Diploma In Computer Application

(D C A)

HANDBOOK

MS-Excel 2013

RICHSON TECNOSERV Opc Pvt. Ltd.

MS-Excel

(Essential For All Computer Courses)

Enrollment Number: .....

Student's Name:.....

Authorised Learning Centre: .....

Richson Technoserv Opc Pvt. Ltd.

An ISO 9001:2015 Organisation

Not for Sale

Free for Enrolled Students

Copyright 2021 by
Richson Technoserv opc (P) Ltd.

All Right Reserved
No part of this book may be reproduced, store in retrieval system or transmitted in any form or by means, electronics, photocopies, recording or otherwirs, without the prior written permission of Richson Technoserv opc (P) Ltd.

3rd Editition : Printed in Nov, 2021

Published by
Richson Technoserv opc Pvt. Ltd.
Publication Division
Patna - 800 010

Perface

We live in technology-driven world, where almost everything is automated. The fast two decades (दशक) have seen a renaissance (पुनरूत्थान) in the world of innovations. We have seen docotors perform surgery by sitting miles away from their patients. The fashion industry is soon to replaces supermodels with robots (one such, the Sophia, was developed by Hong Kong based company Hansaon Robotics). There are similar advances being made in every field, all of whose foundations are based on Computers.

It can often be perplexing (हैरान करनेवाला) for a beginner to keep pace with such developments. To be lost in the world of codes and bytes can be nerve-racking. And this is where a text book of this nature comes in. Written assuming absolutely no prior knowledge of Computers, this book carries the students through the world of financial skills on Computer in a simple and structured manner.

What this book does aim to achieve is to give you an eye opener, a mild introduction of Application Software MS-Excel. It will teach you the basic and advanced building block of MS-Excel, and also cover the formatting and editing your documents in attractive manner which is necessary in all offices all over india. It also gives an introduction to various useful commands which helps you to create financial reports online and offline.

This book of MS-Excel covers all the useful commands of latest version of MS-Office.

There indeed are several books that flood local book shops on this subject. So why should you use this one? The answer is simple; We have not written this book keeping a specific audience in mind. Whether you are a school student, a budding engineer pursuing technical education, or want to be master of document creation then this book will be appropriate search for you. We have kept the language at a level that can be accessed by one and all, and yet kept the discussions thorough and focused.

More specifically, it can be used by the following:

Students pursuing CCC, DCA, DFA, ADCA, PGDCA, CTTC, DDEO etc. Courses from our Branches.

Student pursuing short - term courses in our Authorised Branches in all over india.

Finally, this book is for everyone who is either excited about computers or interested in knowing more about computers.

This book is impregnated with several salient features:

A completed self-study material obtaining basic and advanced knowledge of spreadsheet.

Covers Microsoft Office suites Software.

Concepts and Lab idea are explained using ample number of illustration and screen shots for visualisation of the commands.

Hope that the book will be very useful and move on right path of one's career.

We regard the suggestion and options of the users as most effective guideline for improving this book further.

warm regards

Richson Technoserv opc (P) Ltd.

Index

Topics **Page No.**

Getting Started with Excel

Chapter **1**

Introduction

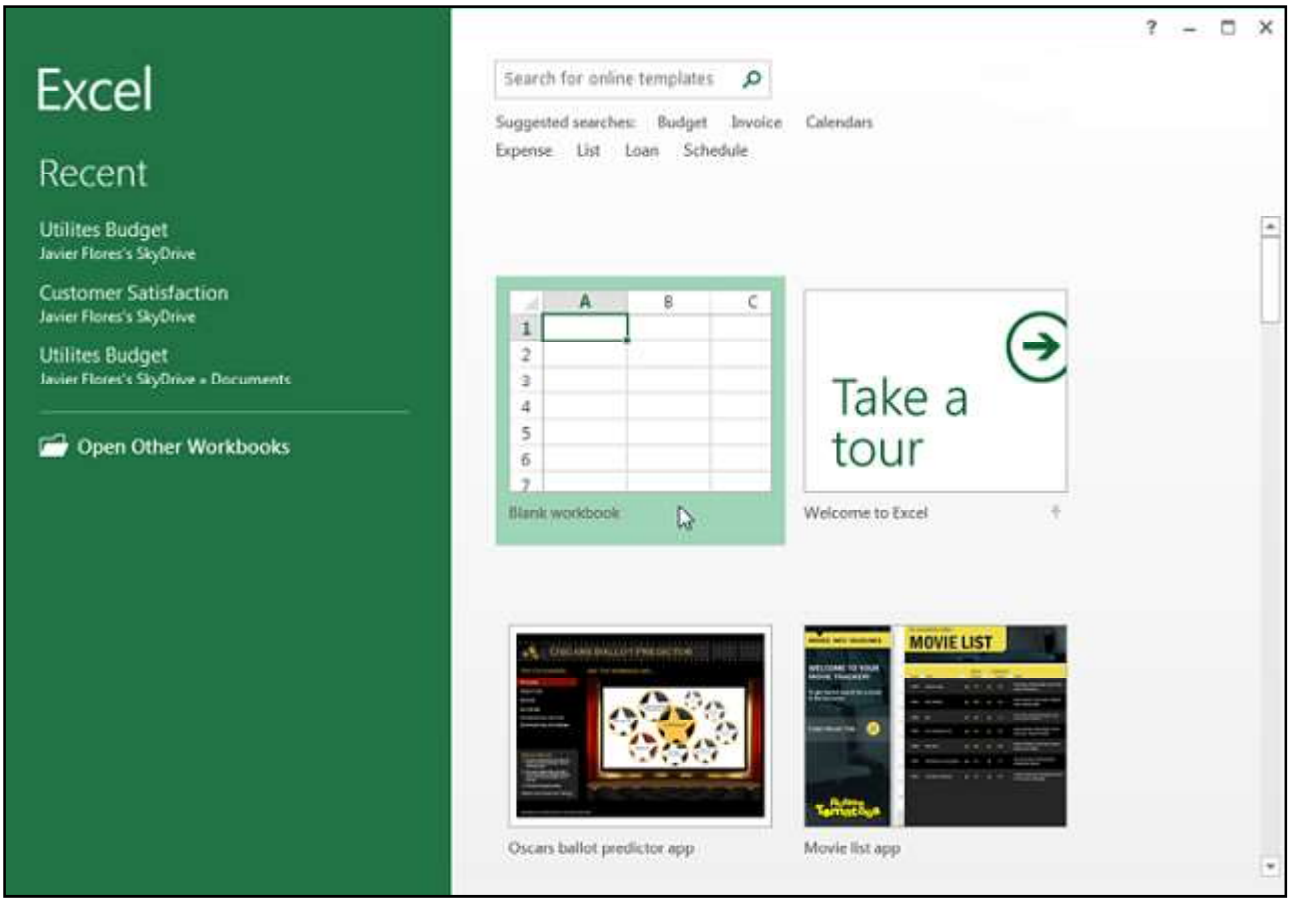
MS-Excel 2013 is a spreadsheet program that allows you to store, organize, and analyze information. While you may believe Excel is only used by certain people to process complicated data, anyone can learn how to take advantage of the program's powerful features. Whether you are keeping a budget, organizing a training log, or creating an invoice, Excel makes it easy to work with different types of data.

Getting to know Excel 2013

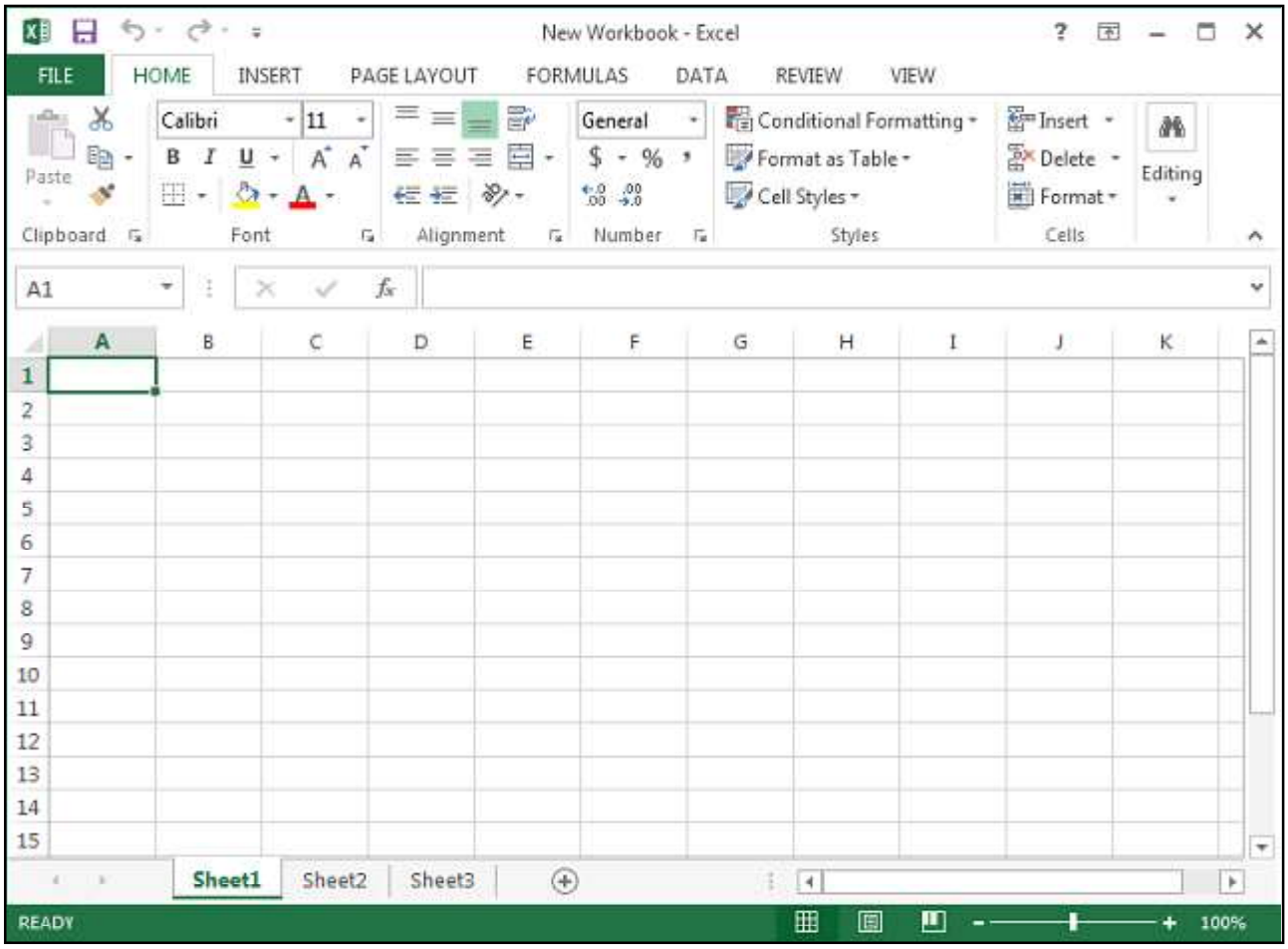
MS-Excel 2013 is similar to Excel 2010. If you have previously used Excel 2010, Excel 2013 should feel familiar. If you are new to Excel or have more experience with older versions, you should first take some time to become familiar with the Excel 2013 interface.

The Excel interface

When you open Excel 2013 for the first time, the Excel Start Screen will appear. From here, you will be able to create a new workbook, choose a template, and access your recently edited workbooks.
From the Excel Start Screen, locate and select Blank workbook to access the Excel interface.



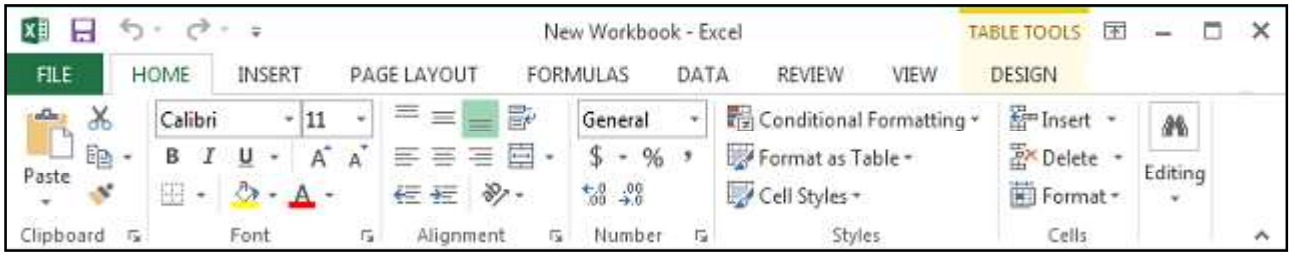
This is welcome screen as you open first your excel. You can open Excel by clicking **Start Button** and many more option avialble in your operating system which we have discussed earlier. Now Click on **Blank Workbook** option to open blank worksheet. As you click your mouse left button on it a Blank Worksheet will appear as next picutre.



Working with the Excel environment

If you have previously used Excel 2010 or 2007, Excel 2013 will feel familiar. It continues to use features like the **Ribbon** and **Quick Access toolbar**, where you will find commands to perform common tasks in Excel, as well as Backstage view.

The Ribbon Excel 2013 uses a tabbed Ribbon system instead of traditional menus. The Ribbon contains multiple tabs, each with several groups of commands. You will use these tabs to perform the most common tasks in Excel.



The Home tab gives you access to some of the most commonly used commands for working with data in Excel 2013, including **copying and pasting, formatting, and number styles**. The Home tab is selected by default whenever you open Excel.

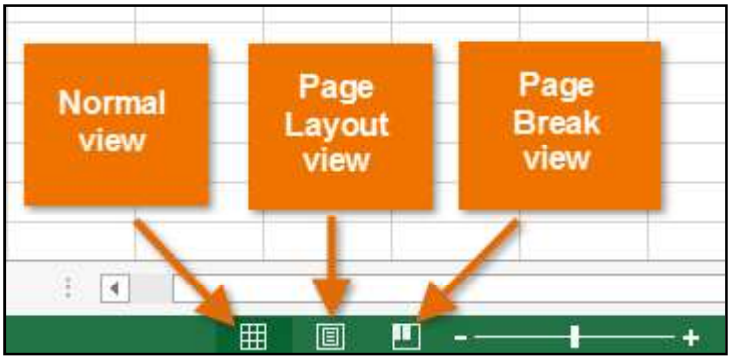
Like Home Tab many more tab availlable in MS-Excel which name is Insert, Page Layout, Formulas, Data, Reveiw, View and Design. We will discuss more about all these tabs later in this book.

Tip: ask your teacher in your lab about all tabs in excel ribbon.

Worksheet views

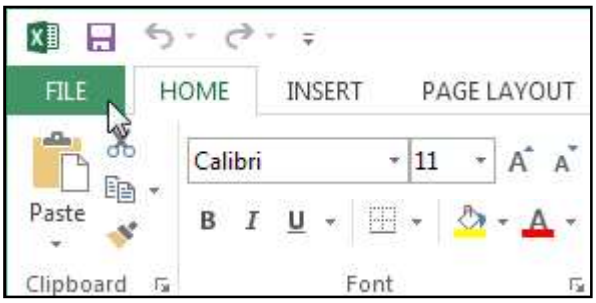
Excel 2013 has a variety of viewing options that change how your workbook is displayed. You can choose to view any workbook in **Normal view, Page Layout view,** or **Page Break view**. These views can be useful for various tasks, especially if you are planning to print the spreadsheet.

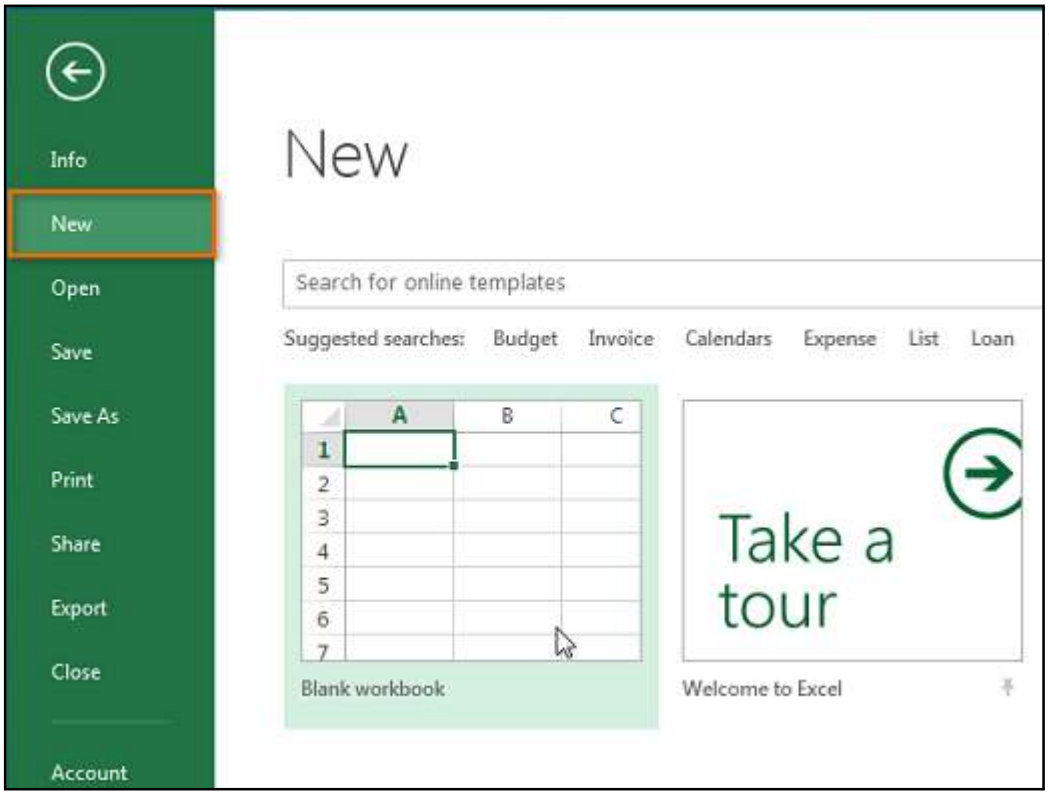
1. To **change worksheet views**, locate and select the desired **worksheet view command** in the bottom-right corner of the Excel window.



Creating and Opening Workbooks

Excel files are called **workbooks**. Whenever you start a new project in Excel, you willll need to **create a new workbook**. There are several ways to start working with a workbook in Excel 2013. You can choose to **create a new workbook**—either with a **blank workbook** or a predesigned **template**—or **open an existing workbook**.





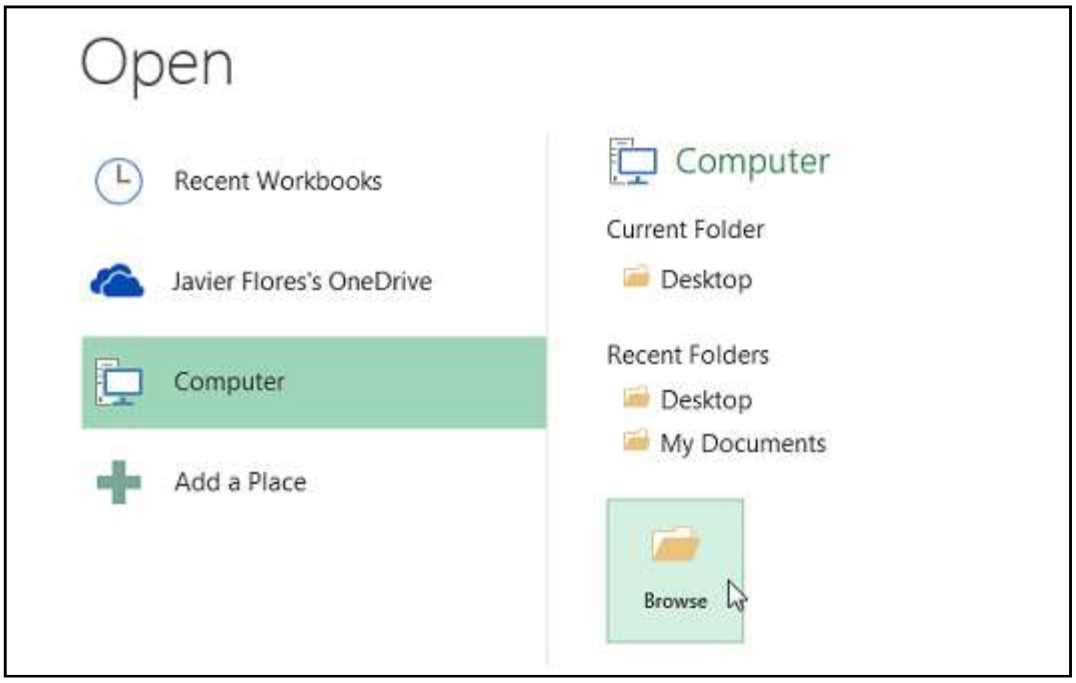
To create a new blank workbook

1. Select the **File** tab. **Backstage view** will appear.
2. Select **New**, then click **Blank workbook**.
3. A new blank workbook will appear.

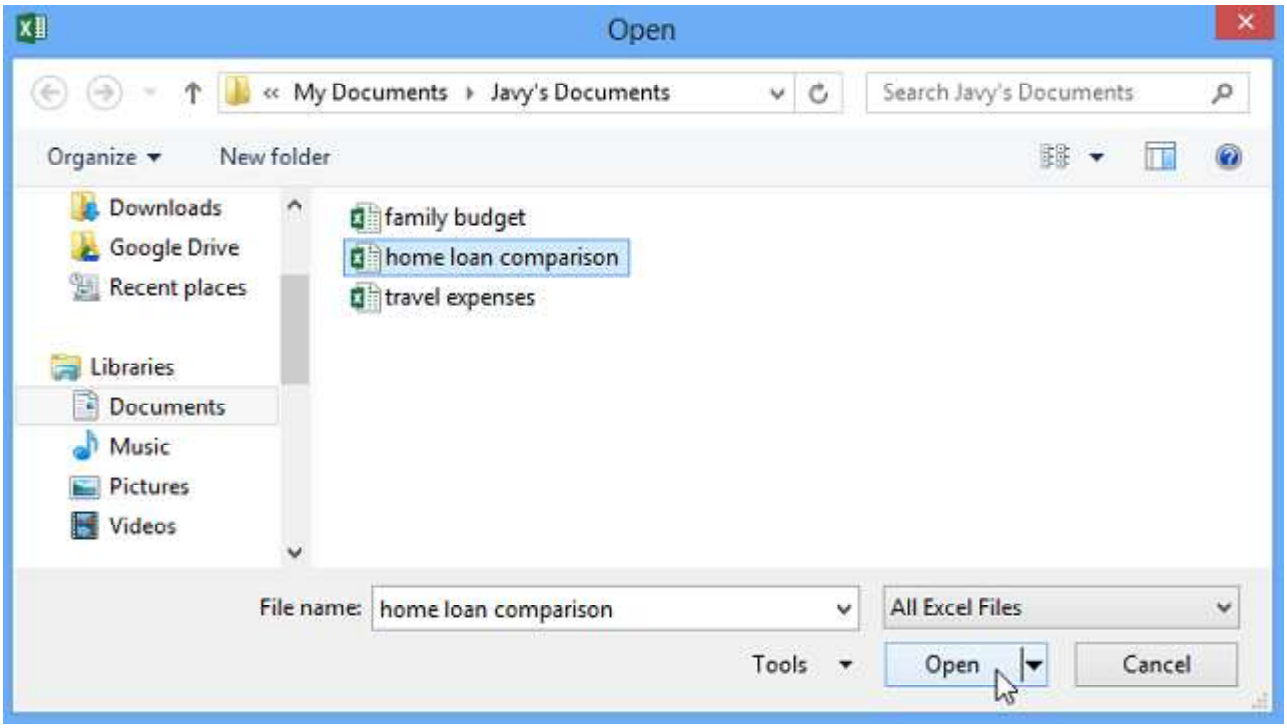
To open an existing workbook:

In addition to creating new workbooks, you will often need to open a workbook that was previously saved.

1. Navigate to **Backstage view**, then click **Open**.
2. Select **Computer**, then click **Browse**. Alternatively, you can choose **OneDrive (previously known as SkyDrive)** to open files stored on your **OneDrive**.



3. The **Open** dialog box will appear. Locate and select your **workbook**, then click **Open**.



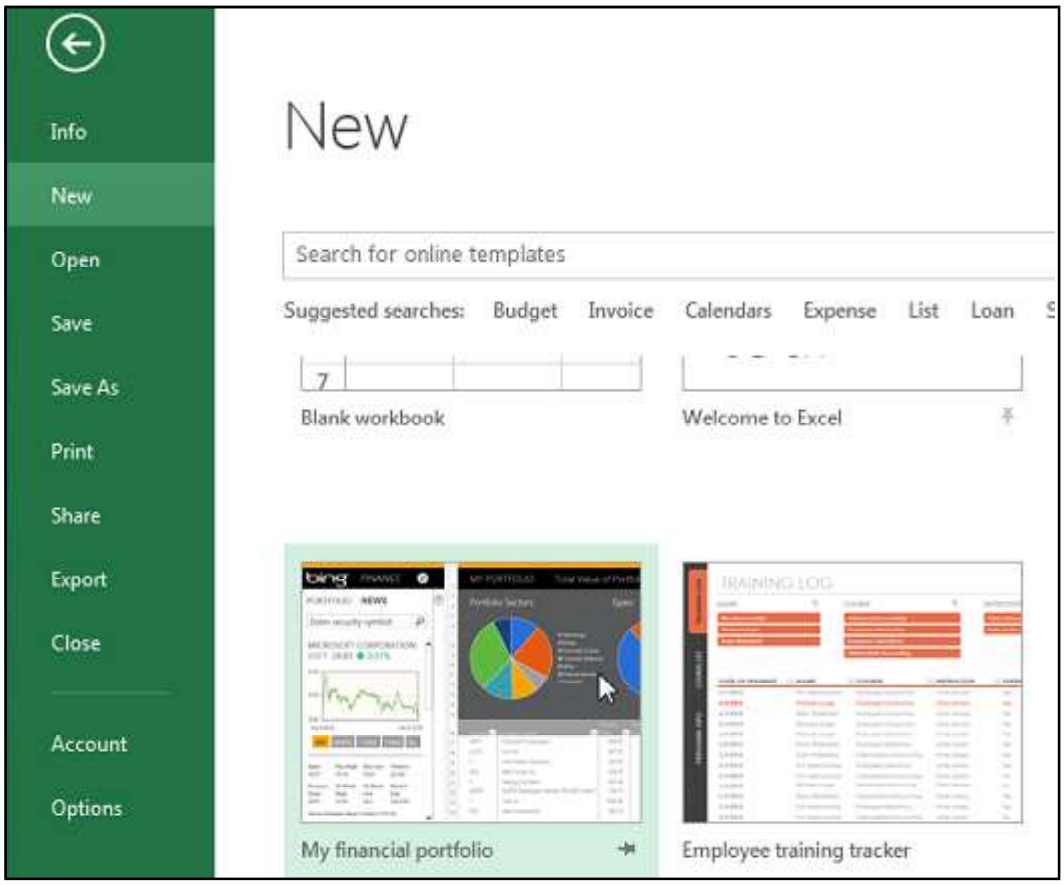
** If you have opened the desired workbook recently, you can browse your **Recent Workbooks** rather than search for the file.*

Using Templates

A **template** is a **predesigned spreadsheet** you can use to create a new workbook quickly. Templates often include **custom formatting** and **predefined formulas**, so they can save you a lot of time and effort when starting a new project.

To create a new workbook from a template

1. Click the **File** tab to access **Backstage view**.
2. Select New. Several templates will appear below the **Blank workbook** option.
3. Select a **template** to review it.

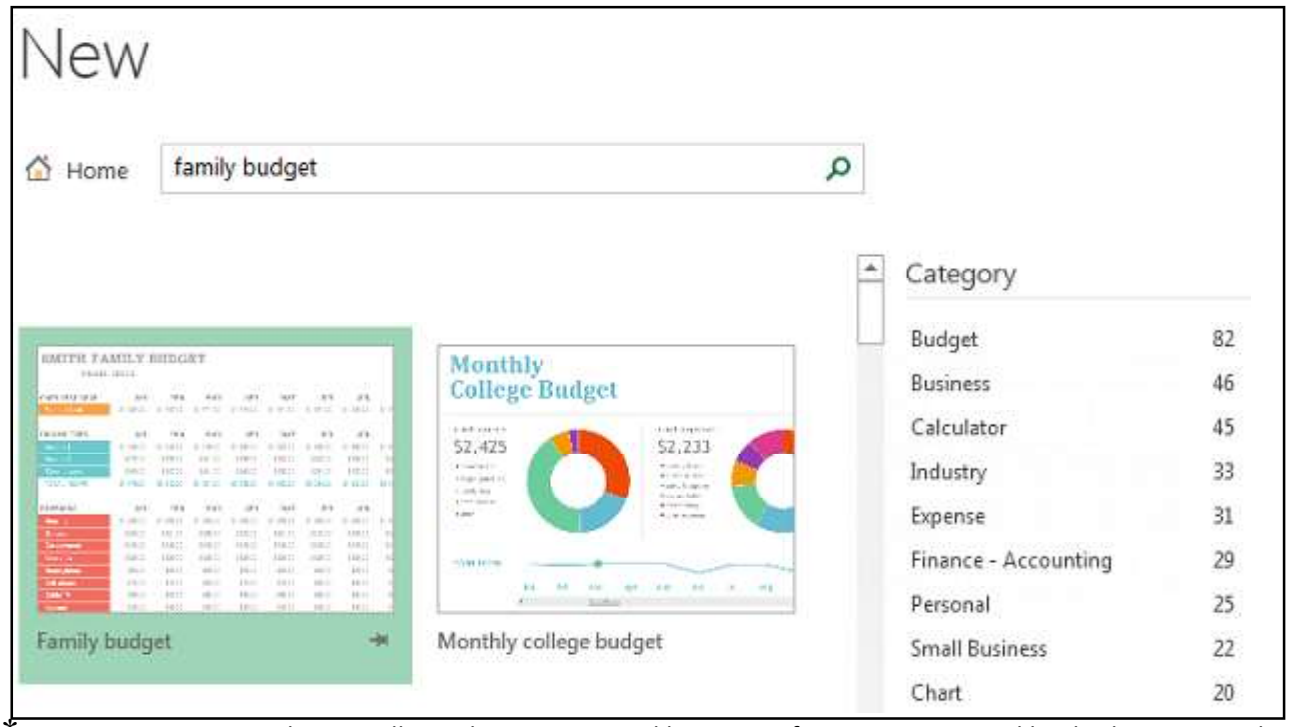


4. A **preview** of the template will appear, along with **additional information** on how the template can be used.

5. Click **Create** to use the selected template.

6. A new workbook will appear with the selected template.

*You can also browse templates by **category** or use the **search bar** to find something more specific.*

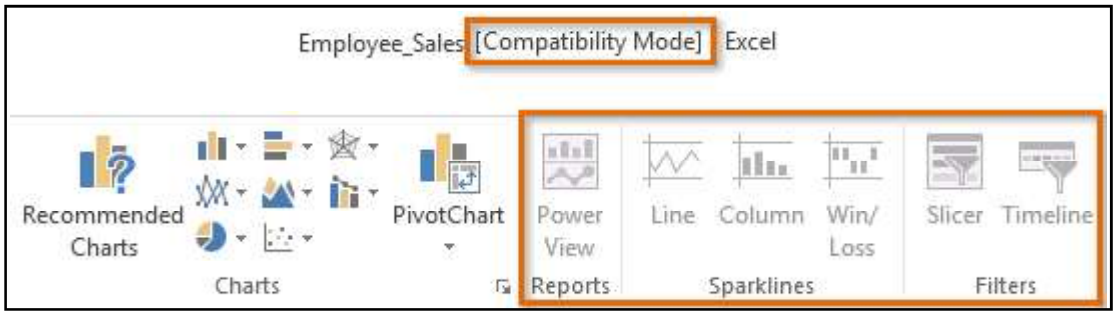


It is important to note that not all templates are created by Microsoft. Many are created by third-party providers and even individual users, so some templates may work better than others.

Compatibility mode

Sometimes you may need to work with workbooks that were created in earlier versions of Microsoft Excel, such as Excel 2003 or Excel 2000. When you open these types of workbooks, they will appear in Compatibility mode. Compatibility mode disables certain features, so you will only be able to access commands found in the program that was used to create the workbook. For example, if you open a workbook created in Excel 2003, you can only use tabs and commands found in Excel 2003.

In the image below, you can see that the workbook is in Compatibility mode. This will disable some Excel 2013 features, such as sparklines and slicers.



In order to exit Compatibility mode, you Will need to convert the workbook to the current version type. However, if you are collaborating with others who only have access to an earlier version of Excel, it is best to leave the workbook in Compatibility mode so the format will not change.

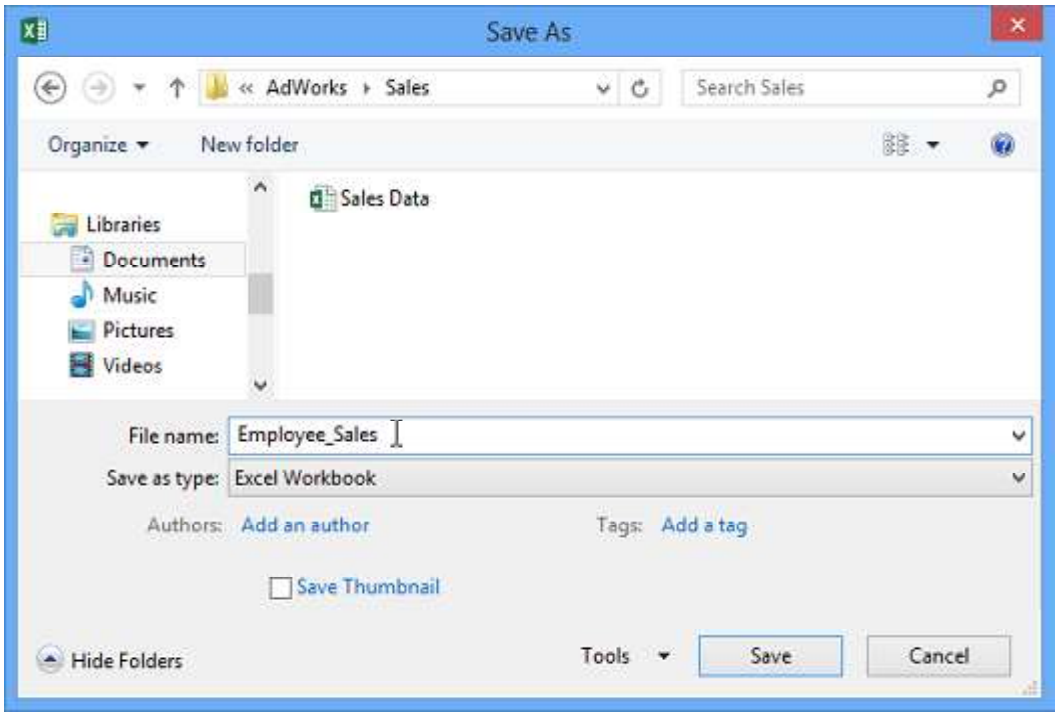
To convert a workbook

If you want access to all of the Excel 2013 features, you can convert the workbook to the 2013 file format.

Note:* *Converting a file may cause some changes to the **original layout of the workbook.*

1. Click the **File** tab to access **Backstage view**.
2. Locate and select **Convert** command.

3. The **Save As** dialog box will appear. Select the **location** where you want to save the workbook, enter a **file name** for the presentation, and click **Save**.



4. The workbook will be converted to the newest file type.

Saving and Sharing Workbooks

Whenever you create a new workbook in Excel, you will need to know how to **save** it in order to access and edit it later. As with previous versions of Excel, you can save files locally to your computer. But unlike older versions, Excel 2013 also lets you save a workbook to the **cloud** using **OneDrive**. You can also **export** and **share** workbooks with others directly from Excel.

OneDrive** *was previously called* ***SkyDrive*. There is nothing fundamentally different about the way OneDrive works—it is just a new name for an existing service. Over the next few months, you may still see SkyDrive in some Microsoft products.*

Save and Save As

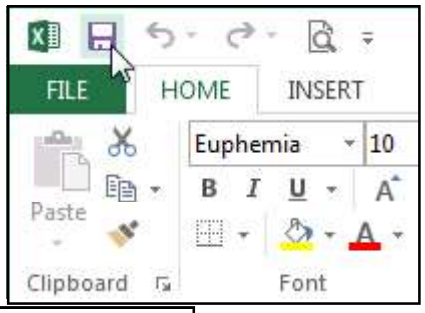
Excel offers two ways to save a file: **Save** and **Save As**. These options work in similar ways, with a few important differences:

Save: When you create or edit a workbook, you will use the **Save** command to save your changes. You will use this command most of the time. When you save a file, you will only need to choose a file name and location the first time. After that, you can just click the Save command to save it with the same name and location.

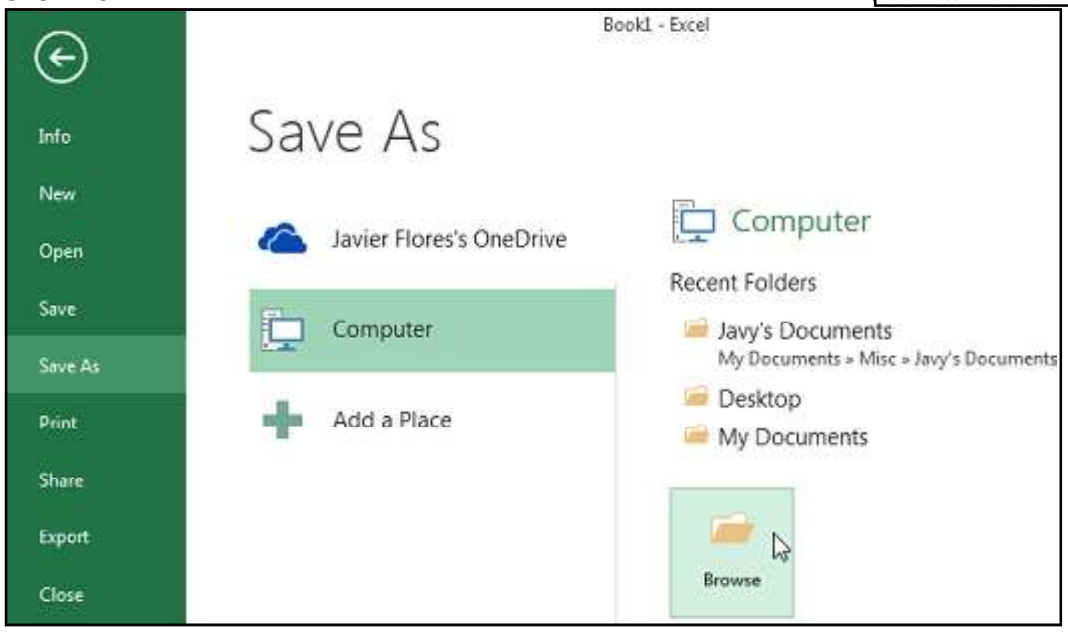
Save As: You will use this command to create a **copy** of a workbook while keeping the original. When you use Save As, you will need to choose a different name and/or location for the copied version.

To save a workbook

It is important to **save your workbook** whenever you start a new project or make changes to an existing one. Saving early and often can prevent your work from being lost. You will also need to pay close attention to **where you save** the workbook so it will be easy to find later.

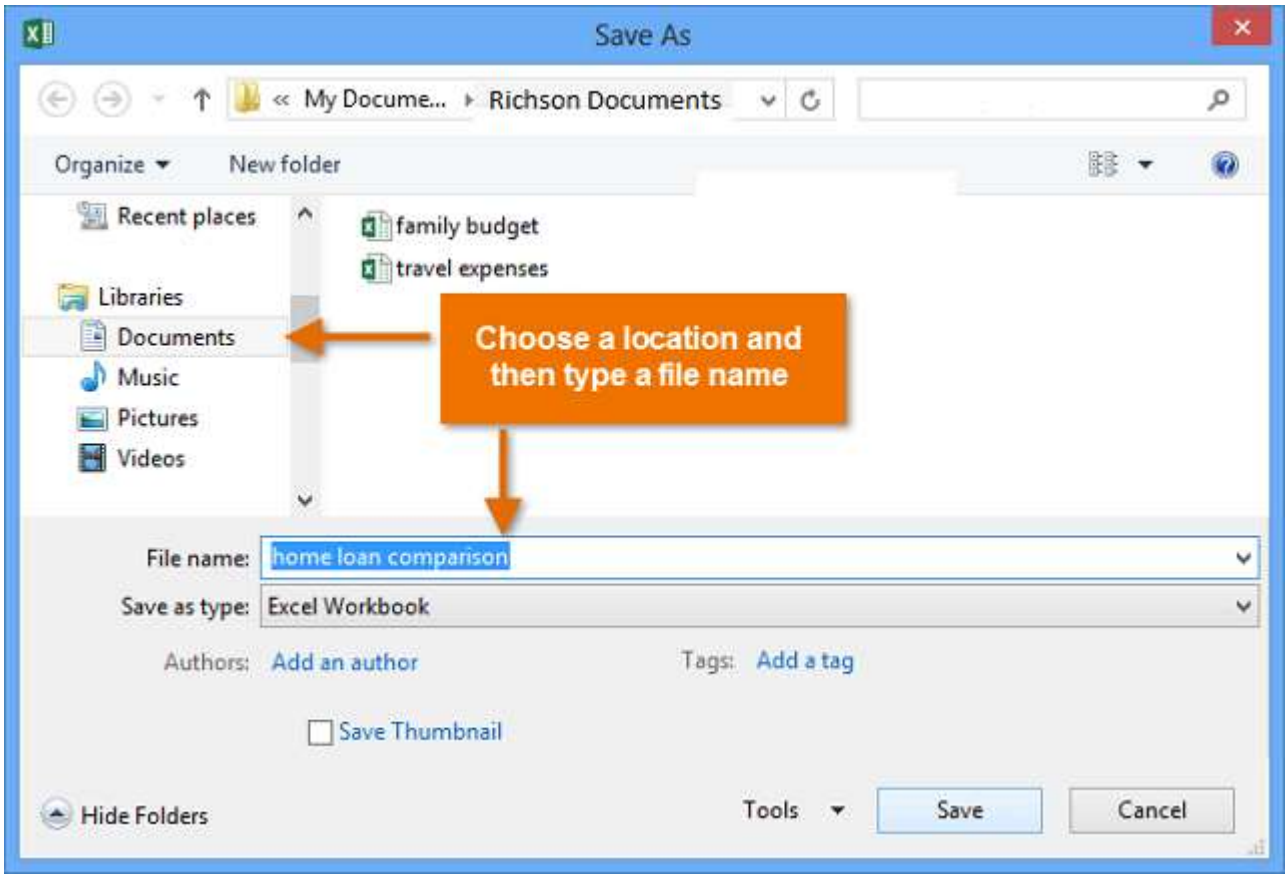


1. Locate and select the **Save** command on the **Quick Access toolbar**.
2. If you are saving the file for the first time, the **Save As** dialogue box will appear in **Backstage view**.
3. You will then need to choose **where to save** the file and give it a **file name**. To save the workbook to your computer, select **Computer**, then click **Browse**. Alternatively, you can click **OneDrive** to save the file to your OneDrive.



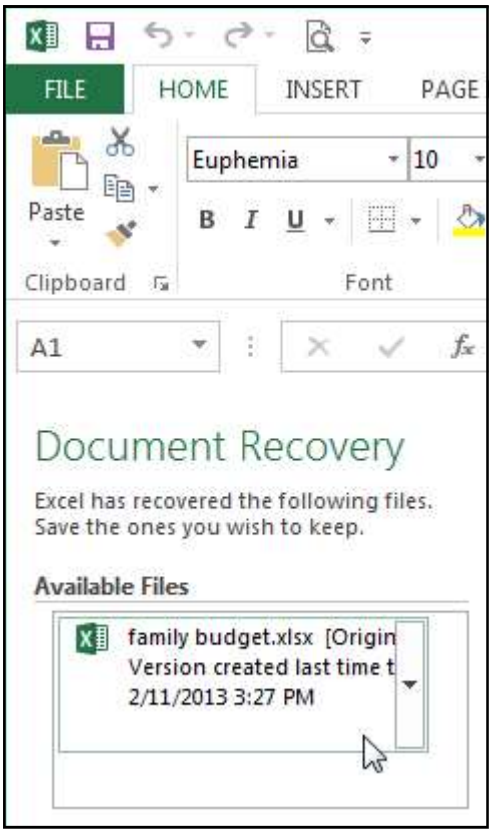
4. The **Save As** dialog box will appear. Select the **location** where you want to save the workbook.

5. Enter a **file name** for the workbook, then click **Save**.



6. The workbook will be **saved**. You can click the **Save** command again to save your changes as you modify the workbook.

You can also access the Save command by pressing **Ctrl+S on your keyboard.*



Auto Recover

Excel automatically saves your workbooks to a temporary folder while you are working on them. If you forget to save your changes or if Excel crashes you can restore the file using **AutoRecover**.

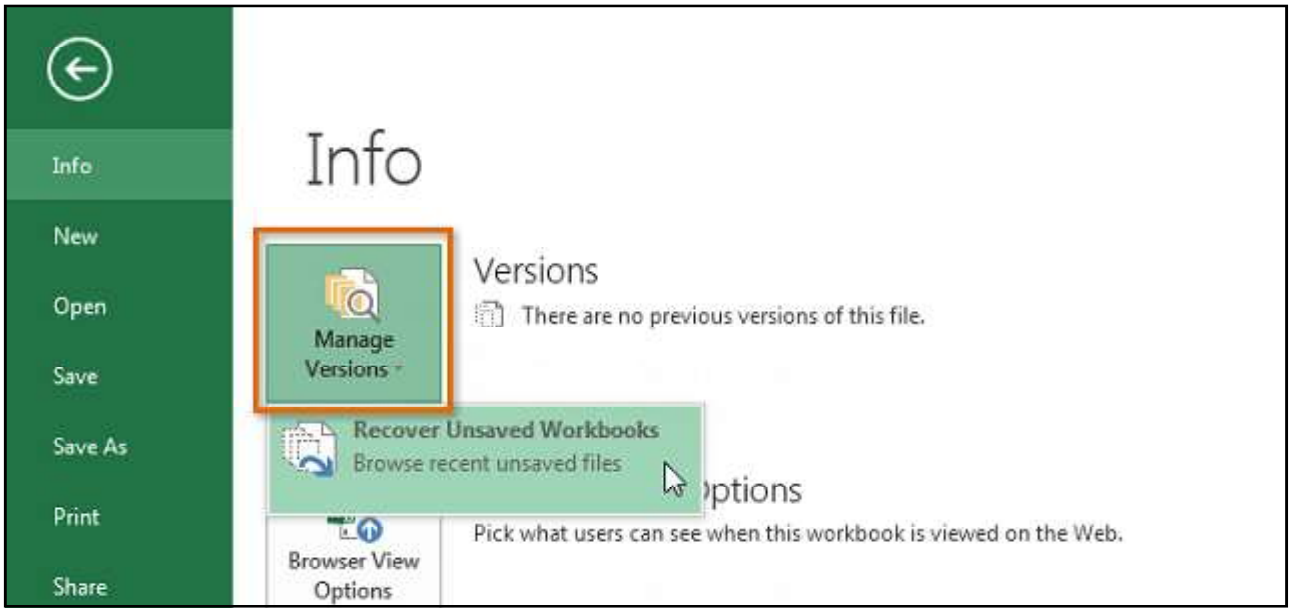
To use AutoRecover:

1. Open Excel 2013. If **autosaved versions** of a file are found, the **Document Recovery** pane will appear.
2. Click to **open** an available file. The workbook will be **recovered**.

**By default, Excel autosaves every 10 minutes. If you are editing a workbook for less than 10 minutes, Excel may not create an autosaved version.*

If you don not see the file you need, you can browse all autosaved files from **Backstage view**. Just select the **File** tab, click **Manage Versions**, then choose **Recover Unsaved Workbooks.**

(See picture on the next page)



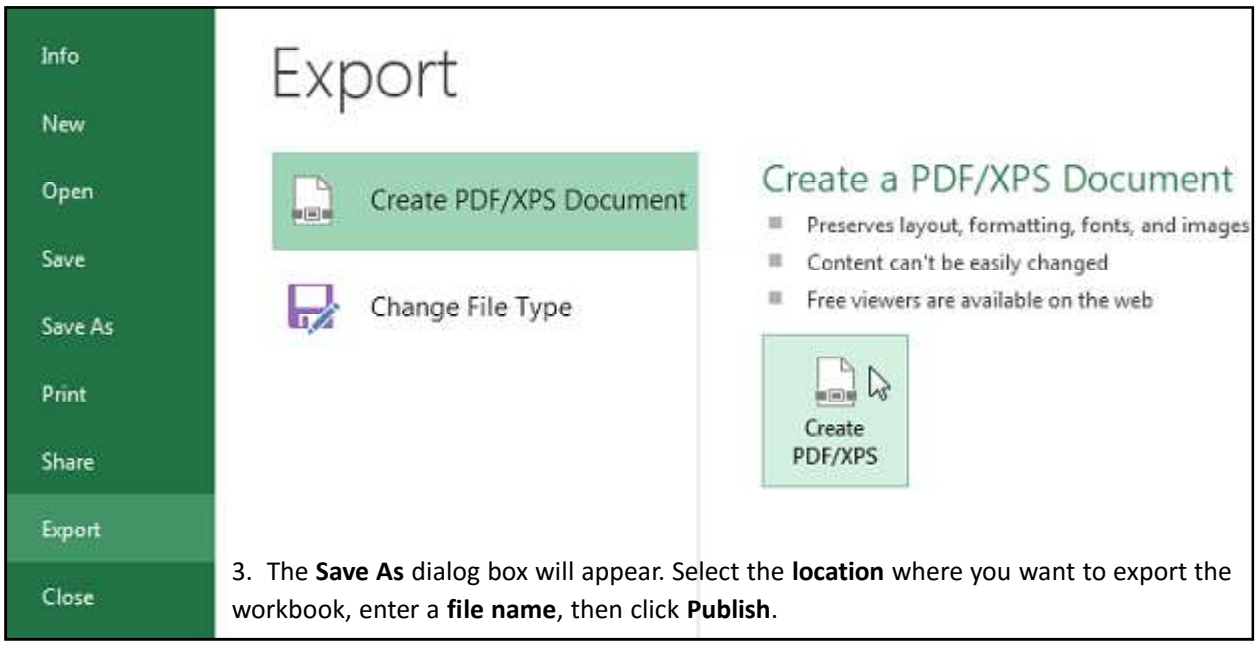
Exporting workbooks

By default, Excel workbooks are saved in the **.xlsx** file type. However, there may be times when you need to use **another file type**, such as a **PDF** or **Excel 97-2003 workbook**. It is easy to export your workbook from Excel in a variety of file types.

