Excel Yourself 2015

By Neale Blackwood

www.a4accounting.com.au

a4@iinet.net.au

Contents

Introduction

This session will cover some of my Excel Yourself articles that were first published in the INTHEBLACK magazine during 2015. We will examine 5 out of the 11 articles in the hour allotted.

The workings sheets for all eleven articles have been included in the companion file for this session.

The companion file includes the code for the macro articles as well. The macro code can be viewed by pressing Alt + F11 and clicking Tools and the Macros to find the macro.

The companion Excel sheets are arranged in date order starting with the February article on the left and working to the right to end with the December article. The green sheet tabs are the ones to be covered during the session.

The content of this manual has been re-written and adapted from the original articles.

VERSION WARNING:

Some of the content in this manual and the Excel file will only work with Excel 2013 and later versions.

Previous versions will NOT be able to use or replicate the results as per this manual in the last section on the October article.

The Dec_15 Error 2013 sheets will only work with Excel 2013 – alternative sheets have been provided for Excel 2007 and 2003 at the far right of the companion Excel file.

February 2015 – Custom Number Formats

In Excel, the entry that is displayed on the sheet can be different to the entry that is in the cell. Formatting allows you to vary the display.

Custom number formats take that difference to another level by allowing you to display text with numbers, but still perform calculations with the number.

In our example in the Feb_15 Code sheet we have a code displayed with dashes in positions 2 and 5.

Often codes have some logic built-in to their design. Parts of the code can represent different things. If you need to increment different parts of the code you can use formulas to simplify the task. You can use the custom number format to handle the display issues.

There is an underlying number in cell A1, as can be seen by the image on the right. It displays with dashes but it is a number.
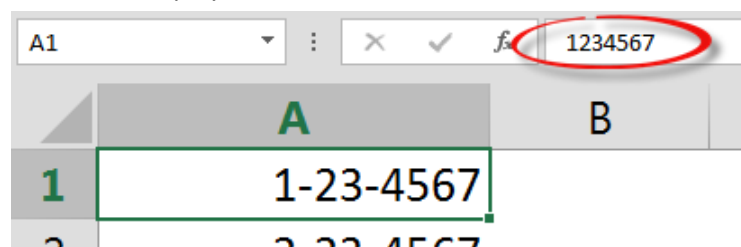
Cell A2 has a formula that is increasing the code in A1 by one million which increases the first digit of the code without changing the other digits – see image on right.
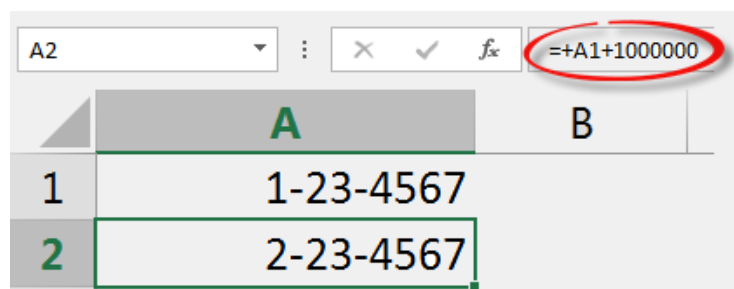
Cell A3 has a formula that increases the code above by 10000, which increases the third numeric digit by 1 and leaves the other digits unchanged.
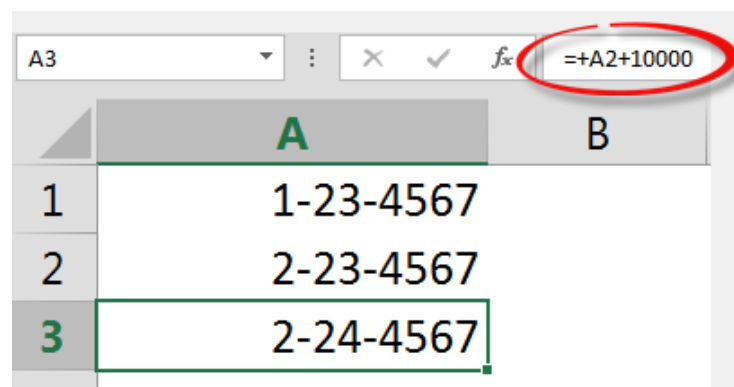
Using the numbers this way makes it easy to increment parts of the number as required with formulas.
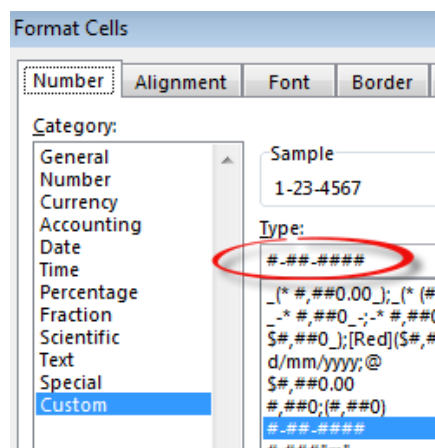
The custom number format that adds the dashes to the number for display purposes is on the left and below.

#-##-####

© 2015 Neale Blackwood

Sometimes you need to include measures with numbers like kg, litres or metres. Many times these are placed in an adjacent column, but you can display a number with a measure and still do calculations with it. You need to use a custom number format.

