4312
11	19/01/2010				41233		41233	41233
12	22/01/2010		10313	10313				10313
13	30/01/2010				26001		26001	26001
14	02/02/2010				34234		34234	34234
15	03/02/2010	20043		20043				20043
16	04/02/2010	6709		6709				6709
17	10/02/2010				11587		11587	11587
18	18/02/2010				13925		13925	13925
19	24/02/2010		11810	11810				11810
20	04/03/2010				32481		32481	32481
21	12/03/2010		32651	32651				32651
22								

	A	B	C	D	E	F	G	H
1								
2								
3	Sum of Amount	Region	Sales Rep.					
4		North		North Total	South		South Total	Grand Total
5	Date	Brown	Smith		Barnes	Jones		
6	Jan	37379	47867	85246	41234	67234	108468	193714
7	Feb	26752	11810	38562	48159	11587	59746	98308
8	Mar	47975	32651	80626	46908	79686	126594	207220
9	Apr		62261	62261	85755	38296	124051	186312
10	May	56568	21909	78477	56106	3866	59972	138449
11	Jun	129993	50748	180741		34166	34166	214907
12	Jul	75657	42848	118505	25714	83634	109348	227853
13	Aug	88726	28077	116803	43185	91503	134688	251491
14	Sep	10134	83089	93223	48165	68056	116221	209444
15	Oct	80296	80083	160379	40294	42043	82337	242716
16	Nov	37176	40425	77601		89946	89946	167547
17	Dec	38231	75049	113280	33842	14812	48654	161934
18	Grand Total	628887	576817	1205704	469362	624829	1094191	2299895

As required, the final pivot table shows the total monthly sales, broken down by sales region and sales rep.

The Pivot Table might be improved visually, by formatting. For example, if columns B - G are formatted as currencies, this will make the Pivot Table easier to read. This has been done in the spreadsheet used in the following section (below).

Pivot Table Page Field

The Pivot Table page field allows you to view the data for a single value in one of your data fields. For example, in the pivot table above, you could view just the data for the North sales region or just the data for the South sales region. This is illustrated below.

In order to view just the data for the 'North' sales region, return to the 'Pivot Table Field List', and drag the '**Region**' field header into the page drop area, as shown below.

	A	B	C	D	E	F	G	H
1								
2								
3	Sum of Amount	Region	Sales Rep.					
4		North		North Total	South		South Total	Grand Total
5	Date	Brown	Smith		Barnes	Jones		
6	Jan	\$37,379	\$47,867	\$85,246	\$41,234	\$67,234	\$108,468	\$193,714
7	Feb	\$26,752	\$11,810	\$38,562	\$48,159	\$11,587	\$59,746	\$98,308
8	Mar	\$47,975	\$32,651	\$80,626	\$46,908	\$79,686	\$126,594	\$207,220

	A	B	C	D
1	Region	North		
2				
3	Sum of Amount	Sales Rep.		
4	Date	Brown	Smith	Grand Total
5	Jan	\$37,379	\$47,867	\$85,246
6	Feb	\$26,752	\$11,810	\$38,562
7	Mar	\$47,975	\$32,651	\$80,626
8	Apr		\$62,261	\$62,261
9	May	\$56,568	\$21,909	\$78,477
10	Jun	\$129,993	\$50,748	\$180,741
11	Jul	\$75,657	\$42,848	\$118,505
12	Aug	\$88,726	\$28,077	\$116,803
13	Sep	\$10,134	\$83,089	\$93,223
14	Oct	\$80,296	\$80,083	\$160,379
15	Nov	\$37,176	\$40,425	\$77,601
16	Dec	\$38,231	\$75,049	\$113,280
17	Grand Total	\$628,887	\$576,817	\$1,205,704

You will see that the 'Region' field is now located in the page drop area, at the top left of the Pivot Table. Use the drop-down list for this field to select the Region 'North'. The resulting Pivot Table, which shows just the sales for the North region, is shown on the right.

You can also quickly view just the sales for the South region by selecting 'South' from the drop down menu.

Freeze Panes

When working with very large spreadsheets headings located at the top and down the left side of the worksheet often disappear if you scroll too far to the right or down. Without the headings, it's hard to keep track of which column or row of data you are looking at.

To avoid this problem use Excel's freeze panes feature. It "freezes" or locks specific columns or rows of the spreadsheet so that they remain visible at all times.

	A	B	C	D
1	Keep Headings on the Screen with Freeze Panes	The Cookie Shop Monthly Statement		
2				
3		January	February	March
4				
5				
6	Revenue from Sales:			
7	Chocolate Chip	\$2,047	1,987	2,321
8	Lemon	\$1,250	1,345	1,232
9	Oatmeal Raisin	\$1,795	2,010	1,987
10	Peanut Butter	\$1,292	1,156	1,232
11	Total Revenues:	\$6,384	\$6,498	\$6,772
12				

Freeze Panes Using the Active Cell

The **Freeze Panes** option freezes all the rows above the active cell and all the columns to the left of the active cell.

To freeze only those columns and rows you want to stay on screen, click on the cell to the *right* of the columns and just *below* the rows that you want to remain on screen.

Example

To keep rows 1, 2, and 3 on the screen and columns A and B:

- Click in cell C4 with the mouse to make it the active cell.
- Click on the *View* tab.
- Click on **Freeze Panes** from the ribbon to open the features drop down list.
- Click on *Freeze Panes* option in the list.
- A black border should appear to the right of column B in the worksheet and below row 3 indicating that the areas above and to the right of the lines have been "frozen".
- Scroll to the right in the worksheet. If you scroll far enough, the columns to the right of column B will begin disappearing while columns A and B will stay on the screen.

- g. Scroll down through the worksheet. If you scroll far enough, the rows below row 3 will begin disappearing while rows 1, 2, and 3 will stay on the screen.

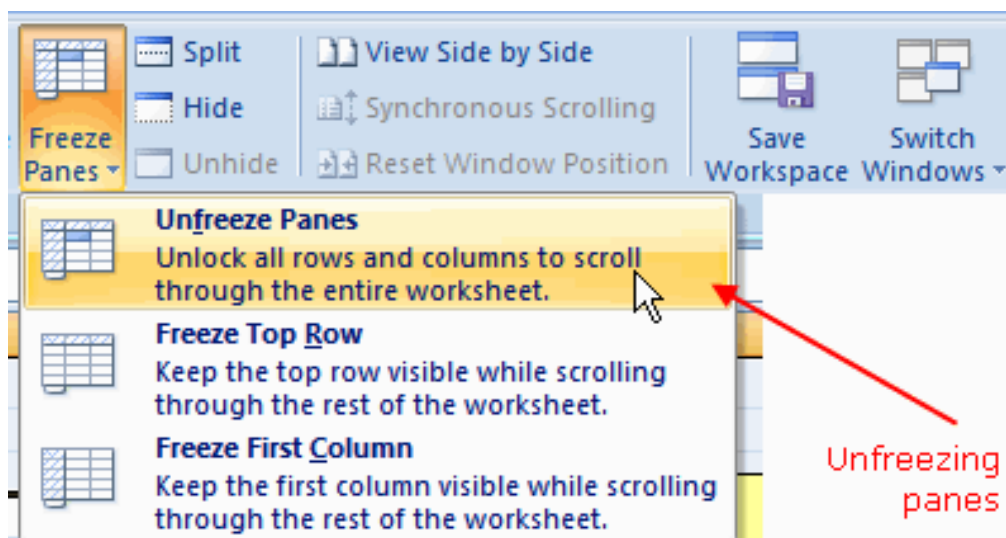
	A	B	C	D	E
1	The Cookie Shop				
2	ome Statement				
3					
4		2003	2004	2005	2006
5	Revenue from Sales:				
6	Peanut Butter	\$15,500	\$16,000	\$17,000	\$18,000
7	Chocolate Chip		\$26,298	\$24,567	\$25,500
8	Oatmeal Raisin		\$25,298	\$21,547	\$26,100
9	Lemon		\$14,799	\$15,001	\$15,200
10	Total Revenues:			\$75,682	\$82,500
11					

Additional options can be found under Click on the View tab > Freeze Panes:

- **Freeze top row** and
- **Freeze first column**

To Unfreeze Columns and Rows

- Click on the *View* tab.
- Click on **Freeze Panes** from the ribbon to open the features drop down list.
- Click on *Unfreeze Panes* option in the list.
- The black border(s) showing the frozen columns and rows should disappear from the worksheet.



Filter Data in a Range or Table

Using AutoFilter to filter data is a quick and easy way to find and work with a subset of data in a range of cells or table. Once you have filtered data in a range of cells or table, you can either succumb reapply a filter to get up-to-date results, or clear a filter to redisplay all of the data.

Filtered data displays only the rows that meet criteria (criteria: Conditions you specify to limit which records are included in the result set of a query or filter.) that you specify and hides rows that you do not want displayed. After you filter data, you can copy, find, edit, format, chart, and print the subset of filtered data without rearranging or moving it.

You can also filter by more than one column. Filters are additive, which means that each additional filter is based on the current filter and further reduces the subset of data.

When you use the Find dialog box to search filtered data, only the data that is displayed is searched; data that is not displayed is not searched. To search all the data, clear all filters.


Types of filters

Using AutoFilter, you can create three types of filters:


- by a list values,
- by a format
- by a given criteria.

Each of these filter types is mutually exclusive for each range of cells or column table. For example, you can filter by cell color or by a list of numbers, but not by both; you can filter by icon or by a custom filter, but not by both.

To determine if a filter is applied, note the icon in the column heading:

- A drop-down arrow  means that filtering is enabled but not applied.

TIP! When you hover over the heading of a column with filtering enabled but not applied, a screen tip displays "(Showing All)".

- A Filter button  means that a filter is applied.

TIP! When you hover over the heading of a filtered column, a screen tip displays the filter applied to that column, such as "Equals a red cell color" or "Larger than 150".

When you reapply a filter, different results appear for the following reasons:

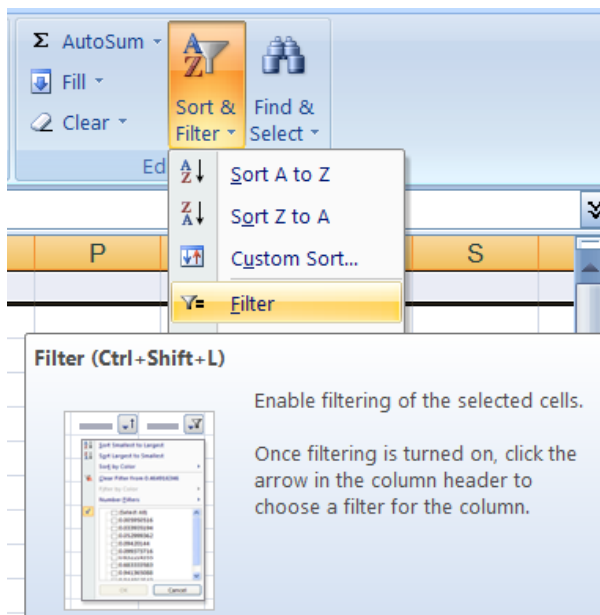
- Data has been added, modified, or deleted to the range of cells or table column.
- The filter is a dynamic date and time filter, such as **Today**, **This Week**, or **Year to Date**.
- Values returned by a formula have changed and the worksheet has been recalculated.


TIP! For best results, do not mix storage formats, such as text and number or number and date, in the same column. If there is a mix of storage formats, the command that is displayed is the storage format that occurs the most. For example, if the column contains 3 values stored as number and 4 as text, the filter command that is displayed is **Text Filters**.

Apply a Filter

To apply a filter, you can select the top cell of a range or top row of the table you want to filter, and do one of the following:

1. On the **Home** tab, in the **Editing** group, click **Sort & Filter**, and then **Filter**
Or
2. Press **Ctrl+Shift+L** (This is a very useful shortcut that applies and clears a filter over selected cells.)



According to the data stored in a column, when you click on the arrow  in the column header, the specific options to Sort & Filter your data will display.

Filter Texts

You can do one of the following:

Select from a list of text values

- In the list of text values, select or clear one or more text values to filter by.

The list of text values can be up to 10,000. If the list is large, clear **(Select All)** at the top, and then select the specific text values to filter by.