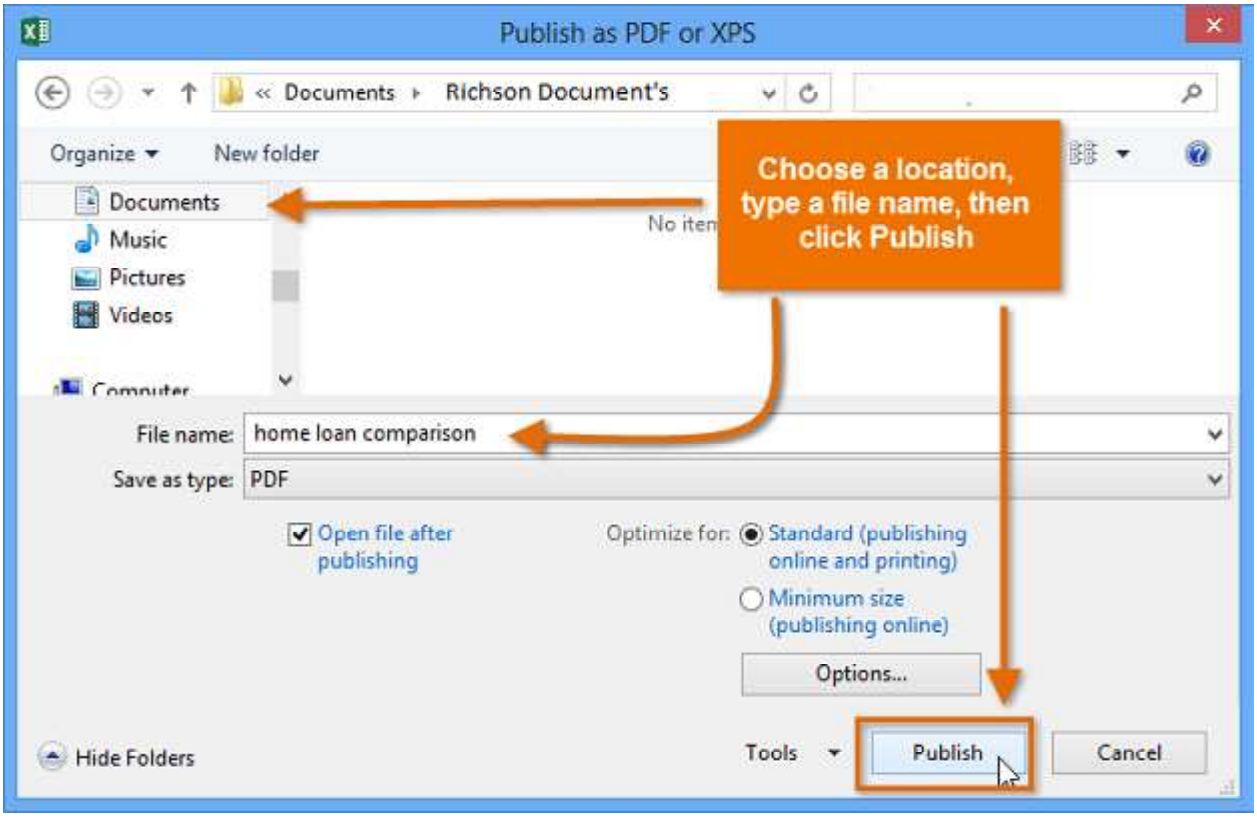
To export a workbook as a PDF file

Exporting your workbook as an **Adobe Acrobat document**, commonly known as a **PDF (Portable Document Format)** file, can be especially useful if you are sharing a workbook with someone who does not have Excel. A PDF will make it possible for recipients to view but not edit the content of your workbook.

1. Click the **File** tab to access **Backstage view**.
2. Click **Export**, then select **Create PDF/XPS**.

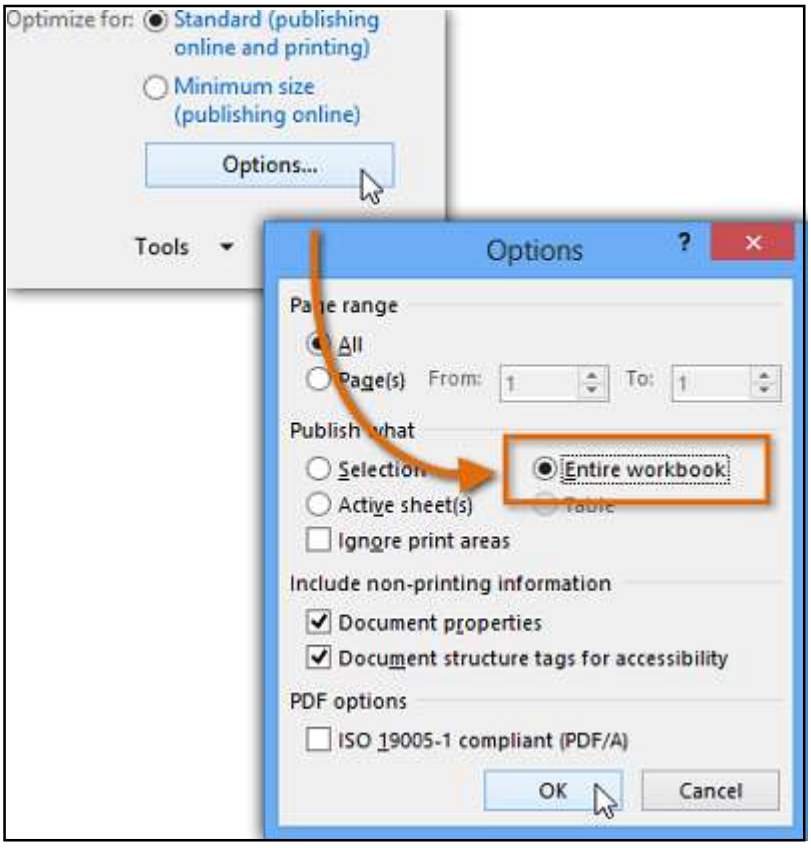


3. The **Save As** dialog box will appear. Select the **location** where you want to export the workbook, enter a **file name**, then click **Publish**.



By default, Excel will only export the **active worksheet. If you have multiple worksheets and want to save all of them in the same PDF file, click **Options** in the **Save as dialog box**. The **Options** dialog box will appear. Select **Entire workbook**, then click **OK**.*

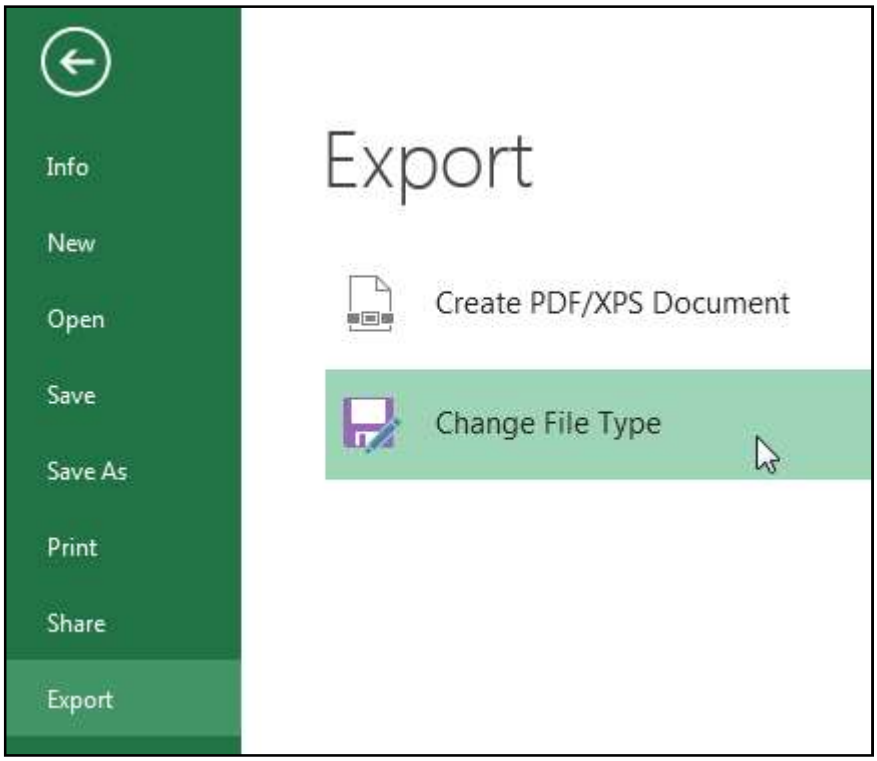
Whenever you export a workbook as a PDF, you will also need to consider how your workbook data will appear on each **page of the PDF, just like **printing** a workbook. Visit our **Page Layout lesson** to learn more about what to consider before exporting a workbook as a PDF.*



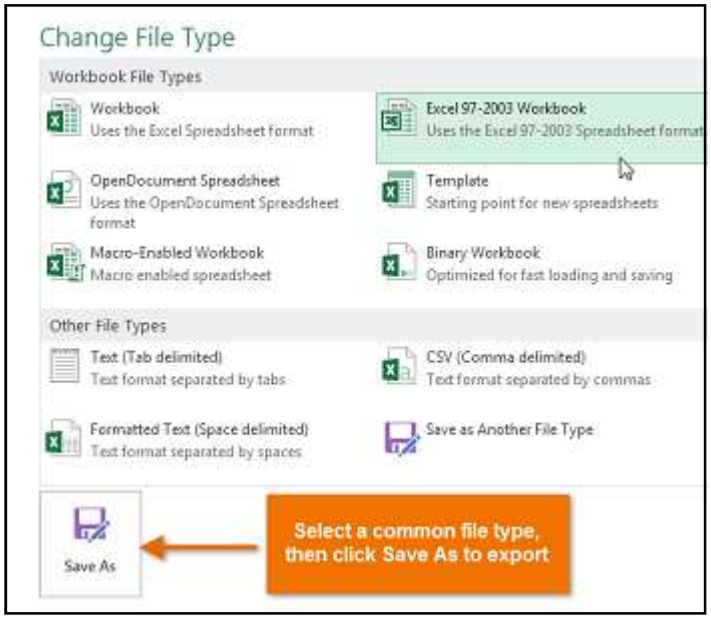
To export a workbook in other file types

You may also find it helpful to export your workbook in other file types, such as an **Excel 97-2003** workbook if you need to share with people using an older version of Excel, or a **.CSV** file if you need a **plain-text version** of your workbook.

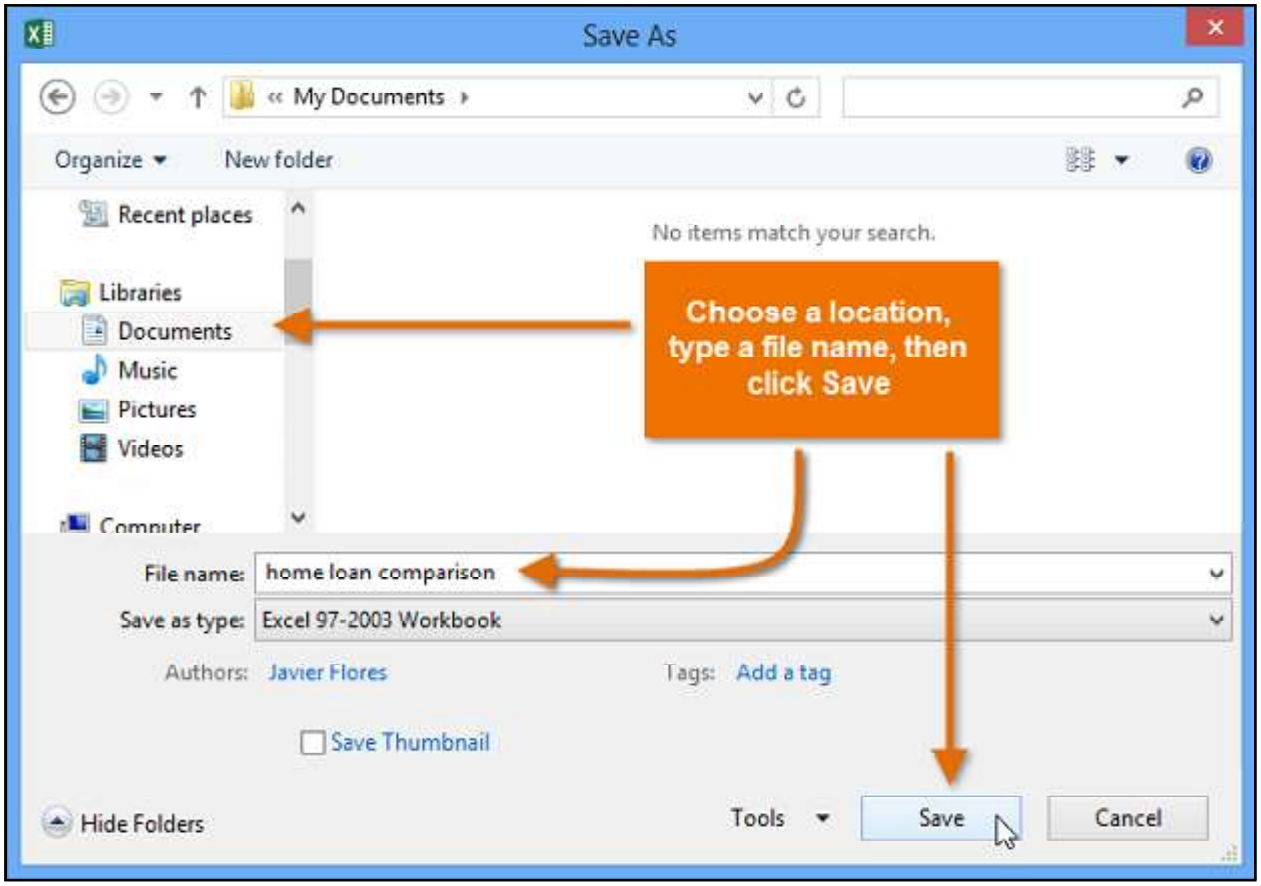
1. Click the **File** tab to access **Backstage view**.
2. Click **Export**, then select **Change File Type**.



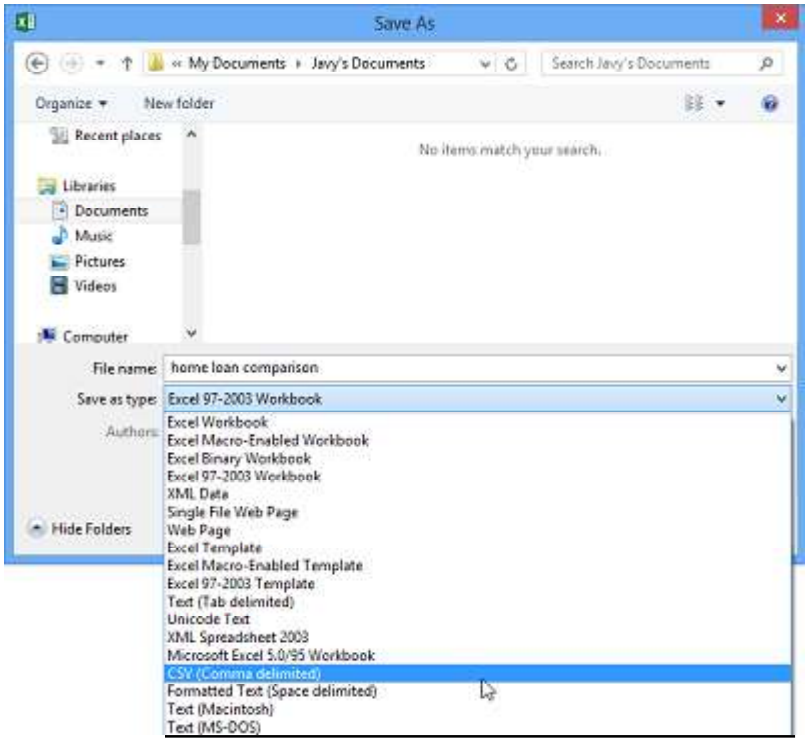
3. Select a common **file type**, then click **Save As**.



4. The **Save As** dialog box will appear. Select the **location** where you want to export the workbook, enter a **file name**, then click **Save**.



**You can also use the Save as type: drop-down menu in the Save As dialog box to save workbooks in a variety of file types.*



Sharing workbooks

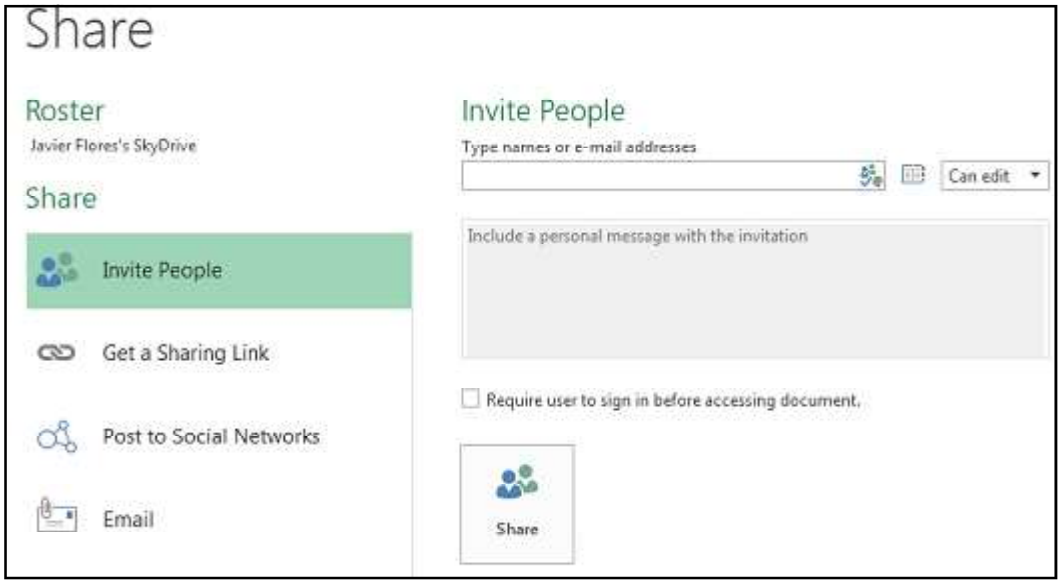
Excel 2013 makes it easy to **share and collaborate** on workbooks using **OneDrive**. In the past, if you wanted to share a file with someone you could send it as an email attachment. While convenient, this system also creates **multiple versions** of the same file, which can be difficult to organize.

When you share a workbook from Excel 2013, you are actually giving others access to the **exact same file**. This lets you and the people you share with **edit the same workbook** without having to keep track of multiple versions.

In order to share a workbook, it must first be **saved to your OneDrive.*

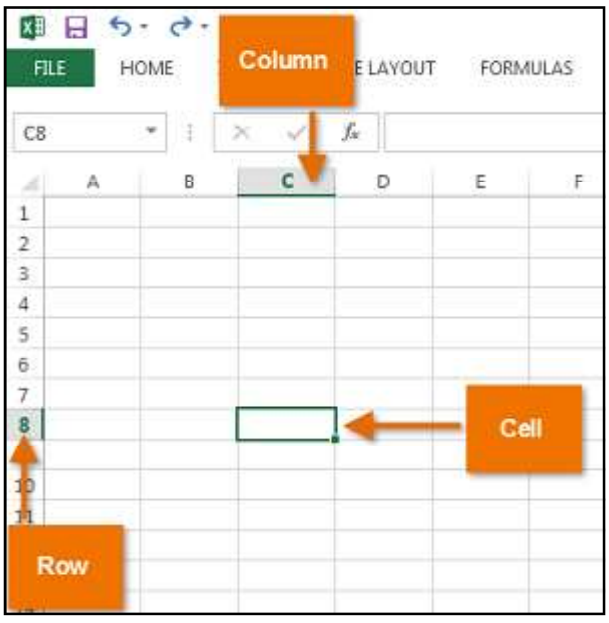
To share a workbook

1. Click the **File** tab to access **Backstage view**, then click **Share**.
2. The **Share pane** will appear.



Cell Basics

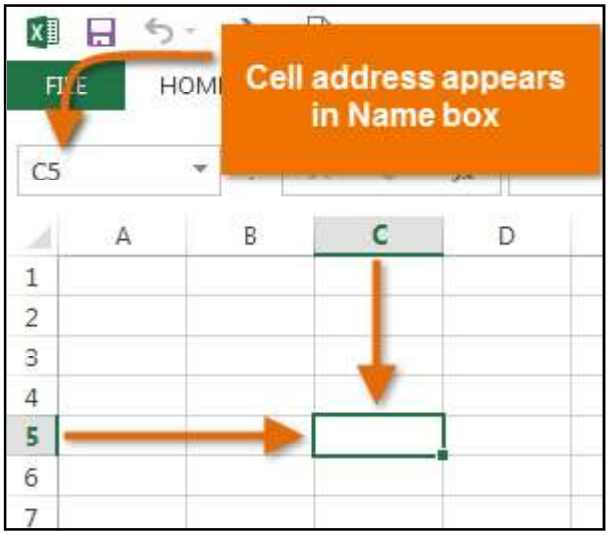
Whenever you work with Excel, you will enter information—or **content**—into **cells**. Cells are the basic building blocks of a worksheet. You will need to learn the basics of **cells** and **cell content** to calculate, analyze, and organize data in Excel.



Understanding cells

Every worksheet is made up of thousands of rectangles, which are called **cells**. A cell is the **intersection** of a **row** and a **column**. Columns are identified by **letters (A, B, C),** while rows are identified by **numbers (1, 2, 3)**.

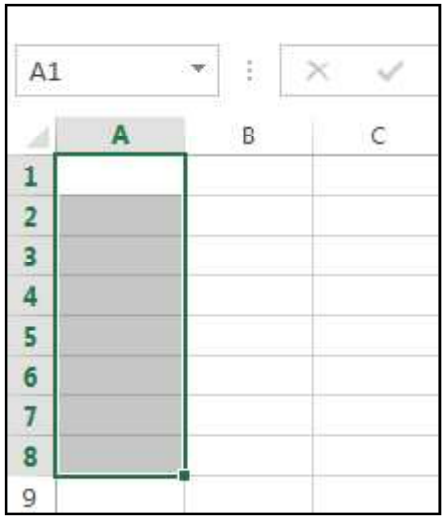
Each cell has its own **name**—or **cell address**—based on its column and row. In this example, the selected cell intersects **column C** and **row 5**, so the cell address is **C5**. The cell address will also appear in the **Name box**. Note that a cell's **column** and **row headings** are **highlighted** when the cell is selected.



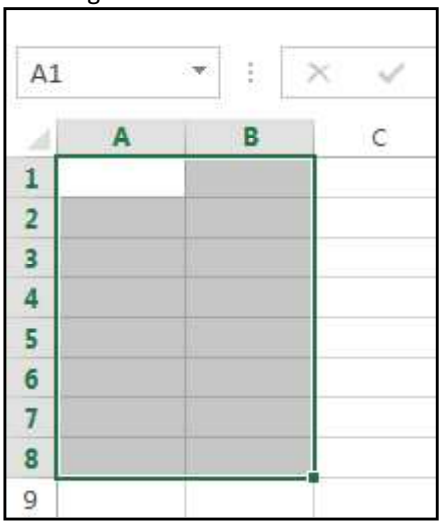
You can also select **multiple cells** at the same time. A group of cells is known as a **cell range**. Rather than a single cell address, you will refer to a cell range using the cell addresses of the **first** and **last** cells in the cell range, separated by a **colon(:)**. For example, a cell range that included cells A1, A2, A3, A4, and A5 would be written as **A1:A5**.

In the images below, two different cell ranges are selected:

Cell range **A1:A8**



Cell range **A1:B8**

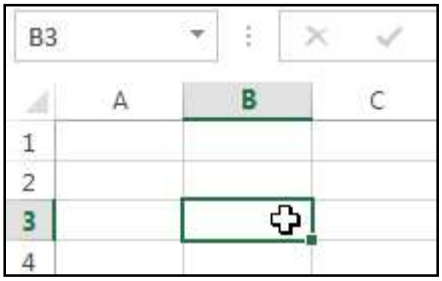


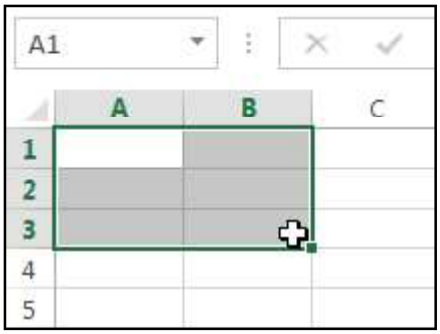
To select a cell

To input or edit cell content, you will first need to **select** the cell.

1. Click a **cell** to select it.
2. A **border** will appear around the selected cell, and the **column heading** and **row heading** will be highlighted. The cell will remain **selected** until you click another cell in the worksheet.

* *You can also select cells using the arrow keys on your keyboard.*





To select a cell range

Sometimes you may want to select a larger group of cells, or a **cell range**.

1. Click, hold, and drag the mouse until all of the **adjoining cells** you want to select are **highlighted**.
2. Release the mouse to **select** the desired cell range. The cells will remain **selected** until you click another cell in the worksheet.

Cell Content

Any information you enter into a spreadsheet will be stored in a cell. Each cell can contain different types of **content**, including **text, formatting, formulas**, and **functions**.

	A	B	C
1	Date	Sales	Percentage of Total
2	5/6/2013	65	0.71
3	5/7/2013	78	0.78
4	5/8/2013	112	0.86
5	5/9/2013	54	0.28
6	5/10/2013	99	0.49
7	5/11/2013	189	0.65
8	5/12/2013	120	0.57
9			

Text Cells can contain **text**, such as letters, numbers, and dates.

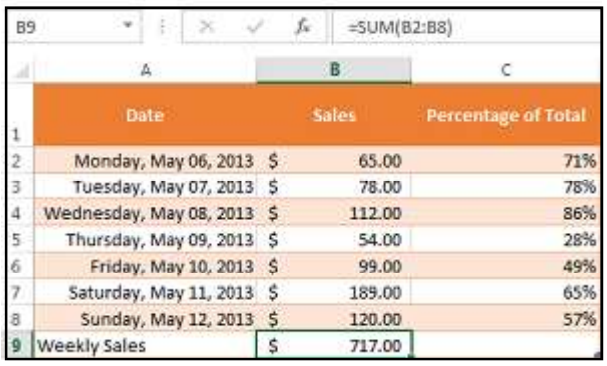
Formatting attributes

Cells can contain **formatting attributes** that change the way letters, numbers, and dates are **displayed**. For example, percentages can appear as 0.15 or 15%. You can even change a cell's **background color**.

	A	B	C
1	Date	Sales	Percentage of Total
2	Monday, May 06, 2013	$ 65.00	71%
3	Tuesday, May 07, 2013	$ 78.00	78%
4	Wednesday, May 08, 2013	$ 112.00	86%
5	Thursday, May 09, 2013	$ 54.00	28%
6	Friday, May 10, 2013	$ 99.00	49%
7	Saturday, May 11, 2013	$ 189.00	65%
8	Sunday, May 12, 2013	$ 120.00	57%
9			

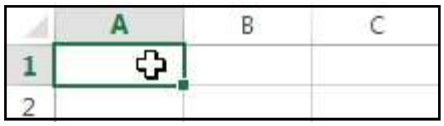
Formulas and functions

Cells can contain **formulas** and **functions** that calculate cell values. In our example, **SUM(B2:B8)** adds the value of each cell in cell range **B2:B8** and displays the total in cell **B9**.

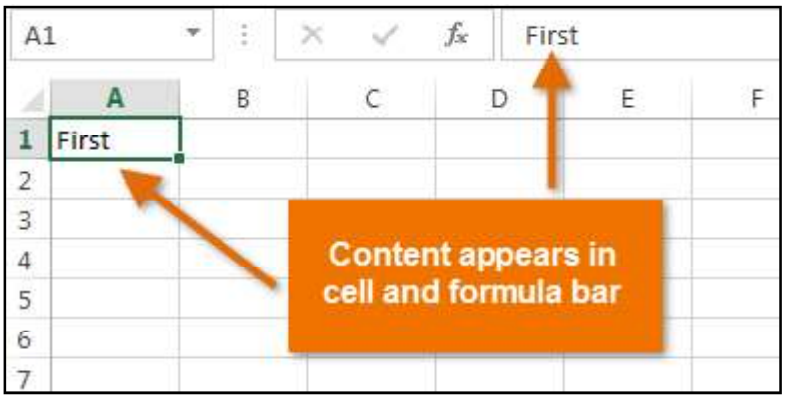


To insert content

1. Click a cell to select it.



2. Type **content** into the selected cell, then press **Enter** on your keyboard. The content will appear in the **cell** and the **formula bar**. You can also input and edit cell content in the formula bar.



To delete cell content

1. Select the **cell** with content you want to delete.

	A	B	C
1			
2	First Name	Middle Name	Last Name
3	Heidi	Lauren	Lee
4	Josie	Marie	Gates
5	Wendy	Anne	Crocker
6	Loretta	Susan	Johnson

2. Press the **Delete** or **Backspace** key on your keyboard. The cell's contents will be deleted.

	A	B	C
1			
2	First Name	Middle Name	Last Name
3	Heidi		Lee
4	Josie	Marie	Gates
5	Wendy	Anne	Crocker
6	Loretta	Susan	Johnson

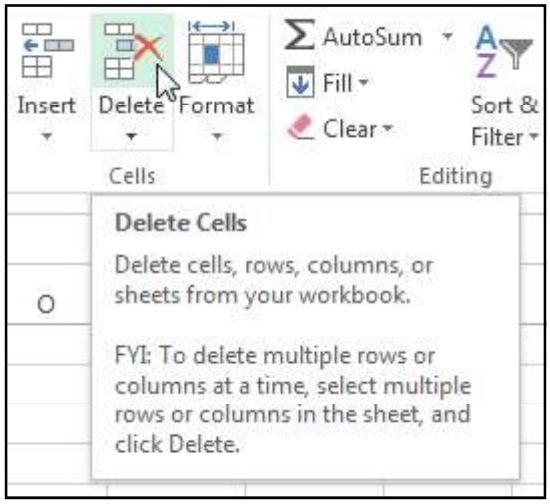
You can use the **Delete key on your keyboard to delete content from **multiple cells** at once. The Backspace key will only delete one cell at a time*.

To delete cells

There is an important difference between **deleting the content of a cell** and **deleting the cell itself**. If you delete the entire cell, the cells below it will **shift up** and replace the deleted cells.

	A	B	C
1			
2	First Name	Middle Name	Last Name
3	Heidi	Joy	Lee
4	Josie	Marie	Gates
5	Wendy	Anne	Crocker
6	Loretta	Susan	Johnson

1. Select the **cell(s)** you want to delete.
2. Select the **Delete** command from the **Home** tab on the **Ribbon**.
3. The cells below will **shift up**.



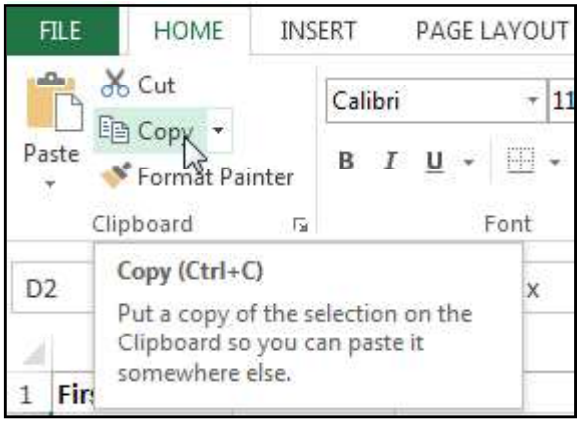
	A	B	C
1	First Name	Middle Name	Last Name
2	Heidi	Joy	Lee
3	Josie	Marie	Gates
4	Wendy	Anne	Crocker
5	Loretta	Susan	Johnson

To copy and paste cell content

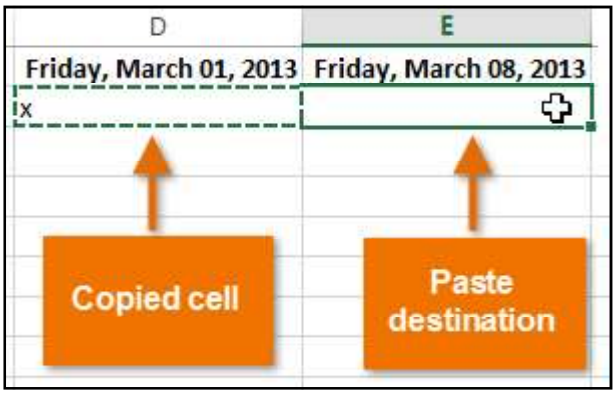
Excel allows you to **copy** content that is already entered into your spreadsheet and **paste** that content to other cells, which can save you time and effort.

1. Select the **cell(s)** you want to **copy**.

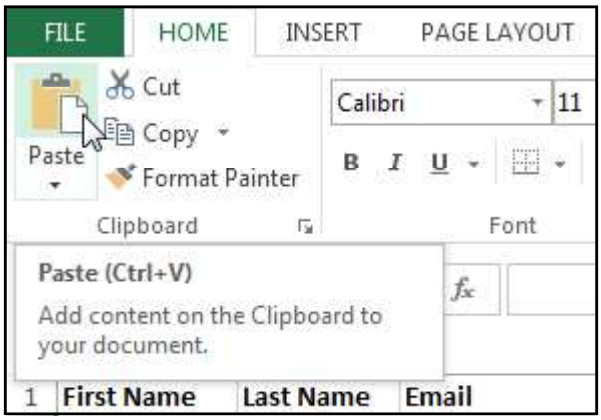
2. Click the **Copy** command on the **Home** tab, or press **Ctrl+C** on your keyboard.



3. Select the **cell(s)** where you want to **paste** the content. The copied cells will now have a **dashed box** around them.



4. Click the **Paste** command on the **Home** tab, or press **Ctrl+V** on your keyboard.



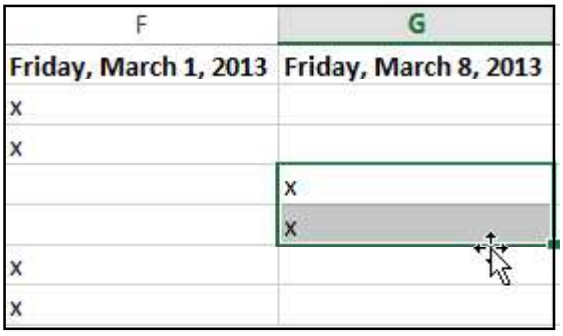
5. The cut contenjt will be **removed** from the original cells and **pasted** into the selected cells.

D	E
Friday, March 01, 2013	Friday, March 08, 2013
x	x
x	
x	
x	

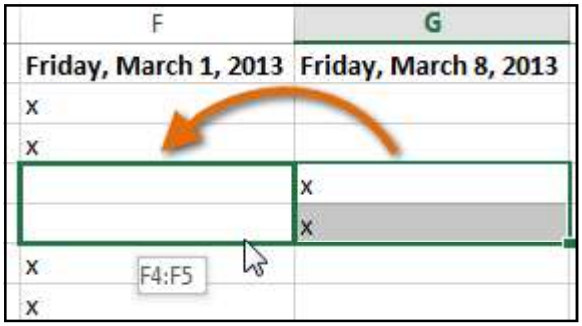
To drag and drop cells

Rather than cutting, copying, and pasting, you can **drag and drop** cells to move their contents.

1. Select the **cell(s)** you want to **move**.
2. Hover the mouse over the **border** of the selected cell(s) until the cursor changes from a **white cross** to a **black cross with four arrows**



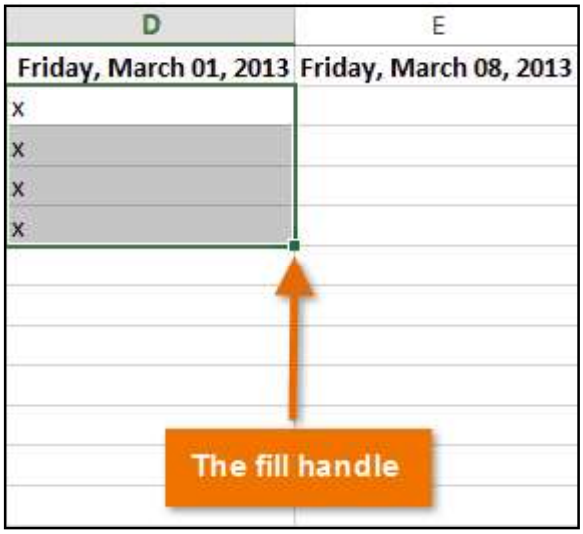
3. Click, hold, and drag the cells to the **desired location**.

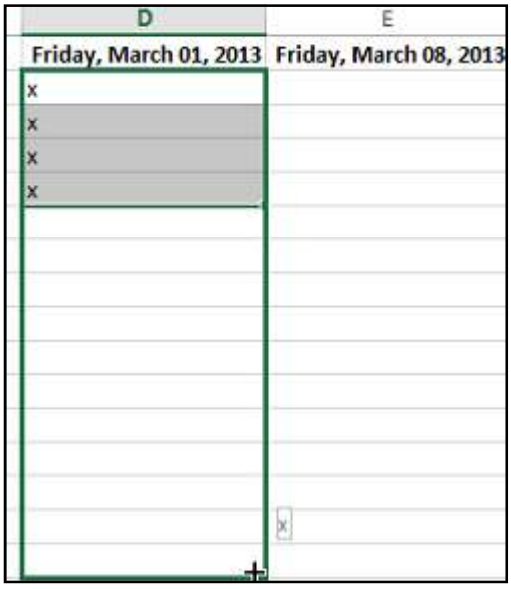


To use the fill handle

There may be times when you need to copy the content of one cell to several other cells in your worksheet. You could **copy and paste** the content into each cell, but this method would be time consuming. Instead, you can use the **fill handle** to quickly copy and paste content to **adjacent cells** in the same row or column.

1. Select the **cell(s)** containing the content you want to use. The **fill handle** will appear as a small square in the bottom-right corner of the selected cell(s).

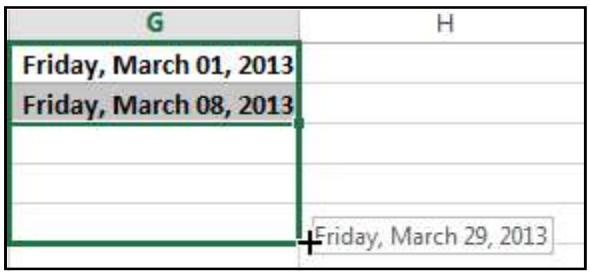


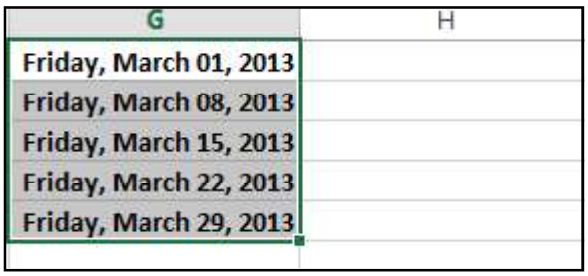


2. Click, hold, and drag the **fill handle** until all of the cells you want to fill are **selected**.
3. Release the mouse to **fill** the selected cells.
4. Release the mouse, and the cells will be **dropped** in the selected location.

To continue a series with the fill handle

The fill handle can also be used to **continue a series**. Whenever the content of a row or column follows a sequential order, like **numbers (1, 2, 3)** or **days (Monday, Tuesday, Wednesday)**, the fill handle can guess what should come next in the series. In many cases, you may need to select **multiple cells** before using the fill handle to help Excel determine the series order. In our example below, the fill handle is used to extend a series of **dates** in a column. (see image on next pg.)





You can also **double-click** the fill handle instead of clicking and dragging. This can be useful with larger spreadsheets, where clicking and dragging may be awkward.

To use Flash Fill

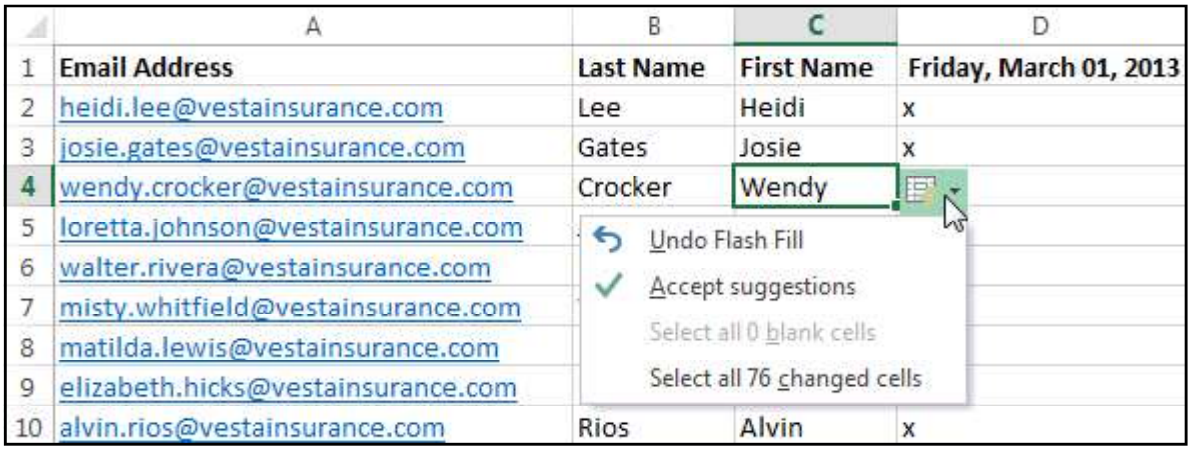
A new feature in Excel 2013, **Flash Fill** can enter data automatically into your worksheet, saving you time and effort. Just like the fill handle, **Flash Fill** can guess what type of information you are entering into your worksheet. In the example below, we will use Flash Fill to create a list of **first names** using a list of existing **email addresses**.

1. Enter the desired information into your worksheet. A **Flash Fill preview** will appear below the selected cell whenever Flash Fill is available.

	A	B	C	D
1	**Email Address**	**Last Name**	**First Name**	**Friday, March 01, 2013**
2	heidi.lee@vestainsurance.com	Lee	Heidi	x
3	josie.gates@vestainsurance.com	Gates	Josie	x
4	wendy.crocker@vestainsurance.com	Crocker	Wendy	x
5	loretta.johnson@vestainsurance.com	Johnson	Loretta	x
6	walter.rivera@vestainsurance.com	Rivera	Walter	x
7	misty.whitfield@vestainsurance.com	Whitfield	Misty	x
8	matilda.lewis@vestainsurance.com	Lewis	Matilda	x
9	elizabeth.hicks@vestainsurance.com	Hicks	Elizabeth	x
10	alvin.rios@vestainsurance.com	Rios	Alvin	x
11	brian.gaines@vestainsurance.com	Gaines	Brian	x

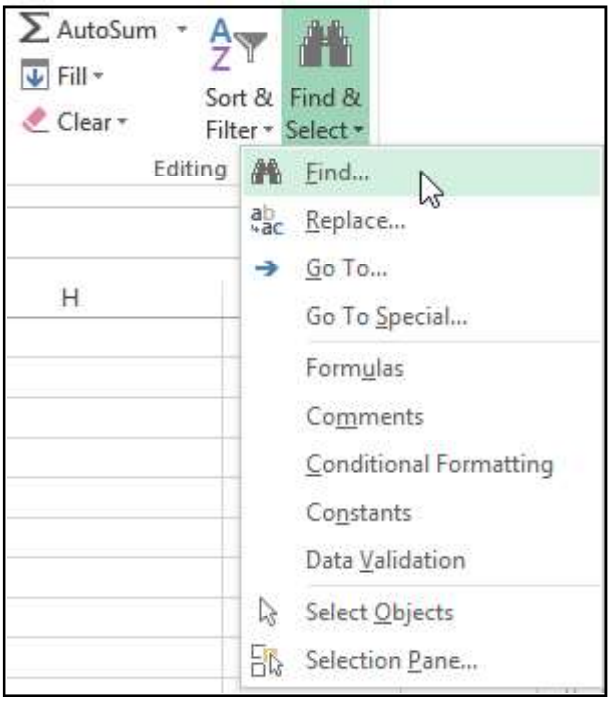
2. Press **Enter**. The Flash Fill data will be **added** to the worksheet.

To **modify or **undo** Flash Fill, click the **Flash Fill button** next to recently added Flash Fill data.*



Find and Replace

When working with a lot of data in Excel, it can be difficult and time consuming to locate specific information. You can easily search your workbook using the **Find** feature, which also allows you to modify content using the **Replace** feature.



To find content

In our example, we will use the Find command to locate a specific name in a long list of employees.

1. From the **Home** tab, click the **Find and Select** command, then select **Find**... from the drop-down menu.
2. The **Find and Replace** dialog box will appear. Enter the **content** you want to find. In our example, we will type the employee's name.
3. Click **Find Next**. If the content is found, the cell containing that content will be selected. (refer image below)

4. Click **Find Next** to find further instances or **Find All** to see every instance of the search term. (look image above)
5. When you are finished, click **Close** to exit the Find and Replace dialog box.

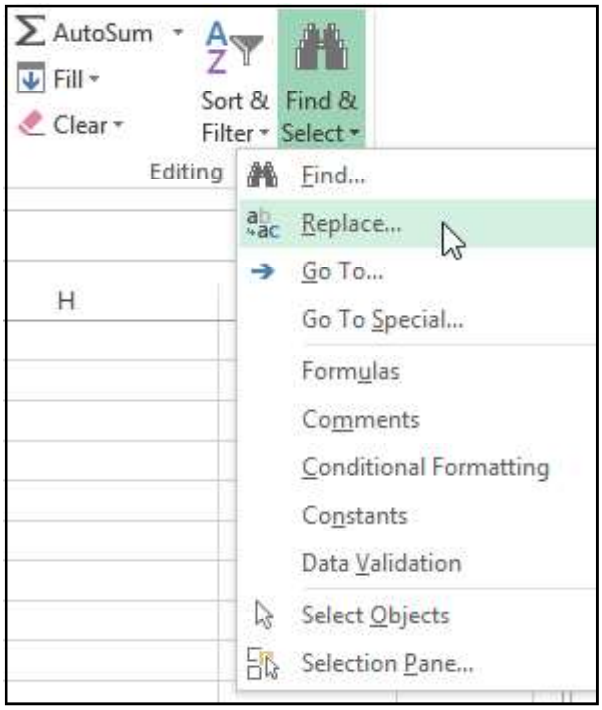
* *You can also access the Find command by pressing Ctrl+F on your keyboard.*

To replace cell content

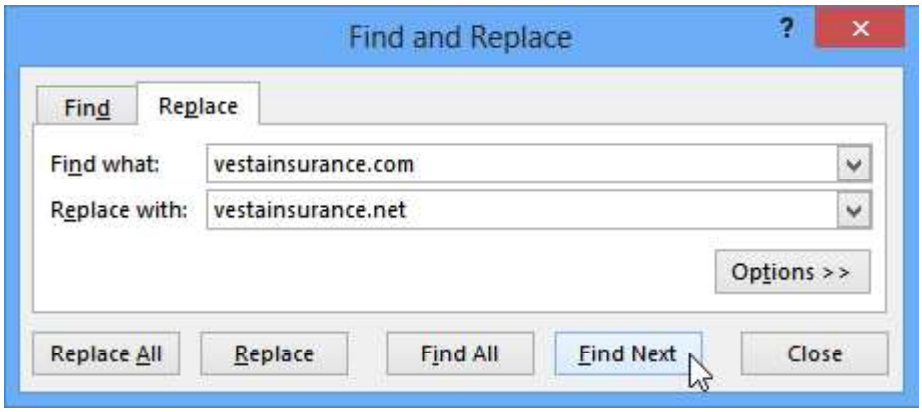
At times, you may discover that you have repeatedly made a mistake throughout your workbook (such as misspelling someone's name), or that you need to exchange a particular word or phrase for another. You can use Excel's **Find and Replace** feature to make quick revisions. In our example, we will use Find and Replace to correct a list of email addresses.