In the Feb_15 metres sheet you can see on the right a number is entered in A1, but it is displayed with the letter m to signify metres.
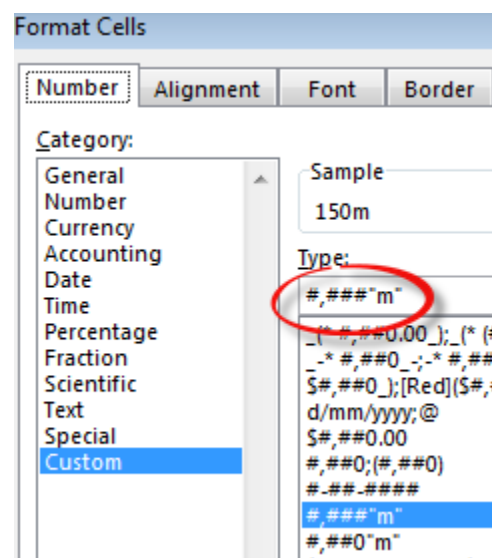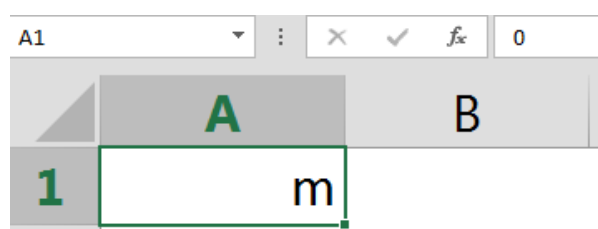
You can perform normal calculations with this cell.
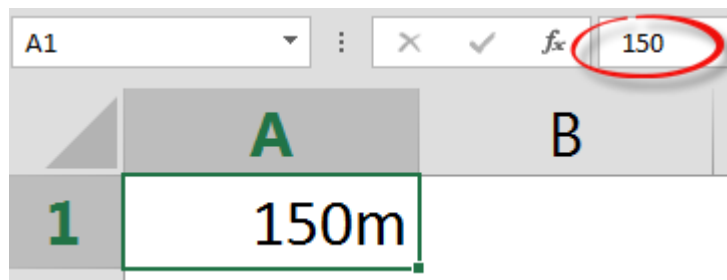
The custom number format used is on the right and shown below.

#,###"m"

Note: when you use the # symbol for all the numbers it won't display a zero, if the number is zero – see below.

If you need to display a zero with the text, then use a slightly different custom number format.

#,##0"m"

This has a letter following the number but you could include a letter preceding the number as well.

A common request is to display negative numbers with brackets and a different colour and to line up the digits.

The image below is from the Feb_15 brackets sheet which has an example. The format is on the following page.
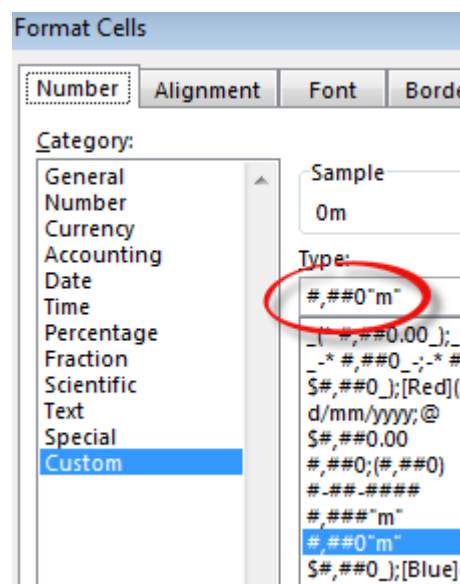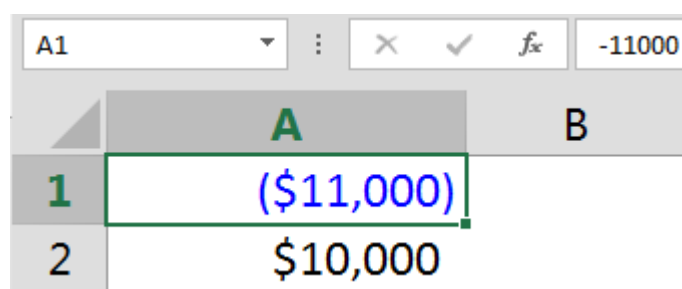
The custom number format syntax allows you to specify a restricted list of colours. The format used is shown on the right and below

$#,##0_);[Blue]($#,##0)

There are four sections to the custom number format syntax they are separated by semi-colons
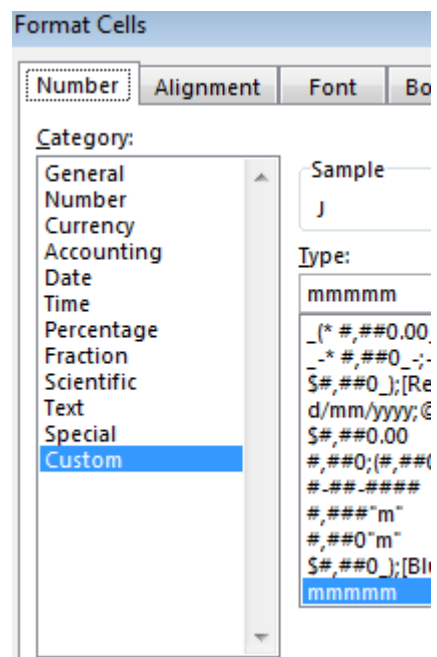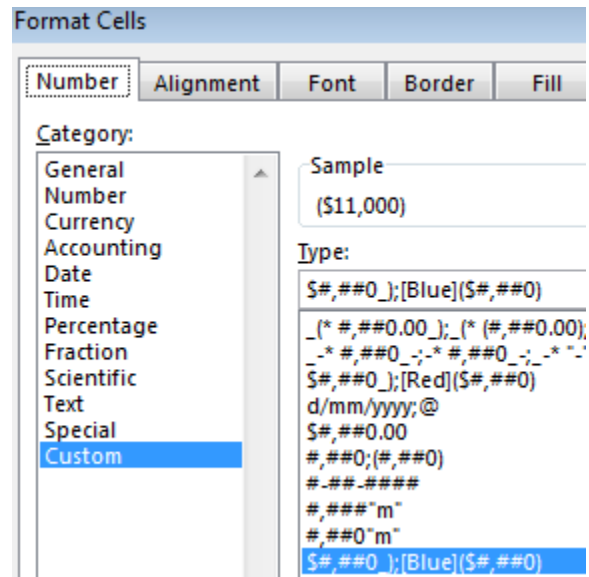
Positive; Negative; Zero; Text

