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Module One: Working with Large Worksheets

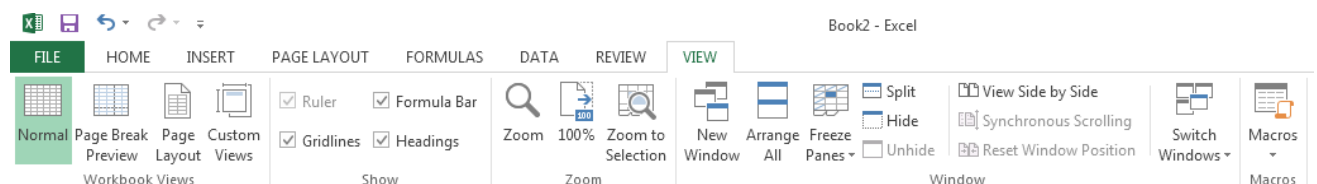
In this module we will be exploring the different ways of managing a larger worksheet using tools such as zoom, freeze panes, outlining, views and many more.

An Overview of Excel's Views

The View tab controls how a worksheet appears on screen. Changing the worksheet view does not impact the way your worksheet prints, only the way you see it on your monitor. The different views are:

- **Normal** is the view used for entering data.
- **Page Layout view** displays what the data will look like when printed. You can use Page Layout view to add headers and footers to your worksheets.
- **Page Break Preview** allows you to adjust where the page breaks occur. You can drag the blue border to a new location for columns or rows to adjust the page breaks.
- **Full screen view** displays the worksheet using the full screen. It does not display the Ribbon or Status Bar. Press the ESC key to leave full screen view.

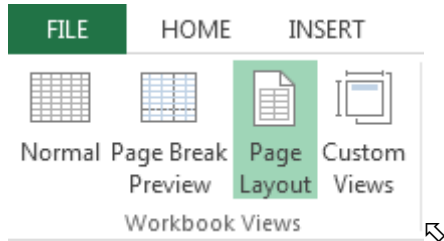
Shown here is the View tab on the Ribbon.



Switching Views

Use the following procedure to view the Page Layout View.

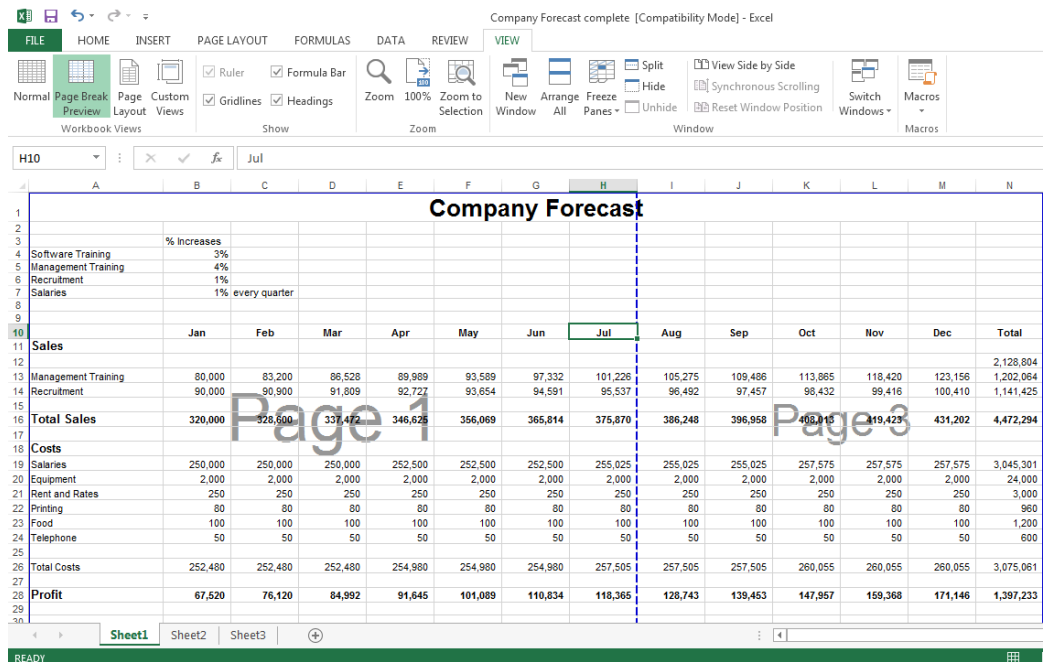
1. Select the View tab. Select the **Page Layout** tool.



There are three areas for the header and the footer. Investigate entering header content in the left, middle, and right of the header and/or footer.

Use the following procedure to view the Page Break Preview.

1. Select the View tab. Select the **Page Break Preview** tool.



Investigate what happens if they move the blue borders. Switch to Page Layout View to see the difference.

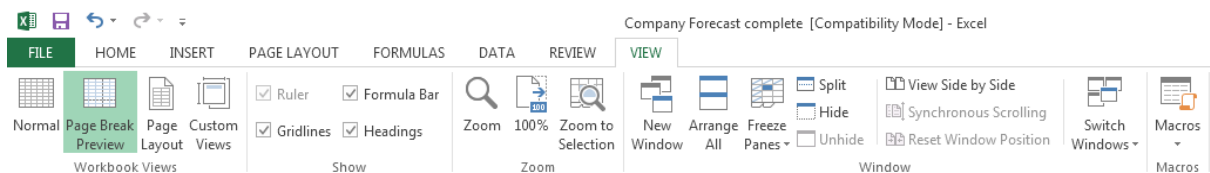
Creating Custom Views

A custom view is a set of settings that you can save for the active workbook and reapply at different times. This helps if you want to view the same data in different ways. Instead of creating different copies of the workbook to see the different views, or redoing a number of settings each time you want to change them, you can create multiple custom views for the workbook. The custom view only applies to the current workbook.

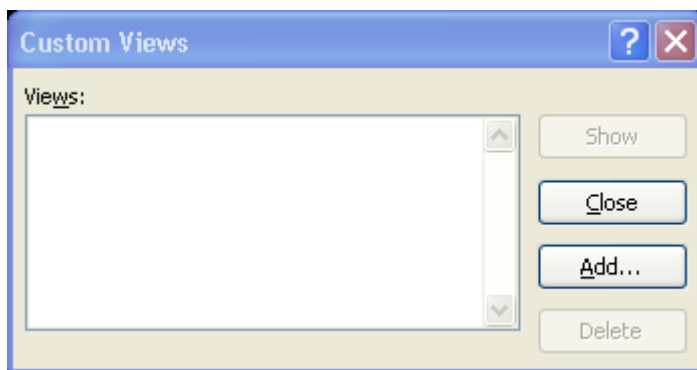
Custom views can include a number of different settings, including column widths and page layout items such as headers and footers. Custom views can also include many features that will be covered later in this course.

Use the following procedure to create a custom view.

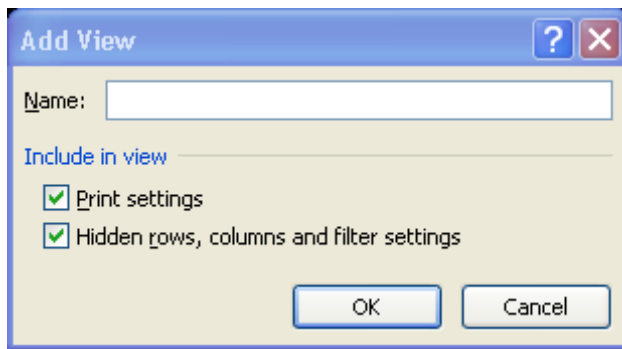
1. Select **Custom Views** from the **View** tab on the Ribbon.



Excel opens the Custom Views dialog box.



2. Select Add to open the Add View dialog box.



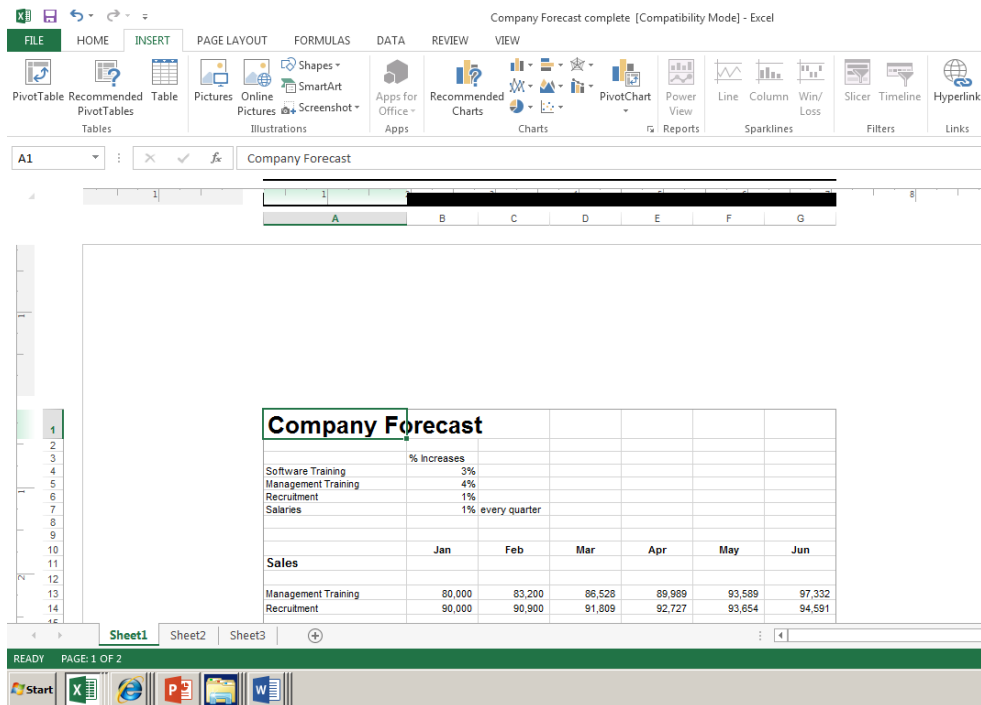
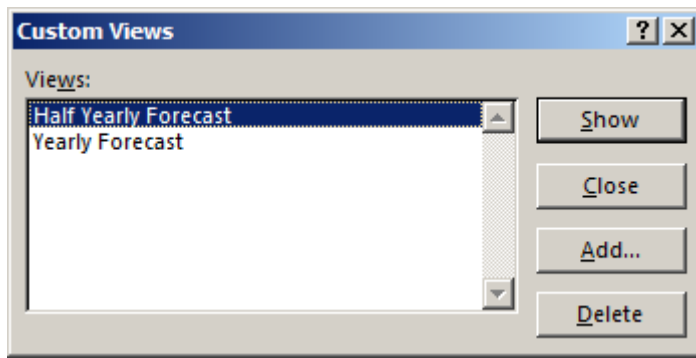
3. Enter the **Name** of your view.
4. Check the **Print Settings** box to include the print settings in your custom view.
5. Check the **Hidden rows, columns and filter settings** to include those in your custom view.
6. Select **OK**.

Use the following procedure to apply a custom view.

1. Select **Custom Views** from the **View** tab on the Ribbon.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Sales								
Management Training	80,000	83,200	86,528	89,989	93,589	97,332	101,226	105,275
Recruitment	90,000	90,900	91,809	92,727	93,654	94,591	95,537	96,492
Total Sales	320,000	328,600	337,472	346,625	356,069	365,814	375,870	386,248

- Highlight the View you want to apply and select **Show**.



Using Zoom

Excel allows you to zoom in or out so that you can make the type appear larger, or see more of your worksheet to check the layout. The View tab includes the zoom tools.

Use the following procedure to zoom to a selection.

1. Highlight the area you want to view larger.
2. Select the **Zoom to Selection** tool from the **View** tab on the Ribbon.

The screenshot shows the Microsoft Excel interface with the 'View' tab selected on the ribbon. The 'Zoom to Selection' button is highlighted. The worksheet displays a 'Company Forecast' table with columns for months (Jan-Dec) and rows for Sales and Costs. The 'Total Sales' row is highlighted, and the 'Zoom to Selection' button is active.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Sales													
Management Training	80,000	83,200	86,528	89,989	93,589	97,332	101,226	105,275	109,486	113,865	118,420	123,156	1,202
Recruitment	90,000	90,900	91,809	92,727	93,654	94,591	95,537	96,492	97,457	98,432	99,416	100,410	1,141
Total Sales	320,000	328,600	337,472	346,625	356,069	365,814	375,870	386,248	396,958	408,013	419,423	431,202	4,472
Costs													
Salaries	250,000	250,000	250,000	252,500	252,500	252,500	255,025	255,025	255,025	257,575	257,575	257,575	3,045
Equipment	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24
Rent and Rates	250	250	250	250	250	250	250	250	250	250	250	250	3
Printing	80	80	80	80	80	80	80	80	80	80	80	80	
Food	100	100	100	100	100	100	100	100	100	100	100	100	1
Talents	50	50	50	50	50	50	50	50	50	50	50	50	

Company Forecast complete [Compatil

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW

Normal Page Break Preview Page Layout Custom Views

Workbook Views

☒ Ruler ☒ Formula Bar

☒ Gridlines ☒ Headings

Show

Zoom 100% Zoom to Selection

Zoom

New Window Arrange All Freeze Panes Split Hide Unhide

A1 : Company Forecast

	A	B	C	D
1	Company Forecast			
2				
3		% Increases		
4	Software Training	3%		
5	Management Training	4%		
6	Recruitment	1%		
7	Salaries	1%	every quarter	
8				
9				
10		Jan	Feb	Mar
11	Sales			
12				
13	Management Training	80,000	83,200	86,528
14	Recruitment	90,000	90,900	91,809
15				
16	Total Sales	320,000	328,600	337,472

Sheet1 Sheet2 Sheet3

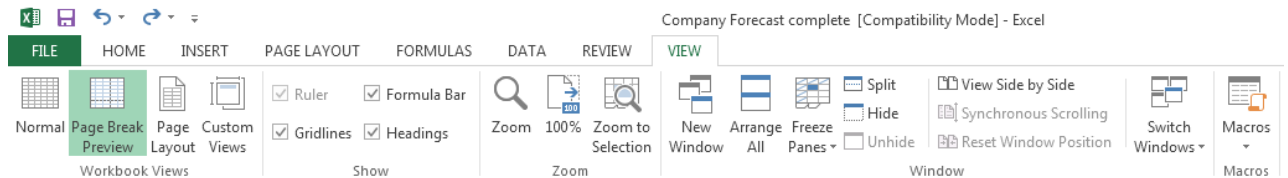
READY

3. Select **100%** from the View tab on the Ribbon to return to the default zoom.

Switching Between Open Files

Use the following procedure to switch from one worksheet to another.

1. Select the **Switch Windows** tool from the **View** tab on the Ribbon. Select the worksheet you want to view from the list.



Using Freeze Panes

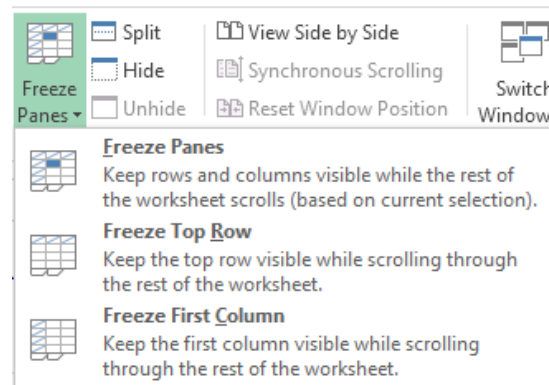
It is sometimes convenient to be able to keep an eye on one part of a spreadsheet while simultaneously viewing other parts of the same spreadsheet (for example, keeping cells with headings in place while scrolling through the data). If you want to see multiple parts of your worksheet at the same time, you can segment your Excel 2013 screen into more than one viewing area by using Excel's Freeze feature.

To use Freeze Panes, open a workbook window, and click the Freeze Panes button on the View tab.

Clicking this button will display a menu of freeze options that you can choose from.

To freeze panes (columns and rows):

- Select the first cell of data
- Go to the View tab
- In the Window group, select Freeze Panes



To freeze panes (top row only):

- Go to the View tab
- In the Window group, select Freeze Top Row

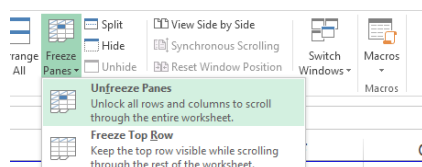
To freeze panes (first column only):

- Go to the View tab
- In the Window group, select Freeze First Column

To unfreeze panes (any setting):

- Go to the View tab
- In the Window group, select Unfreeze Panes

recast complete [Compatibility Mode] - Excel

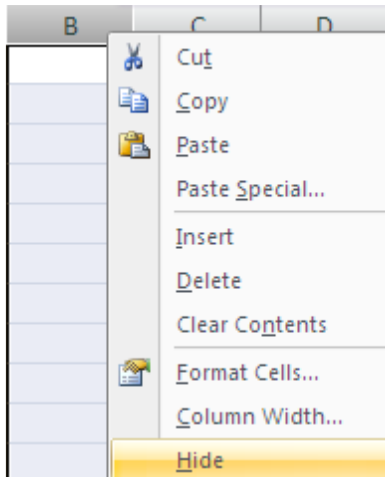


Hide rows and columns

Hiding data serves the purpose of allowing you to temporarily make column or rows from your spreadsheet invisible.

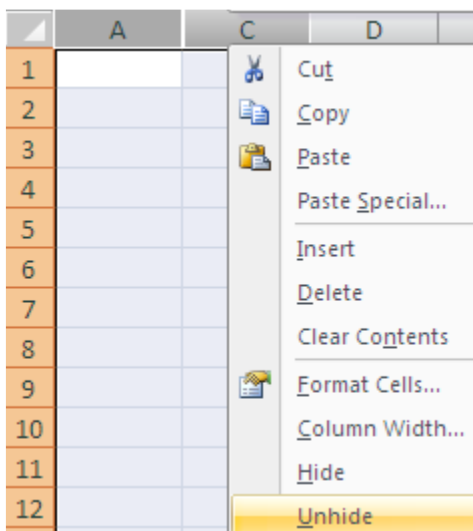
To hide data:

- Right-click a row or column (or a selection of multiple rows or columns)
- Select Hide from the menu



To unhide data:

- Highlight rows / columns either side of the hidden one/s
- Right-click and select Unhide from the menu

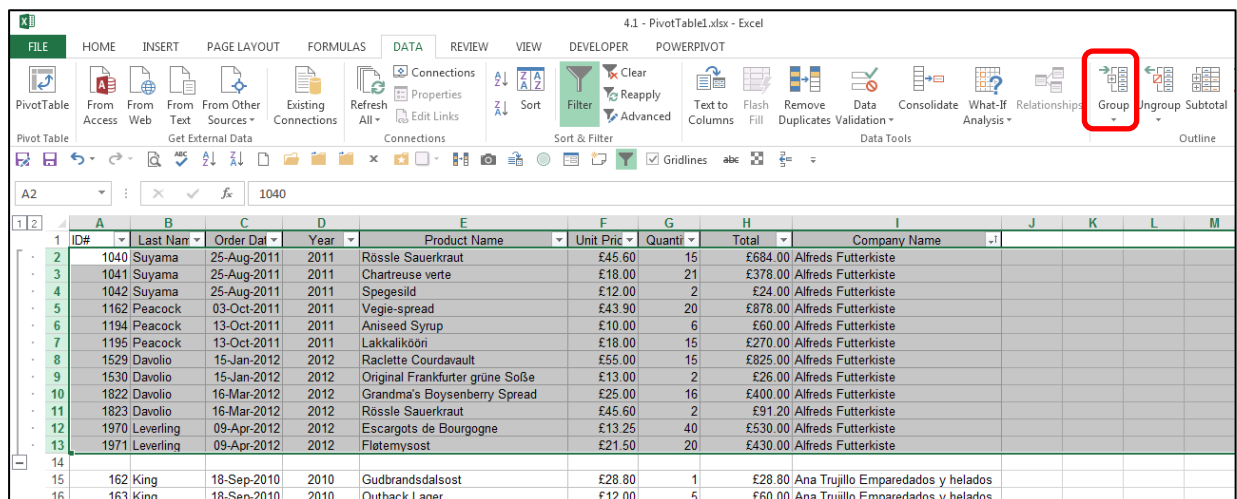


Grouping Data

You can create groups of data to help you work with large worksheets of data, or anytime that you want to provide some structure to your worksheet or facilitate outlining tools. A group simply creates an object out of selected rows or columns. This object can be expanded or collapsed.