To filter for blanks or nonblanks:

- To filter for nonblanks, in the AutoFilter menu at the top of the list of values, select **(Select All)**, and then at the bottom of the list of values, clear **(Blanks)**.
- To filter for blanks, in the AutoFilter menu at the top of the list of values, clear **(Select All)**, and then at the bottom of the list of values, select **(Blanks)**.

The **(Blanks)** check box is available only if the range of cells or table column contains at least one blank cell.

Create criteria

1. Point to **Text Filters** and then click one of the comparison operator commands, or click **Custom AutoFilter**.

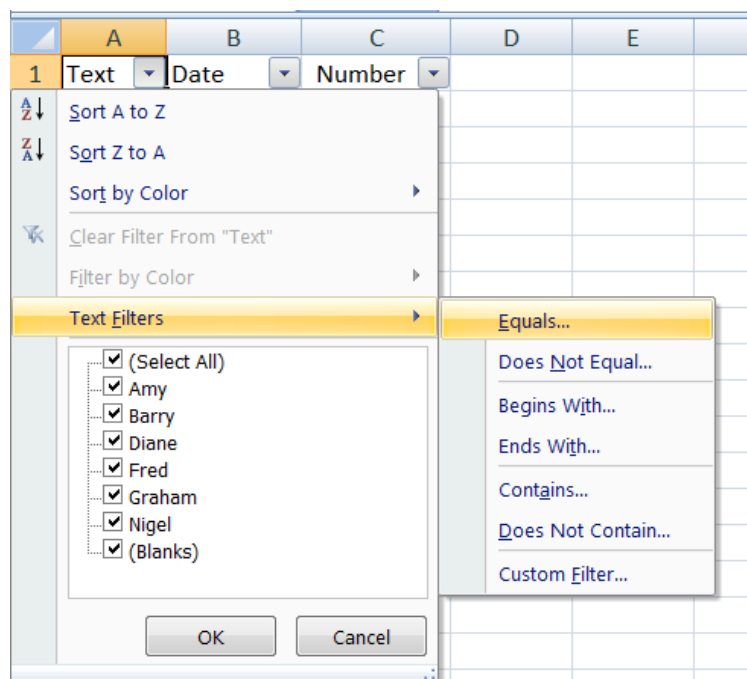
For example, to filter by text that begins with a specific character, select **Begins With**, or to filter by text that has specific characters anywhere in the text, select **Contains**.

2. In the **Custom AutoFilter** dialog box, in the box on the right, enter text or select the text value from the list.

For example, to filter by text that begins with the letter "J", enter **J**, or to filter by text that has "bell" anywhere in the text, enter **bell**. If you need to find text that shares some characters but not others, use a wildcard character.

3. Optionally, you can filter by **one more criteria**:

- To filter the table column or selection so that both criteria must be true, select **And**.
- To filter the table column or selection so that either or both criteria can be true, select **Or**.



Filter numbers

Select from a list of numbers

- In the list of numbers, select or clear one or more numbers to filter by.

The list of numbers can be up to 10,000. If the list is large, clear **(Select All)** at the top, and then select the specific numbers to filter by.

Create criteria

- Point to **Number Filters** and then click one of the comparison operator commands or click **Custom Filter**.

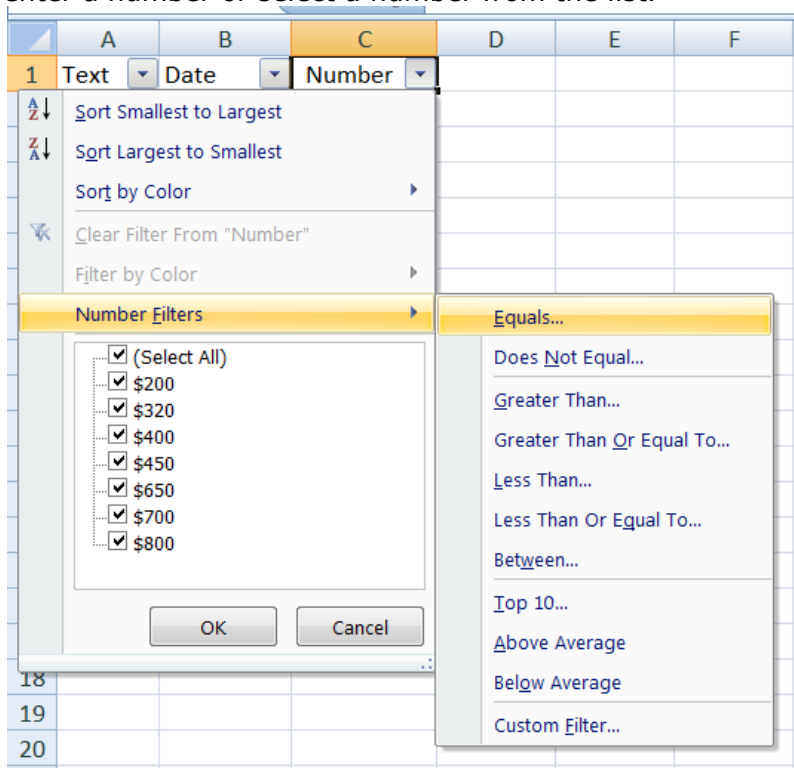
For example, to filter by a lower and upper number limit, select **Between**.

- In the **Custom AutoFilter** dialog box, in the box or boxes on the right, enter numbers or select numbers from the list.

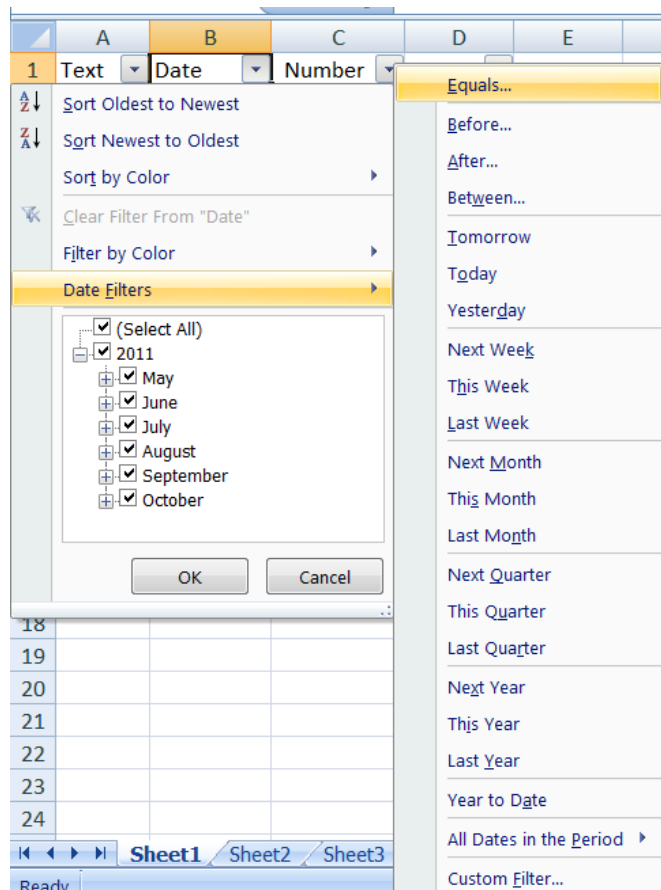
For example, to filter by a lower number of 25 and an upper number of 50, enter **25** and **50**.

Optionally, you can **add one more criteria**:

- To filter the table column or selection so that both criteria must be true, select **And**.
 - To filter the table column or selection so that either or both criteria can be true, select **Or**.
- In the second entry, select a comparison operator, and then in the box on the right, enter a number or select a number from the list.



Filter dates or times



Select from a list of dates or times

- In the list of dates or times, select or clear one or more dates or times to filter by.

By default, all dates in the range of cells or table column are grouped by a hierarchy of years, months, and days. Selecting or clearing a higher level in the hierarchy selects or clears all nested dates below that level. For example, if you select 2006, months are listed below 2006, and days are listed below each month.

The list of values can be up to 10,000. If the list of values is large, clear **(Select All)** at the top, and then select the values to filter by.

Create criteria

- Point to **Date Filters** and then do one of the following:

Common filter – A common filter is one based on a comparison operator.

- Click one of the comparison operator commands (**Equals**, **Before**, **After**, or **Between**) or click **Custom Filter**, for more specific options.

Dynamic filter – The criteria can change when you reapply the filter.

- Click one of the pre-defined date commands, and then click OK.


For example, to filter all dates by the current date, select **Today**, or by the following month, select **Next Month**.

Notes

- The commands under the **All Dates in the Period** menu, such as **January** or **Quarter 2**, filter by the period no matter what the year. This can be useful, for example, to compare sales by a period across several years.
- **This Year** and **Year to Date** are different in the way that future dates are handled. **This Year** can return dates in the future for the current year, whereas **Year to Date** only returns dates up to and including the current date.

When applying date filters, you have to take into consideration the following aspects:

- All date filters are based on the Gregorian calendar.
- Fiscal years and fiscal quarters always start in January of the calendar year.
- If you want to filter by days of the week, format the cells to show the day of the week. If you want to filter by the day of the week regardless of the date, convert them to text by using the TEXT function. However, the TEXT function returns a text value, and so the filter command that is displayed would be **Text Filters**, not **Date Filters**.
- For the list of dates at the bottom of the AutoFilter menu in a date filter, you can change the hierarchical grouping of dates to a nonhierarchical list of dates. For example, you can filter for just two-digit years by manually selecting them from a nonhierarchical list.

1. Click the **Microsoft Office Button** , click **Excel Options**, and then click the **Advanced** category.
2. In the **Display options for this workbook** section, select a workbook, and then clear the **Group dates in the AutoFilter menu** check box.

Filter by cell color, font color, or icon set

If you have manually or conditionally formatted a range of cells, by cell color or font color, you can also filter by these colors. You can also filter by an icon set created through a conditional format.

- Make sure that the table column contains data formatted by cell color, font color, or an icon set (No selection is required).

Select **Filter by Color**, and then depending on the type of format, select **Filter by Cell Color**, **Filter by Font Color**, or **Filter by Cell Icon**.

Filter by selection

You can quickly filter data with criteria that is equal to the contents of the active cell.

1. In a range of cells or table column, right click a cell containing the value, color, font color, or icon you want to filter by.
2. Click **Filter**, and then do one of the following:
 - To filter by text, number, or date or time, click **Filter by Selected Cell's Value**.
 - To filter by cell color, click **Filter by Selected Cell's Color**.
 - To filter by font color, click **Filter by Selected Cell's Font Color**.
 - To filter by icon, click **Filter by Selected Cell's Icon**.


Reapply a Filter

To reapply a filter after you change the data, click a cell in the range or table, and then on the **Home** tab, in the **Editing** group, click **Sort & Filter** and select **Reapply**.

Clear a Filter

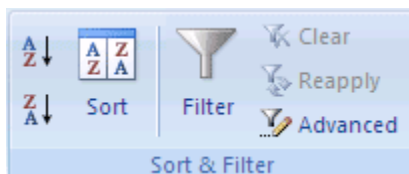
You can clear a filter for a specific column or clear all filters.

Clear a filter for a column

- To clear a filter for one column in a multicolumn range of cells or table, click the Filter button  on the heading, and then click **Clear Filter from <Column Name>**.

Clear all filters in a worksheet and redisplay all rows

- On the **Data** tab, in the **Sort & Filter** group, click **Clear**.





Hide or Show Worksheets or Workbooks

You can hide any worksheet in a workbook to remove it from view. You can also hide the workbook window of a workbook to remove it from your workspace. The data in hidden worksheets and workbook windows is not visible, but it can still be referenced from other worksheets and workbooks. You can display hidden worksheets or workbook windows as needed.

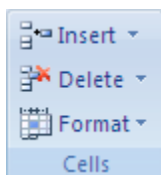
By default, all workbook windows of workbooks that you open are displayed on the taskbar, but you can hide or display them on the taskbar as needed.

