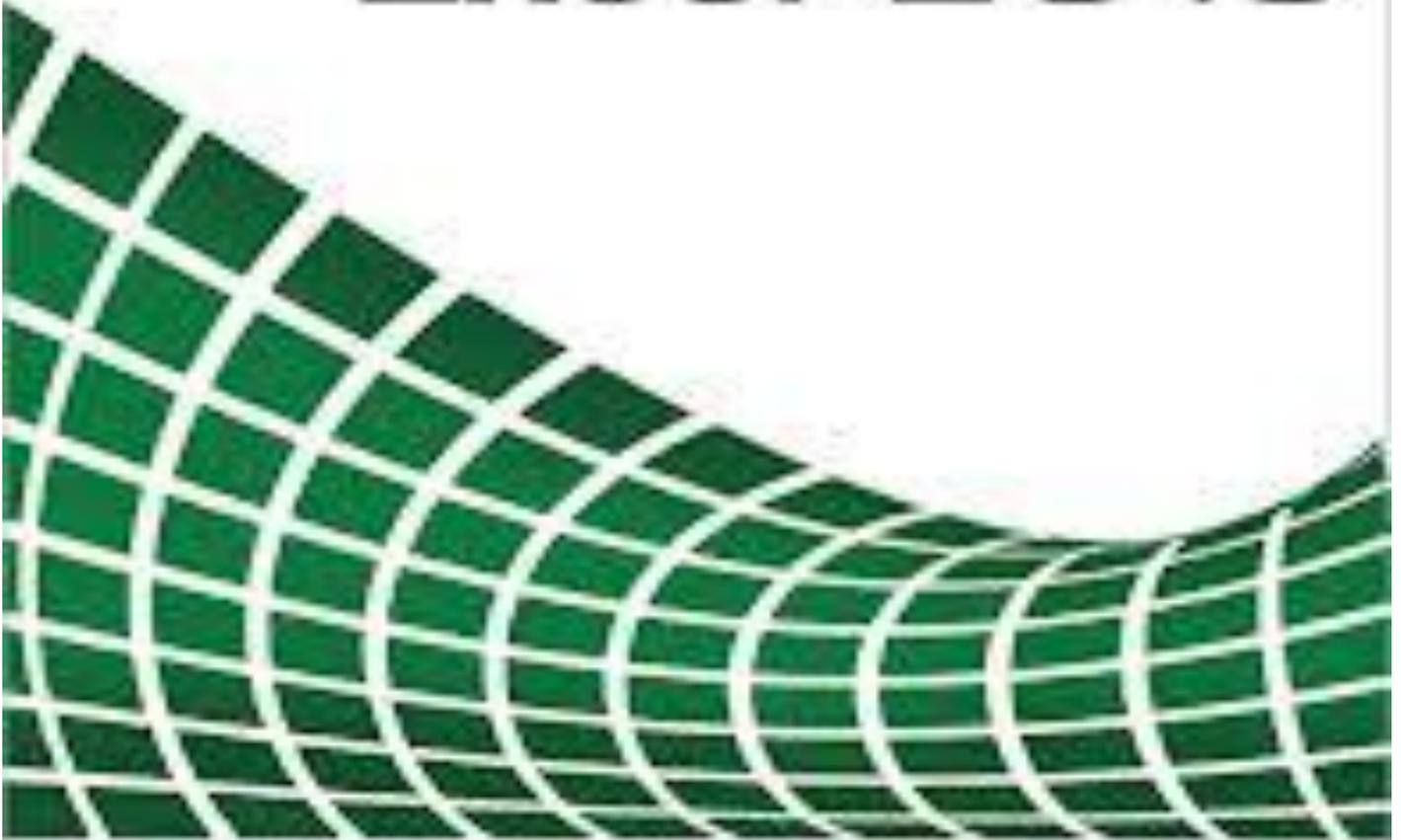




# Excel® 2013



## IN DEPTH



Bill Jelen 

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## CHAPTER ONE

### 1. Excel Basics

#### 1.1 Getting Started with Excel

##### 1.1.1 Introduction

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

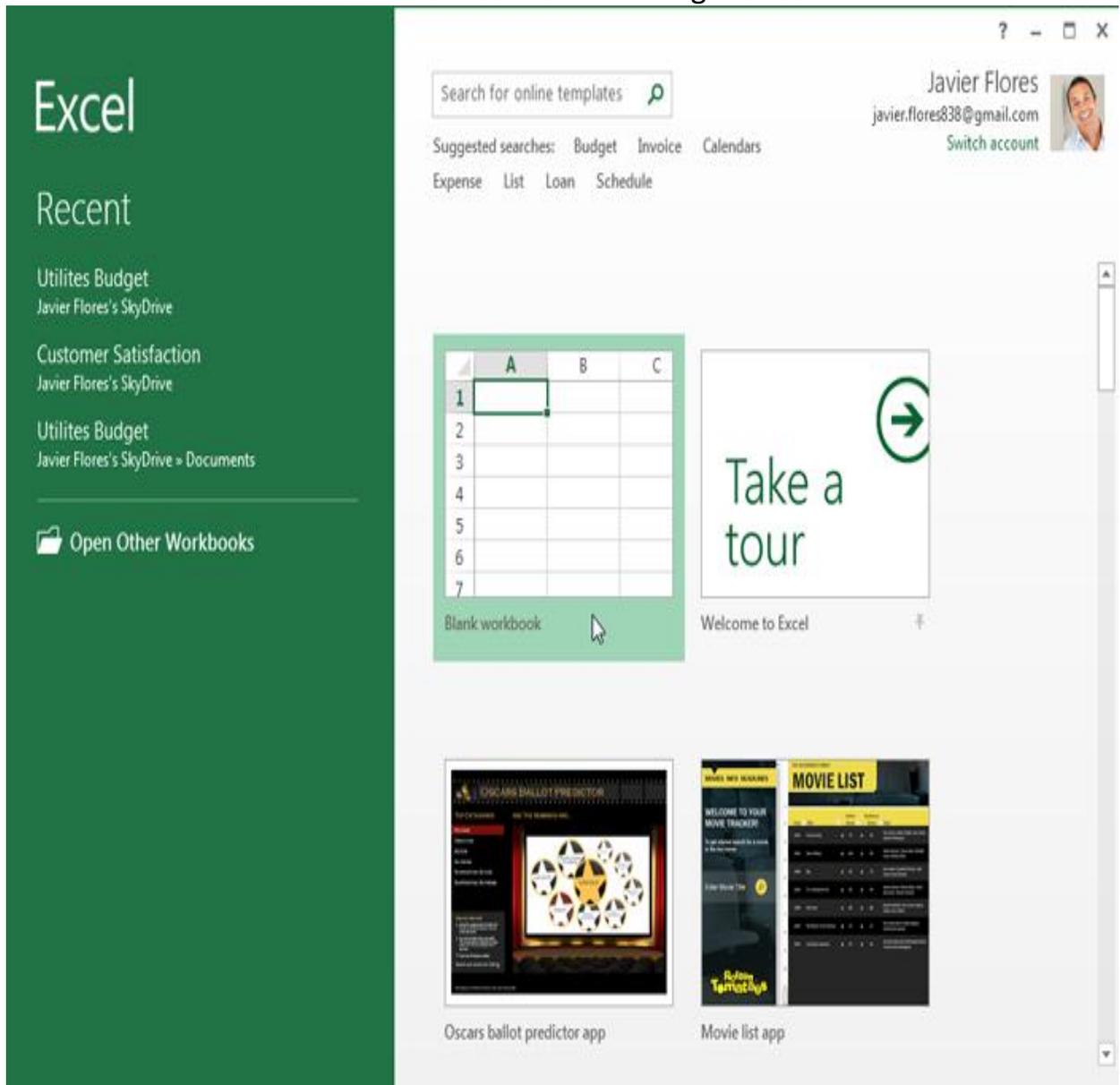
##### 1.1.2 Getting to Know Excel 2013

**Excel 2013** is very similar to Excel 2010. If you've previously used Excel 2010, Excel 2013 should feel very familiar. But 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**.

###### 1.1.2.1 The Excel Interface

When you open Excel 2013 for the first time, the **Excel Start Screen** will appear. From here, you'll be able to create a **new workbook**, choose a **template**, or access your **recently edited workbooks**.

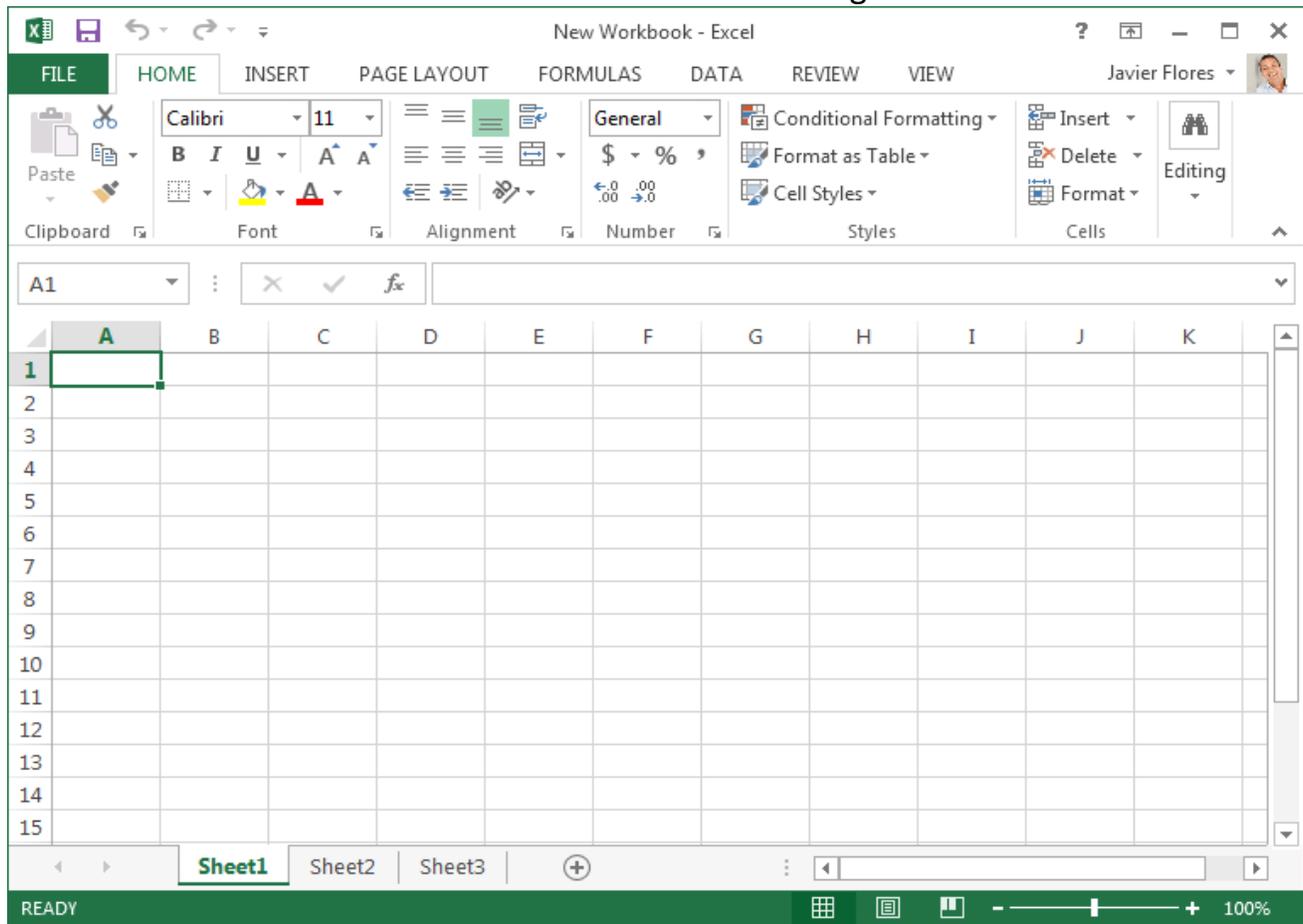
- From the **Excel Start Screen**, locate and select **Blank workbook** to access the Excel interface.



*The Excel Start Screen*

Click the buttons in the interactive below to become familiar with the Excel 2013 interface.

# Microsoft Office Excel 2013 Training Manual

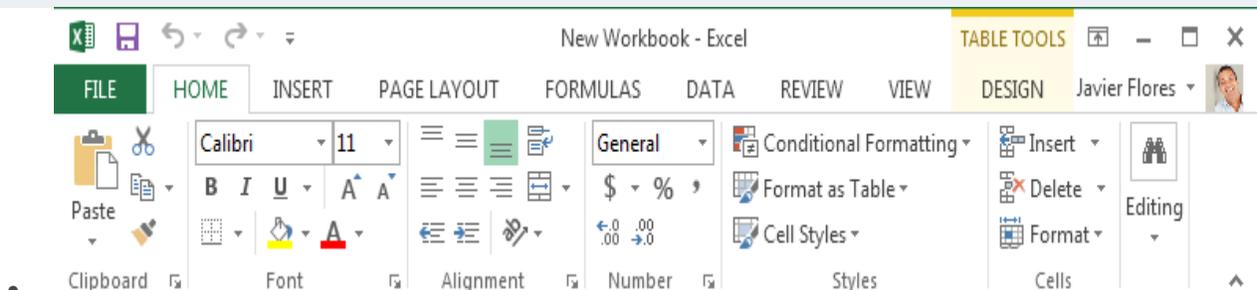


## 1.1.2.2 Working with the Excel Environment

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

## 1.1.2.3 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. Click the arrows in the slideshow below to learn more about the different commands available within each tab on the Ribbon.



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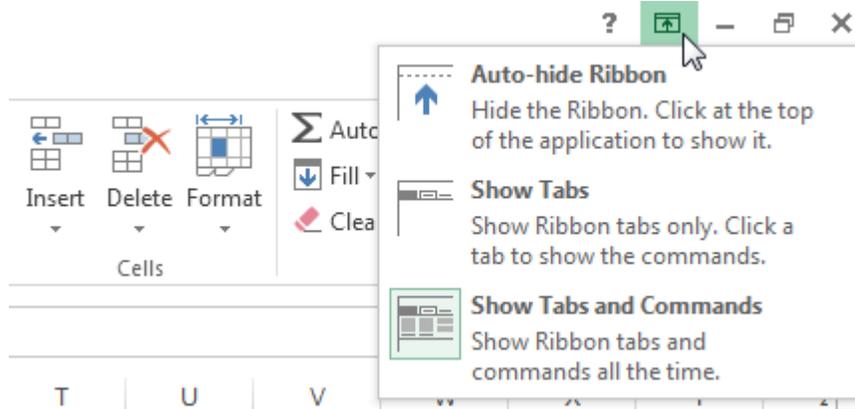
The **Home** tab gives you access to some of the most commonly used commands for working with data in Excel 2013, including **copy & paste**, **formatting**, and **number styles**. The Home tab is selected by default whenever you open Excel.

Certain programs, such as **Adobe Acrobat Reader**, may install additional tabs to the ribbon. These tabs are called **Add-ins**.

### To Minimize and Maximize the Ribbon:

The Ribbon is designed to respond to your current task, but you can choose to **minimize** the Ribbon if you find that it takes up too much screen space.

1. Click the **Ribbon Display Options** arrow in the upper-right corner of the Ribbon.



*Ribbon Display options*

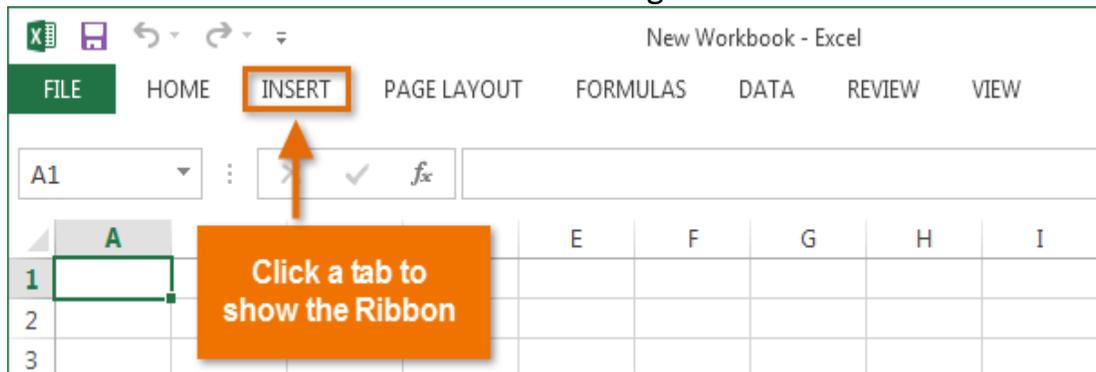
2. Select the desired **minimizing option** from the drop-down menu:
  - o **Auto-hide Ribbon:** Auto-hide displays your workbook in full-screen mode and completely hides the Ribbon. To **show the Ribbon**, click the **Expand Ribbon** command at the top of screen.



*Auto-hiding the Ribbon*

- o **Show Tabs:** This option hides all command groups when not in use, but **tabs** will remain visible. To **show the Ribbon**, simply click a tab.

## Microsoft Office Excel 2013 Training Manual



### Showing only Ribbon tabs

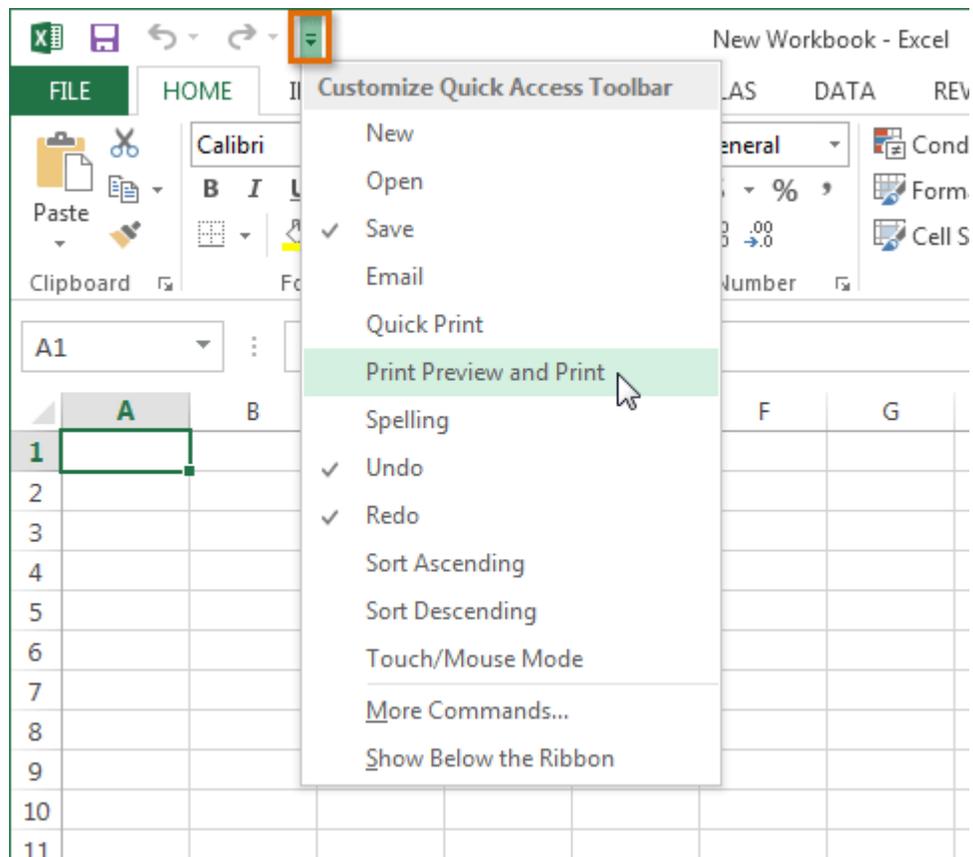
- **Show Tabs and Commands:** This option maximizes the Ribbon. All of the tabs and commands will be visible. This option is selected by default when you open Excel for the first time.

### 1.1.2.4 The Quick Access Toolbar

Located just above the Ribbon, the **Quick Access Toolbar** lets you access common commands no matter which tab is selected. By default, it includes the **Save**, **Undo**, and **Repeat** commands. You can add other commands depending on your preference.

#### To Add Commands to the Quick Access Toolbar:

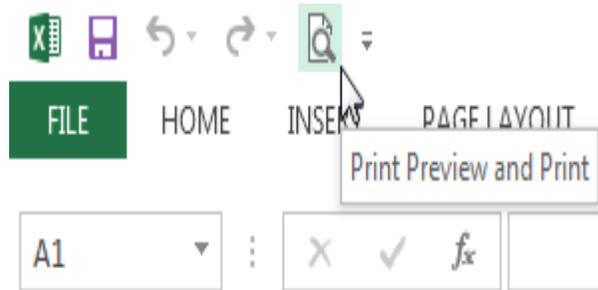
1. Click the **drop-down arrow** to the right of the **Quick Access Toolbar**.
2. Select the **command** you wish to add from the drop-down menu. To choose from more commands, select **More Commands**.



## Microsoft Office Excel 2013 Training Manual

### *Adding a command to the Quick Access Toolbar*

3. The command will be **added** to the Quick Access Toolbar.



*The added command*

### 1.1.3 Backstage View

**Backstage view** gives you various options for saving, opening a file, printing, or sharing your workbooks.

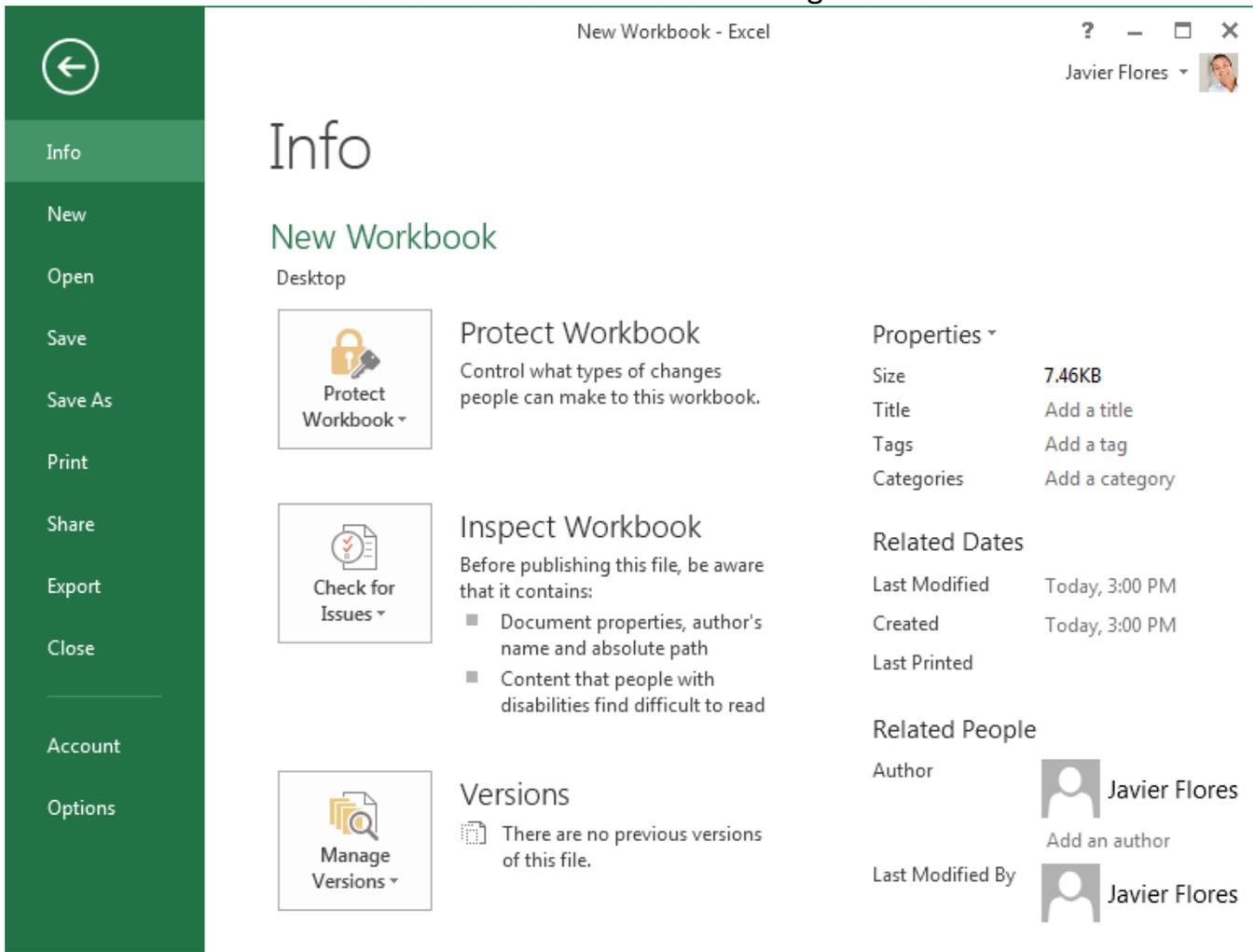
#### To Access Backstage View:

1. Click the **File** tab on the **Ribbon**. **Backstage view** will appear.



*Clicking the File tab*

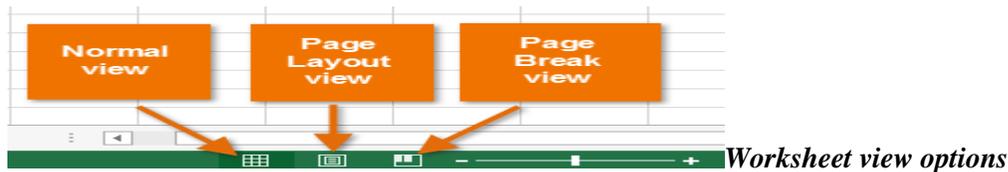
Click the buttons in the interactive below to learn more about using Backstage view.



### 1.1.4 Worksheet Views

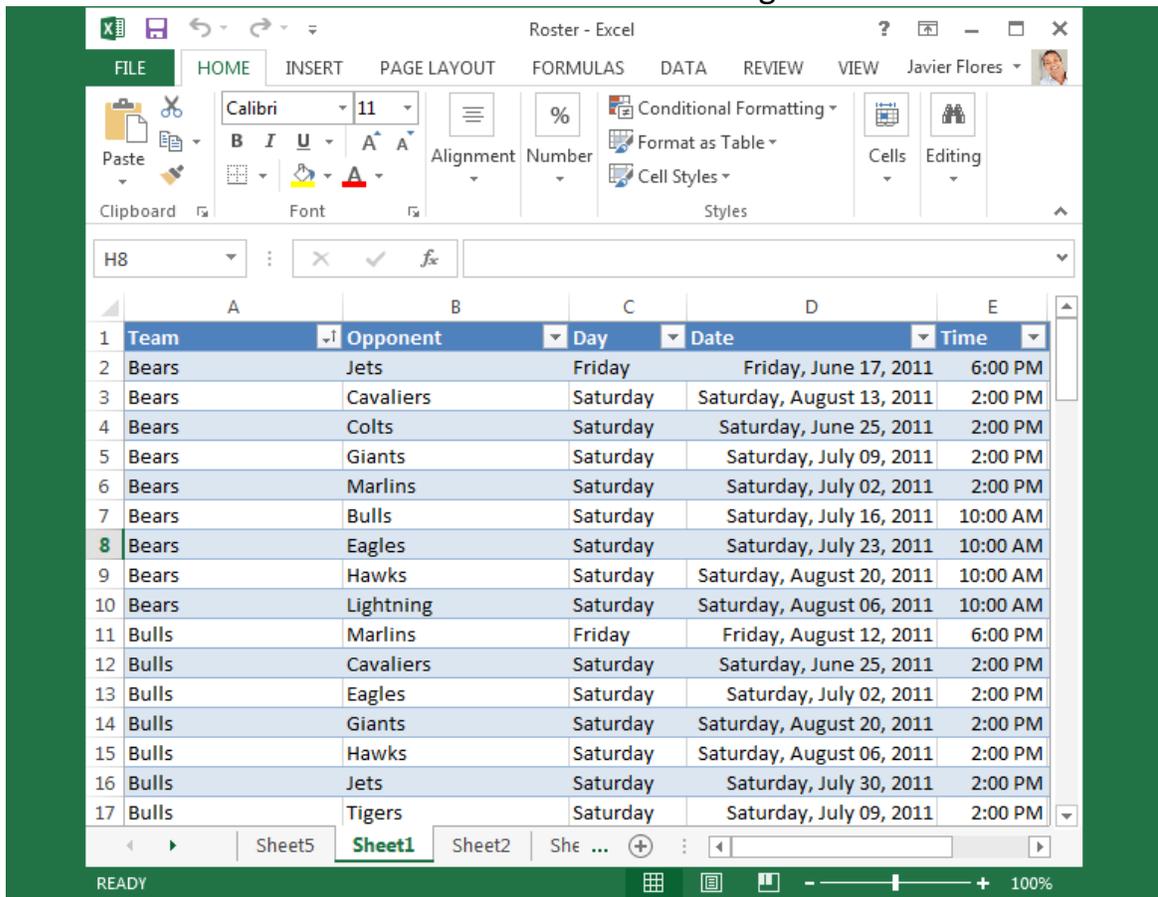
Excel 2013 has a variety of viewing options that change how your workbook is displayed. You can choose to view any workbook in **Normal view**, **Page Layout view**, or **Page Break view**. These views can be useful for various tasks, especially if you're planning to **print** the spreadsheet.

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



Click the arrows in the slideshow below to review the different worksheet view options.

# Microsoft Office Excel 2013 Training Manual



## Exercise 1.1

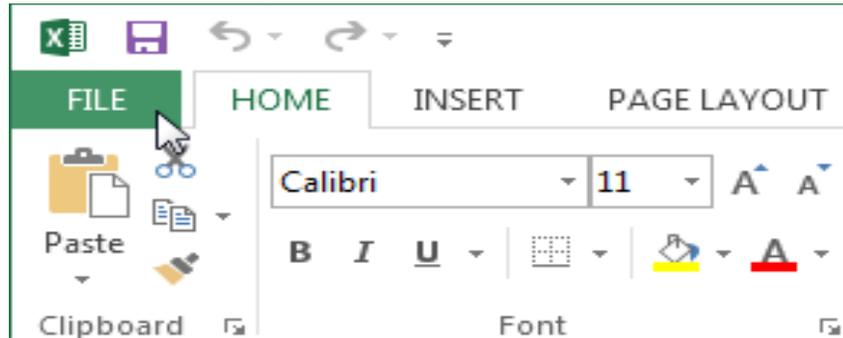
1. Open or navigate to the Excel 2013 **interface**.
2. Click through all of the **tabs** and review the **commands** on the **Ribbon**.
3. Try **minimizing** and **maximizing** the **Ribbon**.
4. Add a **command** to the **Quick Access Toolbar**.
5. Navigate to **Backstage view** and open your **Account settings**.
6. Try switching **worksheet views**.
7. **Close** Excel (you do not have to save the workbook).

## 1.2 Creating and Opening Workbooks

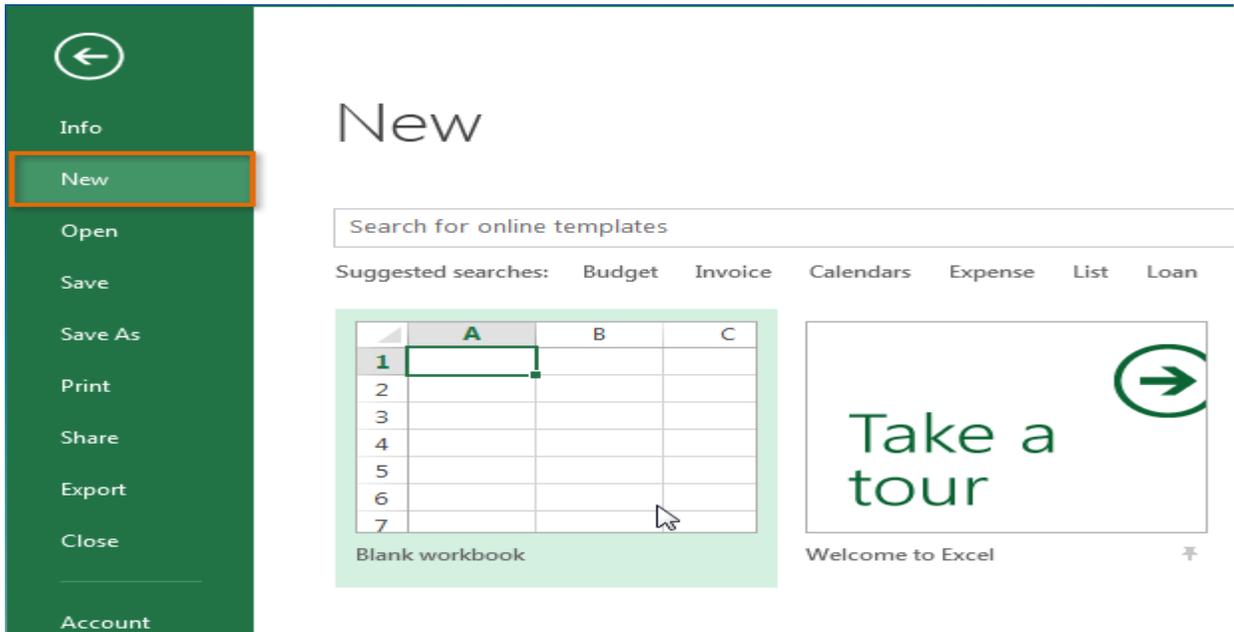
Excel files are called **workbooks**. Whenever you start a new project in Excel, you'll need to **create a new workbook**. There are several ways to start working with a workbook in Excel 2013. You can choose to **create a new workbook**—either with a **blank workbook** or a pre-designed **template**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

### Creating a New, Blank Workbook

1. Select the **File** tab. **Backstage view** will appear.



2. Select **New** and then click **Blank workbook**.



*Creating a new workbook*

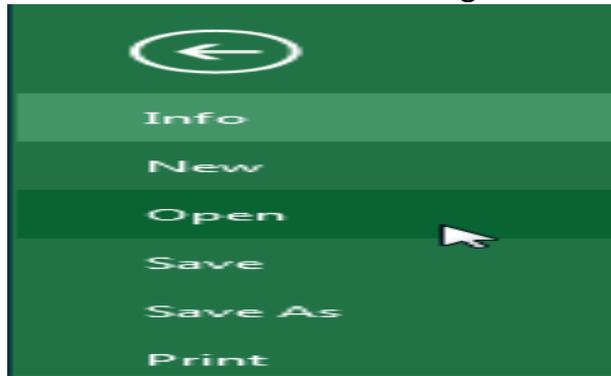
3. A new, blank workbook will appear.

### Opening an Existing Workbook

An **existing workbook** is a workbook that has been previously saved..

1. Navigate to **Backstage view** and then click **Open**.

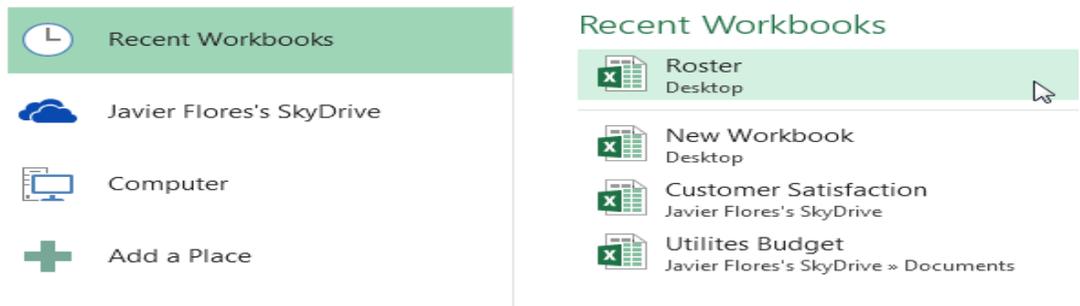
## Microsoft Office Excel 2013 Training Manual



2. Select a **location** option:

- **Recent Workbooks** displays all of your recently edited workbooks, including those saved to Sky Drive.