You can specify colours by using the square brackets [Red] [Blue] [Yellow]

Text is typically surrounded by quotation marks.

I have included a red brackets Style in the August Article later in the manual.

To display months by their first letter, which can be useful for small charts see the custom number format to the right and below.

mmmmm

April 2015 – Identifying Duplicates

Excel has two features that work well with duplicates:

- Conditional Formatting (Home ribbon) that identifies duplicate cell entries in a range
- Remove Duplicates (Data ribbon) which removes duplicate records (rows) across multiple columns

The Remove Duplicates works well if all columns have entries, on all rows. The problem comes when there are missing entries on rows. We need to identify duplicates, or possible duplicates, in the data below.

In this example we have entries in all rows in the first two columns. The third and fourth columns have missing data. This makes the Remove Duplicates option ineffective as it may remove two names that are in fact different people, if they don't have entries in both columns C and D.

	A	B	C	D
1	**First Name**	**Last Name**	**Email**	**DOB**
2	Fred	Smith	fsmith@gmail.com	6/09/1962
3	Kelly	Ng		29/08/1988
4	Michael	Jones	mjones@acme.com.au	14/12/1986
5	Janet	Cox	jc1959@gmail.com	17/01/1959
6	Sally	Tang	stang75@gmail.com	5/06/1975
7	Kelly	Ng	kn88@hotmail.com	
8	Michael	Jones	mjones@acme.com.au	
9	Sally	Tang	stang75@yahoo.com.au	
10	Janet	Cox		17/01/1959

This type of data requires human intervention. But you don't want to have to review every single row. So we can add some formulas on the right to identify likely duplicates which can then be reviewed to determine if they are duplicates.

We will add four columns to the right to help identify duplicates. The cells will display TRUE if a duplicate is possible and FALSE if not. Column E identifies if all 4 columns match. Column F examines the three columns A,B, and C. Column G looks at columns A,B and D. Column H combine the results from columns G and H to determine if a check is necessary. TRUE means a check is required.

	A	B	C	D	E	F	G	H
1	First Name	Last Name	Email	DOB	Duplicate ABCD	Duplicate ABC	Duplicate ABD	Check
2	Fred	Smith	fsmith@gmail.com	6/09/1962	FALSE	FALSE	FALSE	FALSE
3	Kelly	Ng		29/08/1988	FALSE	FALSE	FALSE	FALSE
4	Michael	Jones	mjones@acme.com.au	14/12/1986	FALSE	TRUE	FALSE	TRUE
5	Janet	Cox	jc1959@gmail.com	17/01/1959	FALSE	FALSE	TRUE	TRUE
6	Sally	Tang	stang75@gmail.com	5/06/1975	FALSE	FALSE	FALSE	FALSE
7	Kelly	Ng	kn88@hotmail.com		FALSE	FALSE	FALSE	FALSE
8	Michael	Jones	mjones@acme.com.au		FALSE	TRUE	FALSE	TRUE
9	Sally	Tang	stang75@yahoo.com.au		FALSE	FALSE	FALSE	FALSE
10	Janet	Cox		17/01/1959	FALSE	FALSE	TRUE	TRUE

NOTE: This technique is not perfect – rows 3 and 7 could be a duplicate, but it doesn't show as such because only the names are duplicated and that is not sufficient reason to identify a duplicate.

The formulas for the various cells are shown below. All formulas are from row 2 and have been copied down their respective columns.

Cell E2

=AND(COUNTA(A2:D2)=4,COUNTIFS(A:A,A2,B:B,B2,D:D,D2,C:C,C2)>1)

The AND function allows you to check multiple logical tests and return a single TRUE or FALSE.

To return a TRUE all logical tests reviewed must be TRUE. A single FALSE will mean a FALSE is returned by the AND function.

The COUNTA function counts all cell entries within the range. By comparing the COUNTA result to 4 we confirm there are four entries in the four cells. If there aren't four then this duplicate check is not valid and returns FALSE. Only four rows contain all four entries.

The COUNTIFS function is a conditional count function. It counts the number of times all conditions are met across multiple ranges, in this case, columns.

COUNTIFS(A:A,A2,B:B,B2,D:D,D2,C:C,C2)

This formula calculates the number of times the value in A2 appears in column A AND B2 appears in column B AND C2 appears in column C AND D2 appears in column D. Obviously this COUNTIFS must return at least 1 and that is why we use >1 to identify duplicates.