Use the following procedure to create a group.

1. Select the range of cells you want to group.
2. Select the **Data** tab from the Ribbon.
3. Select **Group**.

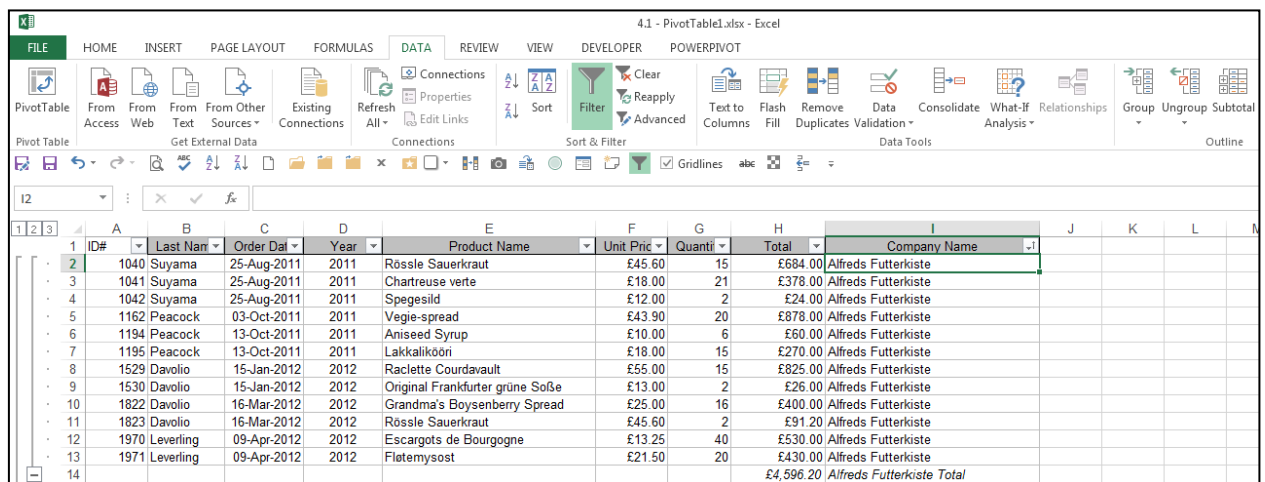


Outlining Data

Outlining provides a structure to your worksheet to quickly hide or display detail and summary information. Your worksheet should already contain summary rows. You can outline automatically or manually. When you create subtotals, you automatically create an outline.

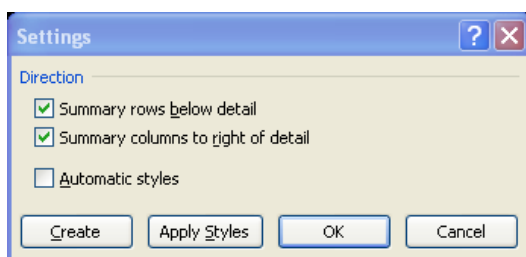
Use the following procedure to create an outline.

1. Select the range of cells to include in the outline.
2. Select the **Data** tab from the Ribbon.
3. Select the small square in the corner of the **Outline** group.



ID#	Last Name	Order Date	Year	Product Name	Unit Price	Quantity	Total	Company Name
1040	Suyama	25-Aug-2011	2011	Rössle Sauerkraut	£45.60	15	£684.00	Alfreds Futterkiste
1041	Suyama	25-Aug-2011	2011	Chartreuse verte	£18.00	21	£378.00	Alfreds Futterkiste
1042	Suyama	25-Aug-2011	2011	Spegesild	£12.00	2	£24.00	Alfreds Futterkiste
1162	Peacock	03-Oct-2011	2011	Veggie-spread	£43.90	20	£878.00	Alfreds Futterkiste
1194	Peacock	13-Oct-2011	2011	Aniseed Syrup	£10.00	6	£60.00	Alfreds Futterkiste
1195	Peacock	13-Oct-2011	2011	Lakkalikööri	£18.00	15	£270.00	Alfreds Futterkiste
1529	Davolio	15-Jan-2012	2012	Raclette Courdavault	£55.00	15	£825.00	Alfreds Futterkiste
1530	Davolio	15-Jan-2012	2012	Original Frankfurter grüne Soße	£13.00	2	£26.00	Alfreds Futterkiste
1822	Davolio	16-Mar-2012	2012	Grandma's Boysenberry Spread	£25.00	16	£400.00	Alfreds Futterkiste
1823	Davolio	16-Mar-2012	2012	Rössle Sauerkraut	£45.60	2	£91.20	Alfreds Futterkiste
1970	Leverling	09-Apr-2012	2012	Escargots de Bourgogne	£13.25	40	£530.00	Alfreds Futterkiste
1971	Leverling	09-Apr-2012	2012	Flotemysost	£21.50	20	£430.00	Alfreds Futterkiste
							£4,596.20	Alfreds Futterkiste Total

4. In the *Settings* dialog box, check the direction of the summary rows and columns.
5. Check the **Automatic styles** box to have Excel automatically apply styles to the outline.



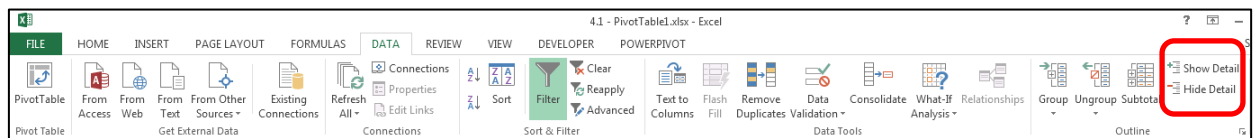
6. Select Create.

Viewing Grouped and Outlined Data

When you have added groups or created an outline, either manually or automatically, Excel includes several features to make it easy to view different parts of the data at once. You can expand or collapse detail data. You can also jump to another group at any time.

To follow is how to work with grouped or outlined data.

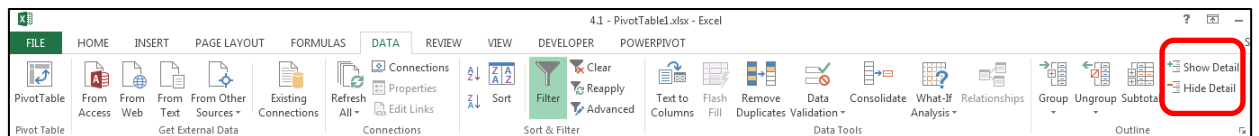
The **Hide Detail** icon allows you to quickly hide the detail data.



A1				Country													
1	2	3	4	A	B	C	D	E	F	G	H	I	J	K	L	M	N
				1	Country	Salesperson	Order Date	OrderID	Order Amount								
				67	UK Total				\$63,792.66								
				119	USA Total				\$45,808.51								
				120	Grand Total				\$109,601.17								

The + icons indicate hiding detail data.

The **Show Detail** icon allows you to quickly show the detail data. You can select the Show Detail icon multiple times to continue expanding the current level.



B74				Callahan Total													
1	2	3	4	A	B	C	D	E	F	G	H	I	J	K	L	M	N
				1	Country	Salesperson	Order Date	OrderID	Order Amount								
				67	UK Total				\$63,792.66								
				68	USA	Callahan	7/25/2008	10262	\$584.00								
				69	USA	Callahan	8/2/2008	10268	\$1,101.20								
				70	USA	Callahan	8/14/2008	10276	\$420.00								
				71	USA	Callahan	8/16/2008	10278	\$1,488.80								
				72	USA	Callahan	8/16/2008	10279	\$351.00								
				73	USA	Callahan	8/30/2008	10286	\$3,016.00								
				74		Callahan Total			\$6,961.00								
				87		Fuller Total			\$15,020.50								
				95		Leverling Total			\$4,847.90								
				96	USA	Peacock	3/3/2010	10906	\$427.50								
				97	USA	Peacock	3/6/2010	10908	\$663.10								

The minus icons allow you to collapse individual groups. The plus icons allow you to expand individual groups.

The numbers in the top left corner indicate a level. Click on a number to show that level.

B74				fx 'Callahan Total						
1	2	3	4	A	B	C	D	E	F	G
				1	Country	Salesperson	Order Date	OrderID	Order Amount	
				11		Buchanan Total			\$8,563.10	
				18		Dodsworth Total			\$10,861.31	
				27		King Total			\$5,663.08	
				66		Suyama Total			\$38,705.17	
				67		UK Total			\$63,792.66	
				74		Callahan Total			\$6,961.00	
				87		Fuller Total			\$15,020.50	
				95		Leverling Total			\$4,847.90	
				118		Peacock Total			\$18,979.11	
				119		USA Total			\$45,808.51	
				120		Grand Total			\$109,601.17	
				121						

Printing Large Worksheets

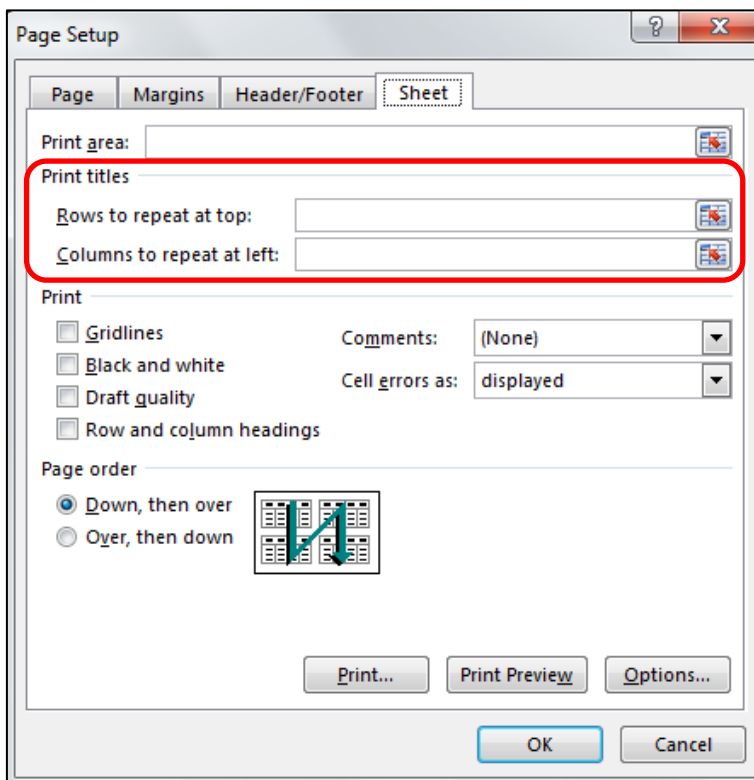
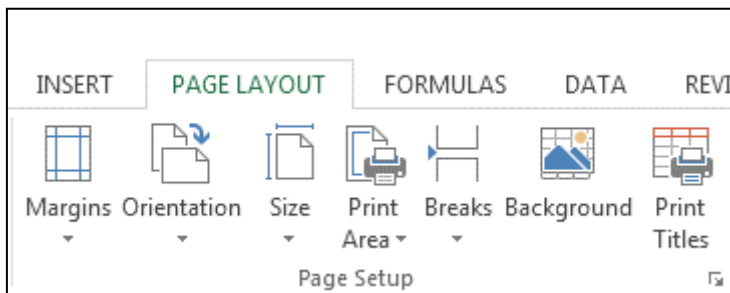
Printing spreadsheets that are larger than one page often requires adjustment of print settings in order to get a hard copy that paginates in an appropriate fashion.

Print Titles

The Print Titles feature allows you to select rows and/or columns which contain labels that you would like repeated at the top and/or left side of each printed page.

To access Print Titles:

- Select the Page Layout tab
- Go to the Page Setup group
- Click the Print Titles button
- Under Print Titles, select the Rows to repeat at the top and/or Columns to repeat at left
- Click OK



Page Break Preview

Excel worksheets can get very large. In fact, most real worksheets contain too much data to fit on one printed page. To print a large worksheet, you have to break up the data into manageable sections. The point where one contiguous sheet of data is broken into separate pages is called a page break.

If you print an Excel worksheet that is too big for a single page, Excel will define page breaks for you based on the size of the cells, the size of the paper that your pages will be printed on, and the print scale you choose. However, Excel doesn't care very much about the meaning or interpretation of your data when it sets up page breaks.

On a large worksheet, the data can be broken into pages in awkward, illogical ways. This is why it is a good idea to learn how to manage page breaks on your own.

If you click the Page Break Preview button on the View Ribbon, you will display an Excel view that shows page breaks in your spreadsheet as blue dotted lines. The solid blue lines indicate the boundaries of the printed page.

4.1 - PivotTable1.xlsx - Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW DEVELOPER POWERPivot

Normal Page Break Preview Page Layout Views

Workbook Views

Ruler Formula Bar

Gridlines Headings

Show

Zoom 100% Zoom to Selection

New Window Arrange All Freeze Panes

Split View Side by Side Synchronous Scroll Reset Window Position

Window

D26 : X ✓ fx 2010

ID#	Last Name	Order Date	Year	Product Name	Unit Price	Quantity	Total	Company Name
1040	Suyama	25-Aug-2011	2011	Rössle Sauerkraut	£45.60	15	£684.00	Alfreds Futterkiste
1041	Suyama	25-Aug-2011	2011	Chartreuse verte	£18.00	21	£378.00	Alfreds Futterkiste
1042	Suyama	25-Aug-2011	2011	Spegesild	£12.00	2	£24.00	Alfreds Futterkiste
1162	Peacock	03-Oct-2011	2011	Veggie-spread	£43.90	20	£878.00	Alfreds Futterkiste
1194	Peacock	13-Oct-2011	2011	Aniseed Syrup	£10.00	6	£60.00	Alfreds Futterkiste
1195	Peacock	13-Oct-2011	2011	Lakkalikööri	£18.00	15	£270.00	Alfreds Futterkiste
1529	Davolio	15-Jan-2012	2012	Raclette Courdavault	£55.00	15	£825.00	Alfreds Futterkiste
1530	Davolio	15-Jan-2012	2012	Original Frankfurter grüne Soße	£13.00	2	£26.00	Alfreds Futterkiste
1822	Davolio	16-Mar-2012	2012	Grandma's Boysenberry Spread	£25.00	16	£400.00	Alfreds Futterkiste
1823	Davolio	16-Mar-2012	2012	Rössle Sauerkraut	£45.60	2	£91.20	Alfreds Futterkiste
1970	Leverling	09-Apr-2012	2012	Escargots de Bourgogne	£13.25	40	£530.00	Alfreds Futterkiste
1971	Leverling	09-Apr-2012	2012	Flotemysost	£21.50	20	£430.00	Alfreds Futterkiste
162	King	18-Sep-2010	2010	Gudbrandsdalsost	£28.80	1	£28.80	Ana Trujillo Emparedados y
163	King	18-Sep-2010	2010	Outback Lager	£12.00	5	£60.00	Ana Trujillo Emparedados y
998	Leverling	08-Aug-2011	2011	Tofu	£23.25	3	£69.75	Ana Trujillo Emparedados y
999	Leverling	08-Aug-2011	2011	Singaporean Hokkien Fried Mee	£14.00	5	£70.00	Ana Trujillo Emparedados y
1000	Leverling	08-Aug-2011	2011	Camembert Pierrot	£34.00	10	£340.00	Ana Trujillo Emparedados y
1347	Leverling	28-Nov-2011	2011	Mascarpone Fabioli	£32.00	10	£320.00	Ana Trujillo Emparedados y
1754	Peacock	04-Mar-2012	2012	Queso Cabrales	£21.00	2	£42.00	Ana Trujillo Emparedados y
1755	Peacock	04-Mar-2012	2012	Konbu	£6.00	10	£60.00	Ana Trujillo Emparedados y
1756	Peacock	04-Mar-2012	2012	Teatime Chocolate Biscuits	£9.20	7	£64.40	Ana Trujillo Emparedados y
1757	Peacock	04-Mar-2012	2012	Mozzarella di Giovanni	£34.80	10	£348.00	Ana Trujillo Emparedados y
314	Leverling	27-Nov-2010	2010	Queso Cabrales	£16.80	24	£403.20	Antonio Moreno Taquería
678	King	15-Apr-2011	2011	Ippoh Coffee	£46.00	15	£690.00	Antonio Moreno Taquería
679	King	15-Apr-2011	2011	Chocolade	£12.75	15	£191.25	Antonio Moreno Taquería

You can also access Page Break view by clicking Page Break Preview on the status bar.

The Page Break view, though not great for actually working with your data, does provide functionality.

That is, you can still edit, copy, remove data, and choose from menus in this view.

This view is designed to help you organise your spreadsheets for printing. If you find that your data

overlaps onto another page, but you would like to keep it on a single page, you can drag the blue dotted

lines with your mouse to adjust where one page ends and another begins.

B	C	D	E	F	G	H	I
Last Name	Order Date	Year	Product Name	Unit Price	Quantity	Total	Company Name
Suyama	25-Aug-2011	2011	Rössle Sauerkraut	£45.60	15	£684.00	Alfreds Futterkiste
Suyama	25-Aug-2011	2011	Chartreuse verte	£18.00	21	£378.00	Alfreds Futterkiste
Suyama	25-Aug-2011	2011	Spegesild	£12.00	2	£24.00	Alfreds Futterkiste
Peacock	03-Oct-2011	2011	Vegie-spread	£43.90	20	£878.00	Alfreds Futterkiste
Peacock	13-Oct-2011	2011	Aniseed Syrup	£10.00	6	£60.00	Alfreds Futterkiste
Peacock	13-Oct-2011	2011	Lakkalikööri	£18.00	15	£270.00	Alfreds Futterkiste
Davolio	15-Jan-2012	2012	Raclette Courdavault	£55.00	15	£825.00	Alfreds Futterkiste
Davolio	15-Jan-2012	2012	Original Frankfurter grüne Soße	£13.00	2	£26.00	Alfreds Futterkiste
Davolio	16-Mar-2012	2012	Grandma's Boysenberry Spread	£25.00	16	£400.00	Alfreds Futterkiste
Davolio	16-Mar-2012	2012	Rössle Sauerkraut	£45.60	2	£91.20	Alfreds Futterkiste
Leverling	09-Apr-2012	2012	Escargots de Bourgogne	£13.25	40	£530.00	Alfreds Futterkiste
Leverling	09-Apr-2012	2012	Flötremysost	£21.50	20	£430.00	Alfreds Futterkiste
King	18-Sep-2010	2010	Gudbrandsdalsost	£28.80	1	£28.80	Ana Trujillo Emparedados y
King	18-Sep-2010	2010	Outback Lager	£12.00	5	£60.00	Ana Trujillo Emparedados y
Leverling	08-Aug-2011	2011	Tofu	£23.25	3	£69.75	Ana Trujillo Emparedados y
Leverling	08-Aug-2011	2011	Singaporean Hokkien Fried Mee	£14.00	5	£70.00	Ana Trujillo Emparedados y
Leverling	08-Aug-2011	2011	Camembert Pierrot	£34.00	10	£340.00	Ana Trujillo Emparedados y
Leverling	28-Nov-2011	2011	Mascarpone Fabioli	£32.00	10	£320.00	Ana Trujillo Emparedados y
Peacock	04-Mar-2012	2012	Queso Cabrales	£21.00	2	£42.00	Ana Trujillo Emparedados y
Peacock	04-Mar-2012	2012	Konbu	£6.00	10	£60.00	Ana Trujillo Emparedados y
Peacock	04-Mar-2012	2012	Teatime Chocolate Biscuits	£9.20	7	£64.40	Ana Trujillo Emparedados y
Peacock	04-Mar-2012	2012	Mozzarella di Giovanni	£34.80	10	£348.00	Ana Trujillo Emparedados y
Leverling	27-Nov-2010	2010	Queso Cabrales	£16.80	24	£403.20	Antonio Moreno Taquería
King	15-Apr-2011	2011	Ippoh Coffee	£46.00	15	£690.00	Antonio Moreno Taquería
King	15-Apr-2011	2011	Chocolade	£12.75	15	£191.25	Antonio Moreno Taquería
Peacock	18-Mar-2011	2011	Queso Cabrales	£21.00	5	£105.00	Antonio Moreno Taquería

If you use print preview, you can get a better idea of what this page will look like when printed, now that the page breaks have been adjusted.