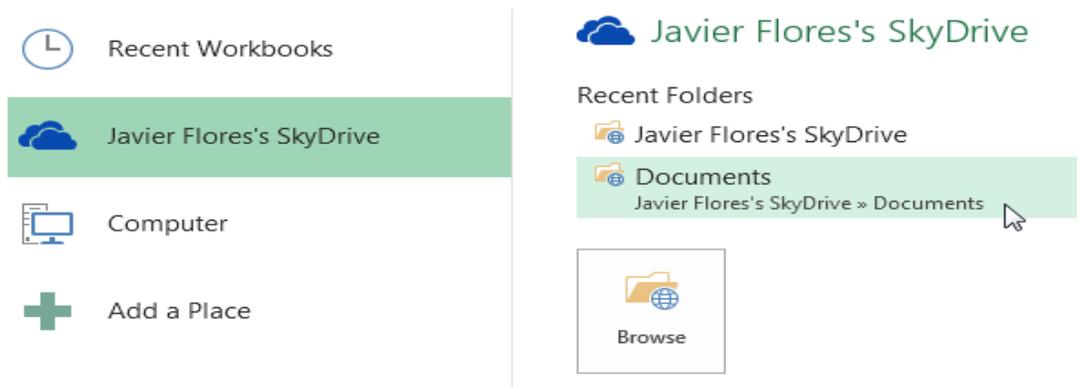
### Open



#### *Viewing recently edited workbooks*

- **Sky Drive** gives you access to your Sky Drive folders. Select Sky Drive and then click **Browse** if you've saved your workbook to the cloud.

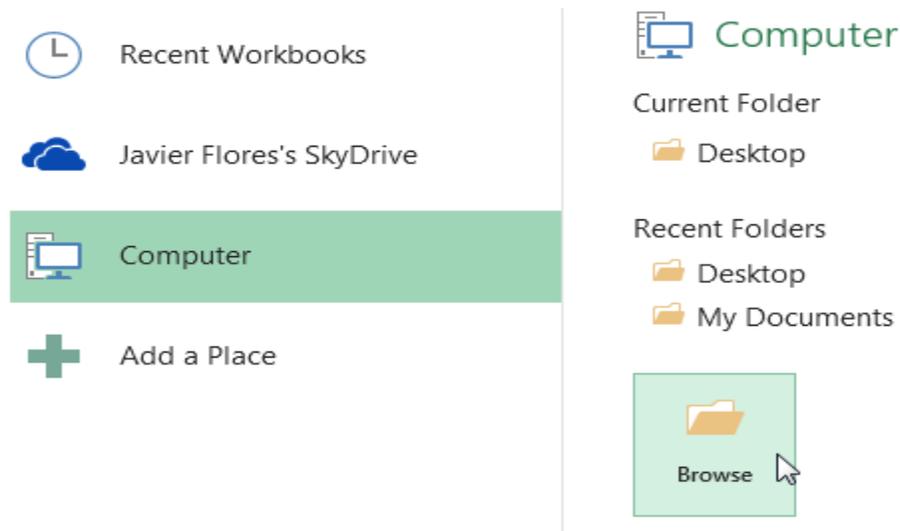
### Open



#### *Opening a workbook from SkyDrive*

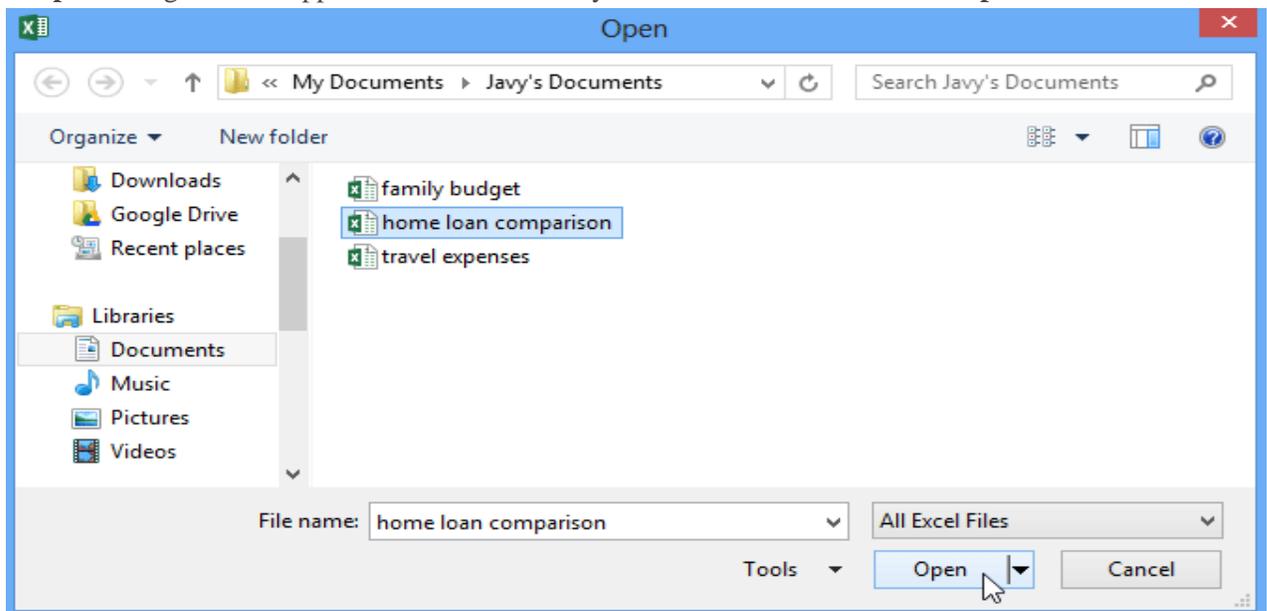
- **Computer** gives you access to the files you've saved locally on your computer. In our example, we will select this option and then click **Browse**.

# Open



### *Opening a locally saved workbook*

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

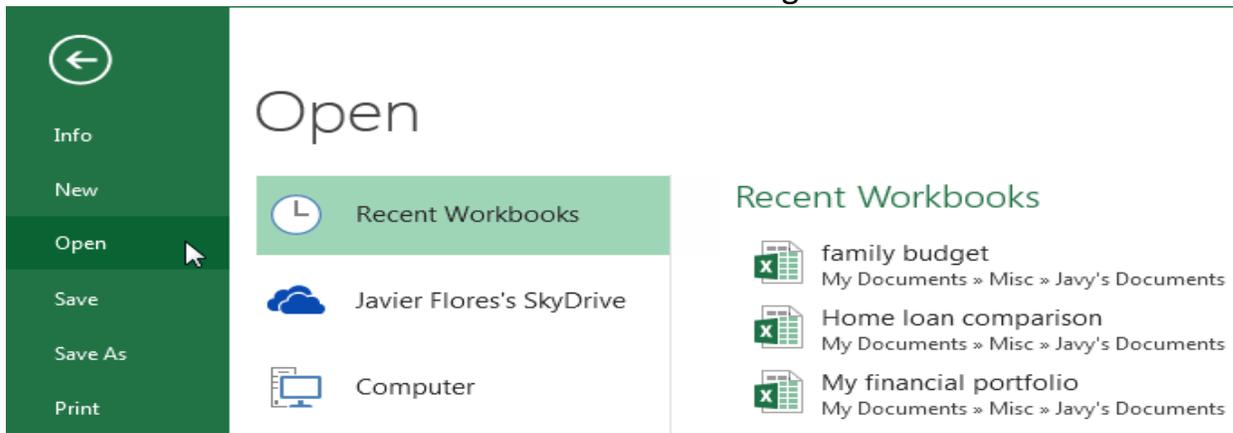


### *Opening a workbook*

## Pining a Workbook

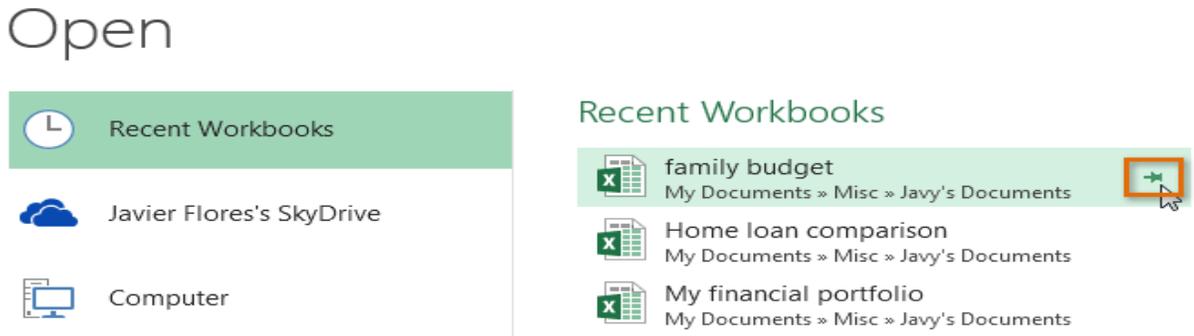
If you frequently work with the **same workbook**, you can **pin it** to Backstage view for quick access.

1. Navigate to **Backstage view**.
2. Click **Open**. Your **recently edited workbooks** will appear.



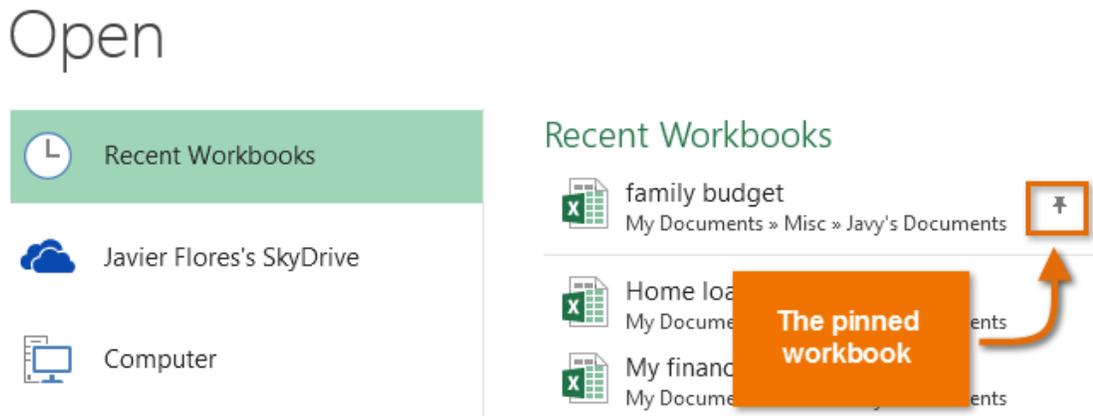
*Viewing recently edited workbooks*

3. Hover the mouse over the **workbook** you wish to pin. A **pushpin icon**  will appear next to the workbook.
4. Click the **pushpin icon**.



*Pinning a workbook*

5. The workbook will appear in Recent Workbooks until it is **unpinned**.

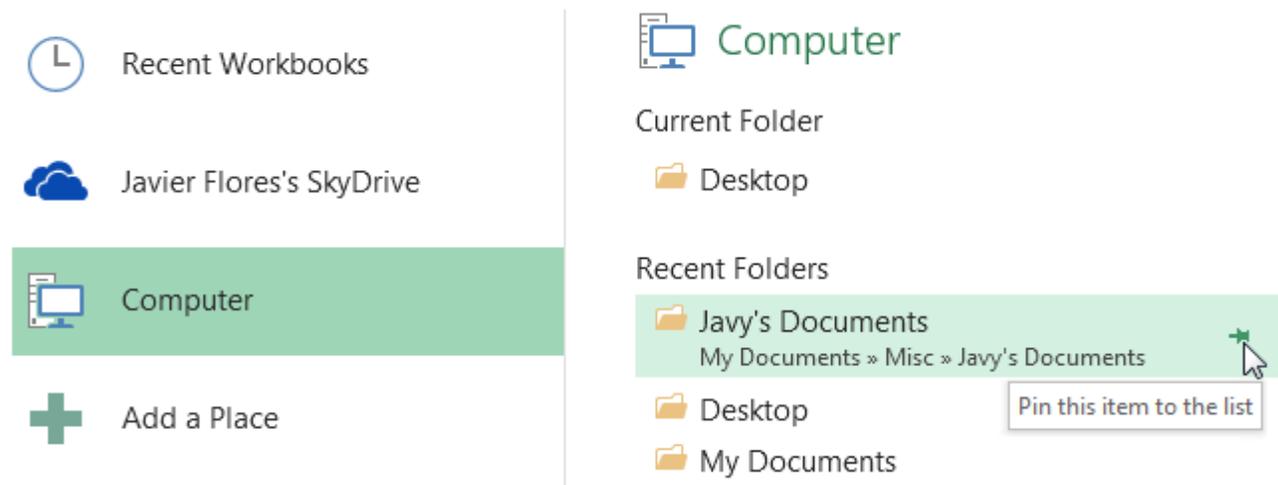


*The pinned workbook*

To **unpin a workbook**, simply click the pushpin icon again.

You can also **pin folders** to Backstage view for quick access. From Backstage view, click **Open** and then locate the **folder** you wish to pin, then click the **pushpin icon**.

# Open



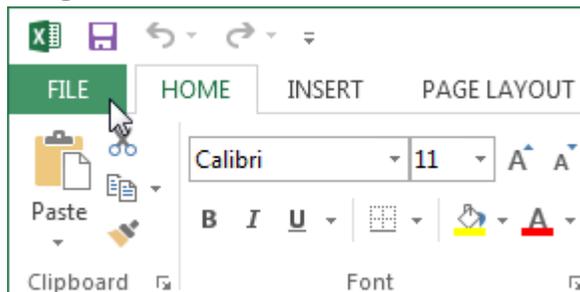
*Pinning a folder to Backstage view*

## 1.2.1 Using Templates

A **template** is a **pre-designed 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.

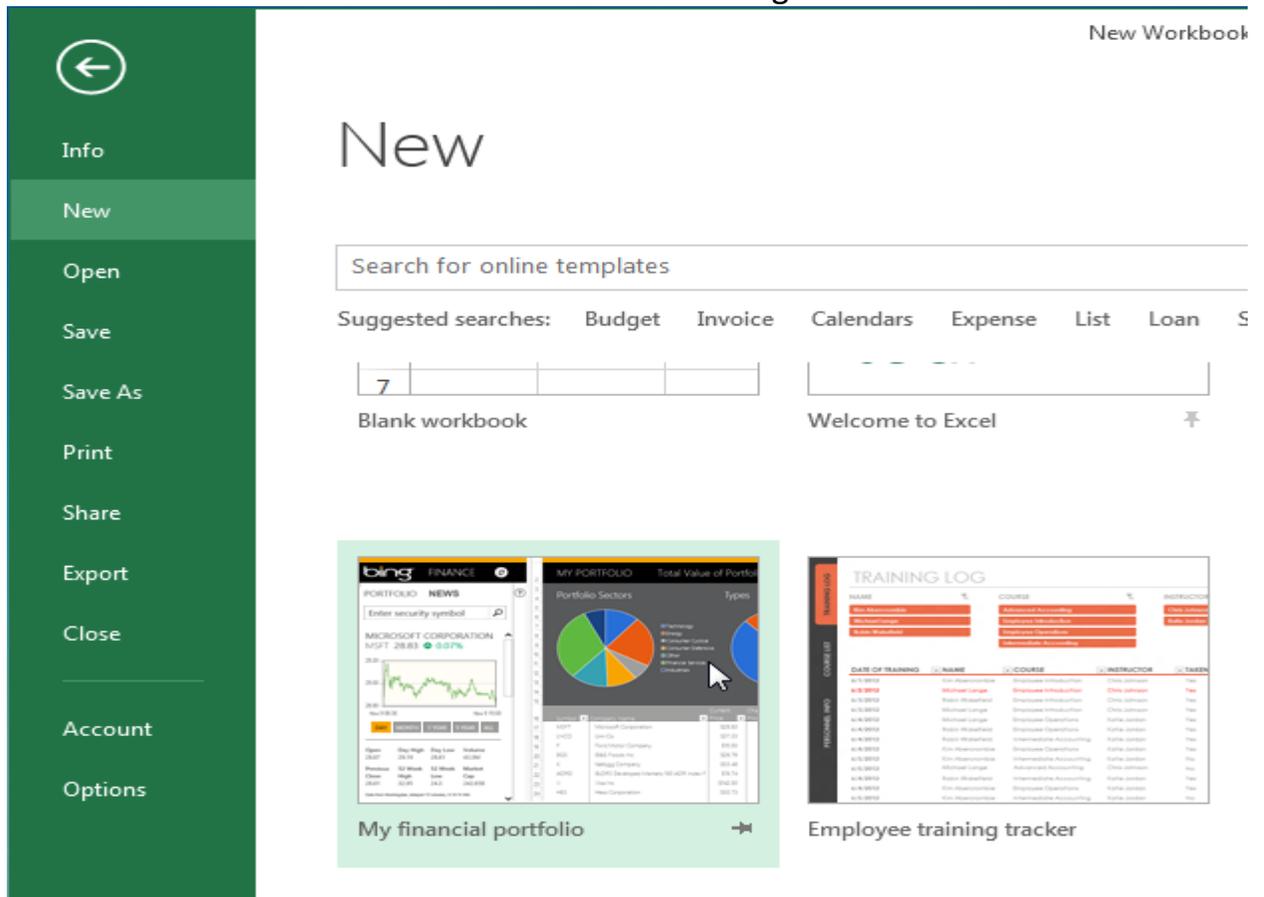
### To Create a New Workbook from a Template:

1. Click the **File** tab to access **Backstage view**.



*Navigating to Backstage view*

2. Select **New**. Several templates will appear below the **Blank workbook** option.
3. Select a **template** to review it.



*Selecting a template*

4. A **preview** of the template will appear, along with **additional information** about how the template can be used.
5. Click **Create** to use the selected template.

### My financial portfolio

Provided by: [Microsoft Corporation](#)

PROVIDER DESCRIPTION

This template contains an Excel app for Office that connects to internet data. It allows you to add and track the stocks and funds in your investment portfolio. It includes quotes, charts, and all the latest news on your positions courtesy of Bing Finance. Customize the fields you'd like to see in the table using the drag and drop feature. Take control of your investments.

Download size: 60 KB

Rating: ★★☆☆☆ (169 Votes)

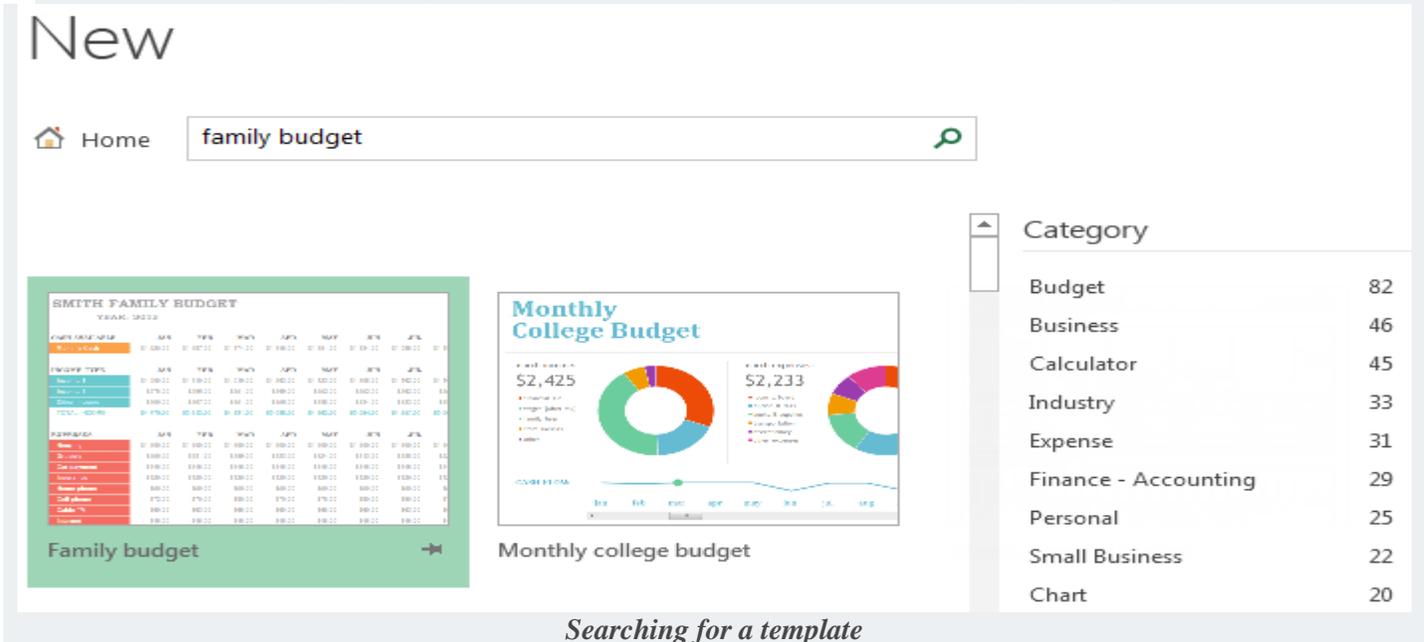
Create

*Creating a new workbook with a template*

# Microsoft Office Excel 2013 Training Manual

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.



*Searching for a template*

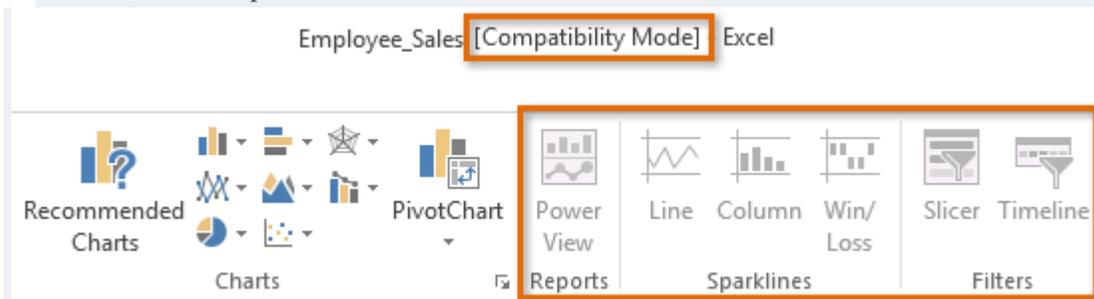
It's important to note that not all templates are created by Microsoft. Many are created by third-party providers and even individual users, so some templates may work better than others.

## 1.2.2 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 kinds of workbooks, they will appear in **Compatibility mode**.

Compatibility mode **disables** certain features, so you'll only be able to access commands found in the program 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.



*Disabled commands in Compatibility mode*

In order to exit Compatibility mode, you'll need to **convert** the workbook to the current version type. However, if you're collaborating with others who only have access to an earlier version of Excel, it's best to leave the workbook in Compatibility mode so that 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 that converting a file may cause some changes to the **original layout** of the workbook.

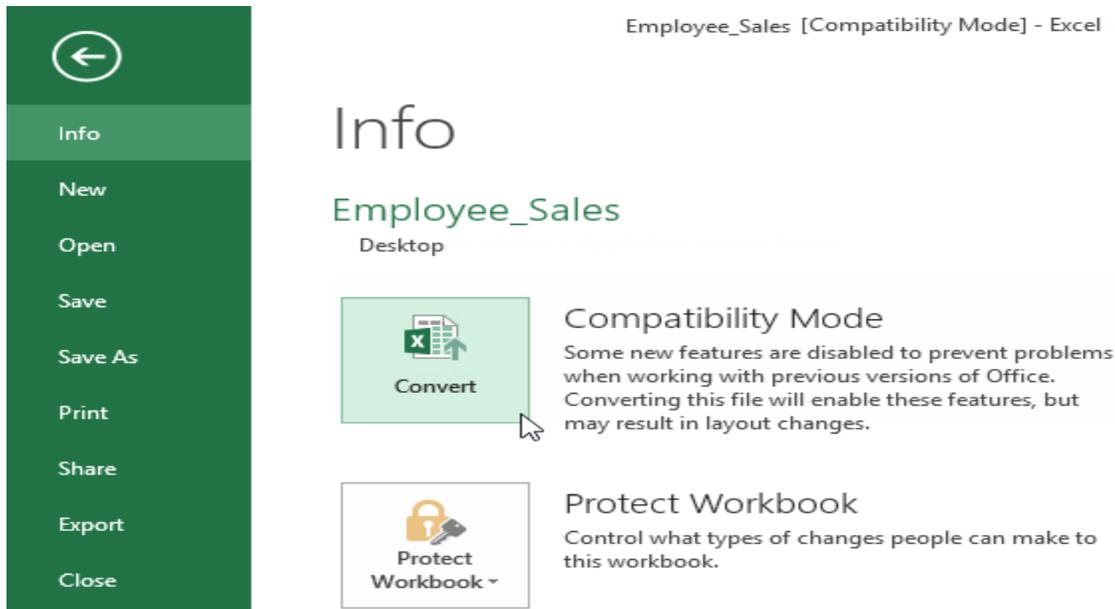
# Microsoft Office Excel 2013 Training Manual

1. Click the **File** tab to access Backstage view.



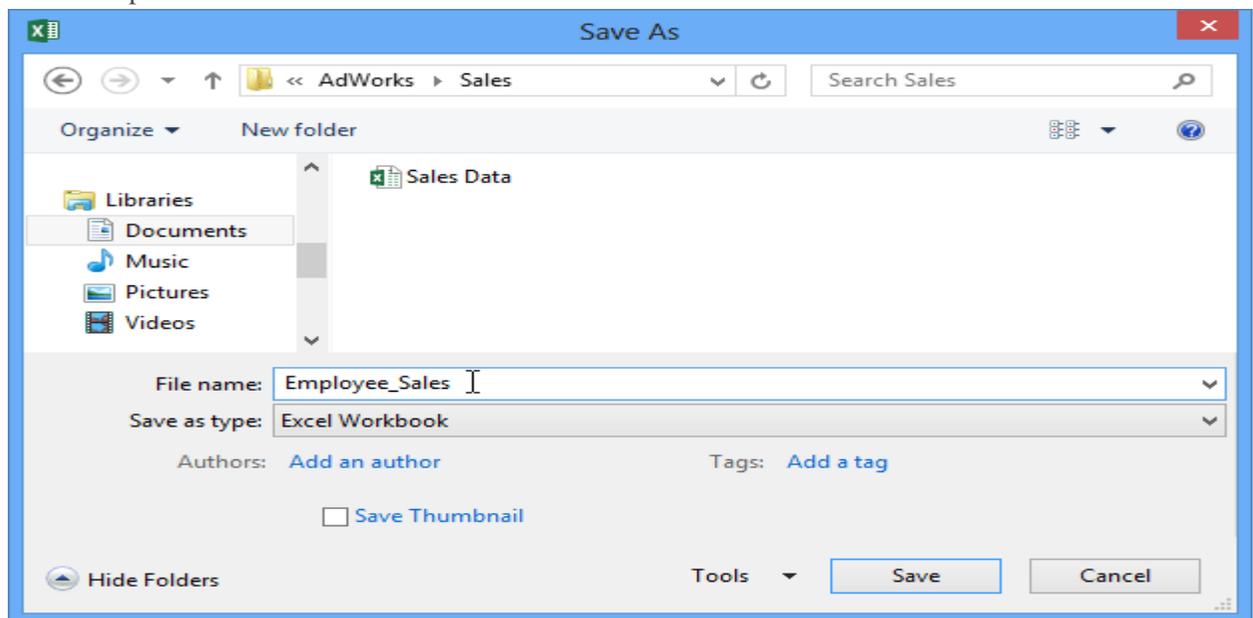
*Clicking the File tab*

2. Locate and select **Convert** command.



*Converting the workbook to the newest file type*

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



*Saving a new version of the workbook*

## Microsoft Office Excel 2013 Training Manual

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

### Exercise 1.2

1. Create a **new, blank workbook**.
2. Open an **existing workbook** from your computer.
3. **Pin** a folder to Backstage view.
4. Create a new workbook using a **template**.

### 1.3. Saving and Sharing Workbooks

Whenever you create a new workbook in Excel, you'll need to know how to **save** it in order to access and edit it later. As in 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 **SkyDrive**. You can also **export** and **share** workbooks with others directly from Excel.

#### Save and Save As

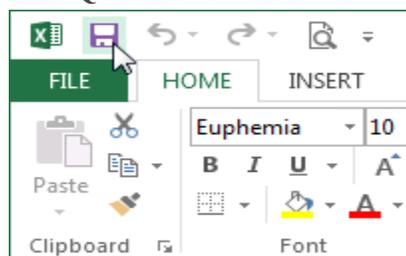
Excel offers two ways to save a file: **Save** and **Save As**. These options work in similar ways, with a few important differences:

- **Save:** When you create or edit a workbook, you'll use the **Save** command to save your changes. You'll use this command most of the time. When you save a file, you'll 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'll use this command to create a **copy** of a workbook while keeping the original. When you use Save As, you'll need to choose a different name and/or location for the copied version.

#### To Save a Workbook:

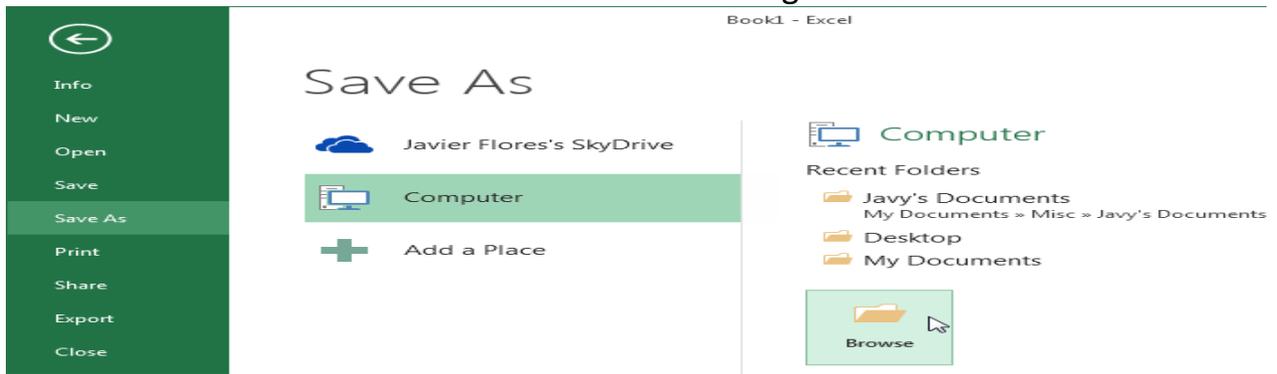
It's important to **save your workbook** whenever you start a new project or make changes to an existing one. Saving early and often can prevent your work from being lost. You'll also need to pay close attention to **where you save** the workbook so it will be easy to find later.

1. Locate and select the **Save** command on the **Quick Access Toolbar**.



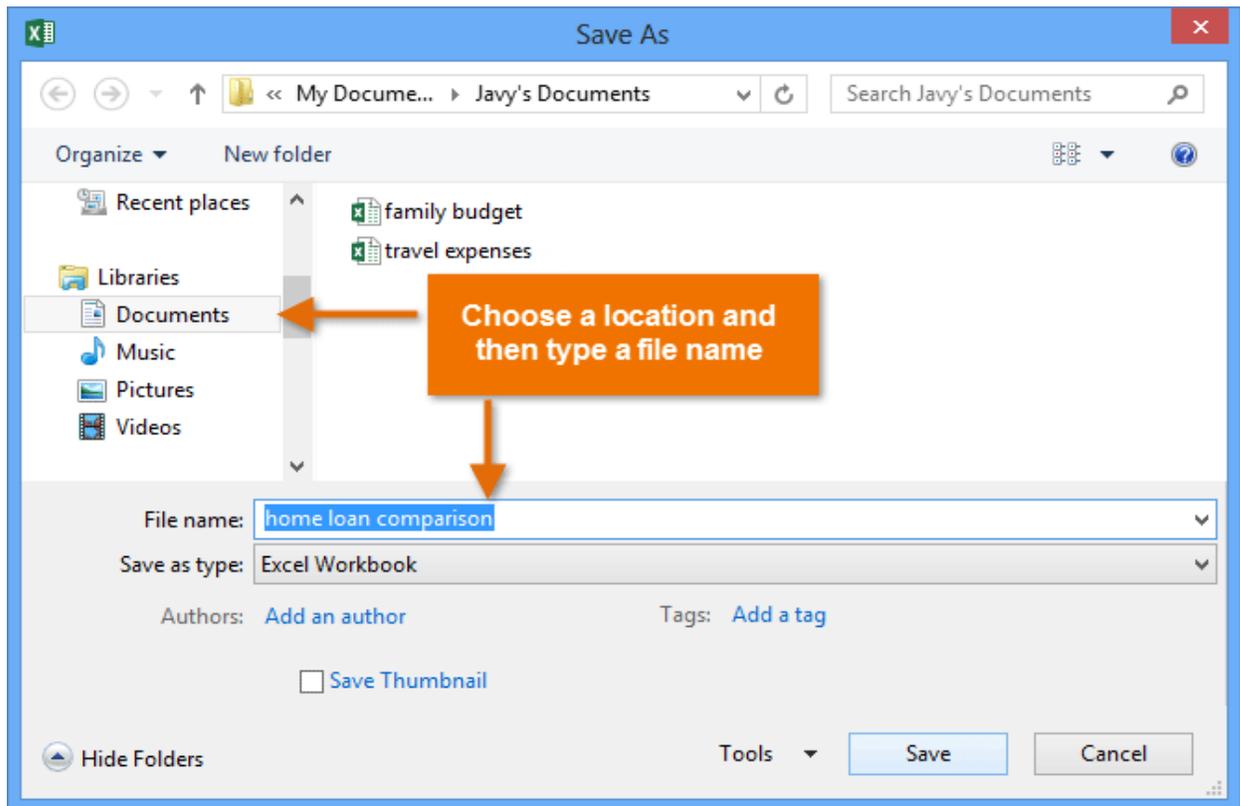
*Clicking the Save command*

2. If you're saving the file for the first time, the **Save As** pane will appear in **Backstage view**.
3. You'll then need to choose **where to save** the file and give it a **file name**. To save the workbook to your computer, select **Computer** and then click **Browse**. Alternatively, you can click **SkyDrive** to save the file to your SkyDrive.



*Saving a workbook locally*

4. The **Save As** dialog box will appear. Select the **location** where you wish to save the workbook.
5. Enter a **file name** for the workbook and click **Save**.



*Saving a workbook*

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

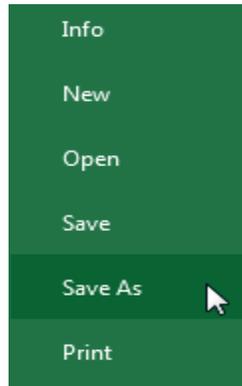
You can also access the **Save** command by pressing **Ctrl+S** on your keyboard.

**Using Save As to Make a Copy**

If you want to save a **different version** of a workbook while keeping the original, you can create a **copy**. For example, if you have a file named "**Sales Data**" you could save it as "**Sales Data 2**" so that you'll be able to edit the new file and still refer back to the original version.

To do this, you'll click the **Save As** command in Backstage View. Just like when saving a file for the first time, you'll need to choose **where to save** the file and give it a new **file name**.