Both logical tests must return TRUE for the AND to return TRUE. Since we are returning FALSE for less than 4 entries across the four columns, it doesn't matter that the COUNTIFS function might identify a duplicate based on three cell entries.

This column identifies duplicates across all four columns, when all four columns have entries.

Cell F2

=AND(COUNTA(A2:C2)=3,COUNTIFS(A:A,A2,B:B,B2,C:C,C2)>1)

We are doing the same calculation from E2 but only across three columns. The formulas work the same but only on three columns. So three entries must be in columns A B and C and a duplicate identified for this AND to return TRUE.

Cell G2

=AND(COUNTA(A2:B2,D2)=3,COUNTIFS(A:A,A2,B:B,B2,D:D,D2)>1)

Same as above but for columns A B and D.

Cell H2

=COUNTIF(F2:G2,TRUE)=1

The COUNTIF function only looks at one condition when counting in a range. In this case we only want to identify if there is a single TRUE in both columns – if there was two TRUE results then it would have been identified by column E. If you copy row 2 to row 11 you will see what I mean.

Column H identifies if a row needs checking as to whether it is a duplicate.

July 2015 – Scenarios

This month we looked at how to convert a single scenario budget into a multi-scenario budget. This involves using a table layout and formulas.

Below is an image of a very simple budget input screen. This is in the Jul_15 Input sheet. We will amend this layout so we can select between different scenarios. The yellow cells are for input and flow into a separate report sheet.

	A	B
1	**Budget Inputs**	
2		
6	**Average Selling Price ($/unit)**	
7	Gadgets	$5.00
8	Widgets	$4.00
10	**Sales Volumes (Units)**	
11	Gadgets	50,000
12	Widgets	45,000
14	**Margin %**	
15	Gadgets	45%
16	Widgets	42%
18	**Fixed Costs $**	
19	Direct Costs	$50,000
20	Overhead Costs	$75,000
22	**Variable Costs ($/unit sold)**	
23	Direct Costs	$1.00
24	Overhead Costs	$1.50

Instead of having the input cells in column B we will create separate scenarios in columns D through H to allow us to choose between five scenarios. We will use a single input cell in column B to select the correct scenario. The selected scenario will flow through into the report sheet.

We will create a formula in cell D4 that will select a scenario name from the right-hand side - see image below. Cell B3, which was hidden on the image on the previous page, will hold the selected scenario number. The formula for cell D4 is

=OFFSET(C4,0,$B$3)

	A	B	C	D	E	F	G	H
1	**Budget Inputs**			**Scenarios**				
2								
3	**Scenario Number**	5		1	2	3	4	5
4	**Scenario Name**	Likely		Base	Prev Year	Best	Worst	Likely
5								
6	**Average Selling Price ($/unit)**							
7	Gadgets	$4.95		$5.00	$4.80	$5.25	$4.80	$4.95
8	Widgets	$4.10		$4.00	$3.90	$4.15	$3.90	$4.10
9								
10	**Sales Volumes (Units)**							
11	Gadgets	50,500		50,000	45,978	54,000	42,000	50,500
12	Widgets	46,000		45,000	43,123	48,000	40,000	46,000
13								
14	**Margin %**							
15	Gadgets	45%		45%	43%	48%	40%	45%
16	Widgets	42%		42%	41%	44%	40%	42%
17								
18	**Fixed Costs $**							
19	Direct Costs	$52,000		$50,000	$44,487	$45,000	$50,000	$52,000
20	Overhead Costs	$72,500		$75,000	$73,321	$70,000	$85,000	$72,500
21								
22	**Variable Costs ($/unit sold)**							
23	Direct Costs	$0.98		$1.00	$0.94	$1.00	$1.20	$0.98
24	Overhead Costs	$1.45		$1.50	$1.47	$1.50	$1.60	$1.45
25								

The OFFSET function allows you to define a starting point (the first argument) and then to offset (move) a number of rows (second argument) and columns (third argument) from that starting cell.

In the formulas above we are starting in cell C4 and move zero rows and 5 columns to the right (cell B3 has 5 in it). This will refer to cell H4 and hence the text "Likely" is displayed from that cell.

We can copy the formula from D4 down to the other cells below to finish the conversion.

We need to use paste formulas because the cells below have different number formats applied. We can also adjust the fill colour to grey as those cells will no longer be input cells.

Paste Options:
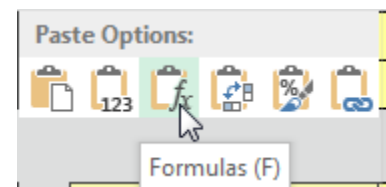
Formulas (F)

Changing cell B3 will change the scenario selected and amend the budget

Volatility

The OFFSET function is a volatile function. This means it calculates every time Excel calculates, even if the cells in its formulas don't change. This can impact file performance if you use a lot of OFFSET functions. It is less of an issue these days with our more powerful PC's and laptops.

August 2015 – Using Styles

I recommend using consistent formatting throughout your Excel files. It is a good idea to use consistent colours for input cells so that users are aware of the cells they can change.