1. From the **Home** tab, click the **Find and Select** command, then select **Replace**... from the drop-down menu.

(see image on next page)



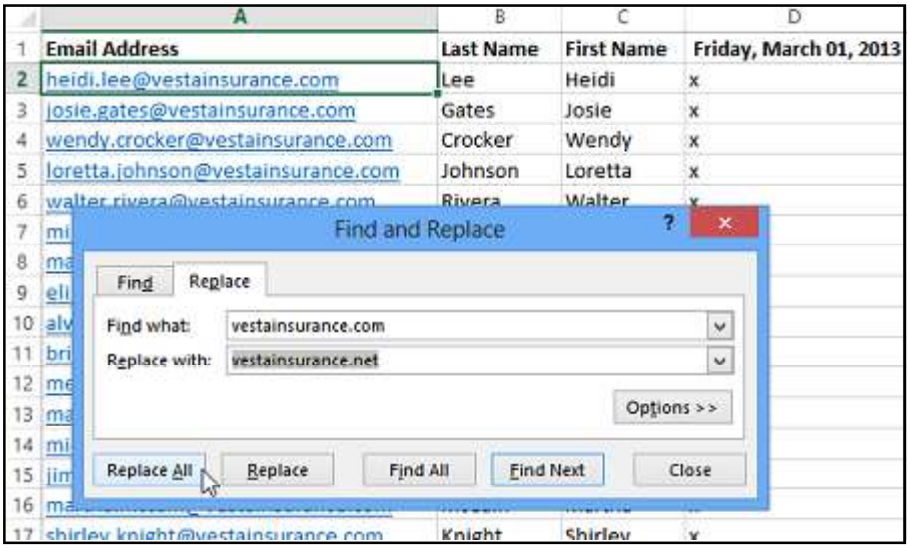
2. The **Find and Replace** dialog box will appear. Type the text you want to find in the **Find what**: field.
3. Type the text you want to replace it with in the **Replace with**: field, then click Find Next.



4. If the content is found, the cell containing that content will be **selected**.
5. **Review** the text to make sure you want to replace it.
6. If you want to replace it, select one of the **replace** options:

Replace will replace individual instances.

Replace All will replace every instance of the text throughout the workbook. In our example, we will choose this option to save time.



7. A dialog box will appear, confirming the number of replacements made. Click **OK** to continue.

8. The selected cell content will be **replaced**.
9. When you are finished, click **Close** to exit the Find and Replace dialog box.

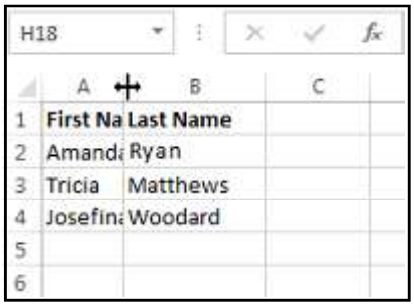
Modifying Columns, Rows, and Cells

By default, every row and column of a new workbook is set to the same **height** and **width**. Excel allows you to modify column width and row height in different ways, including **wrapping text** and **merging cells**.

To modify column width

In our example below, some of the content in column A cannot be displayed. We can make all of this content visible by changing the **width** of column A.

1. Position the mouse over the **column line** in the **column heading** so the **white cross** becomes a **double arrow**.
2. Click, hold, and drag the mouse to **increase** or **decrease** the column width.
3. Release the mouse. The column **width** will be changed.

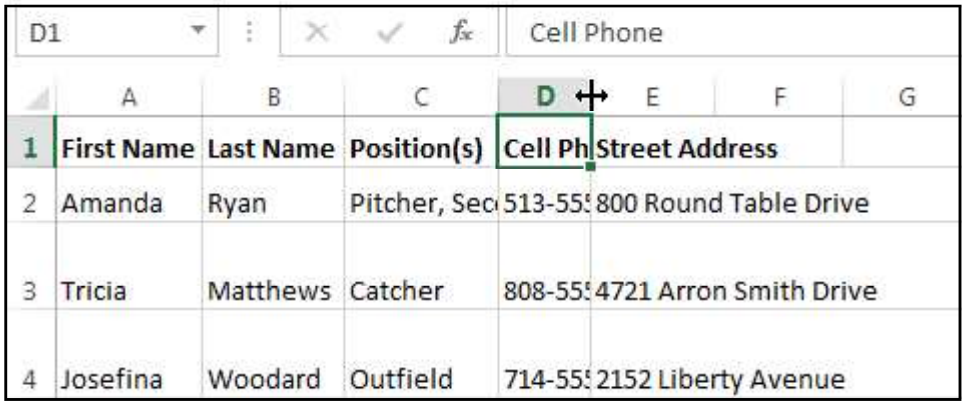


*If you see **pound (hash) signs (#######)** in a cell, it means the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content

To AutoFit column width

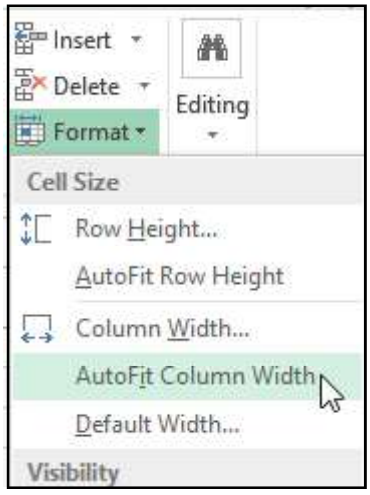
The **AutoFit** feature will allow you to set a column's width to fit its content **automatically**.

1. Position the mouse over the **column line** in the **column heading** so the **white cross** becomes a double arrow.



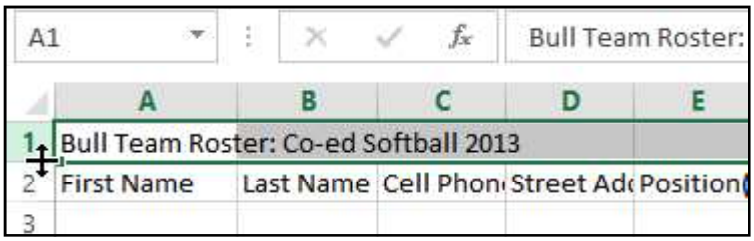
2. Double-click the mouse. The **column width** will be changed automatically to fit the content.

You can also AutoFit the width for several columns at the same time. Simply select the columns you want to AutoFit, then select the **AutoFit Column Width command from the **Format** drop-down menu on the **Home** tab. This method can also be used for **row height**.*



To modify row height

1. Position the **cursor** over the **row line** so the **white cross** becomes a **double arrow**.

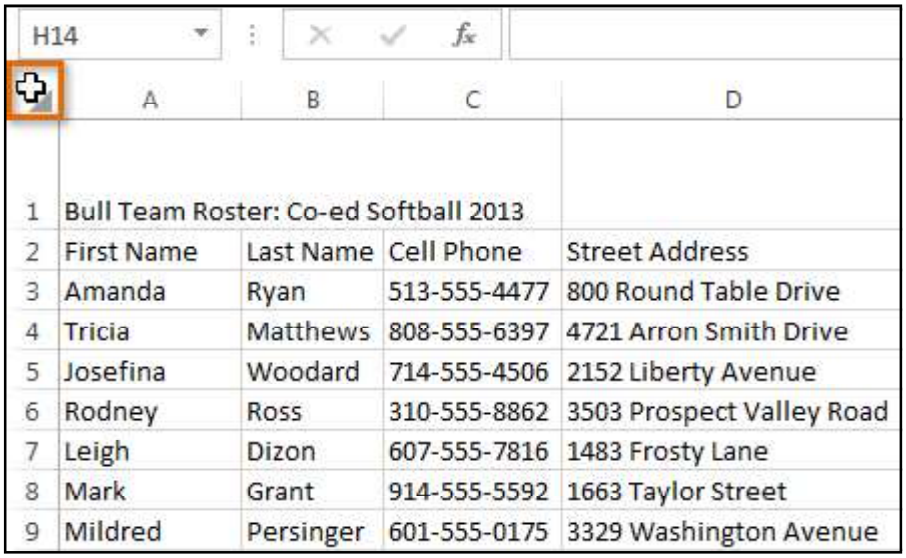


2. Click, hold, and drag the mouse to **increase** or **decrease** the row height.
3. Release the mouse. The **height** of the selected row will be changed.

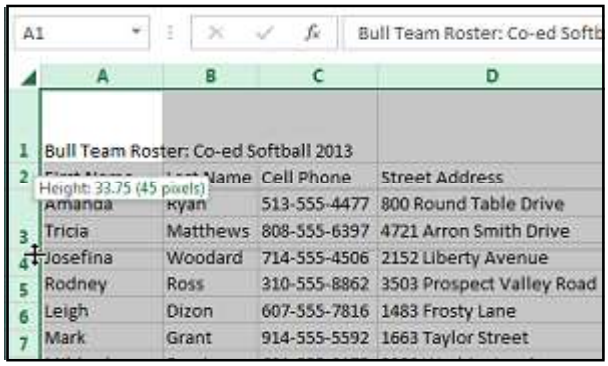
To modify all rows or columns

Rather than resizing rows and columns individually, you can modify the height and width of every row and column at the same time. This method allows you to set a **uniform size** for every row and column in your worksheet. In our example, we will set a **uniform row height**.

1. Locate and click the **Select All** button just below the **formula bar** to select every cell in the worksheet.



2. Position the mouse over a **row line** so the **white cross** becomes a **double arrow**.
3. Click, hold, and drag the mouse to **increase** or **decrease** the row height.



4. Release the mouse when you are satisfied with the **new row height** for the worksheet.

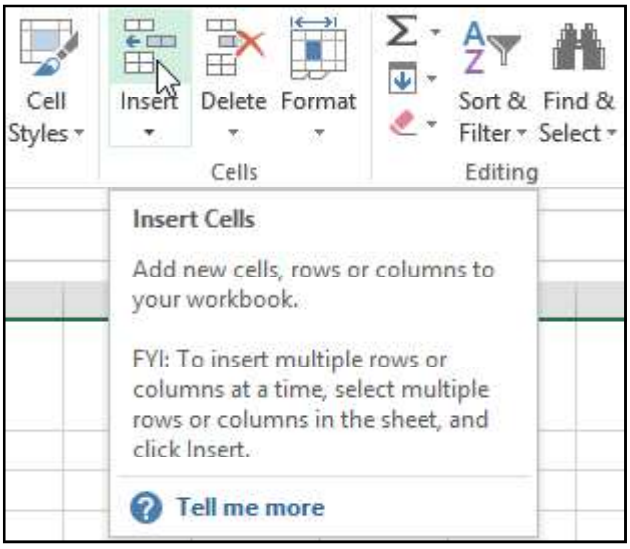
Inserting, deleting, moving, and hiding rows and columns

After you have been working with a workbook for a while, you may find that you want to insert new columns or rows, **delete** certain rows or columns, **move** them to a different location in the worksheet, or even **hide** them.

5	Neil	Crawford	908-555-2234	2312 Stonepot Road
6	Anthony	Keel	267-555-0144	533 Spring Avenue
7	Ray	Logan	256-555-2475	2439 Ritter Street
8	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive
9	Leola	McNew	580-555-8177	2182 Cody Ridge Road
10	Joshua	Milliman	213-555-1117	2166 Zimmerman Lane

To insert rows

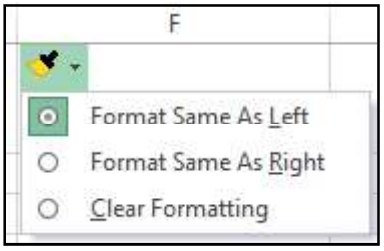
1. Select the **row heading** below where you want the new row to appear. For example, if you want to insert a row between rows 7 and 8, select row 8.
2. Click the **Insert** command on the **Home** tab.



3. The **new row** will appear **above** the selected row.

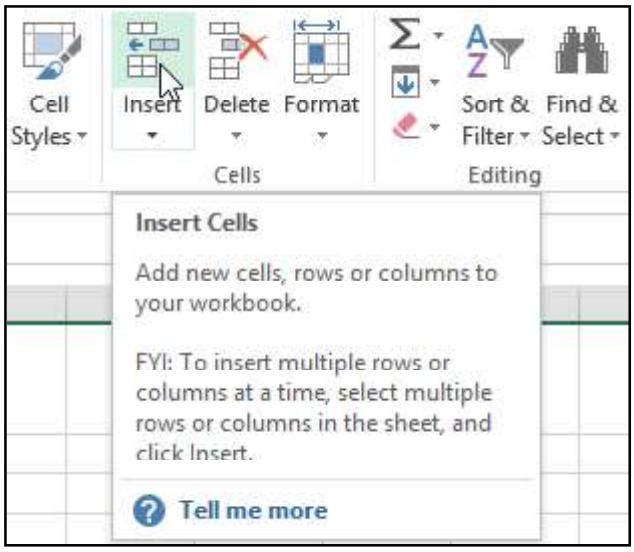
5	Neil	Crawford	908-555-2234	2312 Stonepot Road
6	Anthony	Keel	267-555-0144	533 Spring Avenue
7	Ray	Logan	256-555-2475	2439 Ritter Street
8				
9	cia	Matthews	808-555-6397	4721 Arron Smith Drive
10	Leola	McNew	580-555-8177	2182 Cody Ridge Road

When inserting new rows, columns, or cells, you will see the **Insert Options button next to the inserted cells. This button allows you to choose how Excel formats these cells. By default, Excel formats inserted rows with the same formatting as the cells in the row above. To access more options, hover your mouse over the **Insert Options** button, then click the drop-down arrow.*



To insert columns

1. Select the **column heading** to the right of where you want the new column to appear. For example, if you want to insert a column between columns D and E, select column E.
2. Click the **Insert** command on the **Home** tab.



3. The **new column** will appear **to the left** of the selected column.

When inserting rows and columns, make sure you select the entire row or column by clicking the **heading. If you select only a **cell** in the row or column, the **Insert** command will only insert a new cell.*

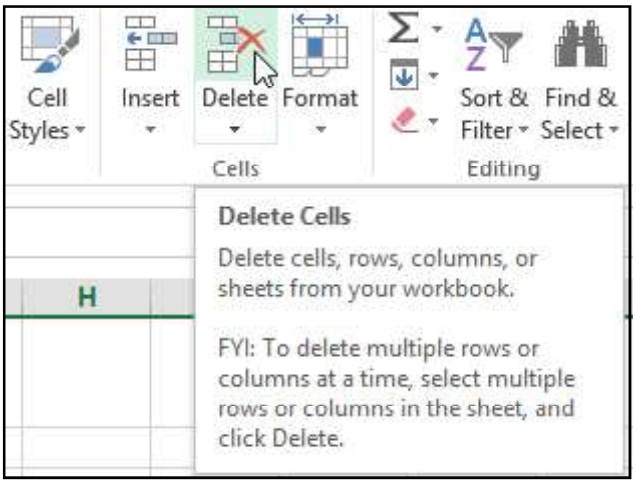
To delete rows

It is easy to **delete** any row that you no longer need in your workbook.

1. Select the **row(s)** you want to delete. In our example, we will select **rows 6-8**.

5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue
6	Rodney	Ross	310-555-8862	3503 Prospect Valley Road
7	Leigh	Dizon	607-555-7816	1483 Frosty Lane
8	Mark	Grant	914-555-5592	1663 Taylor Street
9	Mildred	Persinger	601-555-0175	3329 Washington Avenue
10	Dwayne	Patnode	205-555-3783	1736 Broad Street
11	Bonnie	Benjamin	502-555-1212	2937 Earnhardt Drive

2. Click the **Delete** command on the **Home** tab.



3. The **selected row(s)** will be deleted, and the rows below will **shift up**.

To delete columns

1. Select the **columns(s)** you want to delete.
2. Click the **Delete** command on the **Home** tab.
3. The **selected columns(s)** will be deleted, and the columns to the right will **shift left**.

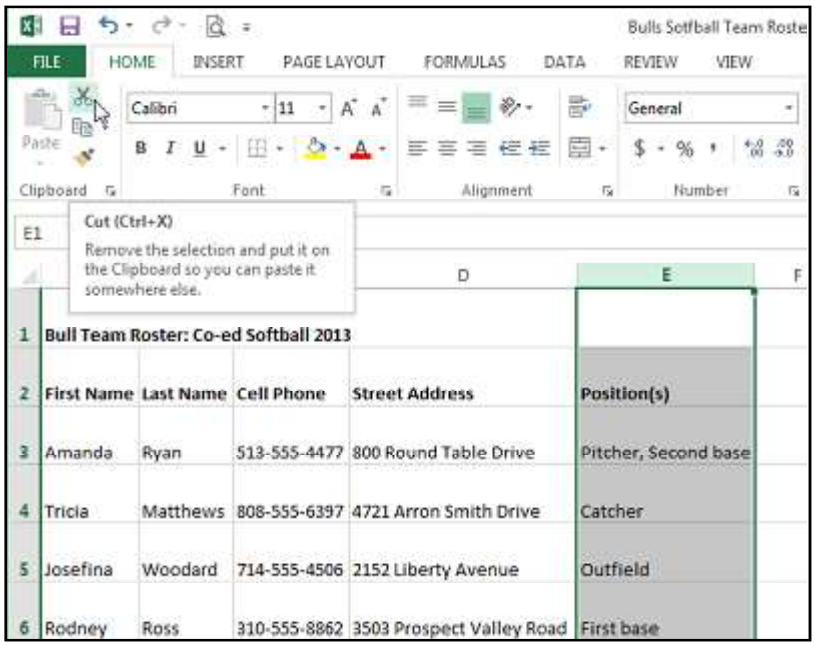
It is important to understand the difference between **deleting a row or column and simply **clearing its contents**. If you want to remove the **content** of a row or column without causing others to shift, right-click a **heading**, then select **Clear Contents** from the drop-down menu.*

To move a row or column

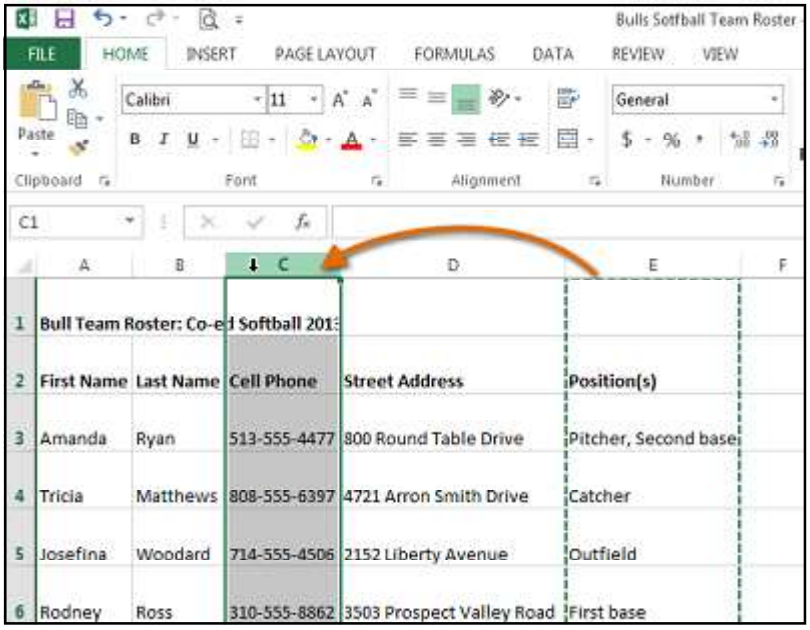
Sometimes you may want to **move** a column or row to rearrange the content of your worksheet. In our example we will move a column, but you can move a row in the same way.

1. Select the desired **column heading** for the column you want to move, then click the **Cut** command on the Home tab or press **Ctrl+X** on your keyboard.

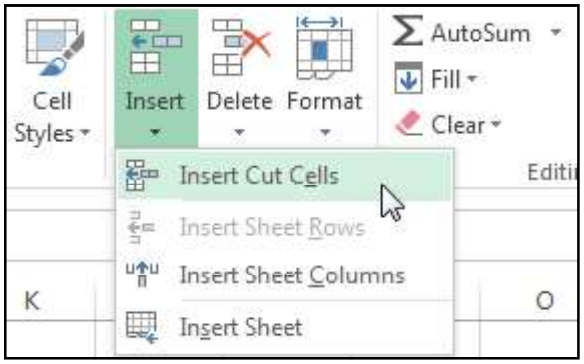
(See image on next page)



2. Select the **column heading** to the right of where you want to move the column. For example, if you want to move a column between columns B and C, select column C.



3. Click the **Insert** command on the **Home** tab, then select Insert **Cut Cells** from the drop-down menu.

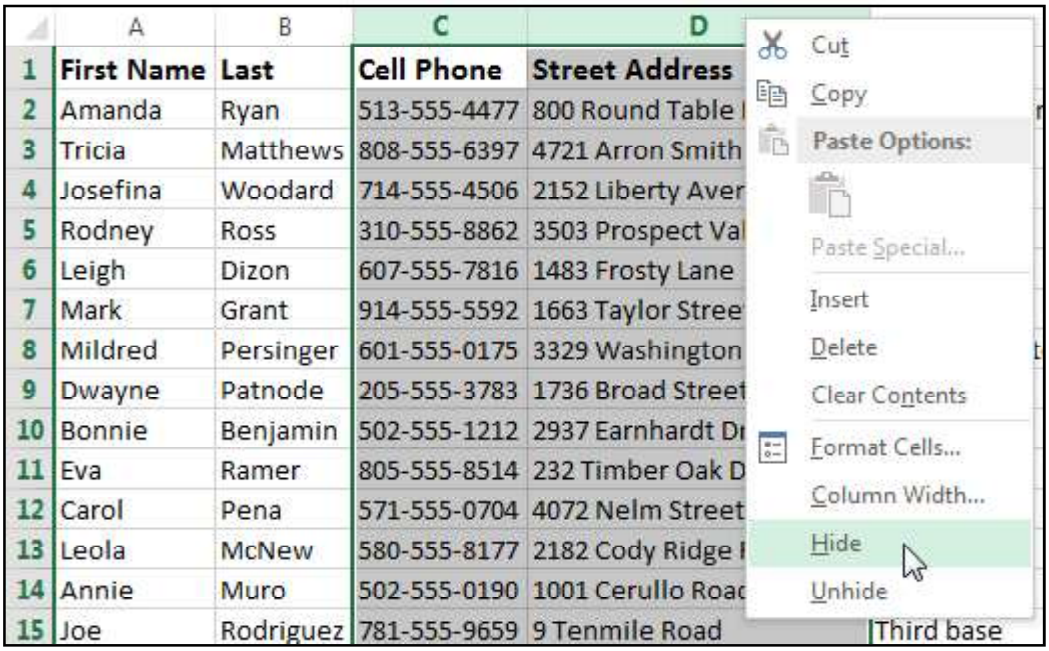


4. The column will be **moved** to the selected location, and the columns to the right will **shift right**.

To hide and unhide a row or column

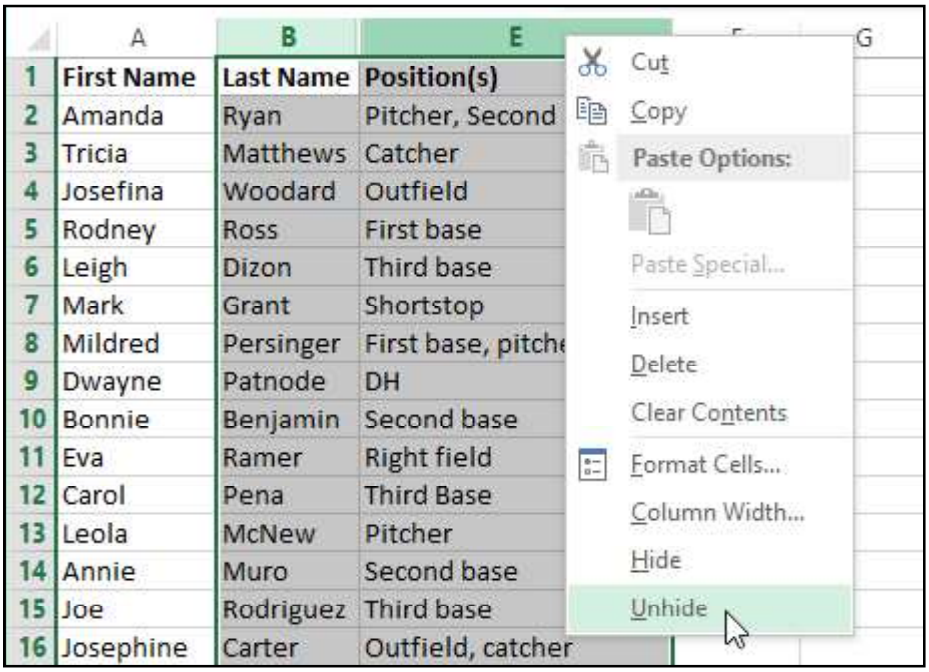
At times, you may want to **compare** certain rows or columns without changing the organization of your worksheet. Excel allows you to **hide** rows and columns as needed. In our example, we will hide columns C and D to make it easier to compare columns A, B, and E.

1. Select the **column(s)** you want to **hide**, right-click the mouse, then select **Hide** from the **formatting** menu.



	A	B	C	D
1	First Name	Last	Cell Phone	Street Address
2	Amanda	Ryan	513-555-4477	800 Round Table
3	Tricia	Matthews	808-555-6397	4721 Arron Smith
4	Josefina	Woodard	714-555-4506	2152 Liberty Aver
5	Rodney	Ross	310-555-8862	3503 Prospect Val
6	Leigh	Dizon	607-555-7816	1483 Frosty Lane
7	Mark	Grant	914-555-5592	1663 Taylor Stree
8	Mildred	Persinger	601-555-0175	3329 Washington
9	Dwayne	Patnode	205-555-3783	1736 Broad Street
10	Bonnie	Benjamin	502-555-1212	2937 Earnhardt Dr
11	Eva	Ramer	805-555-8514	232 Timber Oak D
12	Carol	Pena	571-555-0704	4072 Nelm Street
13	Leola	McNew	580-555-8177	2182 Cody Ridge
14	Annie	Muro	502-555-0190	1001 Cerullo Roac
15	Joe	Rodriguez	781-555-9659	9 Tenmile Road

2. The columns will be **hidden**.
3. To **unhide** the columns, select the columns to the **left** and **right** of the hidden columns (in other words, the columns on both sides of the hidden columns). In our example, we will select columns **B** and **E**.
4. Right-click the mouse, then select **Unhide** from the **formatting** menu. The hidden columns will reappear.



	A	B	E
1	First Name	Last Name	Position(s)
2	Amanda	Ryan	Pitcher, Second
3	Tricia	Matthews	Catcher
4	Josefina	Woodard	Outfield
5	Rodney	Ross	First base
6	Leigh	Dizon	Third base
7	Mark	Grant	Shortstop
8	Mildred	Persinger	First base, pitche
9	Dwayne	Patnode	DH
10	Bonnie	Benjamin	Second base
11	Eva	Ramer	Right field
12	Carol	Pena	Third Base
13	Leola	McNew	Pitcher
14	Annie	Muro	Second base
15	Joe	Rodriguez	Third base
16	Josephine	Carter	Outfield, catcher

Wrapping text and merging cells

Whenever you have too much cell content to be displayed in a single cell, you may decide to **wrap the text** or **merge** the cell rather than resize a column. Wrapping the text will automatically modify a cell's row height, allowing cell contents to be displayed **on multiple lines**. Merging allows you to combine a cell with adjacent empty cells to create **one large cell**.

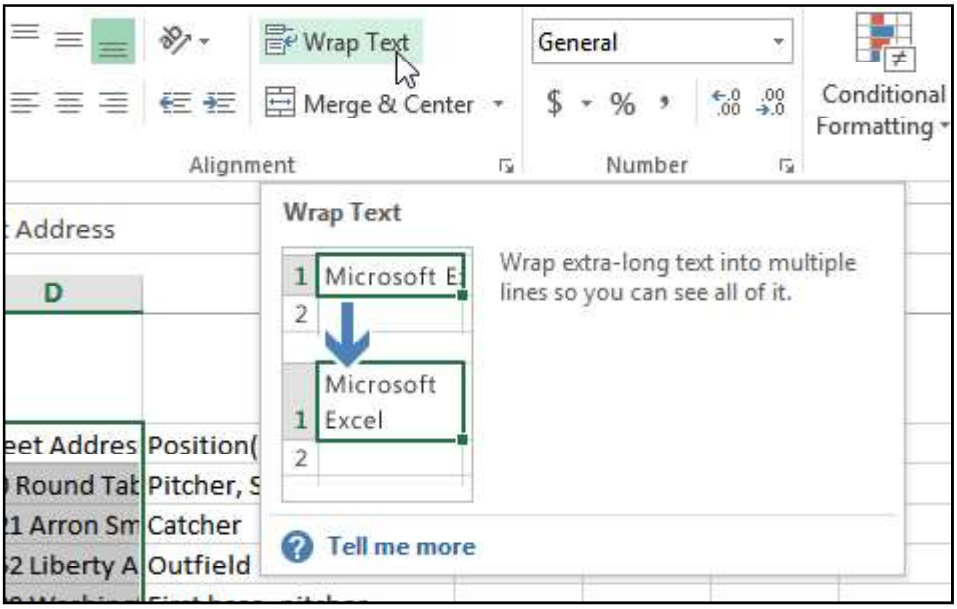
To wrap text in cells

In our example below, we will wrap the text of the cells in column D so the entire address can be displayed.

1. Select the cells you want to wrap. In this example, we will select the cells in **column D**.

	A	B	C	D	E
1	Bull Team Roster: Co-ed Softball 2013				
2	First Name	Last Name	Cell Phone	Street Addres	Position(s)
3	Amanda	Ryan	513-555-4477	800 Round Tab	Pitcher, Second base
4	Tricia	Matthews	808-555-6397	4721 Arron Sm	Catcher
5	Josefina	Woodard	714-555-4506	2152 Liberty A	Outfield
6	Mildred	Persinger	601-555-0175	3329 Washing	First base, pitcher
7	Dwayne	Patnode	205-555-3783	1736 Broad Str	DH
8	Bonnie	Benjamin	502-555-1212	2937 Earnhard	Second base
9	Eva	Ramer	805-555-8514	232 Timber Oa	Right field
10	Carol	Pena	571-555-0704	4072 Nelm Str	Third Base
11	Leola	McNew	580-555-8177	2182 Cody Rid	Pitcher
12	Annie	Muro	502-555-0190	1001 Cerullo R	Second base
13	Joe	Rodriguez	781-555-9659	9 Tenmile Roa	Third base

2. Select the **Wrap Text** command on the **Home** tab.



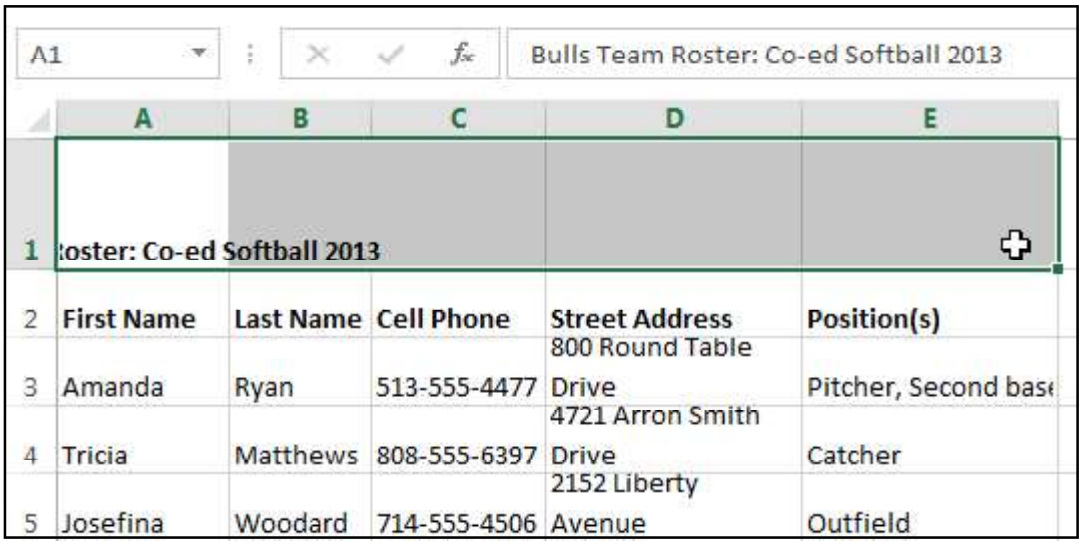
3. The text in the selected cells will be wrapped.

**Click the Wrap Text command again to unwrap the text.*

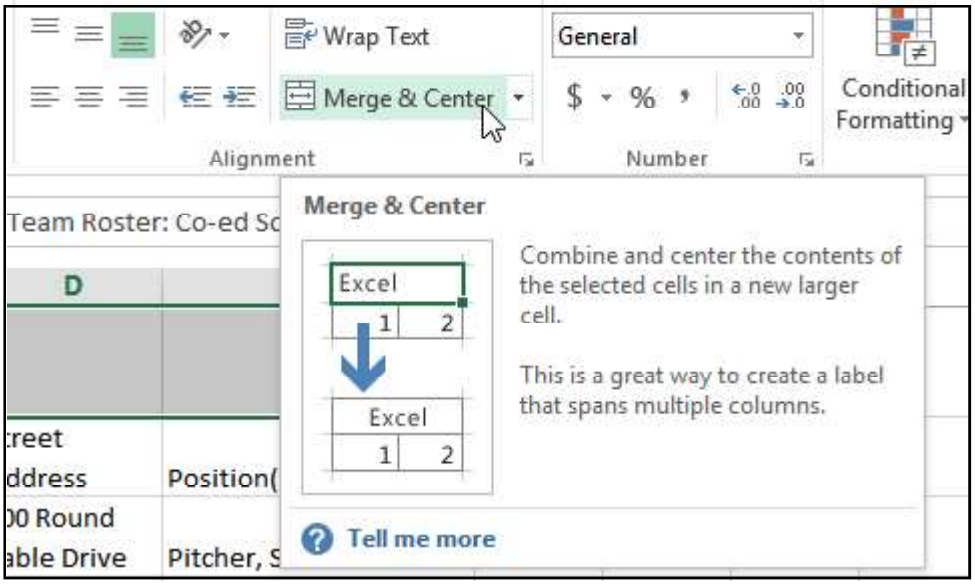
To merge cells using the Merge & Center command

In our example below, we will merge cell A1 with cells B1:E1 to create a title heading for our worksheet.

1. Select the **cell range** you want to merge.



2. Select the **Merge & Center** command on the **Home** tab.



3. The selected cells will be **merged**, and the text will be **centered**.

To access more merge options

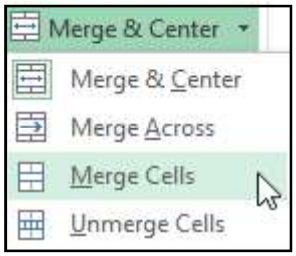
1. Click the drop-down arrow next to the **Merge & Center** command on the **Home** tab. The **Merge** drop-down menu will appear. From here, you can choose to:

Merge & Center: Merges the selected cells into **one cell** and **centers** the text.

Merge Across: Merges the selected cells into **larger cells** while keeping each **row** separate.

Merge Cells: Merges the selected cells into one cell but does not center the text.

Unmerge Cells: Unmerges selected cells.



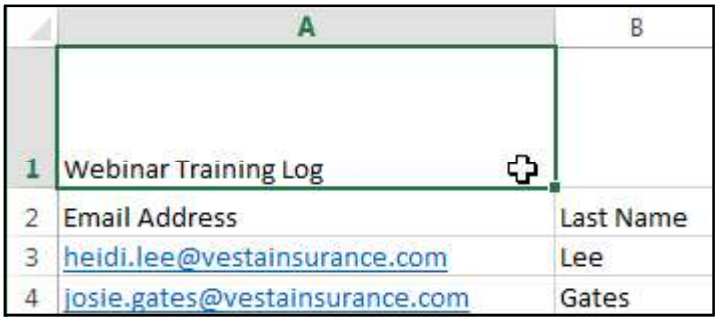
Formatting Cells

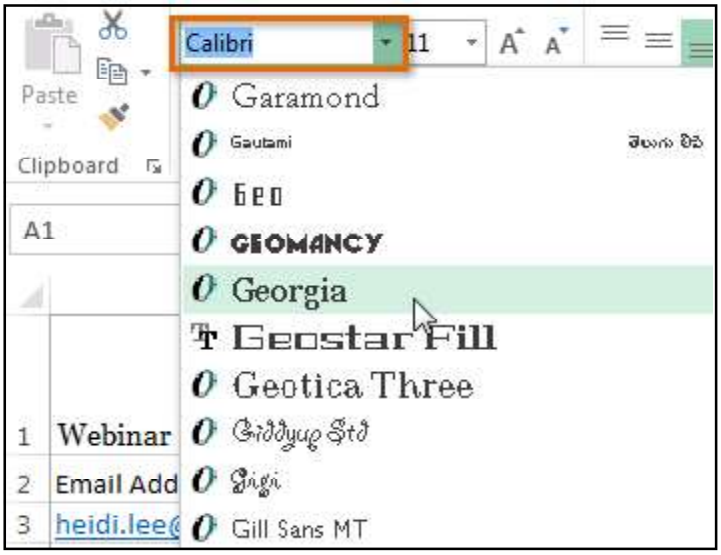
All cell content uses the same **formatting** by default, which can make it difficult to read a workbook with a lot of information. Basic formatting can customize the **look and feel** of your workbook, allowing you to draw attention to specific sections and making your content easier to view and understand. You can also apply number formatting to tell Excel exactly what type of data you are using in the workbook, such as percentages (%), currency ($), and so on.

To change the font

By default, the font of each new workbook is set to **Calibri**. However, Excel provides many other fonts you can use to customize your cell text. In the example below, we will format our **title cell** to help distinguish it from the rest of the worksheet.

1. Select the **cell(s)** you want to modify.
2. Click the **drop-down arrow** next to the Font command on the **Home** tab. The **Font** drop-down menu will appear.
3. Select the desired **font**. A **live preview** of the new font will appear as you hover the mouse over different options. In our example, we will choose **Georgia**.





4. The text will change to the **selected font**.

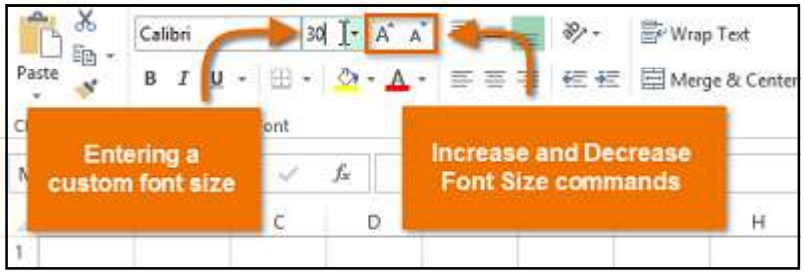
When creating a workbook in the workplace, you will want to select a font that is easy to read. Along with Calibri, standard reading fonts include **Cambria, **Times New Roman**, and **Arial**.*

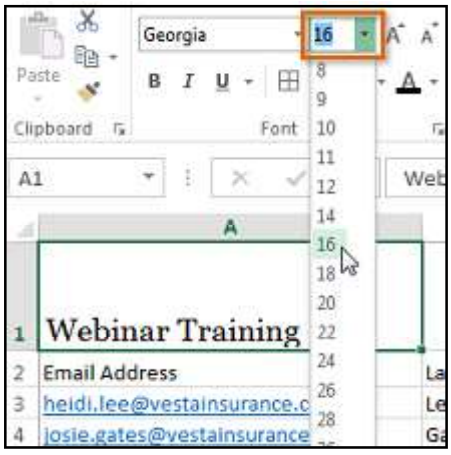
To change the font size

1. Select the **cell(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Font Size** command on the **Home** tab. The **Font Size** drop-down menu will appear.
3. Select the desired **font size**. A **live preview** of the new font size will appear as you hover the mouse over different options. In our example, we will choose 16 to make the text larger.

4. The text will change to the **selected font size**.

**You can also use the Increase Font Size and Decrease Font Size commands or enter a custom font size using your keyboard.*

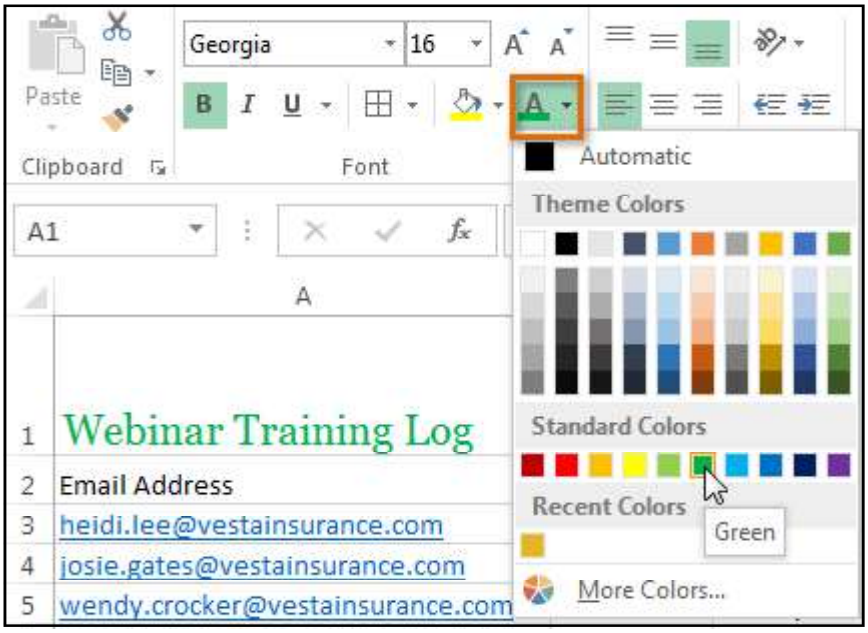


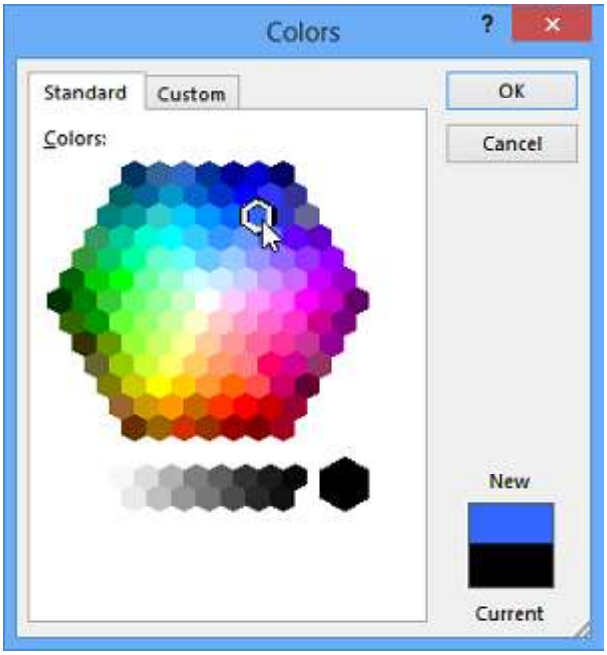


To change the font color

1. Select the **cell(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Font Color** command on the **Home** tab. The **Color** menu will appear.
3. Select the desired **font color**. A **live preview** of the new font color will appear as you hover the mouse over different options. In our example, we will choose **Green**.
4. The text will change to the **selected font color**.

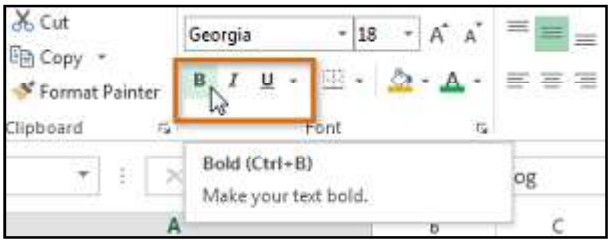
**Select More Colors at the bottom of the menu to access additional color options.*





To use the Bold, Italic, and Underline commands

1. Select the **cell(s)** you want to modify.
2. Click the Bold **(B)**, Italic **(I)**, or Underline **(U)** command on the **Home** tab. In our example, we will make the selected cells **bold**.
3. The **selected style** will be applied to the text.



You can also press **Ctrl+B on your keyboard to make selected text **bold**, **Ctrl+I** to apply **italics**, and **Ctrl+U** to apply an **underline**.*

Text alignment

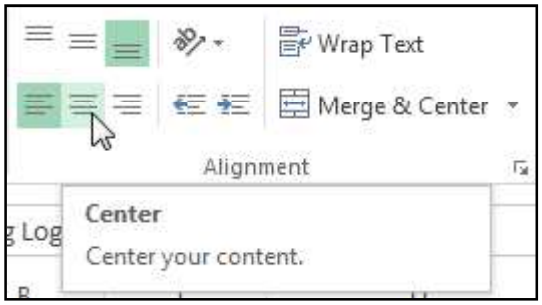
By default, any text entered into your worksheet will be aligned to the bottom-left of a cell, while any numbers will be aligned to the bottom-right. Changing the **alignment** of your cell content allows you to choose how the content is displayed in any cell, which can make your cell content easier to read.

To change horizontal text alignment

In our example we will modify the alignment of our **title** cell to create a more polished look and further distinguish it from the rest of the worksheet.

1. Select the **cell(s)** you want to modify.
2. Select one of the three **horizontal alignment** commands on the **Home tab**. In our example, we will choose **Center Align**. (see image on next page)

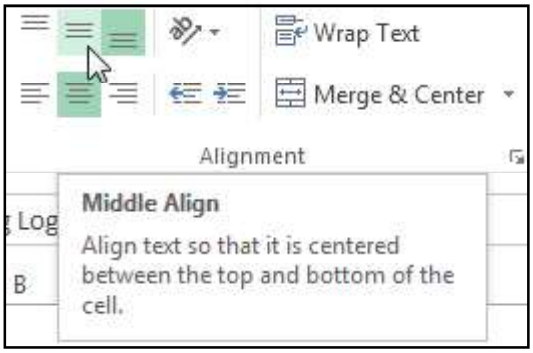
3. The text will realign.



To change vertical text alignment

1. Select the **cell(s)** you want to modify.
2. Select one of the three **vertical alignment** commands on the **Home** tab. In our example, we will choose **Middle Align.**
3. The text will realign.

**You can apply both vertical and horizontal alignment settings to any cell.*



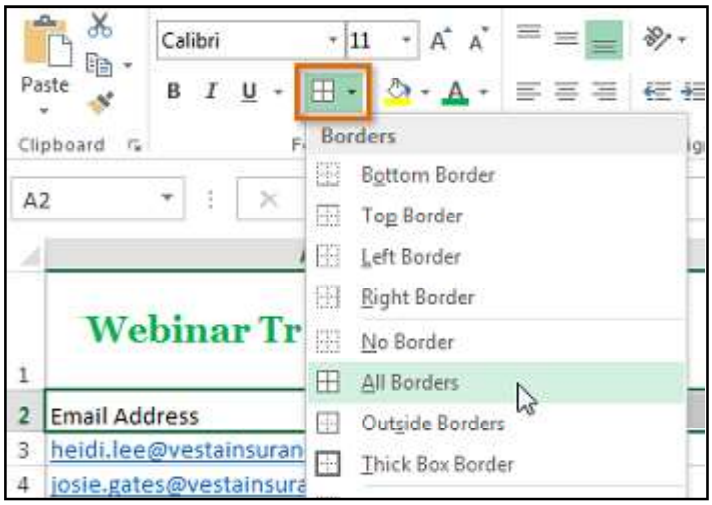
Cell borders and fill colors

Cell borders and **fill colors** allow you to create clear and defined boundaries for different sections of your worksheet. Below, we will add cell borders and fill color to our **header cells** to help distinguish them from the rest of the worksheet.

To add a border

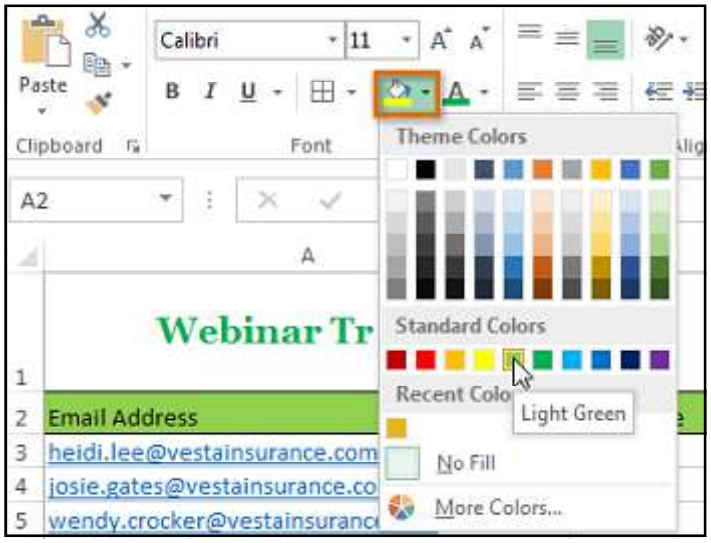
1. Select the **cell(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Borders** command on the **Home** tab. The Borders **drop-down** menu will appear.
3. Select the **border style** you want to use. In our example, we will choose to display **All Borders**.
4. The **selected border style** will appear.

You can draw borders and change the **line style and **color** of borders with the **Draw Borders** tools at the bottom of the Borders drop-down menu.*



To add a fill color

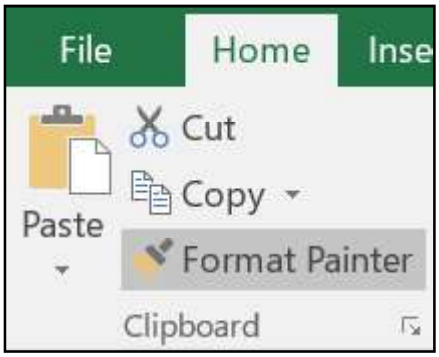
1. Select the **cell(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Fill Color** command on the **Home** tab. The Fill Color menu will appear.
3. Select the **fill color** you want to use. A **live preview** of the new fill color will appear as you hover the mouse over different options. In our example, we will choose **Light Green**.



4. The **selected fill color** will appear in the selected cells.

Format Painter

If you want to copy formatting from one cell to another, you can use the **Format Painter** command on the **Home** tab. When you click the Format Painter, it will copy all of the formatting from the selected cell. You can then **click and drag** over any cells you want to paste the formatting to.