## Microsoft Office Excel 2013 Training Manual

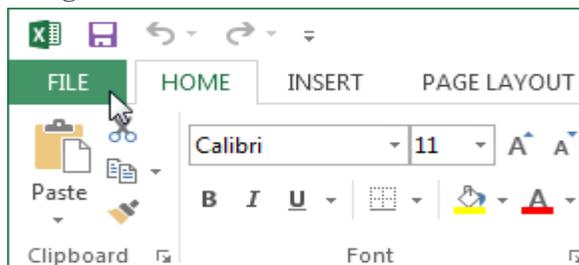


*Clicking Save As*

### To Change the Default Save Location:

If you don't want to use **SkyDrive**, you may be frustrated that SkyDrive is selected as the default location when saving. If you find it inconvenient to select **Computer** each time, you can change the **default save location** so that **Computer** is selected by default.

1. Click the **File** tab to access **Backstage view**.



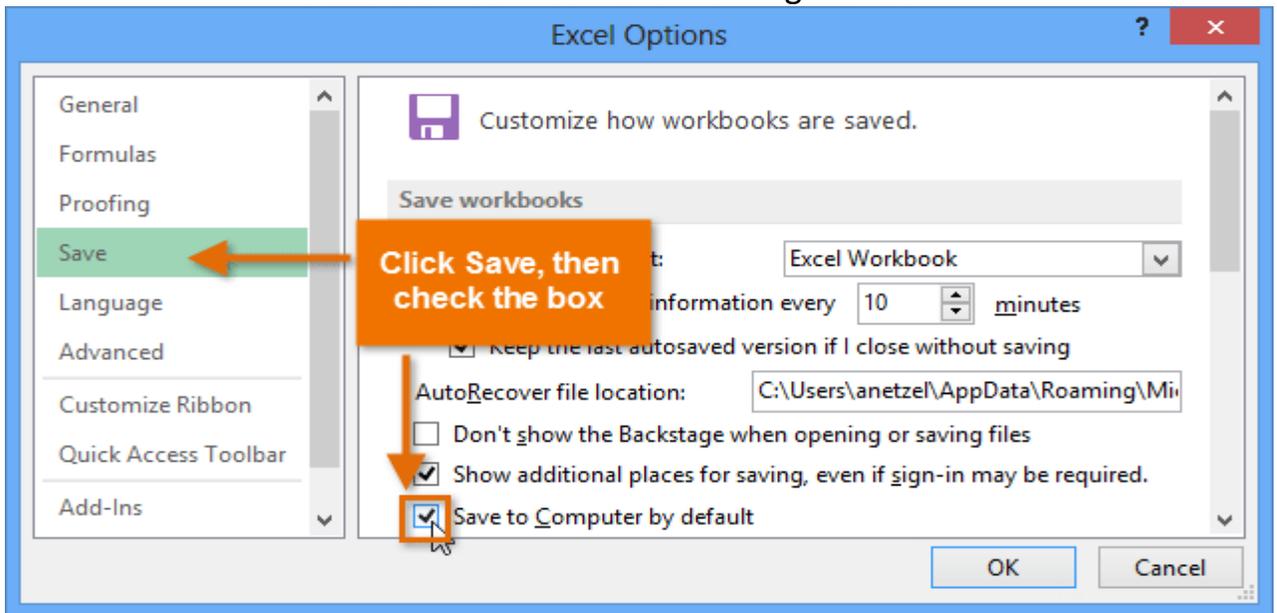
*Clicking the File tab*

2. Click **Options**.



*Clicking Options*

3. The **Excel Options** dialog box will appear. Select **Save**, check the box next to **Save to Computer by default**, and then click **OK**. The default save location will be changed.



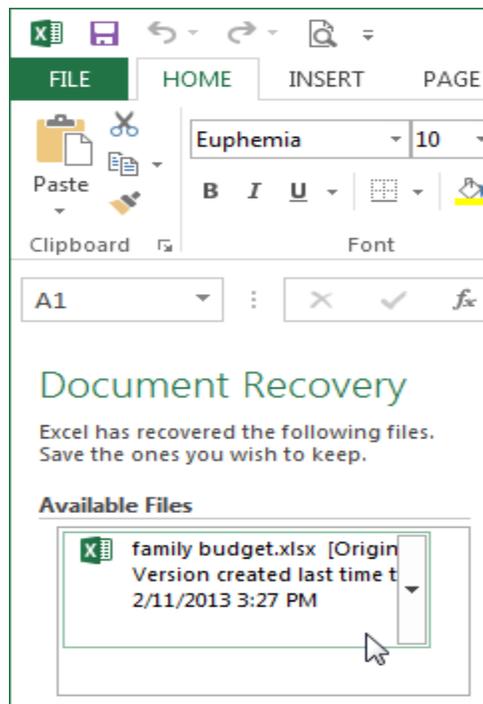
*Changing the default save location*

## AutoRecover

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 **auto-saved versions** of a file are found, the **Document Recovery** pane will appear.
2. Click to **open** an available file. The workbook will be **recovered**.

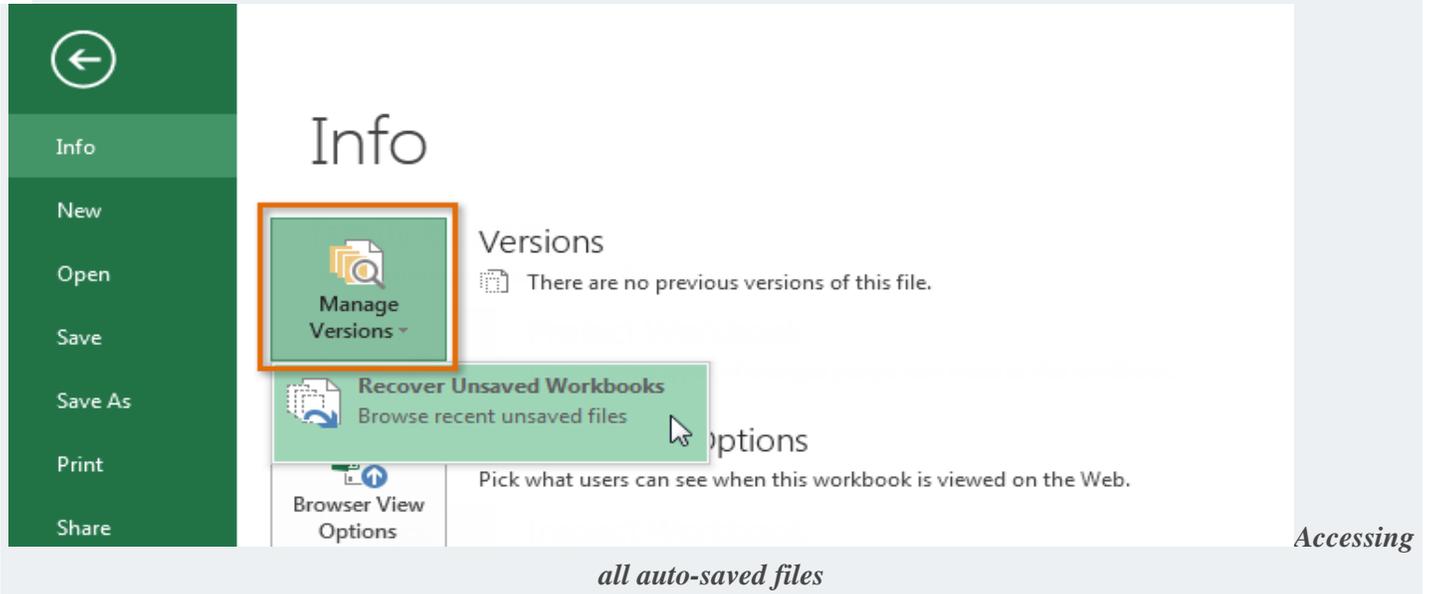


*The Document Recovery pane*

By default, Excel auto-saves every 10 minutes. If you are editing a workbook for less than 10 minutes, Excel may not create an auto-saved version.

## Microsoft Office Excel 2013 Training Manual

If you don't see the file you need, you can browse all auto-saved files from **Backstage view**. Just select the **File** tab, click **Manage Versions** and then choose **Recover Unsaved Presentations**.



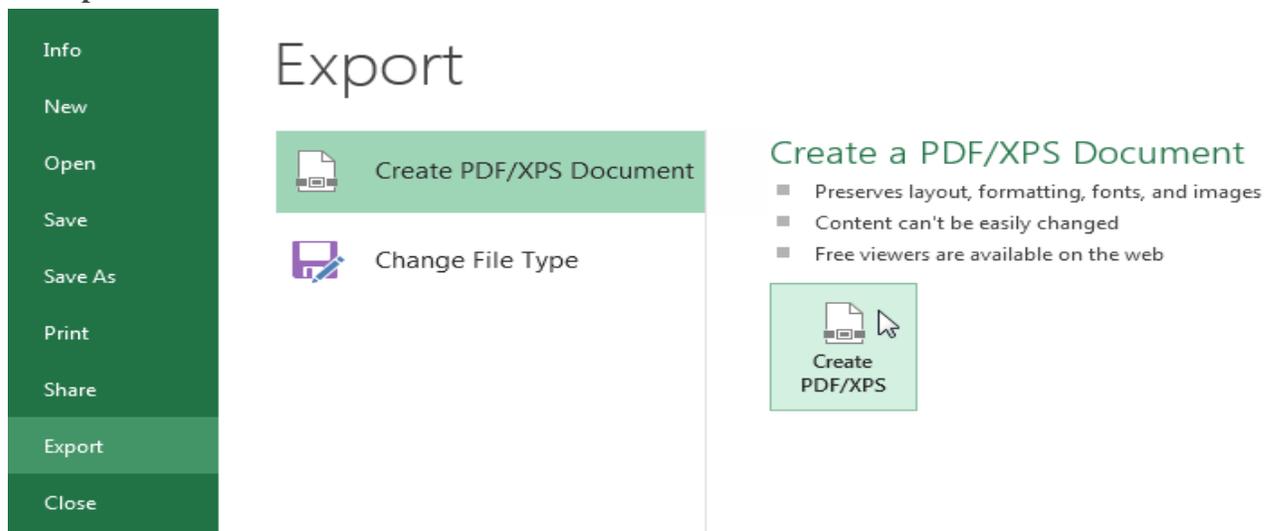
### 1.3.1 Exporting Workbooks

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's easy to **export** your workbook from Excel in a variety of file types.

#### To Export a Workbook as a PDF File:

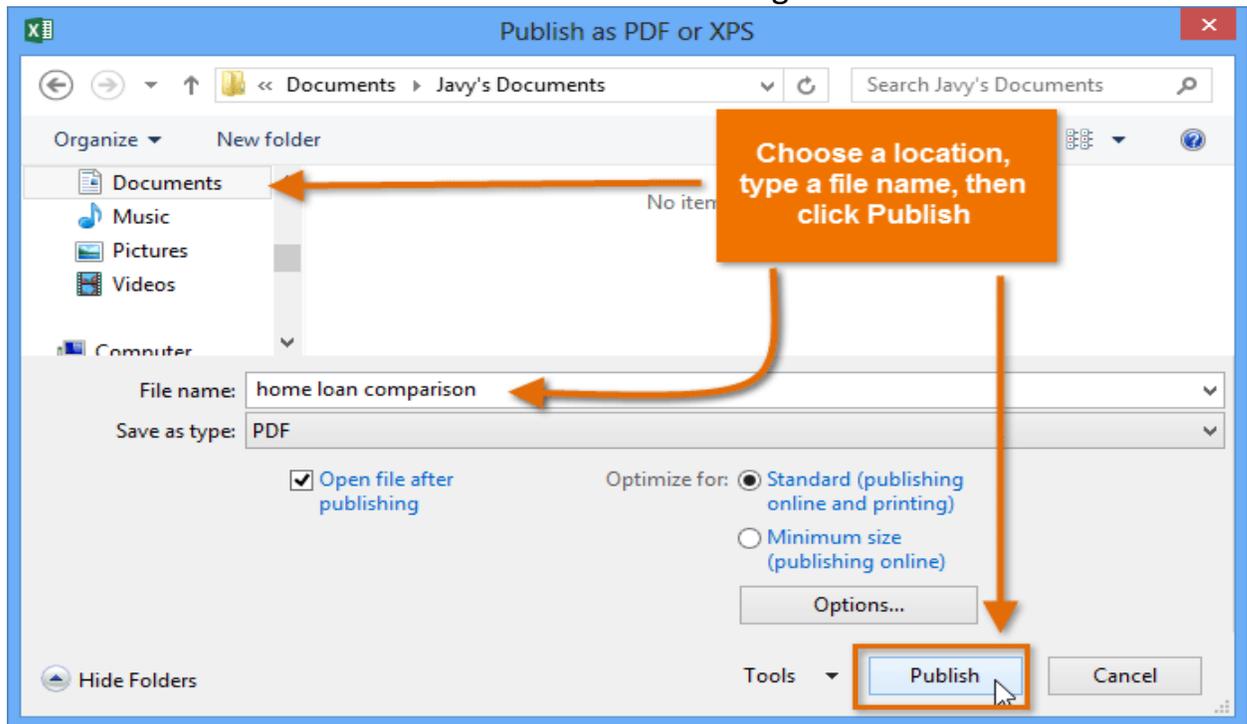
Exporting your workbook as an **Adobe Acrobat Document**, commonly known as a **PDF file**, can be especially useful if sharing a workbook with someone who does not have Excel. A PDF file will make it possible for recipients to view, but not edit, the content of your workbook.

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



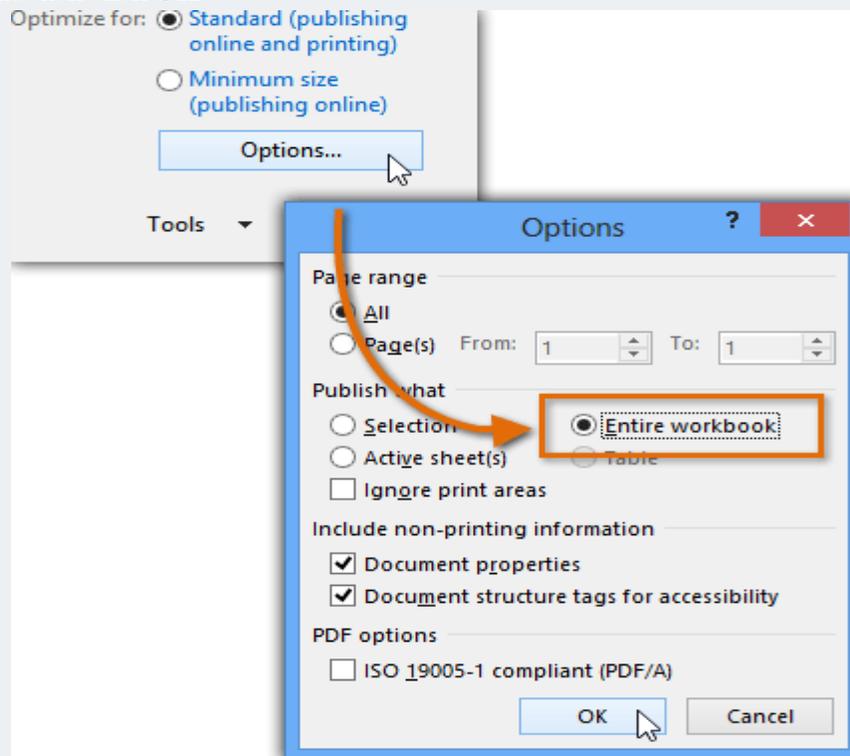
3. The **Save As** dialog box will appear. Select the **location** where you wish to export the workbook, enter a **file name**, then click **Publish**.

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### *Exporting a PDF file*

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** and then click **OK**.



### *Exporting the entire workbook*

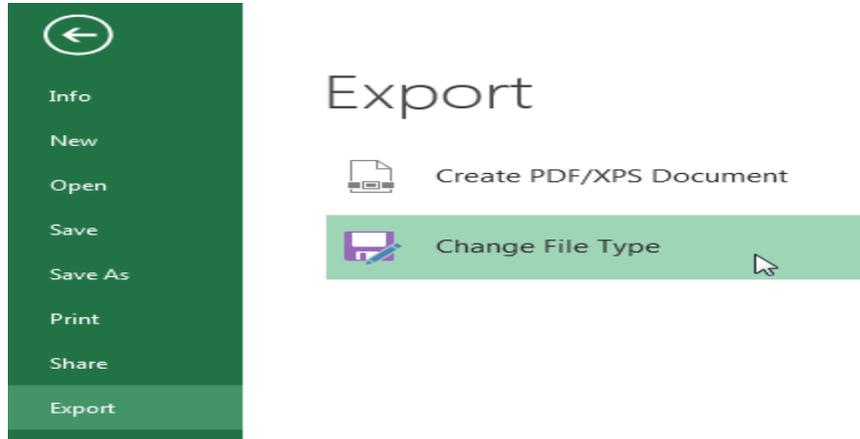
Whenever you export a workbook as a PDF you'll also need to consider how your workbook data will appear on each **page** of the PDF, just like **printing** a workbook. Visit our [Page Layout](#) lesson to learn more about what to consider before exporting a workbook as a PDF.

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### 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.

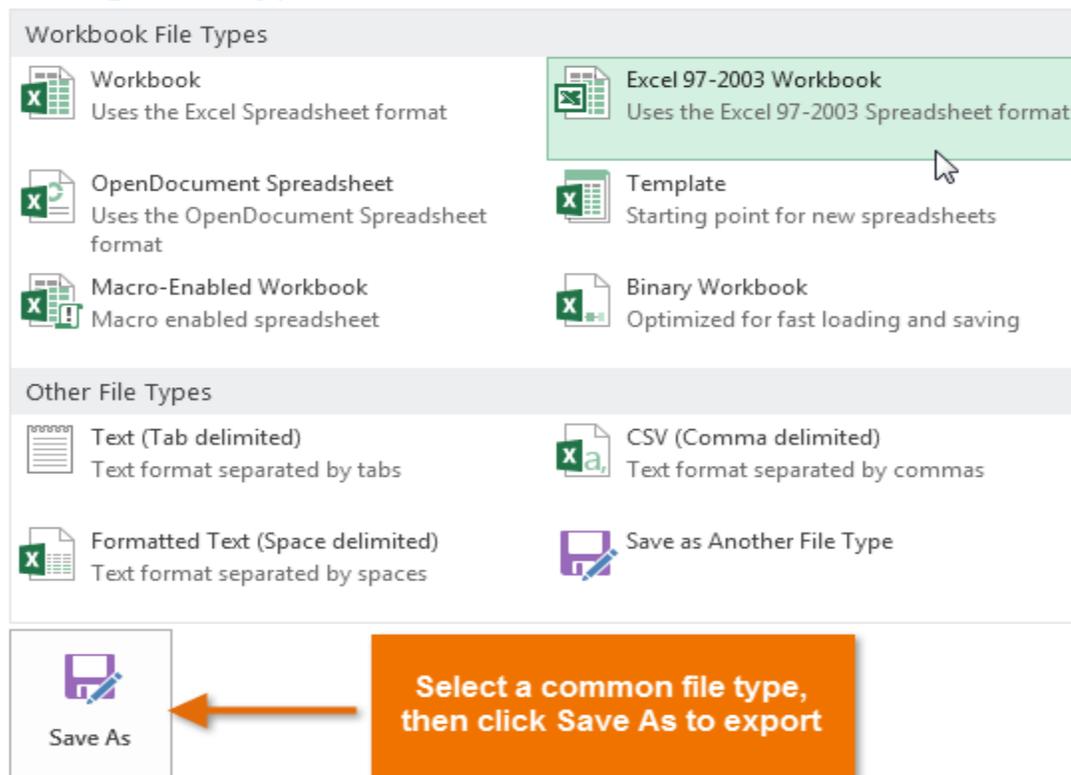
1. Click the **File** tab to access **Backstage view**.
2. Click **Export** and then select **Change File Type**.



*Clicking Change File Type*

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

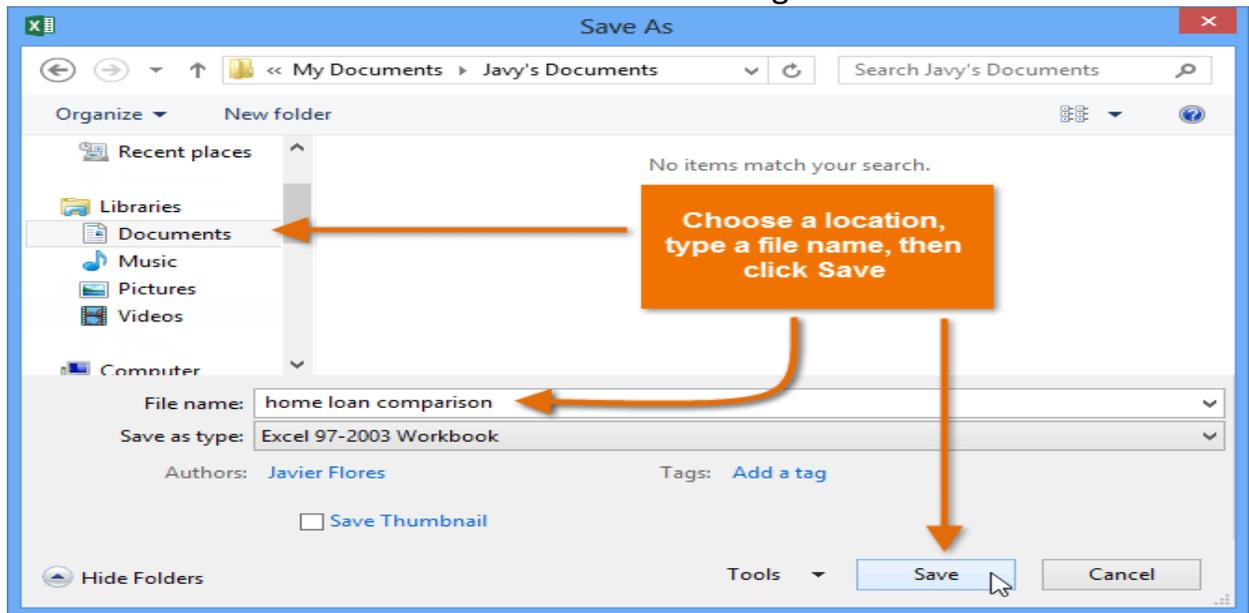
### Change File Type



*Choosing another file type*

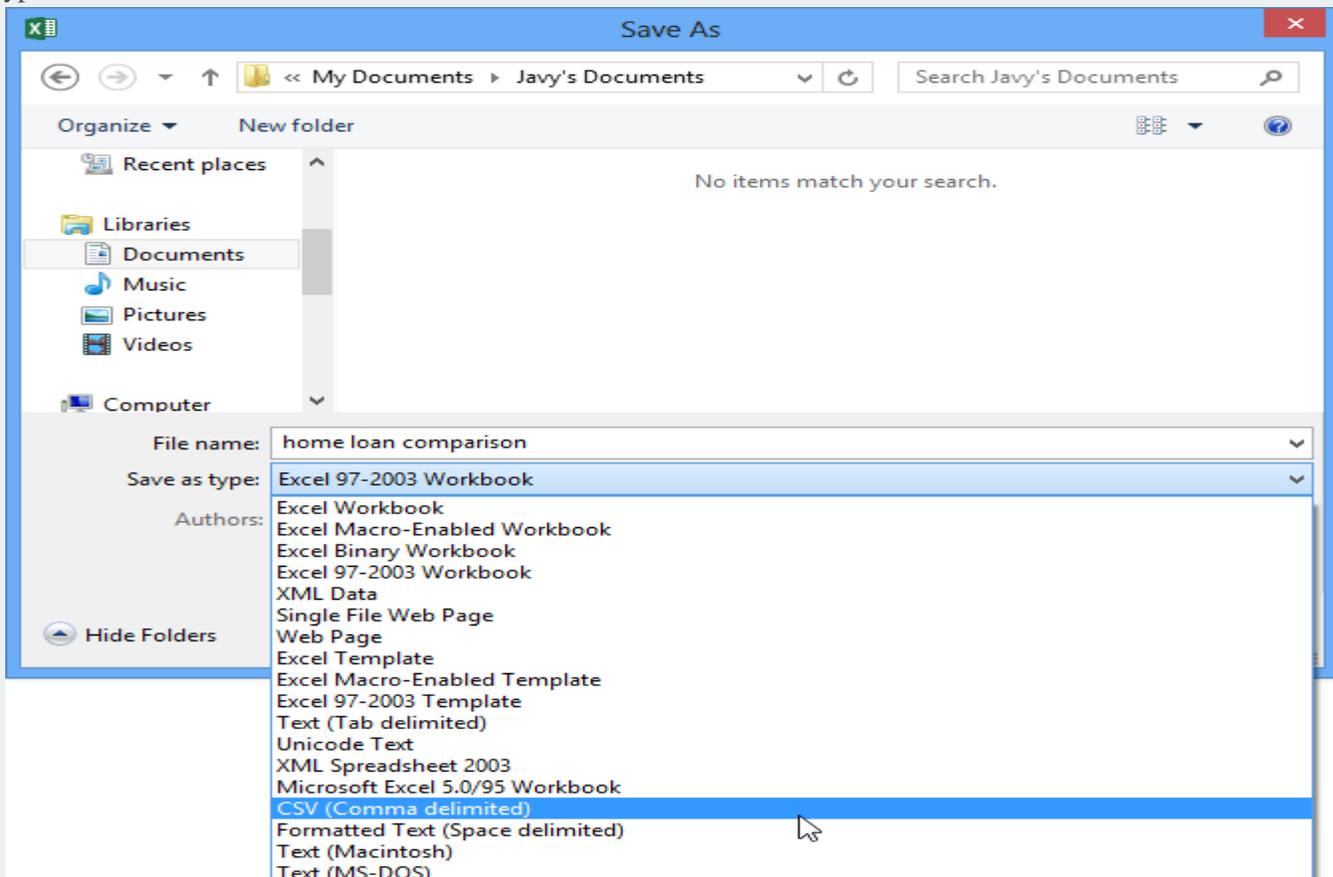
4. The **Save As** dialog box will appear. Select the **location** where you wish to export the workbook, enter a **file name**, then click **Save**.

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*Saving as an Excel 97-2003 workbook*

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.



*Using the Save As type menu to choose a file type*

## 1.3. 2 Sharing Workbooks

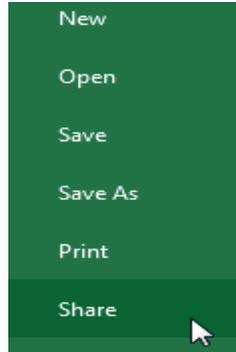
Excel 2013 makes it easy to **share and collaborate** on workbooks using **SkyDrive**. In the past, if you wanted to share a file with someone, you could send it as an email attachment. While convenient, this system also creates **multiple versions** of the same file, which can be difficult to organize.

When you share a workbook from Excel 2013, you're 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 SkyDrive**.

### To Share a Workbook:

1. Click the **File** tab to access **Backstage view**, then click **Share**.



*Clicking Share*

2. The **Share** pane will appear.

Click the buttons in the interactive below to learn more about different ways to share a workbook.

## Share

### Roster

Javier Flores's SkyDrive

### Share

A screenshot of the 'Share' pane in Excel 2013. It shows four options: 'Invite People' (highlighted in green), 'Get a Sharing Link', 'Post to Social Networks', and 'Email'. Each option has a corresponding icon.

### Invite People

Type names or e-mail addresses

Include a personal message with the invitation

Require user to sign in before accessing document.



## Exercise 1.3

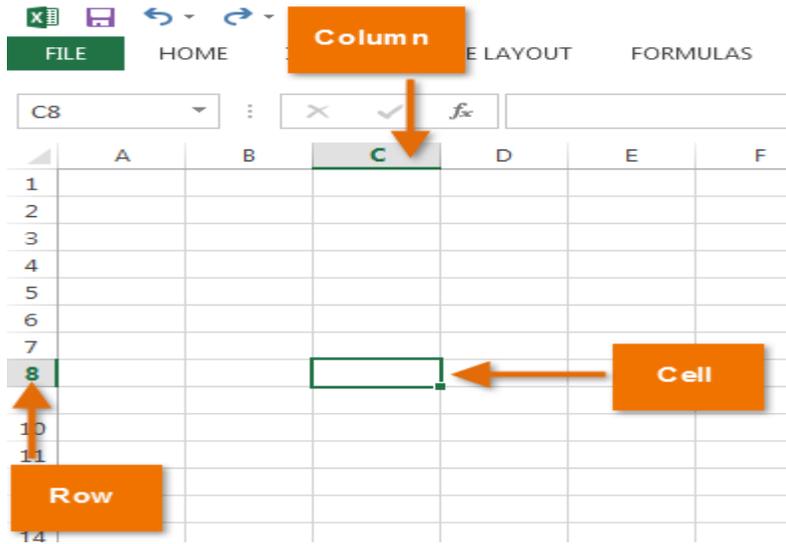
1. Create a **new, blank workbook**.
2. Use the **Save** command to save the workbook to your Desktop.
3. Save the workbook to **SkyDrive** and **invite someone else** to view it.
4. **Export** the workbook as a **PDF** file.

### 1.4 Cell Basics

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

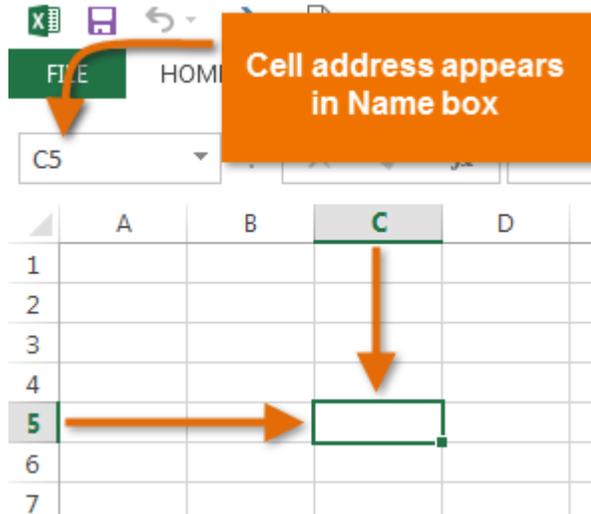
#### Understanding Cells

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)** and rows are identified by **numbers (1, 2, 3)**.



*A cell*

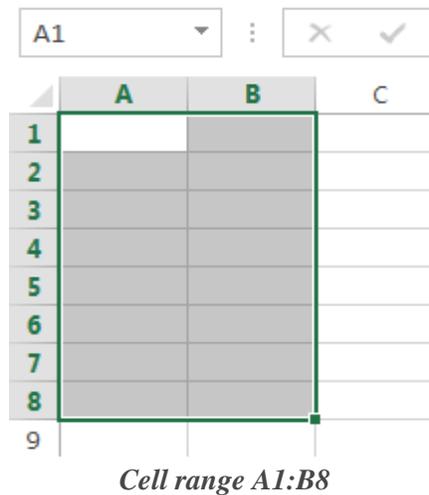
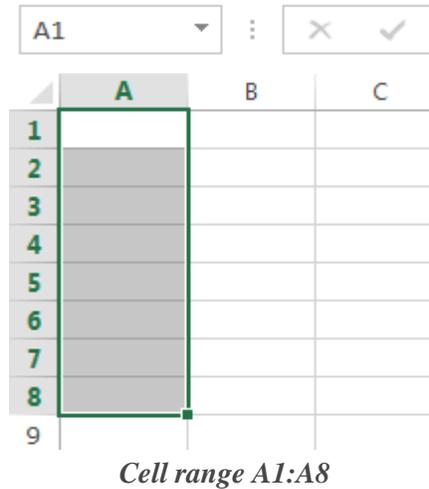
Every cell has its own **name**, or **cell address**, based on its column and row. In this example, the selected cell intersects **column C** and **row 5**, so the cell address is **C5**. The cell address will also appear in the **Name box**. Note that a cell's **column** and **row headings** are **highlighted**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



*Cell C5*

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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**.



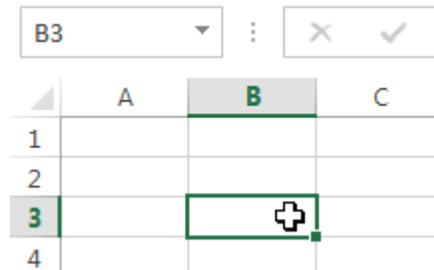
### Selecting Cells

#### To Select a Cell:

To input or edit cell content, you'll 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.

## Microsoft Office Excel 2013 Training Manual



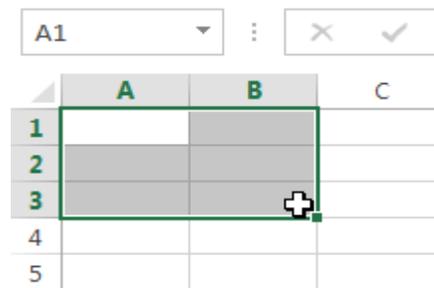
*Selecting a single cell*

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 **cell range**.

1. Click, hold and drag the mouse until all of the **adjoining cells** you wish 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.



*Selecting a cell range*

### 1.4.1 Cell Content

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

- **Text**

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

	A	B	C
1	<b>Date</b>	<b>Sales</b>	<b>Percentage of Total</b>
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			

*Cell text*

### 1.4.2 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			

Cell formatting

### 1.4.3. 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 C9.

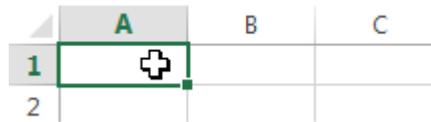
B9 : ✕ ✓ *fx* =SUM(B2:B8)

	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	Weekly Sales	\$ 717.00	

Cell formulas

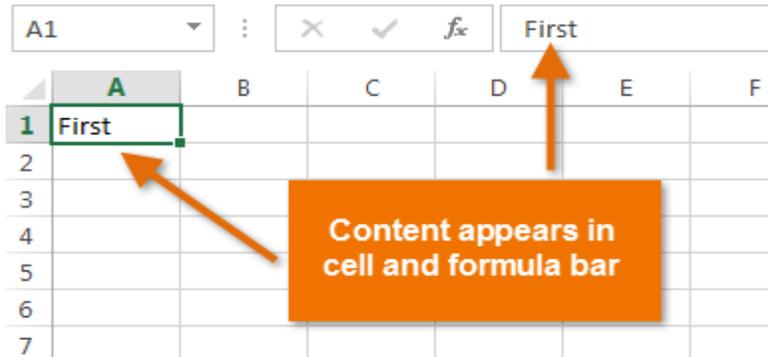
### 1.4.4 Inserting Content

1. Click a **cell** to select it.



*Selecting cell A1*

2. Type **content** into the selected cell and 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.



*Inserting cell content*

### 1.4.5 Deleting Cell Content

1. Select the **cell** with content you wish 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

*Selecting a cell*

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

*Deleting cell content*

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.

### 1. 4. 6 Deleting Cells

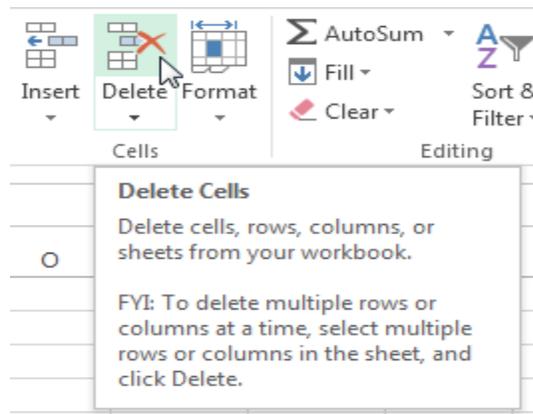
There is an important difference between **deleting the content of a cell** and **deleting the cell itself**. If you delete the entire cell, the cells below it will **shift up** and replace the deleted cells.