Styles (Home ribbon) are a great way to achieve consistent formatting. There are a number of built-in Styles – see image below of the default Styles.
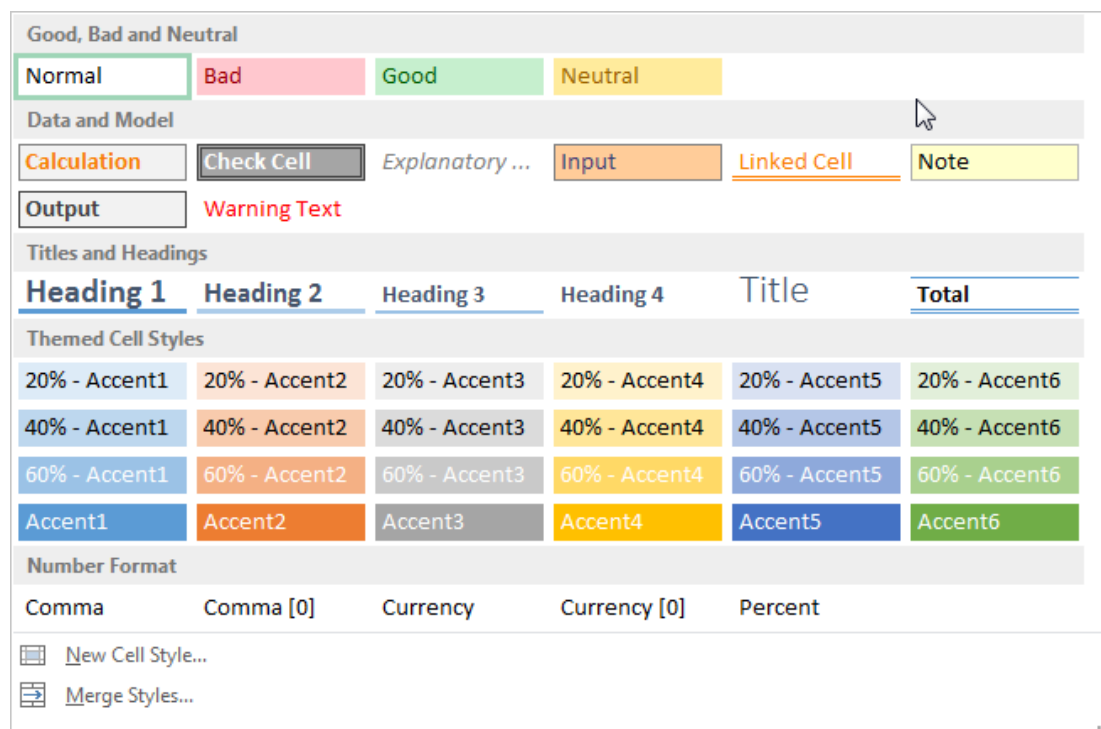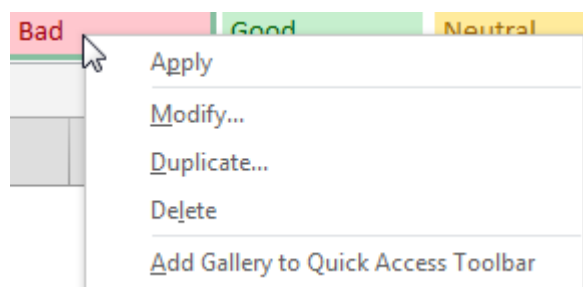

Each of these can be changed to suit your requirements.

You can right click a Style to Modify or Duplicate it – see image on right.

The Duplicate option is useful for input cells.

Input cells tend to be used for many different types of input; text, numbers, dollars, percentages and dates.

In many cases you only need to adjust the number format, whilst keeping the fill colour and other formats the same. The Duplicate option makes this an easy process.

You can also create a Style from scratch using the New Cell Style option.

I have included red brackets for negative Style in the file.

Note: Styles are file-based. Adding or changing a Style only affects the current file. If you need to copy a Style between files you nust use Merge Styles – refer to the note on the following page.

© 2015 Neale Blackwood

Global Change

One of the advantages of using Styles is that if you have used a Style to format multiple cells and you need to change the Style then when you change it, Excel will automatically change all the existing cells that have been formatted with that Style in that file.

Merge Styles

To copy Styles between files you need to use the Merge Cells option at the bottom of the Style dialog on the previous page.

WARNING: I have found Merging to be unstable and have had it crash Excel, so save files before attempting this and use Save As after merging.

Extra Styles

When you copy sheets between files you can often bring some Styles with the sheet. This can lead to a lot of redundant Style – see image on right.

Having a lot of extra Styles can impact file opening times. Removing the Styles can speed up opening the file.
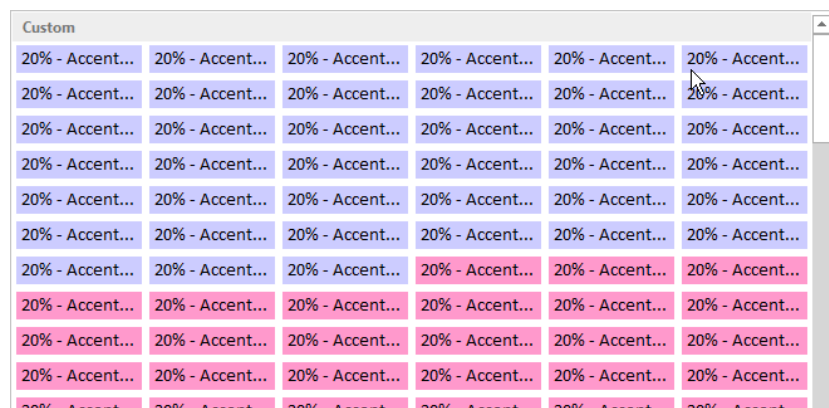
I have included a macro in this file that can clear all custom Styles – leaving just the default styles.