Hide a worksheet

1. Select the worksheets that you want to hide.

To select	Do this
A single sheet	Click the sheet tab.  If you don't see the tab that you want, click the tab scrolling buttons to display the tab, and then click the tab. 
Two or more adjacent sheets	Click the tab for the first sheet. Then hold down SHIFT while you click the tab for the last sheet that you want to select.
Two or more nonadjacent sheets	Click the tab for the first sheet. Then hold down CTRL while you click the tabs of the other sheets that you want to select.
All sheets in a workbook	Right-click a sheet tab, and then click Select All Sheets on the shortcut menu.

2. On the **Home** tab, in the **Cells** group, click **Format**.



3. Under **Visibility**, click **Hide & Unhide**, and then click **Hide Sheet**.

Display a hidden worksheet

1. On the **Home** tab, in the **Cells** group, click **Format**.



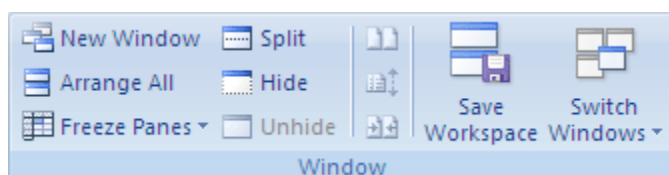
2. Under **Visibility**, click **Hide & Unhide**, and then click **Unhide Sheet**.
3. In the **Unhide sheet** box, double-click the name of the hidden sheet that you want to display.

Note You can unhide only one worksheet at a time.

Note If worksheets are hidden by Visual Basic for Applications (VBA) code that assigns the property **xlSheetVeryHidden**, you cannot use the **Unhide** command to display those hidden sheets. If you are using a workbook that contains VBA macros and you encounter problems when working with hidden worksheets, contact the owner of the workbook for more information.

Hide a workbook window

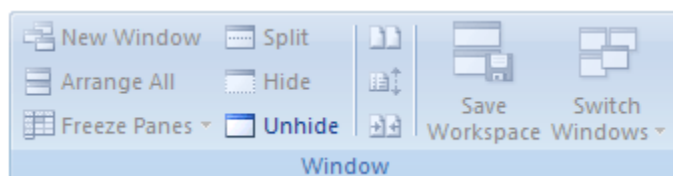
- On the **View** tab, in the **Window** group, click **Hide**.



Note When you exit Excel, you will be asked if you want to save changes to the hidden workbook window. Click **Yes** if you want the workbook window to be hidden the next time that you open the workbook.

Display a hidden workbook window


1. On the **View** tab, in the **Window** group, click **Unhide**.



Note If **Unhide** is unavailable, the workbook does not contain hidden workbook windows.

2. Under **Unhide workbook**, double-click the workbook window that you want to display.

Hide or display workbook windows on the Windows taskbar

1. Click the **Microsoft Office Button** , click **Excel Options**, and then click the **Advanced** category.
2. Under **Display**, clear or select the **Show all windows in the Taskbar** check box.

Chapter IX. Error Correction

Correct common errors when entering formulas

The following table summarizes some of the most common errors that a user can make when entering a formula, and explains how to correct those errors:

MAKE SURE THAT YOU...	MORE INFORMATION
Start every function with the equal sign (=)	If you omit the equal sign, what you type may be displayed as text or as a date. For example, if you type SUM(A1:A10) , Microsoft Office Excel displays the text string SUM(A1:A10) and does not perform the calculation. If you type 11/2 , Excel displays the date 2-Nov (assuming the cell format is General) instead of dividing 11 by 2.
Match all open and close parentheses	Make sure that all parentheses are part of a matching pair (opening and closing). When you use a function in a formula, it is important for each parenthesis to be in its correct position for the function to work correctly. For example, the formula =IF(B5<0),"Not valid",B5*1.05) will not work because there are two closing parentheses and only one open parenthesis (there should be only one opening and one closing parenthesis). The formula should look like this: =IF(B5<0,"Not valid",B5*1.05) .
Use a colon to indicate a range	When you refer to a range of cells, use a colon (:) to separate the reference to the first cell in the range and the reference to the last cell in the range. For example, A1:A5 .
Enter all required arguments	Some functions have required arguments . Also, make sure that you have not entered too many arguments.
Enter the correct type of arguments	Some functions, such as SUM , require numerical arguments. Other functions, such as REPLACE , require a text value for at least one of their arguments. If you use the wrong type of data as an argument, Excel may return unexpected results or display an error.
Nest no more than 64 functions	You can enter, or nest, no more than 64 levels of functions within a function.
Enclose other sheet names in single quotation marks	If the formula refers to values or cells on other worksheets or workbooks, and the name of the other workbook or worksheet contains a nonalphabetical character, you must enclose its name

within single quotation marks (').

Place an exclamation point (!) after a worksheet name when you refer to it in a formula

For example, to return the value from cell D3 in a worksheet named Quarterly Data in the same workbook, use this formula: **= 'Quarterly Data'!D3**.

Include the path to external workbooks

Make sure that each external reference contains a workbook name and the path to the workbook.

A reference to a workbook includes the name of the workbook and must be enclosed in brackets ([]). The reference must also contain the name of the worksheet in the workbook.

For example, to include a reference to cells A1 through A8 on the worksheet named Sales in the workbook (that is currently open in Excel) named Q2 Operations.xlsx, the formula looks like this: **= [Q2 Operations.xlsx]Sales!A1:A8**.

If the workbook that you want to refer to is not open in Excel, you can still include a reference to it in a formula. You provide the full path to the file, such as in the following example: **= ROWS('C:\My Documents\Q2 Operations.xlsx\Sales'!A1:A8)**. This formula returns the number of rows in the range that includes cells A1 through A8 in the other workbook (8).

NOTE If the full path contains space characters, as does the preceding example, you must enclose the path in single quotation marks (at the beginning of the path and after the name of the worksheet, before the exclamation point).

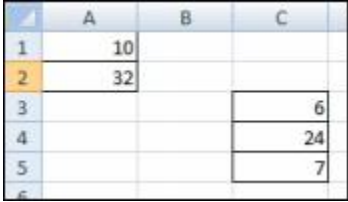
Enter numbers without formatting

Do not format numbers when you enter them in formulas. For example, if the value that you want to enter is \$1,000, enter **1000** in the formula. If you enter a comma as part of a number, Excel treats it as a separator character. If you want numbers displayed so that they show thousands or millions separators, or currency symbols, format the cells after you enter the numbers.

For example, if you want to add 3100 to the value in cell A3, and you enter the formula **= SUM(3,100,A3)**, Excel adds the numbers 3 and 100 and then adds that total to the value from A3, instead of adding 3100 to A3. Or, if you enter the formula **= ABS(-2,134)**, Excel displays an error because the **ABS** function accepts only one argument.

Correct an error value

If a formula cannot correctly evaluate a result, Excel displays one of the below error values. Each error type has different causes, and different solutions.

ERROR	DESCRIPTION
#####	Excel displays this error when a column is not wide enough to display all the characters in a cell, or a cell contains negative date or time values. For example, a formula that subtracts a date in the future from a date in the past, such as =06/15/2008-07/01/2008 , results in a negative date value.
#DIV/0!	Excel displays this error when a number is divided either by zero (0) or by a cell that contains no value.
#N/A	Excel displays this error when a value is not available to a function or formula.
#NAME?	This error is displayed when Excel does not recognize text in a formula. For example, a range name or the name of a function may be spelled incorrectly.
#NULL!	Excel displays this error when you specify an intersection of two areas that do not intersect (cross). The intersection operator is a space character that separates references in a formula. For example, the areas A1:A2 and C3:C5 do not intersect, so entering the formula =SUM(A1:A2 C3:C5) returns the #NULL! error.
	
#NUM!	Excel displays this error when a formula or function contains invalid numeric values.
#REF!	Excel displays this error when a cell reference is not valid. For example, you may have deleted cells that were referred to by other formulas, or you may have pasted cells that you moved on top of cells that were referred to by other formulas.
#VALUE!	Excel can display this error if your formula includes cells that contain different data types. If smart tags are turned on and you position the mouse pointer over the smart tag, the ScreenTip displays "A value used in the formula is of the wrong data type." You can typically fix this problem by making minor changes to your formula.

Part 2

How to...

How to check HP Roles on a profiling report

Supposing that you have to check if your contacts are flagged as Admin and IPG Contact for MDF communication, or if your GMs have the IPG Contact flag as well, to be correctly counted in the reports, you can do this:

1. Pull a report from BOSS, with all the partners in your country and the necessary details:

	A	B	C	D	E	F	G	H	I
	Organization	PartnerAddr Country	Partner Id	Partner Name	Contact Id	First Name	Last Name	Email	HP Role
2	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-13T7WC	Tania	Rosenstam	tania.rosenstam@dustin.se	
3	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-19KIRM	Jonas	Pircher	jonas.pircher@dustin.se	
4	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-1DE8DR	HP	Claims	hp_claims@dustin.se	IPG Contact
5	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-1FWO79	Ylva	Förhammar	ylva.forhammar@dustin.se	
6	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-1K5H7A	Richard	Carlander	richardc@dustin.se	
7	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-22XVXE	Michael	Lagerström	michael.lagerstrom@dustin.se	HPN Contact
8	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-28KKNS	Mattias	Jorlén	mattias.jorlen@dustin.se	
9	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2AJ9MI	Joakim	Seldahl	joakim.seldahl@dustin.se	HPN Contact
10	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2BRT33	Tom	Johansson	tom.johansson@dustin.se	HPN Contact
11	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I2-2419	Mikael	Sjostrand	mikael.sjostrand@dustin.se	HPN Contact
12	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I2-2450	Bruno	Amico	bruno.amico@dustin.se	
13	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I2-2472	Mathias	Eriksson	mathias.eriksson@scribona.se	
14	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I2-2587	Jonas	Silvander	jonas.silvander@dustin.se	HPN Contact
15	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I7-2492	Per-Anders	Barhag	per-anders.barhag@dustin.se	
16	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I7-2496	Kajsa	Melin	kajsa@dustin.se	
17	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I7-2497	Marc	Axelsson	marc.axelsson@dustin.se	
18	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I7-2499	Gunilla	Grefberg	gunilla.grefberg@dustin.se	
19	HP Sweden	Sweden	1-2GF-1296	DUSTIN AB	1-2I7-2500	Per	Gustafsson	per.gustafsson@dustin.se	

2. Select all the cells and create a pivot:

PivotTable Field List

Choose fields to add to report:

☐ Organization
☐ PartnerAddr Country
☐ Partner Id
☐ Partner Name
☒ **Contact Id**
☐ First Name
☐ Last Name
☐ Email
☒ **HP Role**

Drag fields between areas below:

Report Filter

Column Labels

HP Role

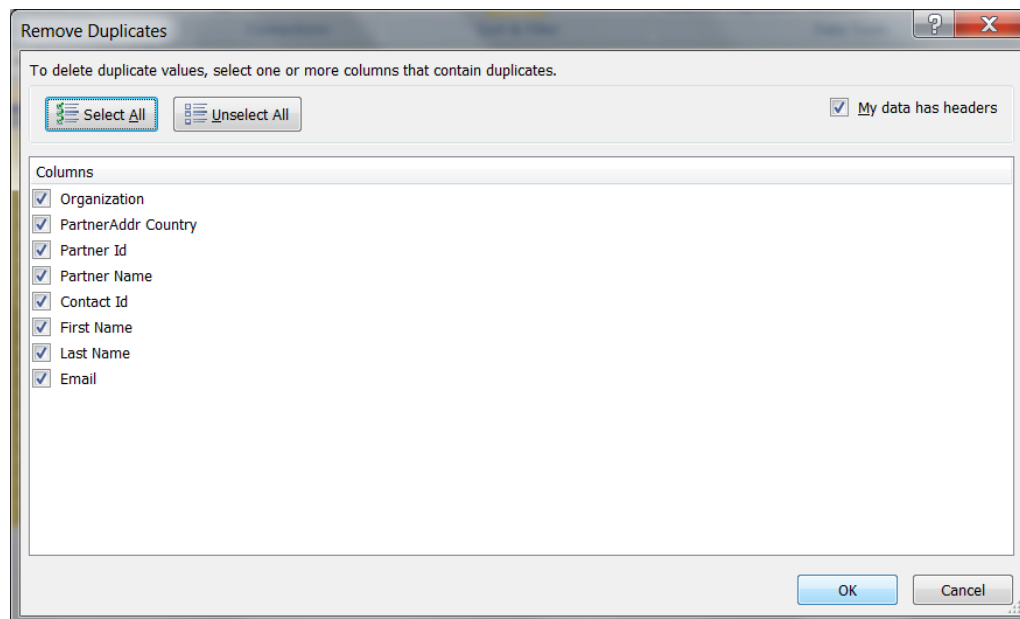
Row Labels

Contact Id

Values

Count of HP Role

3. Return to the original table, delete the **HP role** column, select the **Contact Id** column, and remove the duplicates: Data > Data Tools > Remove Duplicates, and Click Ok to Expand Selection.