Cell styles

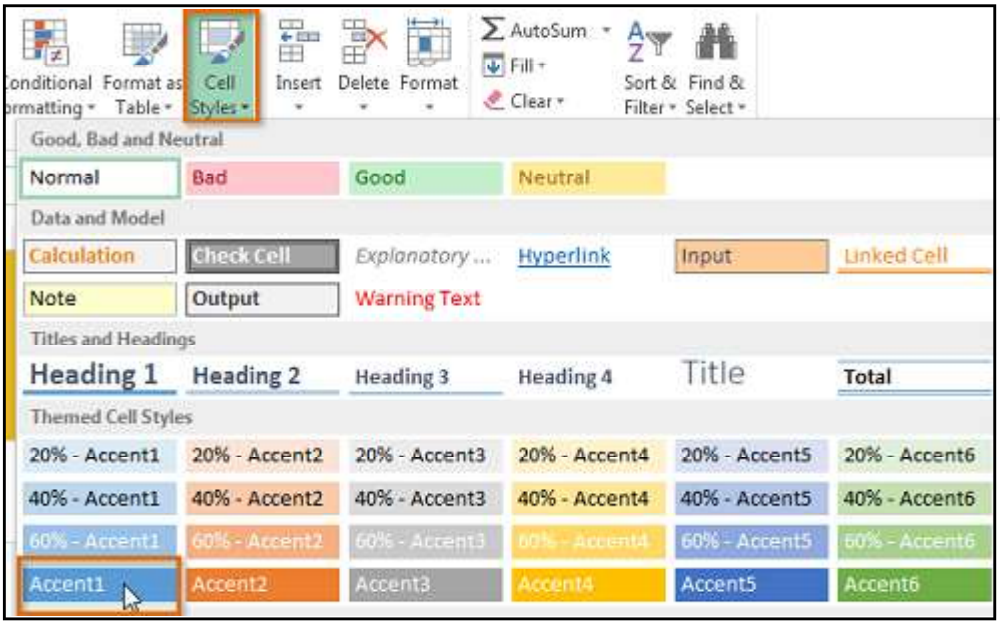
Instead of formatting cells manually, you can use Excel's **predesigned cell styles**. Cell styles are a quick way to include professional formatting for different parts of your workbook, such as **titles** and **headers**.

To apply a cell style

In our example, we will apply a new cell style to our existing title and header cells.

1. Select the cell(s) you want to modify.
2. Click the **Cell Styles** command on the **Home** tab, then choose the **desired style** from the drop-down menu. In our example, we will choose **Accent 1**.

(See image below)

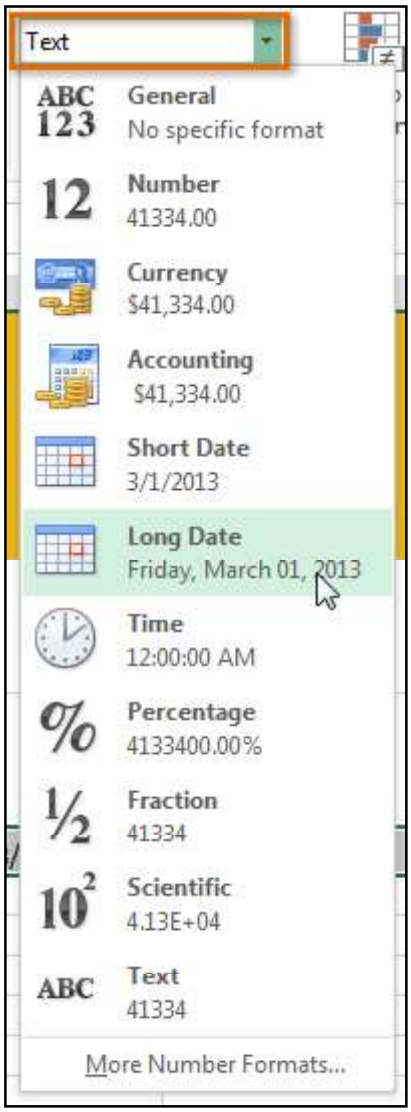


3. The **selected cell style** will appear.

Applying a cell style will **replace any existing cell formatting except for text alignment. You may not want to use cell styles if you have already added a lot of formatting to your workbook.*

Formatting text and numbers

One of the most powerful tools in Excel is the ability to apply **specific formatting** for text and numbers. Instead of displaying all cell content in exactly the same way, you can use formatting to change the appearance of **dates, times, decimals, percentages (%), currency ($),** and much more.



To apply number formatting

In our example, we will change the **number format** for several cells to modify the way **dates** are displayed.

1. Select the **cells(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Number Format** command on the **Home** tab. The **Number Formatting** drop-down menu will appear.
3. Select the **desired formatting option**. In our example, we will change the formatting to **Long Date**.
4. The selected cells will change to the **new formatting** style. For some number formats, you can then use the **Increase Decimal** and **Decrease Decimal** commands (below the Number Format command) to change the number of decimal places that are displayed.

Friday, March 01, 2013	Friday, March 08, 2013	Friday, March 15, 2013	Friday, March 22, 2013	Friday, March 29, 2013

Explanation about aviallable number format in Excel 2013

General: General is the default format for any cell. When you enter a number into the cell, Excel will guess the number format that is most appropriate.

For example, if you enter 1-5, the cell will display the number as a Short Date, 1/5/2010.

Number

Number formats numbers with **decimal places**.

For example, if you enter 4 into the cell, the cell will display the number as 4.00.

Accounting

It formats numbers as monetary values like the Currency format, but it also **aligns** currency symbols and decimal places within columns. This format makes it easier to read long lists of currency figures.

Currency	Accounting	
$24.00	$	24.00
$65.00	$	65.00
$56.24	$	56.24
$99.85	$	99.85
$67.00	$	67.00

Currency

Currency formats numbers as currency with a **currency** symbol.

For example, if you enter 4 into the cell, the cell will display the number as $4.00.

Short Date

Short Date formats numbers as **M/D/YYYY**.

For example, **August 8, 2018**, would be **8/8/2018.**

Long Date

Long Date formats numbers as **Weekday, Month DD, YYYY**.

For example, the date would appear as **Monday, August 14, 2018**.

Percentage

Percentage formats numbers with **decimal places** and the **percent sign**.

For example, if you enter **0.75** into the cell, the cell will display the **number as 75.00%**.

Scientific

Scientific formats numbers in **scientific notation**.

For example, if you enter **140000** into the cell, then the cell will display the number as 1.40E+05.

Note: By default, Excel will format the cell in scientific notation if it contains a large integer. If you do not want Excel to format large integers with scientific notation, use the Number format.

More Number Formats

You can easily customize any format in **More Number Formats**.

For example, with this feature you can change the U.S. dollar sign to another currency, have numbers display commas, and change the number of displayed decimal places.

Time

Time formats numbers as **HH/MM/SS** and notes **AM** or **PM**.

For example, time would appear as **10:25:00 AM**.

Fraction

Fraction formats numbers as fractions separated by the **forward slash**.

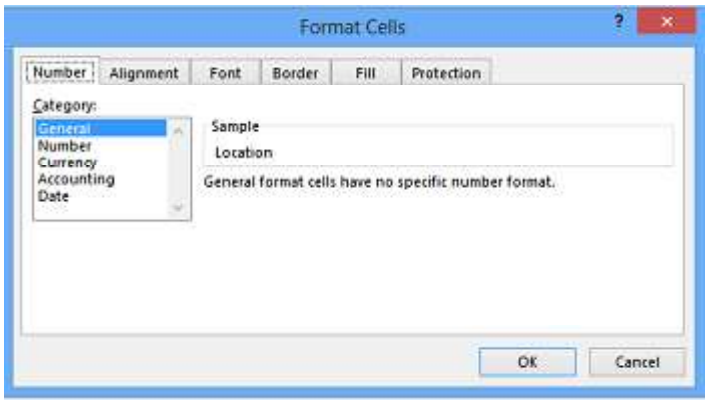
For example, if you enter 1/4 into the cell, the cell will display the number as **1/4**. If you enter **1/4** into a cell that is formatted as General, the cell will display the number as a date, **4-Jan**.

Text

Text formats numbers as text, meaning what you enter into the cell will appear exactly as it was entered.

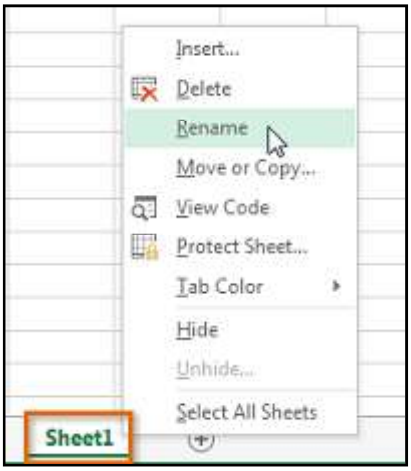
Excel defaults to this setting if a cell contains both text and numbers.

You can click **CTRL+1 from key board to oper Format Dialogue Box*



Worksheet Basics

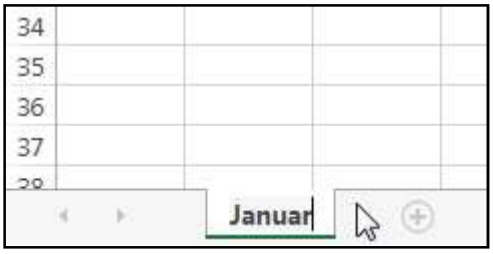
Every workbook contains at least one **worksheet** by default. When working with a large amount of data, you can create **multiple worksheets** to help organize your workbook and make it easier to find content. You can also **group** worksheets to quickly add information to multiple worksheets at the same time.



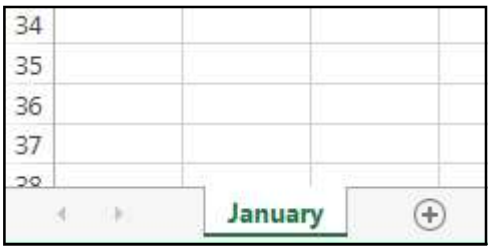
To rename a worksheet

Whenever you create a new Excel workbook, it will contain **one worksheet** named **Sheet1**. You can rename a worksheet to better reflect its content. In our example, we will create a training log organized **by month**.

1. Right-click the **worksheet** you want to rename, then select **Rename** from the **worksheet** menu.
2. Type the **desired name** for the worksheet.

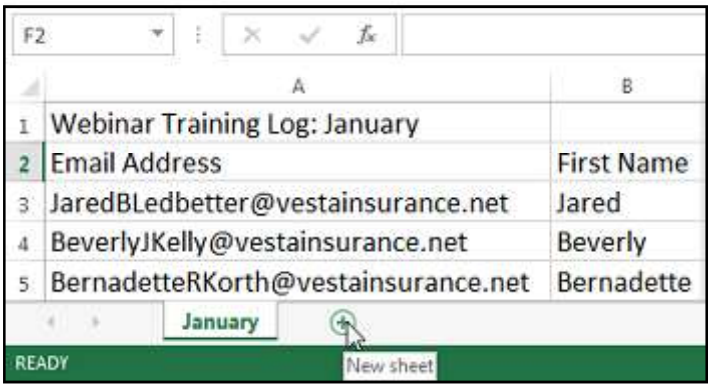


3. Click anywhere outside of the worksheet, or press **Enter** on your keyboard. The worksheet will be **renamed**.

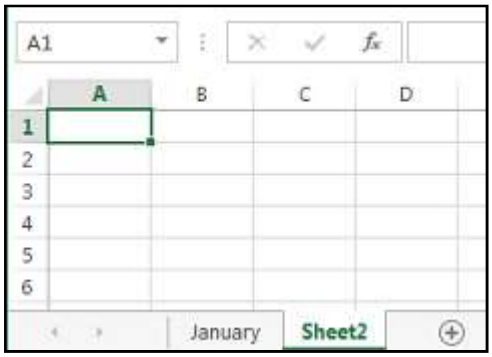


To insert a new worksheet

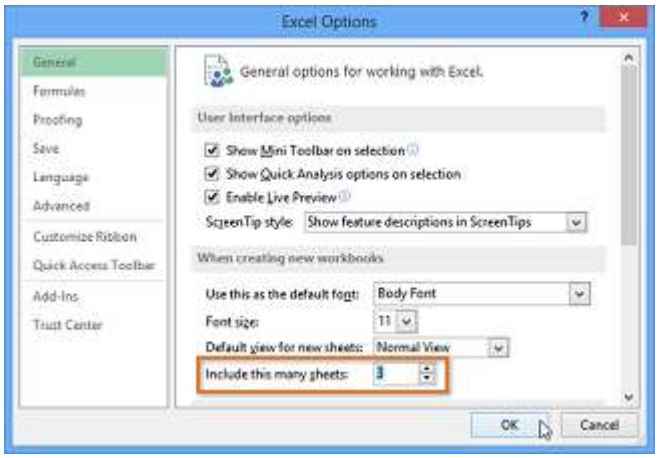
1. Locate and select the **New sheet** button



2. A **new blank worksheet** will appear.

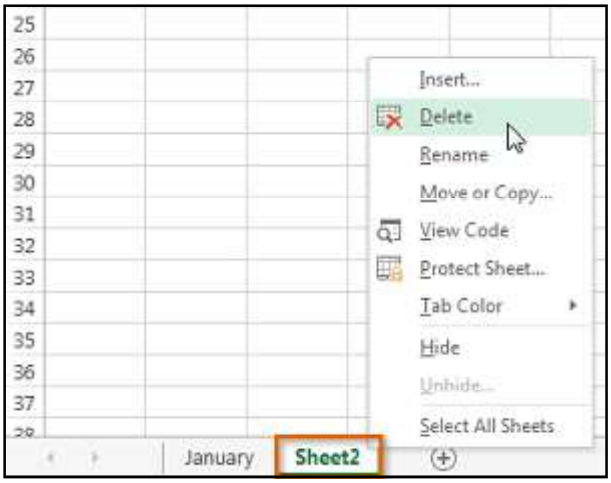


To change the **default number of worksheets, navigate to **Backstage view**, click **Options**, then choose the desired number of worksheets to include in each new workbook.*

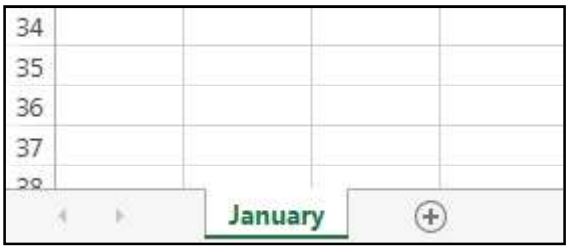


To delete a worksheet:

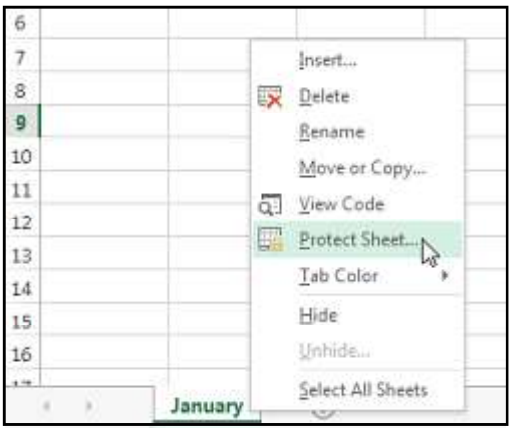
1. Right-click the **worksheet** you want to delete, then select **Delete** from the **worksheet** menu.



2. The worksheet will be deleted from your workbook.



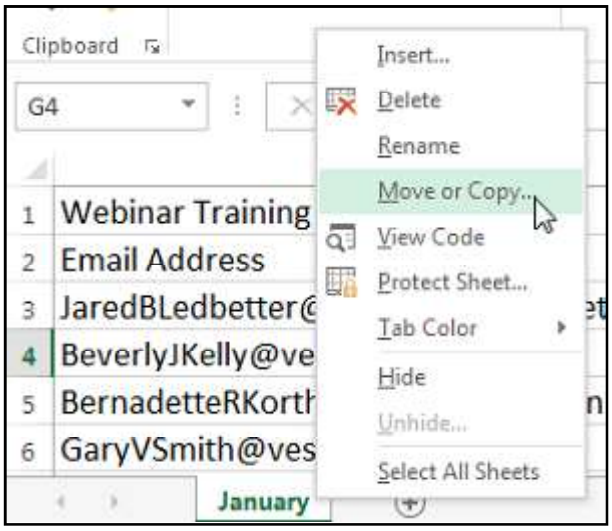
If you want to prevent specific worksheets from being edited or deleted, you can **protect them by right-clicking the desired **worksheet** and then selecting **Protect** sheet from the **worksheet** menu.*

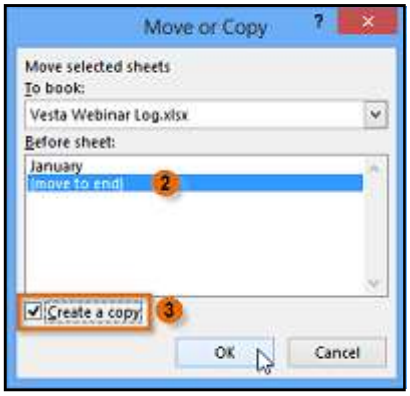


To copy a worksheet

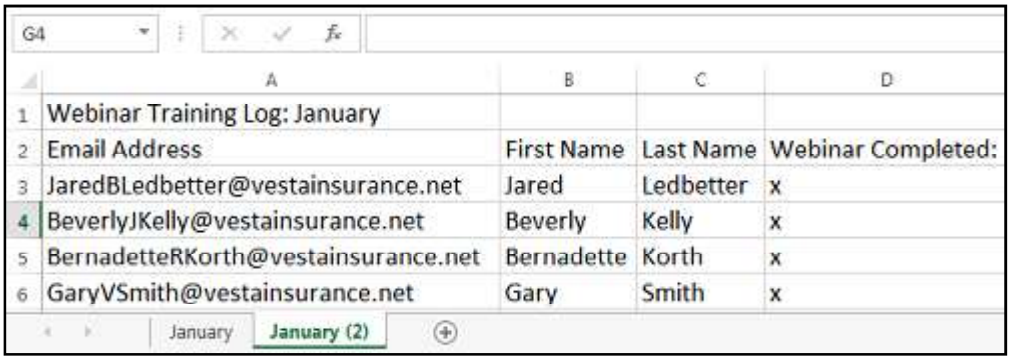
If you need to **duplicate** the content of one worksheet to another, Excel allows you to **copy** an existing worksheet.

1. Right-click the worksheet you want to copy, then select **Move or Copy** from the **worksheet** menu.
2. The **Move or Copy** dialog box will appear. Choose where the sheet will appear in the **Before sheet:** field. In our example, we will choose **(move to end)** to place the worksheet to the right of the existing worksheet.
3. **Check the box** next to **Create a copy**, then click **OK**.

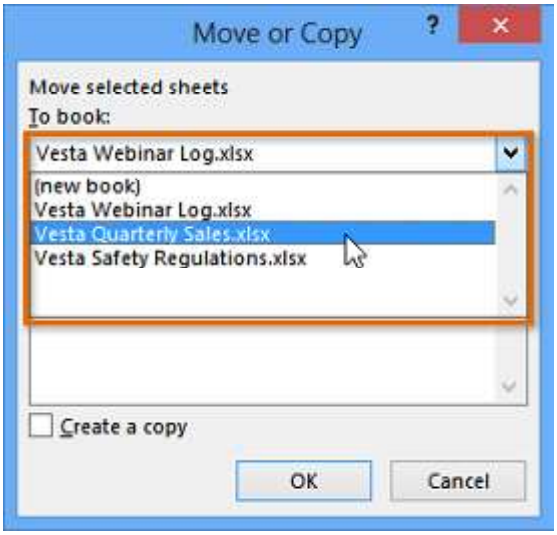




4. The worksheet will be **copied**. It will have the same title as the original worksheet, as well as a **version number**. In our example, we copied the **January** worksheet, so our new worksheet is named **January (2)**. All content from the January worksheet has also been copied to the January (2) worksheet.



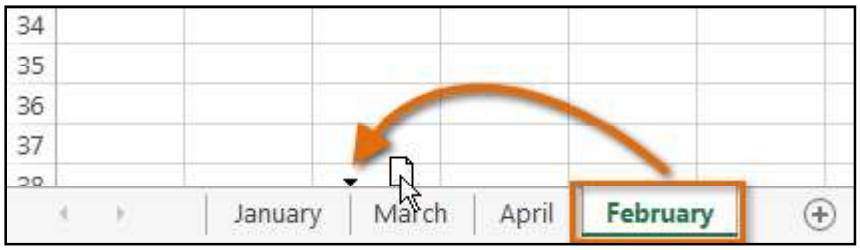
**You can also copy a worksheet to an entirely different workbook. You can select any workbook that is currently open from the To book: drop-down menu.*



To move a worksheet

Sometimes you may want to **move** a worksheet to rearrange your workbook.

1. Select the **worksheet** you want to move. The cursor will become a **small worksheet** icon .
2. Hold and drag the mouse until a **small black arrow** appears above the desired location.

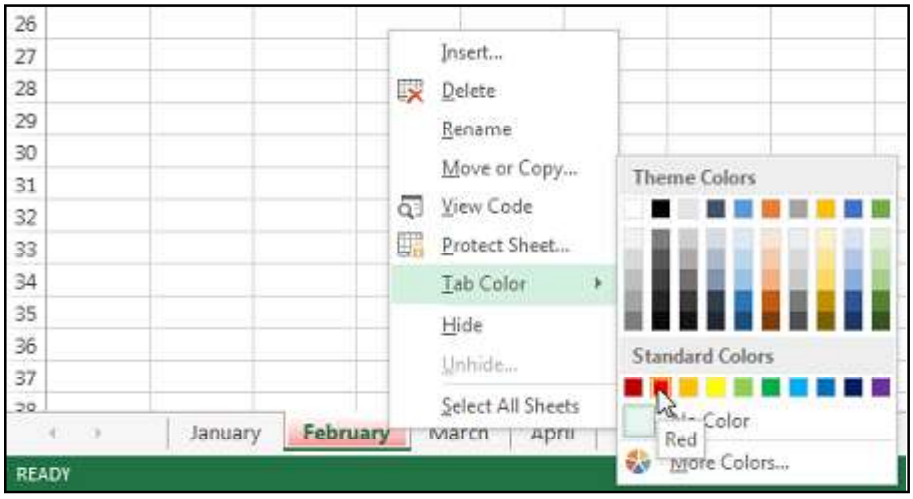


3. Release the mouse. The worksheet will be **moved**.

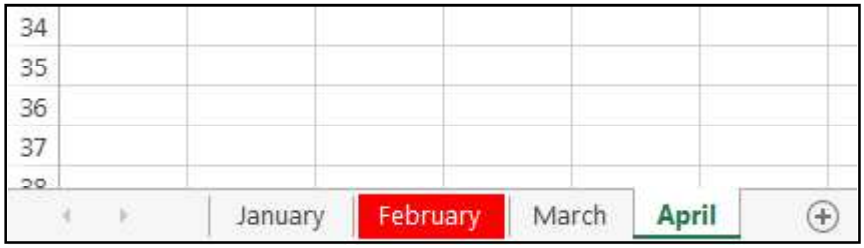
To change the worksheet tab color

You can change a worksheet tab's **color** to help organize your worksheets and make your workbook easier to navigate.

1. Right-click the desired worksheet tab, and hover the mouse over **Tab Color**. The **Color** menu will appear.
2. Select the desired **color**. A **live preview** of the new worksheet tab color will appear as you hover the mouse over different options. In our example, we will choose **Red**.



3. The worksheet tab color will be changed.



Switching between worksheets

If you want to view a different worksheet, you can simply **click the tab** to switch to that worksheet. However, with larger workbooks this can sometimes become tedious, as it may require scrolling through all of the tabs to find the one you want. Instead, you can simply **right-click** the scroll arrows in the lower-left corner, as shown below.

A dialog box will appear with a list of all of the sheets in your workbook. You can then **double-click** the sheet you want to jump to.

Grouping and ungrouping worksheets

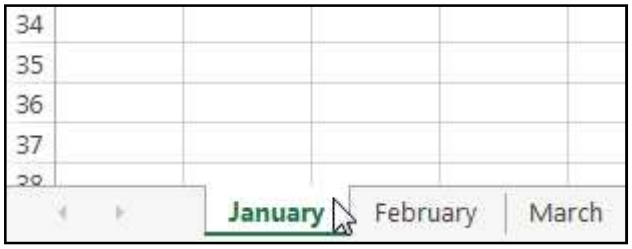
You can work with each worksheet **individually**, or you can work with multiple worksheets at the same time. Worksheets can be combined together into a **group**. Any changes made to one worksheet in a group will be made to **every worksheet** in the group.

To group worksheets

In our example, employees need to receive training every three months, so we will create a worksheet group for those employees. When we add the names of the employees to one worksheet, they will be added to the other worksheets in the group as well.

1. Select the **first worksheet** you want to include in the **worksheet group**.
2. Press and hold the **Ctrl** key on your keyboard.

3. Select the **next worksheet** you want in the group. Continue to select worksheets until all of the worksheets you want to group are selected.



4. Release the **Ctrl** key. The worksheets are now **grouped**.

While worksheets are grouped, you can navigate to any worksheet within the group. Any **changes made to one worksheet will appear on **every worksheet** in the group. However, if you select a worksheet that is not in the group, all of your worksheets will become **ungrouped**.*

To ungroup all worksheets

*1. Right-click a worksheet in the group, then select **Ungroup Sheets** from the **worksheet** menu.*

*2. The worksheets will be **ungrouped**. Alternatively, you can simply click any worksheet not included in the group to **ungroup** all worksheets.*

Page Layout

Many of the commands you will use to prepare your workbook for printing and **PDF** export can be found on the **Page Layout** tab. These commands let you control the way your content will appear on a printed page, including the **page orientation** and **margin size**. Other page layout options, such as **print titles** and **page breaks**, can help make your workbook easier to read.

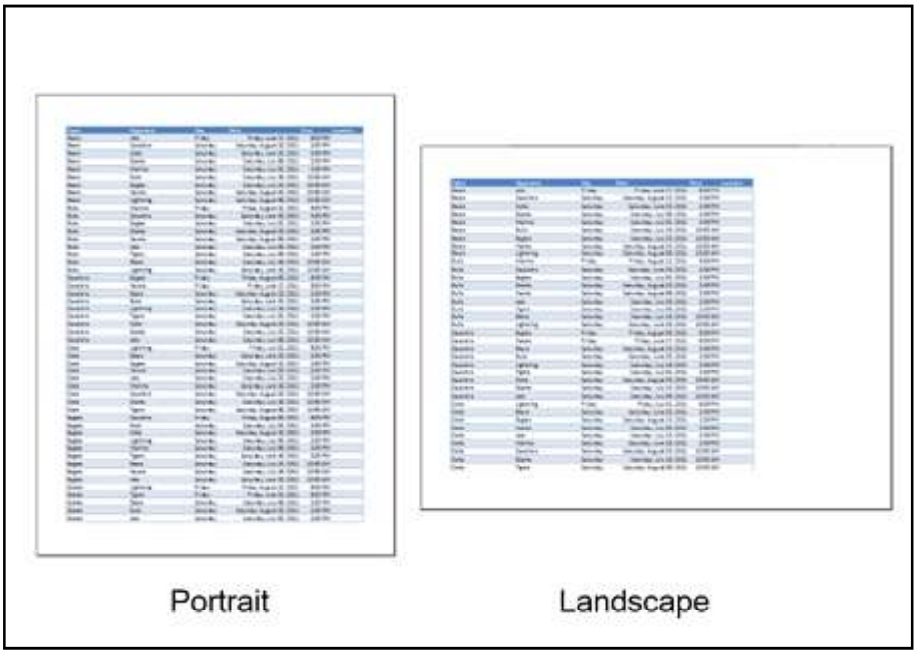
Page Layout view

Before you start modifying a workbook's page layout, you may want to view the workbook in **Page Layout view**, which can help you visualize your changes.

To access Page Layout view, locate and select the **Page Layout view** command in the bottom-right corner of your workbook.

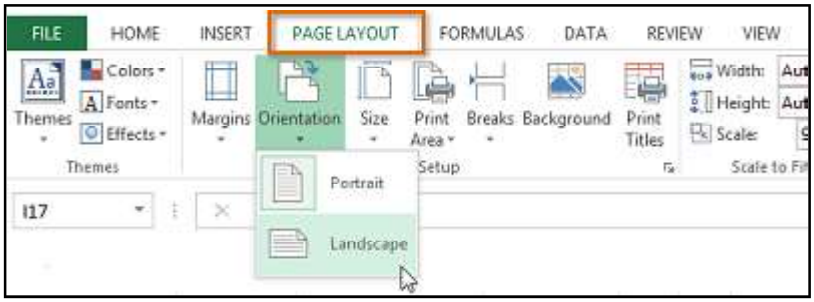
Page orientation

Excel offers two page orientation options: **landscape** and **portrait**. **Landscape** orients the page **horizontally**, while **portrait** orients the page **vertically**. Portrait is especially helpful for worksheets with a lot of **rows**, while landscape is best for worksheets with a lot of **columns**. In the example below, portrait orientation works best because the worksheet includes more rows than columns.



To change page orientation

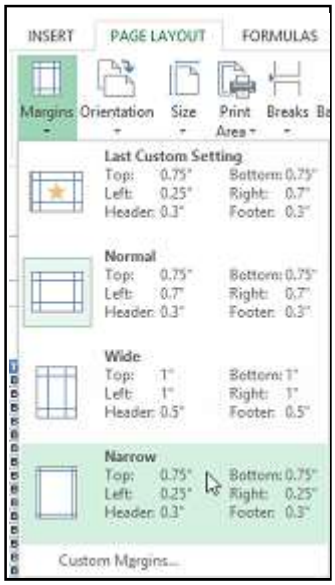
1. Click the **Page Layout** tab on the Ribbon.
2. Select the **Orientation** command, then choose either **Portrait** or **Landscape** from the drop-down menu.
3. The **page orientation** of the workbook will be changed.



To format page margins

A **margin** is the space between your content and the edge of the page. By default, every workbook's margins are set to Normal, which is a one-inch space between the content and each edge of the page. Sometimes you may need to adjust the margins to make your data fit more comfortably on the page. Excel includes a variety of predefined margin sizes.

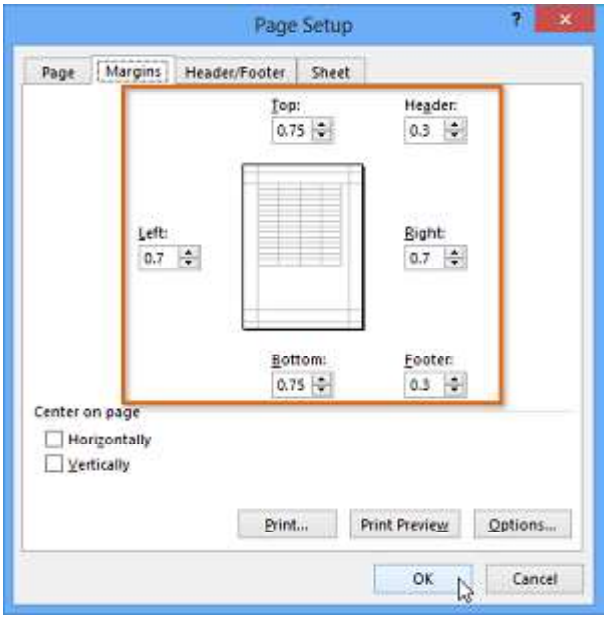
1. Click the **Page Layout** tab on the **Ribbon**, then select the **Margins** command.
2. Select the **desired margin size** from the drop-down menu. In our example, we will select **Narrow** to fit more of our content on the page.
3. The margins will be changed to the selected size.



To use custom margins

Excel also allows you to customize the size of your margins in the **Page Setup** dialog box.

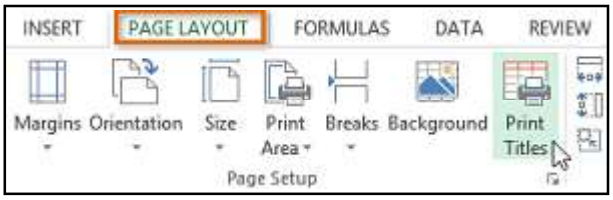
1. From the **Page Layout** tab, click Margins. Select **Custom Margins...** from the drop-down menu.
2. The **Page Setup** dialog box will appear.
3. Adjust the values for each margin, then click **OK**.
4. The margins of the workbook will be changed.



To include Print Titles

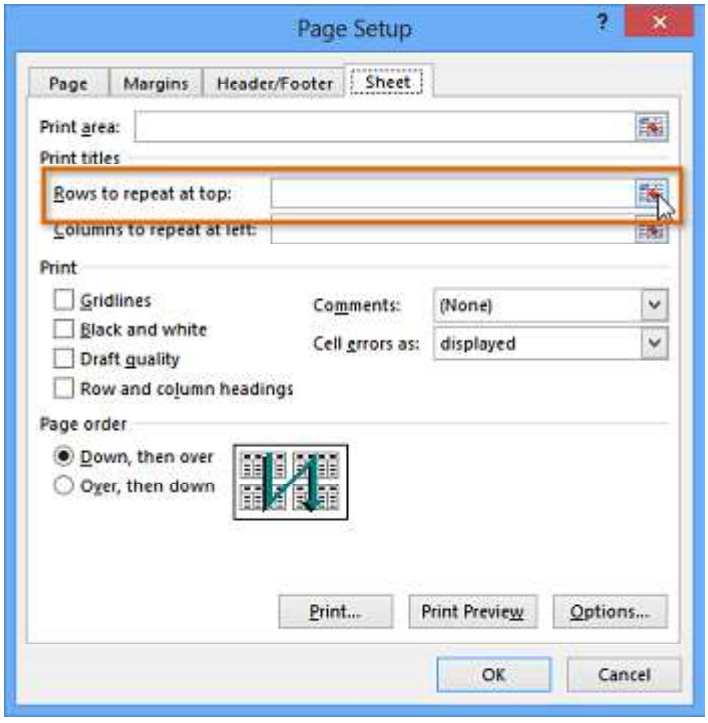
If your worksheet uses **title headings**, it is important to include these headings on each page of your printed worksheet. It would be difficult to read a printed workbook if the title headings appeared only on the first page. The Print Titles command allows you to select specific rows and columns to appear on each page.

1. Click the **Page Layout** tab on the **Ribbon**, then select the **Print Titles** command.

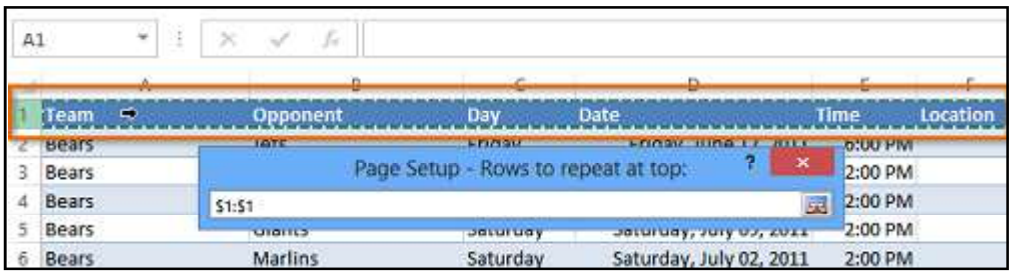


2. The **Page Setup** dialog box will appear. From here, you can choose **rows** or **columns** to repeat on each page. In our example, we will repeat a row.

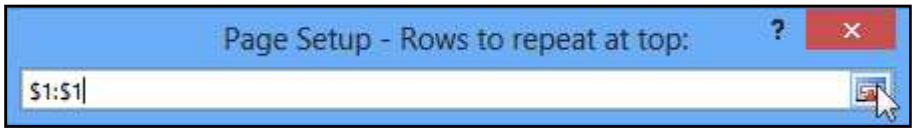
2. Click the **Collapse Dialog** button next to the **Rows to repeat at top:** field.



4. The cursor will become a small **selection arrow** ➡ and the **Page Setup** dialog box will be collapsed. Select the **row(s)** you want to repeat at the top of each printed page. In our example, we will select row 1.



5. Row 1 will be added to the **Rows to repeat at top:** field. Click the **Collapse Dialog** button again.



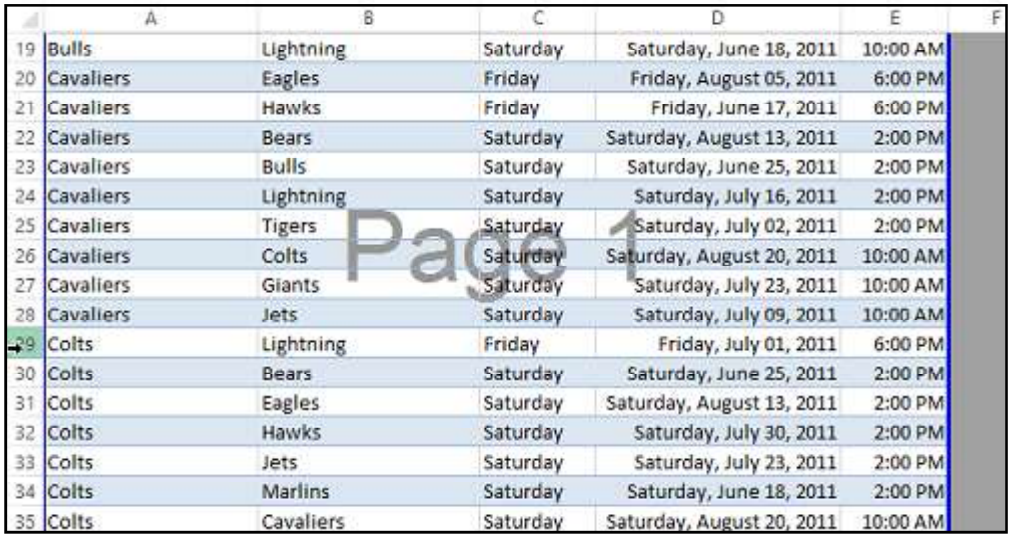
6. The **Page Setup** dialog box will expand. Click **OK**. Row 1 will be printed at the top of every page.

To insert a page break

If you need to print different parts of your workbook across separate pages, you can insert a **page break**. There are two types of page breaks: **vertical and horizontal**. Vertical page breaks separate columns, while horizontal page breaks separate rows. In our example, we will insert a horizontal page break.

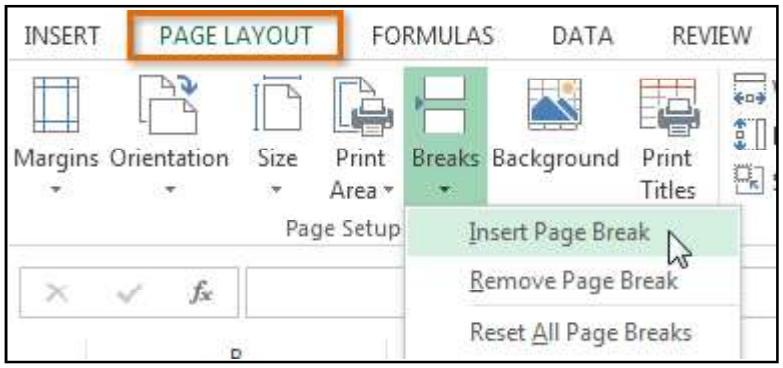
1. Locate and select the **Page Break** view command. The worksheet will appear in Page Break view.

2. Select the **row** below where you want the page break to appear. For example, if you want to insert a page break between rows 28 and 29, select row 29.



	A	B	C	D	E	F
19	Bulls	Lightning	Saturday	Saturday, June 18, 2011	10:00 AM	
20	Cavaliers	Eagles	Friday	Friday, August 05, 2011	6:00 PM	
21	Cavaliers	Hawks	Friday	Friday, June 17, 2011	6:00 PM	
22	Cavaliers	Bears	Saturday	Saturday, August 13, 2011	2:00 PM	
23	Cavaliers	Bulls	Saturday	Saturday, June 25, 2011	2:00 PM	
24	Cavaliers	Lightning	Saturday	Saturday, July 16, 2011	2:00 PM	
25	Cavaliers	Tigers	Saturday	Saturday, July 02, 2011	2:00 PM	
26	Cavaliers	Colts	Saturday	Saturday, August 20, 2011	10:00 AM	
27	Cavaliers	Giants	Saturday	Saturday, July 23, 2011	10:00 AM	
28	Cavaliers	Jets	Saturday	Saturday, July 09, 2011	10:00 AM	
29	Colts	Lightning	Friday	Friday, July 01, 2011	6:00 PM	
30	Colts	Bears	Saturday	Saturday, June 25, 2011	2:00 PM	
31	Colts	Eagles	Saturday	Saturday, August 13, 2011	2:00 PM	
32	Colts	Hawks	Saturday	Saturday, July 30, 2011	2:00 PM	
33	Colts	Jets	Saturday	Saturday, July 23, 2011	2:00 PM	
34	Colts	Marlins	Saturday	Saturday, June 18, 2011	2:00 PM	
35	Colts	Cavaliers	Saturday	Saturday, August 20, 2011	10:00 AM	

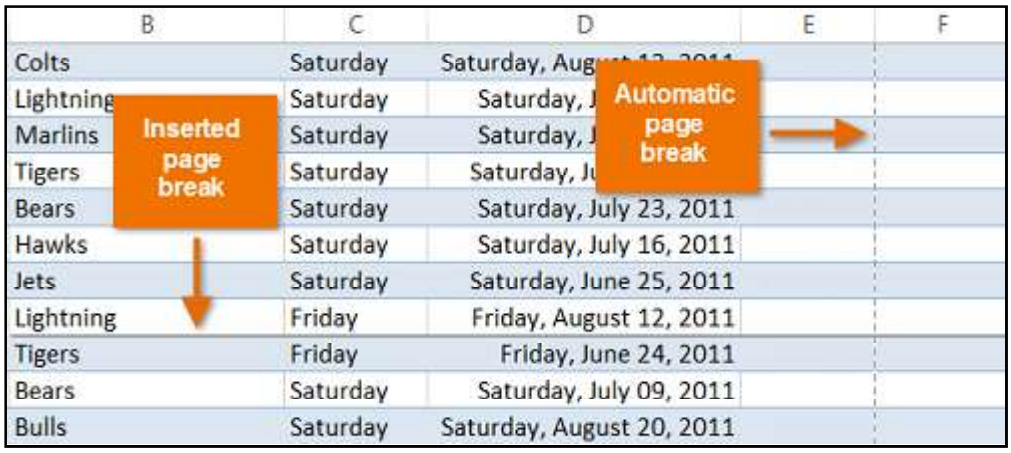
3. Click the **Page Layout** tab on the **Ribbon**, select the **Breaks** command, then click **Insert Page Break**.



4. The page break will be **inserted**, represented by a **dark blue line**.

	A	B	C	D	E	F
19	Bulls	Lightning	Saturday	Saturday, June 18, 2011	10:00 AM	
20	Cavaliers	Eagles	Friday	Friday, August 05, 2011	6:00 PM	
21	Cavaliers	Hawks	Friday	Friday, June 17, 2011	6:00 PM	
22	Cavaliers	Bears	Saturday	Saturday, August 13, 2011	2:00 PM	
23	Cavaliers	Bulls	Saturday	Saturday, June 25, 2011	2:00 PM	
24	Cavaliers	Lightning	Saturday	Saturday, July 16, 2011	2:00 PM	
25	Cavaliers	Tigers	Saturday	Saturday, July 02, 2011	2:00 PM	
26	Cavaliers	Colts	Saturday	Saturday, August 20, 2011	10:00 AM	
27	Cavaliers	Giants	Saturday	Saturday, July 23, 2011	10:00 AM	
28	Cavaliers	Jets	Saturday	Saturday, July 09, 2011	10:00 AM	
29	Colts	Lightning	Friday	Friday, July 01, 2011	6:00 PM	
30	Colts	Bears	Saturday	Saturday, June 25, 2011	2:00 PM	
31	Colts	Eagles	Saturday	Saturday, August 13, 2011	2:00 PM	
32	Colts	Hawks	Saturday	Saturday, July 30, 2011	2:00 PM	
33	Colts	Jets	Saturday	Saturday, July 23, 2011	2:00 PM	
34	Colts	Marlins	Saturday	Saturday, June 18, 2011	2:00 PM	
35	Colts	Cavaliers	Saturday	Saturday, August 20, 2011	10:00 AM	

When viewing your workbook in **Normal view, inserted page breaks are represented by a **solid gray line**, while automatic page breaks are represented by a **dashed line**.*

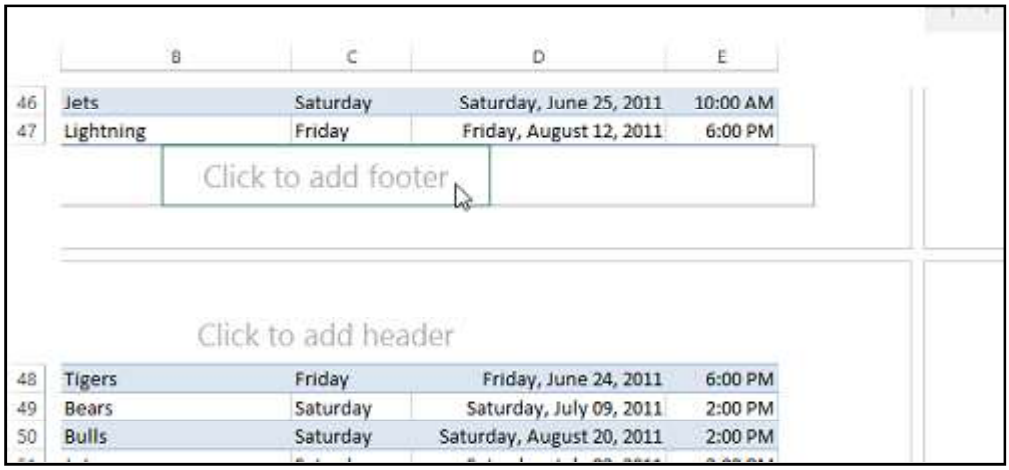


To insert headers and footers:

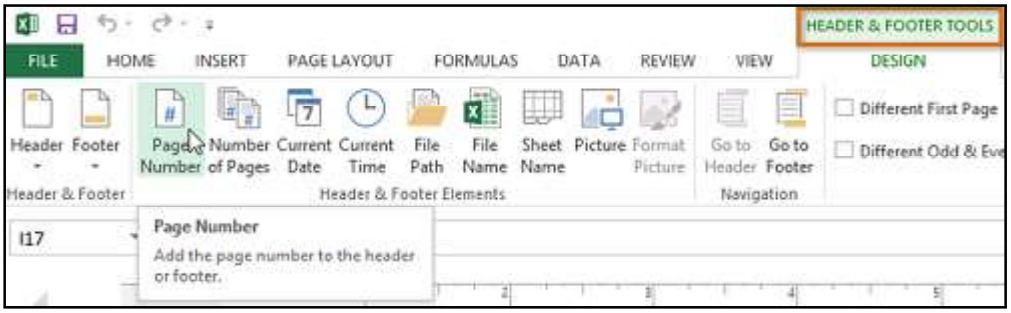
You can make your workbook easier to read and look more professional by including **headers and footers**. The **header** is a section of the workbook that appears in the **top margin**, while the **footer** appears in the **bottom margin**. Headers and footers generally contain information such as page number, date, and workbook name.

1. Locate and select the **Page Layout view** command at the bottom of the Excel window. The worksheet will appear in Page Layout view.

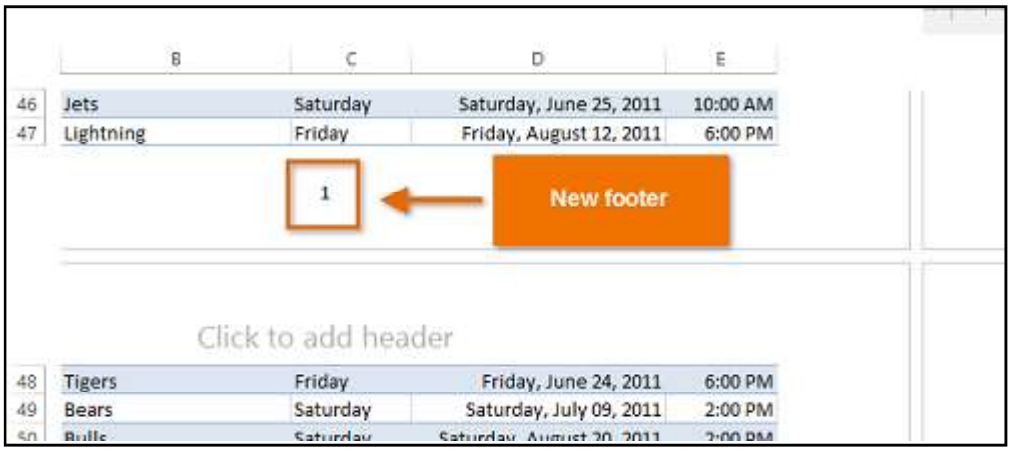
2. Select the **header** or **footer** you want to modify. In our example, we will modify the **footer** at the bottom of the page.



3. The **Header & Footer Tools** tab will appear on the **Ribbon**. From here, you can access commands that will automatically include page numbers, dates, and workbook names. In our example, we will add **page numbers**.