1. Select the **cell(s)** you wish to delete.

	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

*Selecting a cell to delete*

2. Select the **Delete** command from the **Home** tab on the **Ribbon**.



*Clicking the Delete command*

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

*Cells shifted to replace the deleted cell*

### 1. 4. 7 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.

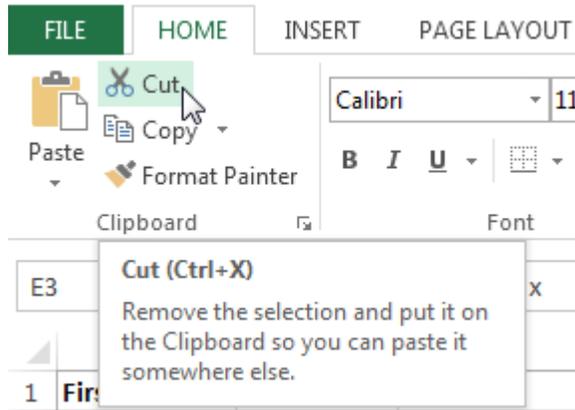
1. Select the **cell(s)** you wish to **copy**.

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

*Selecting a cell to copy*

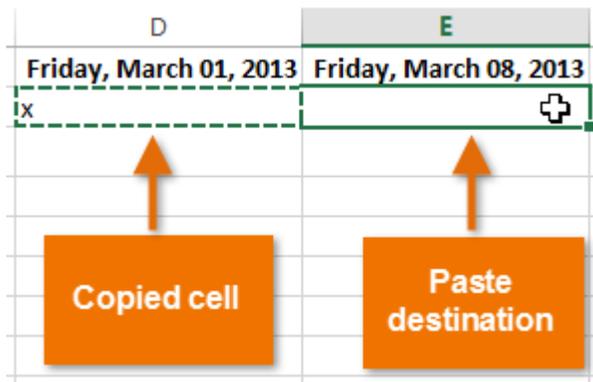
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- Click the **Copy** command on the **Home** tab or press **Ctrl+C** on your keyboard.



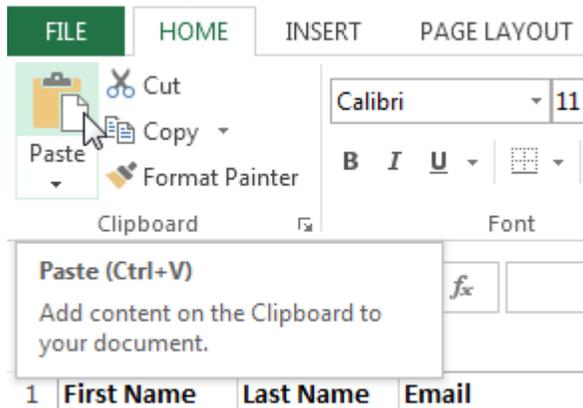
*Clicking the Copy command*

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



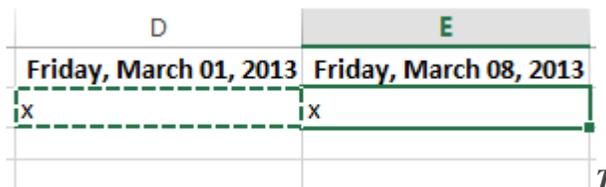
*Pasting cells*

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



*Clicking the Paste command*

- The content will be **pasted** into the selected cells.

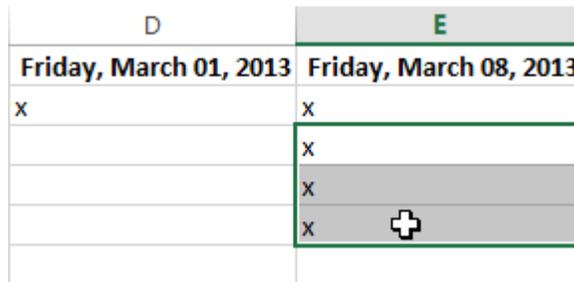


*The pasted cell content*

### 1. 4. 8 Cut and Paste Cell Content

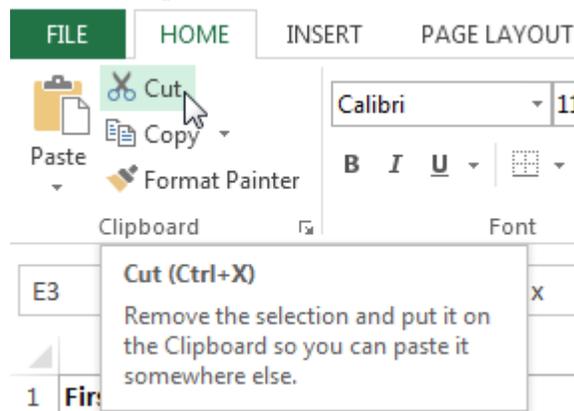
Unlike copying and pasting, which **duplicates** cell content, **cutting** allows you to **move** content between cells.

1. Select the **cell(s)** you wish to **cut**.



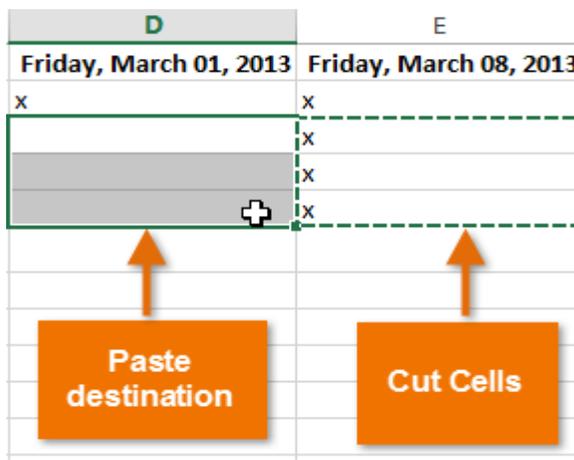
*Selecting a cell range to cut*

2. Click the **Cut** command on the **Home** tab or press **Ctrl+X** on your keyboard.



*Clicking the Cut command*

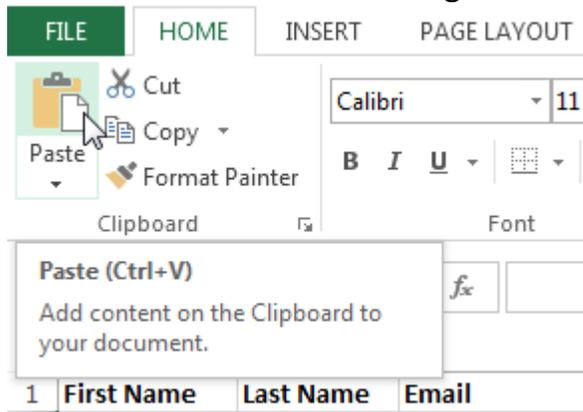
3. Select the cells where you wish to **paste** the content. The cut cells will now have a **dashed box** around them.
- 4.



*Pasting cells*

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

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*Clicking the Paste command*

- The cut content will be **removed** from the original cells and **pasted** into the selected cells.

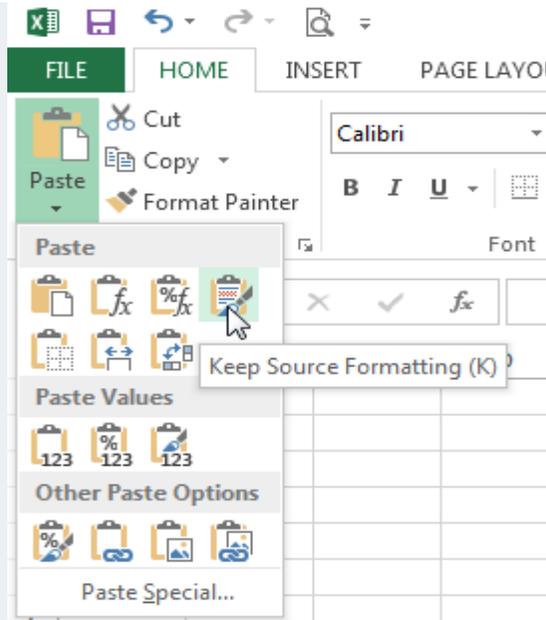
	D	E
	<b>Friday, March 01, 2013</b>	<b>Friday, March 08, 2013</b>
x		x
x		
x		
x		

*The cut and pasted cells*

### 1.4.9 Access More Paste Options

You can also access **additional Paste options**, which are especially convenient when working with cells that contain **formulas** or **formatting**.

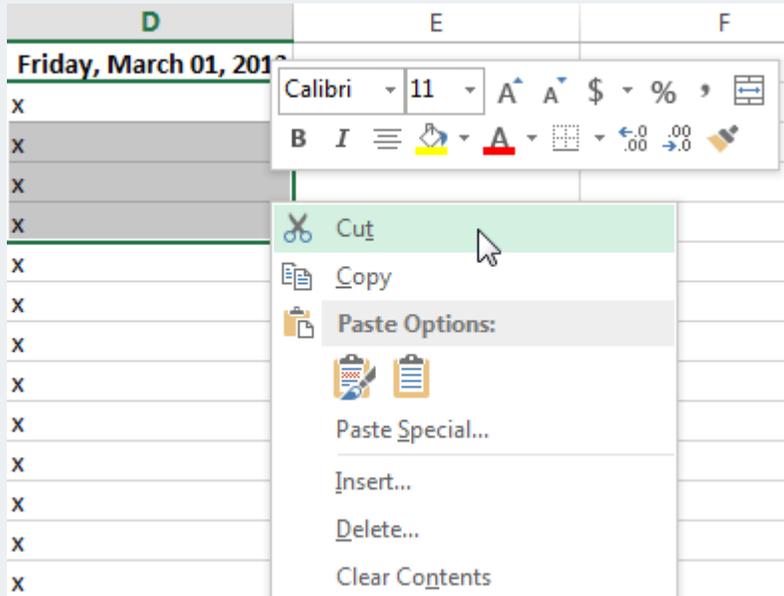
- To access more Paste options, click the **drop-down arrow** on the **Paste** command.



*Additional Paste options*

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Rather than choosing commands from the Ribbon, you can also access commands quickly by **right-clicking**. Simply select the **cell(s)** you wish to **format**, then right-click the mouse. A **drop-down menu** will appear; where you'll find several **commands** also located on the Ribbon.

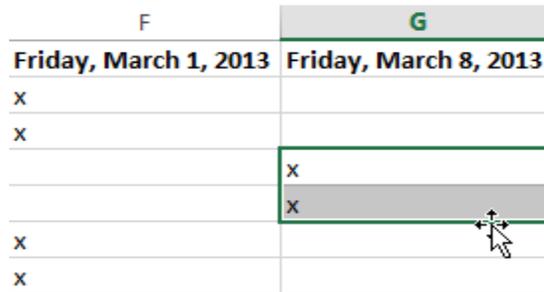


*Right-clicking to access formatting options*

## 1. 4. 10 Drag and Drop Cells

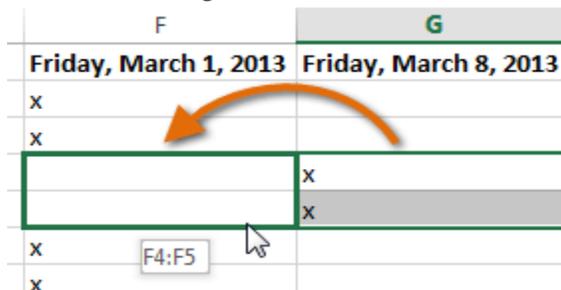
Rather than cutting, copying and pasting, you can also **drag and drop** cells to move their contents.

1. Select the **cell(s)** that you wish 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 4 arrows** .



*Hovering over the cell border*

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

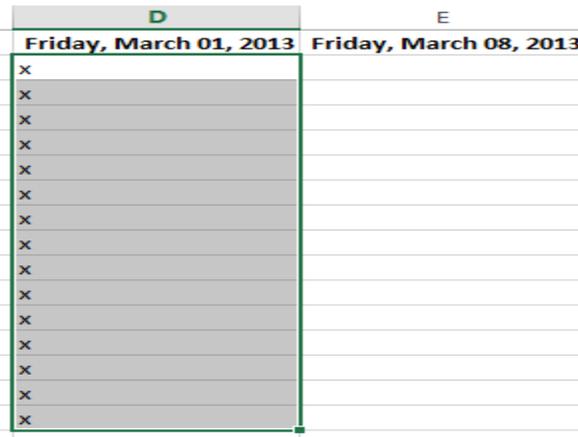




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### *Dragging the fill handle*

3. Release the mouse to **fill** the selected cells.

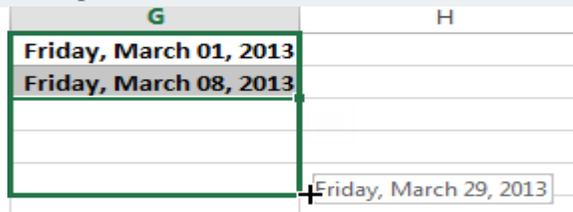


The screenshot shows an Excel worksheet with columns D and E. Column D contains the date 'Friday, March 01, 2013' in the first cell, and the rest of the cells in the column are filled with 'x'. Column E contains the date 'Friday, March 08, 2013' in the first cell. A green border highlights the range of cells in column D from row 1 to row 15, indicating the filled cells.

*The filled cells*

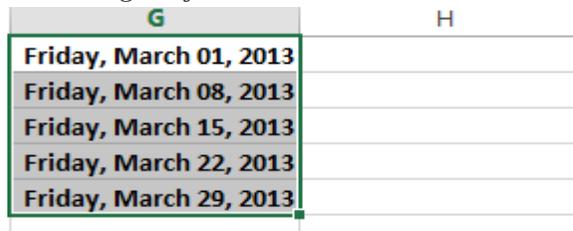
### 1. 4. 12 Continuing a Series with the Fill Handle

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.



The screenshot shows an Excel worksheet with columns G and H. Column G contains the dates 'Friday, March 01, 2013' and 'Friday, March 08, 2013' in the first two cells. A green border highlights these two cells. A mouse cursor is positioned over the fill handle (a small square with a plus sign) at the bottom of the second cell. A preview box shows the date 'Friday, March 29, 2013'.

*Using the fill handle to extend a series*



The screenshot shows the same Excel worksheet as above, but now the series of dates in column G has been extended. The dates are 'Friday, March 01, 2013', 'Friday, March 08, 2013', 'Friday, March 15, 2013', 'Friday, March 22, 2013', and 'Friday, March 29, 2013'. A green border highlights the entire range of cells from row 1 to row 5 in column G.

*The extended series*

### 1. 4. 13 Using Flash Fill

A new feature in Excel 2013, **Flash Fill** can enter data automatically into your worksheet, saving you a lot of time and effort. Just like the Fill handle, **Flash Fill** can guess what kind of information you're entering into your worksheet. In the example below, we'll 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.

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

### *Previewing Flash Fill data*

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

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

### *The entered Flash Fill data*

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

	A	B	C	D
1	<b>Email Address</b>	<b>Last Name</b>	<b>First Name</b>	<b>Friday, March 01, 2013</b>
2	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee	Heidi	x
3	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates	Josie	x
4	<a href="mailto:wendy.crocker@vestainsurance.com">wendy.crocker@vestainsurance.com</a>	Crocker	Wendy	
5	<a href="mailto:loretta.johnson@vestainsurance.com">loretta.johnson@vestainsurance.com</a>			
6	<a href="mailto:walter.rivera@vestainsurance.com">walter.rivera@vestainsurance.com</a>			
7	<a href="mailto:misty.whitfield@vestainsurance.com">misty.whitfield@vestainsurance.com</a>			
8	<a href="mailto:matilda.lewis@vestainsurance.com">matilda.lewis@vestainsurance.com</a>			
9	<a href="mailto:elizabeth.hicks@vestainsurance.com">elizabeth.hicks@vestainsurance.com</a>			
10	<a href="mailto:alvin.rios@vestainsurance.com">alvin.rios@vestainsurance.com</a>	Rios	Alvin	x

-  Undo Flash Fill
-  Accept suggestions
- Select all 0 blank cells
- Select all 76 changed cells

### *Clicking the Flash Fill button*

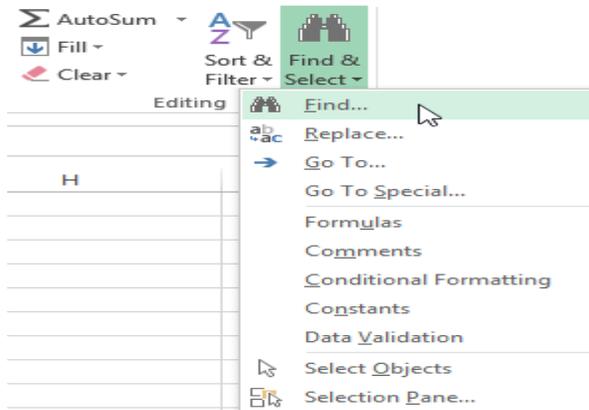
## 1. 4. 14 Find and Replace

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.

### 1. 4. 14.1 Finding Content

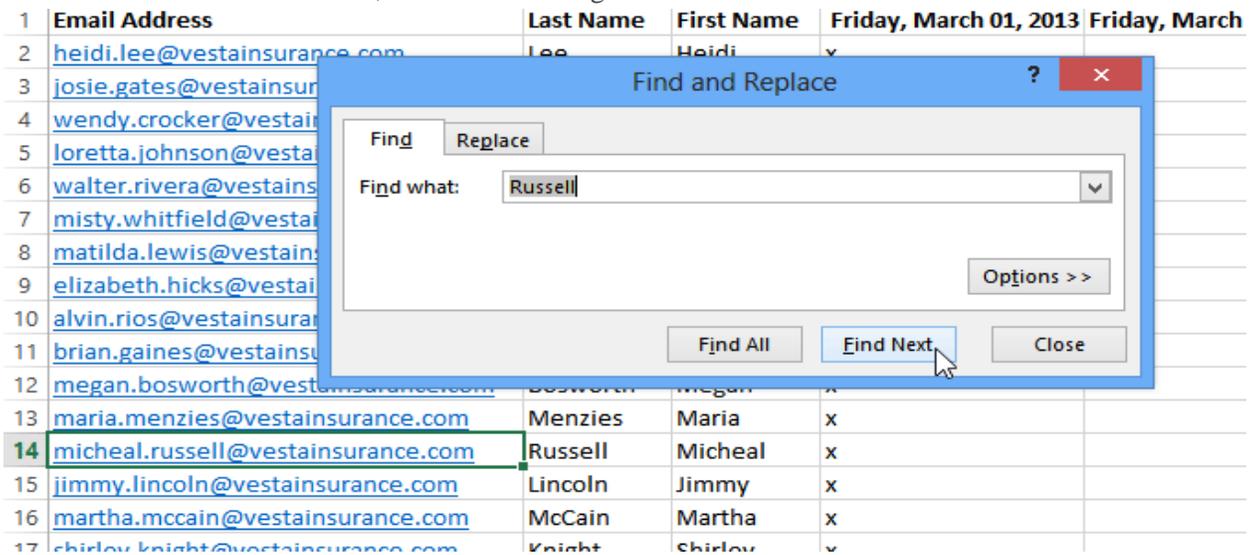
In our example, we'll use the Find command to locate a specific name in a long list of employees.

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



*Clicking the Find command*

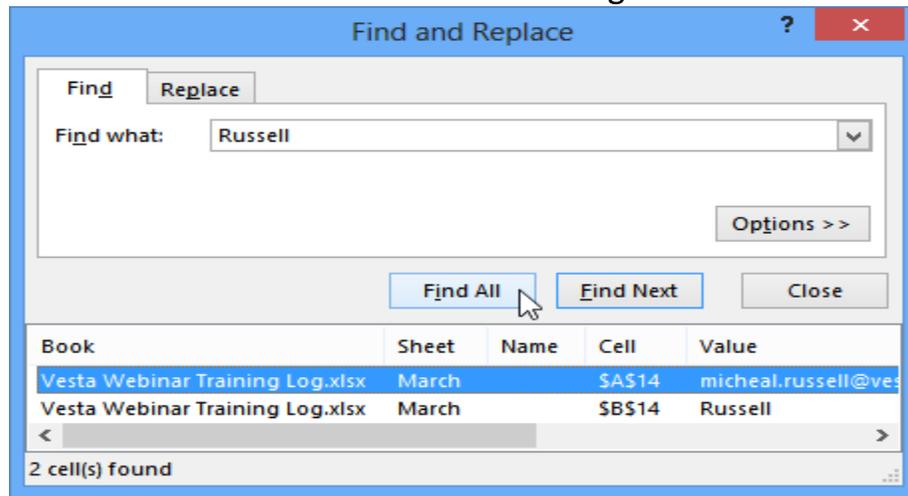
2. The **Find and Replace** dialog box will appear. Enter the **content** you wish to find. In our example, we'll type the employee's name.
3. Click **Find Next**. If the content is found, the cell containing that content will be selected.



*Clicking Find Next*

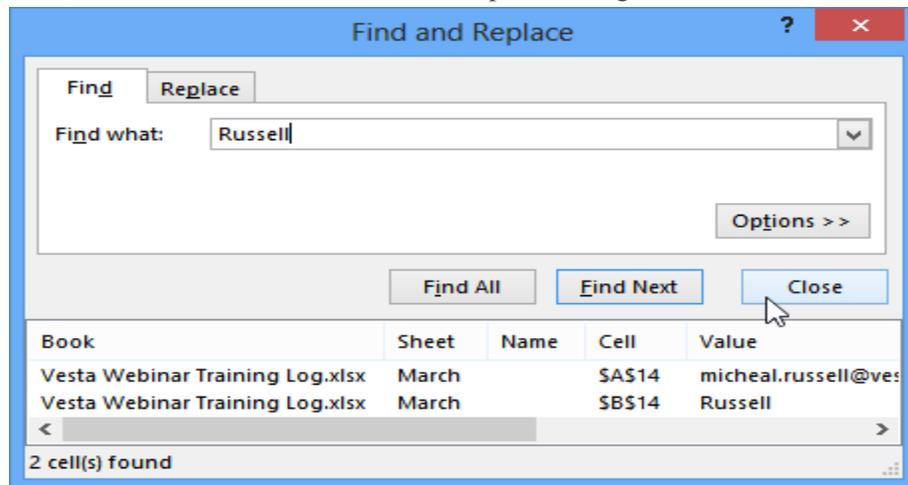
4. Click **Find Next** to find further instances or **Find All** to see every instance of the search term.

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### *Clicking Find All*

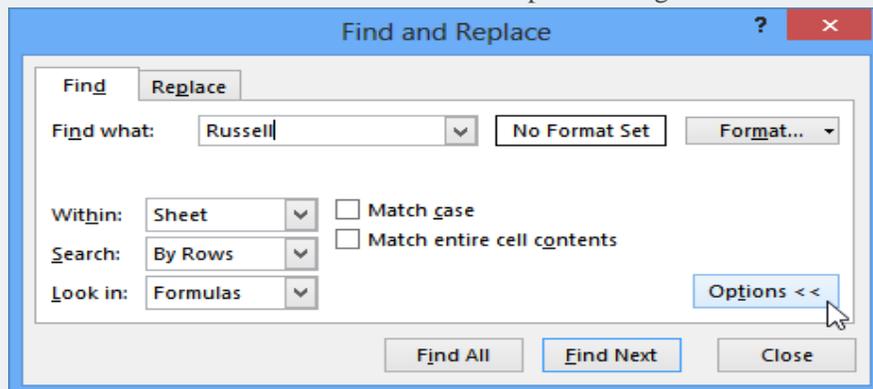
5. When you are finished, click **Close** to exit the Find and Replace dialog box.



### *Closing the Find and Replace dialog box*

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

Click **Options** to see advanced search criteria in the Find and Replace dialog box.

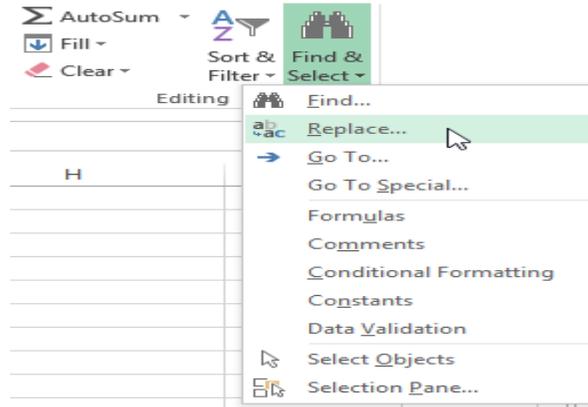


### *Clicking Options*

### 1. 4. 14.2 Replacing Cell Content

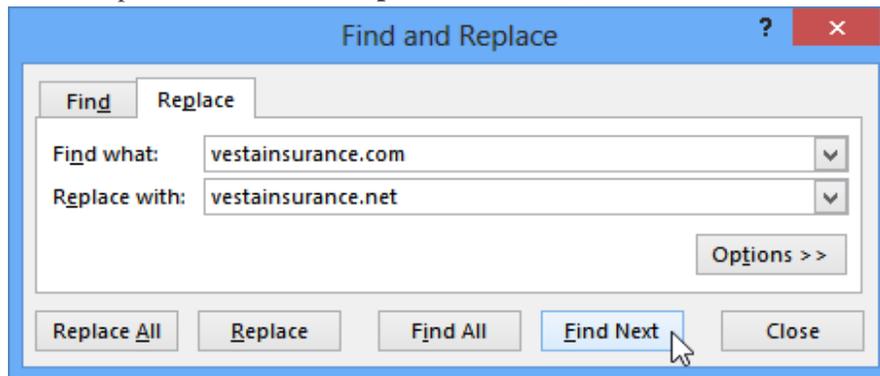
At times, you may discover that you've repeatedly made a mistake throughout your workbook (such as misspelling someone's name), or that you need to exchange a particular word or phrase for another. You can use Excel's **Find and Replace** feature to make quick revisions. In our example, we'll use Find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



*Clicking the Replace command*

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

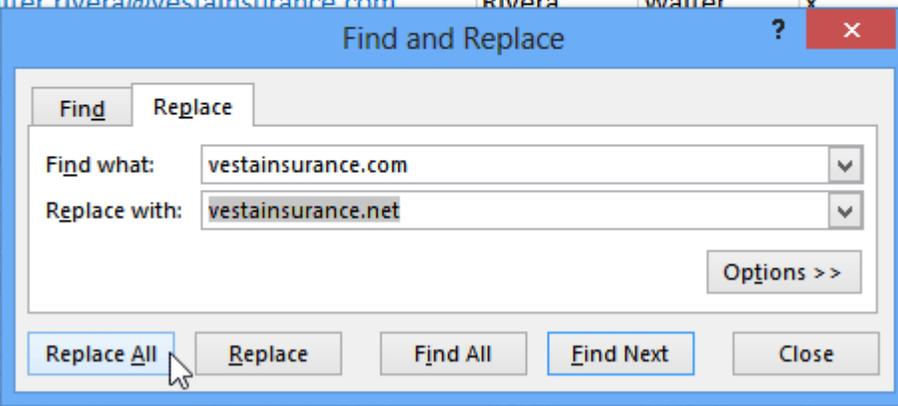


*Clicking Find Next*

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 wish to replace it, select one of the **replace** options:
  - o **Replace** will replace individual instances.
  - o **Replace All** will replace every instance of the text throughout the workbook. In our example, we'll choose this option to save time.

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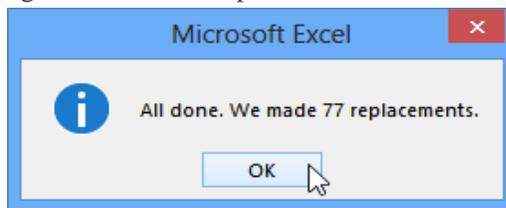
	A	B	C	D
1	<b>Email Address</b>	<b>Last Name</b>	<b>First Name</b>	<b>Friday, March 01, 2013</b>
2	heidi.lee@vestainsurance.com	Lee	Heidi	x
3	josie.gates@vestainsurance.com	Gates	Josie	x
4	wendy.crocker@vestainsurance.com	Crocker	Wendy	x
5	loretta.johnson@vestainsurance.com	Johnson	Loretta	x
6	walter.rivera@vestainsurance.com	Rivera	Walter	x
7	mi			
8	ma			
9	eli			
10	alv			
11	bri			
12	me			
13	ma			
14	mi			
15	jim			
16	ma			
17	shirley.knight@vestainsurance.com	Knight	Shirley	x



*Replacing*

*the highlighted text*

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



*Clicking OK*

- The selected cell content will be **replaced**.

5	heidi.lee@vestainsurance.com	Lee	Heidi
6	josie.gates@vestainsurance.com	Gates	Josie
7	wendy.crocker@vestainsurance.com	Crocker	Wendy
8	loretta.johnson@vestainsurance.com	Johnson	Loretta
9	walter.rivera@vestainsurance.com	Rivera	Walter
10	misty.whitfield@vestainsurance.com	Whitfield	Misty
11	matilda.lewis@vestainsurance.com	Lewis	Matilda
12	elizabeth.hicks@vestainsurance.com	Hicks	Elizabeth

5	heidi.lee@vestainsurance.net	Lee	Heidi
6	josie.gates@vestainsurance.net	Gates	Josie
7	wendy.crocker@vestainsurance.net	Crocker	Wendy
8	loretta.johnson@vestainsurance.net	Johnson	Loretta
9	walter.rivera@vestainsurance.net	Rivera	Walter
10	misty.whitfield@vestainsurance.net	Whitfield	Misty
11	matilda.lewis@vestainsurance.net	Lewis	Matilda
12	elizabeth.hicks@vestainsurance.net	Hicks	Elizabeth

*The replaced content*

- When you are finished, click **Close** to exit the Find and Replace dialog box.

## Microsoft Office Excel 2013 Training Manual

	A	B	C	D
1	<b>Email Address</b>	<b>Last Name</b>	<b>First Name</b>	<b>Friday, March 01, 2013</b>
2	heidi.lee@vestainsurance.net	Lee	Heidi	x
3	josie.gates@vestainsurance.net	Gates	Josie	x
4	wendy.crocker@vestainsurance.net	Crocker	Wendy	x
5	loretta.johnson@vestainsurance.net	Johnson	Loretta	x
6	walter.rivera@vestainsurance.net	Rivera	Walter	x
7	misty.whitfield@vestainsurance.net	Whitfield	Misty	x
8	matilda.lewis@vestainsurance.net	Lewis	Matilda	x
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19	andy.knott@vestainsurance.net	Knott	Andy	x

*Closing the Find and Replace dialog box*

### Exercise 1.4

1. Open an existing Excel 2013 workbook.
2. Select cell D3. Notice how the **cell address** appears in the **Name box** and its **content** appears in both the cell and the **Formula bar**.
3. Select a cell and try inserting **text** and **numbers**.
4. **Delete** a cell and note how the cells below **shift up** to fill in its place.
5. **Cut** cells and **paste** them into a different location. If you are using the example, cut cells **D4:D6** and paste them to **E4:E6**.
6. Try **dragging** and **dropping** some cells to other parts of the worksheet.
7. Use the **Fill handle** to fill in data to adjoining cells both vertically and horizontally. If you are using the example, use the Fill handle to **continue the series** of dates across row 3.
8. Use the **Find** feature to locate content in your workbook. If you are using the example, type the name "**Lewis**" into the **Find what:** field.

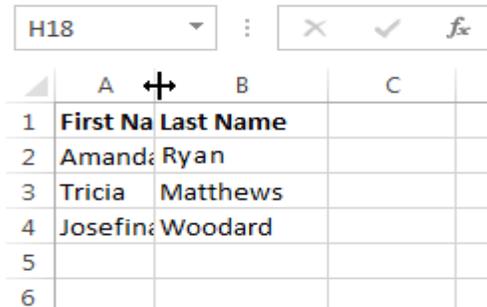
## 1.5. Modifying Columns, Rows, and Cells

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

### 1.5.1 Modifying 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.

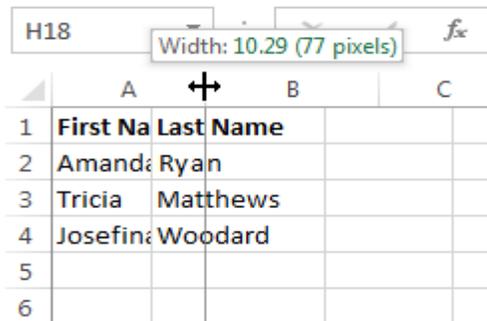
1. Position the mouse over the **column line** in the **column heading** so that the **white cross**  becomes a **double arrow** .



	A	B	C
1	First Na	Last Name	
2	Amanda	Ryan	
3	Tricia	Matthews	
4	Josefina	Woodard	
5			
6			

*Hovering over the column line*

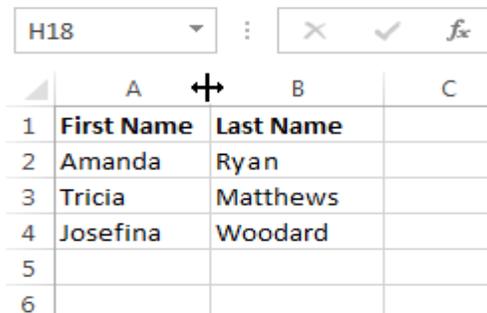
2. Click, hold and drag the mouse to **increase** or **decrease** the column width.



	A	B	C
1	First Na	Last Name	
2	Amanda	Ryan	
3	Tricia	Matthews	
4	Josefina	Woodard	
5			
6			

*Increasing the column width*

3. Release the mouse. The **column width** will be changed.



	A	B	C
1	First Name	Last Name	
2	Amanda	Ryan	
3	Tricia	Matthews	
4	Josefina	Woodard	
5			
6			

*The new column width*

### 1.5.2 AutoFit Column Width

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

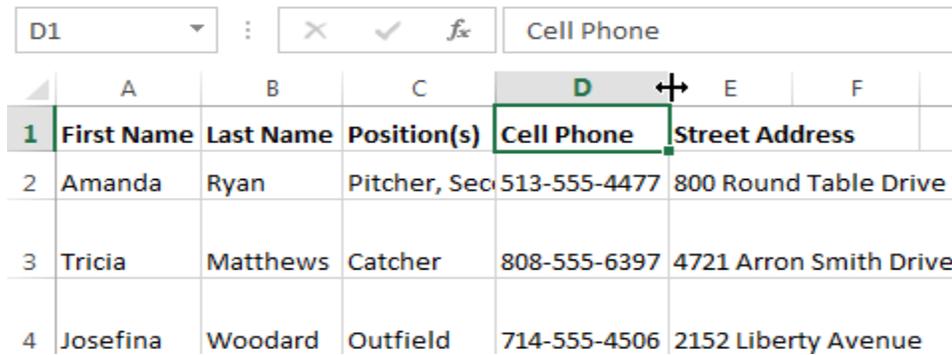
1. Position the mouse over the **column line** in the **column heading** so that the **white cross**  becomes a **double arrow** .



	A	B	C	D	E	F	G
1	First Name	Last Name	Position(s)	Cell Ph	Street Address		
2	Amanda	Ryan	Pitcher, Sec	513-55	800 Round Table Drive		
3	Tricia	Matthews	Catcher	808-55	4721 Arron Smith Drive		
4	Josefina	Woodard	Outfield	714-55	2152 Liberty Avenue		

*Hovering the mouse over the column line*

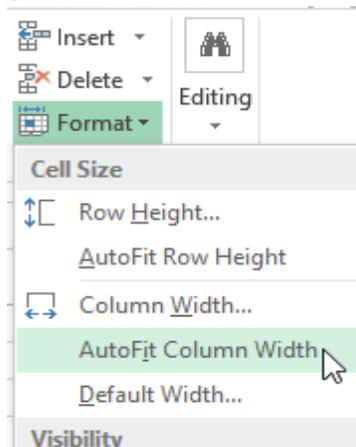
2. Double-click the mouse. The **column width** will be changed automatically to fit the content.