4. Normally, now you should only have unique contacts in the list. To check this, select the Contact Id column once again, and go to Conditional formatting > Highlight Cells Rules > Duplicate Values. All the duplicates will be colored:

	A	B	C	D	E	F	G	H
	Organizat	PartnerAddr Coun	Partner	Partner Name	Contact	First Name	Last Name	Email
408	HP Sweden	Norway	1-2GF-185	KONTORAB (SE)	1-2IC-1319	Bosse	Bohman	profilingcleanup@nosource.com
409	HP Sweden	Sweden	1-2GF-185	KONTORAB (SE)	1-2IC-1319	Bosse	Bohman	profilingcleanup@nosource.com
410	HP Sweden	Norway	1-2GF-185	KONTORAB (SE)	1-2IC-1320	Bruno	Carinci	bruno@kontorab.se
411	HP Sweden	Sweden	1-2GF-185	KONTORAB (SE)	1-2IC-1320	Bruno	Carinci	bruno@kontorab.se
412	HP Sweden	Norway	1-2GF-185	KONTORAB (SE)	1-2IC-1321	Fredrik	Pettersson	butangen@kontorab.se
413	HP Sweden	Sweden	1-2GF-185	KONTORAB (SE)	1-2IC-1321	Fredrik	Pettersson	butangen@kontorab.se
671	HP Sweden	Sweden	1-2GF-7	ATEA SVERIGE AB	1-313IO2	Marcus	Randefalk	marcus.randefalk@officeitpartner.se
672	HP Sweden	Sweden	1-2LL7T1	OFFICE IT-PARTNER I SVERIGE AB	1-313IO2	Marcus	Randefalk	marcus.randefalk@officeitpartner.se
699	HP Sweden	Sweden	1-2GF-186	OFFICE DEPOT SVERIGE AB	1-3A7E-1	Åke	Norström	ake.norstrom@officedepot.com
700	HP Sweden	Sweden	1-2GN-1797	SVANSTRÖMS (SE)	1-3A7E-1	Åke	Norström	ake.norstrom@officedepot.com
732	HP Sweden	Norway	1-2GF-185	KONTORAB (SE)	1-3OI3-683	Jessica	Hvid	jessica.hvid@kontorab.se
733	HP Sweden	Sweden	1-2GF-185	KONTORAB (SE)	1-3OI3-683	Jessica	Hvid	jessica.hvid@kontorab.se
865	HP Sweden	Norway	1-2GF-185	KONTORAB (SE)	1-5ZHC6Q	Thomas	Johansson	thomas.johansson@kontorab.se
866	HP Sweden	Sweden	1-2GF-185	KONTORAB (SE)	1-5ZHC6Q	Thomas	Johansson	thomas.johansson@kontorab.se
1253	HP Sweden	Norway	1-2GF-185	KONTORAB (SE)	1-BYGGPU	Gabriella	Engström	gabriella.engstrom@kontorab.com
1254	HP Sweden	Sweden	1-2GF-185	KONTORAB (SE)	1-BYGGPU	Gabriella	Engström	gabriella.engstrom@kontorab.com
1311	HP Sweden	Sweden	1-2GF-186	OFFICE DEPOT SVERIGE AB	1-EZF-GO	Martin	Holdar	martin.holdar@officedepot.com
1312	HP Sweden	Sweden	1-2GN-1797	SVANSTRÖMS (SE)	1-EZF-GO	Martin	Holdar	martin.holdar@officedepot.com
1637								
1638								
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1648								

You must check and eliminate these as well, to have all unique Contact Ids in the table, and then you sort the column A – Z.

- Go to the pivot, sort the Contact Id column A – Z as well, then copy the entire pivot and paste it at the right of the initial table:

The screenshot shows an Excel spreadsheet with a table of contact information and a pivot table. The table has columns for Contact ID, First Name, Last Name, and Email. The pivot table is located to the right of the table, with Row Labels and columns for various categories including Admin, Co, Contracts, General, HP, and IPG.

Contact	First Name	Last Name	Email
1-102MOE	Kent	Hård	kent.hard@tlf.se
1-102XS6	Christian	Fredriksson	christian.fredriksson@kontorsspecial.se
1-102XNIM	Erik	Magnusson	erik.magnusson@kontorsspecial.se
1-102EXY	Peter	Knafe	peter.knafe@lanassians.se
1-110QIE	Ulrika	Pettersson	ulrika.pettersson@atea.se
1-110EHC	Lena	Selling	lena.selling@kerfi.com
1-12824R	Urban	Lindgarde	urban.lindgarde@dialect.se
1-12843N	Trond	Fikseunet	trond.fikseunet@wulfssupplies.no
1-139U6M	Stefan	Lindström	stefan.lindstrom@tlf.se
1-139U6W	Johan	Bergh	johan.bergh@tlf.se
1-13HVOR	Mikael	Lundahl	mikael.lundahl@wulfssupplies.se
1-136GNP	Ann	Johansson	ann.johansson@olson.se
1-136G00	Ann-Greth	Bengtsson	ann-greth.bengtsson@olson.se
1-136GOL	Sara	Johansson	sara.johansson@olson.se
1-136GOW	Anders	Dahlstedt	anders.dahlstedt@olson.se
1-136PI	Astrid	Wendt	astrid.wendt@olson.se
1-137WVC	Tania	Rosenstam	tania.rosenstam@dustin.se
1-137YH5	Maria	Erestal	maria.erestal@telecomputing.se
1-137YOB	Anders	Alerfeldt	anders.alerfeldt@tlf.se
1-17DQP9	Anna-Karin	Lirius	anna-karin.lirius@olson.se
1-17DQOR	Pia	Efraimsson	pia.efraimsson@olson.se
1-18W8Q	Fredrik	Hult	fredrik.hult@inwarehouse.se
1-18WIAE	John	Lindquist	john.lindquist@inwarehouse.se
1-18WIAO	Rikardh	Hedlund	rikardh.hedlund@inwarehouse.se
1-19ATH9	Jenny	Jakobs	jenny.jakobs@lanassians.se
1-19E1IU	Patric	Eklind	patric.ekind@kerfi.com
1-19ELSY	Magnus	Jahr	magnus.jahr@gullbergs.com
1-19KIRM	Jonas	Pircher	jonas.pircher@dustin.se
1-19M65C	Malin	Hallberg	malin.hallberg@atea.se
1-19PNNU	Dan	Jacobsen	dan.jacobsen@imvid.se

The pivot table is located to the right of the table, with Row Labels and columns for various categories including Admin, Co, Contracts, General, HP, and IPG.

- To check that the contact Ids correspond, type **=I2=E2** in the next available Column, and copy the formula down to the last row. All rows should return **TRUE**.
- Now you can delete all the unnecessary columns, refresh the filter (select the top row and press **Ctrl+Shift+L** twice), and you finally have the report you need.
- For MDF checking, you select 1 on Admin Contacts and 1 on IPG Contacts.
- For GM checking, well... you get the point! ;)

How to create a budget upload from a Marketing Plan

If you need to know the total amount per partner, in a Marketing Plan, either for upload and check against the Budget Upload Sheet, you can easily create a pivot:

1. Select all the cells you need from the Marketing Plan
2. Create a pivot (Insert > Pivot > Pivot Table), with the following selection:

PivotTable Field List

Choose fields to add to report:

- ☐ Activity status
- ☐ Activity updated/ finalized on (date)
- ☒ **Partner Pro ID**
- ☒ **Partner Name**
- ☐ HP Organization
- ☒ **Fund Type**
- ☐ Fund Period(Q3 or Q4)
- ☒ **Partner Led/MSA Led**
- ☐ Currency (EUR/USD)
- ☐ Activity Start Date
- ☐ Activity End Date

Drag fields between areas below:

Report Filter

Column Labels

- Fund Type
- Partner Led/MSA Led

Row Labels

- Partner Pro ID
- Partner Name

Values

- Sum of HP Contribution

☐ Defer Layout Update

Update

3. Your Pivot will now have all the information that you need:

Sum of HP Contribution		Column Labels		IPG LES Total	PL 30	PL 30 Total	Grand Total
		IPG LES					
Row Labels	MSA Led	Partner led		Partner led			
1-2N4-1875		12000		12000			12000
Scriptor technology		12000		12000			12000
1-2N0-102	6500	3000		9500			9500
KONTOR SYD		3000		3000			3000
Kontorsyd	6500			6500			6500
1-2N0-104		8000		8000			8000
CC&CO		8000		8000			8000
1-2N0-105		138880		138880			138880
ATEA DANMARK		138880		138880			138880
1-2N0-177		4000		4000			4000
SHG.DK		4000		4000			4000
1-2N0-195		30000		30000			30000
Lyreco		30000		30000			30000
1-2N0-220		19000		19000			19000
Zap-In		16000		16000			16000
ZAP-IN ÅRHUS		3000		3000			3000
1-2N0-265		4000		4000			4000
COMM/2		4000		4000			4000
1-2N0-729		3000		3000			3000
OPIN KERFI CRS		3000		3000			3000
1-2N4-1835	11000			11000			11000
ScanOffice	11000			11000			11000
1-2N4-1885		16000		16000			16000
LOMAX		16000		16000			16000
1-2N4-506		9000		9000			9000
FLC DANMARK		9000		9000			9000
1-2N4-532	2000	15000		17000			17000
SERVICEGRUPPEN FOR DAT	2000	15000		17000			17000
1-2N8-1277	3500	2500		6000			6000
PENNINN	3500	2500		6000			6000
1-2N8-512		9000		9000			9000
STAPLES DENMARK		9000		9000			9000
1-2N8-806		2000		2000			2000
DANOFFICE		2000		2000			2000
1-2N8-864		46800		46800	3000	3000	49800
DUSTIN		46800		46800	3000	3000	49800
1-4BFL0		35000		35000			35000
DIGITAL HOUSE		35000		35000			35000
1-9DYYON		5000		5000			5000
KOBUZ		5000		5000			5000
Grand Total	23000	362180		385180	3000	3000	388180

You'll have the total amount/partner, that total amount/fund, and split into MSA Led/
Partner Led.

To make sure that the selected fund type at the beginning also reflects in the Fund Name and Name of Marketing plan, you can easily use this trick:

- | | E | F | G | H | I | J | AB | | AC | AD | AQ | AR | |
|----|----------------|---------------|-----------------|-----------|------------------------|---------------------|--|--|---|----|----|----|--|
| 1 | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 4 | Partner Pro ID | Partner Name | HP Organization | Fund Type | Fund Period (Q3 or Q4) | Partner Led/MSA Led | Name of Marketing plan | | Fund Name (Name of fund (budget) which will pay the HP portion of the cost) | | | | |
| 5 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 6 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 7 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 8 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 9 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 10 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 11 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 12 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 13 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - ATEA DANMARK | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 14 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - Atea | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 15 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - Atea | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 16 | 1-2N0-105 | ATEA DANMARK | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - C&CO | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 17 | 1-2N0-104 | C&CO | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - C&CO | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 18 | 1-2N0-104 | C&CO | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - C&CO | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 19 | 1-2N0-104 | C&CO | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - C&CO | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 20 | 1-2N0-265 | COMM/2 | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - COMM/2 | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 21 | 1-2N0-806 | DANOFFICE | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - DANOFFICE | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 22 | 1-4BFKLO | DIGITAL HOUSE | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - DIGITAL HOUSE | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 23 | 1-4BFKLO | DIGITAL HOUSE | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - DIGITAL HOUSE | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 24 | 1-4BFKLO | DIGITAL HOUSE | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - DIGITAL HOUSE | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |
| 25 | 1-4BFKLO | DIGITAL HOUSE | HP Denmark | IPG LES | FY11 Q4 | Partner led | IPG FY11 LES Partner led - DIGITAL HOUSE | | IPG FY11 Q4 HP Denmark LES Partner led | | | | |

- SEARCH** returns the position of the text you are searching for, within another text. So, if it returns a valid number, the fund types are the same. Otherwise, it will return an error. Also, **SEARCH** is not case-sensitive, so it will recognize “Partner led” in “Partner Led” as well.