Note: Any cells formatted with the deleted Styles will have the Default format applied.

WARNING: Running a macro clears the Undo list. So you can't undo **ANYTHING** after you run a macro.

So always save the file before trying any macro. Then you can close the file without saving to revert to the pre-macro position.

To run the macro on the active file press Alt + F11. Then click the Tools menu and select Macros.

Use the drop down at the bottom to select this file and then click the macro and click the Run button. A dialog will confirm, you want to remove custom Styles. Click Yes to continue or No to stop.

Press Alt + F11 to return to Excel and check the file to see if it is ok.
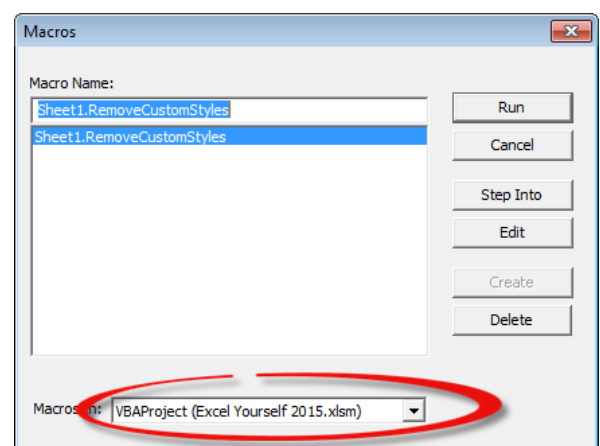
October 2015 – Relationships (Excel 2013)

This article only applies to Excel 2013 and later versions.

In older versions of Excel a VLOOKUP function would have been used to achieve what we will do with a new feature added in Excel 2013, called Relationships (Data menu).

The Problem

We have a Sales Data table that contains a State field and we have a State table that has a listing of states and their respective regions – see below.
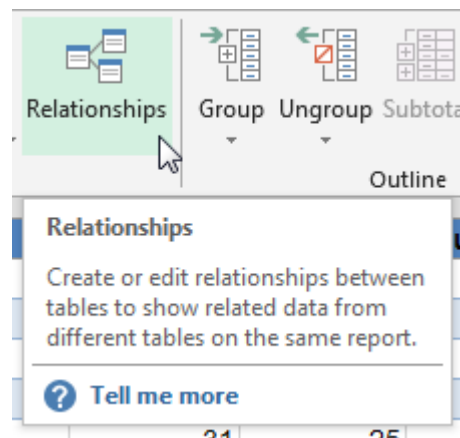
	A	B	C	D	E	F	
1	Date	Invoice	Customer	Customer Category	Sales Rep	Sales_State	Pro
29	2/01/2015	12717	XYZ Ltd	Retail	Linda Garland	VIC	Gad
30	2/01/2015	12718	Aged Debating Club	Other	Shirley Clark	VIC	Gad
31	2/01/2015	12719	Western Allied Corp	Retail	Linda Garland	VIC	Wid
32	2/01/2015	12720	Peabodies	Retail	Shirley Clark	NT	Gad
33	2/01/2015	12721	Department of Energy	Government	Barry Ellis	WA	Gad
34	2/01/2015	12722	Aged Debating Club	Other	Shirley Clark	NT	Wid

We want to use a Pivot Table to report on sales by region.

Pivots Tables can only use ONE table as its source – that is until Relationships were added that allow you to create a relationship between tables.

Since we have a state field in the Sales data we can "relate" that to the state field in the State table and find the region. That region can then be used in the Pivot Table for reporting.

	A	B
1	State	Region
2	NSW	East
3	ACT	East
4	QLD	North
5	NT	North
6	VIC	South
7	TAS	South
8	SA	South
9	WA	West
10		

This is similar to relational data base reporting where tables have a unique field that can allow you to link tables together based on a common field between two tables.

In Excel fields are columns and rows are records.

When using Relationships one of the tables must have unique entries for the shared field – in our case that is the State table – the two column table above.

Format as Table

Both these tables have been defined and named using the Format as Table option on the Home ribbon. I have a free webinar which explains Format as Table in more detail – see my website for free webinars. I use tbl as a prefix for my table names which you will see on the following page.
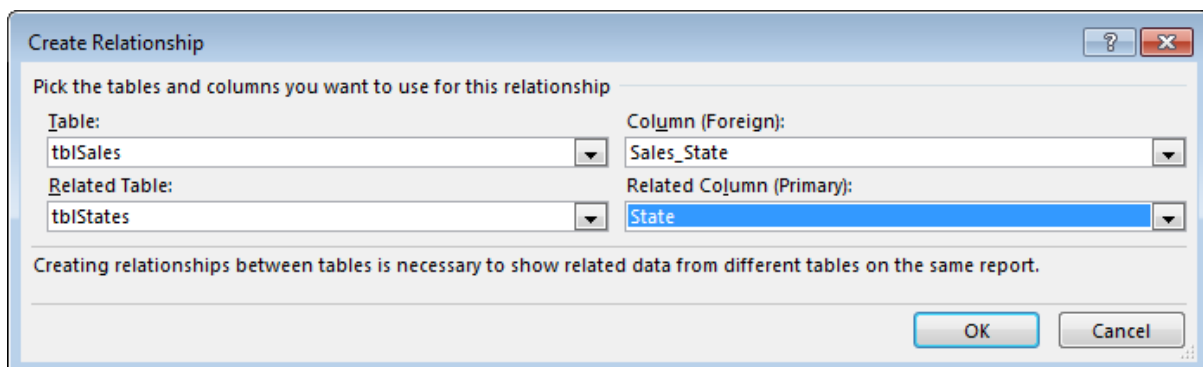
The Set Up