4. The footer will change to include page numbers automatically.

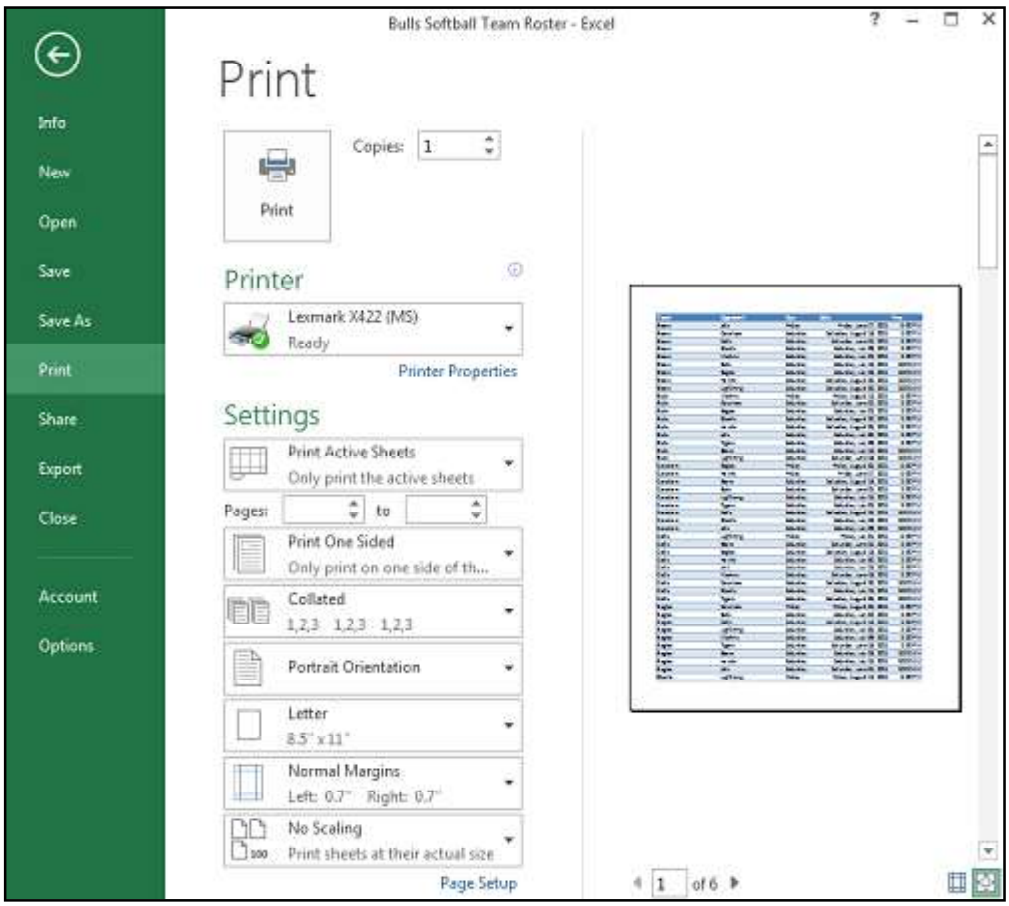


Printing Workbooks

There may be times when you want to **print a workbook** to view and share your data offline. Once you have chosen your **page layout** settings, it is easy to preview and print a workbook from Excel using the **Print** pane.

To access the Print pane

1. Select the **File** tab. **Backstage view** will appear.
2. Select **Print**. The **Print** pane will appear.



To print a workbook

1. Navigate to the **Print** pane, then select the desired **printer**.
2. Enter the number of **copies** you wish to print.
3. Select any additional **settings** if needed (see image beside).
4. Click **Print**.

Choosing a print area

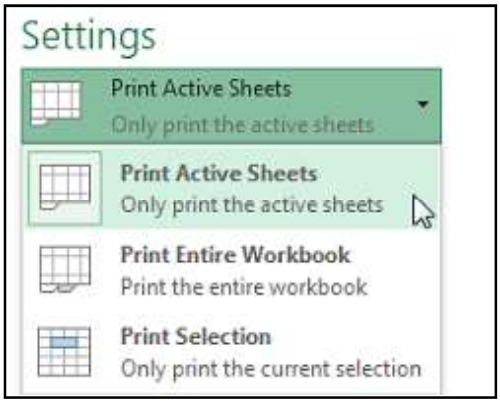
Before you print an Excel workbook, it is important to decide exactly what information you want to print. For example, if you have multiple worksheets in your workbook, you will need to decide if you want to print the **entire workbook** or only active worksheets. There may also be times when you want to print only a **selection** of content from your workbook.

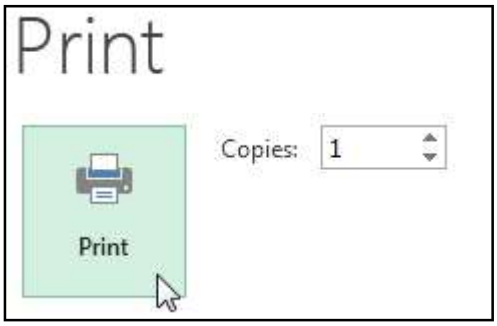
To print active sheets

Worksheets are considered active when **selected**.

1. Select the **worksheet** you want to print. To print **multiple worksheets**, click the first worksheet, hold the **Ctrl** key on your keyboard, then click any other worksheets you want to select.

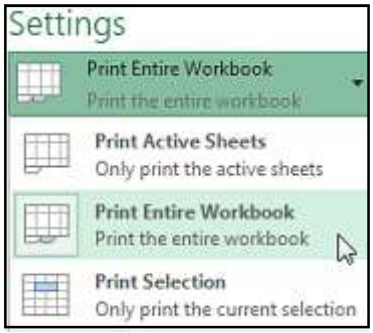
2. Navigate to the **Print** pane.
3. Select **Print Active Sheets** from the **Print Range** drop-down menu.
4. Click the **Print** button.

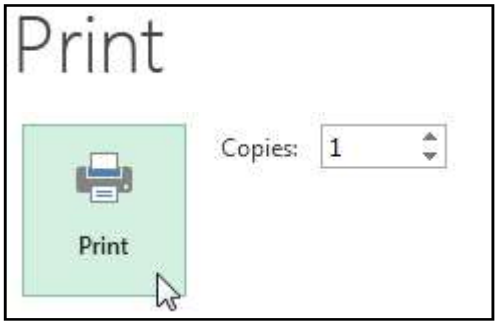




To print the entire workbook

1. Navigate to the **Print** pane.
2. Select **Print Entire Workbook** from the **Print Range** drop-down menu.
3. Click the Print button.





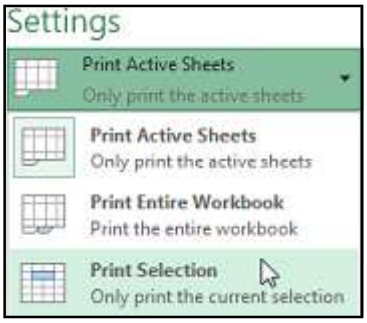
To print a selection

In our example, we will print a selection of content related to upcoming softball games in July.

1. Select the **cells** you want to print.

	Team	Opponent	Day	Date	Time
2	Bears	Jets	Friday	Monday, June 17, 2013	6:00 PM
3	Bears	Cavaliers	Saturday	Tuesday, August 13, 2013	2:00 PM
4	Bears	Colts	Saturday	Tuesday, June 25, 2013	2:00 PM
5	Bears	Giants	Saturday	Tuesday, July 09, 2013	2:00 PM
6	Bears	Marlins	Saturday	Tuesday, July 02, 2013	2:00 PM
7	Bears	Bulls	Saturday	Tuesday, July 16, 2013	10:00 AM
8	Bears	Eagles	Saturday	Tuesday, July 23, 2013	10:00 AM
9	Bears	Hawks	Saturday	Tuesday, August 20, 2013	10:00 AM
10	Bears	Lightning	Saturday	Tuesday, August 06, 2013	10:00 AM

2. Navigate to the **Print** pane.
3. Select **Print Selection** from the **Print Range** drop-down menu.



4. A **preview** of your selection will appear in the **Preview** pane.
5. Click the **Print** button to print the selection.

If you prefer, you can also set the **print area in advance so you will be able to visualize which cells will be printed as you work in Excel. Simply **select** the cells you want to print, click the **Page Layout** tab, select the **Print Area** command, then choose **Set Print Area**.*

Fitting and scaling content

On occasion, you may need to make **small adjustments** from the Print pane to fit your workbook content neatly onto a printed page. The Print pane includes several tools to help fit and scale your content, such as **scaling** and **page margins**.

To fit content before printing

If some of your content is being cut off by the printer, you can use **scaling** to fit your workbook to the page automatically.

1. Navigate to the **Print** pane. In our example, we can see in the Preview pane that our content will be cut off when printed.

2. Select the desired option from the **Scaling** drop-down menu. In our example, we will select Fit Sheet on One Page.

3. The worksheet will be condensed to fit onto a single page.
4. When you are satisfied with the scaling, click **Print**.

Simple Formulas

One of the most powerful features in Excel is the ability to **calculate** numerical information using **formulas**. Just like a calculator, Excel can add, subtract, multiply, and divide. In this lesson, we will show you how to use **cell references** to create simple formulas.

Mathematical operators

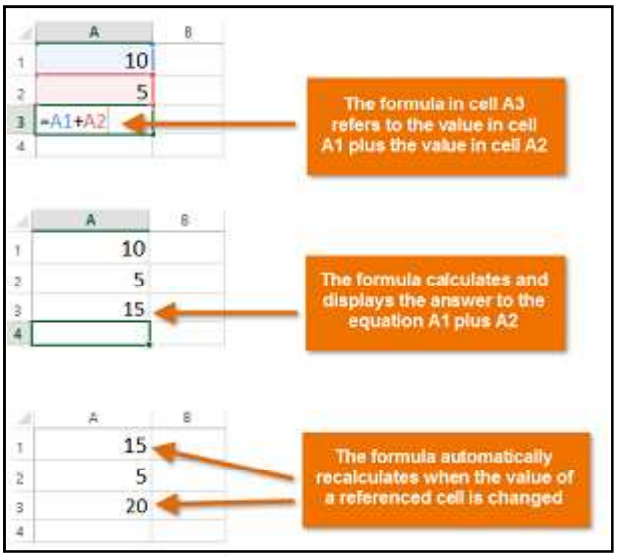
Excel uses standard operators for formulas, such as a **plus sign** for **addition (+)**, a **minus sign** for **subtraction (-)**, an **asterisk** for **multiplication (*)**, a **forward slash** for division (/), and a **caret (^)** for exponents.

Addition	+
Subtraction	-
Multiplication	*
Division	/
Exponents	^

All formulas in Excel must begin with an **equals sign (=)**. This is because the cell contains, or is equal to, the formula and the value it calculates.

Understanding cell references

While you can create simple formulas in Excel manually (for example, **=2+2 or =5*5)**, most of the time you will use **cell addresses** to create a formula. This is known as making a **cell reference**. Using cell references will ensure that your formulas are always accurate because you can change the value of referenced cells without having to rewrite the formula.



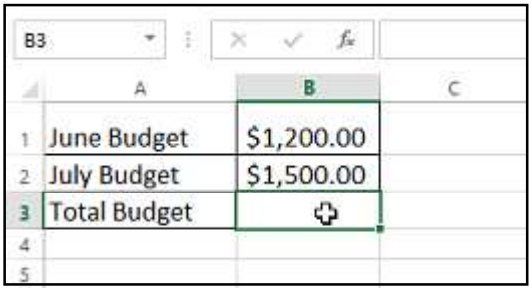
By combining a mathematical operator with cell references, you can create a variety of simple formulas in Excel. Formulas can also include a combination of cell references and numbers, as in the examples below:

=A1+A2	Adds cells A1 and A2
=C4-3	Subtracts 3 from cell C4
=E7/J4	Divides cell E7 by J4
=N10*1.05	Multiplies cell N10 by 1.05
=R5^2	Finds the square of cell R5

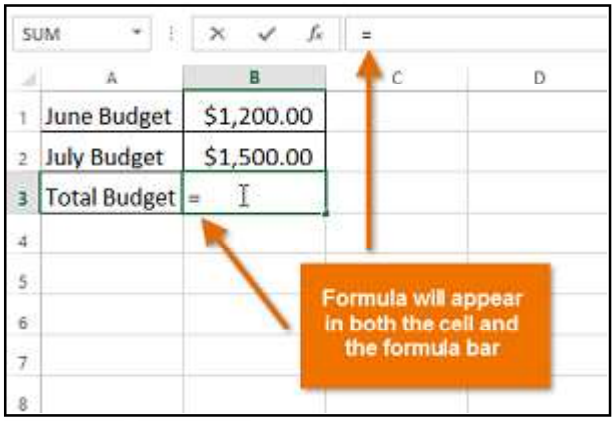
To create a formula

In our example below, we will use a simple formula and cell references to calculate a budget.

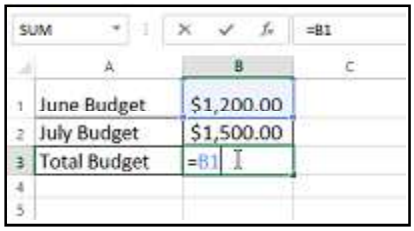
1. Select the **cell** that will contain the formula. In our example, we will select cell **B3**.



2. Type the **equals sign (=)**. Notice how it appears in both the **cell** and the **formula bar**.

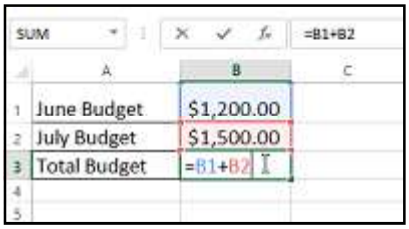


3. Type the **cell address** of the cell you want to reference first in the formula: cell **B1** in our example. A **blue border** will appear around the referenced cell.

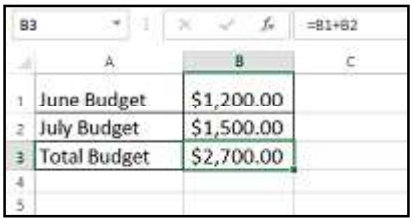


4. Type the **mathematical operator** you want to use. In our example, we will type the **addition sign (+)**.

5. Type the **cell address** of the cell you want to reference second in the formula: cell **B2** in our example. A **red border** will appear around the referenced cell.



6. Press **Enter** on your keyboard. The formula will be **calculated**, and the **value** will be displayed in the cell.



***** *If the result of a formula is too large to be displayed in a cell, it may appear as **pound signs (#######)** instead of a value. This means the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content.*

Complex Formulas

A simple formula is a mathematical expression with one operator, such as **7+9**. A **complex formula** has more than one mathematical operator, such as **5+2*8**. When there is more than one operation in a formula, the order of operations tells Excel which operation to calculate first. In order to use Excel to calculate complex formulas, you will need to understand the order of operations.

The order of operations

Excel calculates formulas based on the following **order of operations**:

1. Operations enclosed in **parentheses.**
2. **Exponential** calculations (3^2, for example).
3. **Multiplication** and **division**, whichever comes first.
4. **Addition** and **subtraction**, whichever comes first.

Creating complex formulas

In the example below, we will demonstrate how Excel solves a complex formula using the order of operations. Here, we want to calculate the cost of **sales tax** for a catering invoice. To do this, we will write our formula as **=(D2+D3)*0.075** in cell **D4**. This formula will add the prices of our items together and then multiply that value by the 7.5% tax rate (which is written as 0.075) to calculate the cost of sales tax.

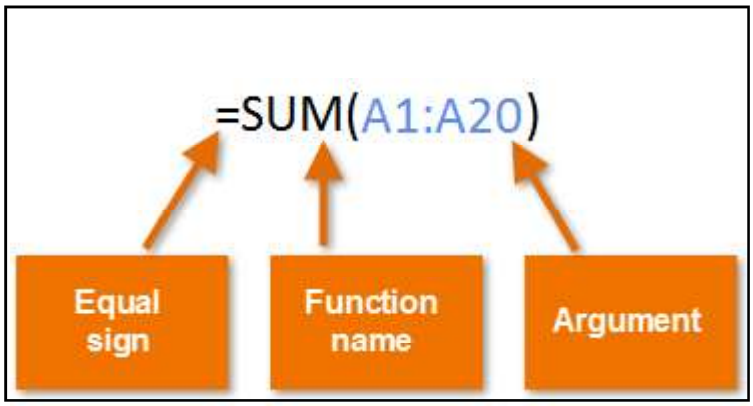
Excel follows the order of operations and first adds the values inside the parentheses: **(44.85+39.90) = $84.75.** It then multiplies that value by the tax rate: **$84.75*0.075**. The result will show that the sales tax is **$6.36**.

Functions

A **function** is a **predefined formula** that performs calculations using specific values in a particular order. Excel includes many common functions that can be useful for quickly finding the **sum, average, count, maximum value**, and **minimum** value for a range of cells. In order to use functions correctly, you will need to understand the different **parts of a function** and how to create **arguments** to calculate values and cell references.

The parts of a function

In order to work correctly, a function must be written a specific way, which is called the **syntax**. The basic syntax for a function is the **equals sign (=)**, the **function name** (SUM, for example), and one or more **arguments**. Arguments contain the information you want to calculate. The function in the example below would add the values of the cell range A1:A20.

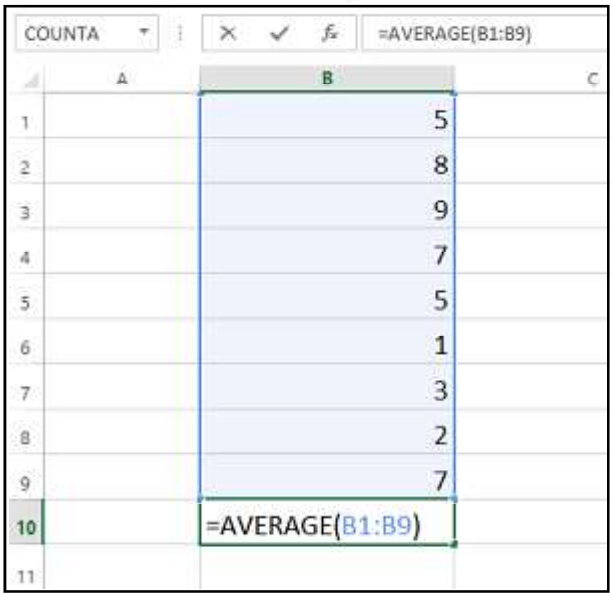


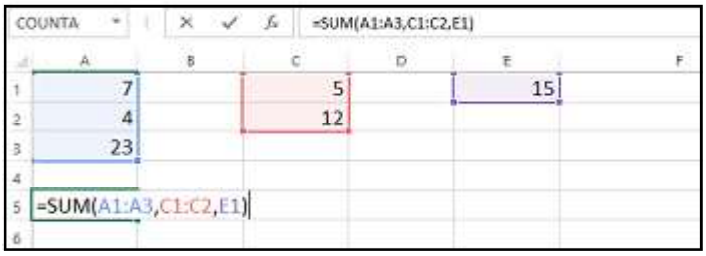
Working with arguments

Arguments can refer to both **individual cells** and **cell ranges** and must be enclosed within **parentheses**. You can include one argument or multiple arguments, depending on the syntax required for the function.

For example, the function **=AVERAGE(B1:B9)** would calculate the **average** of the values in the cell range B1:B9. This function contains only one argument.

Multiple arguments must be separated by a **comma**. For example, the function **=SUM(A1:A3, C1:C2, E1)** will **add** the values of all the cells in the three arguments.





Creating a function

Excel has a variety of functions available. Here are some of the most common functions you will use:

SUM: This function **adds** all of the values of the cells in the argument.

AVERAGE: This function determines the **average** of the values included in the argument. It calculates the sum of the cells and then divides that value by the number of cells in the argument.

COUNT: This function counts the number of cells with numerical data in the argument. This function is useful for quickly counting items in a cell range.

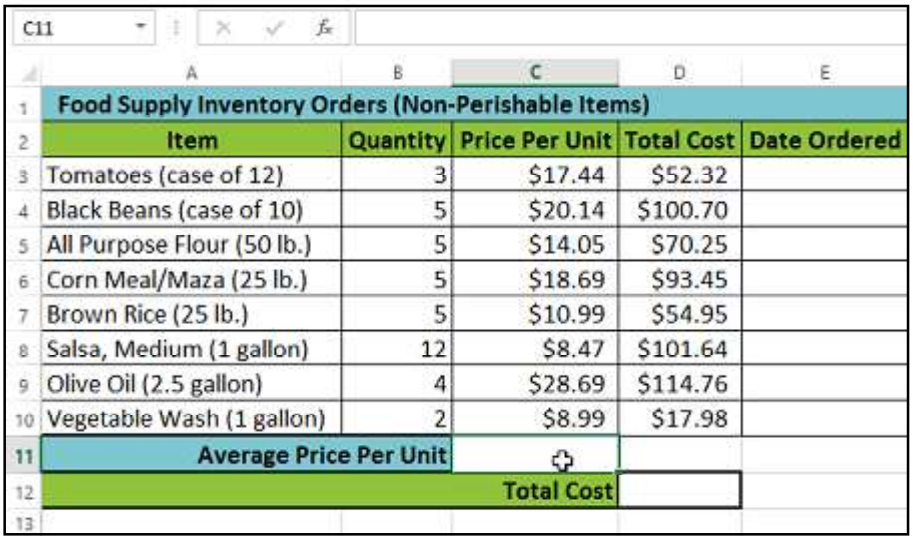
MAX: This function determines the **highest cell value** included in the argument.

MIN: This function determines the **lowest cell value** included in the argument.

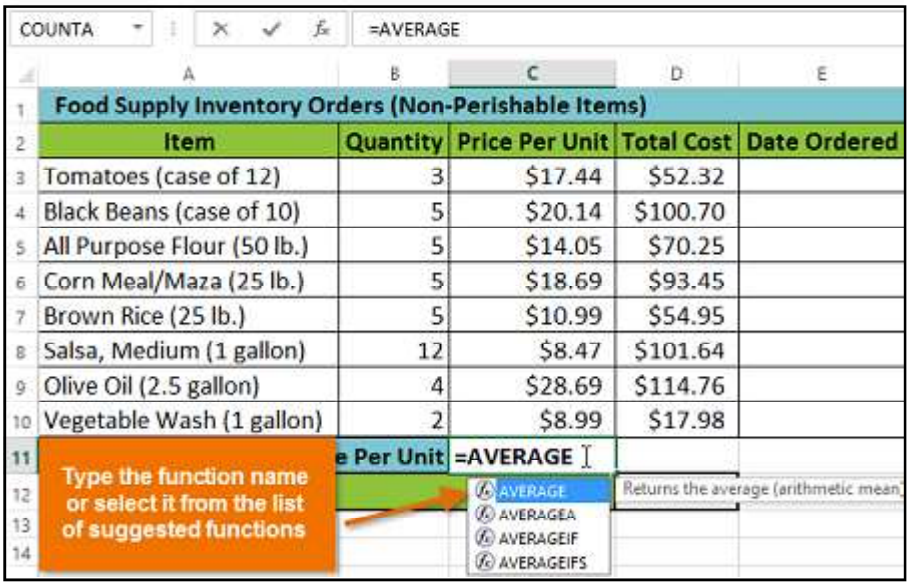
To create a basic function

In our example below, we will create a basic function to calculate the **average price per unit** for a list of recently ordered items using the AVERAGE function.

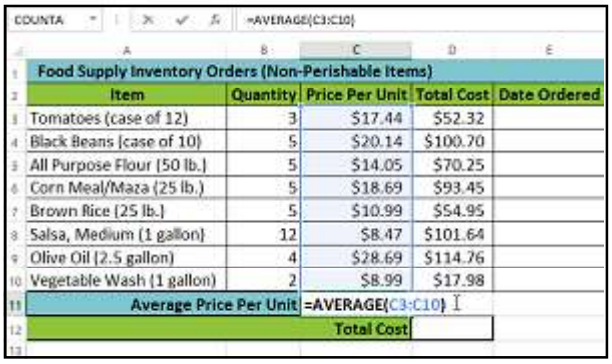
1. Select the **cell** that will contain the function. In our example, we will select cell **C11**.



2. Type the **equals sign (=)** and enter the desired **function name**. You can also select the desired function from the list of **suggested functions** that will appear below the cell as you type. In our example, we will type **=AVERAGE**.



3. Enter the **cell range** for the **argument** inside **parentheses**. In our example, we Will type **(C3:C10)**. This formula will add the values of cells C3:C10 and then divide that value by the total number of cells in the range to determine the average.

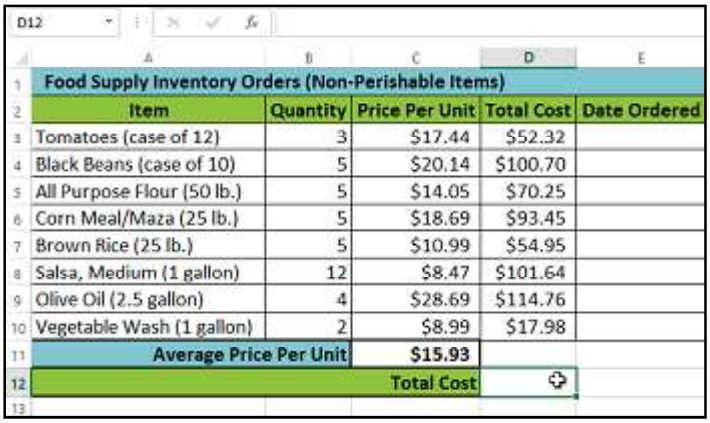


4. Press **Enter** on your keyboard. The function will be calculated, and the result will appear in the cell. In our example, the average price per unit of items ordered was **$15.93**.

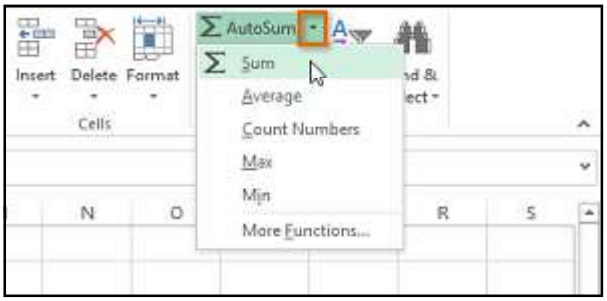
To create a function using the AutoSum command

The **AutoSum** command allows you to automatically insert the most common functions into your formula, including SUM, AVERAGE, COUNT, MIN, and MAX. In our example below, we will create a function to calculate the **total cost** for a list of recently ordered items using the SUM function.

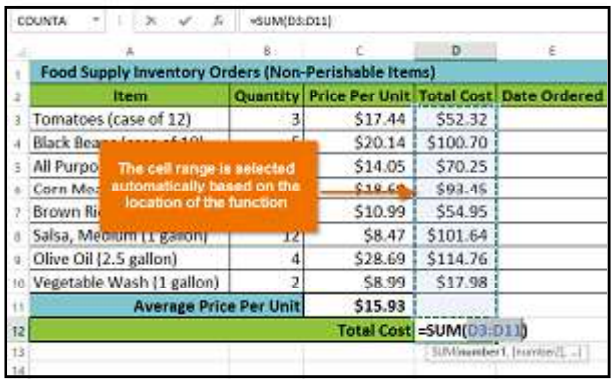
1. Select the **cell** that will contain the function. In our example, we will select cell **D12**.



2. In the **Editing** group on the **Home** tab, locate and select the **arrow** next to the **AutoSum** command and then choose the **desired function** from the drop-down menu. In our example, we will select Sum.

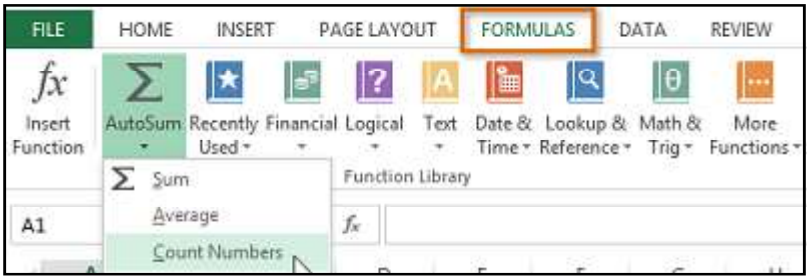


3. The selected **function** will appear in the cell. If logically placed, the AutoSum command will **automatically** select a cell range for the argument. In our example, cells **D3:D11** were selected automatically and their values will be **added** together to calculate the total cost. You can also manually enter the desired cell range into the argument.



4. Press **Enter** on your keyboard. The function will be calculated, and the result will appear in the cell. In our example, the sum of **D3:D11** is **$606.05**.

**The AutoSum command can also be accessed from the Formulas tab on the Ribbon.*
*You can also use the **Alt+=** keyboard shortcut instead of the AutoSum command. To use this shortcut, hold down the **Alt** key and then press the **equals sign**.*



The Function Library

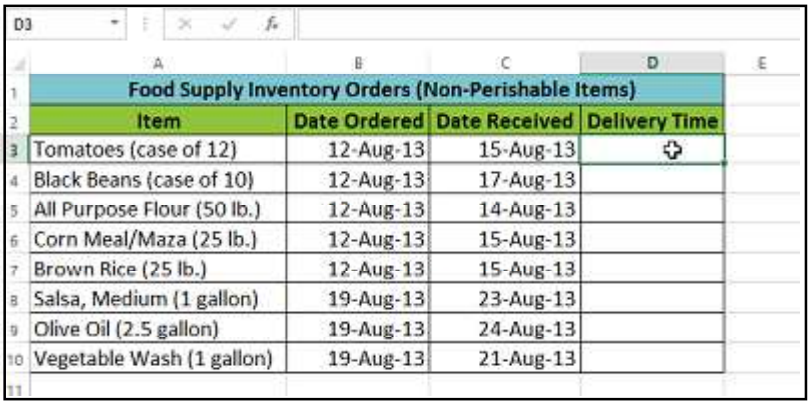
While there are hundreds of functions in Excel, the ones you use most frequently will depend on the **type of data** your workbooks contains. There is no need to learn every single function, but exploring some of the different **types of functions** will be helpful as you create new projects. You can search for functions **by category**, such as **Financial, Logical, Text, Date & Time**, and more from the **Function Library** on the **Formulas** tab.

To access the **Function Library**, select the **Formulas** tab on the **Ribbon**. The **Function Library** will appear.

To insert a function from the Function Library:

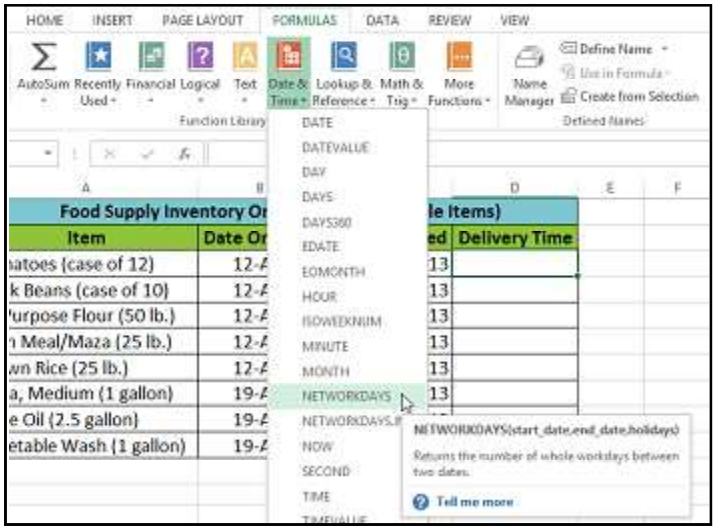
In our example, we will use a function to calculate the **number of business days** it took to receive items after they were ordered. In our example, we will use the dates in columns **B** and **C** to calculate the delivery time in column **D**.

1. Select the **cell** that will contain the function. In our example, we will select cell **D3**.

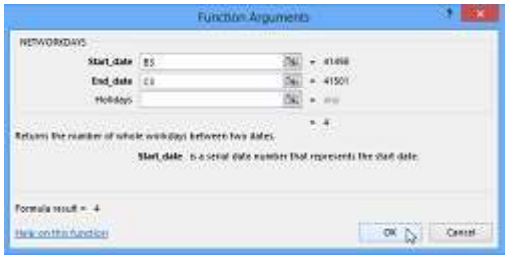


Food Supply Inventory Orders (Non-Perishable Items)			
Item	Date Ordered	Date Received	Delivery Time
Tomatoes (case of 12)	12-Aug-13	15-Aug-13	
Black Beans (case of 10)	12-Aug-13	17-Aug-13	
All Purpose Flour (50 lb.)	12-Aug-13	14-Aug-13	
Corn Meal/Maza (25 lb.)	12-Aug-13	15-Aug-13	
Brown Rice (25 lb.)	12-Aug-13	15-Aug-13	
Salsa, Medium (1 gallon)	19-Aug-13	23-Aug-13	
Olive Oil (2.5 gallon)	19-Aug-13	24-Aug-13	
Vegetable Wash (1 gallon)	19-Aug-13	21-Aug-13	

2. Click the **Formulas** tab on the **Ribbon** to access the **Function Library**.
3. From the **Function Library** group, select the desired **function category**. In our example, we Will choose **Date & Time**.
4. Select the **desired function** from the drop-down menu. In our example, we will select the **NETWORKDAYS** function to count the number of business days between the ordered date and received date.



5. The **Function Arguments** dialog box will appear. From here, you will be able to enter or select the cells that will make up the arguments in the function. In our example, we will enter **B3** in the **Start_date:** field and **C3** in the **End_date:** field.
6. When you are satisfied with the arguments, click **OK**.



7. The function will be **calculated**, and the **result** will appear in the cell. In our example, the result shows that it took **four business days** to receive the order.

=NETWORKDAYS(B3,C3)

Food Supply Inventory Orders (Non-Perishable Items)			
Item	Date Ordered	Date Received	Delivery Time
Tomatoes (case of 12)	12-Aug-13	15-Aug-13	4
Black Beans (case of 10)	12-Aug-13	17-Aug-13	
All Purpose Flour (50 lb.)	12-Aug-13	14-Aug-13	
Corn Meal/Maza (25 lb.)	12-Aug-13	15-Aug-13	
Brown Rice (25 lb.)	12-Aug-13	15-Aug-13	
Salsa, Medium (1 gallon)	19-Aug-13	23-Aug-13	
Olive Oil (2.5 gallon)	19-Aug-13	24-Aug-13	
Vegetable Wash (1 gallon)	19-Aug-13	21-Aug-13	

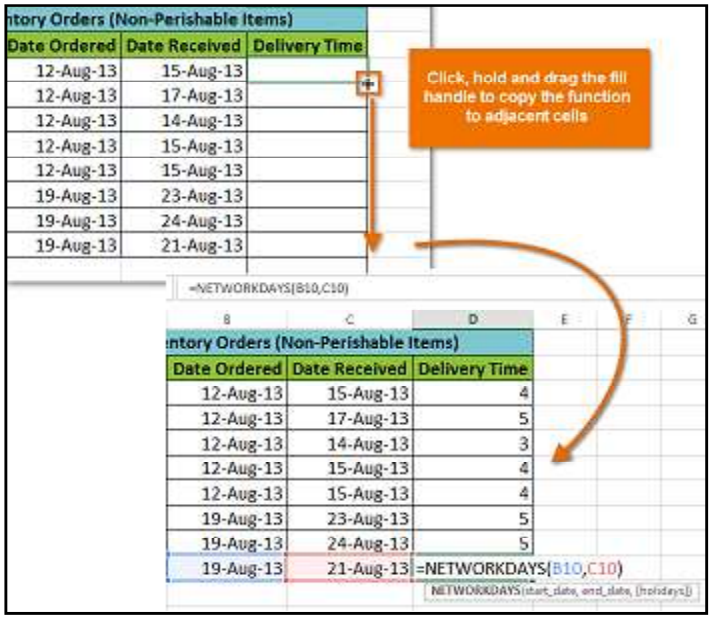
******Like formulas, functions can be copied to adjacent cells. Hover the mouse over the **cell** that contains the function, then click, hold, and drag the **fill handle** over the cells you want to fill. The function will be copied, and values for those cells will be calculated relative to their rows or columns.*

The Insert Function command

If you are having trouble finding the right function, the **Insert Function** command allows you to search for functions using keywords. While it can be useful, this command is sometimes difficult to use. If you do not have much experience with functions, you may have more success browsing the **Function Library** instead. For more **advanced users**, however, the Insert Function command can be a powerful way to find a function quickly.

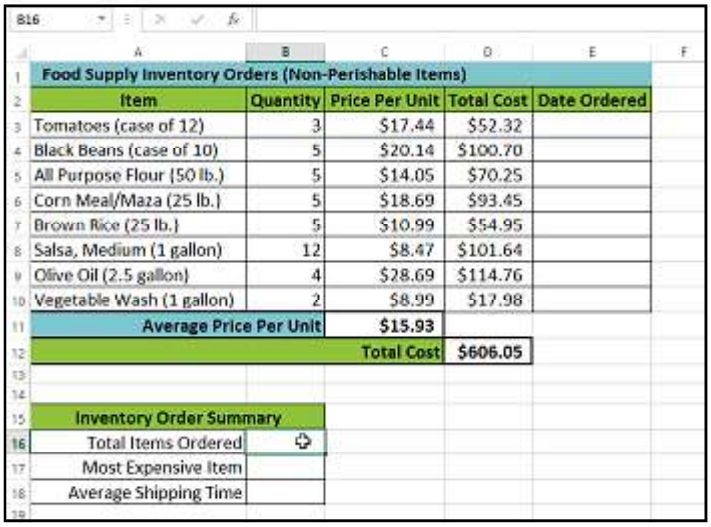
To use the Insert Function command

In our example below, we want to find a function that will count the total number of **items** ordered. We want to count the cells in the **Item** column, which uses text. We cannot use the basic COUNT function because it will only

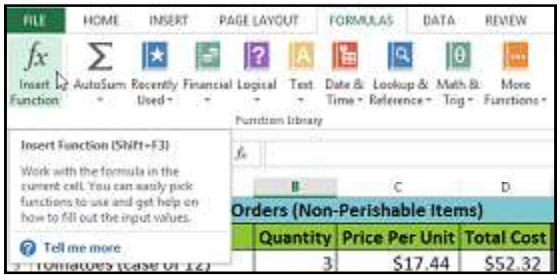


count cells with numerical information. Instead, we will need to find a function that counts the **total number of cells** within a cell range.

1. Select the **cell** that will contain the function. In our example, we will select cell **B16**.

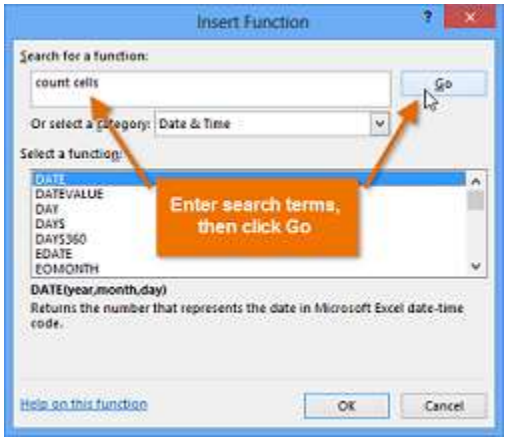


2. Click the **Formulas** tab on the **Ribbon**, then select the **Insert Function** command.

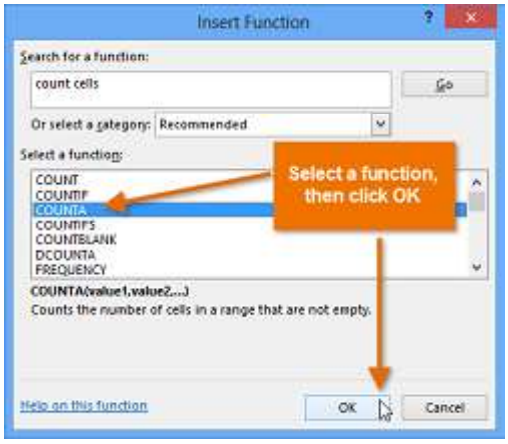


3. The **Insert Function** dialog box will appear.

4. Type a few **keywords** describing the calculation you want the function to perform, then click **Go**. In our example, we will type **Count cells**, but you can also search by selecting a **category** from the drop-down list.



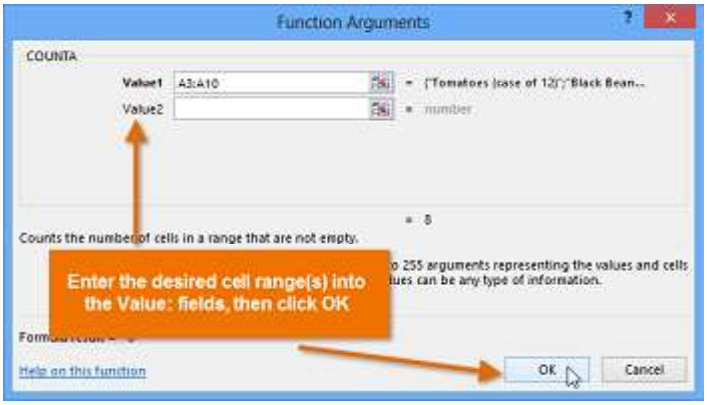
5. Review the **results** to find the desired function, then click **OK**. In our example, we will choose **COUNTA** because it will count the number of cells in a cell range.

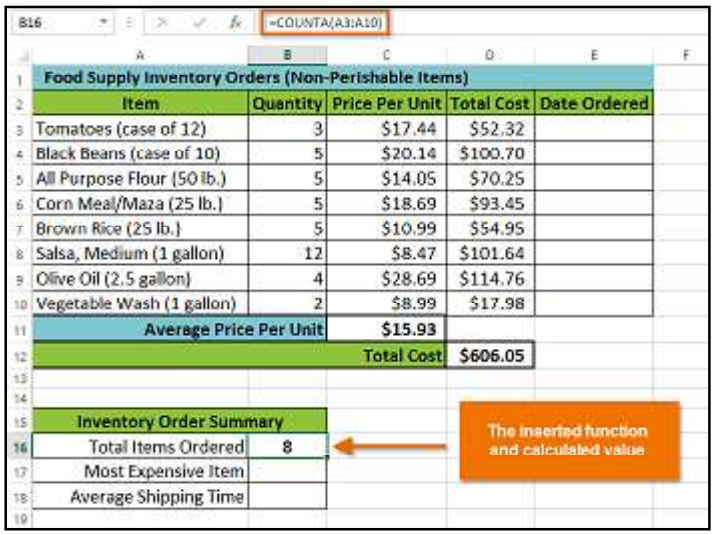


6. The **Function Arguments** dialog box will appear. Select the **Value1:** field, then enter or select the desired cells. In our example, we will enter the cell range **A3:A10**. You may continue to add arguments in the **Value2:** field, but in this case we only want to count the number of cells in the cell range **A3:A10**.

7. When you are satisfied, click **OK**.

8. The function will be **calculated**, and the **result** will appear in the cell. In our example, the result shows that a total of **eight items** were ordered.





Microsoft Excel Function List

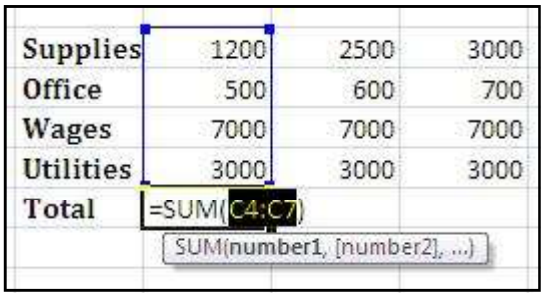
Excel provides many more library functions to calcuate your mathematical calculation in worksheets some are explained below:

Mathematical Functions

SUM - Adds up all the values in a range

The most commonly used Excel function is Sum. The purpose of the Sum function is to add up the numbers in a range.

1. Select the cell where you wish the total to appear.
2. Click the **Sum** Σ button The SUM button on the toolbar
3. The Sum function appears in the cells and a dotted line appears around the cells Excel thinks you want to add. If the range is not correct, select a different range.



4. Press Enter

The total appears in the cell. If a value in the summed range changes at a later date, the total will automatically update itself.

The Sum function can add more than one range if needed. To select a second range, enter a comma and select another range.

SUMIF

The SUMIF function totals the values of a range that meet specific criteria. For example it will total only the orders from a specific company or after a specific date.

The syntax for SUMIF is:

=SUMIF(range, criteria, [sum_range])

Argument	Purpose
Range	The range of cells to evaluate.
Criteria	The condition that defines which cells are to be added.
Sum range	The actual cells to sum. If omitted the values in range are added.

SUMIFS Function

The Excel SUMIFS function is similar to the SUMIF function. It adds up the values from a given range that meets multiple criteria.

The syntax for the SUMIFS function is:

=SUMIFS (sum_range, criteria_range1, criteria1, ...)

Argument	Purpose
Sum_range	The range of cells containing the values you want to add
Criteria_range	The range of cells containing the records you want to check against the criteria
Criteria	The criteria to determine whether the value is added or not

SUMPRODUCT Function

The Excel SUMPRODUCT function is a hidden gem. The purpose of the SUMPRODUCT function is to return the sum of products from 1 or more arrays. Now this may not sound that useful, but let me explain further. It's syntax is:

=SUMPRODUCT(array1, [array2], [array3], ...)

The SUMPRODUCT function works by multiplying a group of numbers and then adding the results. Each array of SUMPRODUCT is a range of values. These arrays must be of the same dimension.

ROUND Functions

The Excel ROUND function is used to round a number to a specified number of digits. For example, round a number to the one decimal place.

The syntax for the ROUND function is:

=ROUND(number,num_digits)

Argument	Purpose
Number	The number you want to round
num_digits	The number of digits you want to round the number to. • If the num_digits is greater than 0, the number is rounded to the specified number of decimal points • If the num_digits is 0, the number is rounded to the nearest integer • If num_digits is less than 0, the number is rounded to the left of the decimal point

ROUNDUP Functions

The Excel ROUNDUP function is used to round a number up to a specified number of digits.For example, round a number up to one decimal place.

The syntax for the ROUNDUP function is:

=ROUNDUP (number,num_digits)

Argument	Purpose
Number	The number you want to round up
num_digits	The number of digits you want to round the number up to. • If the num_digits is greater than 0, the number is rounded up to the specified number of decimal points • If the num_digits is 0, the number is rounded up to the nearest integer • If num_digits is less than 0, the number is rounded up to the left of the decimal point

ROUNDDOWN Function

The Excel ROUNDDOWN function is used to round a number down to a specified number of digits. For example, round a number down to one decimal place.

The syntax for the ROUNDDOWN function is:

=ROUNDDOWN(number,num_digits)

Argument	Purpose
Number	The number you want to round down
num_digits	The number of digits you want to round the number down to. • If the num_digits is greater than 0, the number is rounded down to the specified number of decimal points • If the num_digits is 0, the number is rounded down to the nearest integer • If num_digits is less than 0, the number is rounded down to the left of the decimal point

CEILING Function

The Excel CEILING function is used to round a number up to a multiple of significance. For example, you could round a number up to 2 decimal places, or to the next multiple of 5.

The syntax for the CEILING function is:

=CEILING(number,significance)

Argument	Purpose
Number	The number you want to round up
Significance	The multiple of sigificance you want to round the number up to. This must match the sign of the number you are using. For example, you cannot round a negative number to a positive number

FLOOR Function

The Excel FLOOR function is used to round a number down to a multiple of significance. For example, you could round a number down to the nearest decimal place, or to the next multiple of 5.

The syntax for the FLOOR function is:

=FLOOR(number,significance)

Statical Functions

Count

Returns the number of values from a list.

The syntax for the Count function is:

=COUNT(value1, [value2], ...)

Average

Returns the average or arithmetic mean of a list of values.

The syntax for the Average function is:

=AVERAGE(number1, [number2], ...)

Min

Returns the smallest number from a list of values.

The syntax for the Min function is:

=MIN(number1, [number2], ...)

Max

Returns the largest number from a list of values.

The syntax for the Max function is:

=MAX(number1, [number2], ...)

COUNTBLANK Function

The COUNTBLANK function counts the empty cells in a given range.

The syntax for the COUNTBLANK function is:

=COUNTBLANK(range)

Argument	Purpose
Range	the range of cells you want to count

CountIf

The COUNTIF function counts the number of values in a range that meet specific criteria. For example it will return how many orders were placed by a specific company or after a specific date.

The syntax for COUNTIF is:

=COUNTIF(range, criteria)

Argument	Purpose
Range	The range of cells to evaluate.
Criteria	The condition that defines which cells are to be counted.

COUNTIFS Function

The Excel COUNTIFS function is similar to the COUNTIF function. It counts all the cells from a given range that meets multiple criteria.

The syntax for the COUNTIFS function is:

=COUNTIFS(criteria_range1, criteria1, ...)

Argument	Purpose
Criteria_range	The range of cells you want to look for items to count
Criteria	The criteria to determine whether the cell is counted or not

AVERAGEIF

The Excel AVERAGEIF function is used to find the average value from a range of cells that meet certain criteria.

The syntax for the AVERAGEIF function is:

=AVERAGEIF(range, criteria, [average_range])

Argument	Purpose
Range	The range of cells you want to test
Criteria	The criteria the records have to meet to be included
Average_range	The range of values to average. This is optional and if omitted the function will average the first range

COUNTA Function

The COUNTA function counts the number of non empty cells in a given range. COUNTA will count cells containing values, labels and formulas.

The syntax for the COUNTA function is:

=COUNTA(value1,value2,...)

Argument	Purpose
Value1,value2,...	the range of cells you want to count. The function can take up to 30 different cell ranges

AVERAGEIFS Function

The Excel AVERAGEIFS function is used to find the average value from a range of cells that meet multiple criteria.

The syntax for the AVERAGEIFS function is:

=AVERAGEIFS(average_range, criteria_range, criteria, ...)

Argument	Purpose
Average_range	The range of values to average
Criteria_range	The range of cells you want to test
Criteria	The criteria the records have to meet to be included

LARGE Function

The Excel LARGE function is used to return a value dependent upon its ranking in a range of values. For example, the LARGE function can be used to return the 2nd or 3rd largest number from a range.

The syntax for the LARGE function is:

=LARGE(array,k)

Argument	Purpose
Array	the range of cells you want to find the k-th largest value in
K	The position in the range of numbers, from the largest, that you want to return

SMALL Function

The Excel SMALL function is used to return a value dependent upon its ranking in a range of values. For example, the SMALL function can be used to return the 2nd or 3rd smallest number from a range.