[illegible]

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	J	AB	AC	AP	AQ
	Partner Led/ MSA Led	Name of Marketing plan	Fund Name (Name of fund [budget] which will pay the HP portion of the cost for the Activity)		
	Partner led	IPG FY11 LES Partner led - FLC DANMARK	IPG FY11 Q4 HP Denmark LES Partner led		28
	Partner led	IPG FY11 LES Partner led - FLC DANMARK	IPG FY11 Q4 HP Denmark LES Partner led		28
	Partner led	IPG FY11 LES Partner led - KOBUZ	IPG FY11 Q4 HP Denmark LES MSA led	Wrong Name	
	Partner led	IPG FY11 LES Partner led - KONTOR SYD	IPG FY11 Q4 HP Denmark LES Partner Led		28
	Partner led	IPG FY11 LES Partner led - LOMAX	IPG FY11 Q4 HP Denmark LES Partner led		28
	Partner led	IPG FY11 LES Partner led - LOMAX	IPG FY11 Q4 HP Denmark LES Partner led		28
	Partner led	IPG FY11 LES Partner led - LOMAX	IPG FY11 Q4 HP Denmark LES Partner led		28

How to check for blank cells in a Marketing Plan

To check if there are blank cells in the Plan (a common rejection reason from MIF), you can insert, at the end of the first column (cell E57 in this case), the function **=COUNTBLANK(E5:E56)** and copy it until the last column of the plan:

E57	=COUNTBLANK(E5:E56)					
	E	F	G	H	I	J
1						
2						
3						
4	Partner Pro ID	Partner Name	HP Organization	Fund Type	Fund Period (Q3 or Q4)	Partner Led/MSA Led
55	1-2N0-220	Zap-In	HP Denmark	IPG LES	FY11 Q4	Partner led
56	1-2N0-220	ZAP-IN ÅRHUS	HP Denmark	IPG LES	FY11 Q4	Partner led
57	0	0	0	0	0	0
58						
59						
60						

This way you can easily identify if there are any blank cells in the mandatory columns for upload, like the Justification column:

AE57	=COUNTBLANK(AE5:AE56)				
	AA	AB	AC	AD	AE
1					
2					
3					
4	ROMI (min 9)	Name of Marketing plan	Fund Name (Name of fund [budget] which will pay the HP portion of the cost for the Activity)	Business Unit #1	Justification * (Automatically = objective)
55	5	IPG FY11 LES Partner led - Zap-In	IPG FY11 Q4 HP Denmark LES Partner led	IPG	S1 (CRM): Loyal Ink Supplies customers campaign
56	9,2	IPG FY11 LES Partner led - ZAP-IN ÅRHUS	IPG FY11 Q4 HP Denmark LES Partner led	IPG	S5 (Co-Mktg): Partner Defined Officejet Pro activity
57	4		0	0	1
58					
59					
60					

How to check the values correspondence in a Marketing Plan

To check the correctness and correspondence of the amounts in the plan, you just have to compare them, creating simple equations:

1. Hide all the unnecessary columns, keeping only those you need

	E	F	W	X	Y	Z	AG	AH	AN	AR
1										
2										
3										
4		Partner Pro ID	Partner Name	Est. Total Activity Cost	HP Contribution	Partner Contribution	Contribution HP (%) (should not exceed HP Funding Guidelines)	Allocated Budget (Automat)	Currency Code (Automatically = Activity Currency Code)*	
5	1-2N0-105	ATEA DANMARK	2.000.000	45.000	195.500	2,3%	45.000,00	USD		
6	1-2N0-105	ATEA DANMARK	175.000	16.000	159.000	9,1%	5.000,00	USD		
7	1-2N0-105	ATEA DANMARK	150.000	5.000	145.000	3,3%	5.000,00	USD		
8	1-2N0-105	ATEA DANMARK	150.000	5.000	145.000	3,3%	5.000,00	USD		
9	1-2N0-105	ATEA DANMARK	750.000	15.000	735.000	2,0%	15.000,00	USD		
10	1-2N0-105	ATEA DANMARK	500.000	20.000	480.000	4,0%	20.000,00	USD		
11	1-2N0-105	ATEA DANMARK	100.000	2.000	98.000	2,0%	2.000,00	USD		
12	1-2N0-105	ATEA DANMARK	200.000	7.100	192.900	3,6%	7.100,00	USD		
13	1-2N0-105	ATEA DANMARK	50.000	1.500	48.500	3,0%	1.500,00	USD		
14	1-2N0-105	ATEA DANMARK	10.000	2.280	7.720	22,8%	2.280,00	USD		
15	1-2N0-105	ATEA DANMARK	12.000	10.000	2000	83%	10.000,00	USD		
16	1-2N0-105	ATEA DANMARK	12.000	10.000	2000	83%	10.000,00	USD		
17	1-2N0-104	CC&CO	6.000	3.000	3.000	50,0%	3.000,00	USD		
18	1-2N0-104	CC&CO	6.000	3.000	3.000	50,0%	3.000,00	USD		

2. In the next free column, type **=W5=X5+Y5** and copy it until the last row of the plan. The function will return **TRUE** for every Total Activity Cost that equals the sum between HP Contribution and Partner Contribution. **FALSE** will indicate you an error in the plan:

	A05									
1										
2										
3										
4		Partner Pro ID	Partner Name	Est. Total Activity Cost	HP Contribution	Partner Contribution	Contribution HP (%) (should not exceed HP Funding Guidelines)	Allocated Budget (Automat)	Currency Code (Automatically = Activity Currency Code)*	
5	1-2N0-105	ATEA DANMARK	2.000.000	45.000	195.500	2,3%	45.000,00	USD		FALSE
6	1-2N0-105	ATEA DANMARK	175.000	16.000	159.000	9,1%	5.000,00	USD		TRUE
7	1-2N0-105	ATEA DANMARK	150.000	5.000	145.000	3,3%	5.000,00	USD		TRUE
8	1-2N0-105	ATEA DANMARK	150.000	5.000	145.000	3,3%	5.000,00	USD		TRUE
9	1-2N0-105	ATEA DANMARK	750.000	15.000	735.000	2,0%	15.000,00	USD		TRUE

3. A similar comparison can be used to check the HP contribution % in the Total Cost (**=Z5=X5/W5**), or if the Allocated Budget = HP contribution (**=AG5=X5**).

How to create Variable Dropdown Lists

Suppose you have a list of members of staff, split into teams. You might want to select a team from a drop down list, and then be able to select a member of that team from a second drop down list.

In order to do this, you need to begin with a list of members of each team, as shown below:

	A	B	C
1	Admin	Sales	Development
2	Bernard	Jay	Calvin
3	Carol	Leslie	Kirk
4	Duncan	Maureen	Owen
5	Veronica	Norman	Peter
6	Walter	Victor	Wilf

You also need to create a range of cells that will show the team members for any selected team. In the case of the example above, the team name could be typed into cell G2, and then a formula in cells E2-E6 could return the members of the selected team.

In the example above, the following formula, which combines the Hlookup and the Row functions, would produce the names of the team members for any team name entered into cell G2:

=HLOOKUP(\$G\$2, \$A\$1:\$C\$6, ROW(), 0)

This is shown in the spreadsheet below.

	A	B	C	D	E	F	G
1	Admin	Sales	Development		=G\$2		Team Name:
2	Bernard	Jay	Calvin		=HLOOKUP(\$G\$2, \$A\$1:\$C\$6, ROW(), 0)		Admin
3	Carol	Leslie	Kirk		=HLOOKUP(\$G\$2, \$A\$1:\$C\$6, ROW(), 0)		
4	Duncan	Maureen	Owen		=HLOOKUP(\$G\$2, \$A\$1:\$C\$6, ROW(), 0)		
5	Veronica	Norman	Peter		=HLOOKUP(\$G\$2, \$A\$1:\$C\$6, ROW(), 0)		
6	Walter	Victor	Wilf		=HLOOKUP(\$G\$2, \$A\$1:\$C\$6, ROW(), 0)		

In the above spreadsheet the formula "**=G\$2**" is used to reflect the selected team name in cell E1 and the Hlookup formula in cells E2-E6 is used to display the members of the selected team.

A drop down list that takes its possible values from cells E2-E6 will therefore also depend on the value of cell G2.

Now just create a drop-down list in cell G4, using Data_VValidation feature.

This result is shown below.

	A	B	C	D	E	F	G
1	Admin	Sales	Development		Admin		Team Name:
2	Bernard	Jay	Calvin		Bernard		Admin
3	Carol	Leslie	Kirk		Carol		Select Team Member:
4	Duncan	Maureen	Owen		Duncan		
5	Veronica	Norman	Peter		Veronica		Bernard
6	Walter	Victor	Wilf		Walter		Carol
7							Duncan
8							Veronica
							Walter

To make your spreadsheet look that bit more professional, it is a good idea to hide columns A-C, which contain the original data, or place this data onto a different worksheet.

A further finishing touch could be to add a further drop-down list to cell G2, from which a team name can be selected. This therefore means that your final sheet has a drop-down list, that varies, depending on the selection from another drop-down list.

	D	E	F	G
1		Admin		Team Name:
2		Bernard		Admin
3		Carol		Admin
4		Duncan		Sales
5		Veronica		Development
6		Walter		

If you have to search for MSA Claim Forms only for the **some given approved activities** during the quarter, you can do this:

1. Go to the Claim Forms file, to the right quarter spreadsheet, and select your Organization.
2. Copy the IDs from the source (email, file given by the requester) and paste them at the end of the Activity ID column (K) in your Spreadsheet, selecting "Match destination formatting", to align the format as much as possible.

Excel 2010 interface showing the ribbon (File, Home, Insert, Page Layout, Formulas, Data, Review, View) and the main worksheet area. The worksheet contains a table with columns: MSA ID, Claim Expiration Date, Organization, Partner Name, Partner ID, Lead PBM, Plan, Plan Period, Objective, Activity, Activity ID, Activity Type, Activity Status, and Account. The table lists various MSA IDs (e.g., 11/30/2011, 11/30/2011, 11/30/2011, 11/30/2011) and their corresponding details. A dropdown menu is visible for the 'Activity ID' column, showing options like 1-CT430L, 1-CUST724, 1-CQV72, 1-CQV2P, 1-CT430L, 1-CUSTW99, 1-CUSTW99, 1-CUST724, 1-CUST724, 1-CUST724.

3. Make sure you have no empty rows between the Claim Forms table and the copied activities, and no additional spaces in your copied cells.
 - You can check if there are additional unspotted spaces in the cell, using the function **=LEN(<activity ID cell>)**, if the result is greater than 8, the normal length of an activity ID, then you'll know that additional characters are given by spaces.
 - In this case, you can remove them using the function **=TRIM(<activity ID cell>)**, to clean the cells, and apply the LEN function again, to see if now your activity IDs have 8 characters.
 - If you still have greater lengths, this may be due to spaces put at the beginning, which are not detected by TRIM, so you may use the function **=RIGHT(<activity ID cell>,8)**.