Inserting a Page Break

To manually insert a page break:

- Select the header of the column to the right or row below where the page break is to appear
- Right-click on the column or row header
- Select Insert Page Break from the menu

Page breaks can also be inserted from the Page Layout tab, Page Setup group, Insert Break button.

Printing Multiple Sheets

Rather than selecting and printing sheets in the same file individually, multiple sheets can be printed simultaneously.

To print all sheets in a workbook:

- Right-click on the active sheet tab
- Choose Select All Sheets from the menu
- Use Ctrl + P then press Enter

To print selected sheets from a workbook:

- Click the tab for the first sheet you wish to print
- Hold down the Ctrl key while you click the tabs for the other sheets you want to print. This will create a group of sheets.
- Use Ctrl + P then press Enter
- To ungroup sheets, right-click on the sheet tab for the first sheet you selected
- Choose Ungroup Sheets

Module Two: Working with Multiple Worksheets and Workbooks

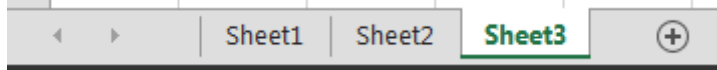
In this module we'll explore the use and management of more than one worksheet using navigating tools, 3-D formulas, linking cells and the consolidation of data.

Using Multiple Worksheets





The default number of worksheets in a work book is three; the maximum number of worksheets is limited only by the memory capacity of your PC.

To create a new worksheet, click the Insert Worksheet tab to the right of the existing sheet tabs in your

workbook (or use the shortcut keys Shift + F11).



Right-click on a sheet tab to get to the menu below.

	<u>I</u> nsert...	Insert	Inserts a sheet tab to the left of the present sheet.
	<u>D</u> elete	Delete	Permanently deletes the sheet, cannot delete if there is only one sheet.
	<u>R</u> ename	Rename	To display a different name on the sheet tab.
	<u>M</u> ove or Copy...	Move or Copy	Move or copy the sheet within the workbook or to a different workbook.
	<u>V</u> iew Code	View Code	View the VBA code in any modules in the workbook.
	<u>P</u> rotect Sheet...	Protect Sheet	Apply protection to the worksheet.
	<u>T</u> ab Color	Tab Colour	Apply colour to the sheet tab.
	<u>H</u> ide	Hide	Temporarily hide the worksheet from view (using Unhide will reverse this.)
	<u>U</u> nhide...		
	<u>S</u> elect All Sheets		

Navigating between sheets

The navigation buttons to the left of the sheet tabs are used to assist with viewing sheet tabs.

The following shortcut keys are also useful:

Ctrl + Page Down Make the next tab to the right active

Ctrl + Page Up Make the next tab to the left active

Creating 3-D formulas

Instead of calculating with only rows and columns on a single sheet, we can create formulas that reference cells on multiple sheets.

A reference that refers to the same cell or cell range on multiple sheets is called a 3-D reference.

To create a 3-D formula using a function:

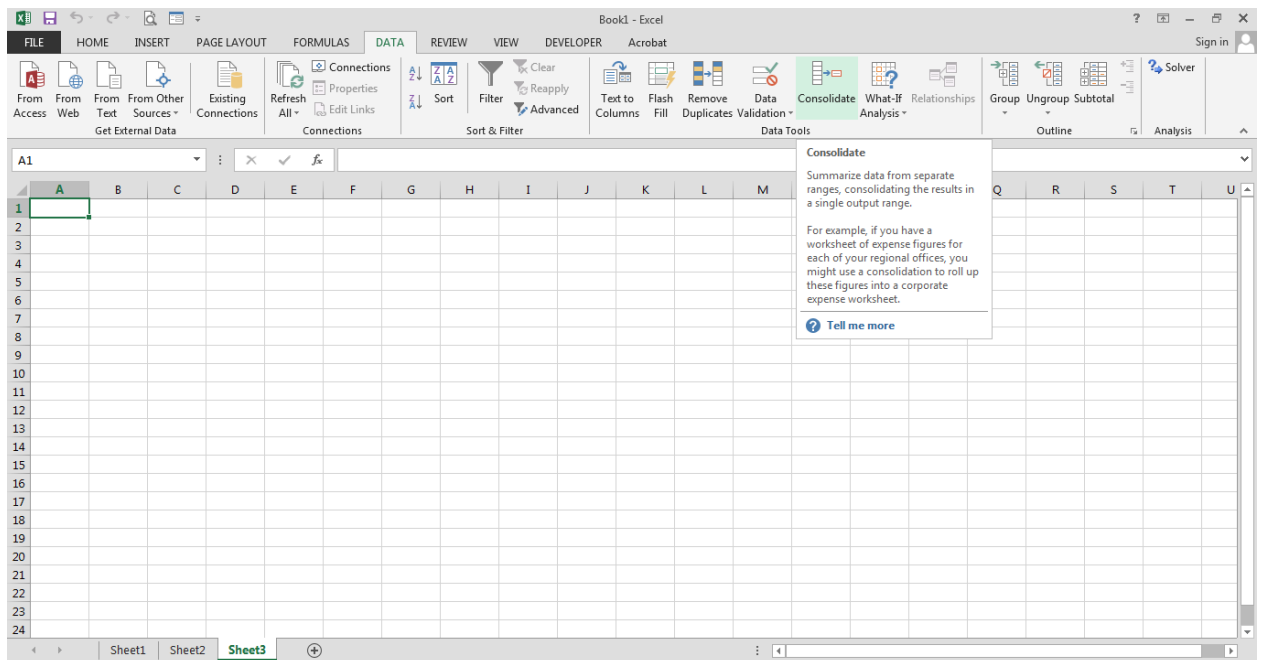
- Select the cell where the formula is to be entered
- Type = (equal sign)
- Type in the function name followed by an open bracket. Click on the sheet tab of the first
- worksheet to be entered into the formula
- Hold down the Shift key and click on the sheet tab for the last worksheet to be entered into the
- formula
- On the sheet you have just selected, highlight the cell or range of cells to be included in the
- formula
- To complete the formula, press the Enter key
-

– Consolidating Data

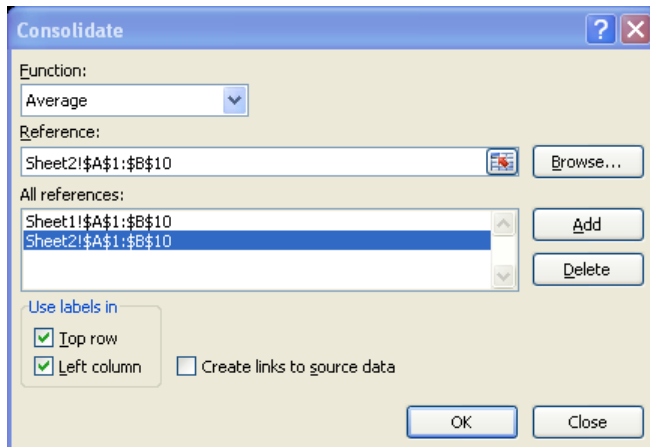
You can consolidate data to summarize and report results of data that appears on separate worksheets. The worksheets can be in different workbooks. The consolidated data is easier to update and aggregate on a regular basis.

Use the following procedure to consolidate data.

1. Select the starting cell where you want to display the consolidated data.
Make sure to leave enough room for the consolidated data, so that you don't overwrite other information. In this example, choose the top left cell in Sheet 3.
2. Select the **Data** tab from the Ribbon.
3. Select **Consolidate**.



4. In the Consolidate dialog box, do the following:
- Select the **Function** from the drop down list. In this example, use **Average**.
 - Select the **Reference** for each worksheet you are consolidating. If the worksheet is in another workbook, select **Browse** to open it. Select the cells to include in the consolidation from the first worksheet and select **Add**. Repeat for each reference.



Linking Workbooks

As you know, a cell reference like K7 simply refers to the cell at the intersection of column K and row 7. A cell reference like Store!K7 refers to the cell at column K and row 7 in the worksheet named Store.

Taking this one step further, the reference [Sales.xlsx]Store!K7 refers to cell K7 in worksheet Store in the workbook Sales.

In Excel, a cell in one worksheet can contain a reference to a cell in another worksheet or in another workbook. This kind of linking can be useful if you have several sheets that have to reference the same pool of data. If you create links, the linked cells in the other worksheets or workbooks will be updated automatically when you update the source data

Link1						
	A	B	C	D	E	F
1		Sales				
2	Store1	45000				
3	Store2	61200				
4	Store3	2300				
5	Store4	21985				
6						
7						
Book2						
	A	B	C	D	E	
1		Foot Wear	Clothing	Equipment	Grand Total	
2	Period1	200	22	900		
3	Period2	222	100	910		
4	Period3	230	178	920		
5	Period4	500	256	930		
6	Period5	506	334	940		
7	Period6	512	412	950		
8	Period7	518	490	960		
9	Period8	524	568	953		
10	Period9	530	646	946		
11	Period10	536	724	939		
12	Period11	542	802	932		
13	Period12	548	880	925		
14	Totals	5368	5412	11205	21985	
15						

In this example above, the linked cells (indicated by arrows) are in two different workbooks.

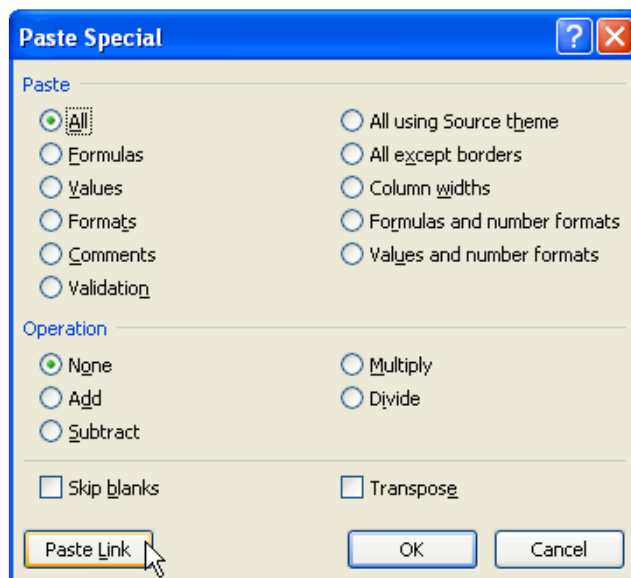
Using the Paste Link option

To link two workbooks, open both of them and select the cell or range of source data that you want to use from one workbook

Link1						
	A	B	C	D	E	F
1		Sales				
2	Store1	45000				
3	Store2	61200				
4	Store3	2300				
5	Store4	21985				
6						
7						

Book2					
	A	B	C	D	E
1		Foot Wear	Clothing	Equipment	Grand Total
2	Period1	200	22	900	
3	Period2	222	100	910	
4	Period3	230	178	920	
5	Period4	500	256	930	
6	Period5	506	334	940	
7	Period6	512	412	950	

Right click on the cell or range and select Copy from the menu. The copied range will be enhanced with a flashing black and white border. Once you have done this, right click on the cell in the destination workbook that will contain the linked data. (If you are linking a range of data, right click on the top left cell of the destination range.) Select Paste Special from the pop up menu and click on the Paste Link button in the lower left.



The linked data will now appear in the destination workbook. If you update the source data, the linked data will be updated as well.

Link1						
	A	B	C	D	E	F
1		Sales		200	22	900
2	Store1	45000		222	100	910
3	Store2	61200		230	178	920
4	Store3	2300		500	256	930
5	Store4	21985		506	334	940
6						
7						
Book2						
	A	B	C	D	E	F
1		Foot Wear	Clothing	Equipment	Grand Total	
2	Period1	200	22	900		
3	Period2	222	100	910		
4	Period3	230	178	920		
5	Period4	500	256	930		
6	Period5	506	334	940		
7	Period6	512	412	950		
8	Period7	518	490	960		
9	Period8	524	568	953		
10	Period9	530	646	946		
11	Period10	536	724	939		
12	Period11	542	802	932		
13	Period12	548	880	925		
14	Totals	5368	5412	11205	21985	

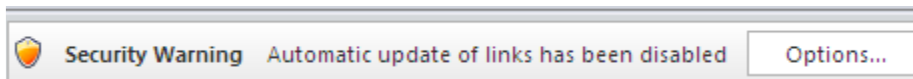
In this image, the cells highlighted in pink have been linked. Cell E14 in the lower workbook has been linked to cell B5 in the upper workbook, and the range B2:D6 in the lower workbook has been linked to the range D1:F5 in the upper workbook.

Creating a formula to link workbooks

There is also another way to create links between workbooks. First, click on the destination cell and type =. Next, click the source data cell in another workbook and press the Enter key. The two workbooks should now be linked, and any data or changes that appear in the source cell will be seen in the linked cell as well.

Controlling link updates

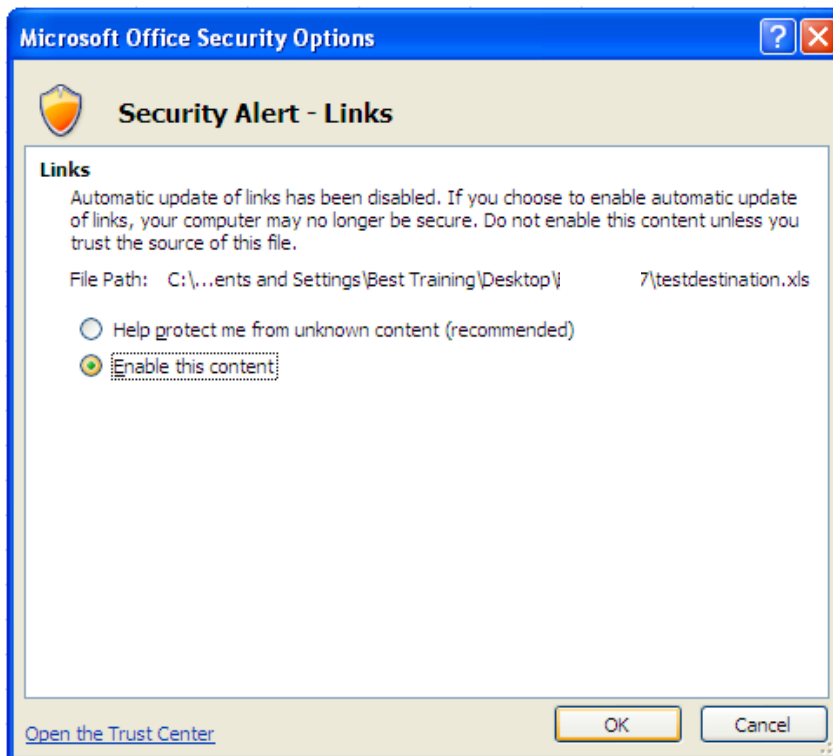
When the source workbook and the destination workbook are open on the same computer, links are updated automatically. When you open a destination workbook, and the source workbook is not open, you may be alerted by the Trust Bar (see below) whether to update the links.



You can control whether the Trust Bar alerts you, and whether to update all links when the alert does not appear. You can also update only some of the links, if the workbook contains more than one link.

Manually update all of the links or none of the links in a workbook

Close all workbooks. If one source workbook is open, and others are closed, the updates will not be uniform. Open the workbook that contains the links. To update the links, on the Trust Bar, click Options, and then click Enable this Content.



Manually update only some of the links to other workbooks

Close all workbooks. Open the workbook that contains the links. On the Data tab, in the Connections group, click Edit Links.

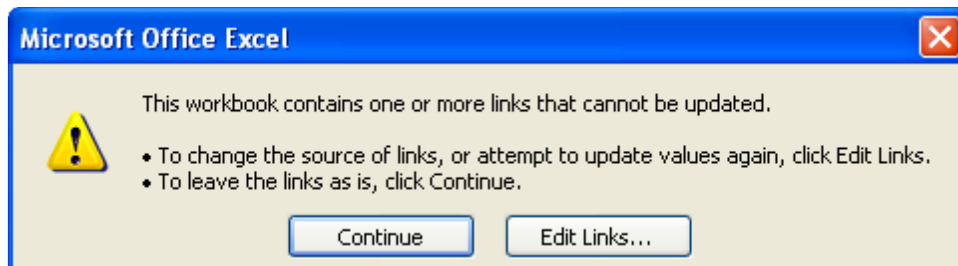


In the Source list, click the linked object that you want to update.

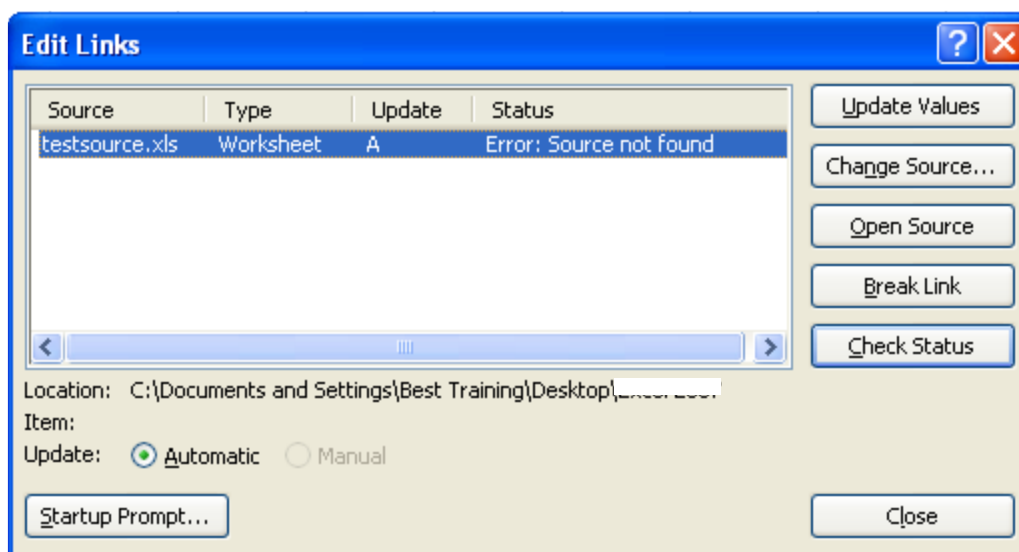
- To select multiple links, hold down CTRL and click each linked object.
- To select all links, press CTRL+A.
- Click Update Values.

Dealing with Broken Links

If the following message appears on your screen when you are attempting to update a linked file, this means that Excel cannot find the source file. This may be because the source file has been renamed or moved to a different location.