The syntax for the SMALL function is:

=SMALL(array,k)

Argument	Purpose
Array	the range of cells you want to find the k-th smallest value in
K	The position in the range of numbers, from the smallest, that you want to return

RANK Functions

The RANK function returns the rank or position of a number within a range of numbers.

Duplicate numbers are given the same rank. This then affects the ranking of subsequent numbers. For example, if number 8 appears twice and has a rank of 4, then 9 would have a rank of 6 and no number would be ranked number 5.

The syntax for the RANK function is:

=RANK(number, ref, [order])

Argument	Purpose
number	The number whose rank you want to find
ref	The range of numbers that you want to find the ranking position within
order	How to rank the number. 0 for descending order and 1 for ascending. Order is optional and if omitted, 0 is entered

Text Functions

LEN Function

The Excel LEN function is used to find the length, in number of characters, of the contents of a cell.

The syntax for the LEN function is:

=LEN(text)

Argument	Purpose
Text	The reference to the cell whose length you want to find

REPT Function

The Excel REPT function is used to repeat text a given number of times in a cell.

The syntax for the REPT function is:

=REPT(text,number_times)

Argument	Purpose
Text	The text you want to repeat
Number_times	The number of times you want to repeat the text

TRIM Function

The Excel TRIM function is used to remove unwanted spaces from cells. These unwanted spaces are usually generated when importing or copying text data into Excel.

The syntax for the TRIM function is:

=TRIM(text)

Argument	Purpose
Text	The text that you want to change. Usually entered as a cell reference

LEFT Function

The LEFT function is used to extract a specific number of characters from the start of a cell.

This can be useful to when needing to remove unwanted characters in a cell that appear on the right of the cells content. This can happen as a result of importing data into Excel from another application or database.

The syntax for the LEFT function is:

=LEFT(text, [num_chars])

Argument	Purpose
Text	The data containing the characters you want to extract
Num_chars	The number of characters you want to extract If omitted, it extracts only the first character

RIGHT Function

The RIGHT function is used to extract a specific number of characters from the end of a cell.

This can be useful to when needing to remove unwanted characters in a cell that appear on the left of the cells content. This can happen as a result of importing data into Excel from another application or database.

The syntax for the RIGHT function is:

=RIGHT(text, [num_chars])

Argument	Purpose
Text	The data containing the characters you want to extract
Num_chars	The number of characters you want to extract If omitted, it extracts only the last character

MID Function

The MID function is used to extract a specific number of characters from the middle of a cell.

This can be useful to when needing to remove unwanted characters in a cell that appear on the left and right of the cells content. This can happen as a result of importing data into Excel from another application or database.

The syntax for the MID function is:

=MID(text, start_num, num_chars)

Argument	Purpose
Text	The data containing the characters you want to extract
Start_num	The number of the first character you want to extract
Num_chars	The number of characters to the right of start_num that you want to extract

UPPER Function

The UPPER function is used to convert the text in a cell to uppercase.

The syntax for the UPPER function is:

=UPPER(text)

Argument	Purpose
Text	The text you want to convert to uppercase, usually entered as a cell reference

LOWER Function

The LOWER function is used to convert the text in a cell to lowercase.

The syntax for the LOWER function is:

=LOWER(text)

Argument	Purpose
Text	The text you want to convert to uppercase, usually entered as a cell reference

PROPER Function

The PROPER function is used to convert the first character of each word in a cell to uppercase and the remaining characters to lowercase.

The syntax for the PROPER function is:

=PROPER(text)

Argument	Purpose
Text	The text you want to convert to proper case, usually entered as a cell reference

REPLACE Function

The Excel REPLACE function is used to replace existing characters in a cell with a different set of characters, or with nothing. These unwanted characters can appear as a result of importing or copying data into Excel.

The syntax for the REPLACE function is:

=REPLACE(old_text, start_num, num_chars, new_text)

Argument	Purpose
Old_text	The text that you want to change. Usually entered as a cell reference
Start_num	The start position of the first character in old_text that you want to replace
Num_chars	The number of characters from start_num that you want to replace
New_text	The new data to be added. Leave it blank to just remove the unwanted characters

Financial Functions

PMT Function

The Excel PMT function is used to calculate loan repayments based on constant payments and a constant interest rate.

The syntax for the PMT function is:

=PMT(rate, nper, pv, [fv], [type])

Argument	Purpose
Rate	The interest rate for the loan
Nper	The total number of payments for the loan
PV	The present value, or total amount a number of future payments is worth now
FV	The future value, or total remaining after the last payment has been made. This argument is optional, and if omitted the total is assumed to be 0
Type	When the payments are due. It can be entered as 1 or 0 and is optional. If omitted the value is assumed to be 0 • 0 - Payments are made at the end of the period • 1 - Payments are made at the beginning of the period

RATE Function

The Excel RATE function is used to return the interest rate per period of a loan or investment.

The syntax for the RATE function is:

=RATE(nper, pmt, pv, [fv], [type], [guess])

PV Function

The Excel PV function is used to return the present value of an investment based on a constant interest rate and payments.

The syntax for the PV function is:

=PV(rate, nper, pmt, [fv], [type])

Argument	Purpose
rate	The interest rate per period of the investment
nper	The number of payments for the investment
pmt	The payment made each period
fv	The future value, or total remaining after the last payment has been made. This argument is optional, and if omitted the total is assumed to be 0
type	When the payments are due. It can be entered as 1 or 0 and is optional. If omitted the value is assumed to be 0 • 0 - Payments are made at the end of the period • 1 - Payments are made at the beginning of the period

IRR Function

The Excel IRR function is used to return the internal rate of return based on a series of investments. The investments must occur at regular intervals such as weekly, bi-weekly or monthly.

The syntax for the IRR function is:

=IRR(values, [guess])

PPMT Function

The Excel PPMT function is used to calculate the principal payment made in a period of an investment. Where as IPMT calculates the interest paid in a period of an investment, PPMT relates to the amount paid that comes of the balance.

The syntax for the PPMT function is:

=PPMT(rate, per, nper, pv, [fv], [type])

FV Function

The Excel FV function is used to return the future value of an investment based on constant payments and a constant interest rate.

The syntax for the FV function is:

= FV (rate, nper, pmt, [pv], [type])

Argument	Purpose
rate	The interest rate per period For example 7%/12 for monthly payments
nper	The number of payment periods
pmt	The payment amount per period
pv	The present value, or amount that the number of future payments is worth now If omitted, then the pv is 0
type	When the payments are made • 0 - Payments are made at the end of the period • 1 - Payments are made at the beginning of the period If omitted, type is 0

IPMT Function

The Excel IPMT function is used to calculate the interest paid during a period of a loan or investment.

It could be used by an investment company to find out the interest earned on a loan given to a customer. The IPMT function could be used to decide what interest rate to apply to the loan, as changing the rate will change the potential interest earned, ensuring the loan is worth giving.

The IPMT function can also be used to find out the amount of interest earned during a specific period during the length of a loan or investment, such as the 3rd year.

The syntax for the IPMT function is:

=IPMT(rate, per, nper, pv, [fv], [type])

Argument	Purpose
values	The range of cells containing the investments that you want to calculate the internal rate of return
guess	An estimate internal rate of return of the investment. This argument is optional and if omitted Excel assumes an estimated irr of 10%

XIRR Function

The Excel XIRR function is used to return the internal rate of return based on a series of irregular payments on an investment.

The syntax for the XIRR function is:

=IRR(values, dates, [guess])

Argument	Purpose
values	The range of cells containing the investments that you want to calculate the internal rate of return
dates	A schedule of dates corresponding to cash flow payments
guess	An estimate internal rate of return of the investment. This argument is optional and if omitted Excel assumes an estimated irr of 10%

NPV Function

The Excel NPV function is used to return the net present value of an investment based on a series of cash flows and a discount rate.

The syntax for the NPV function is:

=NPV(rate, value1, [value2], ...)

Argument	Purpose
rate	Discount rate during one period of the investment
value	Payments made each period. Payments made in the past should have a negative value, and payments made in the future should be positive. This argument can take up to 29 values

XNPV Function

The Excel XNPV function returns the net present value of an investment based on a series of cash flows, the dates of the cash flows and a discount rate.

The syntax for the XNPV function is:

=XNPV(rate, values, dates)

Argument	Purpose
rate	Discount rate to apply to the cash flows of the investment
values	Series of cash flows that correspond to a schedule of payments. The series of payments must contain atleast one negative and one positive value
dates	The schedule of payment dates that correspond to the cash flow payments. The first payment date occurs at the beginning and all other must be later than this date

Lookup and Reference Functions

Vlookup Function

The Excel Vlookup function is a lookup and reference function. It searches for a record of data in a list and returns information from that record. For example, it could search a list of orders and return the value of an order that you ask for.

Vlookup stands for Vertical Lookup. It gets this name because it looks down columns. You would be right to assume that there is also an Hlookup that looks along rows.

Vlookup requires 4 items of information (arguments) in order to work.

=vlookup(lookup_value,table_array,col_index_num,[range_lookup])

Lookup value	The value to search for
Table array	The list of data to search for the value in. It looks for the value in the leftmost column
Col index num	The column number from the left of the data to be returned
Range lookup	Logical value that could be true or false. This is an optional argument that if untouched is set to true. This requires the data list to be sorted by the leftmost column in ascending order. If the value is not found in the column then the closest match is returned. If set to false, the data list can remain unsorted and an exact match is returned. If the value is not found a #N/A error message is returned.

INDEX Function

The INDEX function returns an item from a specific position in a list.

The syntax for the INDEX function is:

=INDEX(array, row_num, [column_num])

Argument	Purpose
array	The range of cells where the item can be found
row_num	The row where the item you want returned can be found
column_num	The column where the item you want returned can be found. If the *array* is only 1 column wide, this argument can be omitted

MATCH Function

The MATCH function returns the position of an item within a range of cells

The syntax for the MATCH function is:

=MATCH(lookup_value, lookup_array, [match_type])

Argument	Purpose
lookup_value	The value you want to search for in the *lookup_array*
lookup_array	The range of of cells that contains the *lookup_value* you are searching for
match_type	How to match the *lookup_value* with values in the *lookup_array* Can be entered as -1, 0 or 1 and is optional. If omitted Excel assumes *match_type* to be 1 • 1 - Finds the largest value less than or equal to the *lookup_value*. The range of cells should be sorted in ascending order • 0 - Finds the first value equal to the *lookup_value* • -1 - Finds the smallest value that is larger than or equal to the *lookup_value*. The range of cells should be sorted in descending order

OFFSET Function

The OFFSET function returns a value from a cell, or range of cells that are a specified number of rows and columns from another cell.

The syntax for the OFFSET function is:

=OFFSET(reference, rows, columns, [height], [width])

Argument	Purpose
reference	The starting cell reference from which the offset will be applied
rows	The number of rows to offset from the *reference*. Enter a positive number for the number of rows below the *reference*, or a negative number for the number of rows above the *reference*
columns	The number of columns to offset from the *reference*. Enter a positive number for the number of columns to the right of the *reference*, or a negative number for the number of columns to the left of the *reference*
height	The height, in number of rows, of the returned range
width	The width, in number of columns, of the returned range

INDIRECT Function

Ensure the reference does not change when additional rows and columns are inserted in the worksheet.

Create a reference from letters and numbers entered into other cells. This also enables you to change the reference in the formula without editing the formula itself.

Refer to a named range. Very useful when used with Data Validation to create dependent drop down lists

The syntax for the INDIRECT function is:

=INDIRECT(ref_text, [a1])

Argument	Purpose
ref_text	The referenced range. Can be entered as a cell reference, text string that creates the cell reference or a range name
a1	The type of reference used in *ref_text*. True, or omitting the argument, uses the A1 style. False uses the R1C1 style

CHOOSE Function

The CHOOSE function in Excel returns a value from a list of values based on a specified position.

The syntax for the CHOOSE function is:

=CHOOSE(index_num, value1, [value2], ...)

Argument	Purpose
index_num	Specifies which value in the list of values that you want. It can be entered as a number between 1 and 254, a cell reference or a formula
value	1 to 254 values that the *index_num* will be selected from. They can be numbers, text, cell references, named ranges or formulas

ADDRESS Function

The ADDRESS function in Excel returns a text representation of a cell address from specified row and column numbers.

The syntax for the ADDRESS function is:

=ADDRESS(row_num, column_num, [abs_num], [a1], [sheet_text])

Argument	Purpose
row_num	The row number to use in the cell reference
column_num	The column number to use in the cell reference
abs_num	The type of reference to return. If omitted, Excel assumes an absolute cell reference • 1 - Absolute • 2 - Absolute row; relative column • 3 - Relative row; absolute column • 4 - Relative
a1	The reference style to be used. If omitted, Excel assumes the A1 style • TRUE - A1 • FALSE - R1C1
sheet_text	The name of the worksheet to be used. If omitted, no worksheet name is used

Logical Functions

IF function

The IF function can perform a logical test and return one value for a **TRUE** result, and another for a **FALSE** result. For example, to **"pass"** scores above **70: =IF(A1>70,"Pass","Fail")**. More than one condition can be tested by nesting IF functions. The IF function can be combined with logical functions like **AND** and **OR**.

Purpose

Test for a specific condition

Return value

The values you supply for **TRUE** or **FALSE**

Syntax

=IF (logical_test, [value_if_true], [value_if_false])

Arguments

logical_test - A value or logical expression that can be evaluated as TRUE or FALSE.

value_if_true - [optional] The value to return when logical_test evaluates to TRUE.

value_if_false - [optional] The value to return when logical_test evaluates to FALSE.

Nested IF statements

You may here the term "Nested IF" or "Nested IF statement". This refers to using more than one IF function so that you can test for more conditions and return more possible results. Each IF statement needs to be carefully "nested" inside another so that the logic is correct.

For example, the following formula can be used to assign an grade rather than a pass / fail result:

=IF(C6<70,"F",IF(C6<75,"D",IF(C6<85,"C",IF(C6<95,"B","A"))))

AND Function

The AND function is a logical function used to require more than one condition at the same time. AND returns either **TRUE** or **FALSE**. To test if a number in **A1** is greater than zero and less than 10, use **=AND(A1>0,A1<10)**. The AND function can be used as the logical test inside the IF function to avoid extra nested IFs, and can be combined with the OR function.

Purpose

Test multiple conditions with AND

Return value

TRUE if all arguments evaluate **TRUE**; **FALSE** if not

Syntax

=AND (logical1, [logical2], ...)

Arguments

logical1 - The first condition or logical value to evaluate.

logical2 - [optional] The second condition or logical value to evaluate.

OR Function

The OR function is a logical function to test multiple conditions at the same time. OR returns either TRUE or FALSE. For example, to test A1 for either **"x"** or **"y"**, use **=OR(A1="x",A1="y")**. The OR function can be used as the logical test inside the IF function to avoid extra nested IFs, and can be combined with the AND function.

Purpose

Test multiple conditions with OR

Return value

TRUE if any arguments evaluate TRUE; FALSE if not.

Syntax

=OR (logical1, [logical2], ...)

Arguments

logical1 - The first condition or logical value to evaluate.

logical2 - [optional] The second condition or logical value to evaluate.

IFERROR Function

The Excel IFERROR function returns a custom result when a formula generates an error, and a standard result when no error is detected. IFERROR is an elegant way to trap and manage errors without using more complicated nested IF statements.

Purpose

Trap and handle errors

Return value

The value you specify for error conditions.

Syntax

=IFERROR (value, value_if_error)

Arguments

value - The value, reference, or formula to check for an error.

value_if_error - The value to return if an error is found.

Date & Time Functions

TODAY Function

The Excel TODAY function returns the current date, updated continuously when a worksheet is changed or opened. The TODAY function takes no arguments. You can format the value returned by TODAY using any standard date format. If you need current date and time, use the NOW function.

Purpose
Get the current date
Return value
A serial number representing a particular date in Excel.
Syntax
=TODAY ()

NOW Function
The Excel NOW function returns the current date and time, updated continuously when a worksheet is changed or opened. The NOW function takes no arguments. You can format the value returned by NOW as a date, or as a date with time by applying a number format.

Purpose
Get the current date and time
Return value
A serial number representing a particular date and time in Excel.
Syntax
=NOW ()

DATE Function
The Excel DATE function is a built-in function that allows you to create a date with individual year, month, and day components. The DATE function is especially useful when supplying dates as inputs to other functions like SUMIFS or COUNTIFS, since you can easily assemble a date using year, month, and day values that come from a cell reference or formula result.

Purpose
Create a valid date from year, month, and day
Return value
A serial number that represents a particular date in Excel.
Syntax
=DATE (year, month, day)
Arguments
year - The year to use when creating the date.
month - The month to use when creating the date.
day - The day to use when creating the date.

DAY Function
The Excel DAY function returns the day of the month as a number between 1 to 31 when given a date. You can use the DAY function to extract a day number from a date into a cell. You can also use the DAY function to feed a day value into another formula, like the DATE function.

Purpose
Get the day as a number (1-31) from a date
Return value
A number (1-31) representing the day component in a date.

Syntax

=DAY (date)

Arguments

date - A valid Excel date in serial number format.

MONTH Function

The Excel MONTH function returns the month portion of a date as number between 1 to 12 when given a date. You can use the MONTH function to extract a month number from a date into a cell. You can also use the MONTH function to feed a month number to another formula, like the DATE function.

Purpose

Get the month as a number (1-12) from a date

Return value

A number between 1 and 12.

Syntax

=MONTH (date)

Arguments

date - A valid date in a format Excel recognizes.

YEAR Function

The Excel YEAR function returns the year component of a date as a 4-digit number. You can use the YEAR function to extract a year number from a date into a cell. You can also use the YEAR function to extract and feed a year value into another formula, like the DATE function.

Purpose

Get the year from a date

Return value

A number representing year.

Syntax

=YEAR (date)

Arguments

date - A date from which to extract the year.

WORKDAY Function

The Excel WORKDAY function takes a date and returns the nearest working day in the future or past, based on an offset value you provide. You can use the WORKDAY function to calculate things like ship dates, delivery dates, and completion dates that need to take into account working and non-working days.

Purpose

Get a date n working days in the future or past

Return value

A serial number representing a particular date in Excel.

Syntax

=WORKDAY (start_date, days, [holidays])

Arguments

start_date - The date from which to start.

days - The working days before or after start_date.

holidays - [optional] A list dates that should be considered non-work days.

WEEKDAY Function

The Excel WEEKDAY takes a date and returns a number between 1-7 representing the day of week. By default, WEEKDAY returns 1 for Sunday and 7 for Saturday. You can use the WEEKDAY function inside other formulas to check the day of week and react as needed.

Purpose

Get the day of the week as a number

Return value

A number between 0 and 7.

Syntax

=WEEKDAY (serial_number, [return_type])

Arguments

serial_number - The date for which you want to get the day of week.

return_type - [optional] A number 1-3 representing day of week mapping scheme. Default is 1.

NETWORKDAYS Function

The Excel NETWORKDAYS function calculates the number of working days between two dates. NETWORKDAYS automatically excludes weekends (Saturday and Sunday) and can optionally exclude a list of holidays supplied as dates.

Purpose

Get the number of working days between two dates

Return value

A number representing days.

Syntax

=NETWORKDAYS (start_date, end_date, [holidays])

Arguments

start_date - The start date.

end_date - The end date.

holidays - [optional] A list of one or more dates that should be considered non-work days.

EOMONTH Function

The Excel EOMONTH function returns the last day of the month, x months in the past or future. You can use EDATE to calculate expiration dates, due dates, and other dates that need to land on the last day of a month. Use a positive value for months to get a date in the future, and a negative value to get a date in the past.

Purpose

Get the last day of the month in future or past months

Return value

A serial number that represents a particular date in Excel.

Syntax

=EOMONTH (start_date, months)

Arguments

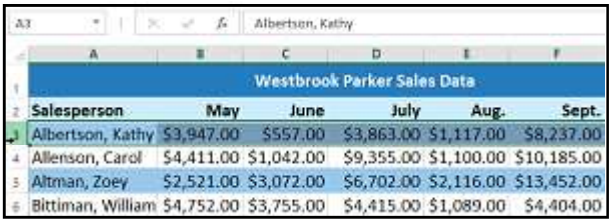
start_date - A date that represents the start date in a valid

Excel serial number format.

months - The number of months before or after start_date.

Freezing Panes and View Options

Whenever you are working with a lot of data, it can be difficult to compare information in your workbook. Fortunately, Excel includes several tools that make it easier to view content from different parts of your workbook at the same time, such as the ability to **freeze panes** and **split** your worksheet.

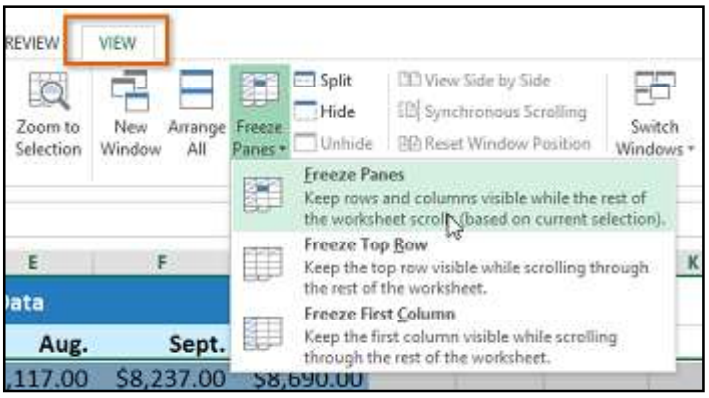


	A	B	C	D	E	F
1	Westbrook Parker Sales Data					
2	Salesperson	May	June	July	Aug.	Sept.
3	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00	$8,237.00
4	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00	$10,185.00
5	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00	$13,452.00
6	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00	$4,404.00

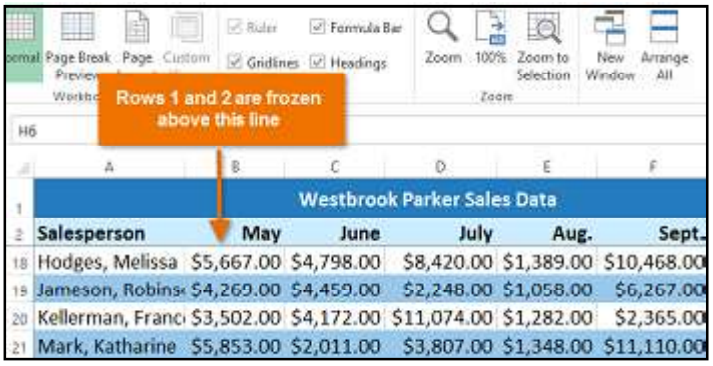
To freeze rows

You may want to see certain rows or columns all the time in your worksheet, especially header cells. By freezing rows or columns in place, you will be able to scroll through your content while continuing to view the frozen cells.

1. Select the **row** below the row(s) you want to **freeze**. In our example, we want to freeze rows **1** and **2**, so we will select row **3**.
2. Click the **View** tab on the **Ribbon**.
3. Select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.



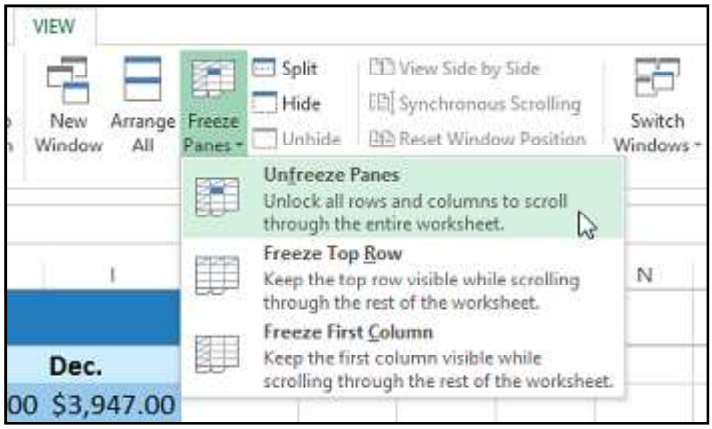
4. The rows will be **frozen** in place, as indicated by the **gray line**. You can scroll down the worksheet while continuing to view the frozen rows at the top. In our example, we have scrolled down to row **18**.



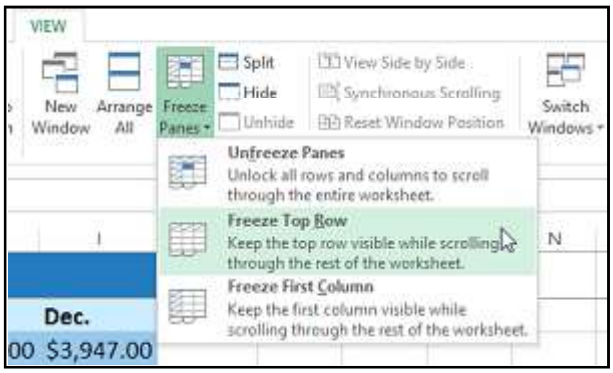
To freeze columns

1. Select the **column** to the right of the column(s) you want to **freeze**. In our example, we want to freeze **column A**, so we will select column **B**.
2. Click the **View** tab on the **Ribbon**.
3. Select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu
4. The column will be **frozen** in place, as indicated by the **gray line**. You can **scroll across** the worksheet while continuing to view the frozen column on the left. In our example, we have scrolled across to column **E**.

To unfreeze* rows or columns, click the ***Freeze Panes* command, then select ***Unfreeze Panes*** from the drop-down menu.*



if you only need to freeze the **top row (row 1) or **first column** (column A) in the worksheet, you can simply select **Freeze Top Row** or **Freeze First Column** from the drop-down menu.*



Other view options

If your workbook contains a lot of content, it can sometimes be difficult to compare different sections. Excel includes additional options to make your workbooks easier to view and compare. For example, you can choose to **open a new window** for your workbook or **split a worksheet** into separate panes.

To open a new window for the current workbook

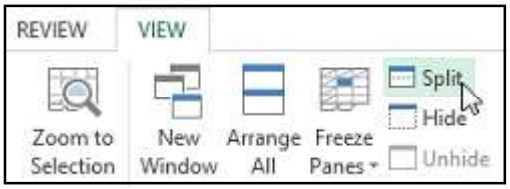
Excel allows you to open multiple windows for a single workbook at the same time. In our example, we will use this feature to compare two different worksheets from the same workbook.

1. Click the **View** tab on the **Ribbon**, then select the **New Window** command.
2. A new window for the workbook will appear.

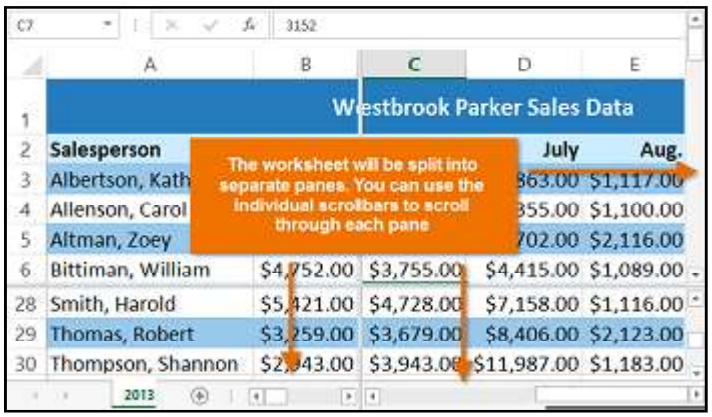
To split a worksheet

Sometimes you may want to compare different sections of the same workbook without creating a new window. The **Split** command allows you to **divide** the worksheet into multiple panes that scroll separately.

1. Select the **cell** where you want to split the worksheet. In our example, we will select cell **C7**.
2. Click the **View** tab on the **Ribbon**, then select the **Split** command.



3. The workbook will be **split** into different **panes**. You can scroll through each pane separately using the **scroll bars**, allowing you to compare different sections of the workbook.



**After creating a split, you can click and drag the vertical and horizontal dividers to change the size of each section.*

To remove the split, click the **Split command again.*

Sorting Data

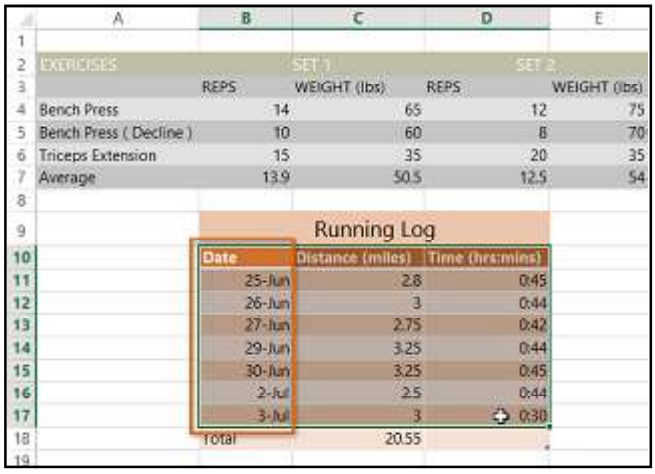
As you add more content to a worksheet, organizing this information becomes especially important. You can quickly reorganize a worksheet by sorting your data. For example, you could organize a list of contact information by last name. Content can be sorted alphabetically, numerically, and in many other ways.

Types of sorting

When sorting data, it is important to first decide if you want the sort to apply to the **entire worksheet** or just a **cell range**.

1. **Sort sheet** organizes all of the data in your worksheet by one column. Related information across each row is kept together when the sort is applied. In the example below, the **Contact Name** column (column **A**) has been sorted to display the names in alphabetical order.

2. **Sort range** sorts the data in a range of cells, which can be helpful when working with a sheet that contains several tables. Sorting a range will not affect other content on the worksheet.



To sort a sheet

In our example, we will sort a T-shirt order form alphabetically by **Last Name** (column C).

1. Select a **cell** in the column you want to sort by. In our example, we will select cell **C2**.

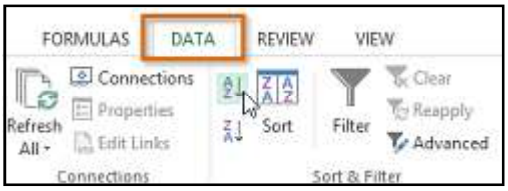
Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method
105	Christiana	Chen	Medium	Cash
105	Melissa	White	Small	Debit Card
105	Esther	Yaron	Small	Check
135	Anisa	Naser	Small	Check
135	Chantal	Weller	Medium	Cash
220-A	Juan	Flores	X-Large	Pending
220-B	Malik	Reynolds	Small	Cash
220-B	Avery	Kelly	Medium	Debit Card
105	Derek	MacDonald	Large	Cash

In our example, we will click the Ascending command.

3. The worksheet will be **sorted** by the selected column. In our example, the worksheet is now sorted by **last name**.

2. Select the **Data** tab on the **Ribbon**, then click the **Ascending** command to sor A to Z.

or the Descending command to Sort Z to A.

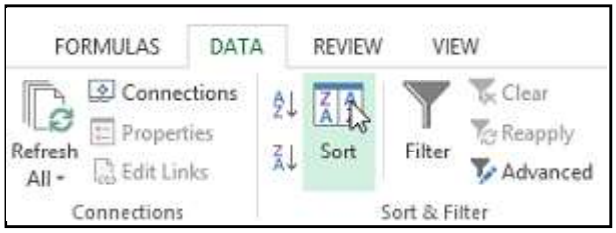


To sort a range:

In our example, we will select a **separate table** in our T-shirt order form to sort the number of shirts that were ordered on different dates.

1. Select the **cell range** you want to sort. In our example, we will select cell range **A13:B17**.

2. Select the Data tab on the Ribbon, then click the Sort command.



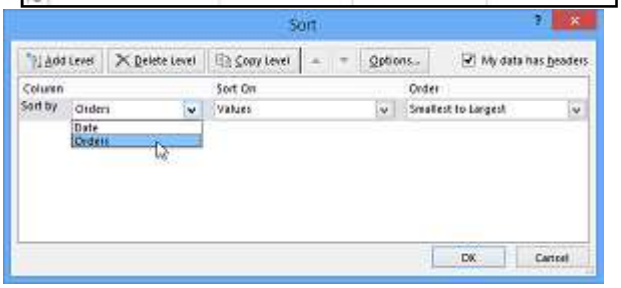
Homeroom #	First Name	Last Name	T-Shirt Size
110	Kris	Ackerman	Large
105	Nathan	Albee	Medium
220-B	Samantha	Bell	Medium
110	Matt	Benson	Medium
105	Christiana	Chen	Medium
110	Gabriel	Del Toro	Medium
220-A	Brigid	Ellison	Small
220-A	Juan	Flores	X-Large
220-B	Tyrese	Hanlon	X-Large

Total Orders By Date	
Date	Orders
Friday, April 05, 2013	4
Friday, April 12, 2013	7
Friday, April 19, 2013	10
Friday, April 26, 2013	6

3. The **Sort** dialog box will appear. Choose the **column** you want to sort by. In our example, we want to sort the data by the number of T-shirt orders, so we will select Orders.

4. Decide the **sorting order** (either ascending or descending). In our example, we will use **Smallest to Largest**.

5. Once you are satisfied with your selection, click **OK**.



6. The cell range will be **sorted** by the selected column. In our example, the Orders column will be sorted from **lowest to highest**. Notice that the other content in the worksheet was not affected by the sort.

**If your data is not sorting properly, double-check your cell values to make sure they are entered into the worksheet correctly. Even a small typo could cause problems when sorting a large worksheet. In the example on next page, we forgot to include a hyphen in cell A18, causing our sort to be slightly inaccurate.*

Custom sorting

Sometimes you may find that the default sorting options can not sort data in the order you need. Fortunately, Excel allows you to create a **custom list** to define your own sorting order.

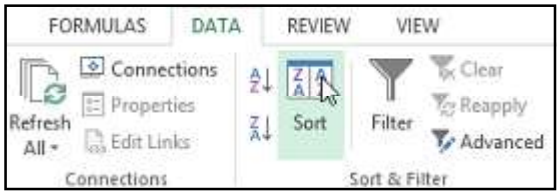
To create a custom sort

In our example below, we want to sort the worksheet by **T-Shirt Size** (column **D**). A regular sort would organize the sizes alphabetically, which would be incorrect. Instead, we will create a custom list to sort from smallest to largest.

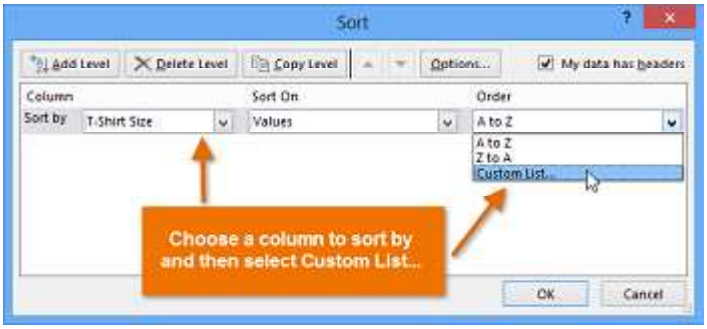
1. Select a **cell** in the column you want to sort by. In our example, we will select cell **D2**.

	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method
2	110	Kris	Ackerman	Large	Money Order
3	105	Nathan	Albee	Medium	Check
4	220-B	Samantha	Bell	Medium	Check
5	110	Matt	Benson	Medium	Money Order
6	105	Christiana	Chen	Medium	Cash
7	110	Gabriel	Del Toro	Medium	Cash
8	220-A	Brigid	Ellison	Small	Cash
9	220-A	Juan	Flores	X-Large	Pending
10	220-B	Tyrese	Hanlon	X-Large	Debit Card

2. Select the **Data** tab, then click the **Sort** command.



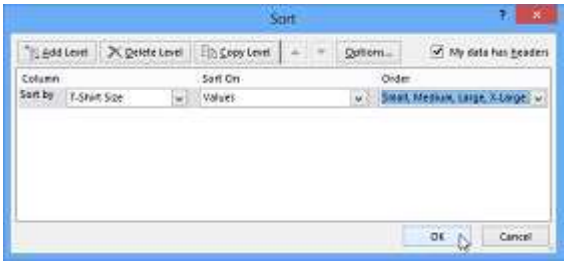
3. The **Sort** dialog box will appear. Select the **column** you want to sort by, then choose **Custom List...** from the **Order** field. In our example, we will choose to sort by **T-Shirt Size**.

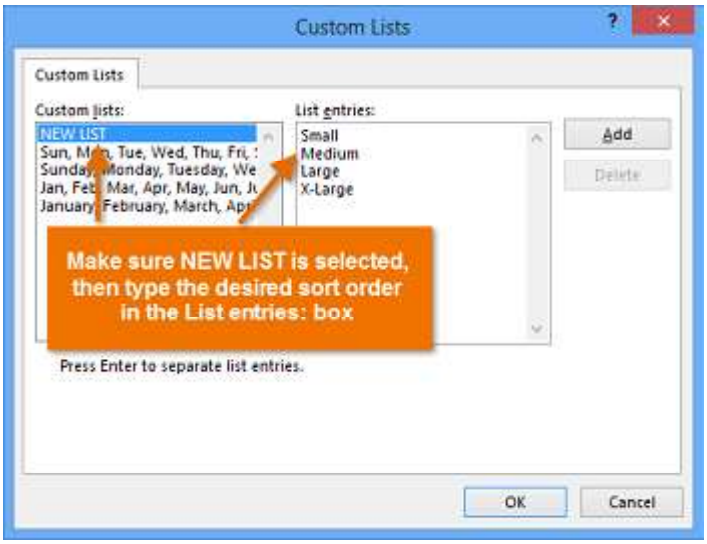


4. The **Custom Lists** dialog box will appear. Select **NEW LIST** from the **Custom Lists**: box.
5. Type the items in the desired custom order in the **List entries: box**. In our example, we want to sort our data by T-shirt size from **smallest** to **largest**, so we will type **Small, Medium, Large**, and **X-Large**, pressing **Enter** on the keyboard after each item.

(see image below)

6. Click **Add** to save the new sort order. The new list will be added to the **Custom lists:** box. Make sure the new list is **selected**, then click **OK**.
7. The **Custom Lists** dialog box will close. Click **OK** in the **Sort** dialog box to perform the custom sort.





8. The worksheet will be **sorted** by the custom order. In our example, the worksheet is now organized by T-shirt size from smallest to largest.

To sort by cell formatting

You can also choose to sort your worksheet by **formatting** rather than cell content. This can be especially helpful if you add color coding to certain cells. In our example below, we will sort by cell color to quickly see which T-shirt orders have outstanding payments.

1. Select a **cell** in the column you want to sort by. In our example, we will select cell **E2**.

	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	220-A	Christopher	Peyton-Gomez	Small	Check Bounced	
3	220-B	Malik	Reynolds	Small	Cash	
4	220-B	Windy	Shaw	Small	Cash	
5	220-B	Michael	Lazar	Small	Cash	
6	135	Anisa	Naser	Small	Pending	
7	220-A	Brigid	Ellson	Small	Cash	
8	105	Melissa	White	Small	Debit Card	
9	105	Esther	Yaron	Small	Check	
10	135	Chantal	Weller	Medium	Cash	

2. Select the **Data tab**, then click the **Sort command**.
3. The **Sort** dialog box will appear. Select the column you want to sort by, then decide whether you will sort by **Cell Color**, **Font Color**, or **Cell Icon** from the **Sort On** field. In our example, we will sort by **Payment Method** (column **E**) and **Cell Color**.

4. Choose a color to sort by from the Order field. In our example, we will choose light red.

5. Click **OK**. In our example, the worksheet is now sorted by **cell color**, with the light red cells on top. This allows us to see which orders still have outstanding payments.

Filtering Data

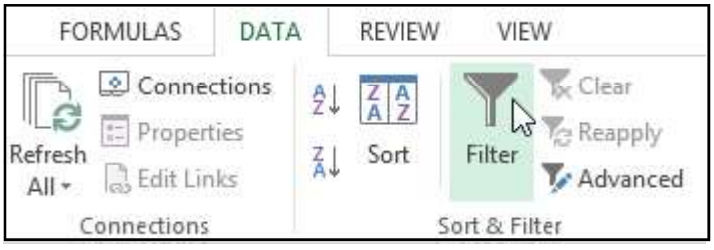
If your worksheet contains a lot of content, it can be difficult to find information quickly. **Filters** can be used to **narrow down** the data in your worksheet, allowing you to view only the information you need.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
2	3000	Camera	Saris Lumina Digital Camera	12-May-13	15-May-13	Shannon Nguyen
3	3005	Camera	Saris Zoom Z-60 Digital Camera	27-Jul-13	06-Aug-13	Sola Shepard
4	3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
8	1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta

To filter data

In our example, we will apply a filter to an equipment log worksheet to display only the laptops and projectors that are available for checkout.

1. In order for filtering to work correctly, your worksheet should include a **header row**, which is used to identify the name of each column. In our example, our worksheet is organized into different columns identified by the header cells in row 1: **ID#, Type, Equipment Detail**, and so on.
2. Select the **Data** tab, then click the **Filter** command.

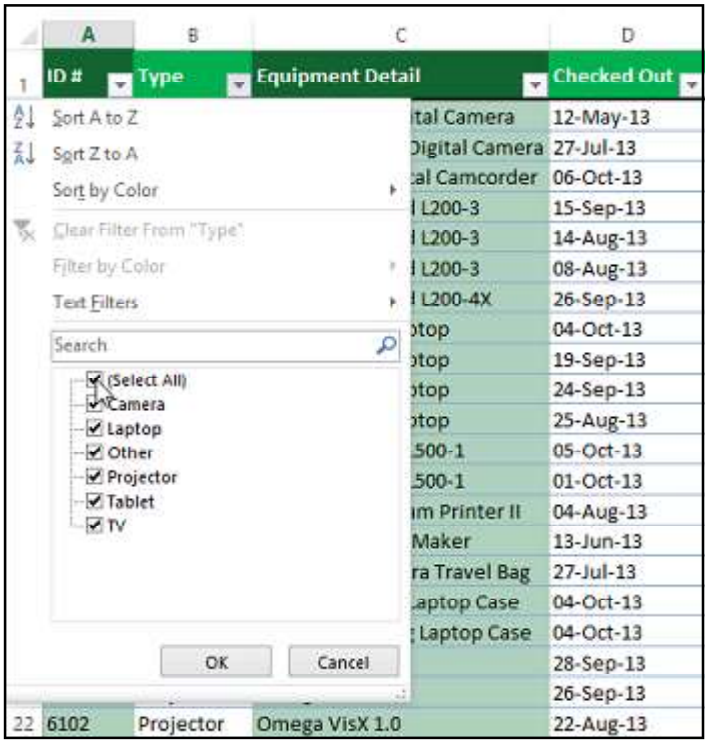


3. A drop-down arrow will appear in the header cell for each column.

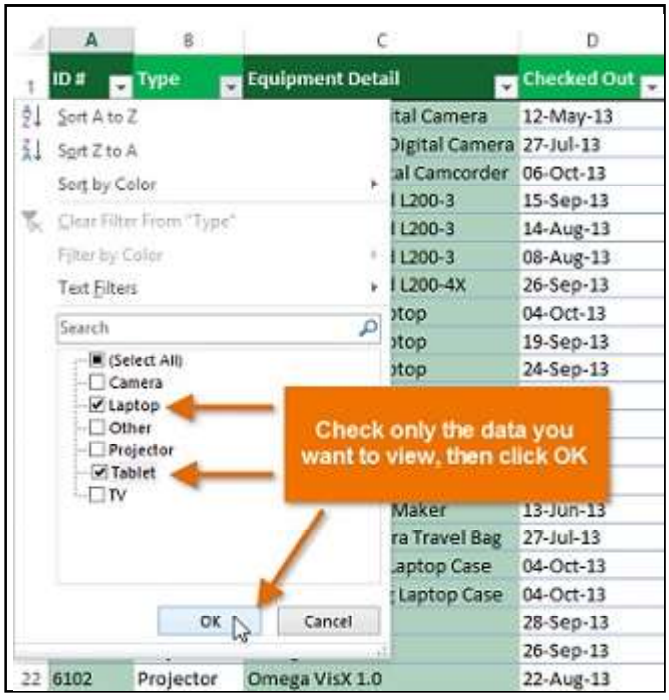
4. Click the **drop-down arrow** for the column you want to filter. In our example, we will filter column **B** to view only certain types of equipment.

5. The **Filter menu** will appear.

6. **Uncheck** the box next to **Select All** to quickly deselect all data.



7. **Check** the boxes next to the data you want to filter, then click **OK**. In this example, we will check **Laptop** and **Tablet** to view only those types of equipment.



8. The data will be **filtered**, temporarily hiding any content that does not match the criteria. In our example, only laptops and tablets are visible.

ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta
1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta
1012	Tablet	Saris SlimTab Pro	29-Sep-13		August Zorn

Filtering options can also be accessed from the **Sort & Filter command on the **Home** tab.*

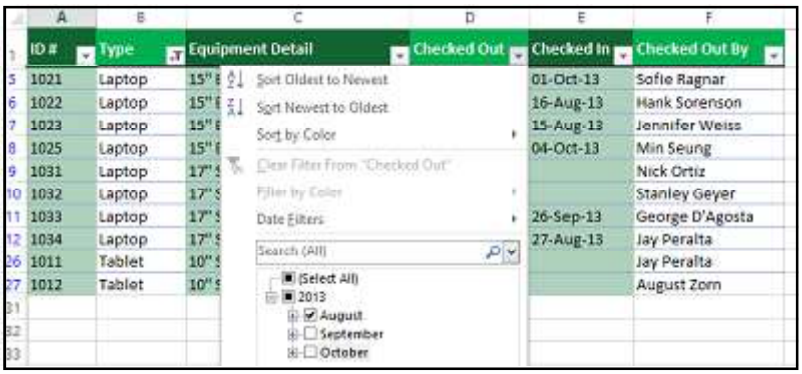
To apply multiple filters

Filters are **cumulative**, which means you can apply **multiple filters** to help narrow down your results. In this example, we have already filtered our worksheet to show laptops and projectors, and we would like to narrow it down further to only show laptops and projectors that were checked out in August.

1. Click the **drop-down arrow** for the column you want to filter. In this example, we will add a filter to **column D** to view information by date.

2. The **Filter menu** will appear.

3. **Check** or **uncheck** the boxes depending on the data you want to filter, then click OK. In our example, we will uncheck everything except for **August**.



4. The new filter will be applied. In our example, the worksheet is now filtered to show only laptops and tablets that were checked out in August.

	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
26	1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta

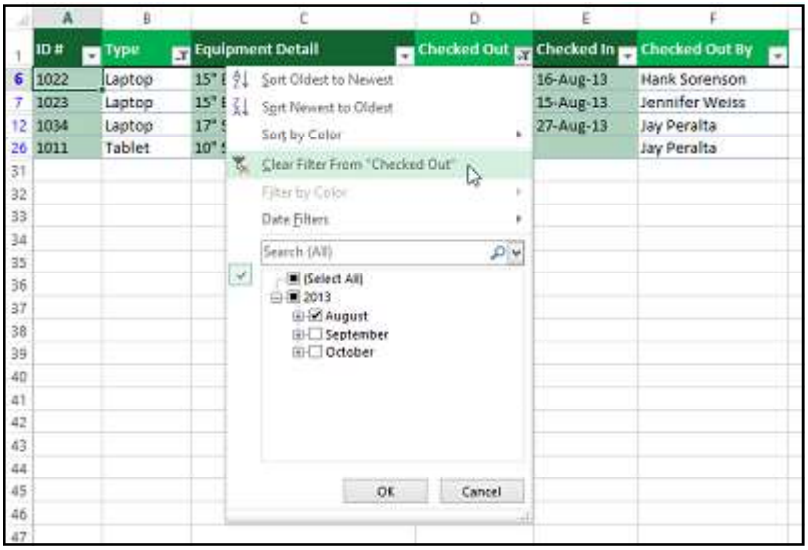
To clear a filter

After applying a filter, you may want to remove—or **clear**—it from your worksheet so you will be able to filter content in different ways.

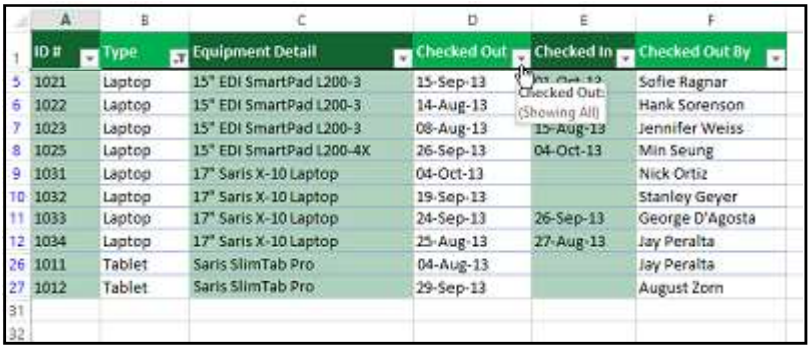
1. Click the **drop-down arrow** for the filter you want to clear. In our example, we will clear the filter in column D.

	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13		Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13		Jennifer Weiss
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-13		Jay Peralta
26	1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta

2. The **Filter menu** will appear.
3. Choose Clear **Filter From [COLUMN NAME]** from the Filter menu. In our example, we will select **Clear Filter From "Checked Out"**.

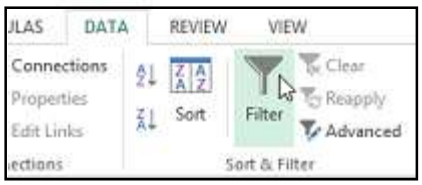


4. The filter will be cleared from the column. The previously hidden data will be displayed.



	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13		Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13		Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
8	1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
26	1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta
27	1012	Tablet	Saris SlimTab Pro	29-Sep-13		August Zorn

To remove all filters from your worksheet, click the **Filter command on the **Data** tab.*



Advanced filtering

If you need to filter for something specific, basic filtering may not give you enough options. Fortunately, Excel includes many **advanced filtering tools**, including **search, text, date**, and **number filtering**, which can narrow your results to help find exactly what you need.