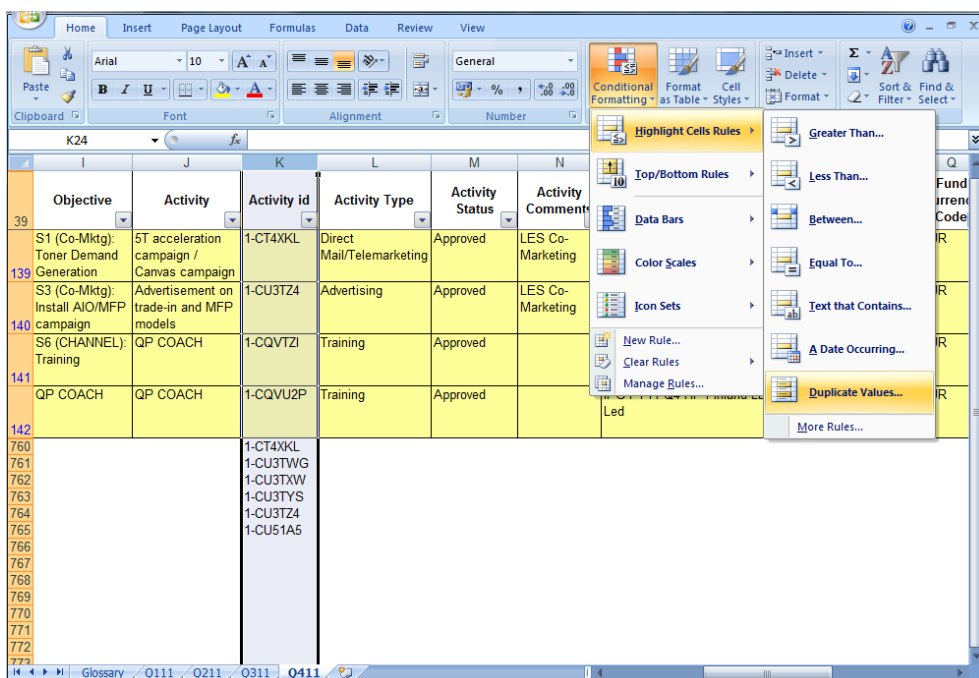
L142		fx =LEN(K142)					
	J	K	L	M	N	O	P
	Activity	Activity id	Activity Type	Activity Status	Activity Comments	Fund	Fund Quarter
39	QP COACH	1-CQVTZI	Training	Approved		IPG FY11 Q4 HP Finland LES MSA Led	2011-Q4
141	QP COACH	1-CQVU2P		Approved		IPG FY11 Q4 HP Finland LES MSA Led	2011-Q4
142			8				
760		1-CT4XKL	9	1-CT4XKL	8	1-CT4XKL	8
761		1-CU3TWG	9	1-CU3TWG	8	1-CU3TWG	8
762		1-CU3TXW	10	1-CU3TXW	9	1-CU3TXW	8
763		1-CU3TYS	10	1-CU3TYS	9	1-CU3TYS	8
764		1-CU3TZ4	10	1-CU3TZ4	9	1-CU3TZ4	8
765		1-CU51A5	10	1-CU51A5	9	1-CU51A5	8
766	K766		=LEN(K766)	=TRIM(K766)	=LEN(K766)	=RIGHT(M766)	=LEN(K766)
767							
768							

4. Now the activity IDs will have the correct length, so you may copy them and **Paste as values** at the end of the K Column, deleting all the additional computing.

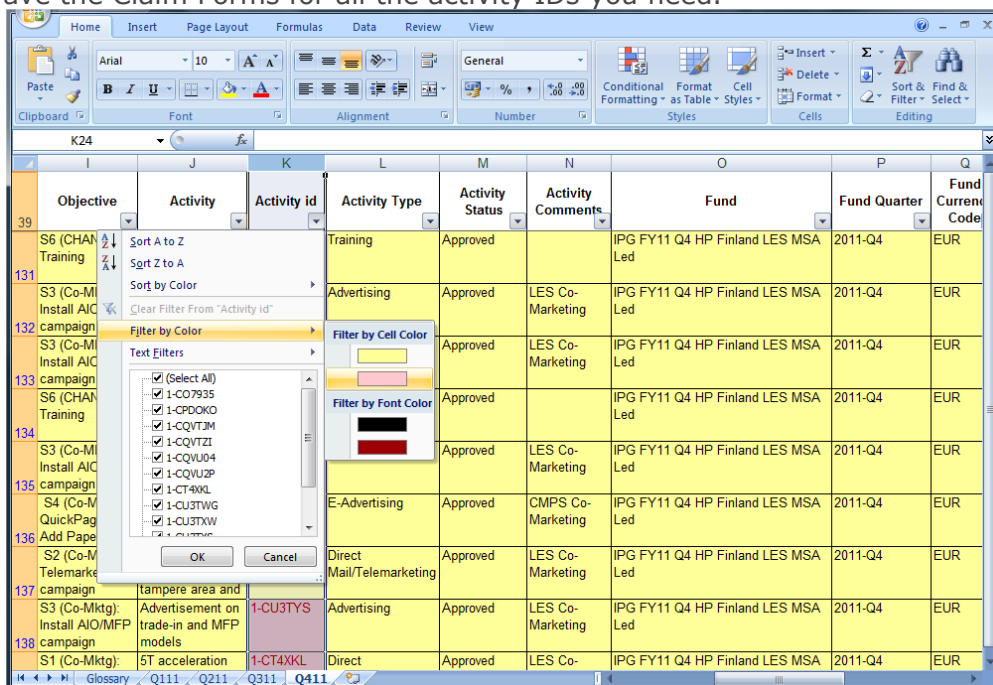
K760		fx		=RIGHT(I760,8)			
	J	K	L	M	N	O	P
	Activity	Activity id	Activity Type	Activity Status	Activity Comments	Fund	Fund Quarter
39	QP COACH	1-CQVTZI	Training	Approved		IPG FY11 Q4 HP Finland LES MSA Led	2011-Q4
141	QP COACH	1-CQVU2P		Approved		IPG FY11 Q4 HP Finland LES MSA Led	2011-Q4
142			8				
760			0		0		0
761			0		0		0
762			0		0		0
763			0		0		0
764			0		0		0
765			0		0		0
766	K766		=TRIM(K766)	=LEN(K766)	=RIGHT(M766)	=LEN(K766)	
767							
768							
769							
770							
771							
772							
773							
774							
775							
776							
777							
778							
779							

<

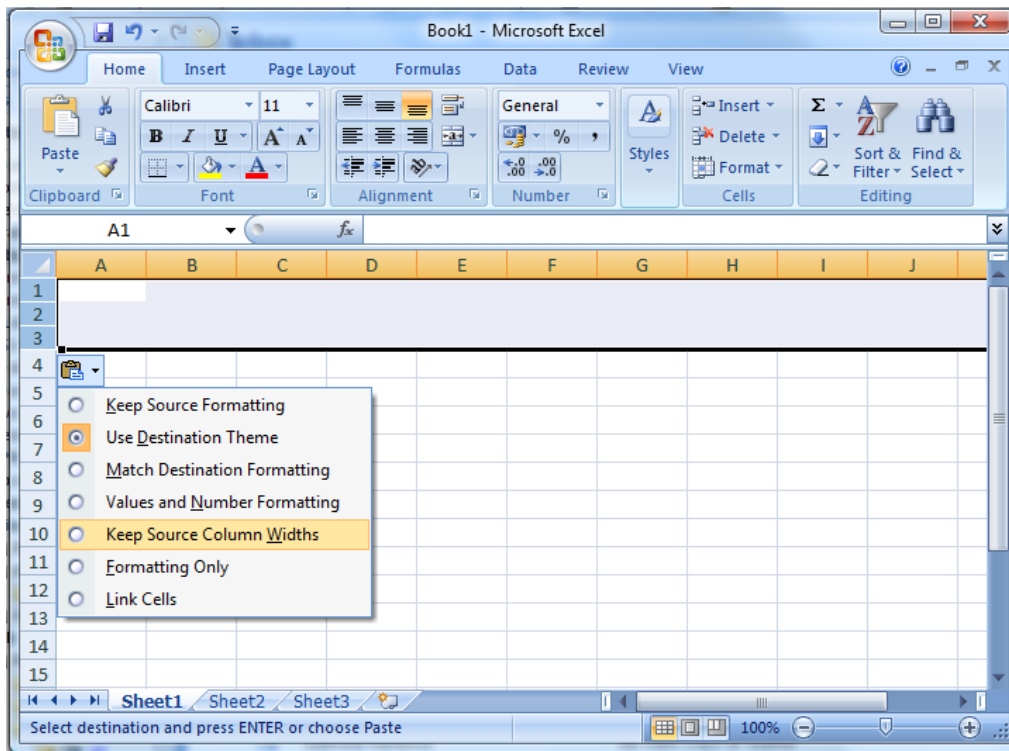
5. Select the whole column K, go to **Conditional formatting > Highlight Cells Rules > Duplicate Values**. This way the duplicates will be colored differently from the rest of the IDs. If one or more of the IDs you pasted is not colored, it means they are not on the respective sheet (they may belong to other quarters):



6. Using the filter, you can then select all the activities needed, filtering by color. You now have the Claim Forms for all the activity IDs you need.

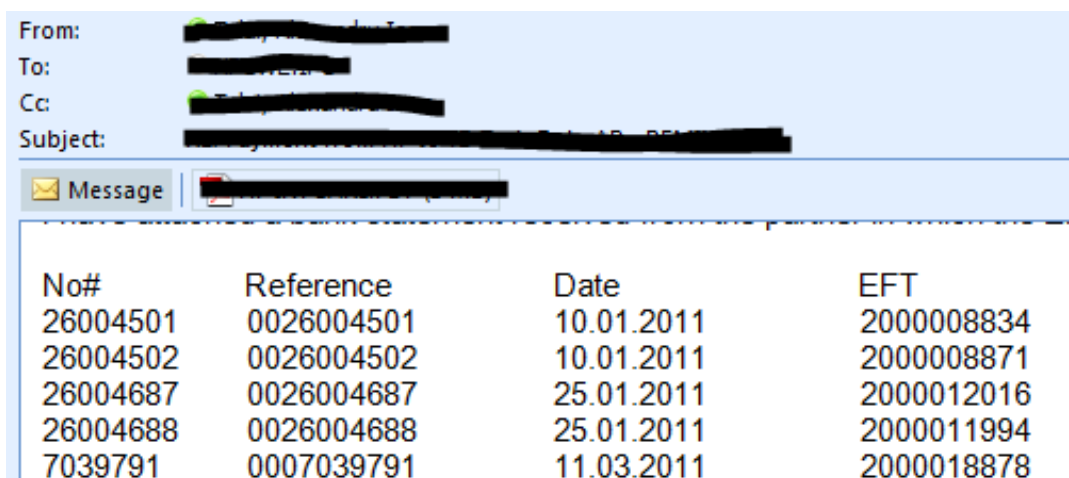


TIP! If you want to keep the original layout of the Claim Forms (when copied to a new book, the columns are all shrunk and cannot be changed), copy some empty rows of the original file, paste them into your new book, selecting **Keep Source Column Widths**, and then select and paste the Claim Forms.



How to convert text to columns

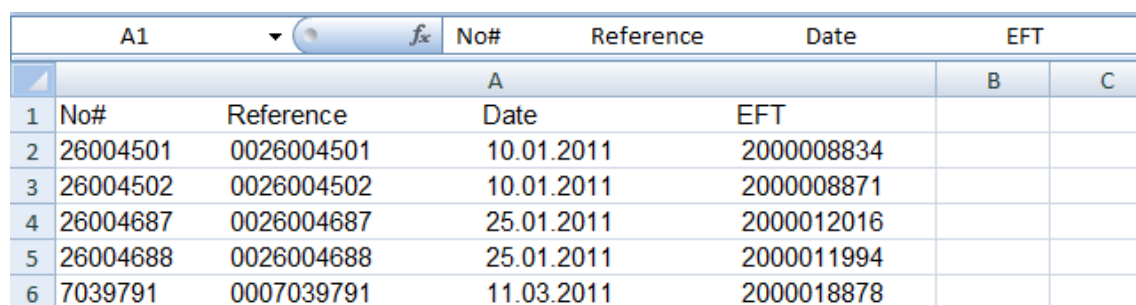
In case someone writes a mail and creates a table right there in the mail (without copy pasting it from another source), the figures will show like this:



The screenshot shows an email header with 'From:', 'To:', 'Cc:', and 'Subject:' fields, all containing redacted information. Below the header is a 'Message' tab. The main content of the email is a table with four columns: 'No#', 'Reference', 'Date', and 'EFT'. The table contains five rows of data.