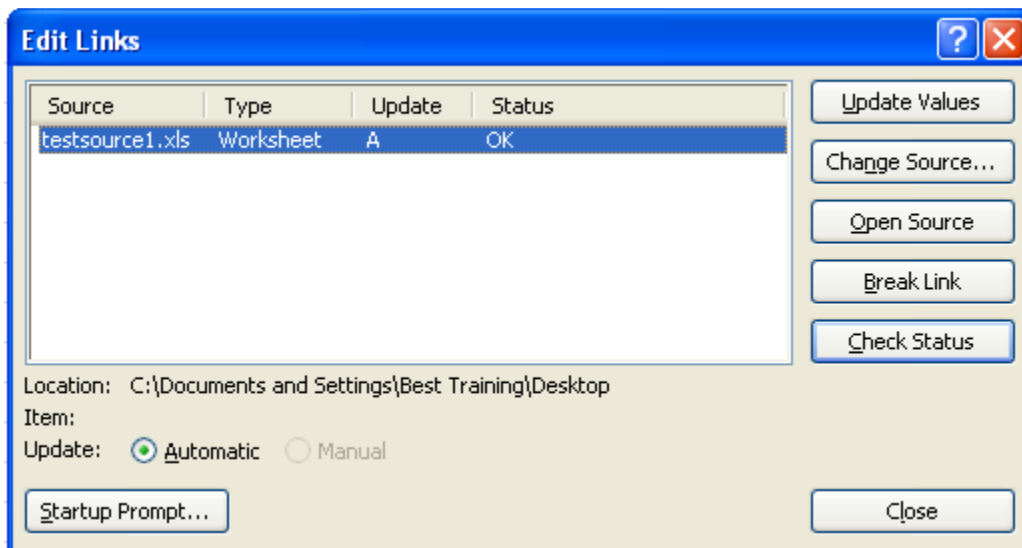
To reestablish the link between the two files, click the Edit Links option to open the Edit Links dialogue box (below).



Select the Change Source button from the Edit Links dialogue box.

This will allow you to navigate to the source file. Once you have located the source file, select it and click OK.

You will then see that the link has been re-established (note OK showing under Status). Any updates of data should have been completed. Click the Close button.



The Edit Links dialogue box can be opened at other times by going to the Data tab, Connections group and clicking the Edit Links button.



Module Three: Working with Dates

In this module we will be exploring the use of dates within formulas, including date functions, the input of dates and format.

Dates and time in Excel

Though Microsoft Excel displays dates and times as you would expect, it stores them as numbers.

Dates are stored as the number of days since the beginning of the last century (ie 1-Jan-1900 is day 1).

Note that dates before 1900 are stored as text and cannot be used in calculations.

Times are stored as parts of a day – i.e. 12 noon is stored as 1/2 or 0.5. Both the date and time can

therefore be stored as a single number, the fractional part forming the time.

When entering a date into a cell, Excel will accept various different formats (including year/month/day as well as day/month/year).

Months can be entered as a number or text - the name in full or in an abbreviated (three-letter) form.

Years abbreviated to 2 figures are taken to be between 1930 and 2029 - ie 31/12/20 is 31-Dec-2020. If

the year is omitted, the current year is assumed.

A slash or hyphen (minus sign) can be used to separate the day, month and year.

Spaces can be used if

the month appears as text.

If Excel recognises data as a date it will appear on the right of the cell - if it appears on the left, Excel

hasn't recognised it.

Times are entered into a cell by using a colon to separate the hour, minute and second. They also appear

right-justified if recognised as valid. Because the time represents the fraction of the day, the hour must

always be included. Times can be entered with an am/pm suffix if desired (a space must precede am/pm).

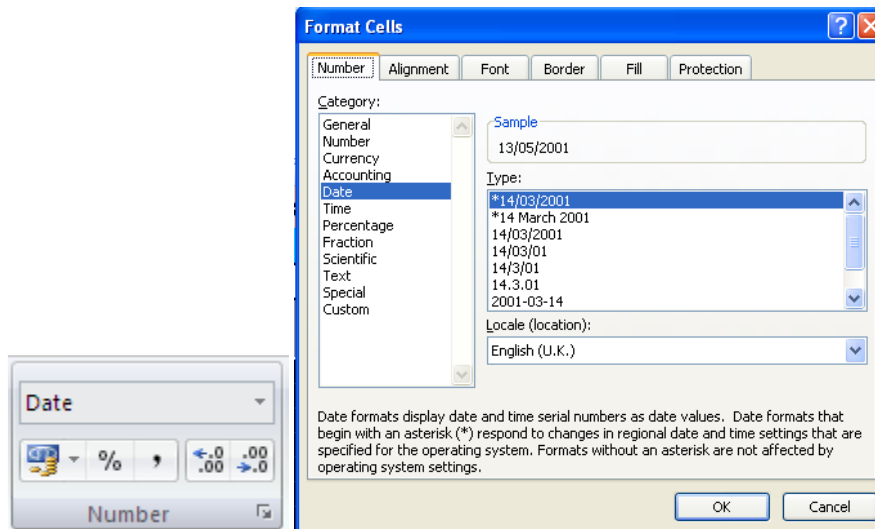
Both a date and time (separated by a space) can be entered into a cell.

Inserting and formatting dates

Once a date and/or time has been entered into a cell, various format styles can be applied to the data.

To apply a format:

- Enter a date into an empty cell and press <Enter> - widen the column, if necessary
- Press <up arrow> to move back to the cell with the date
- Go to the Home tab, Number group
- Launch the Format Cells dialogue box



Entering date functions

There are numerous date and time functions in Excel 2013. These can be viewed by selecting the

Formulas tab and clicking the Date & Time button from the Function Library group.

Two common functions are:-

=NOW() Gives today's date and time (eg 21/07/2005 09:30) - **the two brackets are required.**

=TODAY() Gives today's date in date format (eg 21/07/2005)

Other date and time functions available in Excel 2013 are:

DAY Returns the number of the day from 1 to 31.

DAYS360 Calculates the number of days between two dates based on 360 day years.

HOUR Gives the hour as a number from 0 to 23.

MINUTE Gives the minute as a number from 0 to 59.

MONTH Gives the month as a number from 1 to 12.

SECOND Gives the second as a number from 0 to 59.

TIME Converts hours minutes and seconds to an Excel serial number time.

WEEKDAY Gives the day as a number from one to seven.

YEAR Gives the year of a serial number date, from 1900 to 9999.

Using dates in formulas

Because dates (and times) are stored as numbers, they can be used in calculations - for example, it's

easy to work out the number of days between two dates or calculate an employee's wages given an

hourly wage rate. Some other tasks involving times and dates are less straightforward (for example,

sorting dates into calendar order, irrespective of the year).

Date entries can also be used in formulae to give answers to your questions, i.e. working out a date which is 30 days from the present date.

	A
1	25/12/2010
2	=A1+30

Module Four: Conditional Formulas and Formatting

In this module we will be exploring the use of calculations and formatting within a data set based on the data meeting specific conditions/criteria.

The IF function

Excel's IF function can often prove to be very useful. You can use this function to branch to different

values or actions depending on a specified condition. The structure of an If function is as follows: IF

(logical test, value if true, value if false)

IF functions are called conditional functions because the value that the function returns will depend on

whether or not a specific condition is satisfied. As an example, consider the following function: IF (A1=10,5, 1)

This function states that if cell A1 has a value of 10 the cell that contains the function will have the value

of 5. But if A1 doesn't have a value of 10, the cell that contains the function will have a value of 1. In other words, the function reads: if A1 equals 10 then return the number 5, else, return the number 1.

Let's say that this next IF function is entered into cell B2: IF (A1 <= 100, A1*.5, C3*2)

This function states that if the contents of cell A1 is less than or equal to 100, the value in cell B2 will be

the value in A1 multiplied by .5; else, the value in B2 will be the value of cell C3 multiplied by 2.

You can insert an IF function by invoking the Insert Function dialogue and looking under the Logical

category, or by typing it directly into the formula bar.

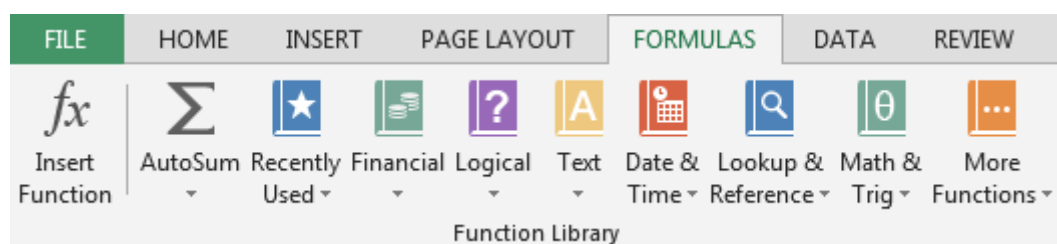
The logic of the IF function can be a little confusing until you get used to it. The best way to get

comfortable with IF functions, is to practice using them.

Using the Function Library

Excel 2013 contains an extensive library of functions that you can call upon to help you solve problems.

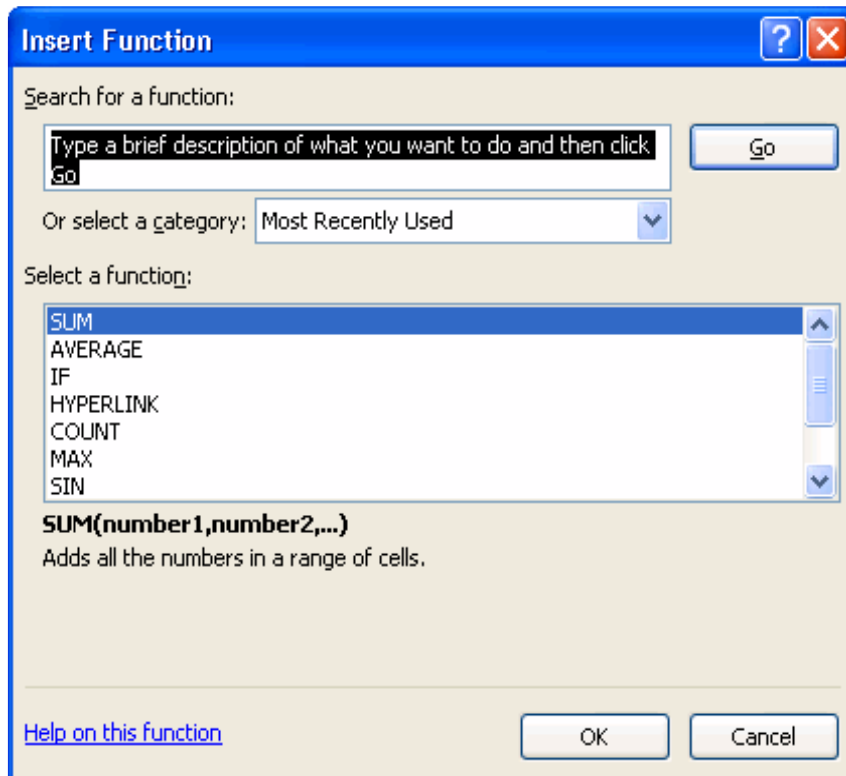
These tools are available in the Function Library button group, on the Formulas ribbon.



The first and largest button is Insert Function. This button will open a dialog allowing you to search for and insert hundreds of functions.

You can also click the small fx button next to the formula bar to display the Insert Function box.

Clicking the Insert Function button activates the Insert Function dialogue box and provides access to the large range of functions available in Excel



Once the Insert Function dialogue box is open:

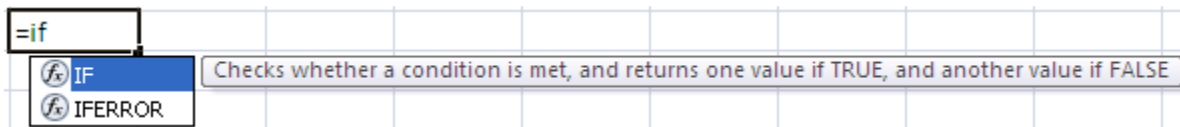
- Select the function you wish to use from the available list and click OK or
- Type the name of the function you wish to use in the Search for a function area, press Enter, select the function when it appears in the list and click OK.

Manually entering a function

If you know which function you wish to use, you can enter a function into a worksheet by inputting it manually (i.e. by typing the function directly into a cell).

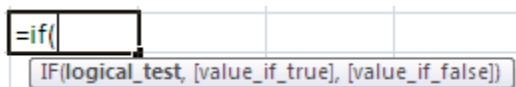
When you do this in Excel 2013, a screen tip will appear with the possible functions that correspond with the letters of the function name you have entered.

For example, if you type =IF into a cell the following appears.

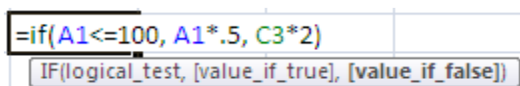


If there is more than one function listed, you can toggle between them by using the arrow up or arrow down keys.

Once you have selected the function you wish to use, continue by typing in a left bracket, which will cause the function syntax to display in another screen tip.



Continue to enter all the arguments required for the function to give you a result, ensuring you type a comma between each argument.



Press Enter to display the result

Conditional Formatting

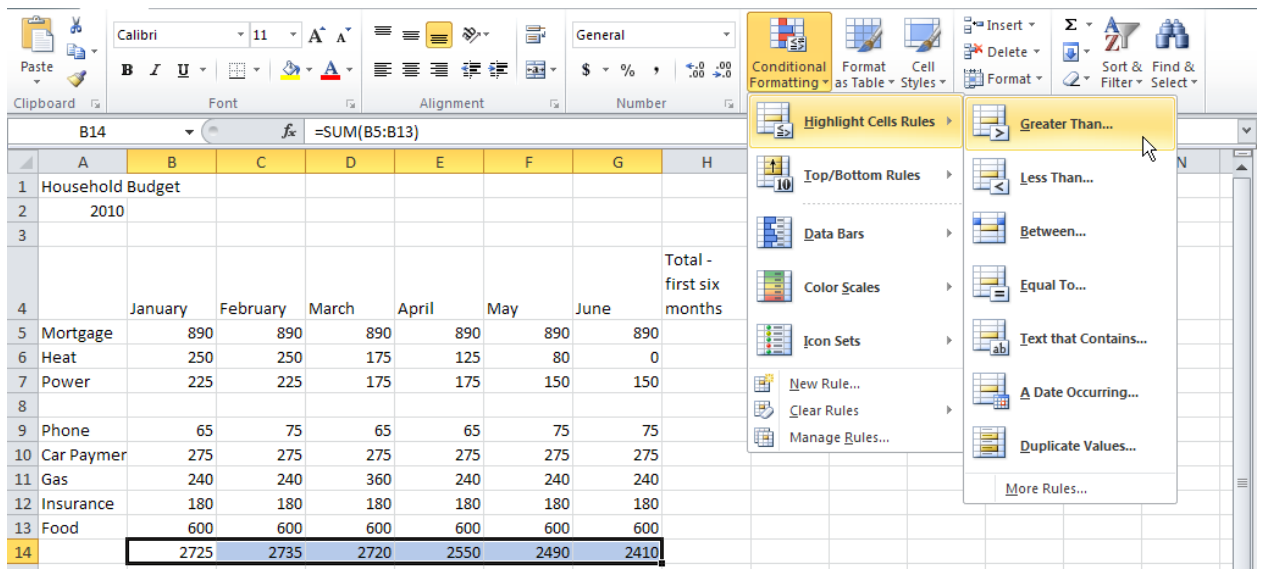
In Excel 2013 you can design a worksheet in such a way that data is formatted differently, based on the values the data assume at any given time. This is called conditional formatting.

This spreadsheet is conditionally formatted to highlight cells in different colours depending on the cell values.

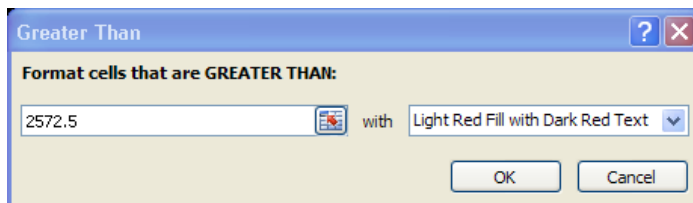
I9								
	A	B	C	D	E	F	G	
1			Budget					
2	Region							
3		Income	Accounts Receivable	Overhead	Depreciation	Net		
4		Region1	\$1,000.00	\$ 500.00	100	50	\$ 1,350.00	
5		Region2	\$1,020.00	\$ 510.00	150	55	\$ 1,325.00	
6		Region3	\$1,040.00	\$ 520.00	200	60	\$ 1,300.00	
7		Region4	\$1,060.00	\$ 530.00	250	65	\$ 1,275.00	
8		Region5	\$1,080.00	\$ 540.00	300	70	\$ 1,250.00	
9		Region6	\$1,100.00	\$ 550.00	350	75	\$ 1,225.00	
10		Region7	\$1,120.00	\$ 560.00	400	80	\$ 1,200.00	
11		Region8	\$1,140.00	\$ 570.00	450	85	\$ 1,175.00	
12		Region9	\$1,160.00	\$ 580.00	500	90	\$ 1,150.00	
13		Total	\$9,720.00	\$ 4,860.00	\$ 2,700.00	\$ 630.00	\$ 11,250.00	
14								

Use the following procedure to apply conditional formatting. In this example, we will format all monthly totals in the budget that are over \$2500.

1. Highlight the cell or cell range where you want to use conditional formatting.
2. Select the **Conditional Formatting** tool from the Home tab on the Ribbon.
Select **Highlight Cell Rules**. Select **Greater Than**.



Excel displays the Greater Than dialog box to help you complete the conditional formatting rule.



3. Enter 2500 in the left field.
4. Select a formatting option from the right drop down list.
5. Select **OK** to apply the conditional formatting.

		January	February	March	April	May	June	Total - first six months
4								
5	Mortgage	890	890	890	890	890	890	
6	Heat	250	250	175	125	80	0	
7	Power	225	225	175	175	150	150	
8								
9	Phone	65	75	65	65	75	75	
10	Car Paymer	275	275	275	275	275	275	
11	Gas	240	240	360	240	240	240	
12	Insurance	180	180	180	180	180	180	
13	Food	600	600	600	600	600	600	
14		2725	2735	2720	2550	2490	2410	
15								

When the Conditional Formatting menu is active it will display a menu of conditional formatting options. From this menu, you can choose:

Highlight Cells Rules This will highlight cells that are greater than, less than, between or equal to values that you can specify.

Top/Bottom Rules This option will allow you to highlight the top or bottom numbers or percent in the selected cells.

Data Bars Will display coloured bars that are indicative of the value in the cell.

Colour Scales Will use different shades of colour to represent different values, from low to high.

Icon Sets Will use sets of similar icons that will visually indicate a cell's value.

You will also notice at the bottom of the menu options for creating a new rule, for clearing rules, and for managing rules.