To filter with search

Excel allows you to **search** for data that contains an exact phrase, number, date, and more. In our example, we will use this feature to show only **Saris** brand products in our equipment log.

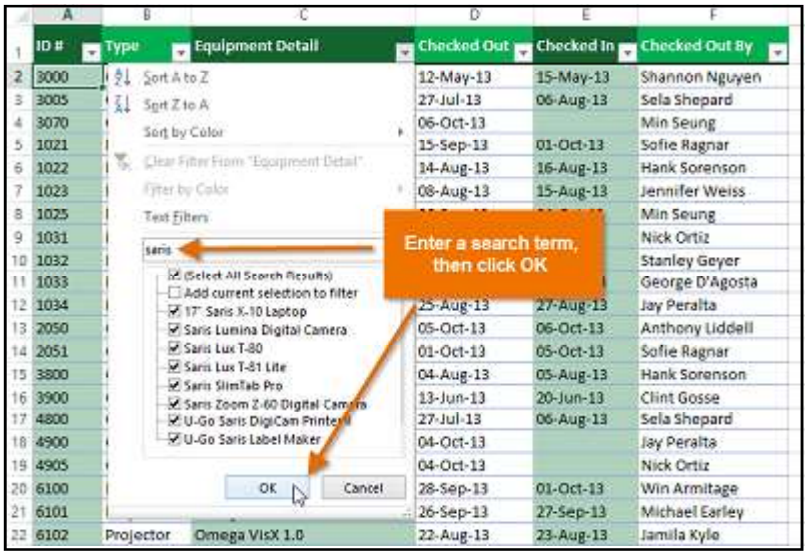
1. Select the **Data** tab, then click the **Filter** command. A **drop-down arrow** will appear in the header cell for each column.

Note: If you have already added filters to your worksheet, you can skip this step.

2. Click the **drop-down arrow** for the column you want to filter. In our example, we will filter column **C**.

ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
3000	Camera	Saris Lumina Digital Camera	12-May-13	15-May-13	Shannon Nguyen
3005	Camera	Saris Zoom Z-60 Digital Camer	27-Jul-13	06-Aug-13	Sela Shepard
3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer

3. The **Filter menu** will appear. Enter a **search term** into the **search box**. Search results will appear automatically below the **Text Filters** field as you type. In our example, we will type saris to find all Saris brand equipment.
4. When you are done, click **OK**.



5. The worksheet will be **filtered** according to your search term. In our example, the worksheet is now filtered to show only Saris brand equipment.

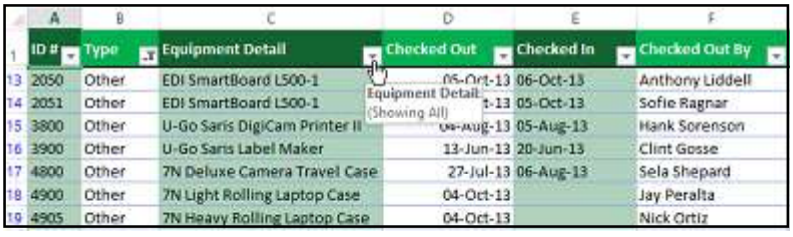
To use advanced text filters

Advanced text filters can be used to display more specific information, such as cells that contain a certain number of characters, or data that excludes a specific word or number. In our example, we have already filtered our worksheet to only show items with other in the Type column, but we had like to exclude any item containing the word case.

1. Select the **Data** tab, then click the **Filter** command. A **drop-down arrow** will appear in the header cell for each column.

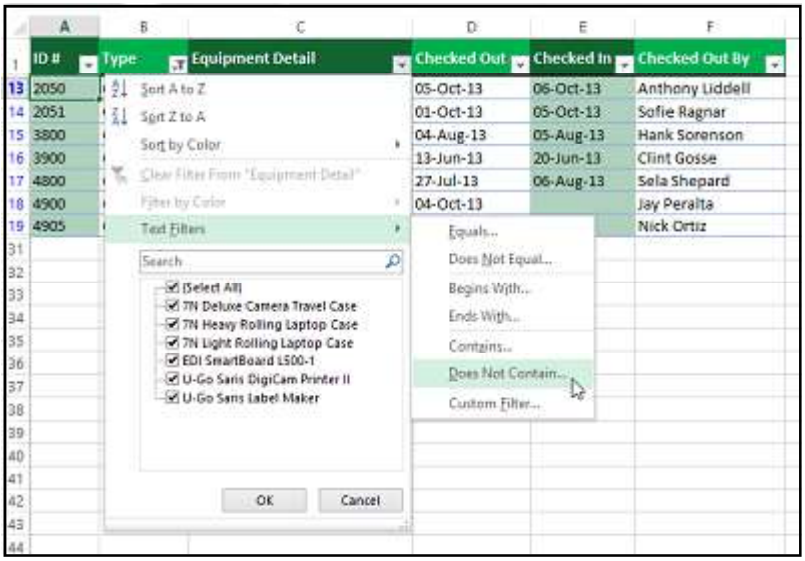
Note: If you have already added filters to your worksheet, you can skip this step.

2. Click the **drop-down arrow** for the column you want to filter. In our example, we will filter column **C**.



ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
2050	Other	EDI SmartBoard L500-1	05-Oct-13	06-Oct-13	Anthony Liddell
2051	Other	EDI SmartBoard L500-1	01-Oct-13	05-Oct-13	Sofie Ragnar
3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse
4800	Other	7N Deluxe Camera Travel Case	27-Jul-13	06-Aug-13	Sela Shepard
4900	Other	7N Light Rolling Laptop Case	04-Oct-13		Jay Peralta
4905	Other	7N Heavy Rolling Laptop Case	04-Oct-13		Nick Ortiz

3. The **Filter menu** will appear. Hover the mouse over Text Filters, then select the desired **text filter** from the drop-down menu. In our example, we will choose **Does Not Contain...** to view data that does not contain specific text.



4. The **Custom AutoFilter** dialog box will appear. Enter the **desired text** to the right of the filter, then click **OK**. In our example, we will type case to exclude any items containing this word.

5. The data will be filtered by the selected text filter. In our example, our worksheet now displays items in the Other category that do not contain the word case.

ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
2050	Other	EDI SmartBoard L500-1	05-Oct-13	06-Oct-13	Anthony Liddell
2051	Other	EDI SmartBoard L500-1	01-Oct-13	05-Oct-13	Sofie Ragnar
3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse

To use advanced date filters

Advanced date filters can be used to view information from a certain time period, such as last year, next quarter, or between two dates. In this example, we will use advanced date filters to view only equipment that has been checked out today.

1. Select the **Data** tab, then click the **Filter** command. A **drop-down arrow** will appear in the header cell for each column.

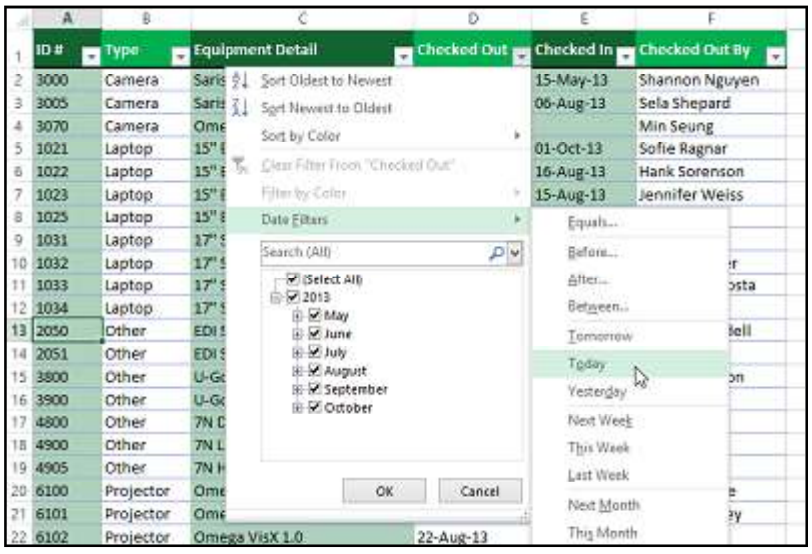
Note: If you have already added filters to your worksheet, you can skip this step.

2. Click the **drop-down arrow** for the column you want to filter. In our example, we will filter **column D** to view only a certain range of dates.

3. The **Filter menu** will appear. Hover the mouse over **Date Filters**, then select the desired date filter from the drop-down menu. In our example, we will select **Today** to view equipment that has been checked out on today's date.

4. The worksheet will be filtered by the selected date filter. In our example, we can now see which items have been checked out today.

**If you are working along with the example file, your results will be different from the images above. If you want, you can change some of the dates so the filter will give more results.*

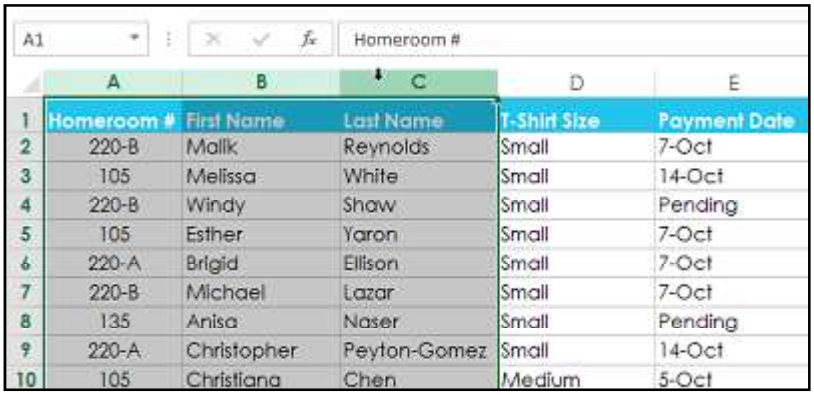


Groups and Subtotals

Worksheets with a lot of content can sometimes feel overwhelming and even become difficult to read. Fortunately, Excel can organize data in **groups**, allowing you to easily **show** and **hide** different sections of your worksheet. You can also summarize different groups using the **Subtotal** command and create an **outline** for your worksheet.

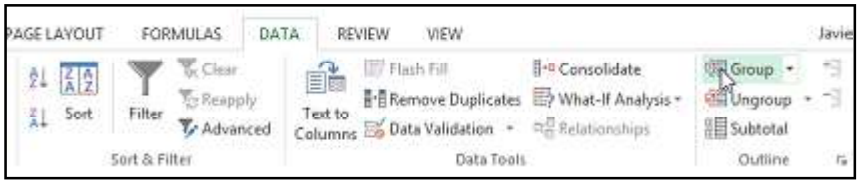
To group rows or columns

1. Select the **rows** or **columns** you want to group. In this example, we will select columns **A, B**, and **C**.



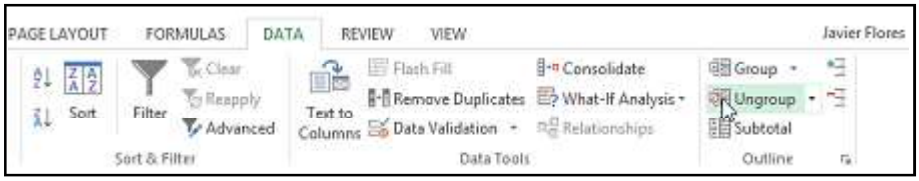
	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Date
2	220-B	Malik	Reynolds	Small	7-Oct
3	105	Melissa	White	Small	14-Oct
4	220-B	Windy	Shaw	Small	Pending
5	105	Esther	Yaron	Small	7-Oct
6	220-A	Brigid	Ellison	Small	7-Oct
7	220-B	Michael	Lazar	Small	7-Oct
8	135	Anisa	Naser	Small	Pending
9	220-A	Christopher	Peyton-Gomez	Small	14-Oct
10	105	Christiana	Chen	Medium	5-Oct

2. Select the **Data** tab on the **Ribbon**, then click the **Group** command.



3. The selected rows or columns will be **grouped**. In our example, columns **A**, **B**, and **C** are grouped together.

To **ungroup data, select the grouped rows or columns, then click the **Ungroup** command.*

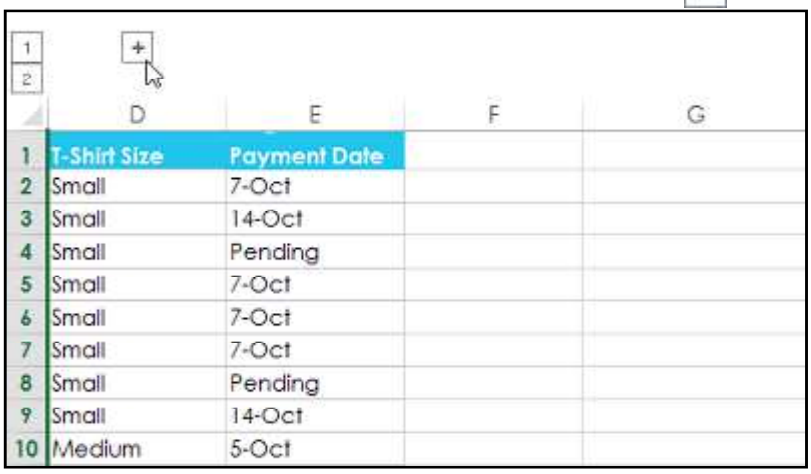


To hide and show groups

1. To hide a group, click the **Hide Detail** [–] button.

	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Date
2	220-B	Malik	Reynolds	Small	7-Oct
3	105	Melissa	White	Small	14-Oct
4	220-B	Windy	Shaw	Small	Pending
5	105	Esther	Yaron	Small	7-Oct
6	220-A	Brigid	Ellison	Small	7-Oct
7	220-B	Michael	Lazar	Small	7-Oct
8	135	Anisa	Naser	Small	Pending
9	220-A	Christopher	Peyton-Gomez	Small	14-Oct
10	105	Christiana	Chen	Medium	5-Oct

2. The group will be **hidden**. To show a hidden group, click the **Show Detail** button [+].



	D	E	F	G
1	T-Shirt Size	Payment Date		
2	Small	7-Oct		
3	Small	14-Oct		
4	Small	Pending		
5	Small	7-Oct		
6	Small	7-Oct		
7	Small	7-Oct		
8	Small	Pending		
9	Small	14-Oct		
10	Medium	5-Oct		

Creating subtotals

The **Subtotal** command allows you to automatically **create groups** and use common functions like SUM, COUNT, and AVERAGE to help **summarize** your data. For example, the **Subtotal** command could help to calculate the cost of office supplies by type from a large inventory order. It will create a hierarchy of groups, known as an **outline**, to help organize your worksheet.

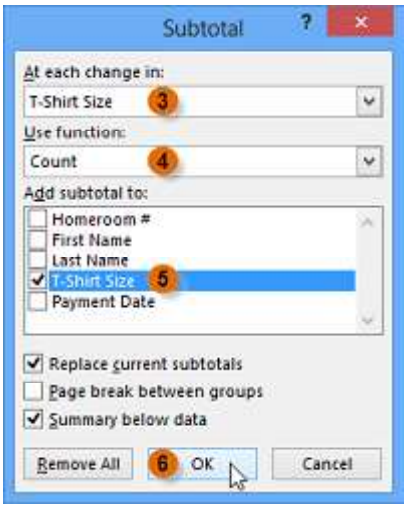
Your data must be correctly **sorted before using the Subtotal command, so you may want to review our previous lesson on **Sorting Data** to learn more.*

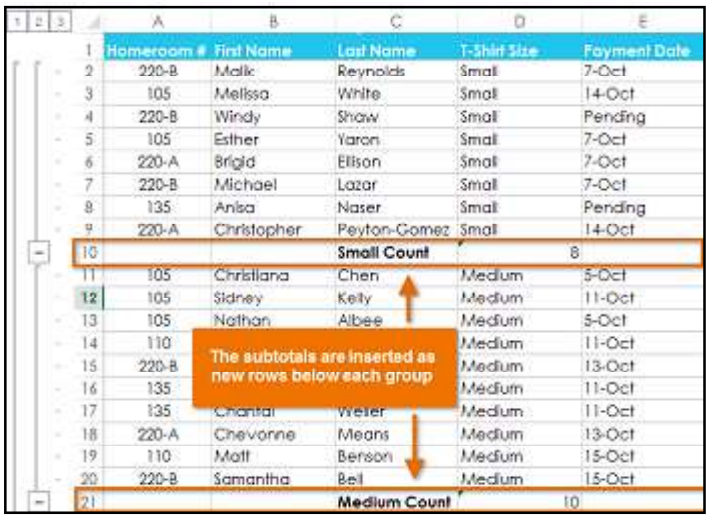
To create a subtotal

In our example, we will use the Subtotal command with a T-shirt order form to determine how many T-shirts were ordered in each size (Small, Medium, Large, and X-Large). This will create an **outline** for our worksheet with a **group** for each T-shirt size and then **count** the total number of shirts in each group.

1. First, **sort** your worksheet by the data you want to subtotal. In this example, we will create a subtotal for each T-shirt size, so our worksheet has been sorted by T-shirt size from smallest to largest.
2. Select the **Data** tab, then click the **Subtotal** command.

3. The **Subtotal** dialog box will appear. Click the drop-down arrow for the **At each change in**: field to select the **column** you want to subtotal. In our example, we will select **T-Shirt Size**.
4. Click the drop-down arrow for the **Use function:** field to select the **function** you want to use. In our example, we will select **COUNT** to count the number of shirts ordered in each size.
5. In the **Add subtotal to:** field, select the **column** where you want the **calculated subtotal** to appear. In our example, we will select **T-Shirt Size**.
6. When you are satisfied with your selections, click **OK**.
7. The worksheet will be **outlined** into **groups**, and the **subtotal** will be listed below each group. In our example, the data is now grouped by T-shirt size, and the number of shirts ordered in that size appears below each group.





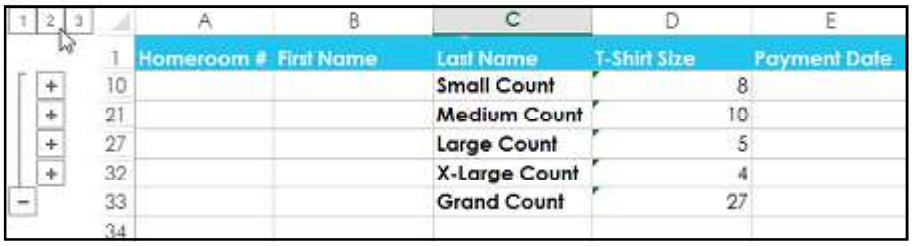
To view groups by level

When you create subtotals, your worksheet it is divided into different **levels**. You can switch between these levels to quickly control how much information is displayed in the worksheet by clicking the **Level** buttons

to the left of the worksheet. In our example, we will switch between all three levels in our outline. While this example contains only three levels, Excel can accommodate up to eight.

1. Click the **lowest level** to display the least detail. In our example, we will select **level 1**, which contains only the **grand count**, or total number of T-shirts ordered.

2. Click the **next level** to expand the detail. In our example, we will select **level 2**, which contains each subtotal row but hides all other data from the worksheet.



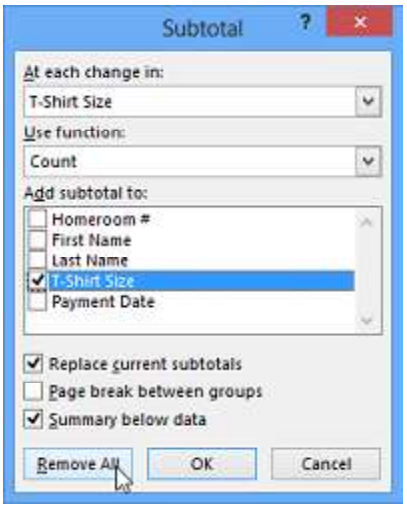
3. Click the **highest level** to view and expand all of your worksheet data. In our example, we will select **level 3**.

You can also use the **Show and **Hide Detail** buttons to show and hide the groups within the outline.*

To remove subtotals

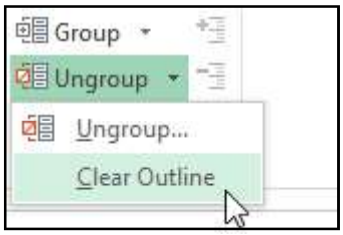
Sometimes you may not want to keep subtotals in your worksheet, especially if you want to reorganize data in different ways. If you no longer want to use subtotaling, you will need **remove it** from your worksheet.

1. Select the **Data** tab, then click the **Subtotal** command. (See image on next page)



2. The **Subtotal** dialog box will appear. Click **Remove All**.
3. All worksheet data will be **ungrouped**, and the subtotals will be **removed**.

To remove all groups without deleting the subtotals, click the **Ungroup command drop-down arrow, then choose **Clear Outline**.*



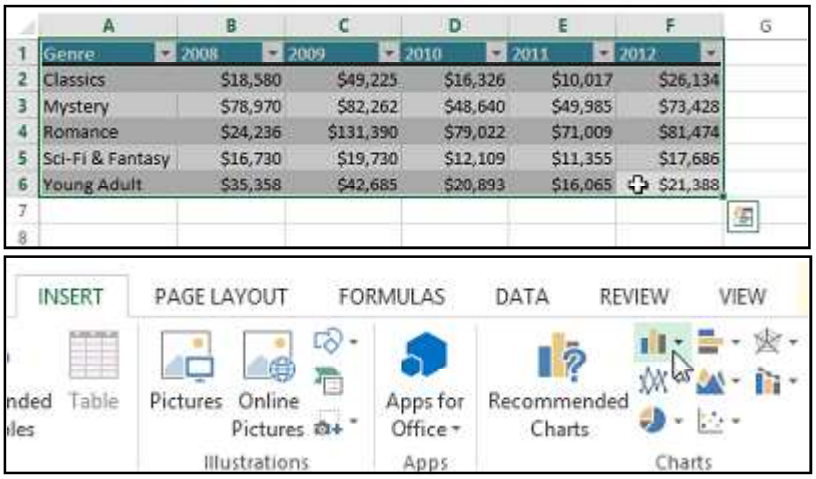
Chart

Understanding charts

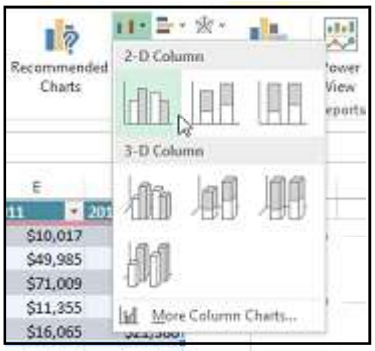
Excel has several different **types of charts**, allowing you to choose the one that best fits your data. In order to use charts effectively, you will need to understand how different charts are used.

To insert a chart

1. Select the **cells** you want to chart, including the **column titles** and **row labels**. These cells will be the **source data** for the chart. In our example, we will select cells A1:F6.

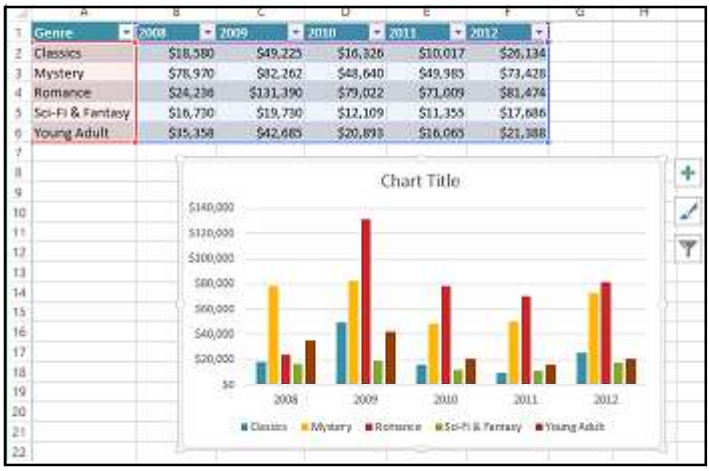


2. From the **Insert** tab, click the desired **Chart** command. In our example, we will select **Column**.



3. Choose the desired **chart type** from the drop-down menu.
4. The selected chart will be inserted in the worksheet.

(See image on next page)

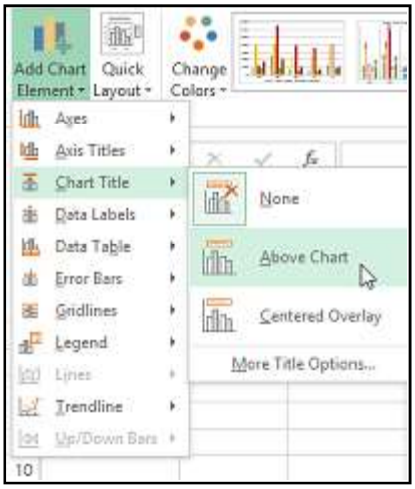


If you are not sure which type of chart to use, the **Recommended Charts command will suggest several different charts based on the source data.*

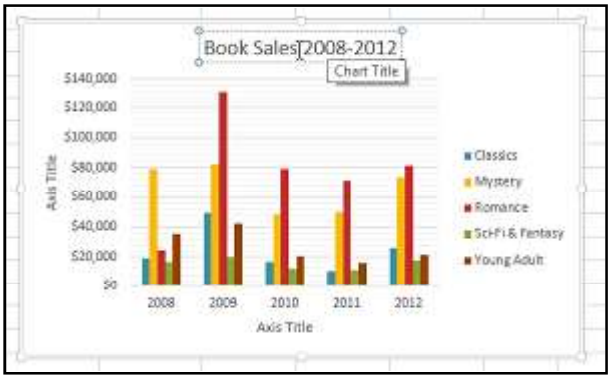
Chart layout and style

After inserting a chart, there are several things you may want to change about the way your data is displayed. It is easy to edit a chart's **layout** and **style** from the **Design** tab.

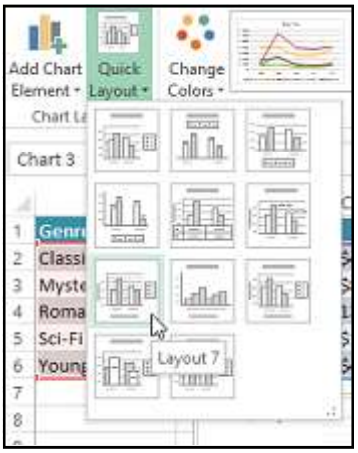
1. Excel allows you to add **chart elements**—such as **chart titles, legends,** and **data labels**—to make your chart easier to read. To add a chart element, click the **Add Chart Element** command on the **Design** tab, then choose the **desired element** from the drop-down menu.



2. To **edit** a chart element, like a **chart title**, simply double-click the **placeholder** and begin typing.

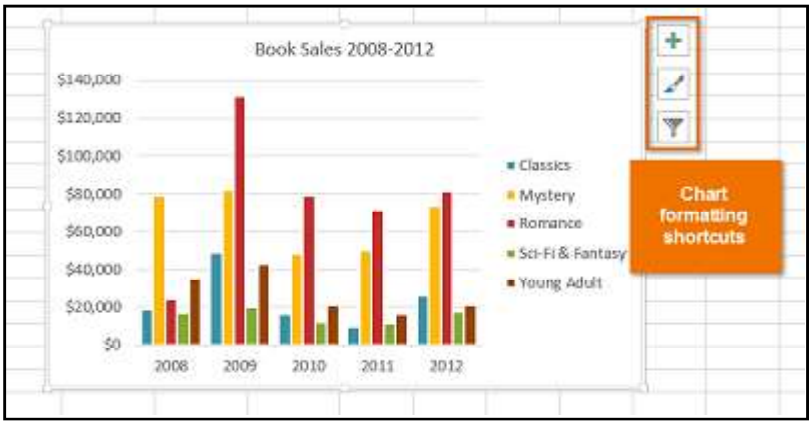


3. If you do not want to add chart elements individually, you can use one of Excel's predefined layouts. Simply click the **Quick Layout** command, then choose the **desired layout** from the drop-down menu.



4. Excel also includes several different **chart styles**, which allow you to quickly modify the look and feel of your chart. To change the chart style, select the **desired style** from the **Chart styles** group.

You can also use the chart formatting shortcut buttons to quickly **add chart elements, change the **chart style**, and **filter** the chart data.*



Other chart options

There are many other ways to customize and organize your charts. For example, Excel allows you to **rearrange** a chart's data, change the **chart type**, and even **move** the chart to a different location in the workbook.

To switch row and column data

Sometimes you may want to change the way charts **group** your data. For example, in the chart below, the Book Sales data are grouped **by year**, with columns for **each genre**. However, we could switch the rows and columns so the chart will group the data **by genre**, with columns for **each year**. In both cases, the chart contains the same data—it is just organized differently.

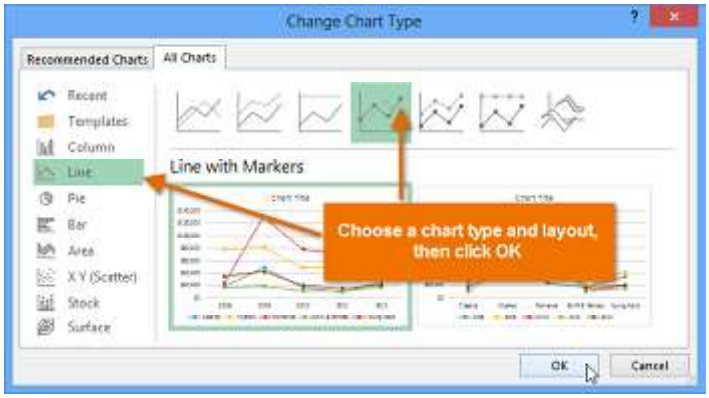
1. Select the **chart** you want to modify.
2. From the **Design** tab, select the **Switch Row/Column** command.

3. The rows and columns will be **switched**. In our example, the data is now grouped by genre, with columns for each year.

To change the chart type

If you find that your data is not well suited to a certain chart, it is easy to switch to a new chart type. In our example, we will change our chart from a **Column** chart to a **Line** chart.

1. From the **Design** tab, click the **Change Chart Type** command.
2. The **Change Chart Type** dialog box will appear. Select a new chart **type** and **layout**, then click **OK**. In our example, we will choose a **Line** chart.



3. The selected chart type will appear. In our example, the line chart makes it easier to see trends in the sales data over time.

To move a chart

Whenever you insert a new chart, it will appear as an object on the same worksheet that contains its source data. Alternatively, you can **move** the chart to a **new worksheet** to help keep your data organized.

1. Select the **chart** you want to move.
2. Click the **Design** tab, then select the **Move Chart** command.

3. The **Move Chart** dialog box will appear. Select the **desired location** for the chart. In our example, we will choose to move it to a **New sheet**, which will create a new worksheet.
4. Click **OK**.

5. The chart will appear in the selected location. In our example, the chart now appears on a new worksheet.

Conditional Formatting

Let us say you have a worksheet with thousands of rows of data. It would be extremely difficult to see patterns and trends just from examining the raw information. Similar to charts and sparklines, **conditional formatting** provides another way to visualize data and make worksheets easier to understand.

	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

Understanding conditional formatting

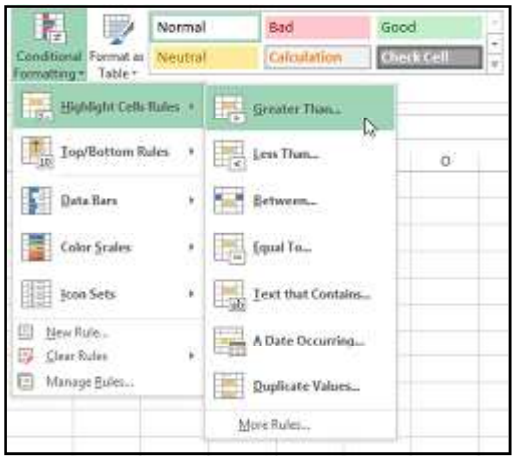
Conditional formatting allows you to automatically apply formatting—such as **colors**, **icons**, and **data bars—**to one or more cells based on the **cell value**. To do this, you will need to create a **conditional formatting rule**. For example, a conditional formatting rule might be: **If the value is less than $2000, color the cell red**. By applying this rule, you had be able to quickly see which cells contain values less than $2000.

To create a conditional formatting rule

In our example, we have a worksheet containing sales data, and we would like to see which sales people are meeting their monthly sales goals. The sales goal is $4000 per month, so we will create a conditional formatting rule for any cells containing a value higher than 4000.

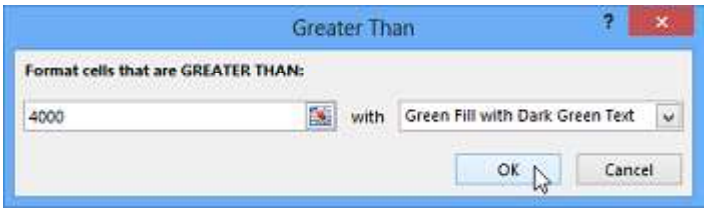
1. Select the **desired cells** for the conditional formatting rule.
2. From the **Home** tab, click the **Conditional Formatting command**. A drop-down menu will appear.
3. Hover the mouse over the **desired conditional formatting** type, then select the **desired rule** from the menu that

appears. In our example, we want to highlight cells that are greater than $4000.



4. A dialog box will appear. Enter the **desired value(s)** into the blank field. In our example, we will enter 4000 as our value.

5. Select a **formatting style** from the drop-down menu. In our example, we will choose **Green Fill with Dark Green** Text, then click **OK**.



6. The conditional formatting will be applied to the selected cells. In our example, it is easy to see which salespeople reached the $4000 sales goal for each month.

	Salesperson	May	June	July	Aug.
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

*You can apply multiple conditional formatting rules to a cell range or worksheet, allowing you to visualize different trends and patterns in your data.

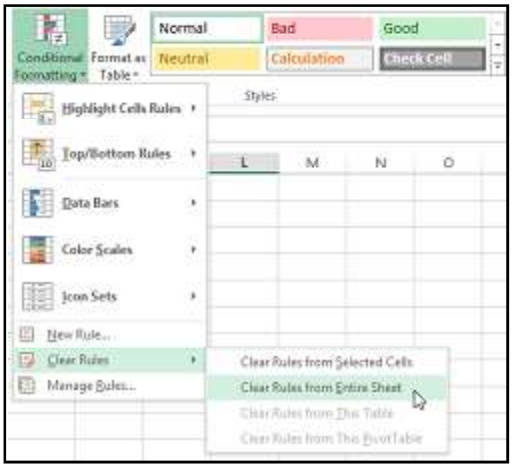
To remove conditional formatting

1. Click the **Conditional Formatting** command. A drop-down menu will appear.

2. Hover the mouse over **Clear Rules**, and choose which rules you want to clear. In our example, we will **select Clear Rules from Entire Sheet** to remove all conditional formatting from the worksheet.

3. The conditional formatting will be removed.

Click **Manage Rules to edit or delete **individual** rules. This is especially useful if you have applied **multiple rules** to a worksheet.*



Conditional formatting presets

Excel has several predefined styles—or **presets**—you can use to quickly apply conditional formatting to your data. They are grouped into three categories:

Data Bars are horizontal bars added to each cell, much like a bar graph.

$3,863.00	$1,117.00	$8,237.00	$8,690.00
$9,355.00	$1,100.00	$10,185.00	$18,749.00
$6,702.00	$2,116.00	$13,452.00	$8,046.00
$4,415.00	$1,089.00	$4,404.00	$20,114.00

Color Scales change the color of each cell based on its value. Each color scale uses a **two- or three-color gradient**. For example, in the **Green - Yellow - Red** color scale, the **highest** values are green, the **average** values are yellow, and the **lowest** values are red.

$3,863.00	$1,117.00	$8,237.00	$8,690.00
$9,355.00	$1,100.00	$10,185.00	$18,749.00
$6,702.00	$2,116.00	$13,452.00	$8,046.00
$4,415.00	$1,089.00	$4,404.00	$20,114.00

Icon Sets add a specific icon to each cell based on its value.

$3,863.00	$1,117.00	$8,237.00	$8,690.00
$9,355.00	$1,100.00	$10,185.00	$18,749.00
$6,702.00	$2,116.00	$13,452.00	$8,046.00
$4,415.00	$1,089.00	$4,404.00	$20,114.00

To use preset conditional formatting

1. Select the **desired cells** for the conditional formatting rule.
2. Click the **Conditional Formatting** command. A drop-down menu will appear.
3. Hover the mouse over the **desired preset**, then choose a **preset style** from the menu that appears.

4. The conditional formatting will be applied to the selected cells.

	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

Pivot Tables

When you have a lot of data, it can sometimes be difficult to analyze all of the information in your worksheet. **PivotTables** can help make your worksheets more manageable by **summarizing** data and allowing you to manipulate it in different ways.

Using PivotTables to answer questions

Let us say we wanted to answer the question: **What is the amount sold by each salesperson?** for the sales data in the example below. Answering this question could be time consuming and difficult—each salesperson appears on multiple rows, and we would need to total all of their different orders individually. We could use the **Subtotal** command to help find the total for each salesperson, but we would still have a lot of data to work with.

	A	B	C	D	E	F
1	Salesperson	Region	Account	Order Amount	Month	
2	Albertson, Kathy	East	29386	$925.00	January	
3	Albertson, Kathy	East	74830	$875.00	February	
4	Albertson, Kathy	East	90099	$500.00	February	
5	Albertson, Kathy	East	74830	$350.00	March	
6	Brennan, Michael	West	82853	$400.00	January	
7	Brennan, Michael	West	72949	$850.00	January	
8	Brennan, Michael	West	90044	$1,500.00	January	
9	Brennan, Michael	West	82853	$550.00	February	
10	Brennan, Michael	West	72949	$400.00	March	
11	Davis, William	South	55223	$235.00	February	
12	Davis, William	South	10354	$850.00	January	
13	Davis, William	South	50192	$600.00	March	
14	Davis, William	South	27589	$250.00	January	
15	Dumlao, Richard	West	67275	$400.00	January	

Fortunately, a **PivotTable** can instantly **calculate** and **summarize** the data in a way that is both easy to read and manipulate. When we are done, the PivotTable will look something like this:

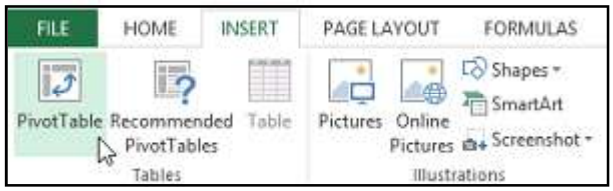
Row Labels	Sum of Order Amount
Albertson, Kathy	$2,650.00
Brennan, Michael	$3,700.00
Davis, William	$1,935.00
Dumlao, Richard	$1,490.00
Flores, Tia	$4,565.00
Post, Melissa	$1,690.00
Thompson, Shannon	$3,160.00
Walters, Chris	$4,375.00
Grand Total	**$23,565.00**

Once you have created a PivotTable, you can use it to answer different questions by rearranging—or **pivoting**—the data. For example, if we wanted to answer the question: **What is the total amount sold in each month?** we could modify our PivotTable to look like this:

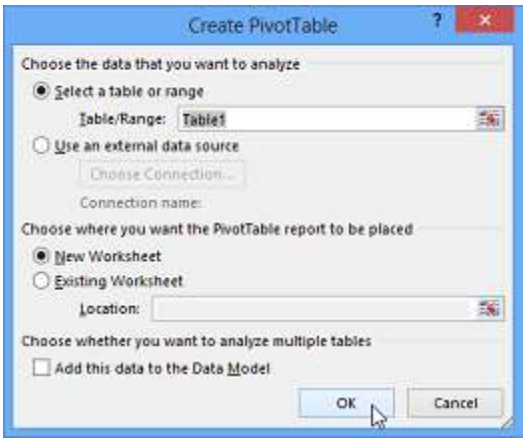
Row Labels	Sum of Order Amount
January	$9,090.00
February	$9,160.00
March	$5,315.00
Grand Total	**$23,565.00**

To create a PivotTable

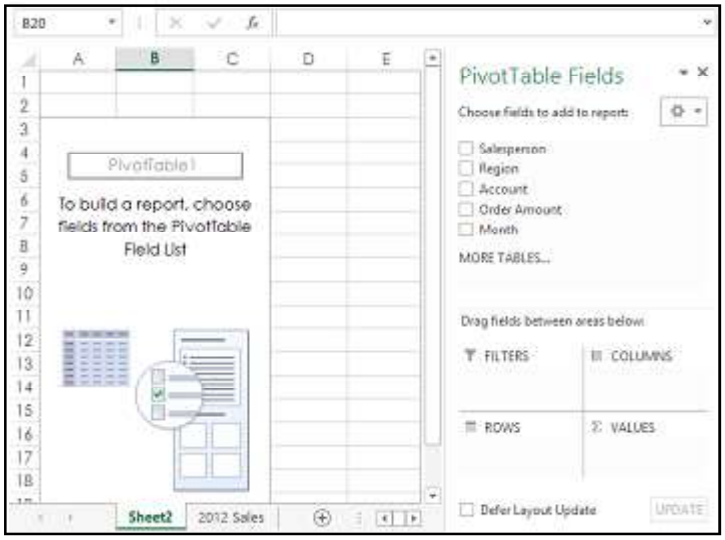
1. Select the **table** or **cells** (including column headers) containing the data you want to use.
2. From the **Insert** tab, click the **PivotTable** command.



3. The **Create PivotTable** dialog box will appear. Choose your settings, then click **OK**. In our example, we will use **Table1** as our source data and place the PivotTable on a **new worksheet**.

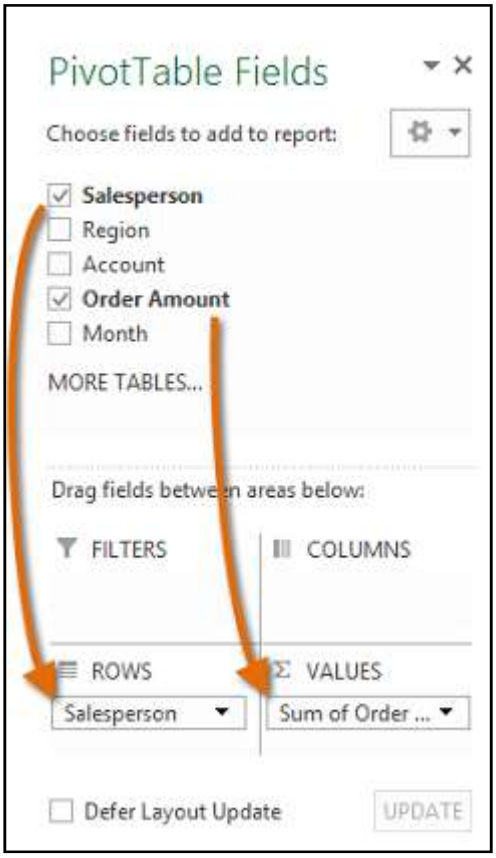


4. A blank **PivotTable** and **Field List** will appear on a new worksheet.

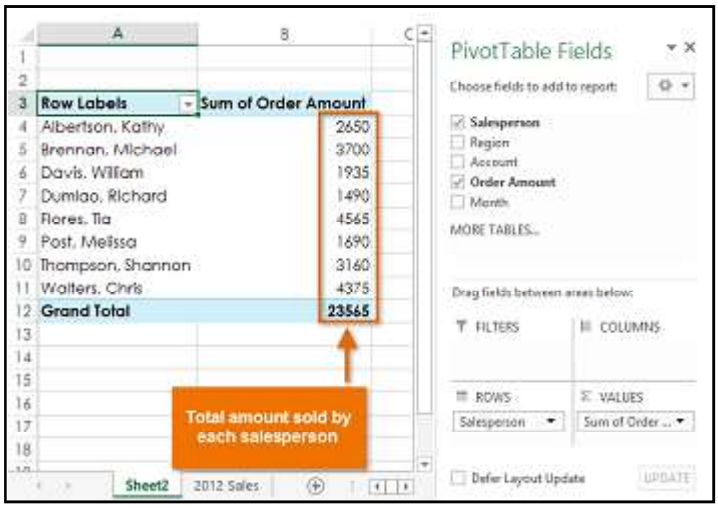


5. Once you create a PivotTable, you will need to decide which **fields** to add. Each field is simply a **column header** from the source data. In the **PivotTable Field List**, check the box for each field you want to add. In our example, we want to know the total **amount** sold by each **salesperson**, so we Will check the **Salesperson** and Order **Amount** fields.

6. The selected fields will be added to one of the four areas below the Field List. In our example, the **Salesperson** field has been added to the **Rows** area, while the **Order Amount** has been added to the **Values** area. Alternatively, you can click, hold, and drag a field to the desired area.



7. The PivotTable will calculate and summarize the selected fields. In our example, the PivotTable shows the amount sold by each salesperson.



**Just like with normal spreadsheet data, you can sort the data in a PivotTable using the Sort & Filter command in the Home tab. You can also apply any type of number formatting you want. For example, you may want to change the Number Format to Currency. However, be aware that some types of formatting may disappear when you modify the PivotTable.*

Row Labels	Sum of Order Amount
Flores, Tia	$4,565.00
Walters, Chris	$4,375.00
Brennan, Michael	$3,700.00
Thompson, Shannon	$3,160.00
Albertson, Kathy	$2,650.00
Davis, William	$1,935.00
Post, Melissa	$1,690.00
Dumlao, Richard	$1,490.00
Grand Total	**$23,565.00**

**If you change any of the data in your source worksheet, the PivotTable will not update automatically. To manually update it, select the PivotTable and then go to Analyze → Refresh*

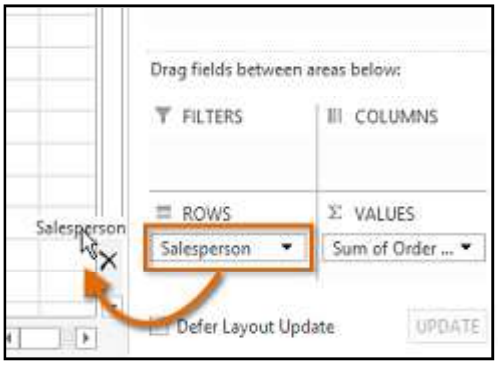
Pivoting data

One of the best things about PivotTables is that they can quickly **pivot**—or reorganize—data, allowing you to look at your worksheet data in different ways. Pivoting data can help you answer **different questions** and even **experiment** with the data to discover new trends and patterns.

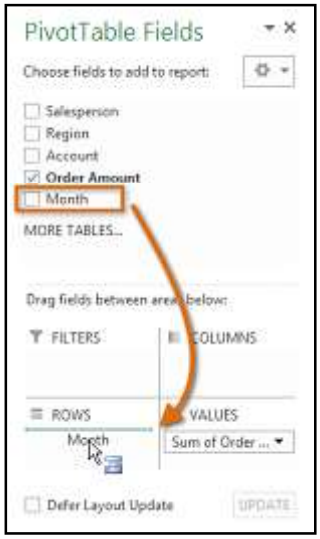
In our example, we used the PivotTable to answer the question: **What is the total amount sold by each salesperson?** But now we would like to answer a new question: **What is the total amount sold in each month?** We can do this by simply changing the field in the **Rows** area.

To change the row

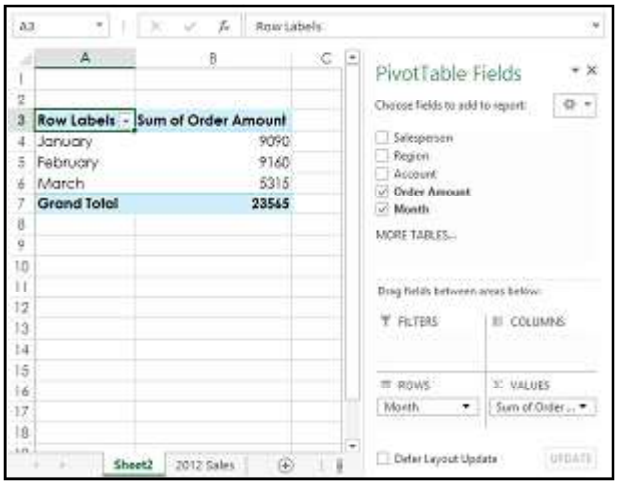
1. Click, hold, and drag any existing **fields** out of the **Rows** area. The field will disappear.



2. Drag a new field from the **Field List into** the **Rows** area. In our example, we will use the **Month** field.



3. The PivotTable will adjust—or pivot—to show the new data. In our example, it now shows the total order amount for each month.



To add columns

So far, our PivotTable has only shown **one column** of data at a time. In order to **show multiple columns**, you will need to add a field to the Columns area.

1. Drag a field from the **Field List** into the **Columns** area. In our example, we will use the **Region** field.

2. The PivotTable will include multiple columns. In our example, there is now a column for each region.

Sum of Order Amount	Column Labels				
Row Labels	East	North	South	West	Grand Total
January	1690	1140	3110	3150	9090
February	1950	1720	3975	1515	9160
March	700	300	3790	525	5315
Grand Total	4340	3160	10875	5190	23565

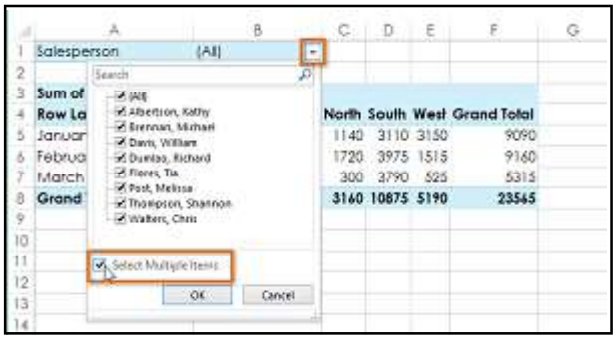
Filters

Sometimes you may want focus on just a certain section of your data. **Filters** can be used to **narrow down** the data in your PivotTable, allowing you to view only the information you need.