No#	Reference	Date	EFT
26004501	0026004501	10.01.2011	2000008834
26004502	0026004502	10.01.2011	2000008871
26004687	0026004687	25.01.2011	2000012016
26004688	0026004688	25.01.2011	2000011994
7039791	0007039791	11.03.2011	2000018878

If we try to copy this in an excel it will look like this:



The screenshot shows an Excel spreadsheet. The formula bar at the top shows 'A1'. The spreadsheet has columns labeled 'No#', 'Reference', 'Date', and 'EFT'. The data is pasted into column A, starting from row 1. The first row (row 1) contains the headers 'No#', 'Reference', 'Date', and 'EFT'. The subsequent rows (rows 2-6) contain the data from the email table.

	No#	Reference	Date	EFT
1	No#	Reference	Date	EFT
2	26004501	0026004501	10.01.2011	2000008834
3	26004502	0026004502	10.01.2011	2000008871
4	26004687	0026004687	25.01.2011	2000012016
5	26004688	0026004688	25.01.2011	2000011994
6	7039791	0007039791	11.03.2011	2000018878

As you may notice, all the text/figures have been noted under column A/line

Of course this looks rather confusing and we can't really use this in a report, so what we can do in this case is to try and convert this back to a table:

1. We select the data
2. We copy paste it into an excel file
3. We select the data and go to Data > Text to columns. Here we have several options to choose from, in accordance to our needs. If we want excel to delimit the text by space then we leave delimited and select space at the second tab option., which can ultimately lead to a delimitation that can be further used in formula:

	A	B	C	D
1	No#	Reference	Date	EFT
2	26004501	0026004501	10.01.2011	2000008834
3	26004502	0026004502	10.01.2011	2000008871
4	26004687	0026004687	25.01.2011	2000012016
5	26004688	0026004688	25.01.2011	2000011994
6	7039791	0007039791	11.03.2011	2000018878

How to use freeze panes on a CAT report

In case we want to run a report from CAT but the resulting excel file is very big and if we scroll down we might confuse which column is assigned to what data, then we can freeze the top pane by going to View > Freeze panes > Freeze top row

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	PROGR	SEGME	REBATE	PERIOD	COMP	PARTN	COUNT	REGION	ACCOU	PL	MONTH	TARGET	TARGET	CAP PE	ACTUAL	ADJUST	ACHIEV	ADJUST	REBATE	QUALITY	BONUS	ADJUST
32	DCP Suppl Depths EN Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		AU	2011-2	0	0	0	3352.07		0	0	0	100	0	
33	DCP Suppl Depths EN Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		AU	2011-3	0	0	0	4025.67		0	0	0	100	0	
34	DCP Suppl Depths EN Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		AU	2011-4	100	74.13	0	2123.38		12816.84		0.01	100	95.01	
35	DCP Suppl Depths EN Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		UK	2011-2	0	0	0	43313.22		0	0	0	100	0	
36	DCP Suppl Depths EN Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		UK	2011-3	0	0	0	35260.62		0	0	0	100	0	
37	DCP Suppl Depths EN Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		UK	2011-4	100	74.13	0	26374.02		141572.7		0.01	100	1049.48	
38	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		1N	2011-2	0	0	0	701804.3		0	0	0	100	0	
39	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		1N	2011-3	0	0	0	1146670		0	0	0	100	0	
40	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		1N	2011-4	1000	741.3	0	778291.1		354345.8		0.003	100	7880.3	
41	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		5T	2011-2	0	0	0	108568.5		0	0	0	100	0	
42	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		5T	2011-3	0	0	0	107634.5		0	0	0	100	0	
43	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		5T	2011-4	1000	741.3	0	80994.34		40091.37		0.003	100	891.59	
44	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		7A	2011-2	0	0	0	835.88		0	0	0	100	0	
45	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		7A	2011-3	0	0	0	606.49		0	0	0	100	0	
46	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		7A	2011-4	1000	741.3	0	362.62		243.491		0.003	100	5.41	
47	DCP Suppl Retail Foc Top produ	Q2-11			1-14E-13	INGRAM N Italy		West Europe		AU	2011-2	0	0	0	23027.45		0	0	0	100	0	

In case we want to freeze several columns and rows we can go to a cell and then go to View > Freeze panes, it will then freeze all the columns and rows before the selected cell (for example if you select cell E5 it will freeze rows 1 to 5 and columns A to E)

	A	B	C	D	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1	PROGR	SEGME	REBATE	PERIOD	REGION	ACCOU	PL	MONTH	TARGET	TARGET	CAP PE	ACTUAL	ADJUST	ACHIEV	ADJUST	REBATE	QUALITY	BONUS	ADJUST	CURREN	STATUS	
2	DCP Suppl Breadth EI Events - ri	Q2-11			West Europe		1N	2011-2	0	0	0	780		100		25	100	14455.35		Euro	Result Confirmed	
3	DCP Suppl Breadth EI Events - ri	Q2-11			West Europe		1N	2011-3	0	0	0	853		100		25	100	15808.22		Euro	Result Confirmed	
4	DCP Suppl Breadth EI Events - ri	Q2-11			West Europe		1N	2011-4	0	0	0	803		100		25	100	14881.6		Euro	Result Confirmed	
104	DCP Suppl Depths EA Top produ	Q2-11			West Europe		UK	2011-2	0	0	0	146103		0	0	0	100	0		Euro	New	
105	DCP Suppl Depths EA Top produ	Q2-11			West Europe		UK	2011-3	0	0	0	216979		0	0	0	100	0		Euro	New	
106	DCP Suppl Depths EA Top produ	Q2-11			West Europe		UK	2011-4	100	74.13	0	168568.4		717186.5		0.01	100	5316.5		Euro	Result Confirmed	
107	DCP Suppl Retail Foc Top produ	Q2-11			West Europe		1N	2011-2	0	0	0	86360.72		0	0	0	100	0		Euro	New	
108	DCP Suppl Retail Foc Top produ	Q2-11			West Europe		1N	2011-3	0	0	0	139190.7		0	0	0	100	0		Euro	New	
109	DCP Suppl Retail Foc Top produ	Q2-11			West Europe		1N	2011-4	1000	741.3	0	1132851		183246		0.003	100	4075.21		Euro	Result Confirmed	
110	DCP Suppl Retail Foc Top produ	Q2-11			West Europe		5T	2011-2	0	0	0	55079.36		0	0	0	100	0		Euro	New	
111	DCP Suppl Retail Foc Top produ	Q2-11			West Europe		5T	2011-3	0	0	0	82166.2		0	0	0	100	0		Euro	New	
112	DCP Suppl Retail Foc Top produ	Q2-11			West Europe		5T	2011-4	1000	741.3	0	105369.7		32728.35		0.003	100	727.85		Euro	Result Confirmed	
113	DCP Suppl Retail Foc Top produ	Q2-11			West Europe		7A	2011-2	0	0	0	1746.52		0	0	0	100	0		Euro	New	
114	DCP Suppl Retail Foc Top produ	Q2-11			West Europe		7A	2011-3	0	0	0	551.02		0	0	0	100	0		Euro	New	

Whenever you want to unfreeze the columns and rows you can just go to View > Unfreeze panes

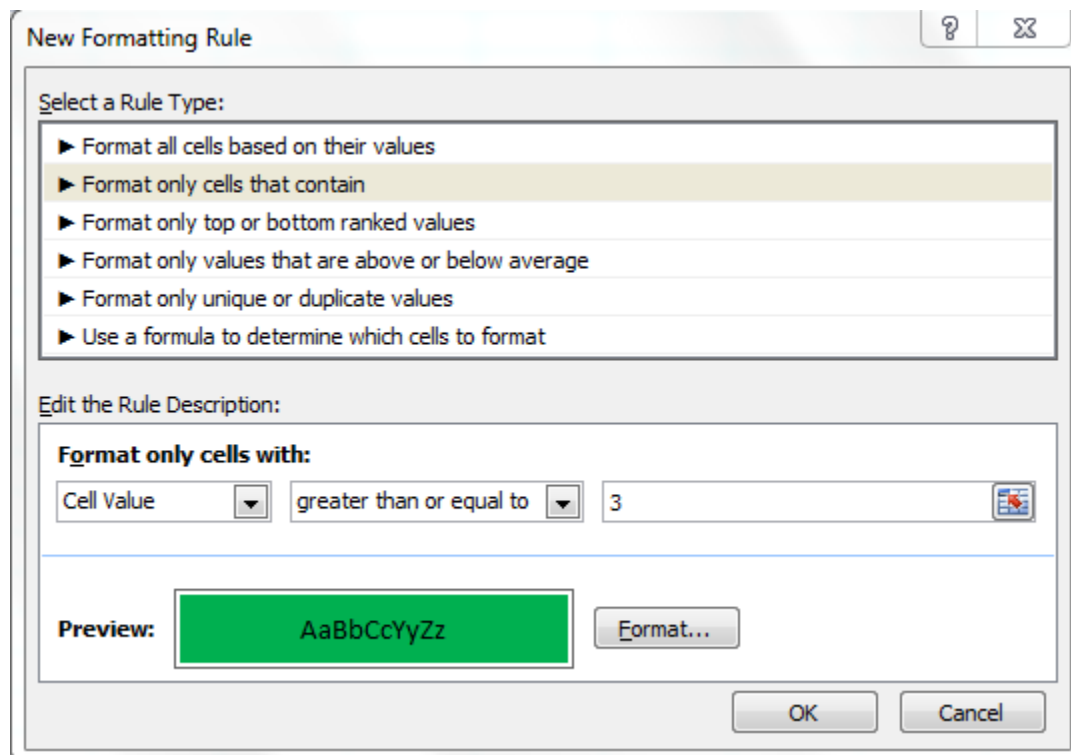
Please note that you can only have one freeze panes rule on a worksheet at a time, if you want to change it you will need to unfreeze the previous one and create a new one.

How to highlight desired cells on a WOS LFM Top 50 report

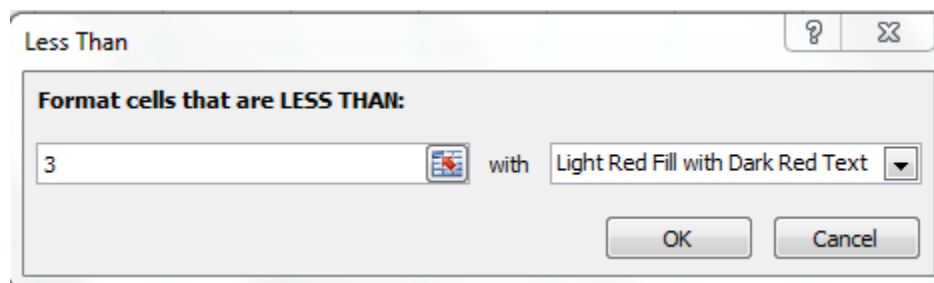
We are interested in highlighting the cells greater or equal to 3 with green while the ones with less than 2 must have red.