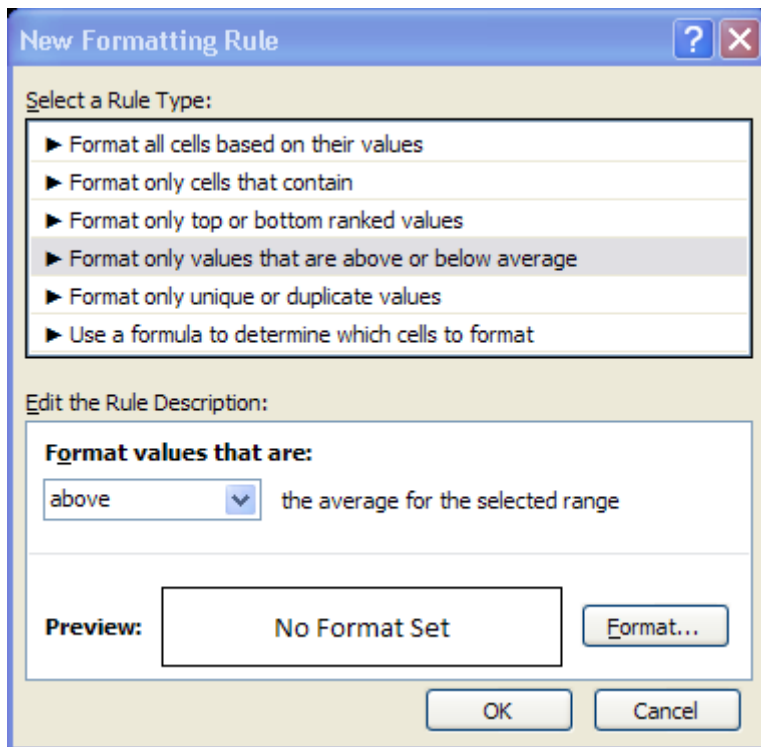
Each one of the conditional formatting menu options will display either a sub menu or a dialogue box. In the image above, you can see the sub menu for the Data Bars option. As you let your mouse pointer hover over an option in the sub menu, you will see a preview of the type of conditional formatting that your pointer is on applied to the cells that you selected. To implement the conditional formatting, just click the submenu option of your choice.

You can apply multiple conditional formatting rules to a group of cells by simply re-selecting the group, and then adding another conditional format by using the menu system discussed previously. The following image shows a group of cells with a data bar conditional format and an icon set conditional format.

Use the following procedure to create a new conditional formatting rule.

1. Highlight the cell or cell range where you want to use conditional formatting.
2. Select the **Conditional Formatting** tool from the Home tab on the Ribbon.
Select **New Rule**.

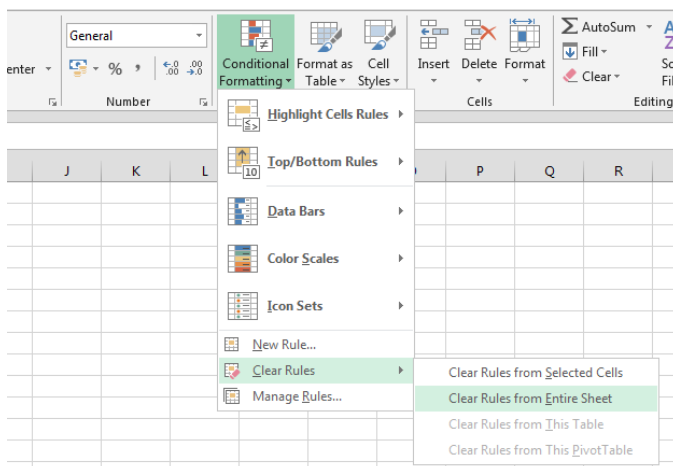
Excel opens the **New Formatting Rule** dialog box.



3. The options in this dialog box differ, based on the **Rule Type** you select. Select the **Rule Type** and follow the prompts to indicate the conditions for when to apply the formatting.
4. Select **Format** to open the **Format Cells** dialog box to create the formatting to apply when the conditions are met.
5. Select **OK** to save your rule and close the **New Formatting Rule** dialog box.

Removing Conditional Formatting

If you want to remove conditional formatting rules, simply use the Clear Rules option from the menu. This option will let you clear rules for selected cells or for an entire spreadsheet.



Module Five: Documenting and Auditing

This module introduces concepts that will help you troubleshoot formulas as we progress through the course. Precedent cells are cells whose contents are used in the active cell. Dependent cells are used in other cells contents or formulas. This module explains how to show these relationships. It also explains how to display the formulas, instead of the results, in a worksheet. You'll also learn how to work with comments in this module.

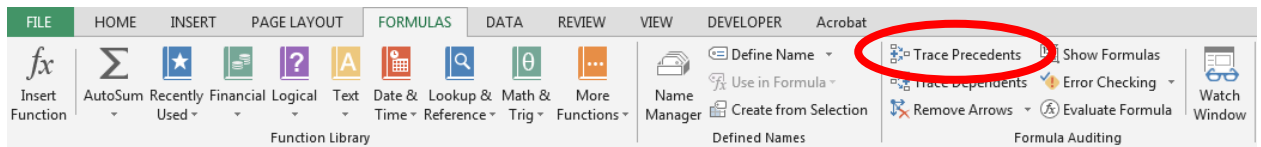
Formula errors can be very frustrating. This module will teach you how to prevent formula errors by using named ranges. You'll gain an understanding of formula errors and take a closer look at tracing dependents and precedents. This module explains how to use the trace errors commands. You'll also learn how to evaluate formulas

Tracing Precedent Cells

If you have formulas that are based on the contents of another cell, you have precedent cells. If you have problems with a formula or result, you can trace the precedent cells to help track down the problem. The Trace Precedents command is useful to see the trail of data relationships. The Trace Precedents command allows you to show tracer arrows to show the relationship between the active cell and the precedents to that cell.

Use the following procedure to trace precedents.

1. Select the cell that contains the formula you want to trace. Cell D18 is used in this example.
2. Select the **Formulas** tab from the Ribbon.
3. Select **Trace Precedents**.



4. Excel adds a tracer arrow from each cell that provides data to the active cell.

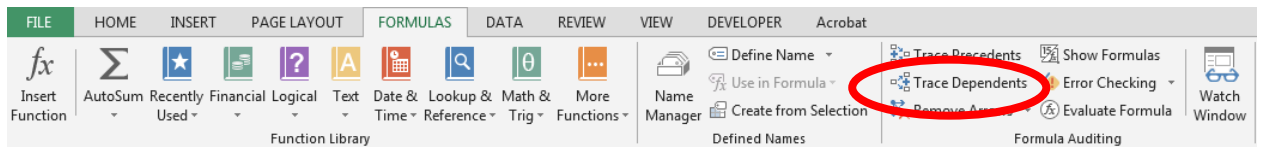
Line Item	February
PROFIT AND LOSS	
Revenue	
Budget	\$75,000
Actual	\$70,000
Budget variance (Actual – Budget)	(\$5,000)
Prior year	\$60,000
Prior year variance (Actual – Prior year)	\$10,000

Tracing the Dependents of a Cell

If you have formulas that are based on the contents of another cell, you have dependent cells. The Trace Dependents command is useful to see how other cells are influenced by the active cell's contents. The Trace Dependents command allows you to show tracer arrows to show the relationship between the active cell and the dependents of that cell.

Use the following procedure to trace dependents.

1. Select the cell that you want to trace. Cell D18 is used in this example.
2. Select the **Formulas** tab from the Ribbon.
3. Select **Trace Dependents**.



4. Excel adds a tracer arrow to each cell that uses the active cell's data.
5. Click the Trace Dependents tool again to see further relationships that are influenced by the active cell's contents.

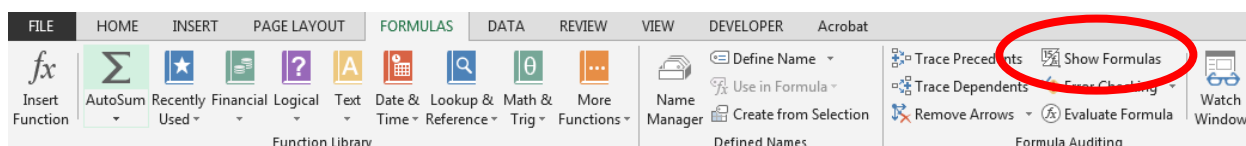
Line Item	February	March	Q1	April	May	June	Q2	July
PROFIT AND LOSS								
Revenue								
Budget	\$75,000	\$85,000	\$225,000	\$75,000	\$80,000	\$90,000	\$245,000	\$95,000
Actual	\$70,000	\$88,000	\$218,000	\$95,000	\$65,000	\$88,000	\$248,000	\$95,000
Budget variance (Actual – Budget)	(\$5,000)	\$3,000	(\$7,000)	\$20,000	(\$15,000)	(\$2,000)	\$3,000	\$0
Prior year	\$60,000	\$70,000	\$185,000	\$75,000	\$80,000	\$90,000	\$245,000	\$90,000
Prior year variance (Actual – Prior year)	\$10,000	\$18,000	\$33,000	\$20,000	(\$15,000)	(\$2,000)	\$3,000	\$5,000

Displaying Formulas Within the Sheet

In the default view, your worksheet shows the results of your formulas. When you select a cell, the formula bar shows the formula of the active cell. To help you audit your worksheet, you can show all of the formulas at once. The formulas display in the appropriate cells instead of the formula results.

Use the following procedure to display formulas within the sheet.

1. Select the **Formulas** tab from the Ribbon.
2. Select **Show Formulas**.



Excel expands the cells as necessary and displays all the worksheet's formulas in their cells.

A screenshot of an Excel worksheet with formulas displayed in cells. The formula bar at the top shows 'D18' and the formula '=+D15-D17'. The worksheet contains a 'Model Key' section and a 'PROFIT AND LOSS' table. The table has columns for 'Line Item', 'January', and 'February'. The 'January' column contains numerical values and formulas, while the 'February' column contains numerical values and formulas. The 'February' column is highlighted in yellow. The 'Line Item' column contains text labels for various financial items. The 'PROFIT AND LOSS' table is highlighted in yellow. The 'Model Key' section provides instructions on how to interpret the data: 'Numbers in black represent budget numbers or actuals for the current or prior year', 'Numbers in blue represent forecast numbers for the current year', and 'Italicized numbers in gray cells are calculations that generally should not be altered'.

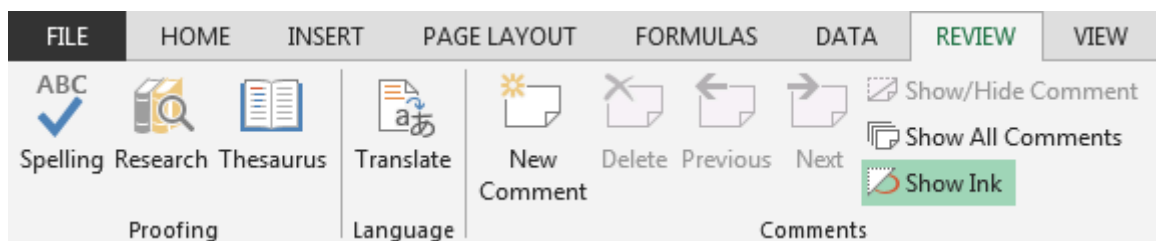
Line Item	January	February
PROFIT AND LOSS		
Revenue		
Budget	65000	75000
Actual	60000	70000
Budget variance (Actual – Budget)	=C15-C14	=D15-D14
Prior year	55000	60000
Prior year variance (Actual – Prior year)	=+C15-C17	=+D15-D17
Cost of Goods Sold		
Budget	50000	55000
Actual	47500	55000
Budget variance (Budget – Actual)	=+C20-C21	=+D20-D21
Prior year	45000	48000
Prior year variance (Prior year – Actual)	=+C23-C21	=+D23-D21

Adding, Displaying, Editing, and Removing Comments

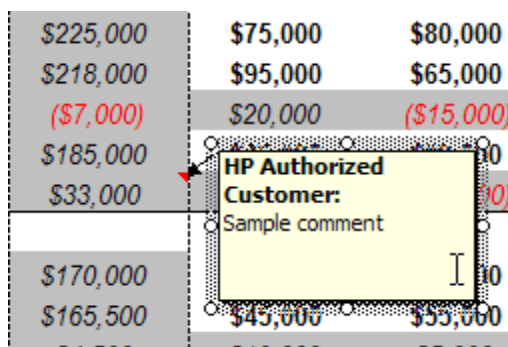
Comments are notes that you can add to a cell to explain the contents, such as to remind yourself of something related to the cell or explain it to other worksheet users. The Comments section on the Review tab of the Ribbon includes the tools to insert, edit, show or hide, and remove comments.

Use the following procedure to add a comment.

1. Select the cell where you want to add a comment.
2. Select the **Review** tab from the Ribbon.
3. Select **New Comment**.

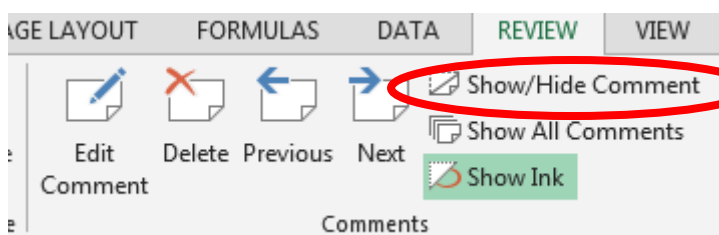


4. Begin typing your comment.



Use the following procedure to show or hide comments.

1. Select the cell with the comment.
2. Select **Show/Hide Comment** or **Show All Comments**.

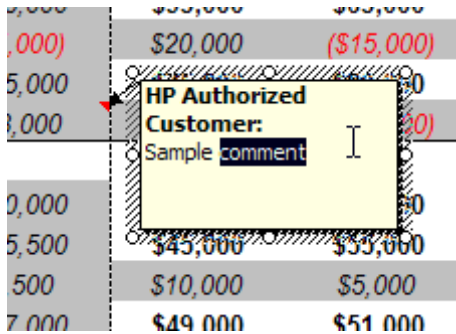


Use the following procedure to edit a comment.

1. Select the cell with the comment.

2. Select **Edit Comment**.

Excel opens the comment for editing. You can select text to change it, delete, or add text to the comment.



Use the following procedure to remove a comment.

1. Select the cell with the comment.
2. Select Delete.

Understanding Formula Errors

the most common formula errors and how they occur.

Start every function with the equal sign (=)

Excel will display the formula contents as text or a date if you do not use the equal sign.

Match all open and close parentheses

Every parenthesis needs a pair. Parenthesis must be in the correct position for the formula to work correctly.

Use a colon to indicate a range

When working with a range of cells, you must use a colon between the first and last cell reference.

Enter all required arguments

Some functions require arguments and some do not. If the function requires arguments, make sure you have the right number.

Enter the correct type of arguments

For functions that require arguments, make sure you have the right ones.

Nest no more than 64 functions

The top limit of nested functions, or functions within a function, is 64.

Enclose other sheet names in single quotation marks

If your worksheet names contain non-alphabetical characters, you must enclose the sheet name within single quotation marks when using the name in a formula.

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

If you are using a worksheet name in a formula, the name must be followed by an exclamation point.

Include the path to external workbooks

If you are referencing cells from another workbook, make sure the formula includes both the workbook name and the path to the workbook.

Enter numbers without formatting

Excel treats commas as separator characters. Format the formula result after you enter the numbers in the formula.

Avoid dividing by zero

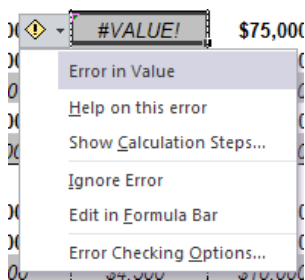
If you divide a cell by another that is zero or no value can result in a #DIV/0! Error.

Using the Trace Errors Commands

When you have a cell with an error, the cell displays a green triangle in the upper left corner. The Trace Errors icon appears next to the cell. The icon gives you several options to help correct your error.

Use the following procedure to use the Trace Errors Commands on a cell with a formula error

1. A formula with an error displays a green triangle in the upper left corner, along with an error icon next to the cell. Click on the arrow next to the icon to see the options.



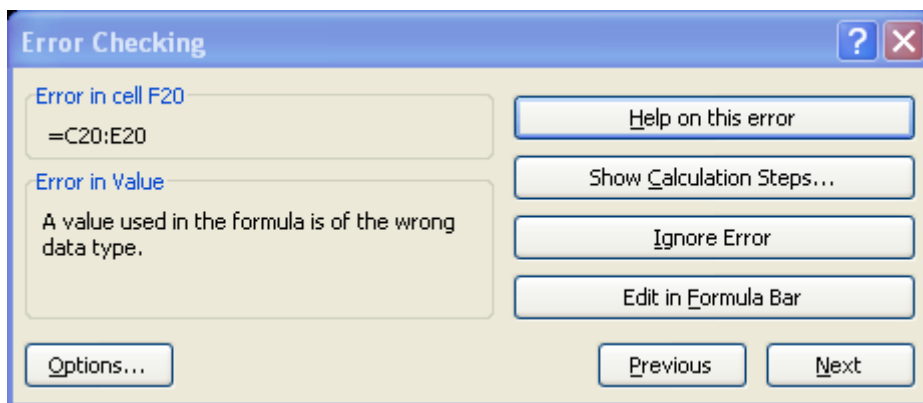
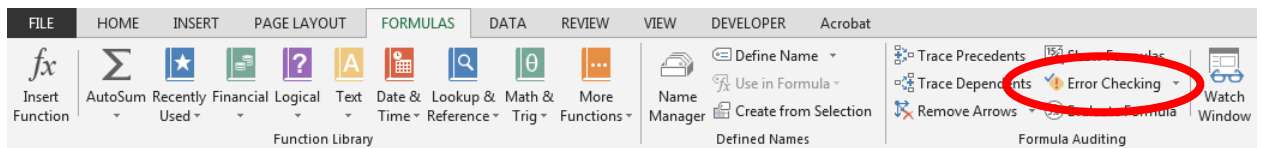
- **Help on this Error** – opens the Excel help files directly to an article related to the type of error Excel detected.
- **Show Calculation steps** – opens the Evaluate Formula dialog box (discussed later in this module).
- **Ignore Error** – allows you to keep the error and removes the error icon and green triangle.
- **Edit in Formula Bar** – moves your cursor to the Formula bar to allow you to correct the formula.
- **Error Checking Options** – opens the Options window to allow you to adjust the error checking options (discussed later in this module).

Using Error Checking

The Error Checking function in Excel is something like the Spell checking function in other applications. The Error Checking function checks for certain types of errors. The options on the dialog box help you to correct any errors that it finds.

Below is the *Error Checking* dialog box.

1. From anywhere on the worksheet, select the **Formulas** tab.
2. Select **Error Checking**.

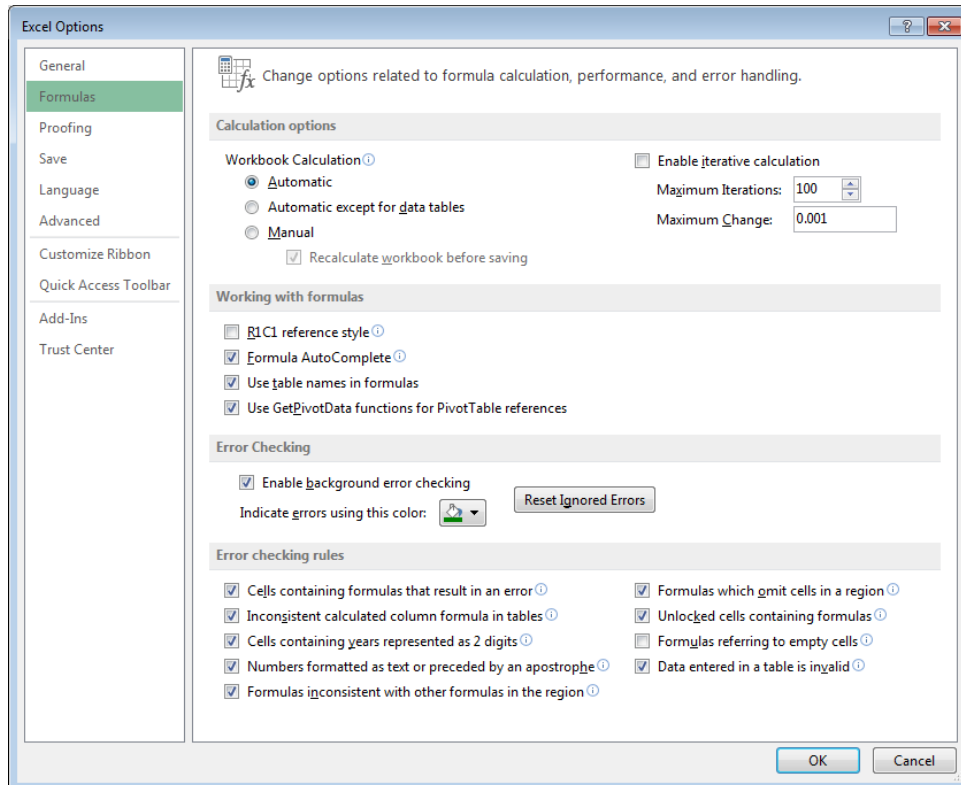


The Error Checking dialog box displays the formula as written in the cells. It explains why the formula contains an error.