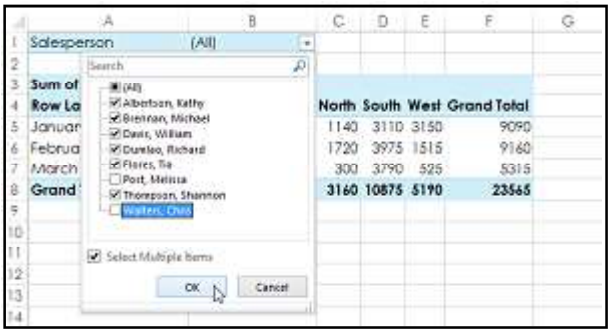
To add a filter

In our example, we will filter out certain salespeople to determine how they affect the total sales.

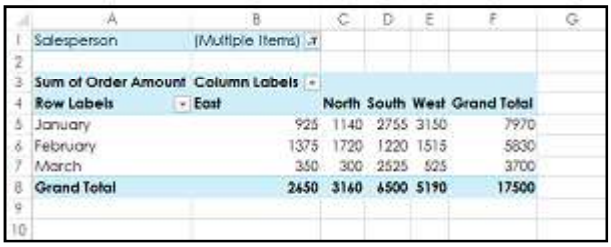
1. Drag a field from the **Field List** to the **Filters** area. In this example, we will use the **Salesperson** field.
2. The filter will appear above the PivotTable. Click the drop-down arrow, then check the box next to Select Multiple Items.



3. **Uncheck** the box for any items you do not want to include in the PivotTable. In our example, we will uncheck the boxes for a few different salespeople, then click **OK**.



4. The PivotTable will adjust to reflect the changes.



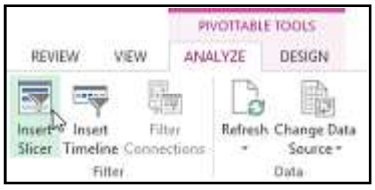
Salesperson	(Multiple Items)				
Sum of Order Amount	Column Labels				
Row Labels	East	North	South	West	Grand Total
January	925	1140	2755	3150	7970
February	1375	1720	1220	1515	5830
March	350	300	2525	525	3700
Grand Total	2650	3160	6500	5190	17500

Slicers

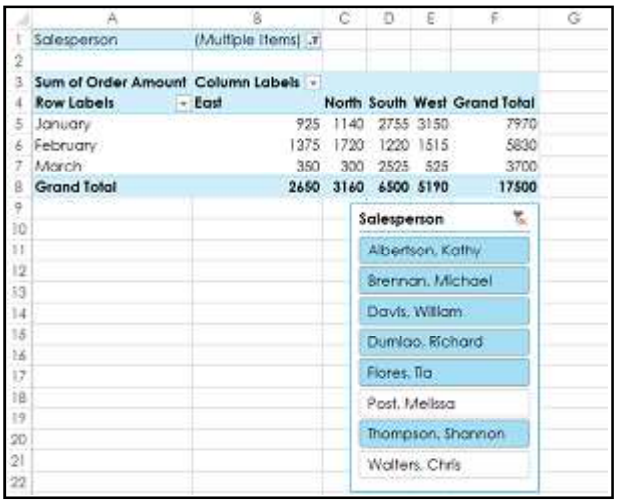
Slicers make filtering data in PivotTables even easier. Slicers are basically just **filters**, but they are easier and faster to use, allowing you to instantly pivot your data. If you frequently filter your PivotTables, you may want to consider using slicers instead of filters.

To add a slicer

1. Select any cell in the PivotTable.
2. From the **Analyze** tab, click the **Insert Slicer** command.
3. A dialog box will appear. Select the desired **field**. In our example, we will select **Salesperson**, then click **OK**.



4. The slicer will appear next to the PivotTable. Each selected item will be highlighted in **blue**. In the example below, the slicer contains a list of all salespeople, and six of them are currently selected.



Salesperson	(Multiple Items)				
Sum of Order Amount	Column Labels				
Row Labels	East	North	South	West	Grand Total
January	925	1140	2755	3150	7970
February	1375	1720	1220	1515	5830
March	350	300	2525	525	3700
Grand Total	2650	3160	6500	5190	17500

Salesperson
Albertson, Kathy
Brennan, Michael
Davis, William
Dumlao, Richard
Flores, Tia
Post, Melissa
Thompson, Shannon
Walters, Chris

5. Just like **filters**, only **selected** items are used in the PivotTable. When you **select** or **deselect** items, the PivotTable will instantly reflect the changes. Try selecting different items to see how they affect the PivotTable. Press and hold the **Ctrl** key on your keyboard to select multiple items from a slicer.

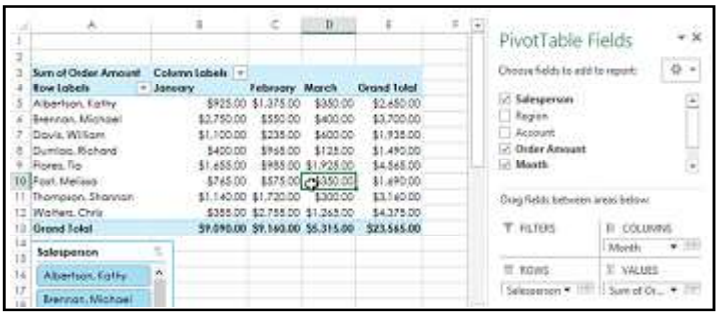
**You can also click the Filter icon in the top-right corner to select all items from the slicer at once.*

PivotCharts

PivotCharts are like regular charts, except they display data from a **PivotTable**. Just like regular charts, you will be able to select a **chart type, layout,** and **style** that will best represent the data.

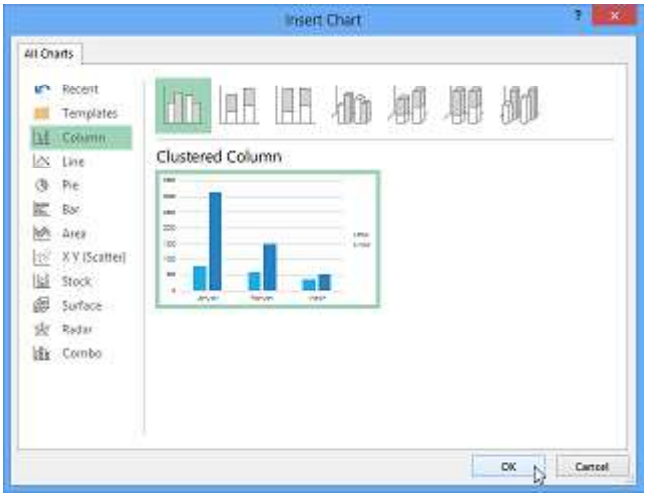
To create a PivotChart

In this example, our PivotTable is showing each person's total sales per month. We will use a PivotChart so we can see the information more clearly.



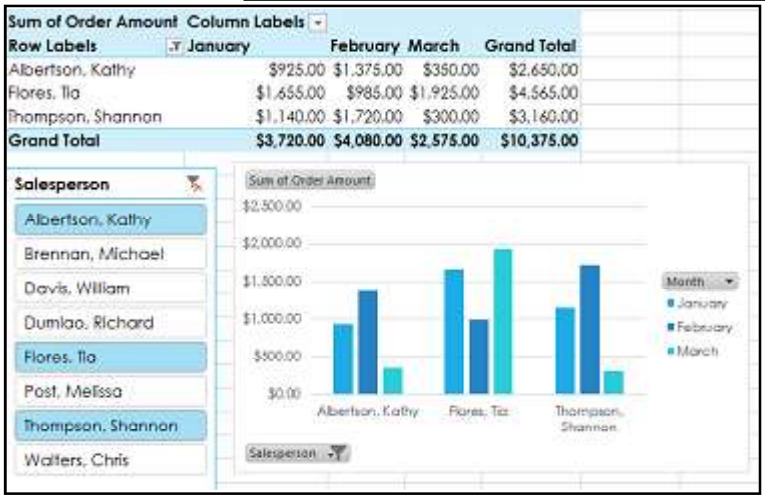
1. Select any cell in your PivotTable.
2. From the Insert tab, click the PivotChart command.

3. The **Insert Chart** dialog box will appear. Select the desired **chart type** and **layout**, then click **OK**.



4. The PivotChart will appear.

Try using slicers or **filters to change the data that is displayed. The PivotChart will automatically adjust to show the new data.*



What-If Analysis

Excel includes many powerful tools to perform complex mathematical calculations, including **what-if analysis**. This feature can help you **experiment** and **answer questions** with your data, even when the data is incomplete. In this lesson, you will learn how to use a what-if analysis tool called **Goal Seek**.

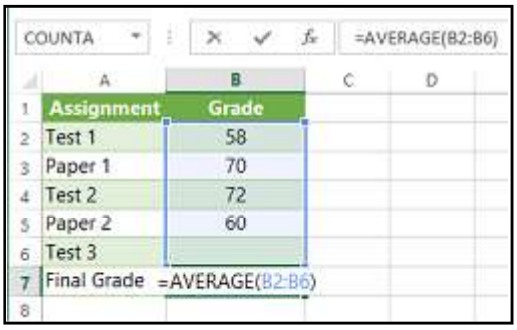
Goal Seek

Whenever you create a formula or function in Excel, you put various parts together to calculate a **result**. **Goal Seek** works in the opposite way: It lets you start with the **desired result**, and it calculates the **input value** that will give you that result. We will use a few examples to show how to use Goal Seek.

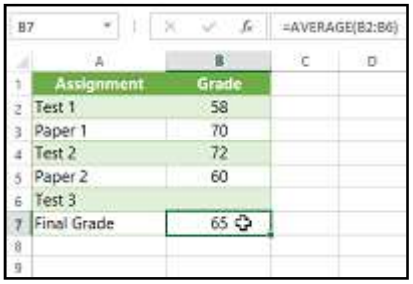
To use Goal Seek (example 1)

Let us say you are enrolled in a class. You currently have a grade of 65, and you need at least a 70 to pass the class. Luckily, you have one final assignment that might be able to raise your average. You can use Goal Seek to find out **what grade you need on the final assignment** to pass the class.

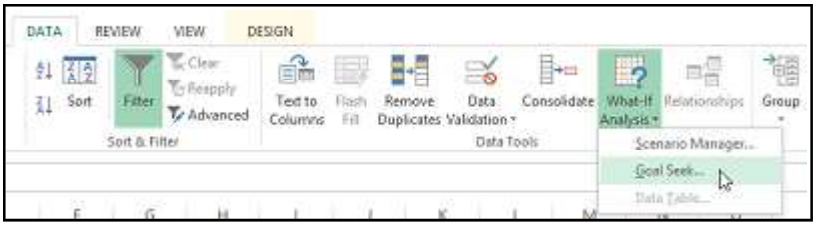
In the image below, you can see that the grades on the first four assignments are **58, 70, 72**, and **60**. Even though we do not know what the fifth grade will be, we can write a formula—or function—that calculates the final grade. In this case, each assignment is weighted equally, so all we have to do is average all five grades by typing **=AVERAGE(B2:B6)**. Once we use Goal Seek, cell B6 will show us the minimum grade we will need to make on that assignment.



1. Select the cell whose value you want to change. Whenever you use Goal Seek, you will need to select a cell that already contains a **formula** or **function**. In our example, we will select cell **B7** because it contains the formula **=AVERAGE(B2:B6)**.



2. From the **Data** tab, click the **What-If Analysis** command, then select **Goal Seek** from the drop-down menu.



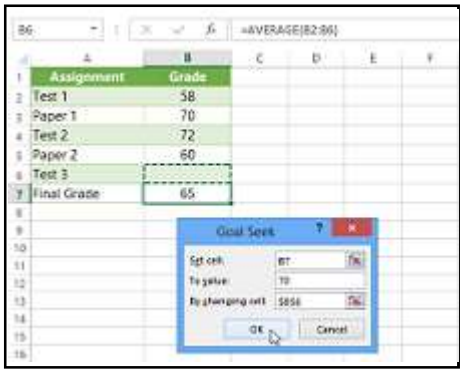
3. A dialog box will appear with three fields:

Set cell: This is the cell that will contain the desired result. In our example, cell **B7** is already selected.

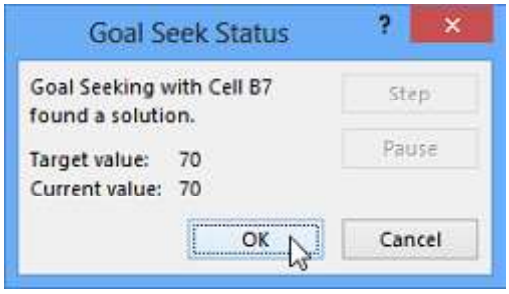
To value: This is the desired result. In our example, we will enter **70** because we need to earn at least that to pass the class.

By changing cell: This is the cell where Goal Seek will place its answer. In our example, we will select cell **B6** because we want to determine the grade we need to earn on the final assignment.

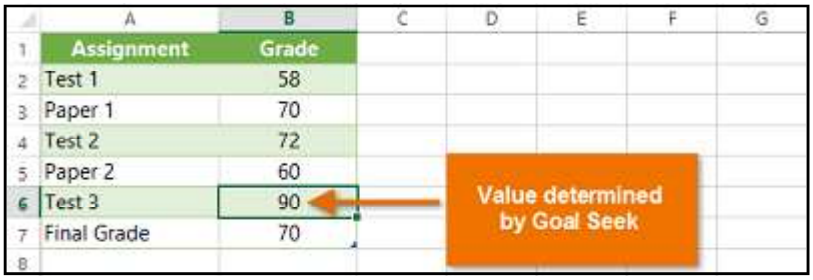
4. When you are done, click **OK**.



5. The dialog box will tell you if Goal Seek was able to find a solution. Click **OK**.



6. The result will appear in the specified cell. In our example, Goal Seek calculated that we will need to score at least a 90 on the final assignment to earn a passing grade.



To use Goal Seek (example 2):

Let us say you are planning an event and want to invite as many people as you can without exceeding a budget of $500. We can use Goal Seek to figure out how many people to invite. In our example below, cell **B4** contains the formula **=B1+B2*B3** to calculate the total cost of a room reservation, plus the cost per person.

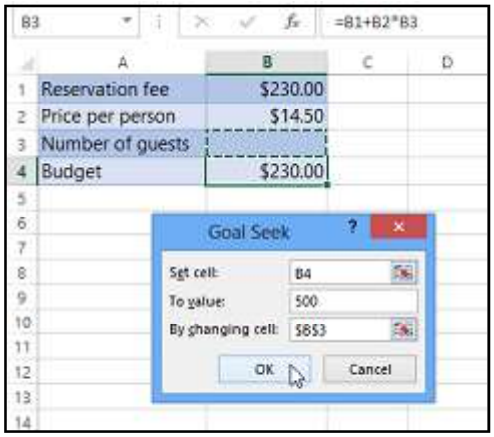
1. Select the cell whose value you want to change. In our example, we will select cell **B4**.

2. From the **Data** tab, click the **What-If Analysis** command, then select **Goal Seek** from the drop-down menu.
3. A dialog box will appear with three fields:

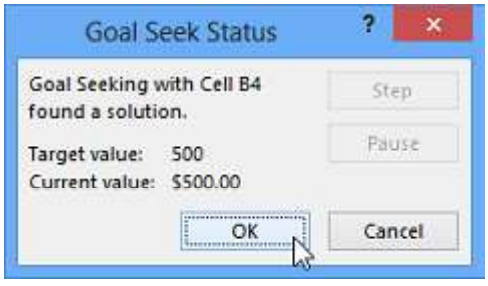
Set cell: This is the cell that will contain the desired result. In our example, cell **B4** is already selected.

To value: This is the desired result. In our example, we will enter **500** because we only want to spend $500.

By changing cell: This is the cell where Goal Seek will place its answer. In our example, we will select cell **B3** because we want to know how many guests we can invite without spending more than $500.



4. When you are done, click OK.
5. The dialog box will tell you if Goal Seek was able to find a solution. Click **OK**.
6. The result will appear in the specified cell. In our example, Goal Seek calculated the answer to be approximately 18.62. In this case, our final answer needs to be a whole number, so we will need to round the answer up or down. Because rounding up would cause us to exceed our budget, we will round down to 18 guests.



As you can see in the example above, some situations will require the answer to be a whole number. If Goal Seek gives you a decimal, you will need to **round up or down, depending on the situation.*

Other types of what-if analysis

For more advanced projects, you may want to consider the other types of what-if analysis: **scenarios** and **data tables**. Instead of starting from the desired result and working backward, like Goal Seek, these options allow you to test multiple values and see how the results change.

Scenarios A Scenario is a set of values that Excel saves and can substitute automatically on your worksheet. You can create and save different groups of values as scenarios and then switch between these scenarios to view the different results.

If several people have specific information that you want to use in scenarios, you can collect the information in separate workbooks, and then merge the scenarios from the different workbooks into one.

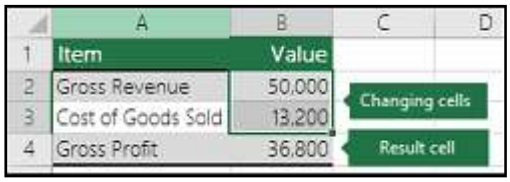
After you have all the scenarios you need, you can create a scenario summary report that incorporates information from all the scenarios.

Scenarios are managed with the **Scenario Manager wizard** from the **What-If Analysis** group on the **Data** tab.

Creating scenarios

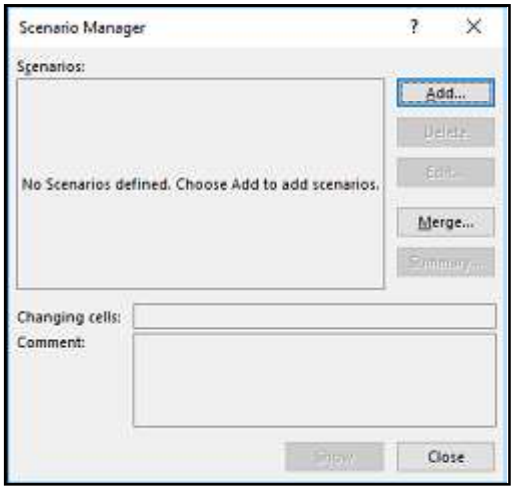
Suppose that you want to create a budget but are uncertain of your revenue. By using scenarios, you can define different possible values for the revenue and then switch between scenarios to perform what-if analyses.

For example, assume that your worst case budget scenario is Gross Revenue of $50,000 and Costs of Goods Sold of $13,200, leaving $36,800 in Gross Profit. To define this set of values as a scenario, you first enter the values in a worksheet, as shown in the following illustration

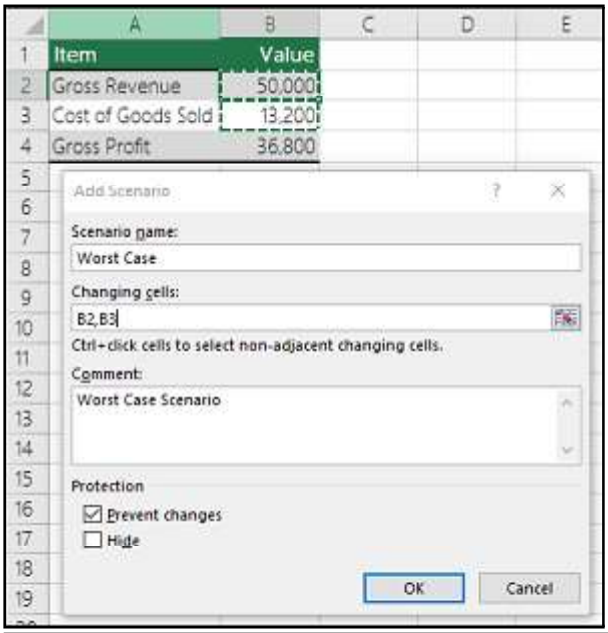


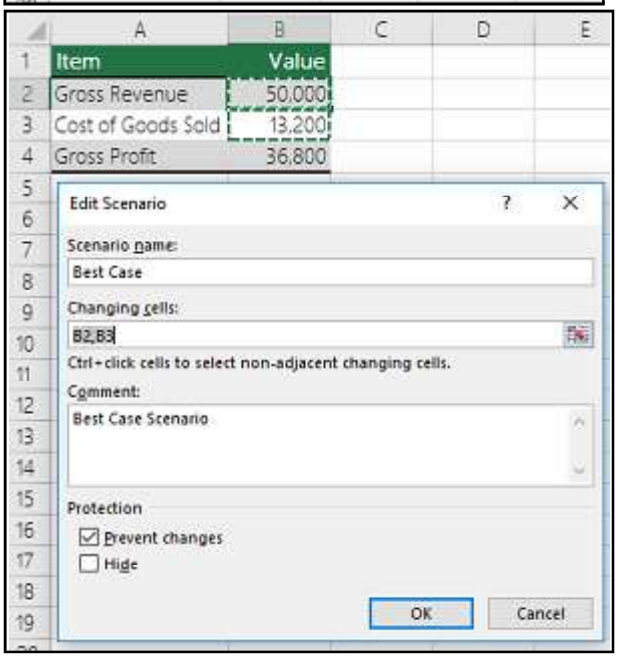
The **Changing cells** have values that you type in, while the **Result cell** contains a formula that is based on the Changing cells (in this illustration cell B4 has the formula **=B2-B3**).

You then use the **Scenario Manager** dialog to save these values as a scenario. Goto the **Data tab > What-If Analysis > Scenario Manager > Add**.



In the **Scenario name** dialog, name the scenario Worst Case, and specify that cells B2 and B3 are the values that change between scenarios. If you select the **Changing cells** on your worksheet before adding a Scenario, the Scenario Manager will automatically insert the cells for you, otherwise you can type them by hand, or use the cell selection dialog to the right of the Changing cells dialog box.





Note: Although this example contains only two changing cells (B2 and B3), a scenario can contain up to 32 cells.

Protection – You can also protect your scenarios, so in the Protection section check the options that you want, or uncheck them if you do not want any protection.

1. Select **Prevent Changes** to prevent editing the scenario when the worksheet is protected.
2. Select Hidden to prevent displaying the scenario when the worksheet is protected.

Note: These options apply only to protected worksheets. For more information about protected worksheets, see Protect a worksheet

Now suppose that your Best Case budget scenario is Gross Revenue of $150,000 and Costs of Goods Sold of $26,000, leaving $124,000 in Gross Profit. To define this set of values as a scenario, you create another scenario, name it Best Case, and supply different values for cell B2 (150,000) and cell B3 (26,000). Because Gross Profit (cell B4) is a formula - the difference between Revenue (B2) and Costs (B3) - you do not change cell B4 for the Best Case scenario.

After you save a scenario, it becomes available in the list of scenarios that you can use in your what-if analyses. Given the values in the preceding illustration, if you chose to display the Best Case scenario, the values in the worksheet would change to resemble the following illustration:

	A	B
1	Item	Value
2	Gross Revenue	150,000
3	Cost of Goods Sold	26,000
4	Gross Profit	124,000

Merging scenarios

There may be times when you have all the information in one worksheet or workbook needed to create all the scenarios that you want to consider. However, you may want to gather scenario information from other sources. For example, suppose you are trying to create a company budget. You might collect scenarios from different departments, like Sales, Payroll, Production, Marketing, and Legal, because each of these sources has different information to use in creating the budget.

You can gather these scenarios into one worksheet by using the **Merge** command. Each source can supply as many or as few changing cell values as you want. For example, you might want each department to supply expenditure projections, but only need revenue projections from a few.

When you choose to merge, the Scenario Manager will load a **Merge Scenario wizard,** which will list all of the worksheets in the active workbook, as well as listing any other workbooks you might have open at the time. The wizard will tell you how many scenarios you have on each source worksheet you select.

When you collect different scenarios from various sources, you should use the same cell structure in each of the workbooks. For example, Revenue might always go in cell B2 and Expenditures might always go in cell B3. If you use

different structures for the scenarios from various sources, it can be difficult to merge the results.

Data tables

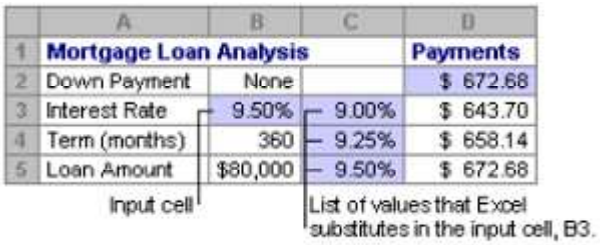
A data table is a range of cells in which you can change values in some of the cells and come up with different answers to a problem. A good example of a data table employs the PMT function with different loan amounts and interest rates to calculate the affordable amount on a home mortgage loan. Experimenting with different values to observe the corresponding variation in results is a common task in data analysis.

Data table basics

Create either one-variable or two-variable data tables, depending on the number of variables and formulas that you need to test.

One-variable data tables

Use a one-variable data table if you want to see how different values of one variable in one or more formulas will change the results of those formulas. For example, you can use a one-variable data table to see how different interest rates affect a monthly mortgage payment by using the PMT function. You enter the variable values in one column or row, and the outcomes are displayed in an adjacent column or row.



	A	B	C	D
1	**Mortgage Loan Analysis**			**Payments**
2	Down Payment	None		$ 672.68
3	Interest Rate	9.50%	9.00%	$ 643.70
4	Term (months)	360	9.25%	$ 658.14
5	Loan Amount	$80,000	9.50%	$ 672.68

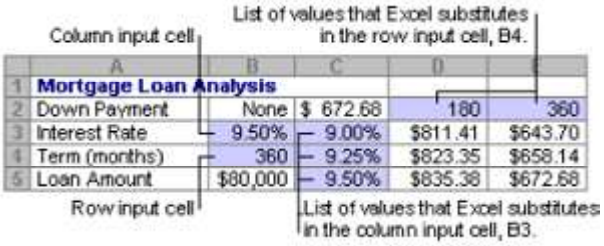
Input cell

List of values that Excel substitutes in the input cell, B3.

In the following illustration, cell D2 contains the payment formula, **=PMT(B3/12,B4,-B5)**, which refers to the input cell B3.

Two-variable data tables

Use a two-variable data table to see how different values of two variables in one formula will change the results of that formula. For example, you can use a two-variable data table to see how different combinations of interest rates and loan terms will affect a monthly mortgage payment. In the following illustration, cell C2 contains the payment formula, **=PMT(B3/12,B4,-B5)**, which uses two input cells, B3 and B4.



Column input cell

List of values that Excel substitutes in the row input cell, B4.

	A	B	C	D	E
1	**Mortgage Loan Analysis**				
2	Down Payment	None	$ 672.68	180	360
3	Interest Rate	9.50%	9.00%	$811.41	$643.70
4	Term (months)	360	9.25%	$823.35	$658.14
5	Loan Amount	$80,000	9.50%	$835.38	$672.68

Row input cell

List of values that Excel substitutes in the column input cell, B3.

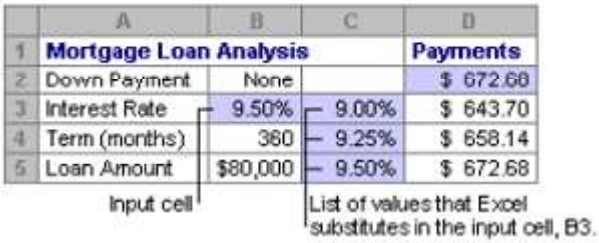
Create a one-variable data table

A one-variable data table contain its input values either in a single column (column-oriented), or across a row (row-oriented). Any formula in a one-variable data table must refer to only one input cell.

Follow these steps

1. Type the list of values that you want to substitute in the input cell—either down one column or across one row. Leave a few empty rows and columns on either side of the values.
2. Do one of the following

If the data table is *column-oriented* (your variable values are in a column), type the formula in the cell one row above and one cell to the right of the column of values. This one-variable data table is column-oriented, and the formula is contained in cell D2.



	A	B	C	D
1	**Mortgage Loan Analysis**			**Payments**
2	Down Payment	None		$ 672.68
3	Interest Rate	9.50%	9.00%	$ 643.70
4	Term (months)	360	9.25%	$ 658.14
5	Loan Amount	$80,000	9.50%	$ 672.68

Input cell

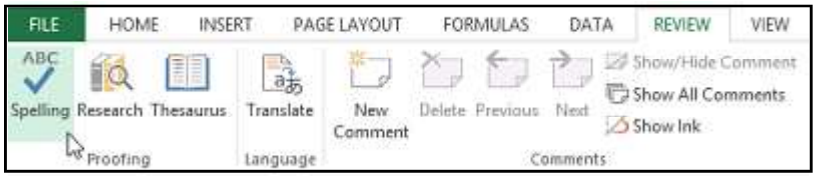
List of values that Excel substitutes in the input cell, B3.

If you want to examine the effects of various values on other formulas, enter the additional formulas in cells *to the right* of the first formula.
If the data table is *row-oriented* (your variable values are in a row), type the formula in the cell one column to the left of the first value and one cell below the row of values.
If you want to examine the effects of various values on other formulas, enter the additional formulas in cells below the first formula.
3. Select the range of cells that contains the formulas and values that you want to substitute. In the figure above, this range is C2:D5.
4. On the **Data** tab, click **What-If Analysis? > Data Table** (in the **Data Tools** group or **Forecast** group of Excel 2013).
5. Do one of the following:
If the data table is column-oriented, enter the cell reference for the input cell in the **Column input cell field**. In the figure above, the input cell is B3.
If the data table is row-oriented, enter the cell reference for the input cell in the **Row input cell** field.
Note: *After you create your data table, you might want to change the format of the result cells. In the figure, the result cells are formatted as currency.*

Add a formula to a one-variable data table
Formulas that are used in a one-variable data table must refer to the same input cell.
Follow these steps
1. Do either of these:
If the data table is column-oriented, enter the new formula in a blank cell to the right of an existing formula in the top row of the data table.
If the data table is row-oriented, enter the new formula in a empty cell below an existing formula in the first column of the data table.
2. Select the range of cells that contains the data table and the new formula.
3. On the **Data** tab, click **What-If Analysis > Data Table** (in the **Data Tools** group or Forecast group of Excel 2013).
4. Do either of the following:
If the data table is column-oriented, enter the cell reference for the input cell in the **Column input cell** box.
If the data table is row-oriented, enter the cell reference for the input cell in the **Row input cell** box.

Finalizing and Protecting Workbooks

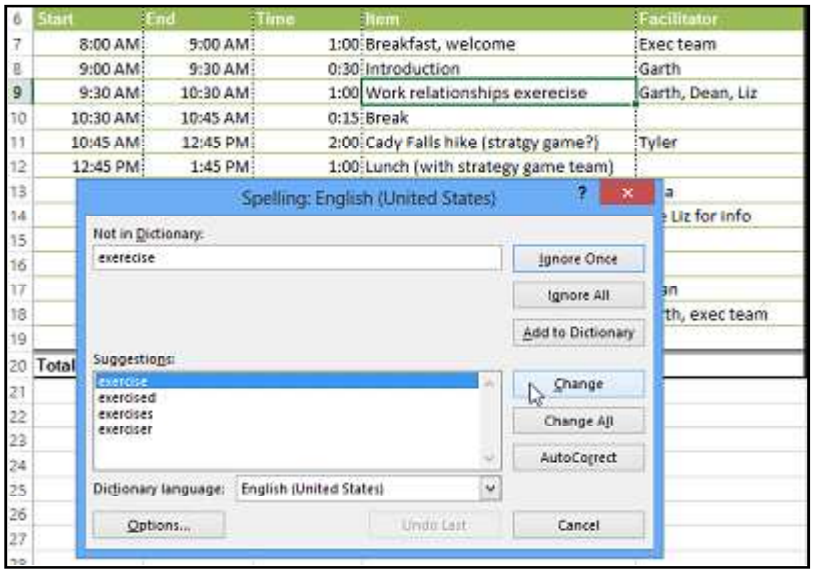
Before sharing a workbook, you will want to make sure it does not include any spelling errors or information you want to keep private. Fortunately, Excel includes several tools to help **finalize** and **protect** your workbook, including **Spell Check** and the **Document Inspector.**



To use Spell Check:

1. From the **Review** tab, click the **Spelling** command.

2. The **Spelling** dialog box will appear. For each spelling error in your worksheet, Spell Check will try to offer **suggestions** for the correct spelling. Choose a suggestion, then click Change to correct the error.



3. A dialog box will appear after reviewing all spelling errors. Click **OK** to close Spell Check.

**If there are no appropriate suggestions, you can also enter the correct spelling manually.*

Ignoring spelling "errors"

Spell Check **is not always correct**. It will sometimes mark certain words as incorrect, even if they are spelled correctly. This often happens with names, which may not be in the dictionary. You can choose **not** to change a spelling "error" using one of three options:

Ignore Once: This will skip the word without changing it.

Ignore All: This will skip the word without changing it and also skip all other instances of the word in your worksheet.

Add: This adds the word to the dictionary so it will never appear as an error again. Make sure the word is spelled correctly before choosing this option.

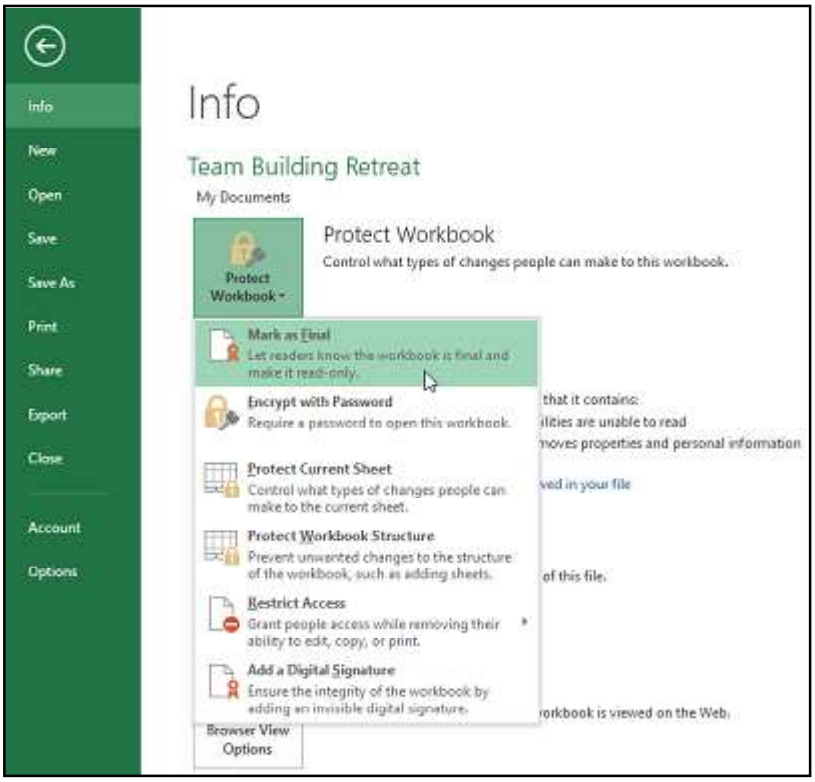
Protecting your workbook

By default, anyone with access to your workbook will be able to open, copy, and edit its content unless you protect it. There are many different ways to protect a workbook, depending on your needs.

To protect your workbook

1. Click the **File** tab to access **Backstage** view.
2. From the **Info** pane, click the **Protect Workbook** command.
3. In the drop-down menu, choose the option that best suits your needs. In our example, we will select **Mark as Final**. Marking your workbook as final is a good way to discourage others from editing the workbook, while the other options

give you even more control if needed.



4. A dialog box will appear, prompting you to save. Click **OK**.

5. Another dialog box will appear. Click **OK**.

6. The workbook will be marked as final.

Marking a workbook as final will not prevent someone from editing it. If you want to prevent people from editing it, you can use the **Restrict Access option instead.*

FUNCTION Shortcut keys for MS Excel 2013

F1	Help for excel
F2	Makes a cell in editable mode. This is helpful if we want to paste only text from a website
F5	This will populate the 'Go To' box. Enter the cell address (B23, HH1234...) you want to enter and that particular cell will be highlighted.
F7	Spell checker – can be used to verify spellings of the text in an excel workbook
F8	Once pressed 'extended selection' is enabled. Just by pressing arrow key we can select required area. Provides Same features as 'SHIFT' is pressed while selecting using arrow key
F9	Recalculate all the formulas in all workbook. Especially useful if we are using UDF in excel sheet
F12	Gives the 'Save As' dialog box. Very helpful in saving excel file with some other name/ format (same feature as ALT+F2)

SHIFT Shortcut keys for MS Excel 2013

Shift +F2	Insert or edit comment. It is difficult to edit comment if 'show comment' is disabled in an excel sheet. 'shift+F2' will helps to edit the comment easily
Shift +F4	Helps to repeat the last find without opening the find window.
Shift + F8	Once Pressed 'Add to selection' is enabled. Just click the cells you want to select and all the selection is preserved. Provides same feature as 'CONTROL' key while doing multiple selection
Shift + F9	Recalculation of excel formulas only on the active sheet of excel
Shift +F11	Inserts a new worksheet in to the active workbook

SHIFT + ENTER	Data entered is stored to the current cell and selection moves to the next cell Above it
SHIFT + TAB	Data entered is stored to the current cell and selection moves to the next cell Left to it
SHIFT + SPACE BAR	Select current row

ALT Shortcut keys for MS Excel 2013

ALT+F2	Display 'Save As' dialog box. Very helpful in saving excel file with some other name/ format (same feature as F12)
ALT+F4	This will close all the workbooks. It will prompt if contains any unsaved data. If we want to close only active workbook, we should use CTRL+F4.
ALT +F8	Populated the macro window. We can choose any macro and run it. Very helpful running macro
ALT +F11	Open Visual Basic editor. We can write Macros using VBA code in visual basic editor
ALT + ENTER	Enter a new row in a single cell. Very helpful if we want to write data paragraph by paragraph
ALT + 'Page Up'	Moves the active area of a sheet to right side by a screen width
ALT + 'Page Down'	Moves the active area of a sheet to Left side by a screen width

CONTROL Shortcut keys for MS Excel 2013

CTRL + F1	Used to hide / open the Ribbon in excel 2013.
CTRL + F2	Print preview. CTRL +P for printing active page
CTRL +F3	Opens the name manager. This short cut is not commonly used as we deal rarely with name managers
CTRL+F4	Close the active workbook. Same as ALT+F4 (This is a windows shortcut for closing any open window)

CTRL+F6	Moves to next active excel workbook. Same functionality as ALT+ TAB (a windows shortcut for choosing between all active windows)CTRL+F6 selects only excel windows
CTRL+F9	Minimize the active workbook. (excel window will be opened and only the active workbook will be minimized)
CTRL+F10	Maximize the active workbook. (excel window will be opened and only the active workbook will be maximized)
CTRL +0	Hide the columns in current selection. Very helpful shortcut while designing an excel template
CTRL +1	Pop ups the formatting window. Very helpful in formatting a selected cell.
CTRL +2	Helpful in making a cell BOLD (same feature as CTRL+B)
CTRL+8	If we are using grouping for certain rows, There will be an outline near row header. CTRL+8 can be used to view/hide this outline
CTRL+9	Hides rows in current selection. Column equivalent of same feature is CTRL+0
CTRL+SHIFT+0	Used to unhide the columns if any under selected columns (hiding columns can be done by CTRL+0)
CTRL+SHIFT+8	Can be used to identify current region around the active cell. I don't know what is the use of this shortcut
CTRL+SHIFT+9	Used to unhide the rows if any under selected rows (hiding rows can be done by CTRL+9)
CTRL+A	Select all the cells in the excel sheet
CTRL+B	Convert selected text in to bold letter
CTRL+C	Copy selected content into clipboard
CTRL+D	Fill the content of the top most row in to all the selected cells below that respectively.
CTRL+F	Display the Find box in an excel sheet

CTRL+G	Display the 'GO TO' Box. Can be used to navigate to any cell by providing cell address. Same functionality as F5 and very helpful in navigating in a big excel sheet
CTRL+H	Display the 'Find and Replace' Dialog box in active sheet
CTRL +I	Convert selected text in to italic letter
CTRL+K	Display the hyperlink window. Whenever a cell needs to be hyperlinked to other sheets/workbook, This shortcut becomes handy
CTRL+N	Can be used to Create a new workbook
CTRL+O	Opens the 'open dialog' Box. Can be used to open an existing workbook by browsing to that file
CTRL+P	Fire a Print command of the active sheet .CTRL+F2 gives a Print preview and CTRL+P prints the file
CTRL+S	Saves the active workbook. Very helpful in preventing data modifications while working on a file
CTRL+V	Paste the data from the clipboard to selected sheet
CTRL+W	Close the active workbook window.
CTRL+X	Cut selected cells. This will cut all features of excel cell including formatting and formula
CTRL +Y	To Undo an Undo made by "
CTRL+Z	To undo the last update made to an excel file
CTRL + ;	Enters Date stamp to the cell. Only Date is entered.
CTRL + SHIFT + ;	Enters Time to the cell. Only Time is entered.
CTRL + SHIFT + ENTER	Used to enter array formula. Not used in normal cases. Used only when dealing with array formulas.
CTRL + Delete	Delete the entire content to the right of current selection. Very Helpful in deleting row by row instead of deleting character by character

CTRL + /	Used to find out the current range of array around active cell. Not useful if arrays are not used and very helpful while working with a sheet containing arrays and array formulas
CTRL + [	Highlights the cells directly referred by the formula in the selected cell. Same functionality as the 'Trace Precedents' feature in the 'Formula' Tab. 'Trace Precedents' is more useful than this shortcut since it is giving 'arrows' to trace the connections
CTRL + SHIFT + [	Highlights the cells directly or indirectly referred by the formula in the selected cell. Same functionality as Double clicking the 'Trace Precedents' feature in the 'Formula' Tab. 'Trace Precedents' is more useful than this shortcut since it is giving 'arrows' to trace the connections to any levels
CTRL +]	Highlights the cells directly referred to the formula in the selected cell. Same functionality as the 'Trace Dependents' feature in the 'Formula' Tab. 'Trace Dependents' is more useful than this shortcut since it is giving 'arrows' to trace the connections
CTRL + SHIFT + [	Highlights the cells directly or indirectly referred to the formula in the selected cell. Same functionality as Double clicking the 'Trace Precedents' feature in the 'Formula' Tab. 'Trace Precedents' is more useful than this shortcut since it is giving 'arrows' to trace the connections to any levels
CTRL + SPACE BAR	Select current column
CTRL + SHIFT + END	Extends the selection to the last used cell on the worksheet From active cell
CTRL + SHIFT + ARROW	Extends the selection to a used cell before a blank cell on the worksheet From active cell
CTRL + SHIFT + 7	Apply border to selected data. Useful shortcut while designing templates in excel
CTRL + SHIFT + -	Remove border to selected data. Useful shortcut while designing templates in excel

CTRL + TAB	Moves to next workbook window. Same functionality as CTRL+F6
CTRL + ARROW	Moves to the next non empty cell in that direction. Same feature as END + Arrow keys
CTRL + 'Page Up'	Move to next sheet in same workbook
CTRL + 'Page Down'	Move to previous sheet in same workbook
CTRL + ~	Displays the Formula in the cell instead of result of the formula

Model Practice Set

1. What is the intersection of a column and a row on a worksheet called?
A. Column
B. Value
C. Address
D. Cell

2. What type of chart is useful for comparing values over categories?
A. Pie Chart
B. Column Chart
C. Line Chart
D. Dot Graph

3. Which function in Excel tells how many numeric entries are there?
A. NUM
B. COUNT
C. SUM
D. CHKNUM

4. A features that displays only the data in column(s) according to specified criteria-
A. Formula
B. Sorting
C. Filtering
D. Pivot

5. Statistical calculations and preparation of tables and graphs can be done using
A. Adobe Photoshop
B. Excel
C. Notepad
D. Power Point

6. What type of chart will you use to compare performance of two employees in the year 2016?
A. Column Chart
B. Line Chart
C. Pie Chart
D. Dot Chart

7. Which one is not a Function in MS Excel?
A. SUM
B. AVG
C. MAX
D. MIN

8. Functions in MS Excel must begin with-
A. An () sign
B. An (=) Equal Sign
C. A (+) Plus Sign
D. A > Sign

9. Which functionin Excel checks whether a condition is true or not ?
A. SUM
B. COUNT
C. IF
D. AVERAGE

10. In Excel, Columns are labelled as-
A. A, B, C, etc
B. 1,2,3 etc
C. A1, A2, etc.
D. A1, A2, etc.

11. The Greater Than sign (>) is an example of _____ operator.
A. Arithmatic
B. Logical
C. Conditional
D. Greater

12. What type of chart is useful for showing trends or changes over time?
A. Pie Chart
B. Column Chart
C. Line Chart
D. Dot Graph

13. The process of arranging the items of a column in some sequence or order is known as :
A. Arranging
B. Autofill
C. Sorting
D. Filtering

14. The ___ feature of MS Excel quickly completes a series of data-
A. Auto Complete
B. Auto Fill
C. Fill Handle
D. Sorting

15. What type of chart is useful for comparing parts of a whole?
A. Pie Chart
B. Column Chart
C. Line Chart
D. Dot Graph

16. In Excel, Rows are labelled as _____
A. A, B, C, etc
B. 1,2,3 etc
C. A1, A2, etc.
D. A1, A2, etc

17. What do you use to create a chart?
A. Pie Wizard
B. Excel Wizard
C. Data Wizard
D. Chart Wizard

18. How will you graphically represent expenditure in different departments?
A. Column Chart
B. Line Chart
C. Pie Chart
D. Dot Chart

19. What type of chart is good for single series of data?
A. Column Chart
B. Line Chart
C. Pie Chart
D. Cone Chart

20. The basic unit of a worksheet into which you enter data in Excel is called a-
A. cell
B. table
C. box
D. column

21. How many sheets are there, by default, when we create a new Excel 2013 file ?
A. 1
B. 3
C. 5
D. 10

22. In Excel, which one denoted a range from B1 through E5
A. B1 - E5 B. B1:E5
C. B1 to E5 D. B1$E5

23. An Excel file is generally called a / an :
A. E-Spreadsheet B.Woorksheet
C. Workbook D.Sheet

24. It is a collection of data that is stored electronically as a series of records in a table.
A. spreadsheet B. presentation
C. database D. MS Word

25. What type of chart will you use to compare performance of sales of two products?
A. Column Chart B. Line Chart
C. Pie Chart D. Both A and B

26. Free online version of MS excel is known as _____
A. Office for the web B. Excel Mobile
C. Word Mobile D. Excel for the web

27. Microsoft Excel was first time launched in _____ by the Microsoft Corporation
A. 1985 B. 1991
C. 1995 D. 1998

28. MS Excel file can NOT be directly exported as -
A. PDF B. TXT
C. PPT D. CSV

29. How cells are named in ms excel?
A. using rename option **B. using name box**
C. simply double click on sheet name D. simply double click on cell and name it

30. Select correct statement
A. Each Excel workbook can contain multiple worksheets.
B. Each Excel worksheet can contain multiple workbooks.
C. Each Excel workbook can contain multiple spreadsheets.
D. Each Excel worksheet can contain multiple spreadsheets.

31. Another name for a pre-programmed formula in Excel is
(A) Cell (B) Graph
(C) Function (D) Range

32. Which of the following identifies a cell in Excel?
(A) Address (B) Formula
(C) Name (D) Label

33. Which term is used to join the selected cells in to one cell?
(A) Filter (B) Wrap
(C) Pivot (D) Merge

34. A(n) ___ is a series of two or more adjacent cells in a column or row or rectangular group of cells.
(A) List (B) Section
(C) Range (D) Area

35. What is the extension of saved file in MS Excel 2013?
(A) .xlsx (B) .xks
(C) .xos (D) .xbs

36. Which command is used to close the window of Excel?
(A) Alt+ F4 (B) Ctrl + W
(C) Ctrl +R (D) Ctrl+ C

37. How many characters can be typed in a single cell in Excel?
(A) 256 (B) 1024
(C) 32000 (D) 65535

38. Tab scrolling button
(A) Allow you to view a different worksheet
(B) Allow you to view additional worksheet rows down
(C) Allow you to view additional worksheet columns to the right
(D) Allow you to view additional sheets tabs

39. The auto calculate feature
(A) Can only add values in a range of cells
(B) Provides a quick way to view the result of an arithmetic operation on a range of cells
(C) Automatically creates formulas and adds them to a worksheet
(D) Both A and C

40. How do you select an entire column in excel?
(A) Select Edit > Select > Column from the menu
(B) Click the column heading letter
(C) Hold down the shift key as you click anywhere in the column
(D) Hold down the Ctrl key as you click anywhere in the column

41. Multiple calculations can be made in a single formula using
(A) Standard formulas (B) Array formula
(C) Complex formulas (D) Smart formula

42. Which of the following is the oldest spreadsheet package?
(A) VisiCalc (B) Lotus 1-2-3
(C) Excel (D) StarCalc

43. Excel worksheet cells work very similarly to what common element of the windows graphical user interface
(A) Option buttons (B) List boxes
(C) Text boxes (D) Combo boxes

44. To copy cell contents using drag and drop press the
(A) End key (B) Shift key
(C) Ctrl key (D) Esc key

45. Which of the following formulas will Excel Not be able to calculate?
(A) =SUM(Sales)-A3
(B) =SUM(A1:A5)*.5
(C) =SUM(A1:A5)/(10-10)
(D) =SUM(A1:A5)-10

46. Data can be arranged in a worksheet in a easy to understand manner using
(A) Auto formatting
(B) Applying styles
(C) Changing fonts
(D) All of above

47. Which of the following is not a way to complete a cell entry?
(A) Pressing enter
(B) Pressing any arrow key on the keyboard
(C) Clicking the Enter button on the Formula bar
(D) Pressing spacebar

48. Which is used to perform what if analysis?
(A) Solver
(B) Goal seek
(C) Scenario Manager
(D) All of above

49. When the formula bar is active, you can see
(A) The edit formula button
(B) The cancel button
(C) The enter button
(D) All of the above

50. To create a formula, you can use:
(A) Values but not cell references
(B) Cell references but not values
(C) Values or cell references although not both at the same time
(D) Value and cell references