	A	B	C	D	E	F	G
1	First Name	Last Name	Position(s)	Cell Phone	Street Address		
2	Amanda	Ryan	Pitcher, Sec	513-555-4477	800 Round Table Drive		
3	Tricia	Matthews	Catcher	808-555-6397	4721 Arron Smith Drive		
4	Josefina	Woodard	Outfield	714-555-4506	2152 Liberty Avenue		

*The automatically sized column*

You can also AutoFit the width for several columns at the same time. Simply select the columns you would like to AutoFit and 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**.

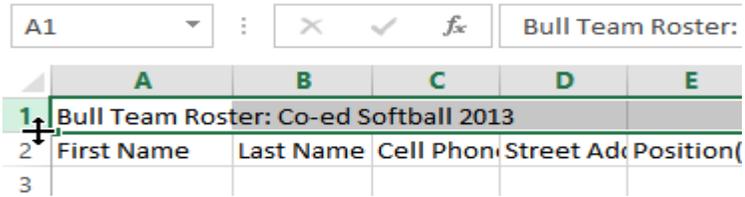


*AutoFitting columns width with the Format command*

### 1.5.3 Modifying Row Height

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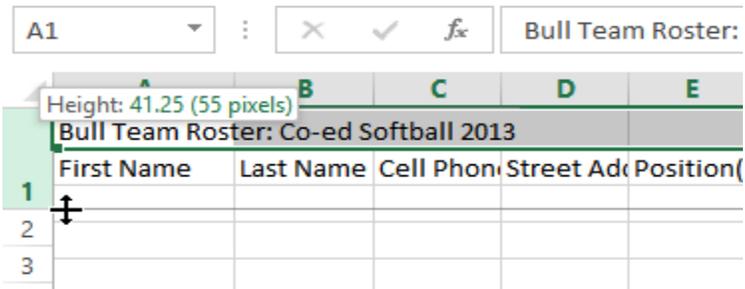
1. Position the **cursor** over the **row line** so that the **white cross**  becomes a **double arrow** .



	A	B	C	D	E
1	Bull Team Roster: Co-ed Softball 2013				
2	First Name	Last Name	Cell Phone	Street Address	Position
3					

*Hovering the mouse over the row line*

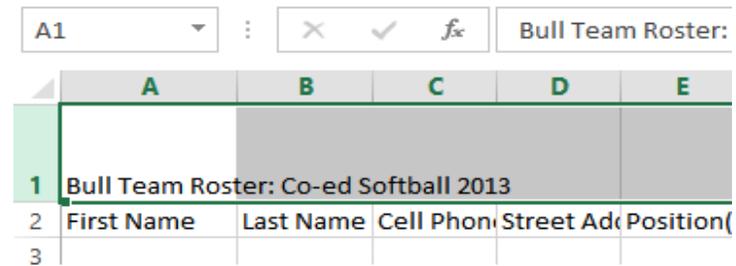
2. Click, hold and drag the mouse to **increase** or **decrease** the row height.



	A	B	C	D	E
1	Bull Team Roster: Co-ed Softball 2013				
2	First Name	Last Name	Cell Phone	Street Address	Position
3					

*Increasing the row height*

3. Release the mouse. The **height** of the selected row will be changed.



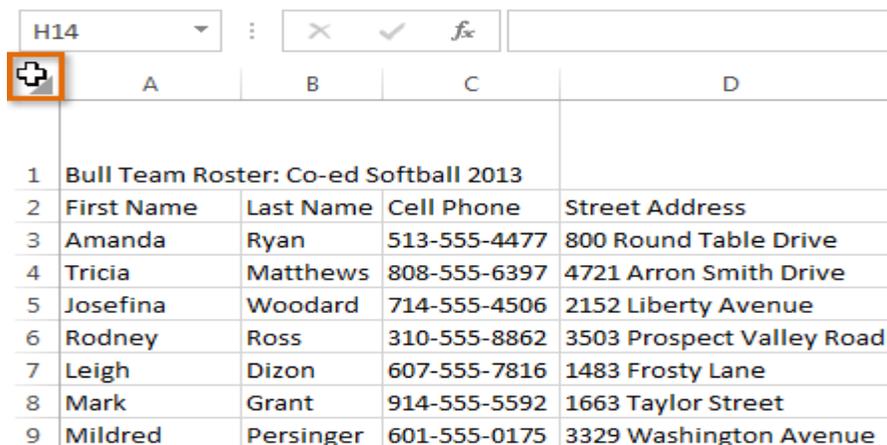
	A	B	C	D	E
1	Bull Team Roster: Co-ed Softball 2013				
2	First Name	Last Name	Cell Phone	Street Address	Position
3					

*The new row height*

### 1.5.4 Modifying All Rows or Columns

Rather than resizing rows and columns individually, you can also 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.

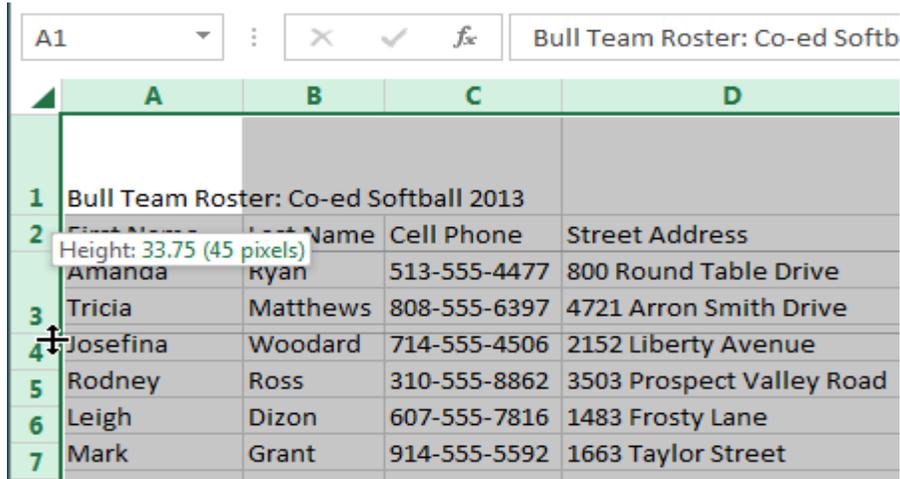


	A	B	C	D
1	Bull Team Roster: Co-ed Softball 2013			
2	First Name	Last Name	Cell Phone	Street Address
3	Amanda	Ryan	513-555-4477	800 Round Table Drive
4	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive
5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue
6	Rodney	Ross	310-555-8862	3503 Prospect Valley 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

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### Selecting every cell in a worksheet

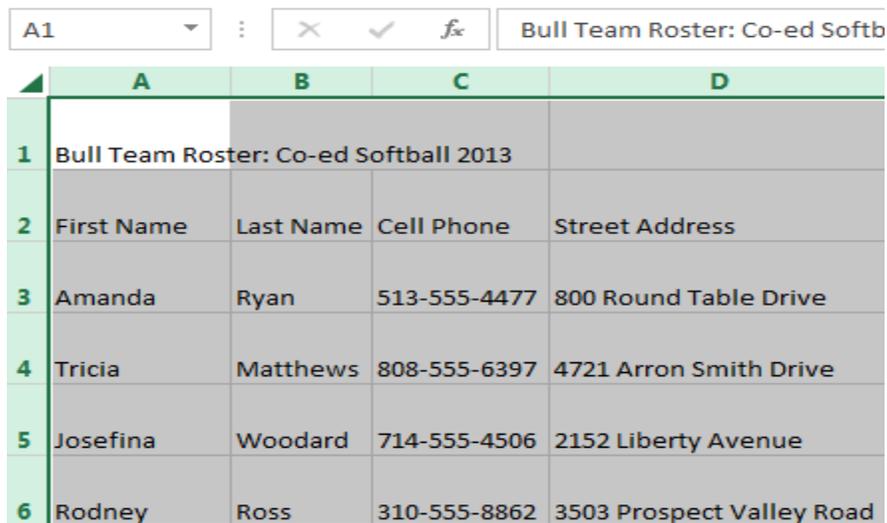
2. Position the mouse over a **row line** so that the **white cross**  becomes a **double arrow** .
3. Click, hold and drag the mouse to **increase** or **decrease** the row height.



	A	B	C	D
1	Bull Team Roster: Co-ed Softball 2013			
2	First Name	Last Name	Cell Phone	Street Address
3	Amanda	Ryan	513-555-4477	800 Round Table Drive
4	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive
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

### Modifying the height of all rows

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



	A	B	C	D
1	Bull Team Roster: Co-ed Softball 2013			
2	First Name	Last Name	Cell Phone	Street Address
3	Amanda	Ryan	513-555-4477	800 Round Table Drive
4	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive
5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue
6	Rodney	Ross	310-555-8862	3503 Prospect Valley Road

### The uniform row height

## 1.5.5. Inserting, Deleting, Moving, and Hiding Rows and Columns

After you've 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.

### 1.5.6.1 Inserting Rows

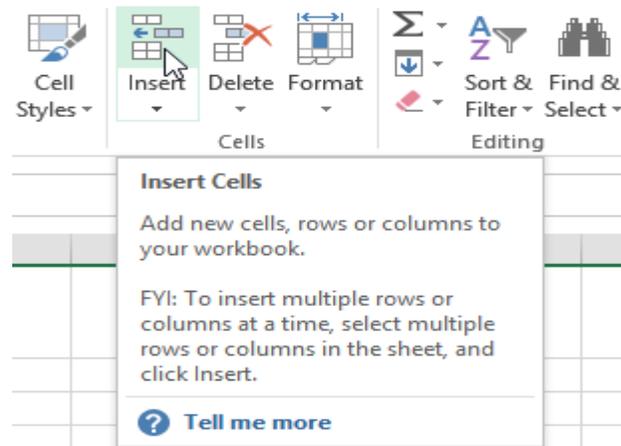
1. Select the **row heading** below where you want the new row to appear. For example, if you want to insert a row between rows 7 and 8, select row 8.

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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

*Selecting a row*

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



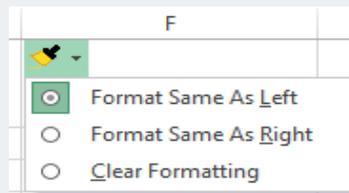
*Clicking the Insert command*

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	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive
10	Leola	McNew	580-555-8177	2182 Cody Ridge Road

*The new row*

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 and then click the **drop-down arrow**.



*The Insert Options button*

### 1.5.5.2 Inserting Columns

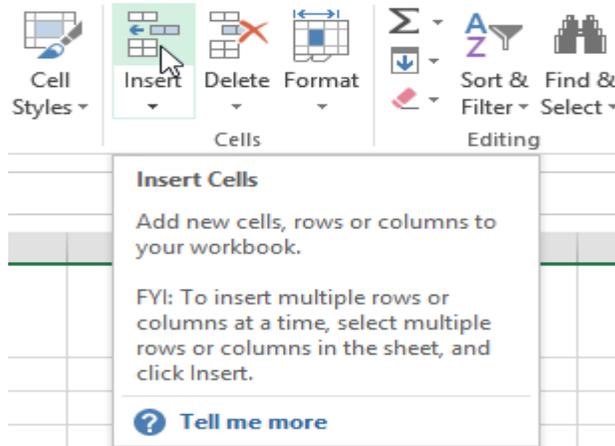
1. Select the **column heading** to the right of where you want the new column to appear. For example, if you want to insert a column between columns D and E, select column E.

## Microsoft Office Excel 2013 Training Manual

D	E	F
Street Address	Position(s)	
300 Round Table Drive	Pitcher, Second base	
4721 Arron Smith Drive	Catcher	
2152 Liberty Avenue	Outfield	
3503 Prospect Valley Road	First base	
1483 Frosty Lane	Third base	
1663 Taylor Street	Shortstop	
3329 Washington Avenue	First base, pitcher	
1736 Broad Street	DH	
2937 Earnhardt Drive	Second base	
232 Timber Oak Drive	Right field	
4072 Nelm Street	Third Base	
2182 Cody Ridge Road	Pitcher	
1001 Cerullo Road	Second base	

*Selecting a column*

- Click the **Insert** command on the **Home** tab.



*Clicking the Insert command*

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

D	E	F
Street Address		Position(s)
800 Round Table Drive		Pitcher, Second base
4721 Arron Smith Drive		Catcher
2152 Liberty Avenue		Outfield
3503 Prospect Valley Road		First base
1483 Frosty Lane		Third base
1663 Taylor Street		Shortstop
3329 Washington Avenue		First base, pitcher
1736 Broad Street		DH
2937 Earnhardt Drive		Second base
232 Timber Oak Drive		Right field
4072 Nelm Street		Third Base
2182 Cody Ridge Road		Pitcher
1001 Cerullo Road		Second base
9 Tenmile Road		Third base
1386 Patterson Street		Outfield, catcher
3990 Pretty View Lane		Left field

*The new column*

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

### 1.5.6.3 Deleting Rows

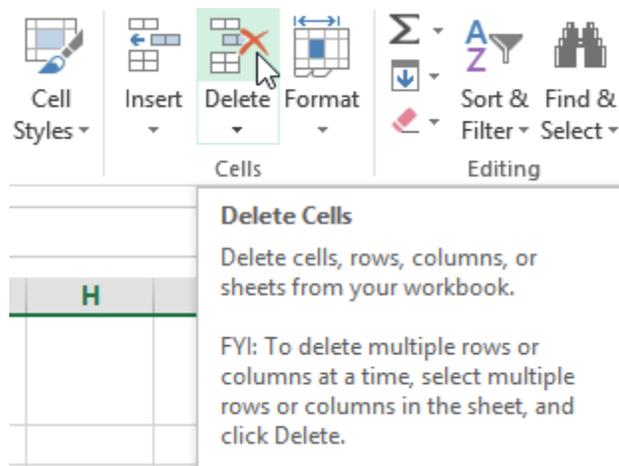
It's easy to **delete** any row that you no longer need in your workbook.

1. Select the **row(s)** you want to delete. In our example, we'll 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

*Selecting rows to delete*

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



*Clicking the Delete command*

3. The **selected row(s)** will be deleted and the rows below will **shift up**. In our example, **rows 9-11** are now **rows 6-8**.

5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue
6	Mildred	Persinger	601-555-0175	3329 Washington Avenue
7	Dwayne	Patnode	205-555-3783	1736 Broad Street
8	Bonnie	Benjamin	502-555-1212	2937 Earnhardt Drive
9	Eva	Ramer	805-555-8514	232 Timber Oak Drive
10	Carol	Pena	571-555-0704	4072 Nelm Street
11	Leola	McNew	580-555-8177	2182 Cody Ridge Road

*Rows 9-11 shifted up to replace rows 6-8*

### 1.5.5. 4 Deleting Columns

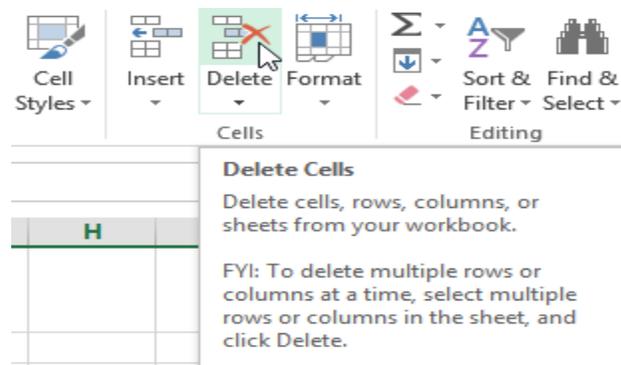
1. Select the **columns(s)** you want to delete. In our example, we'll select **column E**.

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D	E	F
Street Address	Zip Code	Position(s)
800 Round Table Drive	27606	Pitcher, Second base
4721 Arron Smith Drive	27704	Catcher
2152 Liberty Avenue	27615	Outfield
3329 Washington Avenue	27513	First base, pitcher
1736 Broad Street	27613	DH
2937 Earnhardt Drive	27606	Second base
232 Timber Oak Drive	27704	Right field
4072 Nelm Street	27615	Third Base
2182 Cody Ridge Road	27513	Pitcher
1001 Cerullo Road	27613	Second base
9 Tenmile Road	27606	Third base
1386 Patterson Street	27704	Outfield, catcher
3990 Pretty View Lane	27615	Left field
533 Spring Avenue	27513	Shortstop, pinch runner
2723 Nelm Street	27613	Left field, Center field

*Selecting a column to delete*

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



*Clicking the Delete command*

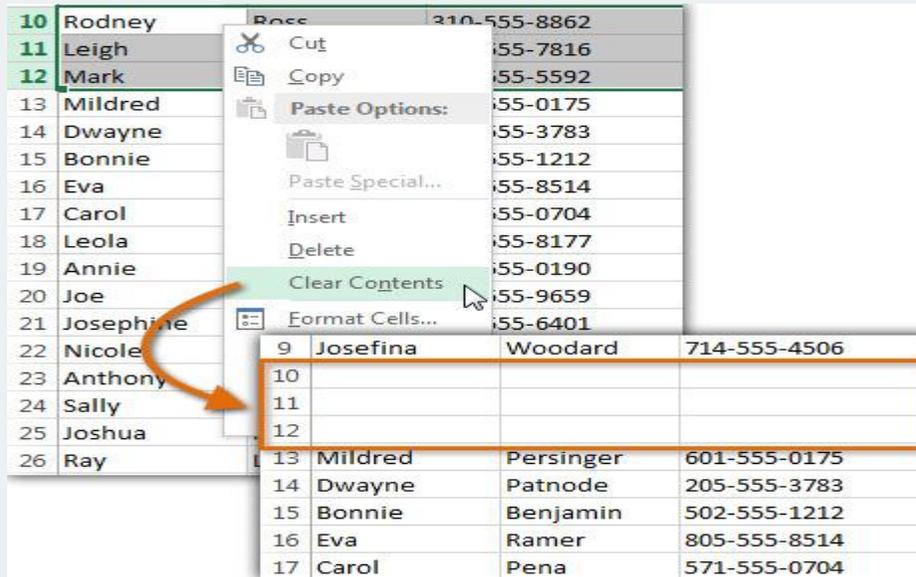
- The **selected column(s)** will be deleted and the columns to the right will **shift left**. In our example, **Column F** is now **Column E**.

D	E
Street Address	Position(s)
800 Round Table Drive	Pitcher, Second base
4721 Arron Smith Drive	Catcher
2152 Liberty Avenue	Outfield
3329 Washington Avenue	First base, pitcher
1736 Broad Street	DH
2937 Earnhardt Drive	Second base
232 Timber Oak Drive	Right field
4072 Nelm Street	Third Base
2182 Cody Ridge Road	Pitcher
1001 Cerullo Road	Second base
9 Tenmile Road	Third base
1386 Patterson Street	Outfield, catcher
3990 Pretty View Lane	Left field
533 Spring Avenue	Shortstop, pinch runner
2723 Nelm Street	Left field, Center field

*Column F shifted right to replace column E*

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It's 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** and then select **Clear Contents** from the drop-down menu.

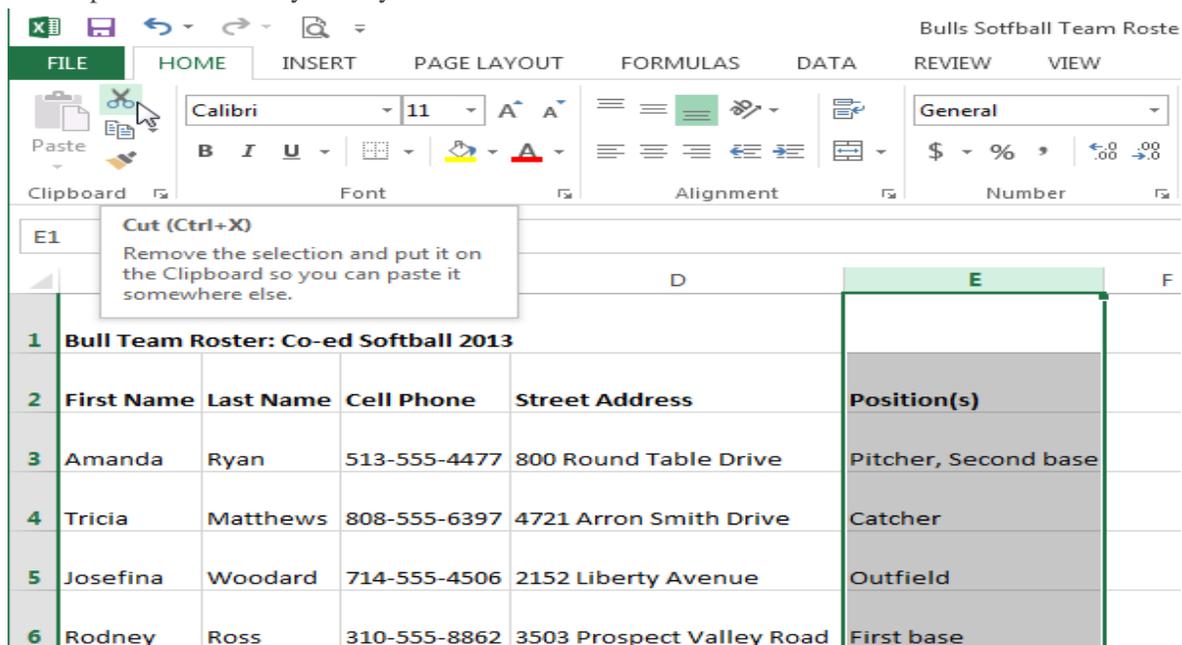


*Clearing the contents from several rows*

### 1.5.5.5 Deleting Rows/Columns 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.

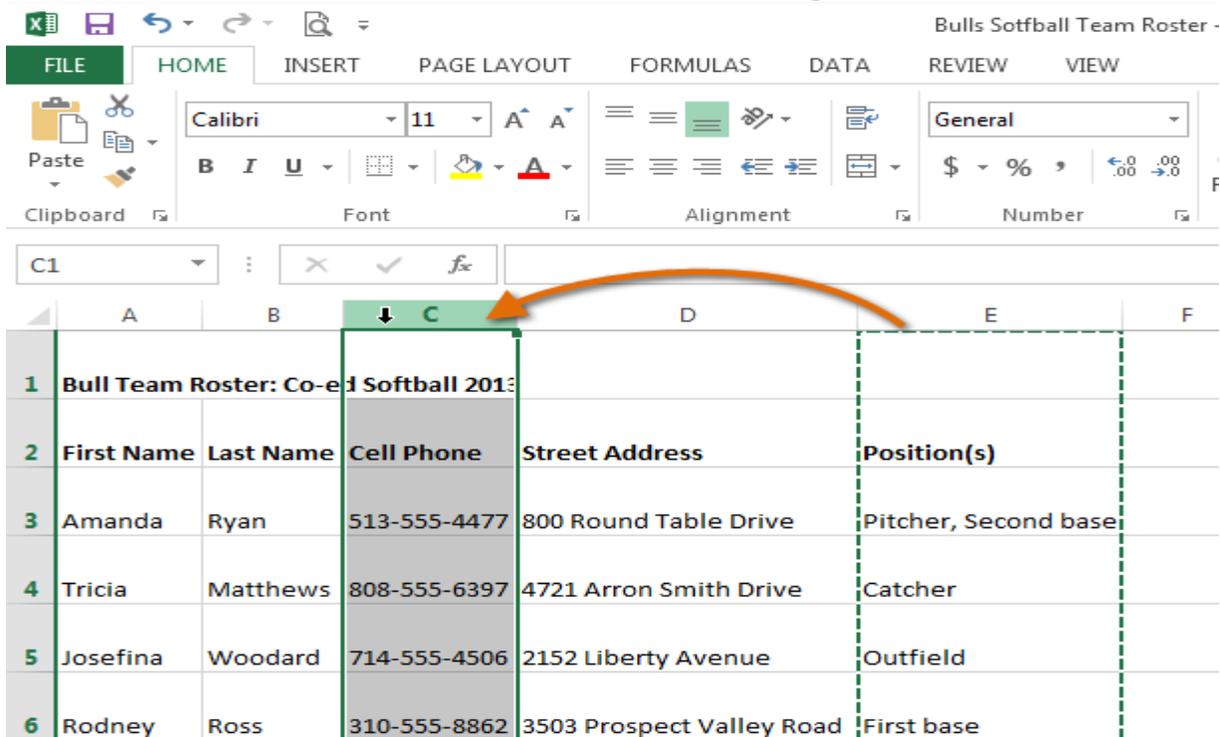
1. Select the desired **column heading** for the column you wish to move, then click the **Cut** command on the **Home** tab or press **Ctrl+X** on your keyboard.



*Cutting an entire column*

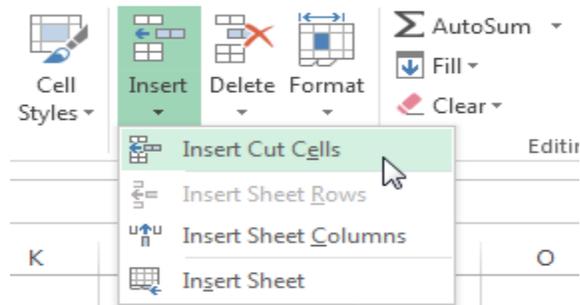
2. Select the **column heading** to the right of where you want to move the column. For example, if you want to move a column between columns B and C, select column C.

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### *Choosing a destination for the column*

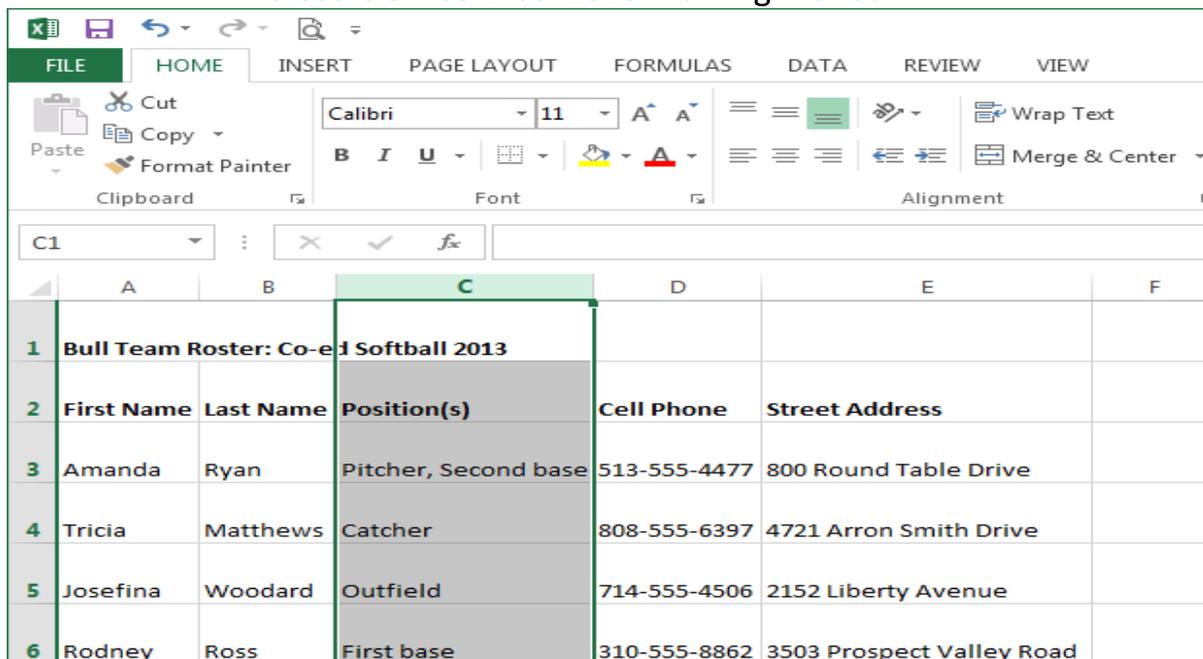
3. Click the **Insert** command on the **Home** tab and then select **Insert Cut Cells** from the drop-down menu.



### *Inserting the column*

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

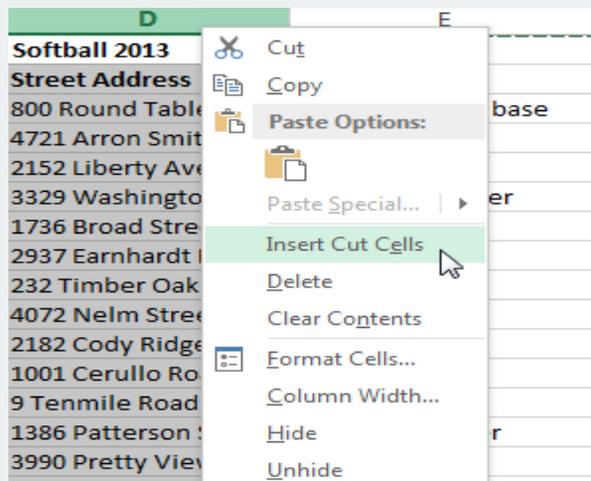
## Microsoft Office Excel 2013 Training Manual



	A	B	C	D	E	F
1	<b>Bull Team Roster: Co-ed Softball 2013</b>					
2	<b>First Name</b>	<b>Last Name</b>	<b>Position(s)</b>	<b>Cell Phone</b>	<b>Street Address</b>	
3	Amanda	Ryan	Pitcher, Second base	513-555-4477	800 Round Table Drive	
4	Tricia	Matthews	Catcher	808-555-6397	4721 Arron Smith Drive	
5	Josefina	Woodard	Outfield	714-555-4506	2152 Liberty Avenue	
6	Rodney	Ross	First base	310-555-8862	3503 Prospect Valley Road	

*The moved column*

You can also access the **Cut** and **Insert** commands by right-clicking the mouse and then selecting the **desired commands** from the drop-down menu.



*Right-clicking to Insert Cut Cells*

### 1.5.5. 6 Hiding and Un hiding 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'll hide columns C and D to make it easier to compare columns A, B and E.

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

## Microsoft Office Excel 2013 Training Manual

	A	B	C	D
1	<b>First Name</b>	<b>Last</b>	<b>Cell Phone</b>	<b>Street Address</b>
2	Amanda	Ryan	513-555-4477	800 Round Table I
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 I
14	Annie	Muro	502-555-0190	1001 Cerullo Road
15	Joe	Rodriguez	781-555-9659	9 Tenmile Road

*Hiding the selected columns*

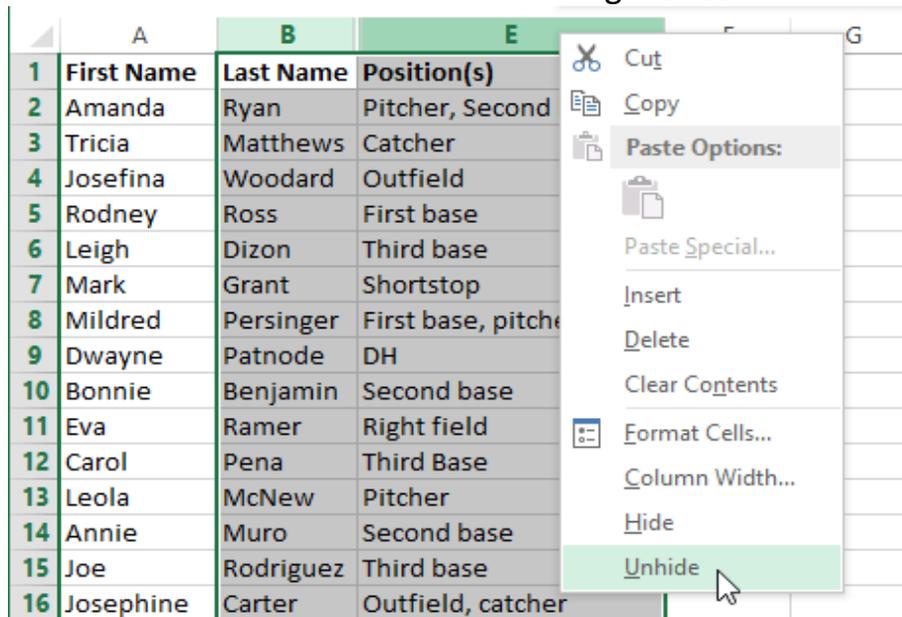
- The columns will be **hidden**. The **green column line** indicates the location of the hidden columns.

	A	B	E
1	<b>First Name</b>	<b>Last</b>	<b>Position(s)</b>
2	Amanda	Ryan	Pitcher, Second base
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, pitcher
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

*The hidden columns*

- 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'll select columns **B** and **E**.
- Right-click the mouse and then select **Unhide** from the **formatting** menu. The hidden columns will reappear.

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*Unhiding the hidden columns*

### 1.5.6 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 resizing a column. Wrapping the text will automatically modify a cell's **row height**, allowing the cell contents to be displayed **on multiple lines**. Merging allows you to combine a cell with adjacent, empty cells to create **one large cell**.

#### 1.5.6.1 Wrapping Text in Cells

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

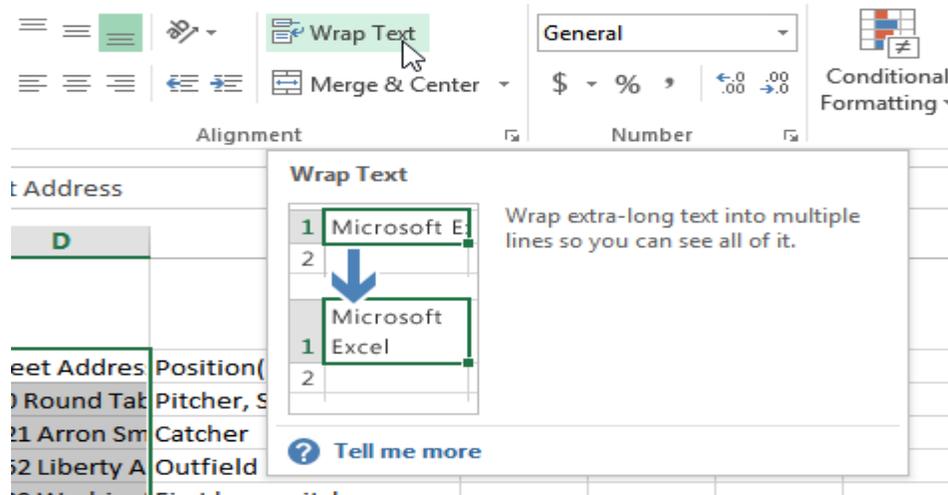
1. Select the cells you wish to wrap. In this example, we'll select the cells in **column D**.