- **Help on this Error** – opens the Excel help files directly to an article related to the type of error Excel detected.
- **Show Calculation steps** – opens the Evaluate Formula dialog box (discussed later in this module).
- **Ignore Error** – allows you to keep the error and removes the green triangle from the cell.
- **Edit in Formula Bar** – moves your cursor to the Formula bar to allow you to correct the formula.
- **Options** – opens the Options window to allow you to adjust the error checking options.
- **Resume** – restarts the Error Checking if you have switched to another task.
- **Previous** – returns to the previous error.
- **Next** – moves to the next error.

You can open the Formulas options from the Error Checking dialog box or the Trace Errors commands next to an error cell.

You can also open the Options dialog box selecting the **File** tab from the Ribbon. Then select **Options**. Select **Formulas**.



Under Error Checking, you can turn off **Background error checking** by clearing the box.

You can change the color of the triangle displayed in cells where Excel has detected a formula error.

Select the **Reset Ignored Errors** to re-enable Excel to help you with any errors that you have previously ignored.

In the Error Checking Rules area, you can check or clear the following checkboxes:

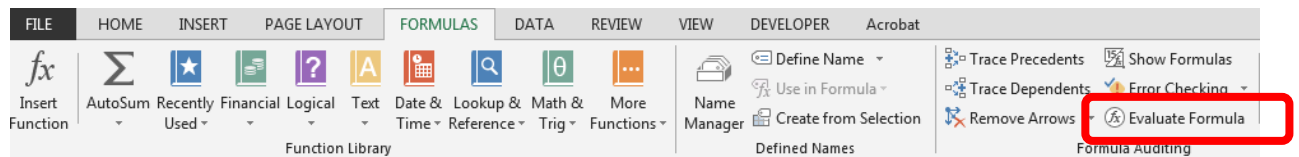
- **Cells containing Formulas that result in an error** – When checked, Excel checks for formulas that do not use expected syntax, arguments, or data types.
- **Inconsistent calculated column formula in tables** – When checked, Excel checks for inconsistencies in calculated columns, such as when you enter data other than a formula in a column that has all calculated cells.
- **Cells containing years represented in 2 digits** – When checked, Excel will create an error if you enter a date with a year represented as two digits.
- **Numbers formatted in text or preceded by an apostrophe** – When checked, Excel will create an error if you enter or import numbers preceded by an apostrophe or text.
- **Formulas inconsistent with other formulas in the region** – When checked, Excel looks for formulas that are different from formulas near it. Often these formulas should be the same, except for the cell references used.
- **Formulas which omit cells in a region** – When checked, Excel compares the reference in a formula against the actual range of cells adjacent to it.
- **Unlocked cells containing formulas** – Formulas are locked for protection by default and must be unlocked before editing. If you have unlocked cells with formulas, Excel marks it as an error when this box is checked.
- **Formulas referring to empty cells** – When checked, Excel creates an error if a formula includes a reference to an empty cell.
- **Data entered in a table is invalid** – When checked, Excel creates an error if there is a validation error in a table.

Evaluating Formulas

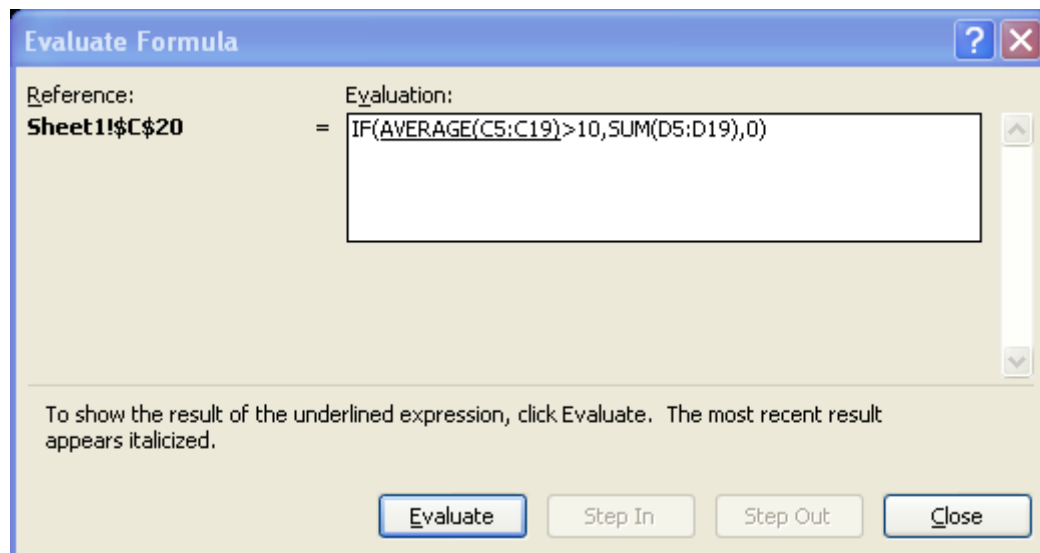
The Evaluate Formula dialog box allows you to calculate – one at a time – the intermediate calculations and logical tests in a nested formula.

Use the following procedure to evaluate a formula.

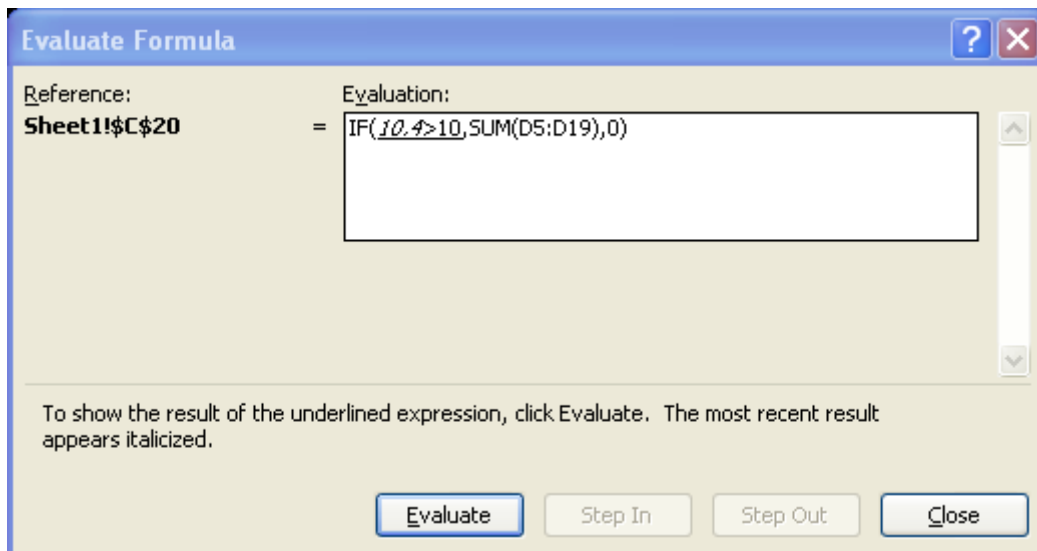
1. Select the cell that contains the formula you want to evaluate.
2. Select the Formulas tab.
3. Select Evaluate Formula.



4. Select **Evaluate** to see the results of the underlined portion of the formula.



5. Continue selecting **Evaluate** to see the results of each piece of the formula.



- If the underlined part of the formula is a reference to another formula, select **Step In** to display the other formula in the **Evaluation** box. Select **Step Out** to go back to the previous cell and formula. The **Step In** button is not available the second time a reference appears in the formula, or if the formula refers to a cell in a separate workbook.
 - To see the evaluation again, click **Restart**.
6. Select **Close** when you have finished.
- Evaluate each of the formulas and think about why the results are different, even though the same formula is used for each column of cells.

Module Six: List Management

In this module, you'll learn how to work with lists and manage them using the transpose data tool, text to columns tool and sorting and filtering tools.

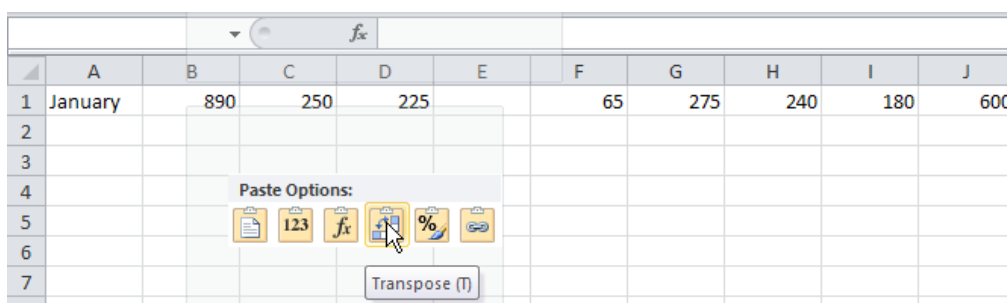
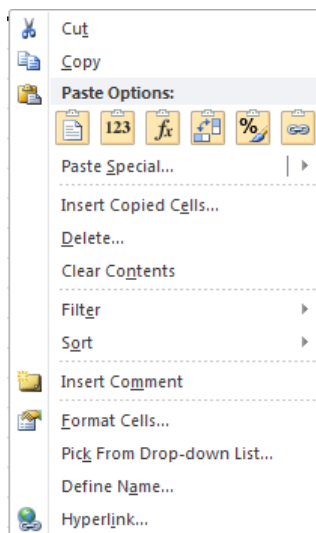
Transposing Data from Rows to Columns

You've spent some time setting up a worksheet and now you realize that you really need some of the data in columns instead of rows. Don't worry. There's an easy way to do that. Just copy the values, select the new area where you want to paste them, and select the Transpose option when you paste the values.

Use the following procedure to transpose data.

Copy the range of cells you want to transpose. This feature will not work if you cut the cells.

1. Place your cursor in the new location and right-click.
2. Select **Transpose** from the **Paste Options** on the context menu.



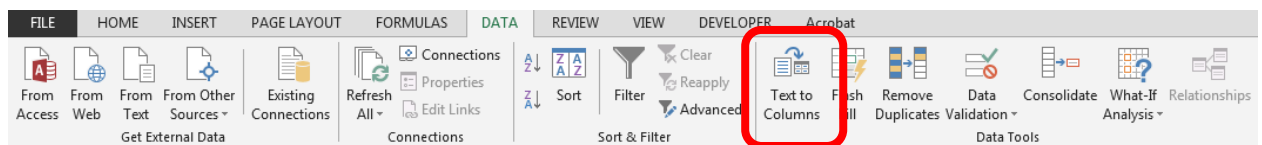
Using the Text to Columns Feature

The text to columns feature allows you to use data in another format (such as a text file) and convert the text into columns. This is useful such as when you have a list of names that you want separated into first and last name columns.

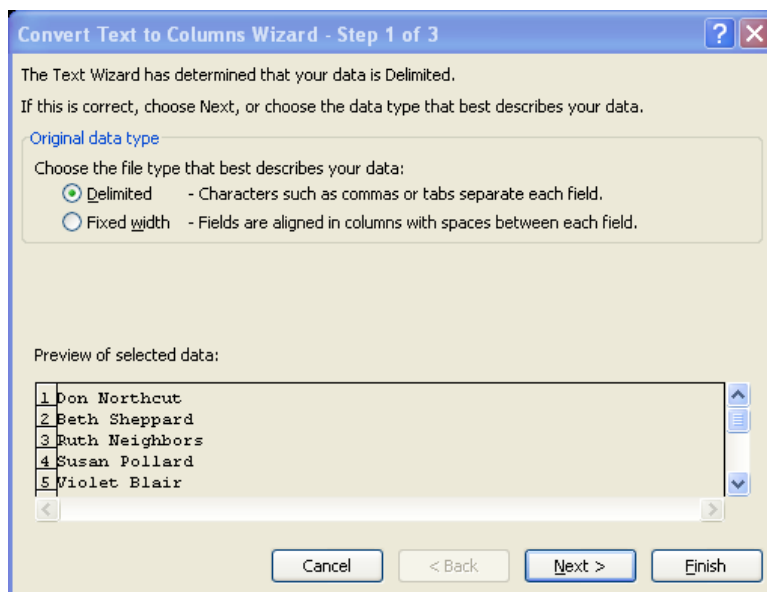
Use the following procedure to convert text to columns.

Paste text from another application.

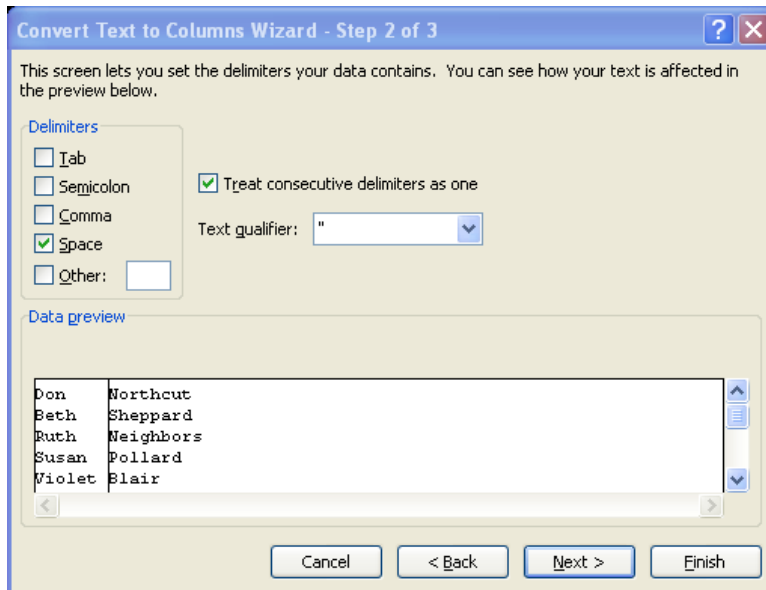
1. Select the text.
2. Select the **Data** tab from the Ribbon.
3. Select **Text to Columns**.



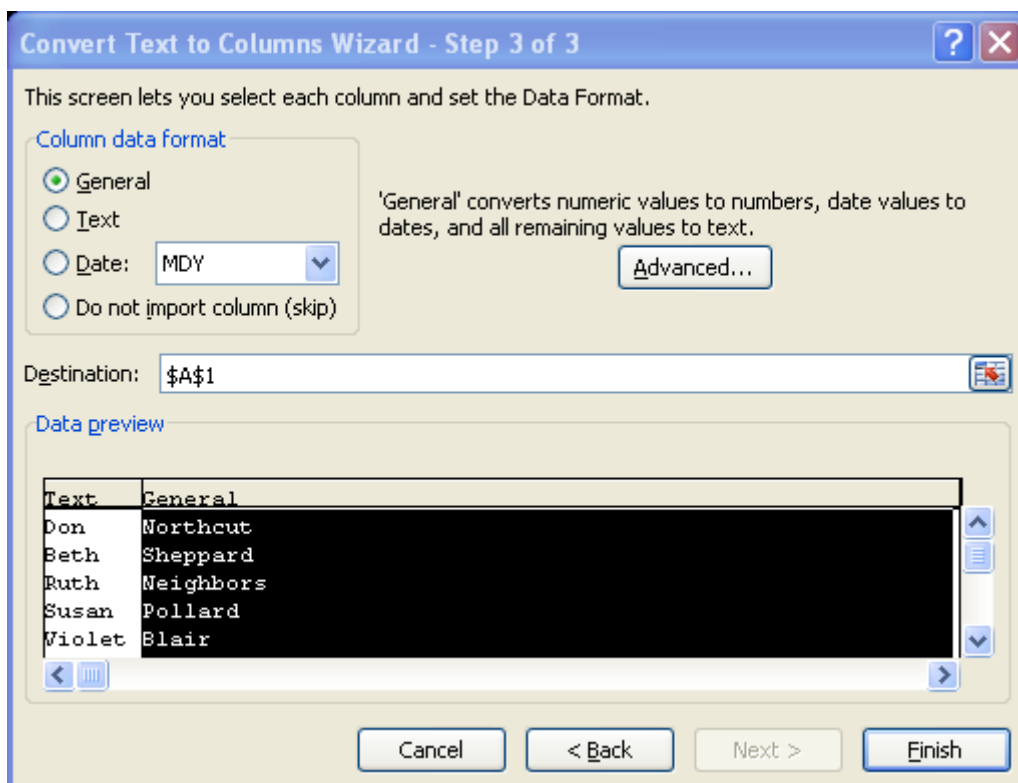
4. In the *Convert Text to Columns Wizard*, choose the file type that best describes your data. Select **Next**.



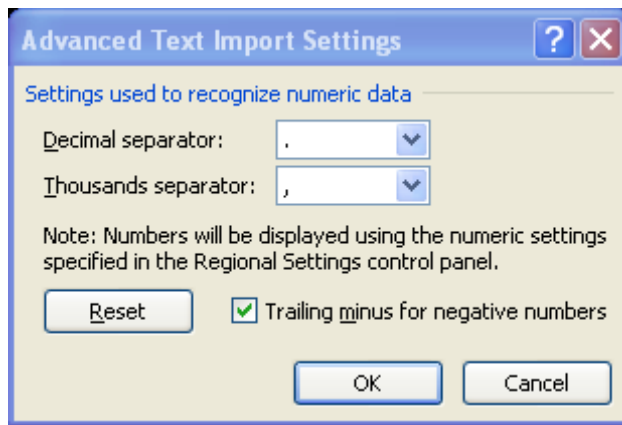
5. In the next screen, select the type of divider. In this example, a space separates the items we want to convert to columns. Your text could be divided by almost any character. Select **Next**.



6. In the next screen, you see a preview of the data converted to columns. For each column:
- Define the data format (General, Text, Date) or choose to skip that column.
 - Enter or select the destination on the worksheet.



Using the Advanced button, you can also choose your settings for numeric data.



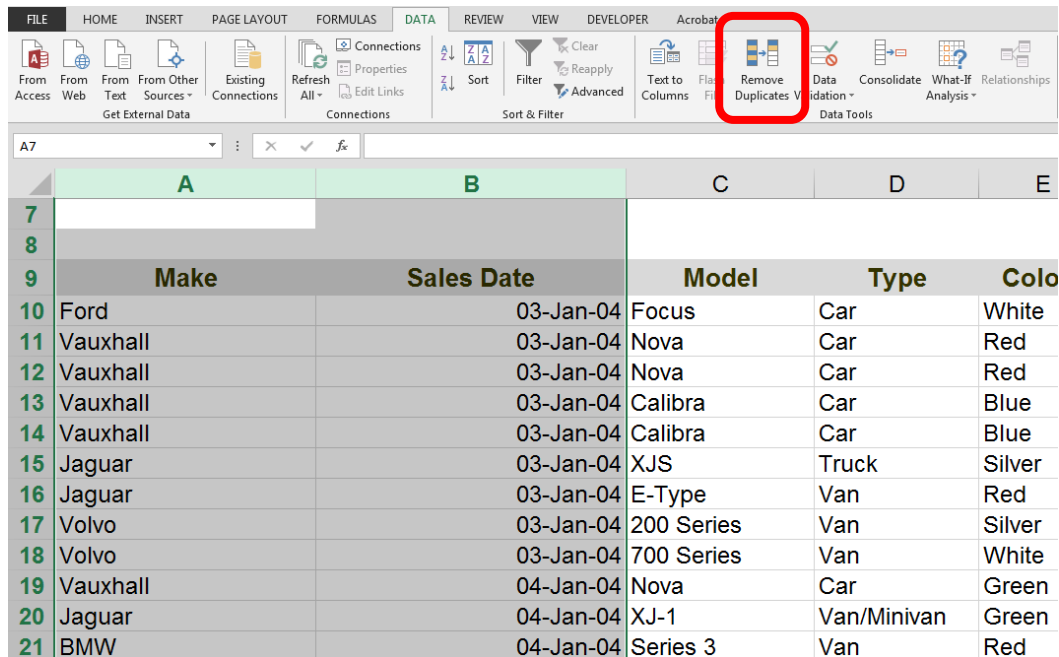
7. When you have finished, select **Finish**.