Click the Data ribbon, click the Relationships button and click New.
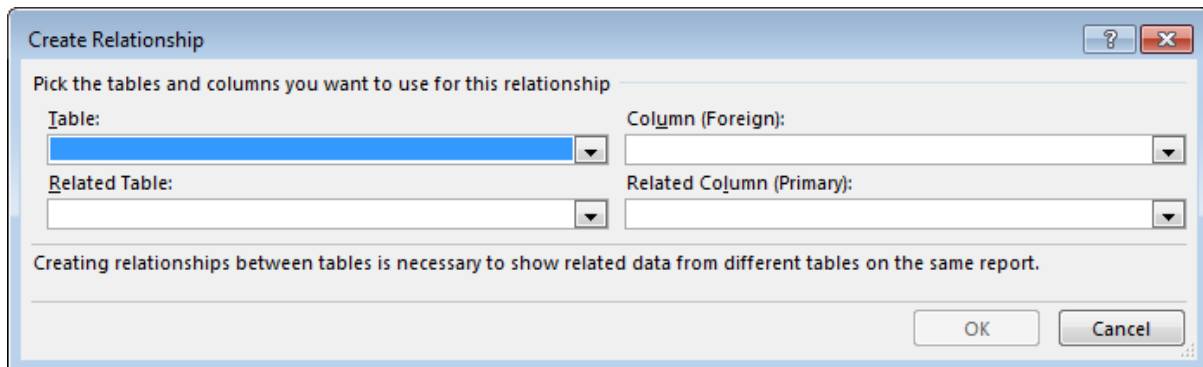
Select tblSales and Sales_State in the top two drops downs and tblStates and State in the bottom two drop downs – see image below.
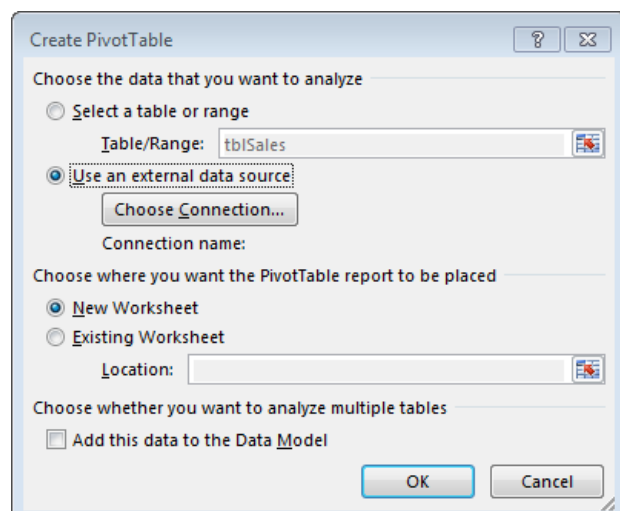

Click OK and then click Close.

To create the Pivot Table report requires different mouse clicks than usual.

Click the Insert ribbon and click Pivot Table.

Select the "Use an external data source" option and click the Choose Connection button.
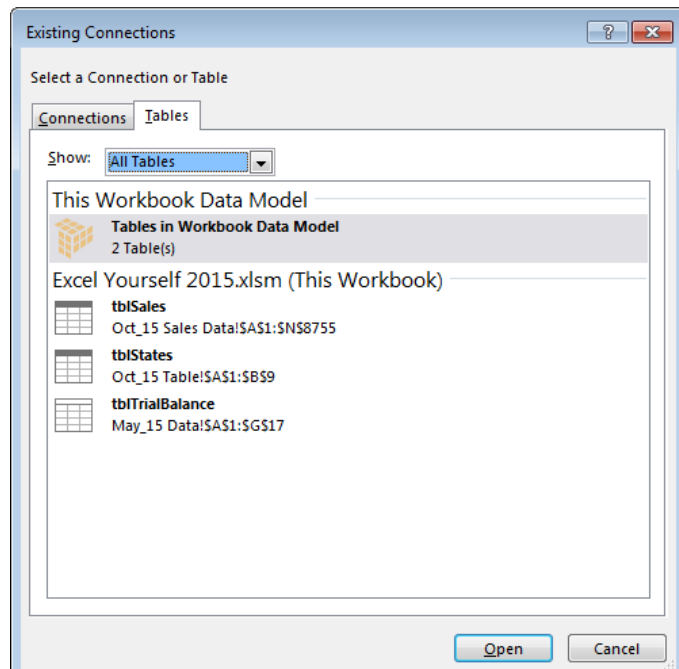
© 2015 Neale Blackwood

Click the Tables tab and choose the first option under This Workbook Data Model and click Open button.

Click OK.

This file has an additional table tblTrialBalance used for another article but it is not linked to the two tables we are working with here, but it is still shown in the PivotTable Fields screen.

See below for a simple pivot table report by region.

See next page for potential error.