	A	B	C	D	E
1	Bull Team Roster: Co-ed Softball 2013				
2	First Name	Last Name	Cell Phone	Street Address	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 Nelms 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

# Microsoft Office Excel 2013 Training Manual

## Selecting cells to wrap

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



*Clicking the Wrap Text command*

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

	A	B	C	D	E
1	Bull Team Roster: Co-ed Softball 2013				
2	First Name	Last Name	Cell Phone	Street Address	Position(s)
3	Amanda	Ryan	513-555-4477	800 Round Table Drive	Pitcher, Second base
4	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive	Catcher
5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue	Outfield
6	Mildred	Persinger	601-555-0175	3329 Washington Avenue	First base, pitcher

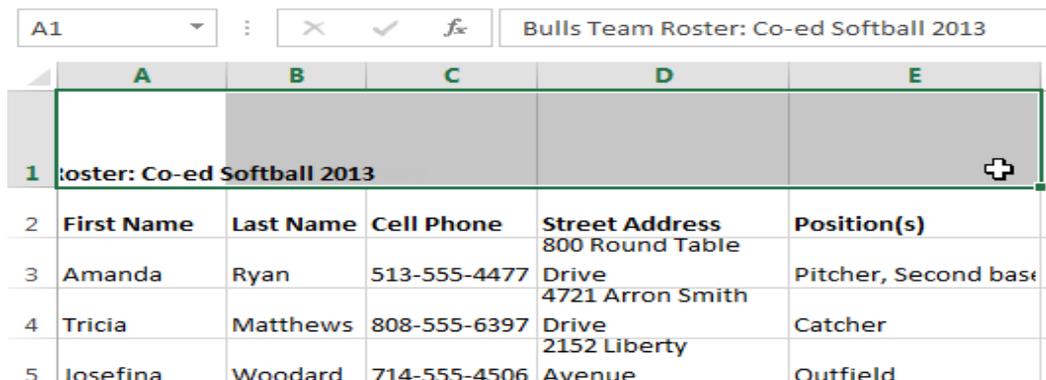
*The wrapped text*

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

## 1.5.6.2 Merging Cells Using the Merge & Center Command

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

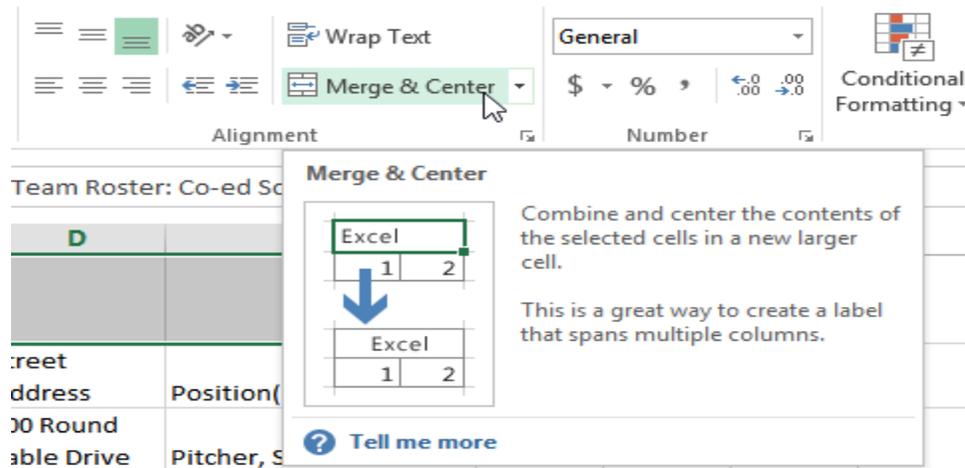
1. Select the **cell range** you want to merge together.



## Microsoft Office Excel 2013 Training Manual

### Selecting cell range A1:E1

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



### Clicking the Merge & Center command

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

The screenshot shows the Excel spreadsheet after the Merge & Center command has been applied. The formula bar shows 'A1' and the spreadsheet title is 'Bulls Team Roster: Co-ed Softball 2013'. The spreadsheet grid shows that cells A1 through E1 have been merged into a single large cell, and the text 'Bulls Team Roster: Co-ed Softball 2013' is now centered across the entire width of the row. The rest of the spreadsheet data remains unchanged.

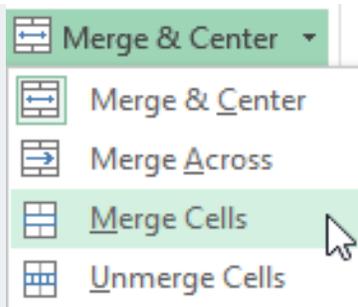
	A	B	C	D	E	F
1	Bulls Team Roster: Co-ed Softball 2013					
2	First Name	Last Name	Cell Phone	Street Address	Position(s)	
3	Amanda	Ryan	513-555-4477	800 Round Table Drive	Pitcher, Second base	
4	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive	Catcher	
5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue	Outfield	

### Cell A1 after merging with B1:E1

### 1.5.6.3 Accessing More Merge Options

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 the selected cells.



*Accessing more Merge options*

## Exercise 1.5

1. Open an existing Excel 2013 workbook.
2. Modify the **width** of a column. If you are using the example, use the column that contains the players' first names.
3. **Insert** a column between column A and column B, then **insert** a row between row 3 and row 4.
4. **Delete** a column or a row.
5. **Move** a column or row.
6. Try using the **Text Wrap** command on a cell range. If you are using the example, wrap the text in the column that contains street addresses.
7. Try **merging** some cells together. If you are using the example, merge the cells in the title row using the **Merge & Center** command. (cell range A1:E1)

### 1.6. 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. 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.

#### 1.6.1 Changing the Font

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

1. Select the **cell(s)** you wish to modify.



A screenshot of an Excel spreadsheet. The first row is labeled 'A' and the first column is labeled '1'. Cell A1 is highlighted with a green border and contains the text 'Webinar Training Log'. Below it, row 2 has 'Email Address' in column A and 'Last Name' in column B. Row 3 has 'heidi.lee@vestainsurance.com' in column A and 'Lee' in column B. Row 4 has 'josie.gates@vestainsurance.com' in column A and 'Gates' in column B.

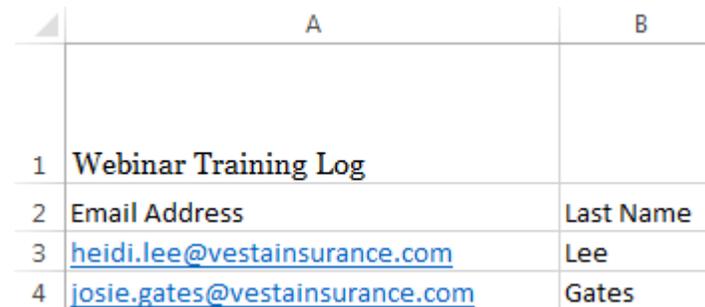
*Selecting a cell*

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'll choose **Georgia**.



*Choosing a font*

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



A screenshot of the same Excel spreadsheet as before. The text in cell A1, 'Webinar Training Log', is now displayed in the Georgia font. The rest of the spreadsheet content remains the same.

*The new font*

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

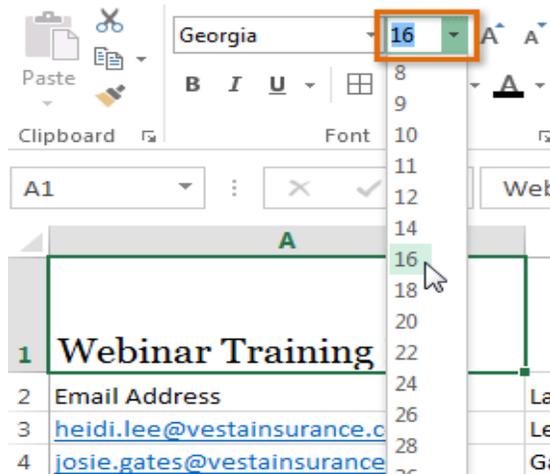
## 1. 6.2 Changing the Font Size

1. Select the **cell(s)** you wish to modify.

	A	B
1	Webinar Training Log	
2	Email Address	Last Name
3	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
4	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*Selecting a cell*

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**.



*Choosing a new font size*

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

	A	B
1	Webinar Training Log	
2	Email Address	Last Name
3	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
4	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*The new font size*

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



*Modifying the font size*

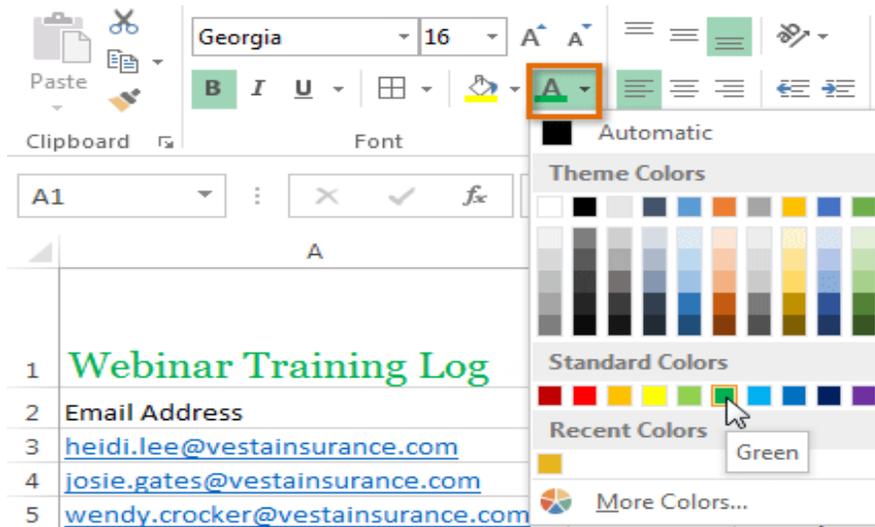
### 1. 6. 3 Changing the Font Color

1. Select the **cell(s)** you wish to modify.

	A	B
1	Webinar Training Log	
2	Email Address	Last Name
3	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
4	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*Selecting a cell*

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'll choose **Green**.



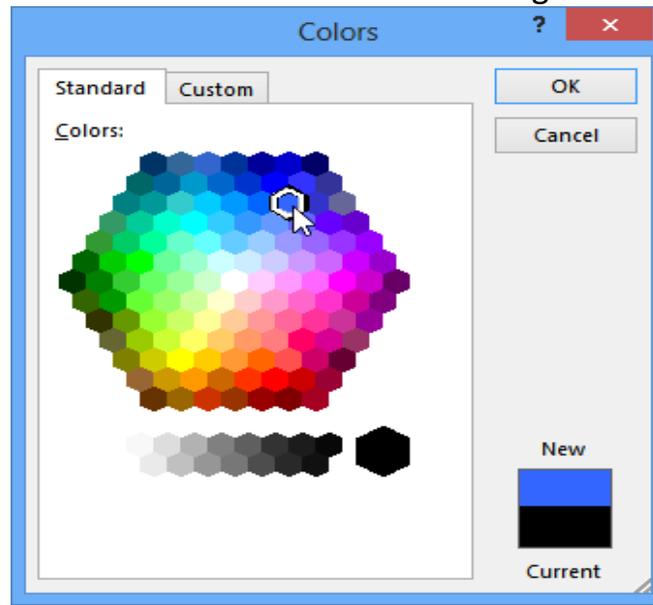
*Choosing a font color*

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

	A	B
1	Webinar Training Log	
2	Email Address	Last Name
3	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
4	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*The new font color*

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



*Selecting more colors*

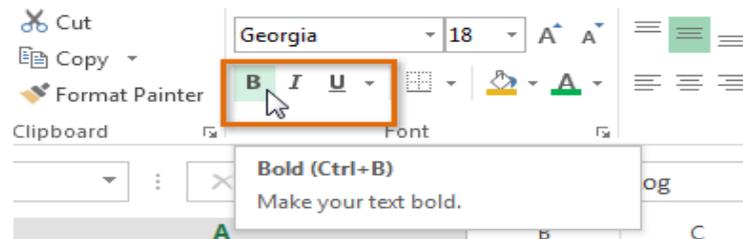
## 1. 6.4 Using the Bold, Italic, and Underline Commands

1. Select the cell(s) you wish to modify.

	A	B
1	<b>Webinar Training Log</b>	
2	Email Address	Last Name
3	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
4	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*Selecting a cell*

2. Click the Bold (**B**), Italic (*I*), or Underline (U) commands on the **Home** tab. In our example, we'll make the selected cells **bold**.



*Clicking the Bold command*

3. The **selected style** will be applied to the text.

	A	B
1	<b>Webinar Training Log</b>	
2	Email Address	Last Name
3	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
4	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*The bold text*

# Microsoft Office Excel 2013 Training Manual

You can also press **Ctrl+B** on your keyboard to apply **bolding**, **Ctrl+I** to apply **italics**, or **Ctrl+U** to apply **underlining**.

## 1. 6. 5 Text Alignment

By default, any text entered into your worksheet will be aligned to the bottom-left of a cell. Any numbers will be aligned to the bottom-right of a cell. 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.

Click the arrows in the slideshow below to learn more about the different text alignment options.

	A	B	C	D	E
1	First Name	Last Name	Email Address		
2					

**Left align:** Aligns content to the left border of the cell.

### 1. 6. 6.1. Changing Horizontal Text Alignment

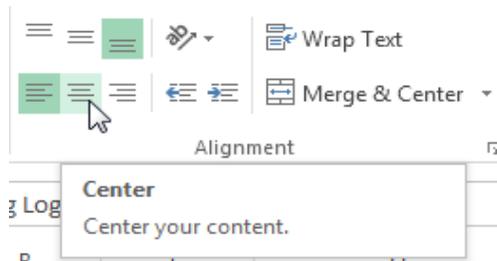
In our examples below, we'll modify the alignment of our **title** cell to create a more polished look and further distinguish it from the rest of the worksheet.

1. Select the **cell(s)** you wish to modify.

3	<b>Webinar Training Log</b>	
4	Email Address	Last Name
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
6	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*Selecting a cell*

2. Select one of the three **horizontal Alignment** commands on the **Home** tab. In our example, we'll choose **Center Align**.



*Choosing Center Align*

3. The text will **realign**.

3	<b>Webinar Training Log</b>	
4	Email Address	Last Name
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
6	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*The realigned cell text*

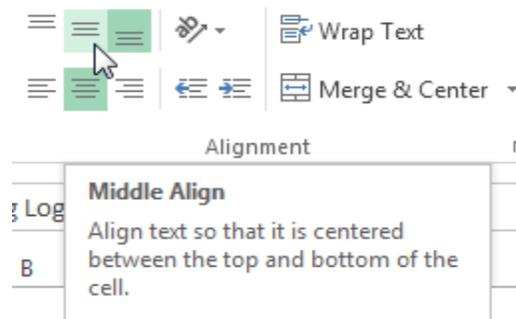
**1. 6. 5.2. Changing Vertical Text Alignment**

1. Select the **cell(s)** you wish to modify.

3	<b>Webinar Training Log</b>	
4	Email Address	Last Name
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
6	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*Selecting a cell*

2. Select one of the three **vertical Alignment** commands on the **Home** tab. In our example, we'll choose **Middle Align**.



*Choosing Middle Align*

3. The text will **realign**.

3	<b>Webinar Training Log</b>	
4	Email Address	Last Name
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee
6	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates

*The realigned cell text*

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

**1. 6.6. Cell Borders and Fill Colors**

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

**1. 6.6.1. Adding a Border**

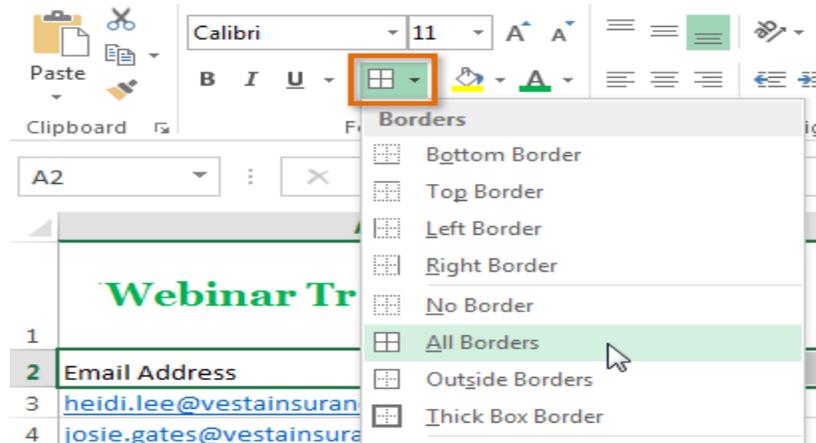
1. Select the **cell(s)** you wish to modify.

## Microsoft Office Excel 2013 Training Manual

3	<b>Webinar Training Log</b>		
4	<b>Email Address</b>	<b>Last Name</b>	<b>First Name</b>
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee	Heidi
6	<a href="mailto:iosie.gates@vestainsurance.com">iosie.gates@vestainsurance.com</a>	Gates	Josie

### *Selecting a cell range*

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**.



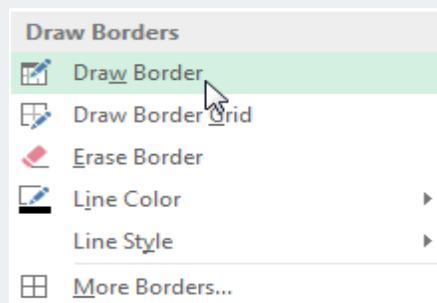
### *Choosing a border style*

4. The **selected border style** will appear.

3	<b>Webinar Training Log</b>		
4	<b>Email Address</b>	<b>Last Name</b>	<b>First Name</b>
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee	Heidi
6	<a href="mailto:iosie.gates@vestainsurance.com">iosie.gates@vestainsurance.com</a>	Gates	Josie

### *The added cell borders*

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.



### *Drawing custom borders*

## 1. 6.6.2. Adding a Fill Color

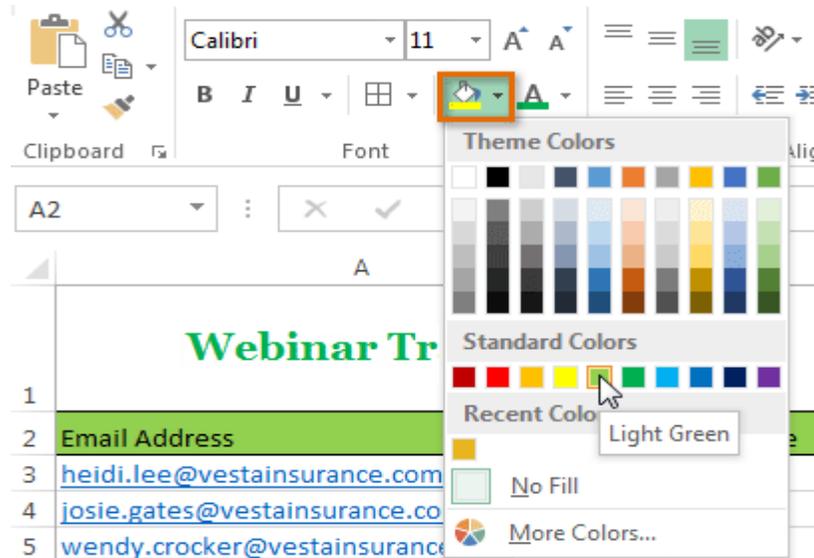
1. Select the **cell(s)** you wish to modify.

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3	<b>Webinar Training Log</b>		
4	<b>Email Address</b>	<b>Last Name</b>	<b>First Name</b>
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee	Heidi
6	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates	Josie

### *Selecting a cell range*

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'll choose **Light Green**.



### *Choosing a cell fill color*

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

3	<b>Webinar Training Log</b>		
4	<b>Email Address</b>	<b>Last Name</b>	<b>First Name</b>
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee	Heidi
6	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates	Josie

### *The new fill color*

## 1. 6.7 Cell Styles

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

### **To Apply a Cell Style:**

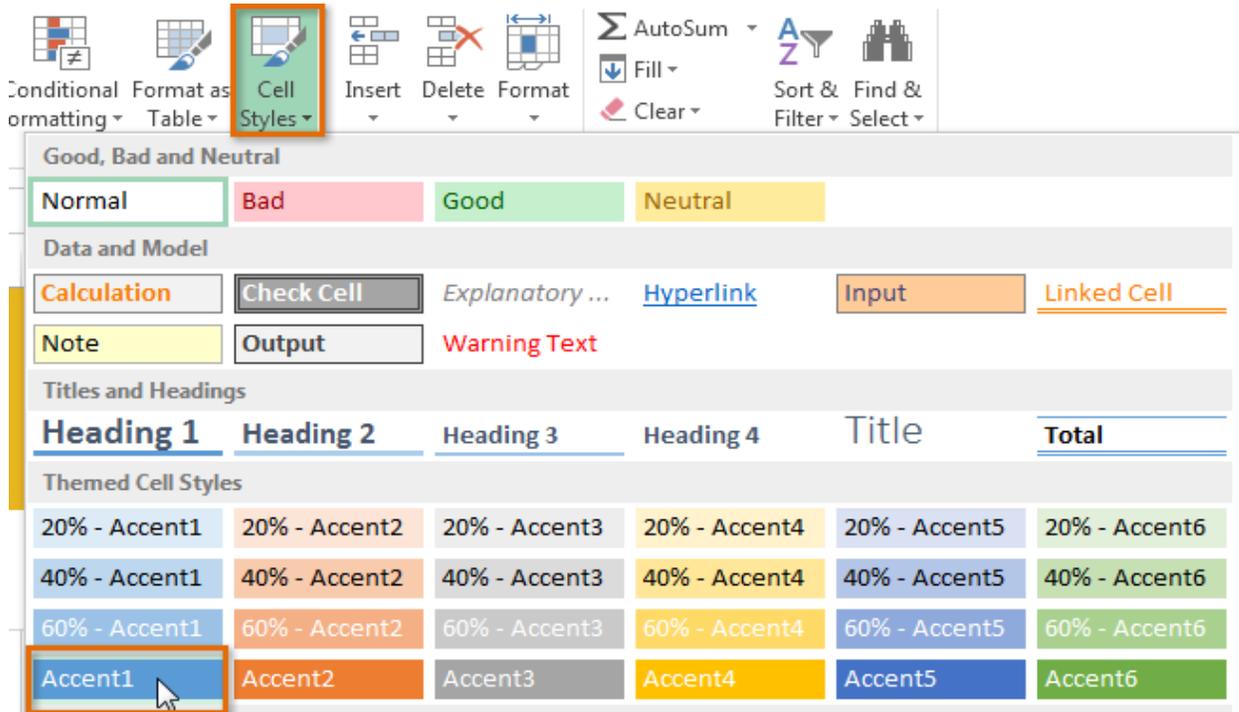
In our example, we'll apply a new cell style to our existing **title** and **header** cells.

1. Select the **cell(s)** you wish to modify.

3	<b>Webinar Training Log</b>		
4	Email Address	Last Name	First Name
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee	Heidi
6	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates	Josie

*Selecting a cell range*

- Click the **Cell Styles** command on the **Home** tab and then choose the **desired style** from the drop-down menu. In our example, we'll choose **Accent 1**.



*Choosing a cell style*

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

3	<b>Webinar Training Log</b>		
4	Email Address	Last Name	First Name
5	<a href="mailto:heidi.lee@vestainsurance.com">heidi.lee@vestainsurance.com</a>	Lee	Heidi
6	<a href="mailto:josie.gates@vestainsurance.com">josie.gates@vestainsurance.com</a>	Gates	Josie

*The new cell style*

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

## 1. 6.8 Formatting Text and Numbers

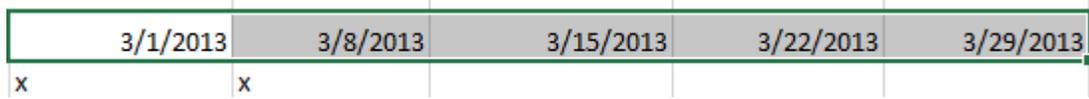
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One of the most powerful tools in Excel is the ability to apply **specific formatting** for text and numbers. Instead of displaying all cell content in exactly the same way, you can use formatting to change the appearance of **dates**, **times**, **decimals**,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

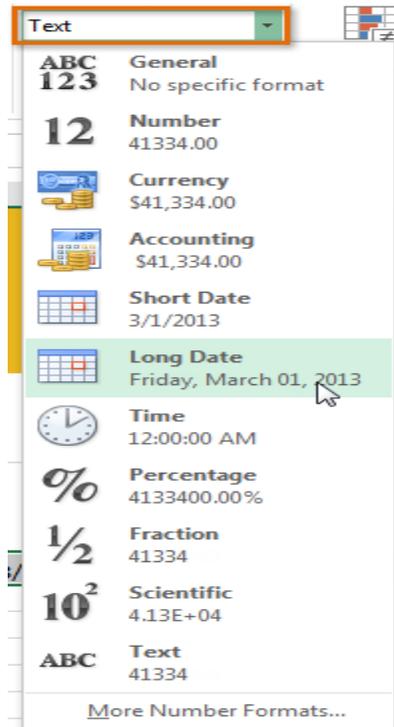
1. Select the **cells(s)** you wish to modify.



3/1/2013	3/8/2013	3/15/2013	3/22/2013	3/29/2013
----------	----------	-----------	-----------	-----------

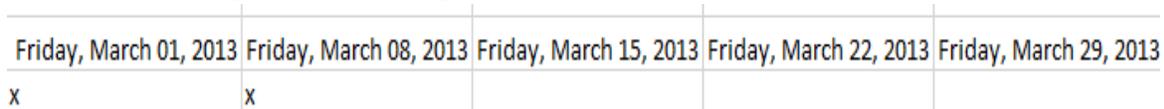
*Selecting a cell range*

2. Click the **drop-down arrow** next to the **Number** 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**.



*Choosing Long Date*

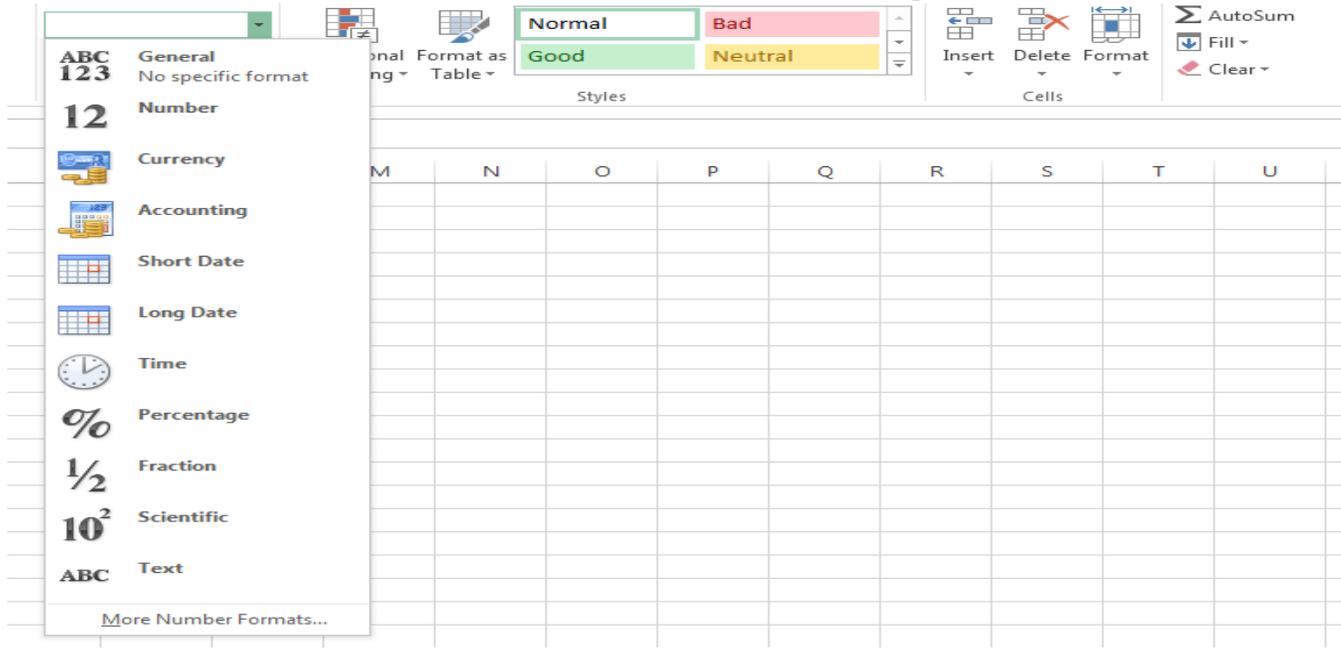
4. The selected cells will change to the **new formatting** style. For some number formats, you can then use the **Increase Decimal** and **Decrease Decimal** commands (below the Number Format command) to change the number of decimal places that are displayed.



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

*The applied number formatting*

Click the buttons in the interactive below to learn about different text and number formatting options.



## Exercise 1.6

1. Open an existing Excel 2013 workbook.
2. Select a **cell** and change the **font style, size, and color** of the text. If you are using the example, change the title in cell A3 to Verdana font style, size 16 with a font color of green.
3. Apply **bolding, italics, or underlining** to a cell. If you are using the example, bold the text in **cell range A4:C4**.
4. Try changing the **vertical** and **horizontal text alignment** for some cells.
5. Add a **border** to a cell range. If you are using the example, add a border to the header cells in in row 4.
6. Change the **fill color** of a cell range. If you are using the example, add a fill color to row 4.
7. Try changing the **formatting** of a number. If you are using the example, modify the date formatting in **cell range D4:H4**.

## 1.7. Worksheet Basics

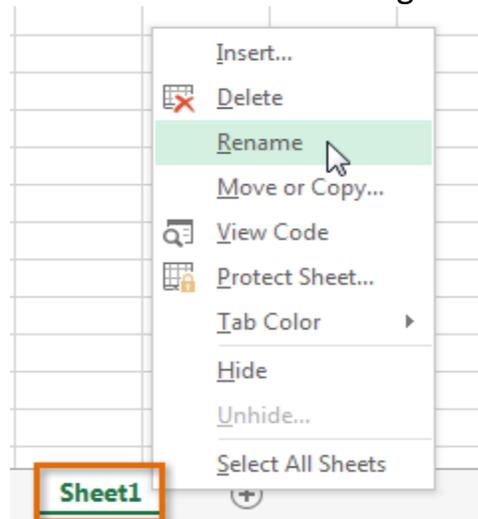
Every workbook contains at least one **worksheet** by default. When working with a large amount of data, you can create **multiple worksheets** to help organize your workbook and make it easier to find content. You can also **group** worksheets to quickly add information to multiple worksheets at the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

### 1.7.1 Renaming 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**.

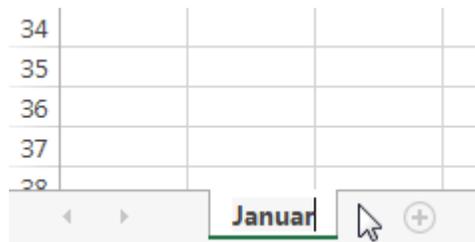
1. Right-click the **worksheet** you wish to rename, then select **Rename** from the **worksheet** menu.

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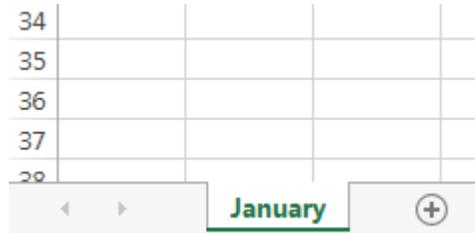
*Clicking Rename*

2. Type the **desired name** for the worksheet.



*Entering a new worksheet name*

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

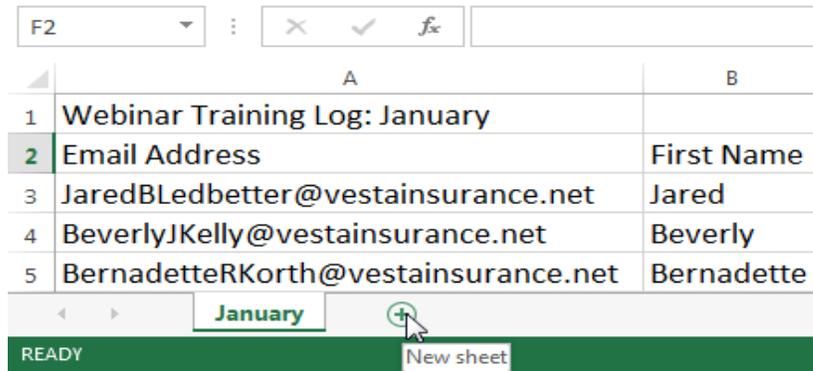


*The renamed worksheet*

### 1.7.2 Inserting a New Worksheet

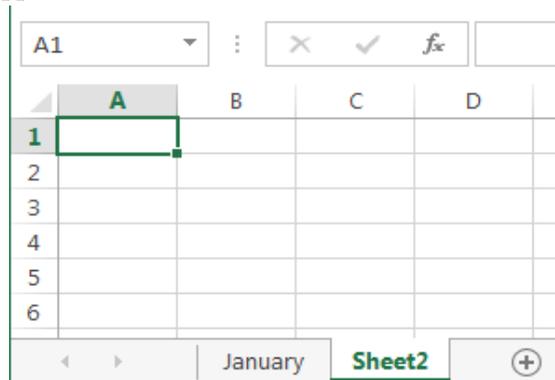
1. Locate and select the **New sheet** button.

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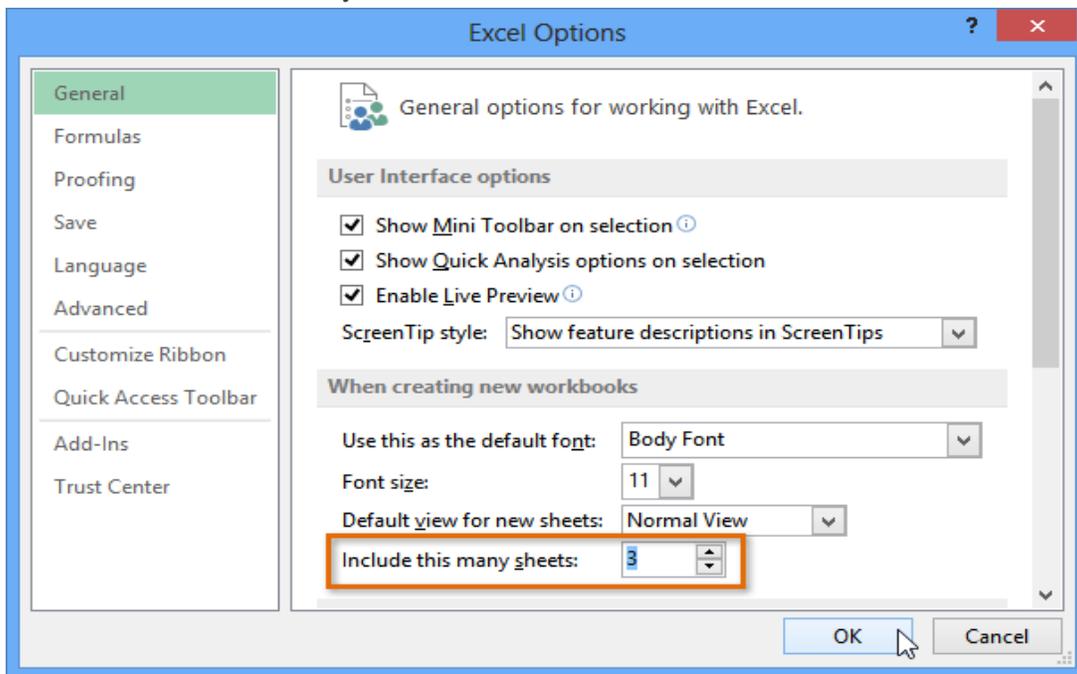
*Clicking the New sheet button*

2. A new, blank worksheet will appear.



*The new, blank worksheet*

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

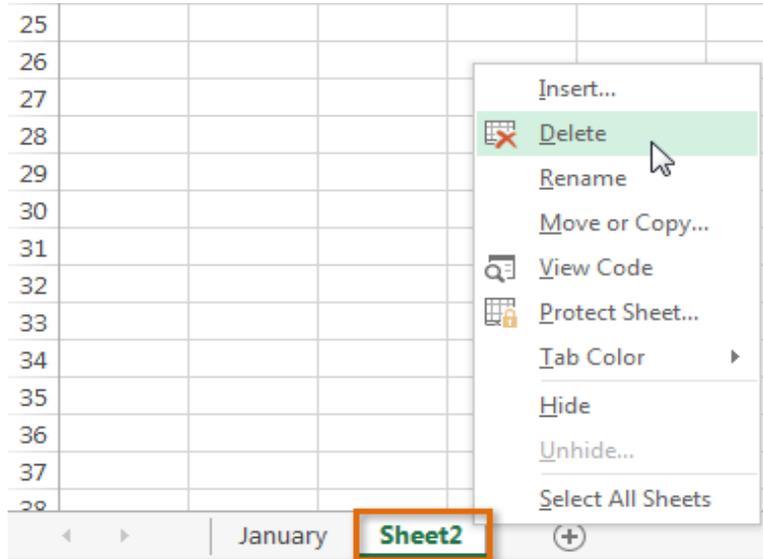


*Modifying the number of default worksheets*

### 1.7.3 Deleting a Worksheet

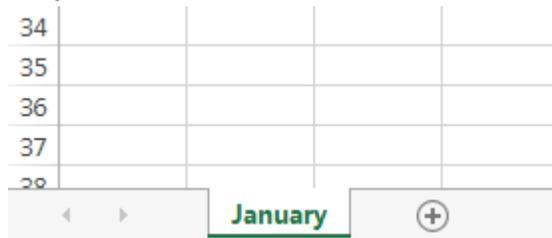
## Microsoft Office Excel 2013 Training Manual

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



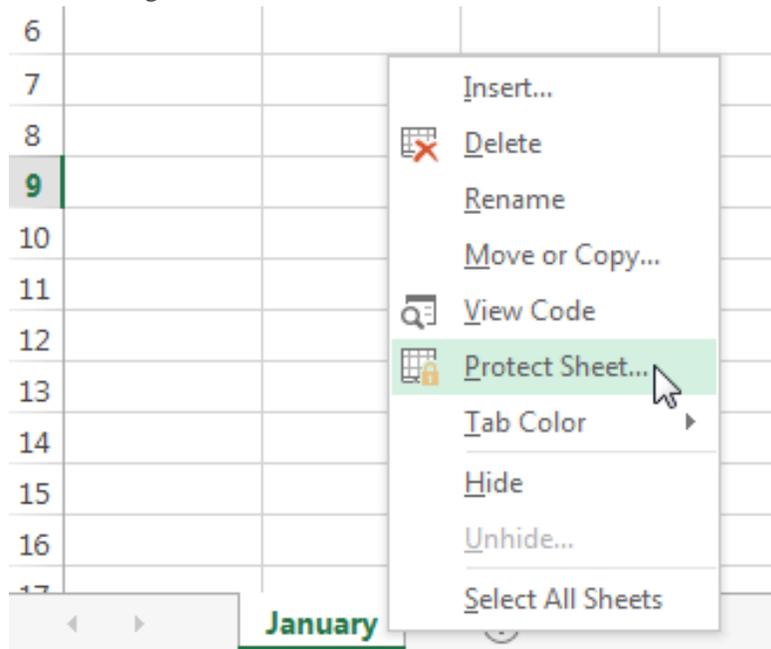
*Deleting a worksheet*

2. The worksheet will be **deleted** from your workbook.



*The deleted worksheet*

If you wish 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.