You can now work with your data as separate columns.

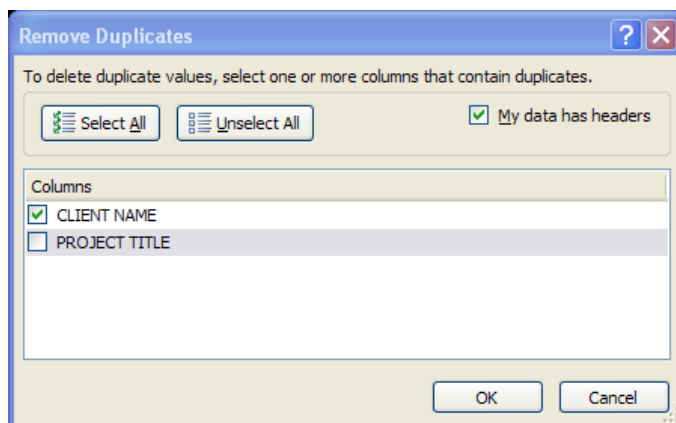
Checking for Duplicates

Use the following procedure to check for duplicate data.

1. Highlight the area from which you want to remove duplicates.
2. Select the **Data** tab from the Ribbon.
3. Select **Remove Duplicates**.

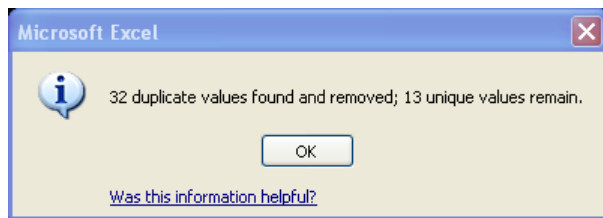


4. Select the columns you want to check for duplicates. The **Select All** and **Unselect All** tools can help you manage a large list of columns. The **My data has headers** box indicates whether the list includes header rows.



5. Select **OK**.

Excel notifies you of how many duplicates are removed.



Sorting Data

Excel allows you to sort your data in ascending or descending order by one or more columns. Data sorting works best when your columns have a label. When you sort, Excel keeps your rows together.

Use the following procedure to sort. The part number column is used in this example.

1. Click on the column header.
2. Select the **Sort & Filter** tool from the Ribbon.

The screenshot shows the Microsoft Excel interface. The 'Sort & Filter' ribbon is active, displaying options like 'Sort A to Z', 'Sort Z to A', 'Custom Sort...', 'Filter', 'Clear', and 'Reapply'. Below the ribbon, a table of car data is visible. The table has columns: Date, Model, Type, Colour, Year, and Part Number. The 'Model' column is selected, and the 'Sort & Filter' dropdown menu is open, showing the 'Sort A to Z' option.

Date	Model	Type	Colour	Year	Part Number
03-Jan-04	Focus	Car	White	2004	1217895963
03-Jan-04	Nova	Car	Red	2004	1217650373
03-Jan-04	Nova	Car	Red	2004	1219152310
03-Jan-04	Calibra	Car	Blue	2003	1219106491
03-Jan-04	Calibra	Car	Blue	2003	1334587154
03-Jan-04	XJS	Truck	Silver	2003	1331590384
03-Jan-04	E-Type	Van	Red	2003	1661813512
03-Jan-04	200 Series	Van	Silver	2003	1662709331
03-Jan-04	700 Series	Van	White	2003	1662709331

3. Select **Sort A to Z** or **Sort Z to A**.

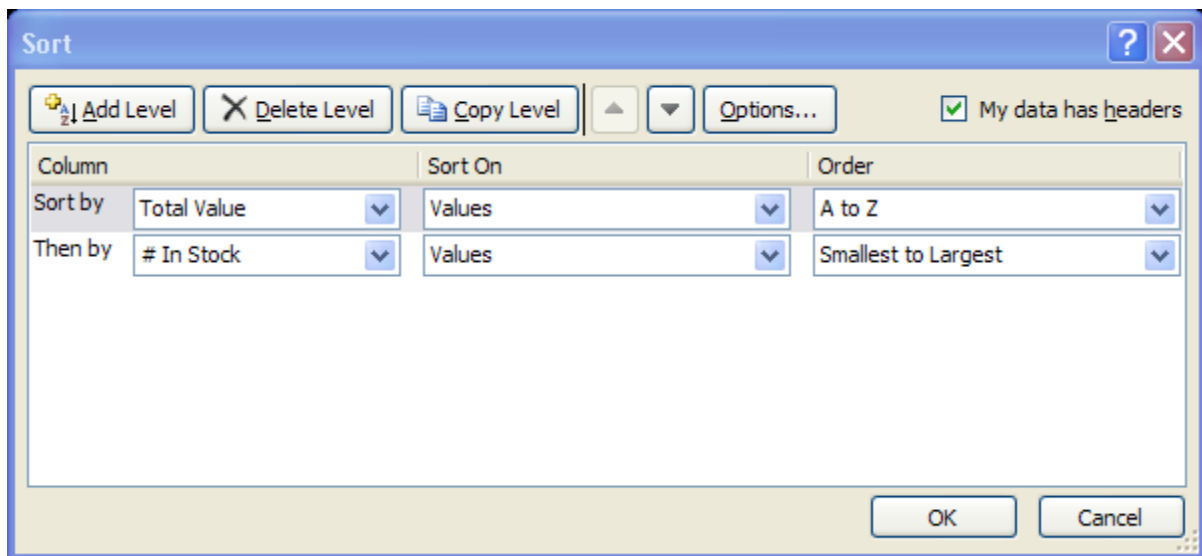
Use the following procedure to create a custom sort.

1. Click on one column header you want to use in your sort.
2. Select the **Sort & Filter** tool from the Ribbon.
3. Select **Custom Sort**.

Excel opens the Sort dialog box.

4. You can choose the first column by which to sort from the **Sort By** drop down list. The options displayed match the column headers in your worksheet.

5. Select an option from the **Sort On** drop down list. **Values** is selected by default.
6. Select an **Order** from the drop down list.
7. To add another column to your sort, select **Add Level**. Repeat steps 4, 5, and 6 for the next sorting level. You can **Delete the Level**, **Copy a Level**, and rearrange the order of the sorting levels by using the up or down arrows.
8. Select **OK** when you have finished setting up your sort to see the results.



	A	B	C	D	E	F
1	Inventory					
2						
3	Part No.	# In Stock	Unit Price	Total Value	Reorder level	# left to reorder
4	DS12566	2	\$ 470.99		1	
5	DS45848	2	\$ 588.00		1	
6	KS36678	3	\$ 685.75		1	
7	KSP4333	4	\$ 585.00		2	
8	QS12585	5	\$ 555.22		5	
9	DS12556	8	\$ 430.37		5	
10	QP133	12	\$ 255.23		10	
11	SSP2777	12	\$ 118.00		5	
12	DSP4543	14	\$ 124.50		10	
13	SS12566	18	\$ 224.67		10	
14	QS12578	26	\$ 248.89		20	
15						
16	Tax rate	10%				

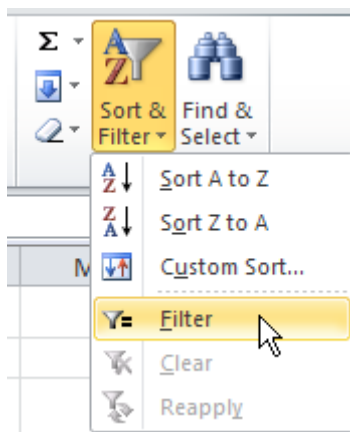
Filtering Data

Filters allow you to view only data that matches certain criteria. Simple filters filter the data based on your selection. There are also different types of more advanced filters, depending on your data. For example, number filters allow you to answer a variety of questions, using "less than," "greater than," or "top ten." Text filters allow you to answer questions like "begins with," "ends with," or "contains." There are also specialized filters for dates and other types of data.

Filtering works best when all columns have headers. Excel places a small arrow in the column header to apply a filter.

Use the following procedure to apply a simple filter.

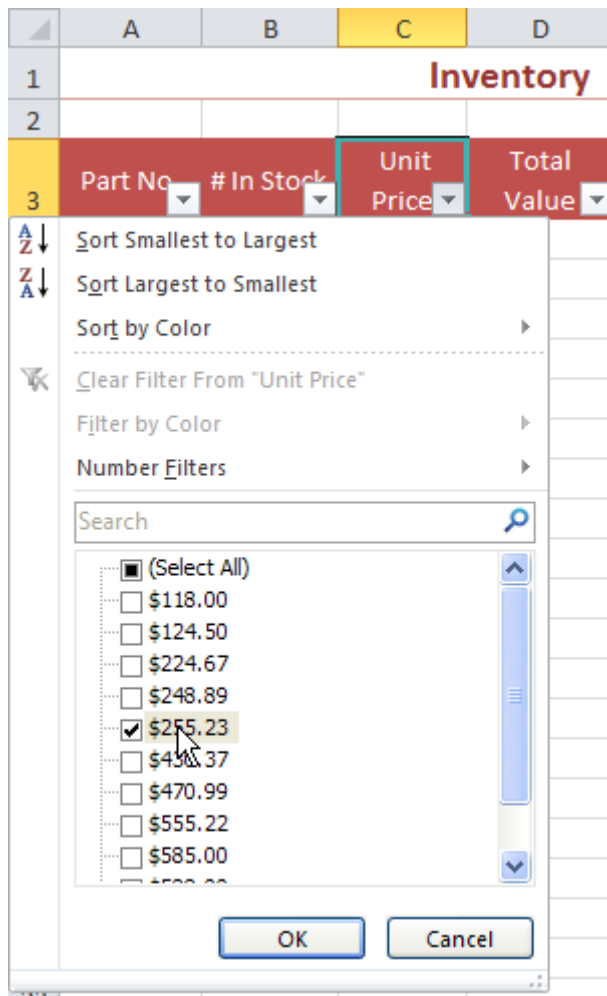
1. Click in the column header for the column including the value you want to filter. Select the **Sort & Filter** tool from the Ribbon. Select **Filter**.



Excel places a small icon in each column header for filtering.

	A	B	C	D	E	F
1	Inventory					
2						
3	Part No	# In Stock	Unit Price	Total Value	Reorder level	# left to reorder

2. Select the icon to see the Filter options.

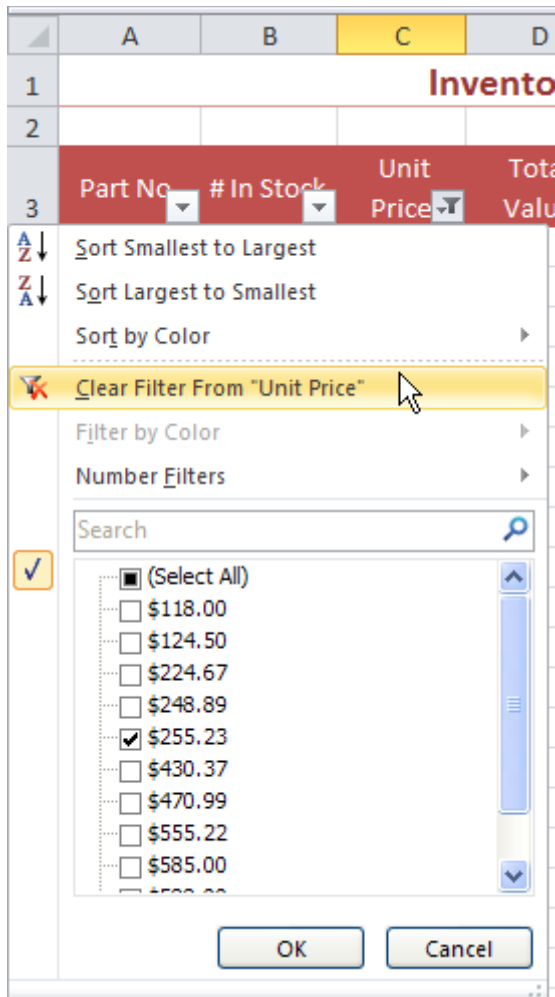


3. You can uncheck the Select All check box to clear all of the values. Select the option(s) that include the values you want to see. For example, in the above illustration, Excel will only show the rows that include the value \$255.23 in this column. You can check multiple values.
4. Select **OK** to apply the filter. Excel includes a different small icon in the column header to indicate that a filter has been applied. It only shows the rows that match the filter. The other rows are still present, but hidden.

	A	B	C	D	E	F
1	Inventory					
2						
3	Part No	# In Stock	Unit Price	Total Value	Reorder level	# left to reorder
13	QP133	12	\$ 255.23		10	
15						
16	Tax rate	10%				
17						

Use the following procedure to clear a filter.

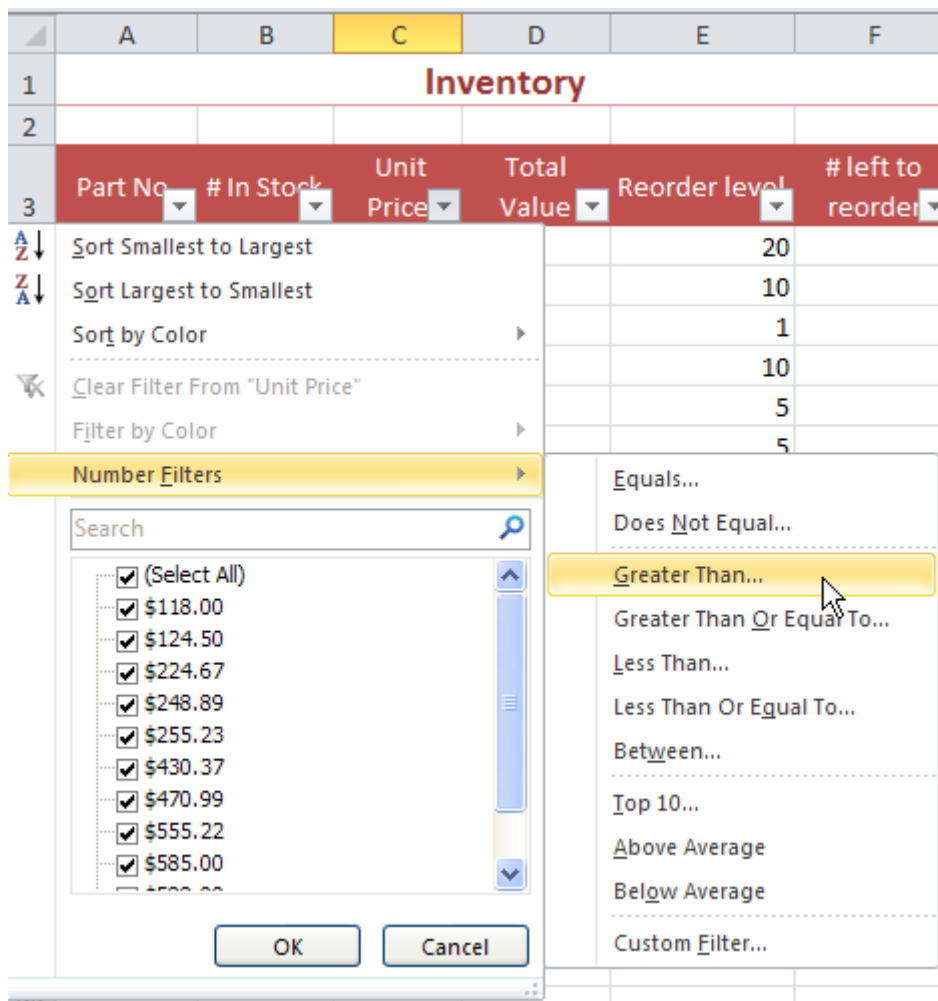
1. Click the Filter icon next to the column header to open the Sort and Filter context menu.



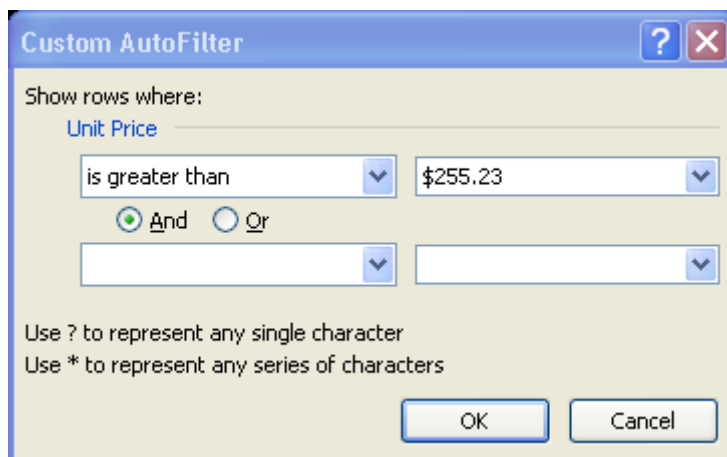
2. Select **Clear Filter From** to clear the filter.

Use the following procedure to use a number filter. This example demonstrates a "Greater Than" number filter.

1. If you have not previously performed a filter on this worksheet, you may need to select the **Sort & Filter** tool from the Ribbon. Select **Filter**. Select the Filter icon next to the column header you want to filter.
2. Select **Number Filters**. Select **Greater Than**.



Excel displays the Custom Auto Filter dialog box.



3. Select the value from the second drop down list.
4. If you want to add to you filter, select either **And** or and select another column header from the drop down list. Select another value from the drop down list.
5. Select **OK** to apply the filter.

	A	B	C	D	E	F
1	Inventory					
2						
3	Part No <input type="text"/>	# In Stock <input type="text"/>	Unit Price <input type="text"/>	Total Value <input type="text"/>	Reorder level <input type="text"/>	# left to reorder <input type="text"/>
6	DS45848	2	\$ 588.00		1	
9	QS12585	5	\$ 555.22		5	
10	DS12566	2	\$ 470.99		1	
11	DS12556	8	\$ 430.37		5	
12	KSP4333	4	\$ 585.00		2	
14	KS36678	3	\$ 685.75		1	
15						
16	Tax rate	10%				
17						

Using an Advanced Filter

If you can't get the results you want from a custom filter, you can construct your own advanced filters to

get the most control over your data tables.

To make an advanced filter, you have to set up a range of criteria to filter your table with.

	A	B	C	D	E	F
1	Name	Height	Weight	Age		Age
2	Bob	70	180	50		<40
3	Bob	70	181	50		
4	Cindy	65	105	48		
5	John	68	186	34		
6	Kevin	72	140	25		
7	Vera	59	110	22		
8	Bert	68	150	30		
9	Bert	70	165	38		
10	Bert	69	175	48		
11	Sandy	63	130	55		

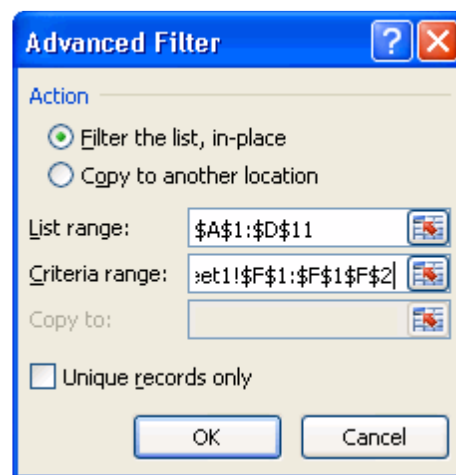
In this example, we want to show only the records where the Age field is less than 40. To do this, you can type a column heading in cell F1. This heading must be exactly the same as the corresponding heading in the data table that you want to base the filter on.