Existing Connections

Select a Connection or Table

Connections | **Tables**

Show: All Tables

This Workbook Data Model

Tables in Workbook Data Model
2 Table(s)

Excel Yourself 2015.xlsm (This Workbook)

tblSales
Oct_15 Sales Data!$A$1:$N$8755

tblStates
Oct_15 Table!$A$1:$B$9

tblTrialBalance
May_15 Data!$A$1:$G$17

Open | Cancel

	A	B	C	D
3	Sum of Value	Column Labels		
4	Row Labels	Gadget	Widget	Grand Total
5	East	3,282,066	3,015,124	6,297,190
6	North	2,994,504	1,908,472	4,902,976
7	South	6,402,503	4,711,490	11,113,992
8	West	2,195,034	1,679,117	3,874,150
9	Grand Total	14,874,106	11,314,202	26,188,308

PivotTable Fields

ACTIVE | **ALL**

Choose fields to add to report:

⊿ ▦ **tblSales**
☐ Date
☐ Invoice
☐ Customer
☐ Customer Category
☐ Sales Rep
☐ Sales_State
☑ **Product**
☐ Colour
☐ Size
☐ Volume
☐ $/unit
☑ **Value**
☐ Cost
☐ Margin

⊿ ▦ **tblStates**
☐ State
☑ **Region**

Drag fields between areas below:

▼ FILTERS | ▥ COLUMNS
| | Product ▼

≡ ROWS | Σ VALUES
Region ▼ | Sum of Value ▼
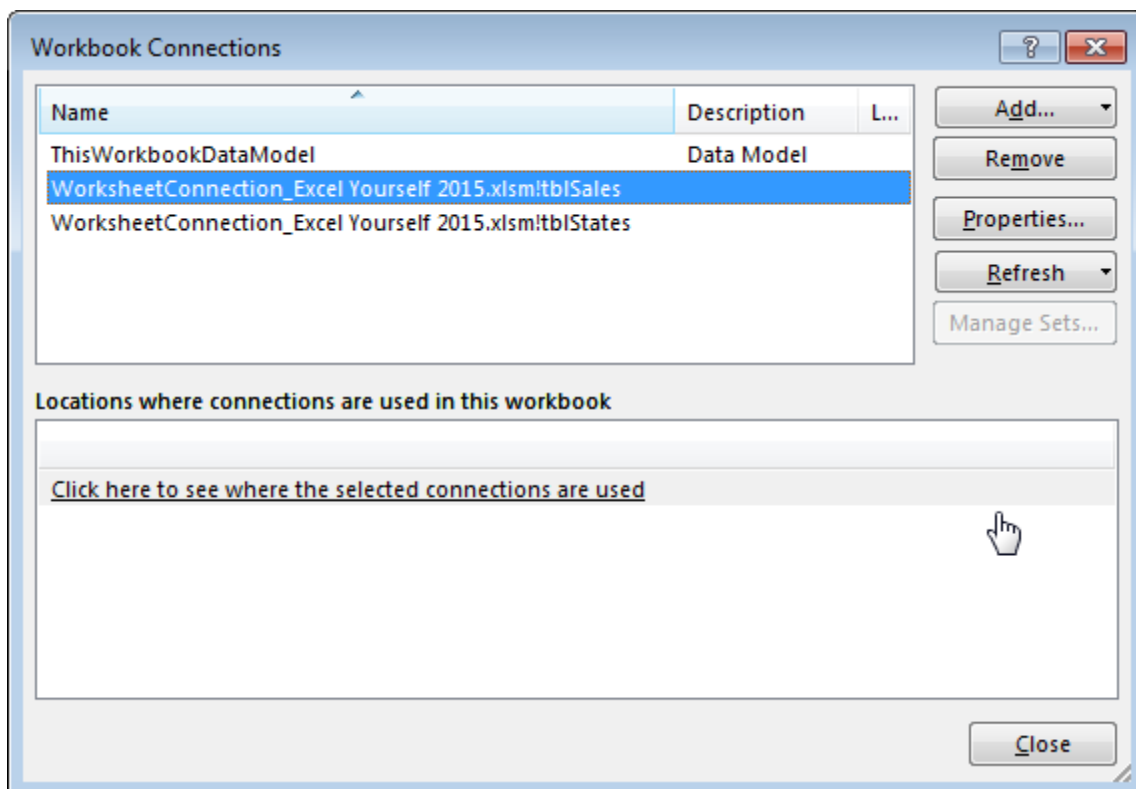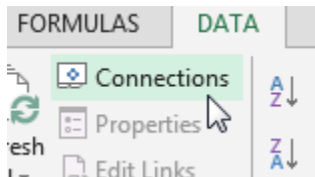
☐ Defer Layout Update | UPDATE

© 2015 Neale Blackwood

If you get the following error message
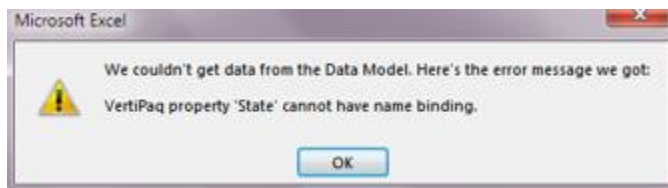
Try this.

Click on the Data ribbon tab and the Connections icon

Click on each of the tblSales and tblStates items and click the Remove button on the right.

That should reset the file and allow you to create the Relationship.