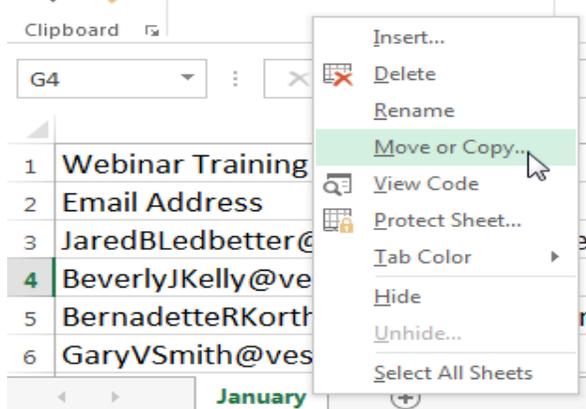


*Protecting a worksheet*

### 1.7. 4 Copying a Worksheet

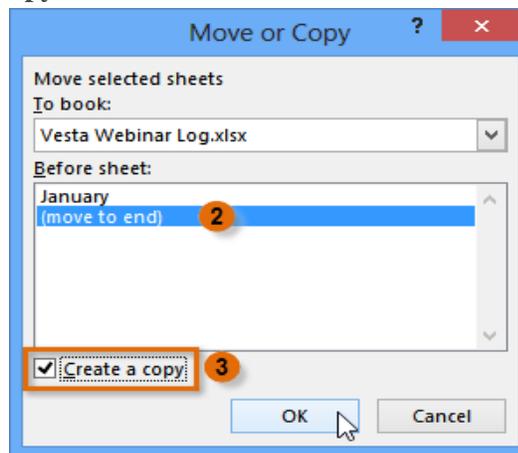
If you need to **duplicate** the content of one worksheet to another, Excel allows you to **copy** an existing worksheet.

1. Right-click the worksheet you want to copy, then select **Move or Copy...** from the **worksheet** menu.



*Selecting Move or Copy...*

2. The **Move or Copy** dialog box will appear. Choose where the sheet will appear in the **Before sheet:** field. In our example, we'll 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**.



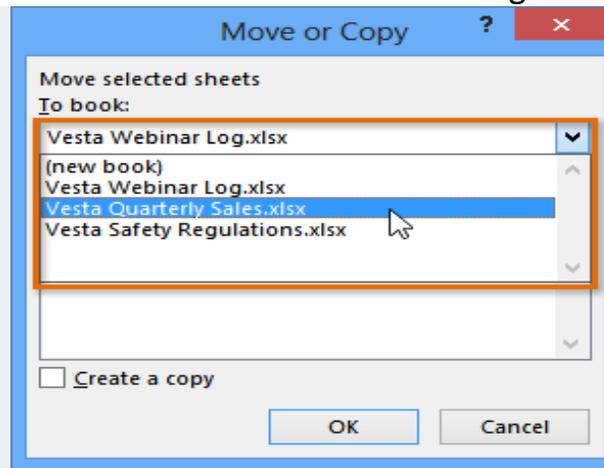
*Copying a worksheet*

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.

	A	B	C	D
1	Webinar Training Log: January			
2	Email Address	First Name	Last Name	Webinar Completed:
3	JaredBLedbetter@vestainsurance.net	Jared	Ledbetter	x
4	BeverlyJKelly@vestainsurance.net	Beverly	Kelly	x
5	BernadetteRKorth@vestainsurance.net	Bernadette	Korth	x
6	GaryVSmith@vestainsurance.net	Gary	Smith	x

*The copied 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.

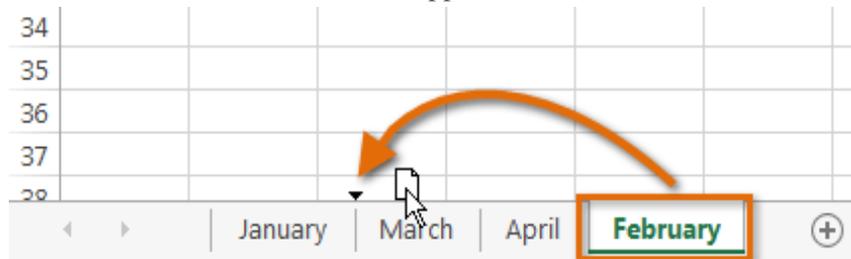


*Copying a worksheet to a different workbook*

### 1.7.5 Moving a Worksheet

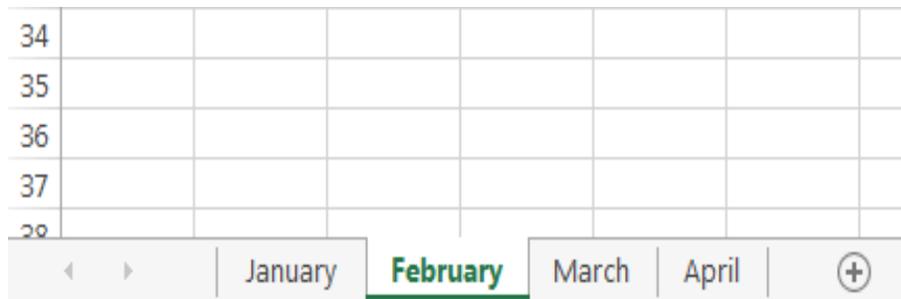
Sometimes you may want to **move** a worksheet to rearrange your workbook.

1. Select the **worksheet** you wish 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.



*Moving a worksheet*

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



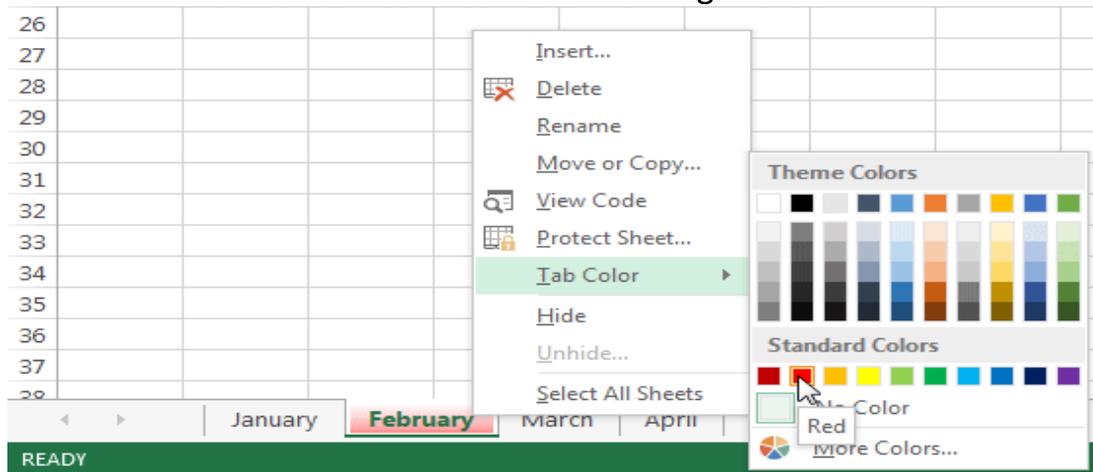
*The moved worksheet*

### 1.7.6 Changing the Worksheet Color

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

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

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*Selecting a worksheet color*

3. The worksheet color will be **changed**.



*The new worksheet color*

The worksheet color is considerably **less noticeable** when the worksheet is selected. Select another worksheet to see how the color will appear when the worksheet is not selected.



*Viewing an unselected worksheet color*

### 1.7.7 Grouping and Ungrouping Worksheets

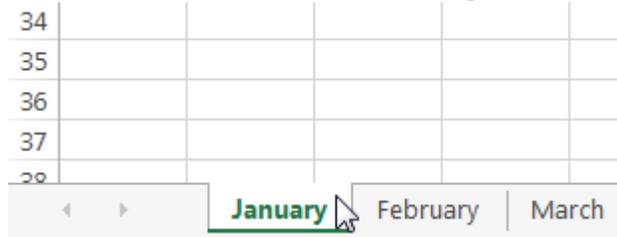
You can work with each worksheet **individually**, or you can work with multiple worksheets at the same time. Worksheets can be combined together into a **group**. Any changes made to one worksheet in a group will be made to **every worksheet** in the group.

#### 1.7.7.1. Grouping Worksheets

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

1. Select the **first worksheet** you wish to include in the **worksheet group**.

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### *Selecting the first worksheet of the 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.



### *Adding worksheets to the group*

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**.

## 1.7.7.2. Ungrouping All Worksheets

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



### *Ungrouping a worksheet group*

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

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*The ungrouped worksheets*

### Exercise 1.7

1. Open an existing Excel workbook.
2. **Insert** a new worksheet and **rename** it. If you are using the example, title the new worksheet **April**.
3. **Delete** a worksheet. If you are using the example, delete the blank worksheet named **Sheet 4**.
4. **Move** a worksheet.
5. **Copy** a worksheet.
6. Try **grouping** and **ungrouping** worksheets. If you are using the example, group the **January** and **March** worksheets together. Try entering new content in the **January** worksheet and then notice how it appears in the **March** worksheet.

## 1.8. Page Layout

Many of the commands you'll 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**, **margin size**, and more. Other page layout options, such as **print titles** and **page breaks**, can help make your workbook easier to read.

### 1.8.1 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 lower-right corner of your workbook.

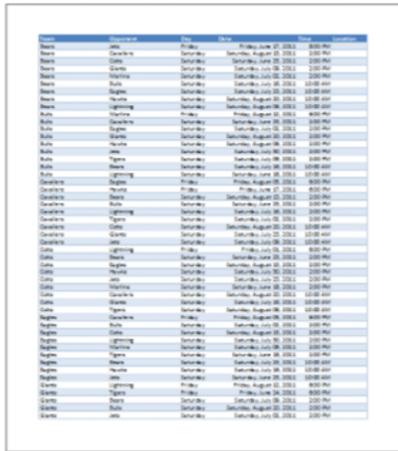


*Selecting Page Layout view*

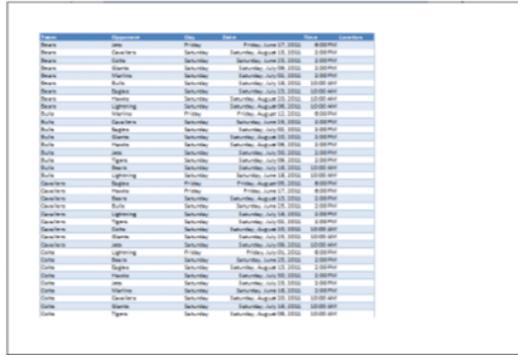
### 1.8.2 Page Orientation

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.

# Microsoft Office Excel 2013 Training Manual



Portrait

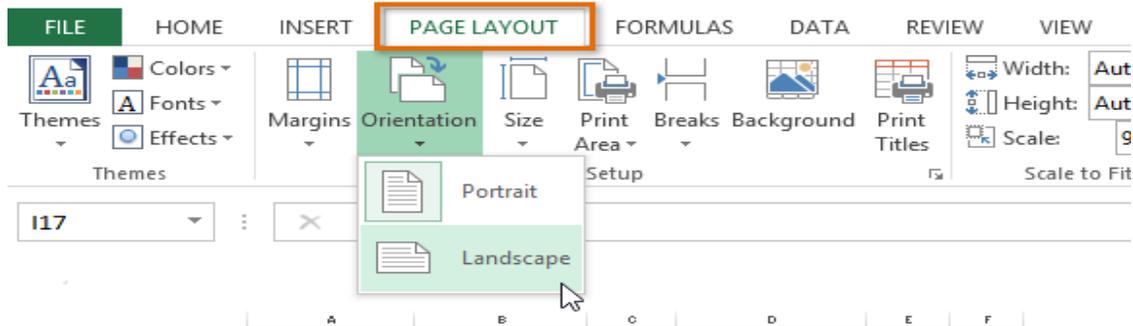


Landscape

*Portrait and Landscape orientation*

## 1.8.3 Changing Page Orientation

1. Click the **Page Layout** tab on the **Ribbon**.
2. Select the **Orientation** command and then choose either **Portrait** or **Landscape** from the drop-down menu.



Click to add header					
Team	Opponent	Day	Date	Time	
Bears	Jets	Friday	Friday, June 17, 2011	6:00 PM	
Bears	Cavaliers	Saturday	#####	2:00 PM	
Bears	Colts	Saturday	#####	2:00 PM	
Bears	Giants	Saturday	#####	2:00 PM	
Bears	Marlins	Saturday	#####	2:00 PM	
Bears	Bulls	Saturday	Saturday, July 16, 2011	#####	
Bears	Eagles	Saturday	#####	#####	
Bears	Hawks	Saturday	#####	#####	
Bears	Lightning	Saturday	#####	#####	
Bulls	Marlins	Friday	#####	6:00 PM	
Bulls	Cavaliers	Saturday	#####	2:00 PM	
Bulls	Eagles	Saturday	#####	2:00 PM	
Bulls	Giants	Saturday	#####	2:00 PM	
Bulls	Hawks	Saturday	#####	2:00 PM	
Bulls	Jets	Saturday	#####	2:00 PM	

*Choosing a page orientation*

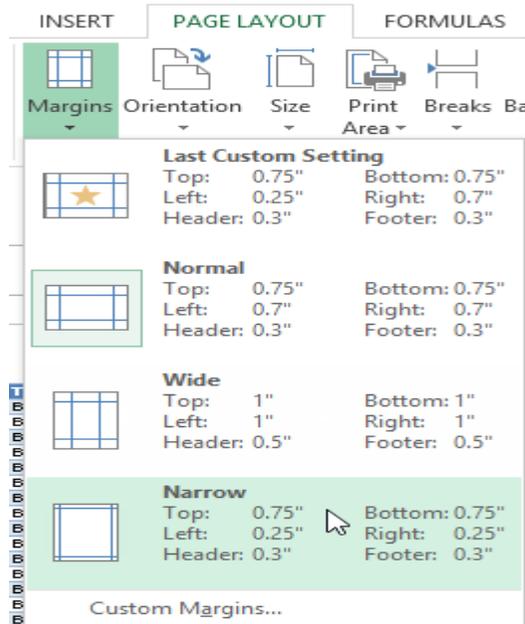
3. The page orientation of the workbook will be changed.

## 1.8.4 Formatting Page Margins

## Microsoft Office Excel 2013 Training Manual

A **margin** is the space between your content and the edge of the page. By default, every workbook's margins are set to **Normal**, 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 wide variety of **pre-defined margin sizes**.

1. Click the **Page Layout** tab on the **Ribbon** and then select the **Margins** command.
2. Select the **desired margin size** from the drop-down menu. In our example, we'll select **Narrow** to fit more of our content on the page.



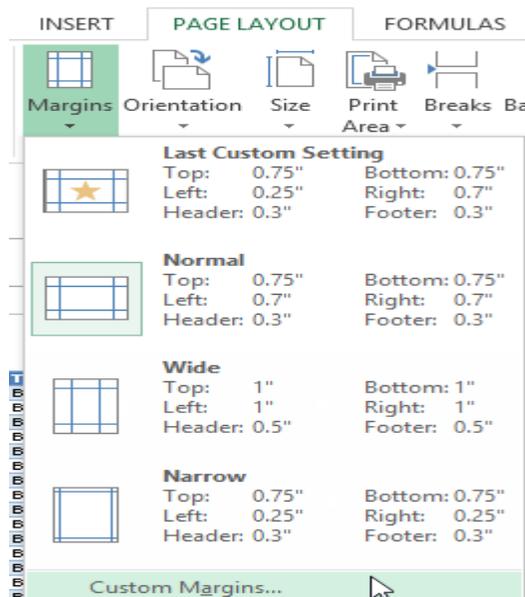
### *Choosing a pre-defined margin size*

3. The margins will be changed to the selected size.

## 1.8.5 Using Custom Margins

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

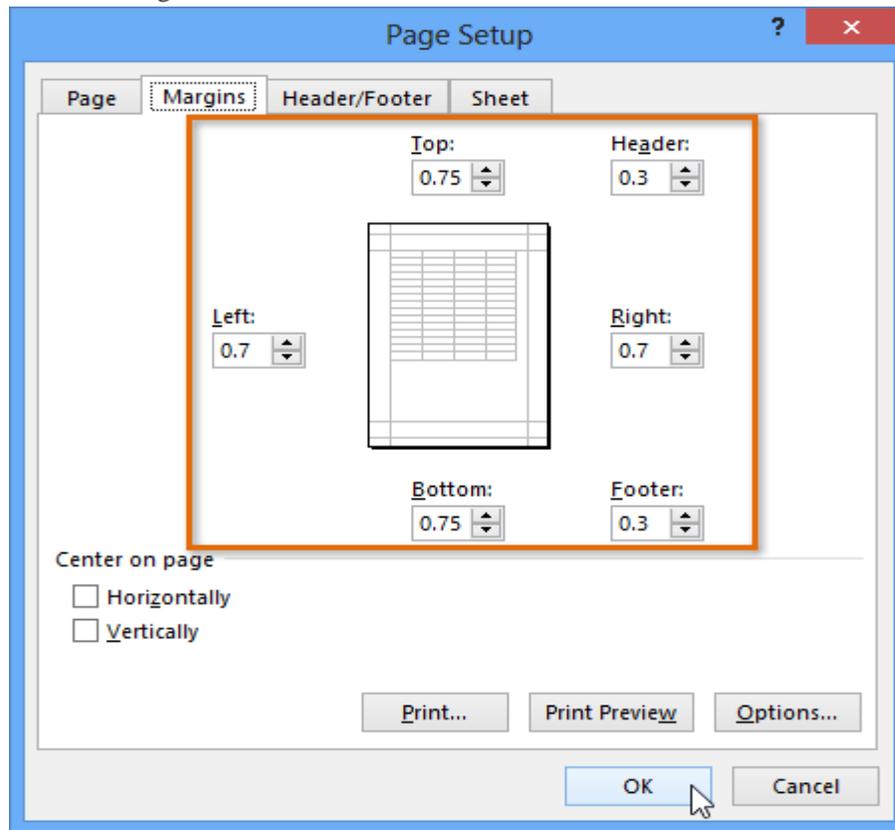
1. From the **Page Layout** tab, click **Margins**. Select **Custom Margins...** from the drop-down menu.



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### *Selecting Custom Margins...*

2. The **Page Setup** dialog box will appear.
3. Adjust the values for each margin and click **OK**.



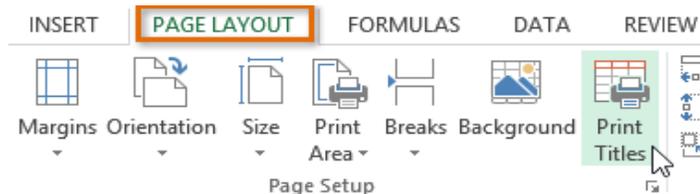
*Setting custom page margins*

4. The margins of the workbook will be changed.

## 1.8.6 Including Print Titles

If your worksheet uses **title headings**, it's important to include those headings on every page of your printed worksheet. It would be extremely 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.

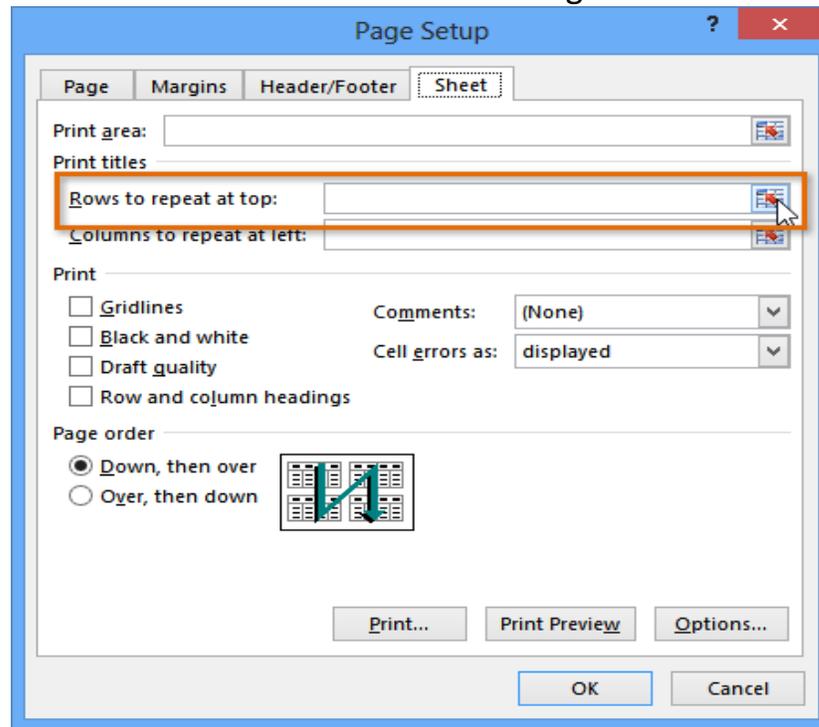
1. Click the **Page Layout** tab on the **Ribbon**, then select the **Print Titles** command.



*Clicking the Print Titles command*

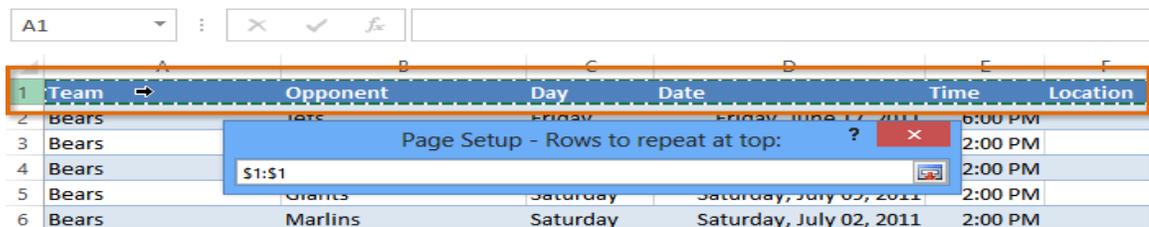
2. The **Page Setup** dialog box will appear. From here, you can choose **rows** or **columns** to repeat on each page. In our example, we'll repeat a row.
3. Click the **Collapse Dialog** button next to the **Rows to repeat at top:** field.

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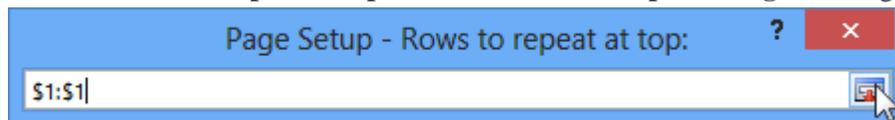
*Clicking the Collapse Dialog Button*

- 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'll select row 1.



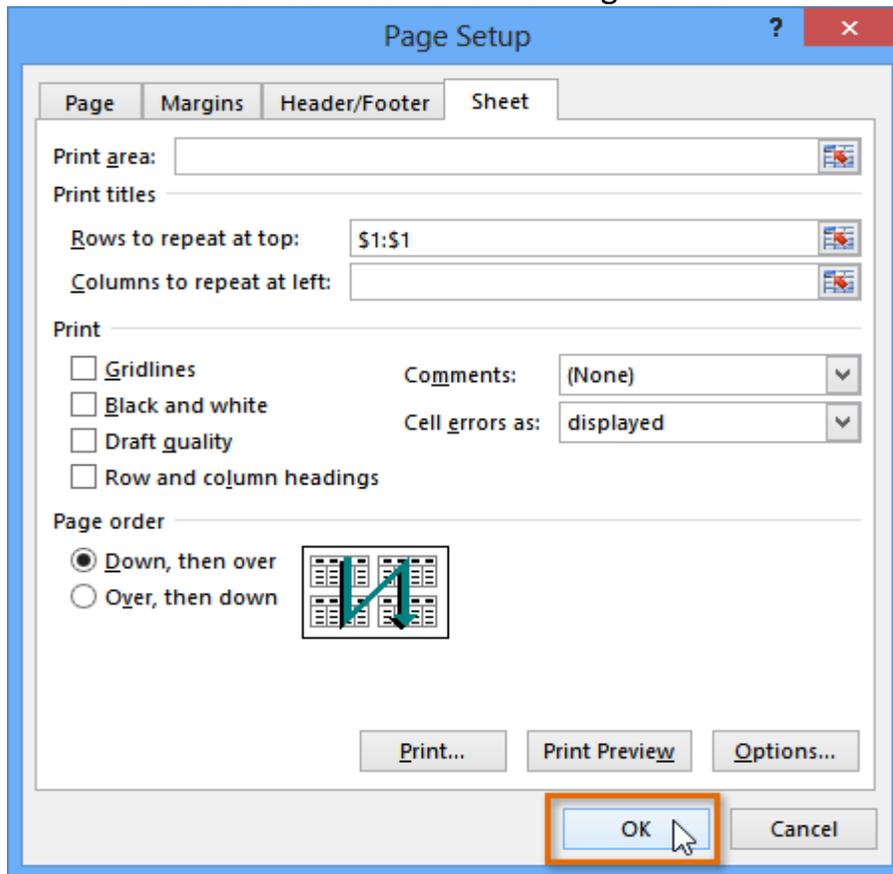
*Selecting row 1*

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



*Clicking the Collapse Dialog button*

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



*Clicking OK*

### 1.8.7 Inserting 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'll insert a horizontal page break.

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



*Selecting Page Break View*

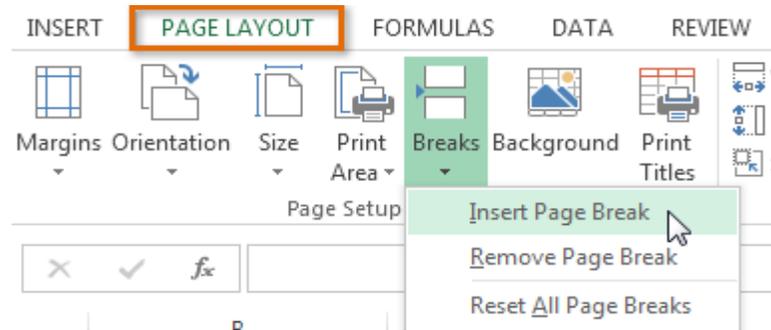
2. Select the **row** above where you want the page break to appear. For example, if you want to insert a page break between rows 28 and 29, select row 29.

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	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	

*Selecting a row*

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



*Inserting a page break*

- 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	

*The inserted page break*

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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**.

	B	C	D	E	F
	Colts	Saturday	Saturday, August 13, 2011		
	Lightning	Saturday	Saturday, July 23, 2011		
	Marlins	Saturday	Saturday, July 23, 2011		
	Tigers	Saturday	Saturday, July 23, 2011		
	Bears	Saturday	Saturday, July 23, 2011		
	Hawks	Saturday	Saturday, July 16, 2011		
	Jets	Saturday	Saturday, June 25, 2011		
	Lightning	Friday	Friday, August 12, 2011		
	Tigers	Friday	Friday, June 24, 2011		
	Bears	Saturday	Saturday, July 09, 2011		
	Bulls	Saturday	Saturday, August 20, 2011		

*Viewing inserted and automatic page breaks in Normal view*

### 1.8.8 Inserting Headers & Footers

You can make your workbook easier to read and look more professional by including **Headers & 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. The worksheet will appear in Page Layout view.



*Selecting Page Layout View*

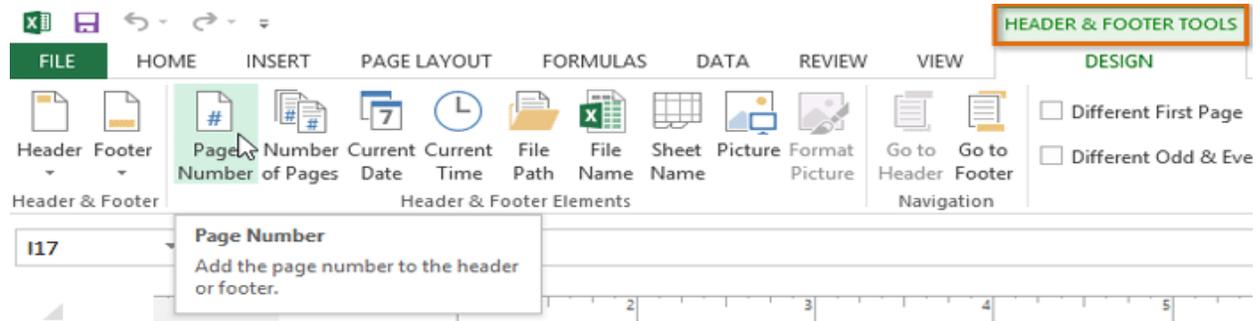
2. Select the desired **header** or **footer** you wish to modify. In our example, we'll modify the **footer** at the bottom of the page.

	B	C	D	E
46	Jets	Saturday	Saturday, June 25, 2011	10:00 AM
47	Lightning	Friday	Friday, August 12, 2011	6:00 PM
	Click to add footer			
	Click to add header			
48	Tigers	Friday	Friday, June 24, 2011	6:00 PM
49	Bears	Saturday	Saturday, July 09, 2011	2:00 PM
50	Bulls	Saturday	Saturday, August 20, 2011	2:00 PM

*Selecting a footer to modify*

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- The **Header & Footer Tools** tab will appear on the **Ribbon**. From here, you can access commands that will automatically include page numbers, date, workbook name, and more. In our example, we'll add **page numbers**.



*Adding page numbers from the Header & Footer Tools tab*

- The footer will change to include page numbers automatically.

	B	C	D	E
46	Jets	Saturday	Saturday, June 25, 2011	10:00 AM
47	Lightning	Friday	Friday, August 12, 2011	6:00 PM
		1	New footer	
	Click to add header			
48	Tigers	Friday	Friday, June 24, 2011	6:00 PM
49	Bears	Saturday	Saturday, July 09, 2011	2:00 PM
50	Bulls	Saturday	Saturday, August 20, 2011	2:00 PM

*The newly added footer*

Excel uses the same tools as Microsoft Word to modify headers and footers. Check out our lesson on [Headers, Footers and Page Numbers](#) from our [Word 2013](#) training manual to learn more.

### Exercise 1.8

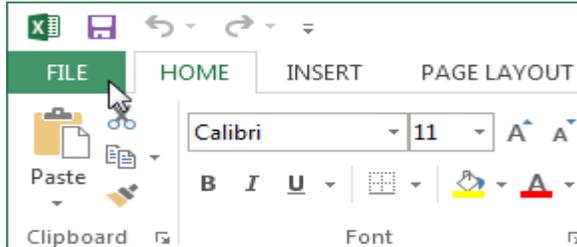
- Open an existing Excel workbook.
- Change the **page orientation** to **Landscape**.
- Try modifying the **margins** of a worksheet.
- Try using the **Print Titles** command to include a row or column on every page of your workbook. If you are using the example, use the Print Titles command to make row 1 of the **Schedule** worksheet appear at the top of every page
- Insert a **page break**. If you are using the example, insert a page break between rows 19 and 20 on the **Schedule** worksheet.
- Navigate to **Page Layout view** and insert a **header** or **footer**.

## 1.9. Printing Workbooks

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

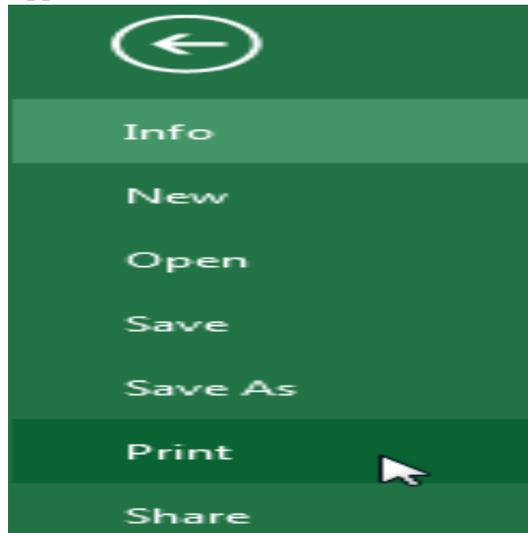
### 1.9.1 Accessing the Print Pane

1. Select the **File** tab. **Backstage view** will appear.



*Clicking the File tab*

2. Select **Print**. The **Print** pane will appear.

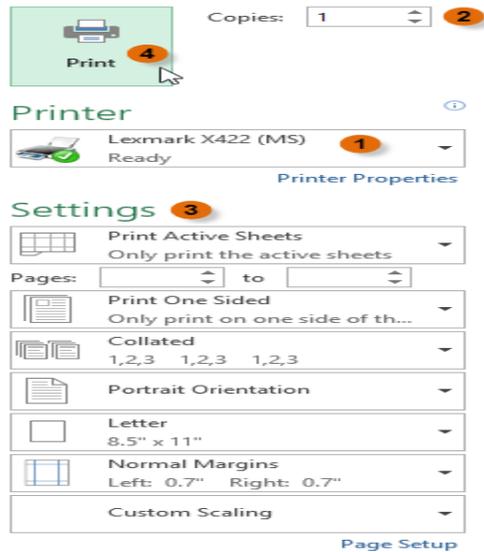


*Clicking Print*

Click the buttons in the interactive below to learn more about using the Print pane.