In cell F2, you can enter the criteria. In this instance, cell F2 contains <40 as you only want to show

records with an age field value that is less than 40. To apply the filter, click on any cell in the data table

and then click the Advanced button on the Data Ribbon.

You will now see the data table outlined with a flashing dashed border, and the Advanced Filter dialogue box will be displayed.



When you see the box, make sure the table range is indeed the range you want to filter. You can then

click in the data area labeled Criteria Range and select the cells that contain your filtering criteria (cells

F1:F2 in this case).

The Filter the List in-Place radio button is selected, so the filtered records will appear in the same location as the original table. Click OK to filter the List range using the Criteria range as specified in the Advanced Filter dialogue

	A	B	C	D	E
1	Name	Height	Weight	Age	
5	John	68	186	34	
6	Kevin	72	140	25	
7	Vera	59	110	22	
8	Bert	68	150	30	
9	Bert	70	165	38	

The table has been filtered to show only those records that have an age field value that is less than 40.

To display the full table again, click the Clear button in the sort and filter button group on the Data Ribbon.

You can set up more complex filters by adding to your criteria range. For example, the following criteria

range will filter the records so that only those with an age less than 40, a height greater than 63, and a

weight less than 180 will be shown. Notice that the column headings in the criteria range are identical to

those in the original table.

F	G	H
Age	Height	Weight
<40	>63	<180

This next criteria range will show records that have a height greater than 63 or a weight less than 180.

The conditions are offset by one row from each other, indicating the use of a logical Or operator.

F	G	H
	Height	Weight
	>63	
		<180

Copying Filtered Records

It may be the case that you want to extract your filtered records to a new place in the worksheet or even to a new worksheet altogether. Copying your filtered records to a new location leaves the view of your original data table unchanged.

To copy your filtered records to a new location, set up a criteria range as before, with column headings

and the conditions you want to specify. In addition, you can prepare a range for the filtered records to be copied to. To do this, you can choose some empty columns and label them with the headings for the

fields you want to display. You do not have to display an entire record, just the fields of your choice.

Make sure the column headings for the range you are copying to are exactly the same as the column

headings in the original unfiltered table. If you do not put column headings in the copy to range, all of the fields specified in the table range will be copied. If you are copying entire records, you can leave the range you are copying to blank.

Click a cell in the data table, and click the Advanced button in the Sort and Filter group on the Data

Ribbon to display the Advanced Filter box. Set your options as before, but this time, choose Copy to

Another Location from the radio options at the top.



Select the range that you that you have prepared for the copied records with your mouse or type it in directly. If you don't know how large a range to select, select the column letters above the fields you have chosen in the destination range. If you are copying all fields (i.e. complete records), just click on a cell in the upper left of the range you are copying to. Click OK to copy the filtered records to the destination range.

The image that follows shows the fields Weight and Age filtered from the main table and copied to columns I and J, according to the condition that height is less than 70 .Because the column headings Weight and Age have been specified in the destination range, only the weight and age of people with a height less than 70 will be shown in the destination area.

	A	B	C	D	E	F	G	H	I	J	K
1	Name	Height	Weight	Age			Height		Weight	Age	
2	Bob	70	180	50			<70		105	48	
3	Bob	70	181	50					186	34	
4	Cindy	65	105	48					110	22	
5	John	68	186	34					150	30	
6	Kevin	72	140	25					175	48	
7	Vera	59	110	22					130	55	
8	Bert	68	150	30							
9	Bert	70	165	38							
10	Bert	69	175	48							
11	Sandy	63	130	55							
12											

You can also specify unique records only by clicking the appropriate checkbox in the Advanced Filter dialogue box. This will ensure that duplicate records are not selected or copied.

Creating Subtotals

Another kind of outlining or grouping technique available in Excel is the subtotals feature. If you have

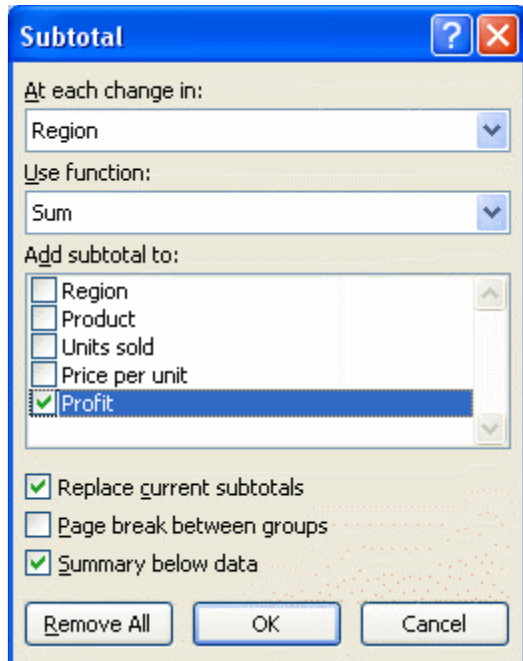
numeric data organised with clear column and row headings, you can use Excel to create automatic

subtotals and grand totals for the data.

The following worksheet contains sales information for different products across geographical regions.

	A	B	C	D	E	
1	Region	Product	Units sold	Price per unit	Profit	
2	East	TypeA	23	\$ 2,000.00	\$46,000.00	
3	East	TypeB	7	\$ 1,500.00	\$10,500.00	
4	East	TypeC	13	\$ 2,350.00	\$30,550.00	
5	West	TypeD	12	\$ 4,000.00	\$48,000.00	
6	West	TypeC	12	\$ 2,350.00	\$28,200.00	
7	West	TypeA	12	\$ 2,000.00	\$24,000.00	
8	South	TypeE	12	\$ 5,450.00	\$65,400.00	
9	South	TypeC	10	\$ 2,350.00	\$23,500.00	
10	South	TypeB	8	\$ 1,500.00	\$12,000.00	
11						

To use Excel's subtotal feature, select the range of data you want to apply subtotals to and click the Subtotal button on the Data Ribbon. Be sure to include the column labels in your selection so Excel will be able to discern what numbers to total. For this example, you could select A1:E10 and click the Subtotal button on the Data Ribbon to invoke the following Subtotal dialogue.



The drop list under the "At each change in" heading gives you options as to the number of rows that will be totaled. (Totals will be applied every time the values under the chosen column label changes.)

The "Use function" drop list lets you choose from a list of functions including SUM, AVERAGE, COUNT, PRODUCT, and STDEV to apply to your data. The function you choose (normally SUM) will be used to calculate the totals.

Under the "Add subtotals to" option list, you can select which columns to apply the totals to. You can

apply totals to a single column or to multiple columns in the selected range.

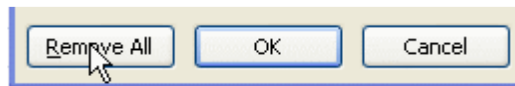
Finally, there are three check boxes at the bottom of the dialogue box that will allow you to:

- _ Replace any pre existing subtotals
- _ Put page breaks between totaled groups so they will be printed on separate pages
- _ Place the subtotals and grand totals above or below the corresponding data

If you choose to apply totals to each change in the region column while using the Sum function for the profit column, and with no page breaks, the resulting worksheet will look like this.

1	2	3	A	B	C	D	E
			Region	Product	Units sold	Price per unit	Profit
	2		East	TypeA	23	\$ 2,000.00	\$ 46,000.00
	3		East	TypeB	7	\$ 1,500.00	\$ 10,500.00
	4		East	TypeC	13	\$ 2,350.00	\$ 30,550.00
	5		East Total				\$ 87,050.00
	6		West	TypeD	12	\$ 4,000.00	\$ 48,000.00
	7		West	TypeC	12	\$ 2,350.00	\$ 28,200.00
	8		West	TypeA	12	\$ 2,000.00	\$ 24,000.00
	9		West Total				\$100,200.00
	10		South	TypeE	12	\$ 5,450.00	\$ 65,400.00
	11		South	TypeC	10	\$ 2,350.00	\$ 23,500.00
	12		South	TypeB	8	\$ 1,500.00	\$ 12,000.00
	13		South Total				\$100,900.00
	14		Grand Total				\$288,150.00
	15						

Notice that there is a subtotal for the profit figures at every change in the region value. There is also a grand total for the Profit column at the end of the data. You can also see that Excel has provided outline levels, collapse/expand buttons, and numbered outline level buttons associated with the totals. These buttons and outlines work exactly as previously explained. The lower the number on the button, the less detailed information will be shown. To remove these subtotals, select the range of data in question (A1:E14) and click the Subtotal button to invoke the subtotal dialogue box. When you see the box, click the Remove All button.



Module Seven: Using Templates

This module focuses on helping to understand how to use inbuilt templates, and modify and create custom templates.

By the end of this module, you will be able to: Access and use Excel's in-built templates & create, modify and use custom templates.

A template is a workbook design or layout that can be saved and reused for any number of workbooks. A template can have formulas, fill effects, labels, borders, worksheet names, formats, and a host of other Excel features that will be applied to each new workbook that uses the template.

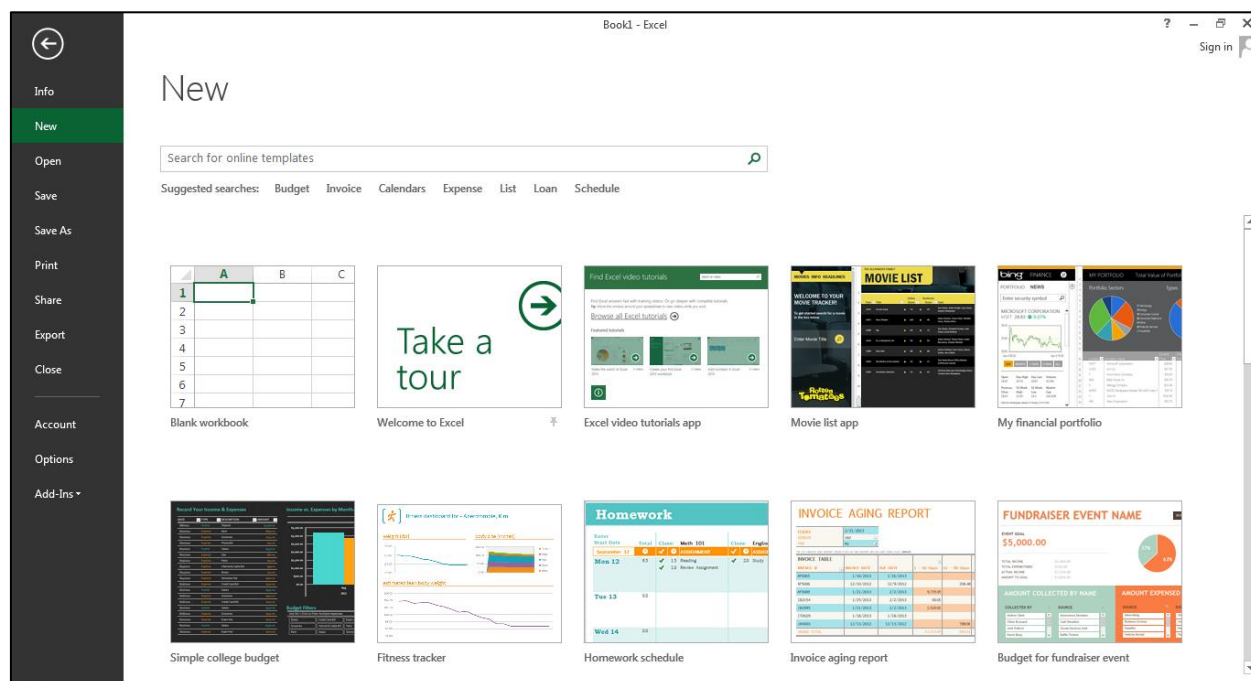
This is an example of an Excel template.

1	A	B	C	D	E	F	G	H	I
2		My Team's Sports Statistics						Week:	
4		Rank	Team Name	Coach	Wins	Losses	Ties	Total Points	Games Played
5									
6									
7									
8									
9									
10									
11									
12									
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Opening a Template

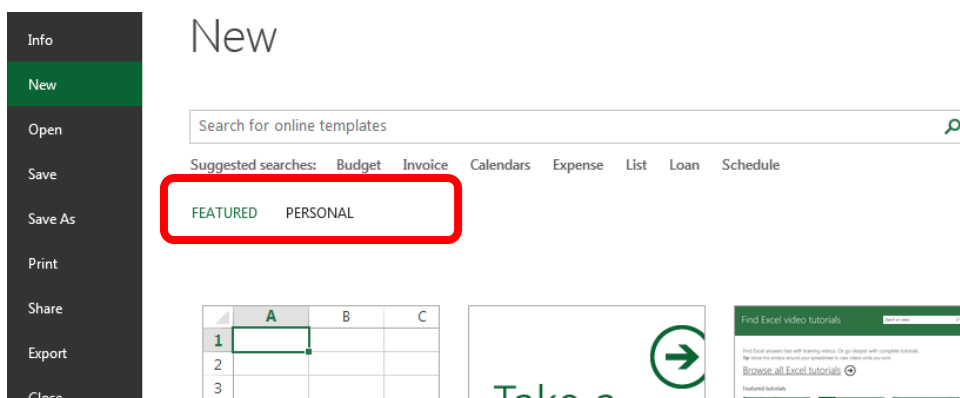
To open a workbook using a template, start Excel 2013, and then choose the File tab, from the Office

Menu on the left hand side select New. When you do this, you will display the Available Templates window.



You can select a template grouping from the categories listed in the middle panel. When you click on a category option, the large viewing pane will display the templates available in the chosen category. If you double click on a template icon in the main viewing area, a workbook will open based on the selected template.

Until you save your own templates you only see the standard Microsoft template designs. Once you create and save your own templates you will see the following across the top.



Downloading a Template

When you display the Available Templates window (by clicking the New option) you will see a variety of options listed under the From Microsoft Office Online heading in the middle pane.

You can choose from business templates, calendars, finance and accounting templates, specialty papers, and more. When you select one of these online options, you will often see a list of template subcategories in the viewing pane on the right.

This list of subcategories is actually downloaded from the Microsoft Office Online Web site. If you do not have an Internet connection, you will not see the list of subcategories and moreover, you will not be able to download any templates.

If you do have an Internet connection, you can click on one of the subcategory options to see a preview list of downloadable templates.

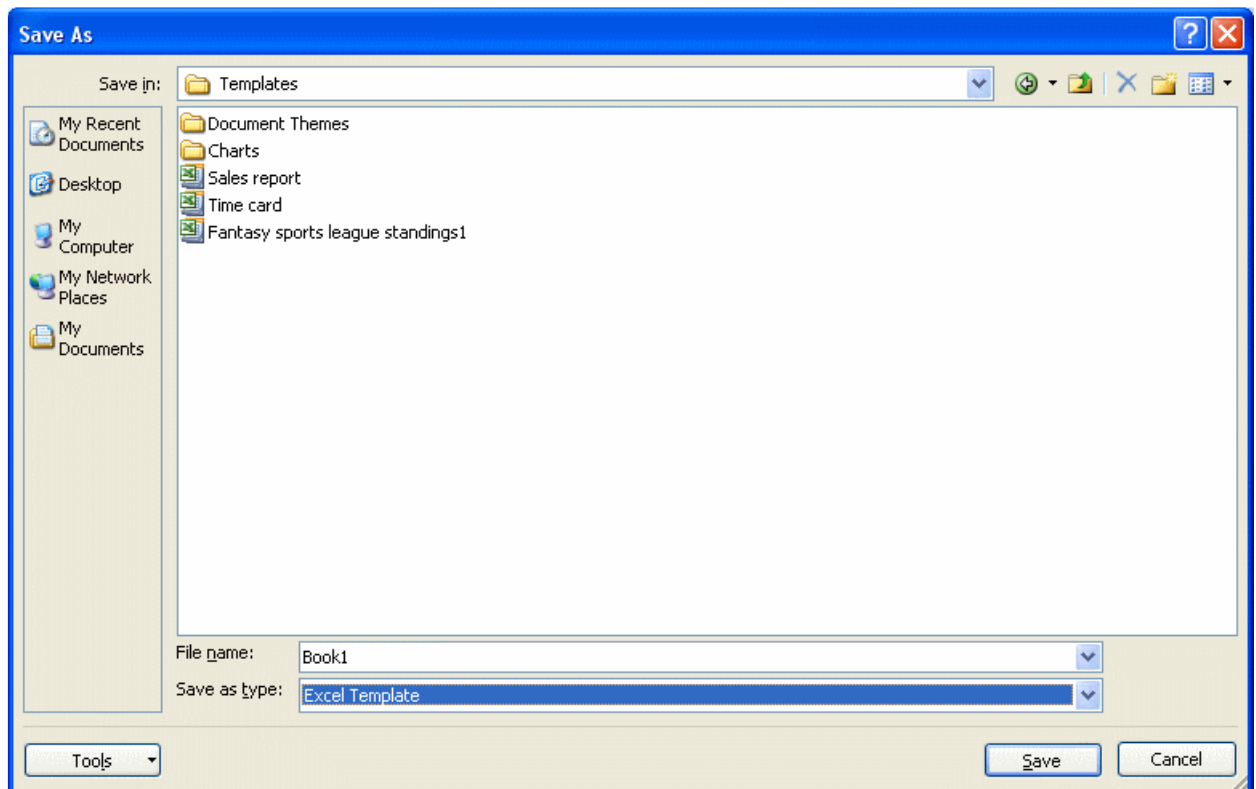
When you see a template that you like, select it by single clicking on it, and then click the Download button to download the template. Once the template is downloaded, Excel will automatically open a workbook based on the template. You can also simply double click on the template icon to download the template and create a workbook.

Creating a Template

To create your own template, open Excel 2013 and design your worksheet or workbook layout to meet any specifications you require. You can add labels, formatting, colour, borders, and formulas. If need be, you can even create layouts on different sheets in the workbook, as a template can contain as many worksheets as you need.

Remember, the main purpose of a template is for repeated use of a workbook layout. Keep this in mind when creating a template. Plan your layout, labels, and formats to make your templates comprehensive and complete.

When you have completed your design, choose Save As from the File tab to display the Save As dialogue box. In the dialogue, enter a name for your template in the File Name text field. Next, display the Save As Type drop list near the bottom of the dialogue box and select the Excel template option. (You may have to scroll through the list of options to find it). This will save the file as filename.xltx. When you choose the Excel Template option from the Save As Type drop list, the Save In text field will automatically be filled in with the word Templates.



This means that your new template will be automatically saved in the Excel Templates folder. (You can choose another folder to save your templates in if you wish, but if you do, they will not be available when you click the My Templates option in the Available Templates window).

Once you save the file as a template in the Templates folder, it will be available under the My Templates option in the New window. If you intend to use the template with earlier versions of Excel, save it under the Excel 97-2003 Template option for backwards compatibility. If you have a macro or macros in your template, save it under the Excel Macro-Enabled Template option.

Rather than create a template from scratch, you can always download a template that is close to what

you are looking for and modify it in Excel to make it suit your needs exactly. After you finish customizing the template; save it with a new name in your templates folder as described above. Simply remember to save it as a template rather than a workbook.

E&OE

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