1. We select the column that we want to place a conditional formatting rule on (in our case column "wos")
2. We go to Conditional Formatting > New rule

Here we have the following rule creation:



3. While having the same column selected we go to Conditional Formatting > Highlight Cells Rule > Less than ...

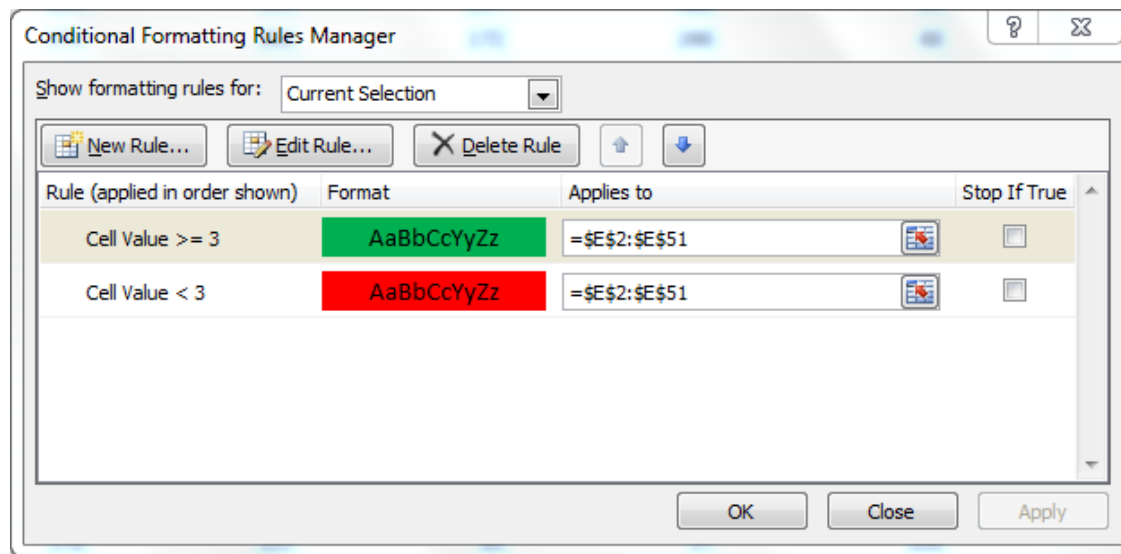


Our table will now show:

	A	B	C	D	E	F	G	H	I	J	K
1	Partner_group_name	Segment_Name	pn	month	wos	Sum_Average_InVENTORY	Sum_Sellout_Units	M1_Sellout_Units	M2_Sellout_Units	M3_Sellout_Units	Sellout_Units_intra
2	ALSO Actebis Group	LFM - Top 50 EEA	S1631D	2011-5	13.25322581	56.22580645	56	30	3	34	11
3	ALSO Actebis Group	LFM - Top 50 EEA	S1631E	2011-5	6.887431401	125.7478006	241	100	131	110	100
4	ALSO Actebis Group	LFM - Top 50 EEA	C6019B	2011-5	4.153393266	345.4868035	1098	602	405	694	603
5	ALSO Actebis Group	LFM - Top 50 EEA	C6020B	2011-5	3.566794839	675.5293255	2500	1889	730	817	936
6	ALSO Actebis Group	LFM - Top 50 EEA	C6029C	2011-5	2.582252776	59.66568915	305	180	115	126	116
7	ALSO Actebis Group	LFM - Top 50 EEA	C6030C	2011-5	2.339950372	110.6158358	624	205	187	361	129
8	ALSO Actebis Group	LFM - Top 50 EEA	C6035A	2011-5	2.622205469	722.4970674	3637	1548	1489	1602	1002
9	ALSO Actebis Group	LFM - Top 50 EEA	C6036A	2011-5	3.085973694	1051.568915	4498	1995	1120	2498	1115
10	ALSO Actebis Group	LFM - Top 50 EEA	C6567B	2011-5	3.479320883	225.3651026	855	497	520	288	450
11	ALSO Actebis Group	LFM - Top 50 EEA	C6569C	2011-5	1.553273714	47.53958944	404	77	287	174	134
12	ALSO Actebis Group	LFM - Top 50 EEA	C6810A	2011-5	2.36847792	147.8504399	824	303	217	388	84
13	ALSO Actebis Group	LFM - Top 50 EEA	C6980A	2011-5	3.516489962	152.3812317	572	202	172	246	48
14	ALSO Actebis Group	LFM - Top 50 EEA	C6825A	2011-5	4.836883749	19.42082111	53	24	17	16	4
15	ALSO Actebis Group	LFM - Top 50 EEA	Q1396A	2011-5	2.83629471	592.398827	2757	1418	701	1791	1153
16	ALSO Actebis Group	LFM - Top 50 EEA	Q1397A	2011-5	2.124457662	616.2536657	3829	1499	1211	2383	1264
17	ALSO Actebis Group	LFM - Top 50 EEA	Q1398A	2011-5	3.034551791	365.9853372	1592	751	396	650	205
18	ALSO Actebis Group	LFM - Top 50 EEA	Q1404A	2011-5	2.499984264	155.3020528	820	453	203	361	197

Thus highlighting the numbers that are greater or equal to 3 with green and the ones lower than 3 with red.

We can also manage the rules by going to Conditional Formatting > Manage rules (the selected cell must be the one containing the rules).





Here you can view an overview of the rules we previously set and you can delete, edit or add new rules.


How to see the claiming status per partner on a CST report


If you need an overview on partners claiming: claims executed/in progress per partner per quarter, you must select your cells, and then from Insert Tab -> Insert Pivot Table, and select the following fields:

Drag fields between areas below:

 Report Filter

 Column Labels

 Row Labels

 Values

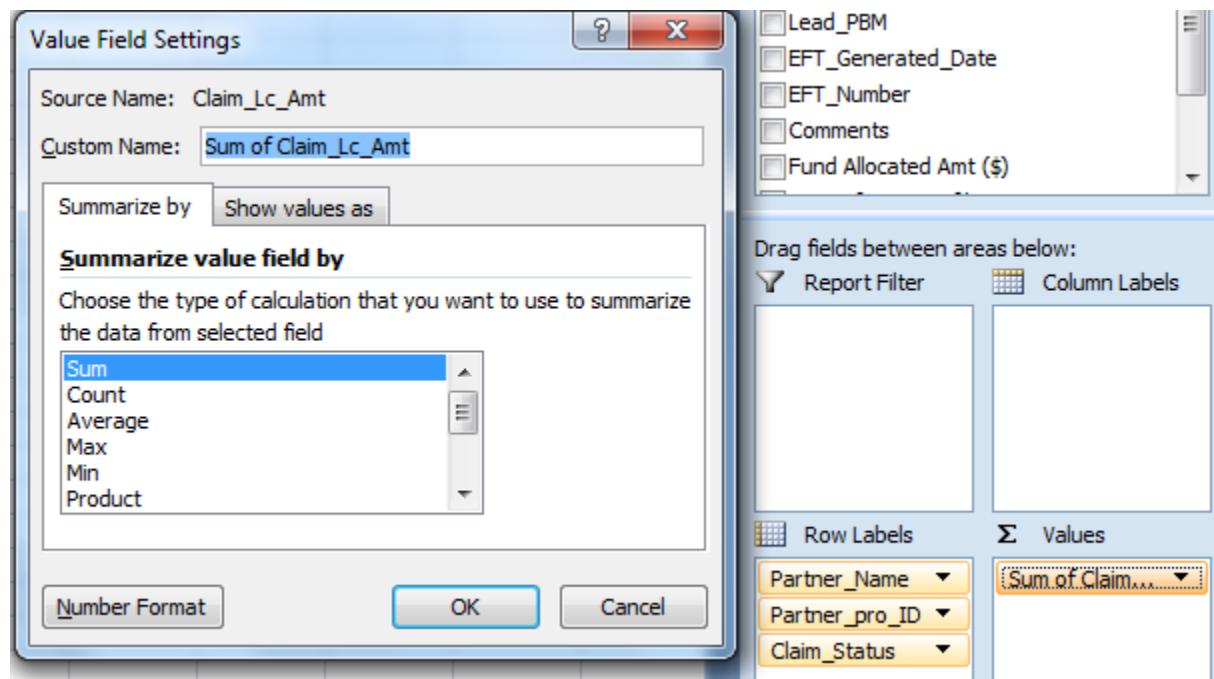
Partner_pro_ID
Partner_Name
Fund Quarter
Claim_Status

Count of Claim_Status

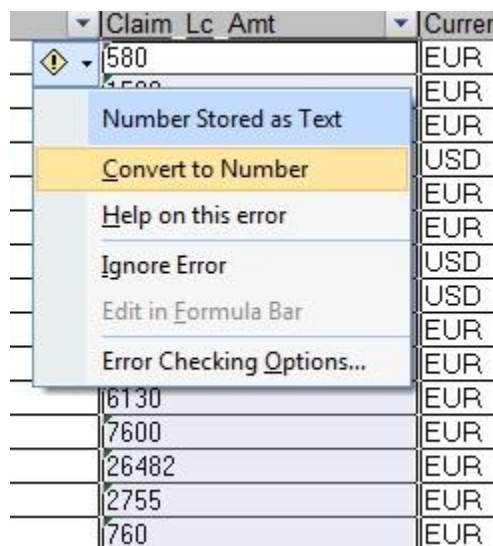
The final report will look like this:

3	Count of Claim_Ste				
4	Partner_pro_ID	Partner_Nam	Fund Quarter	Claim_Status	Total
5	1-14E-13	INGRAM MICRO	Q1-11	Claim Executed	16
6			Q2-11	Claim Executed	26
7			Q3-10	Claim Executed	13
8			Q3-11	Claim Executed	21
9			Q4-10	Claim Executed	16
10			Q4-11	Claim Form Not Received	3
11	INGRAM MICRO Total				95
12	1-14E-13 Total				95
13	1-14E-24	TECH DATA I	Q1-11	Claim Executed	13
14			Q2-11	Claim Executed	20
15				Claim Form Not Received	1
16			Q3-10	Claim Executed	15
17			Q3-11	Claim Executed	10
18		Q4-10	Claim Executed	14	
19	TECH DATA ITALIA S.P.A. Total				73
20	1-14E-24 Total				73
21	1-14E-3	ADIMPO INTE	Q1-11	Claim Executed	1
22			Q2-11	Claim Executed	4
23			Q3-10	Claim Executed	4
24			Q3-11	Claim Executed	3
25			Q4-10	Claim Executed	5
26			In Progress	1	
27	ADIMPO INTERNATIONAL ITALY Total				18
28	1-14E-3 Total				18
29	1-14E-8	ESPRINET S	Q1-11	Claim Executed	13
30			Q2-11	Claim Executed	24
31			Q3-10	Claim Executed	8
32			Q3-11	Claim Executed	13
33			Q4-10	Claim Executed	20
34		Q4-11	Claim Form Not Received	9	
35	ESPRINET SPA Total				87
36	1-14E-8 Total				87

CST arranges to see payments per partner (make sure the text is converted to number, otherwise it won't be able to calculate the sum*)



*How to convert the text to number: press the first cell (e.g. AN2) and press Shift + Arrow Down + End, this will select the whole column. Then go to the ! mark and select convert to number:



Part 3

Tips & Tricks

How to better write a VLOOKUP

Use named ranges A better option is to use named ranges in lookup formulas:

=VLOOKUP(valSalesPerson,tblData,3,FALSE) is much more easier to read and understand than =VLOOKUP(G5,\$B\$5:\$G\$17,3,FALSE)

Make table / list references Absolute If you still prefer to use cell references, make sure the table references are absolute, like this: \$B\$5:\$G\$17 instead of B5:G17.

Check for Errors VLOOKUP is a powerful formula, alright. But ask it to look up a value that is not the data and it acts up. So you need to handle this. The easiest method is to use IFERROR() formula. Like this: =IFERROR(VLOOKUP(...),"Oops, nothing found!").

Use 1 and 0 for last argument You can use 1 and 0 for last argument in VLOOKUP to make the formula shorter. The formula =VLOOKUP(value, range, column #, **FALSE**) is same as =VLOOKUP(value, range, column #, **0**). Similarly you can use 1 for TRUE.

Evenmore, you can even omit the last argument if it is 0, like this: =VLOOKUP(value, range, column #,) *Remember, you must place a comma (,) after the column number if you are planning to use this.*

Use VLOOKUP only when you need it Do you know that formulas like SUMIF() or SUMPRODUCT() can effectively replace VLOOKUP() formulas? For example, the formula =SUMIF(lookup-range, lookup value, return column range) gives same value as =VLOOKUP(lookup value, total range, 2, false)? **assuming there is only one match, return column range has numbers.*

Useful Key Shortcuts

CTRL + SHIFT + L Applies the Filter to a selected Row/Removes existing Filter

ALT + ENTER When you're typing text into a cell, by default hitting Enter takes you to the next cell. However, to enter a new line in the same cell, this combination will correctly wrap your text.

F9 Calculates all worksheets. After changing references into a formula and recopying it all the way down, you may notice that it either fills in the same value, or the values don't change at all. F9 will refresh the references, filling the correct values.

F4 Switches between Absolute and Relative references, when entered in a formula.
(A2 / \$A\$2 / \$A2 / A\$2 / A2)

CTRL + SHIFT + Right ARROW Selects all the columns, up to the last one active.
Pressing it again will expand the selection to the last column of the worksheet.

CTRL + SHIFT + Down ARROW Selects all the rows, up to the last one active.
Pressing it again will expand the selection to the last row of the worksheet.