## Print



*Printing a workbook*

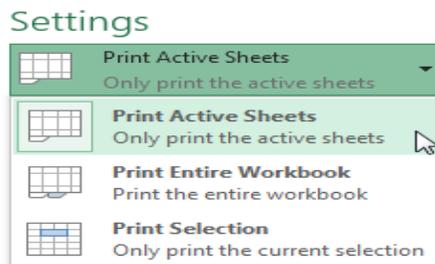
### 1.9.3 Choosing a Print Area

Before you print an Excel workbook, it's 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.

### 1.9.4 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.



*Printing active worksheets*

4. Click the **Print** button.

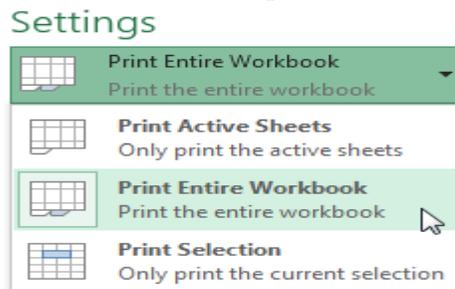
# Print



*Clicking the Print button*

## 1.9.5 Printing the Entire Workbook

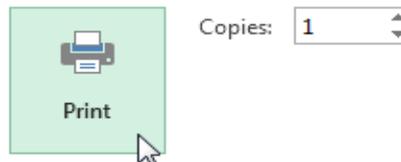
1. Navigate to the **Print** pane.
2. Select **Print Entire Workbook** from the **Print Range** drop-down menu.



*Printing the entire workbook*

3. Click the **Print** button.

# Print



*Clicking the Print button*

## 1.9.6 Printing a Selection

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

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

1	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

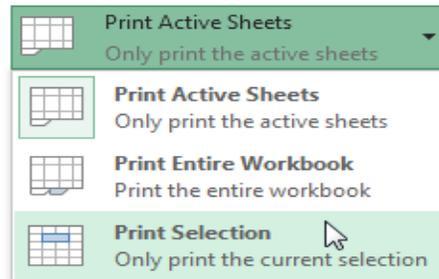
*Selecting a print area*

2. Navigate to the **Print** pane.

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3. Select **Print Selection** from the **Print Range** drop-down menu.

### Settings



### *Printing only the selected cells*

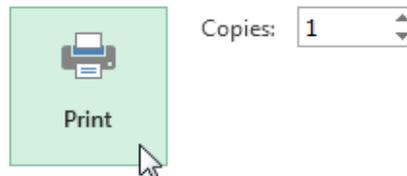
4. A **preview** of your selection will appear in the **Preview** pane.

Bears	Giants	Saturday	Saturday, July 09, 2011
Bears	Marlins	Saturday	Saturday, July 02, 2011
Bears	Bulls	Saturday	Saturday, July 16, 2011
Bears	Eagles	Saturday	Saturday, July 23, 2011

### *Viewing the selection in the Preview pane*

5. Click the **Print** button to print the selection.

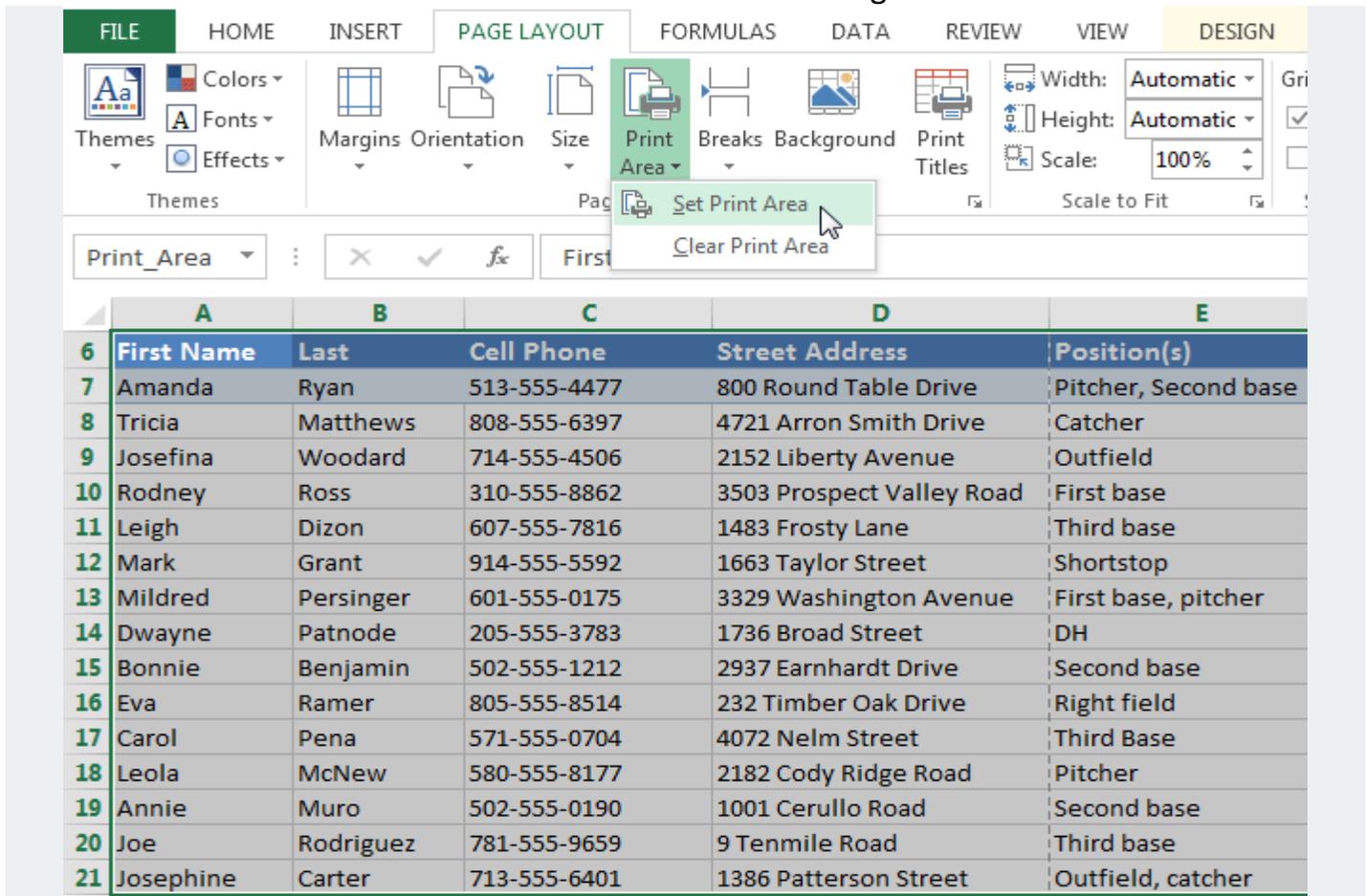
## Print



### *Clicking the Print button*

If you prefer, you can also set the **print area** in advance so you'll 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**.

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The screenshot shows the Microsoft Office Excel 2013 interface. The ribbon is set to 'PAGE LAYOUT'. The 'Print Area' group is active, and the 'Print Area' dropdown menu is open, showing 'Set Print Area' and 'Clear Print Area' options. The worksheet below shows a table of baseball players with columns for First Name, Last, Cell Phone, Street Address, and Position(s).

	A	B	C	D	E
6	First Name	Last	Cell Phone	Street Address	Position(s)
7	Amanda	Ryan	513-555-4477	800 Round Table Drive	Pitcher, Second base
8	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive	Catcher
9	Josefina	Woodard	714-555-4506	2152 Liberty Avenue	Outfield
10	Rodney	Ross	310-555-8862	3503 Prospect Valley Road	First base
11	Leigh	Dizon	607-555-7816	1483 Frosty Lane	Third base
12	Mark	Grant	914-555-5592	1663 Taylor Street	Shortstop
13	Mildred	Persinger	601-555-0175	3329 Washington Avenue	First base, pitcher
14	Dwayne	Patnode	205-555-3783	1736 Broad Street	DH
15	Bonnie	Benjamin	502-555-1212	2937 Earnhardt Drive	Second base
16	Eva	Ramer	805-555-8514	232 Timber Oak Drive	Right field
17	Carol	Pena	571-555-0704	4072 Nelm Street	Third Base
18	Leola	McNew	580-555-8177	2182 Cody Ridge Road	Pitcher
19	Annie	Muro	502-555-0190	1001 Cerullo Road	Second base
20	Joe	Rodriguez	781-555-9659	9 Tenmile Road	Third base
21	Josephine	Carter	713-555-6401	1386 Patterson Street	Outfield, catcher

### 1.9.7 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.



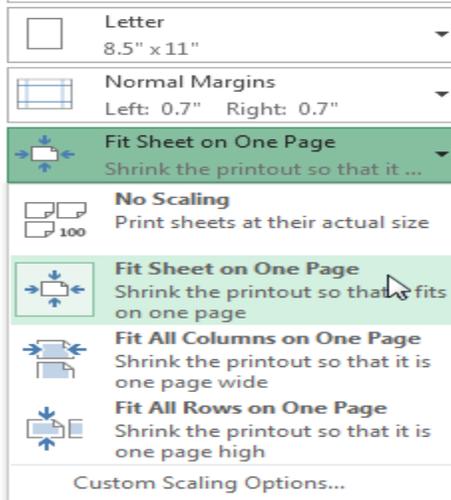
The screenshot shows a preview of an Excel worksheet. At the top, there is a blue header bar with a white logo of two crossed baseball bats and the text "Bulls Team". Below the header is a table with three columns: "First Name", "Last", and "Cell Phone". The table contains 20 rows of data, each representing a team member.

First Name	Last	Cell Phone
Amanda	Ryan	513-555-4477
Tricia	Matthews	808-555-6397
Josefina	Woodard	714-555-4506
Rodney	Ross	310-555-8862
Leigh	Dizon	607-555-7816
Mark	Grant	914-555-5592
Mildred	Persinger	601-555-0175
Dwayne	Patnode	205-555-3783
Bonnie	Benjamin	502-555-1212
Eva	Ramer	805-555-8514
Carol	Pena	571-555-0704
Leola	McNew	580-555-8177
Annie	Muro	502-555-0190
Joe	Rodriguez	781-555-9659
Josephine	Carter	713-555-6401
Nicole	Waugh	707-555-8767
Anthony	Keel	267-555-0144
Sally	Smith	571-555-9432
Joshua	Milliman	213-555-1117
Ray	Logan	256-555-2475
Carla	Ramirez	573-555-1107
Billy	Sanchez	205-555-6874

*Viewing a cut off worksheet in the Preview pane*

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

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## *Fitting a worksheet onto one page*

- The worksheet will be **condensed** to fit onto a single page.

First Name	Last	Cell Phone	Street Address	Position(s)
Amanda	Ryan	513-555-4477	800 Round Table Drive	Pitcher, Second base
Tricia	Matthews	808-555-6397	4721 Arnon Smith Drive	Catcher
Josefina	Woodard	714-555-4506	2152 Liberty Avenue	Outfield
Rodney	Ross	310-555-8862	3503 Prospect Valley Road	First base
Léigh	Dixon	807-555-7816	1483 Frosty Lane	Third base
Mark	Grant	914-555-5592	1663 Taylor Street	Shortstop
Mildred	Persinger	801-555-0175	3329 Washington Avenue	First base, pitcher
Dwayne	Patnode	205-555-3785	1736 Broad Street	DH
Bonnie	Benjamin	502-555-1212	2957 Eamhardt Drive	Second base
Eva	Ramer	805-555-8514	232 Timber Oak Drive	Right field
Carol	Pena	571-555-0704	4072 Nelim Street	Third Base
Leola	McNew	580-555-8177	2182 Cody Ridge Road	Pitcher
Annie	Muro	502-555-0190	1001 Genulo Road	Second base
Joe	Rodriguez	781-555-9659	9 Tenmile Road	Third base
Josephine	Carter	713-555-6401	1386 Patterson Street	Outfield, catcher
Nicole	Waugh	707-555-8767	3990 Pretty View Lane	Left field
Anthony	Keel	267-555-0144	533 Spring Avenue	Shortstop, pinch runner
Sally	Smith	571-555-9432	2723 Nelim Street	Left field, Center field
Joshua	Milliman	213-555-1117	2166 Zimmerman Lane	Pitcher, DH
Ray	Logan	256-555-2475	2439 Ritter Street	Center Field
Carla	Ramirez	573-555-1107	4858 Pennin Street	First base, Third base
Billy	Sanchez	205-555-6874	569 Strother Street	Pitcher, Outfield
Neil	Crawford	908-555-2234	2312 Stonepat Road	Left Field
Robert	Murray	318-555-4689	746 Brookside Drive	Manager

## *The scaled worksheet*

- When you're satisfied with the scaling, click **Print**.

# Print



## *Clicking the Print button*

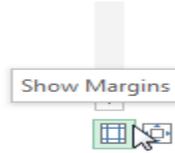
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Keep in mind that worksheets will become more **difficult to read** as they are scaled down, so you may not want to use this option when printing a worksheet with a lot of information.

### 1.9.8 Modifying Margins in the Preview Pane

Sometimes, you may only need to adjust a **single margin** to make your data fit more comfortably. You can modify individual page margins from the **Preview** pane.

1. Navigate to the **Print** pane, then click the **Show Margins** button in the lower-right corner.



*Showing the margins*

2. The **page margins** will appear in the **Preview** pane. Hover the mouse over one of the **margin markers** ■ until the cursor becomes a **double arrow** ⇄. In our example, we'll modify the **left margin** to fit an additional column on the page.

A screenshot of the Preview pane showing a table with columns for Team, Opponent, Day, and Date. The table is surrounded by a border with margin markers. A double arrow cursor is positioned over the left margin marker.

Team	Opponent	Day	Date
Bears	Jets	Friday	Friday, June 17, 2011
Bears	Cavaliers	Saturday	Saturday, August 13, 2011
Bears	Colts	Saturday	Saturday, June 25, 2011
Bears	Giants	Saturday	Saturday, July 09, 2011
Bears	Marlins	Saturday	Saturday, July 02, 2011
Bears	Bulls	Saturday	Saturday, July 16, 2011
Bears	Eagles	Saturday	Saturday, July 23, 2011
Bears	Hawks	Saturday	Saturday, August 20, 2011

*Hovering the mouse over a margin*

3. Click, hold and drag the mouse to **increase** or **decrease** the **margin width**.

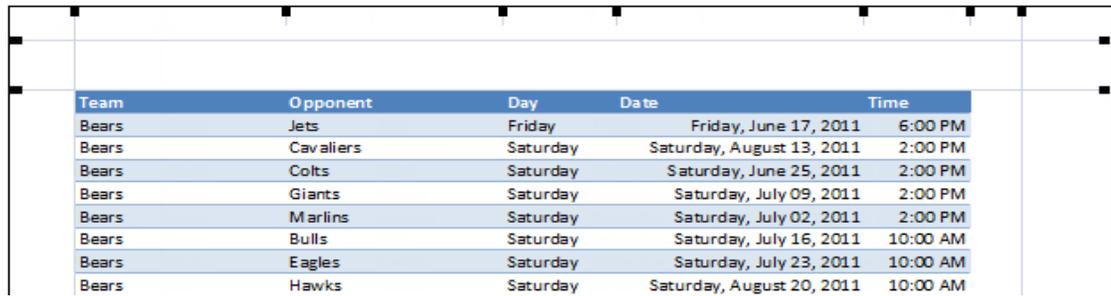
A screenshot of the Preview pane showing the same table as above. An orange arrow points to the left margin marker, indicating that the margin width is being decreased.

Team	Opponent	Day	Date
Bears	Jets	Friday	Friday, June 17, 2011
Bears	Cavaliers	Saturday	Saturday, August 13, 2011
Bears	Colts	Saturday	Saturday, June 25, 2011
Bears	Giants	Saturday	Saturday, July 09, 2011
Bears	Marlins	Saturday	Saturday, July 02, 2011
Bears	Bulls	Saturday	Saturday, July 16, 2011
Bears	Eagles	Saturday	Saturday, July 23, 2011
Bears	Hawks	Saturday	Saturday, August 20, 2011

*Decreasing the margin width*

4. Release the mouse. The margin will be modified. In our example, we were able to fit an additional column on the page.

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Team	Opponent	Day	Date	Time
Bears	Jets	Friday	Friday, June 17, 2011	6:00 PM
Bears	Cavaliers	Saturday	Saturday, August 13, 2011	2:00 PM
Bears	Colts	Saturday	Saturday, June 25, 2011	2:00 PM
Bears	Giants	Saturday	Saturday, July 09, 2011	2:00 PM
Bears	Marlins	Saturday	Saturday, July 02, 2011	2:00 PM
Bears	Bulls	Saturday	Saturday, July 16, 2011	10:00 AM
Bears	Eagles	Saturday	Saturday, July 23, 2011	10:00 AM
Bears	Hawks	Saturday	Saturday, August 20, 2011	10:00 AM

*The new margin width*

## Exercise 1.9

1. Open an existing Excel workbook.
2. Try printing two **active worksheets**. If you are using the example, try printing the **Player Info** and **Schedule** worksheets.
3. Try printing only a **selection** of cells. If you are using the example, try printing the upcoming games for the **Bulls** (cell range **A12:E19**).
4. Try the **scaling** feature to condense your workbook content. If you are using the example, use scaling to make the worksheet fit onto a **single page**.
5. Adjust the **margins** from the **Preview pane**.

## 2. Formulas and Functions

### 2.1 Simple Formulas

#### 2.1.1 Introduction

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'll show you how to use **cell references** to create simple formulas.

#### 2.1.2 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	^

*Standard operators*

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

#### 2.1.3 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.

	A	B
1	10	
2	5	
3	=A1+A2	
4		

The formula in cell A3 refers to the value in cell A1 plus the value in cell A2

	A	B
1	10	
2	5	
3	15	
4		

The formula calculates and displays the answer to the equation A1 plus A2

	A	B
1	15	
2	5	
3	20	
4		

The formula automatically recalculates when the value of a referenced cell is changed

*Using cell references to recalculate a 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

*Examples of simple formulas*

### 2.1.4 Creating a Formula

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

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

	A	B	C
1	June Budget	\$1,200.00	
2	July Budget	\$1,500.00	
3	Total Budget	+	
4			
5			

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### Selecting cell B3

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

The screenshot shows the Excel interface. The formula bar at the top contains an equals sign (=). The spreadsheet grid shows columns A, B, and C, and rows 1 through 8. Cell B3 is selected and contains the text "= I". An orange arrow points from the equals sign in the formula bar to the equals sign in cell B3. Another orange arrow points from the equals sign in cell B3 to a blue-bordered cell B1. A blue-bordered cell B2 is also visible. An orange callout box with white text says "Formula will appear in both the cell and the formula bar".

### Entering the = sign

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

The screenshot shows the Excel interface. The formula bar at the top contains the text "=B1". The spreadsheet grid shows columns A, B, and C, and rows 1 through 5. Cell B3 is selected and contains the text "=B1 I". Cell B1 is highlighted with a blue border. Cell B2 is also highlighted with a blue border.

### Referencing cell B1

4. Type the **mathematical operator** you wish to use. In our example, we'll type the **addition sign (+)**.
5. Type the **cell address** of the cell that you wish to reference second in the formula, cell **B2** in our example. A **red border** will appear around the referenced cell.

The screenshot shows the Excel interface. The formula bar at the top contains the text "=B1+B2". The spreadsheet grid shows columns A, B, and C, and rows 1 through 5. Cell B3 is selected and contains the text "=B1+B2 I". Cell B1 is highlighted with a blue border. Cell B2 is highlighted with a red border.

### Referencing cell B2

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

		B3	:	X	✓	<i>fx</i>	=B1+B2
		A		B		C	
1	June Budget			\$1,200.00			
2	July Budget			\$1,500.00			
3	Total Budget			\$2,700.00			
4							
5							

*The complete formula and calculated value*

### 2.1.5 Modifying Values with Cell References

The true advantage of cell references is that they allow you to **update data** in your worksheet without having to rewrite formulas. In the example below, we've modified the value of cell B1 from \$1,200 to \$1,800. The formula in B3 will automatically recalculate and display the new value in cell B3.

		B3	:	X	✓	<i>fx</i>	=B1+B2	
		A		B		C	D	E
1	June Budget			\$1,800.00				
2	July Budget			\$1,500.00				
3	Total Budget			\$3,300.00				
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

*The recalculated cell value*

### 2.1.6 Create a Formula Using the Point and Click Method

Rather than typing cell addresses manually, you can also **point and click** on the cells you wish to include in your formula. This method can save a lot of time and effort when creating formulas. In our example below, we'll create a formula to calculate the cost of ordering several boxes of plastic silverware.

- Select the **cell** that will contain the formula. In our example, we'll select cell **D3**.

D3

	A	B	C	D	E
1	<b>Paper Supply Inventory Orders</b>				
2	<b>Item</b>	<b>Quantity</b>	<b>Price Per Unit</b>	<b>Total Cost</b>	
3	Plastic Silverware (box of 100)	9	\$8.75	+	
4	Napkins (box of 250)	12	\$2.59		
5	Plates (box of 50)	6	\$14.25		
6	Cups (box of 75)	10	\$11.99		
7	<b>Total</b>				
8					

*Selecting cell D3*

2. Type the **equal sign (=)**.
3. Select the **cell** that you wish to reference first in the formula, cell **B3** in our example. The **cell address** will appear in the formula and a **dashed blue line** will appear around the referenced cell.

B3

	A	B	C	D	E
1	<b>Paper Supply Inventory Orders</b>				
2	<b>Item</b>	<b>Quantity</b>	<b>Price Per Unit</b>	<b>Total Cost</b>	
3	Plastic Silverware (box of 100)	9	\$8.75	=B3	
4	Napkins (box of 250)	12	\$2.59		
5	Plates (box of 50)	6	\$14.25		
6	Cups (box of 75)	10	\$11.99		
7	<b>Total</b>				
8					

*cell B3*

*Referencing*

4. Type the **mathematical operator** you wish to use. In our example, we'll type the **multiplication sign (\*)**.
5. Select the **cell** that you wish to reference second in the formula, cell **C3** in our example. The **cell address** will appear in the formula and a **dashed red line** will appear around the referenced cell.

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C3					
: X ✓ fx =B3*C3					
	A	B	C	D	E
1	<b>Paper Supply Inventory Orders</b>				
2	<b>Item</b>	<b>Quantity</b>	<b>Price Per Unit</b>	<b>Total Cost</b>	
3	Plastic Silverware (box of 100)	9	\$8.75	=B3*C3	
4	Napkins (box of 250)	12	\$2.59		
5	Plates (box of 50)	6	\$14.25		
6	Cups (box of 75)	10	\$11.99		
7	<b>Total</b>				
8					

*Referencing cell C3*

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

D3					
: X ✓ fx =B3*C3					
	A	B	C	D	E
1	<b>Paper Supply Inventory Orders</b>				
2	<b>Item</b>	<b>Quantity</b>	<b>Price Per Unit</b>	<b>Total Cost</b>	
3	Plastic Silverware (box of 100)	9	\$8.75	\$78.75	
4	Napkins (box of 250)	12	\$2.59		
5	Plates (box of 50)	6	\$14.25		
6	Cups (box of 75)	10	\$11.99		
7	<b>Total</b>				
8					

*The completed formula and calculated value*

Formulas can also be **copied** to adjacent cells with the **fill handle**, which can save a lot of time and effort if you need to perform the **same calculation** multiple times in a worksheet. Review our lesson on [Relative and Absolute Cell References](#) to learn more.

The screenshot shows an Excel spreadsheet with the following data:

Inventory Orders			
Item	Quantity	Price Per Unit	Total Cost
Plastic Silverware (box of 100)	9	\$8.75	\$78.75
Napkins (box of 250)	12	\$2.59	
Plates (box of 50)	6	\$14.25	
Hot Sauce (gallon bottle)	10	\$11.99	
Total			

The formula bar shows `=B3*C3`. An orange callout box contains the text: "Click, hold and drag the Fill handle to copy the function to adjacent cells". A second screenshot below shows the formula copied to cell D6, with the formula bar showing `=B6*C6`.

Copying a formula to adjacent cells using the fill handle

### 2.1.7 Editing a Formula

Sometimes, you may want to modify an existing formula. In the example below, we've entered an incorrect cell address in our formula, so we'll need to correct it.

1. Select the **cell** containing the formula you wish to edit. In our example, we'll select cell **B3**.

The screenshot shows an Excel spreadsheet with the following data:

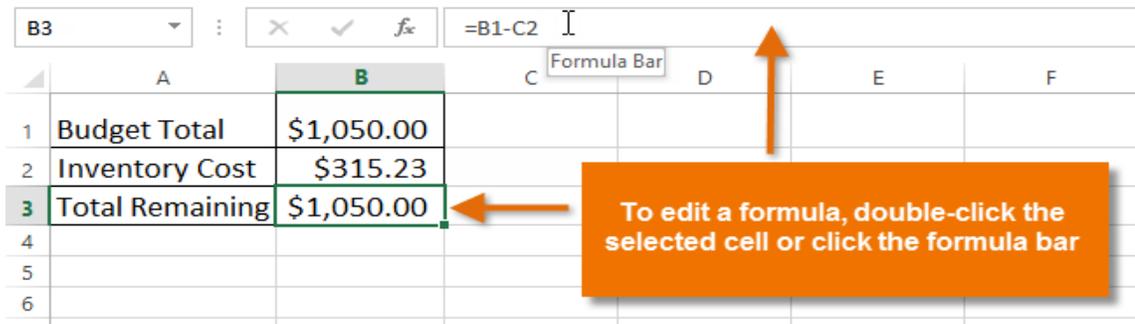
	A	B	C
1	Budget Total	\$1,050.00	
2	Inventory Cost	\$315.23	
3	Total Remaining	\$1,050.00	
4			
5			

The formula bar shows `=B1-C2`. Cell B3 is selected.

Selecting cell B3

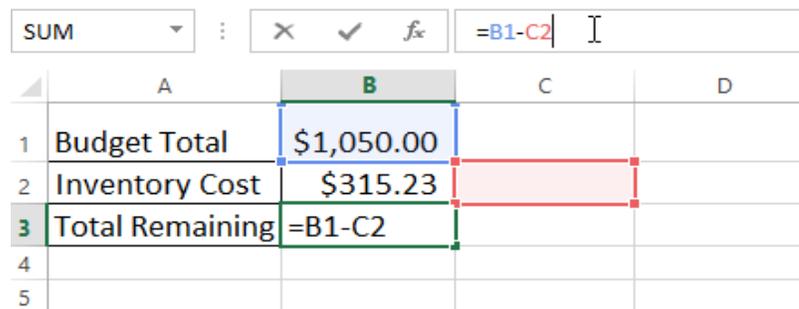
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- Click the **formula bar** to edit the formula. You can also **double-click** the cell to view and edit the formula directly within the cell.



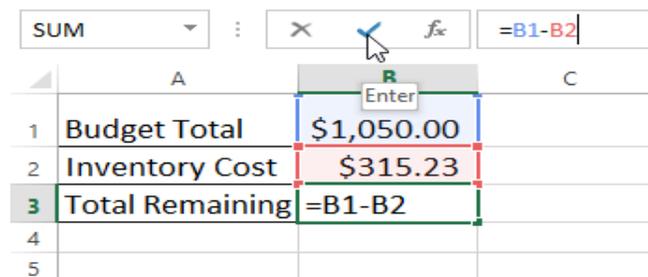
*Selecting a formula to edit*

- A **border** will appear around any referenced cells. In our example, we'll change the second part of the formula to reference cell **B2** instead of cell **C2**.



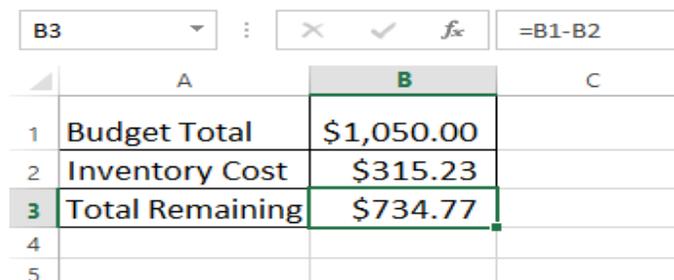
*The misplaced cell reference*

- When finished, press **Enter** on your keyboard or select the **Enter** command  in the formula bar.



*Editing a formula*

- The formula will be **updated** and the **new value** will be displayed in the cell.



*The newly calculated value*

If you change your mind, you can press the **Esc** key or your keyboard or click the **Cancel** command  in the formula bar to avoid accidentally making changes to your formula.

### Exercise 2.1

1. Open an existing Excel workbook.
2. Create a simple addition formula using **cell references**. If you are using the example, create the formula in cell **B4** to calculate the "Total Budget."
3. Try modifying the **value** of a cell referenced in a formula. If you are using the example, change the value of cell **B2** to \$2,000. Notice how the formula in cell B4 recalculates the total.
4. Try using the **point and click method** to create a formula. If you are using the example, create a formula in cell **G5** that multiplies the cost of **napkins** by the **quantity** needed to calculate the **total cost**.
5. **Edit** a formula using the formula bar. If you are using the example, edit the formula in cell **B9** to change the **division sign (/)** to a **minus sign (-)**.

## 2.2 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.

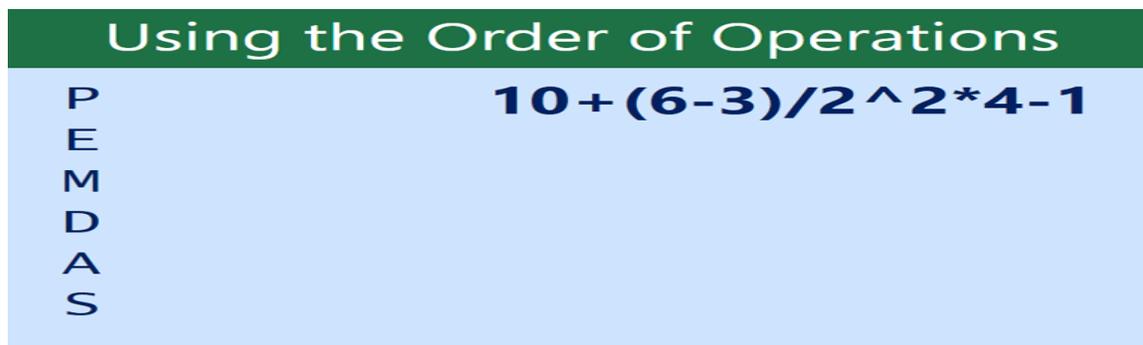
### 2.2.1 Order of Operations

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

A mnemonic that can help you remember the order is **PEMDAS** or **Please Excuse My Dear Aunt Sally**.

Click the arrows in the slideshow below to learn more about how the order of operations is used to calculate formulas in Excel.



The slide features a dark green header with the title "Using the Order of Operations" in white. Below the header, the acronym "PEMDAS" is listed vertically in blue. To the right of the acronym, the mathematical expression  $10 + (6 - 3) / 2^2 * 4 - 1$  is displayed in blue.

While this formula may look really complicated, we can use the order of operations step-by-step to find the right answer.

### 2.2.2 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'll 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.

	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Total</b>	
2	Empanadas: Beef Picadillo	\$2.99	15	\$44.85	
3	Empanadas: Chipotle Shrimp	\$3.99	10	\$39.90	
4			<b>Tax</b>	$= (D2+D3)*0.075$	
5	<b>Total</b>				

*Creating a complex formula*

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

	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Total</b>	
2	Empanadas: Beef Picadillo	\$2.99	15	\$44.85	
3	Empanadas: Chipotle Shrimp	\$3.99	10	\$39.90	
4			<b>Tax</b>	<b>\$6.36</b>	
5	<b>Total</b>				

*The completed formula and calculated value*

It is especially important to enter complex formulas with the correct order of operations. Otherwise, Excel will not calculate the results accurately. In our example, if the **parentheses** are not included, the multiplication is calculated first and the result is incorrect. Parentheses are the best way to define what calculations will be performed first in Excel.

	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>			
2	Empanadas: Beef Picadillo	\$2.99			
3	Empanadas: Chipotle Shrimp	\$3.99	10	\$39.90	
4			<b>Tax</b>	$= D2+D3 *0.075$	
5	<b>Total</b>				
6			<b>Tax</b>		<b>\$47.84</b>
			<b>Total</b>		

Without parentheses, multiplication is performed before addition, leading to an incorrect result

*Result of an incorrect formula*

### 2.2.3 Creating a Complex Formula Using the Order of Operations

In our example below, we will use **cell references** along with **numerical values** to create a complex formula that will calculate the **total cost** for a catering invoice. The formula will calculate the cost for each menu item and then add those values together.

1. Select the **cell** that will contain the formula. In our example, we'll select cell **C4**.

	A	B	C	D
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	
2	Tamales: Chicken Tinga	\$2.29	20	
3	Empanadas: Apple Cinnamon	\$3.49	35	
4	<b>Total</b>		+	
5				

*Selecting cell C4*

2. Enter your **formula**. In our example, we'll type `=B2*C2+B3*C3`. This formula will follow the order of operations, first performing the multiplication:  $2.29 * 20 = 45.80$  and  $3.49 * 35 = 112.15$ . Then, it will add those values together to calculate the total:  $45.80 + 112.15$ .

	A	B	C	D
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	
2	Tamales: Chicken Tinga	\$2.29	20	
3	Empanadas: Apple Cinnamon	\$3.49	35	
4	<b>Total</b>		<code>=B2*C2+B3*C3</code>	
5				

*Creating a complex formula*

3. Double-check your formula for accuracy, then press **Enter** on your keyboard. The formula will **calculate** and display the **result**. In our example, the result shows that the total cost for the order is **\$167.95**.

	A	B	C	D
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	
2	Tamales: Chicken Tinga	\$2.29	20	
3	Empanadas: Apple Cinnamon	\$3.49	35	
4	<b>Total</b>		<b>\$167.95</b>	
5				

*The completed formula and calculated value*

You can add **parentheses** to any equation to make it easier to read. While it won't change the result of the formula in this example, we could enclose the multiplication operations within parentheses to clarify that they will be calculated before the addition.

	A	B	C	D
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	
2	Tamales: Chicen Tinga	\$2.29	20	
3	Empanadas: Apple Cinnamon	\$3.49	35	
4		<b>Total</b>	<b>=(B2*C2)+(B3*C3)</b>	
5				

*Including parentheses in a formula for clarity*

## Exercise 2.2

1. Open an existing Excel workbook.
2. Try creating a complex formula that uses **addition** and **subtraction**. If you are using the example, create a formula in cell **D6** that first **adds** the values of cells **D3**, **D4** and **D5** and then **multiplies** their total by **0.075**.
3. Try creating a complex formula that uses **multiplication** and **division**. If you are using the example, create a formula in cell **D7** to calculate the **total cost** of the invoice, including sales tax.

## 2.3 Relative and Absolute Cell References

There are two types of cell references: **relative** and **absolute**. Relative and absolute references behave differently when copied and filled to other cells. Relative references **change** when a formula is copied to another cell. Absolute references, on the other hand, remain **constant**, no matter where they are copied.

### 2.3.1 Relative References

By default, all cell references are **relative references**. When copied across multiple cells, they change based on the relative position of rows and columns. For example, if you copy the formula **=A1+B1** from row 1 to row 2, the formula will become **=A2+B2**. Relative references are especially convenient whenever you need to **repeat** the same calculation across multiple rows or columns.

### 2.3.2 Creating and Copying a Formula Using Relative References

In the following example, we want to create a formula that will multiply each item's **price** by the **quantity**. Rather than creating a new formula for each row, we can create a single formula in cell **D2** and then copy it to the other rows. We'll use relative references so that the formula correctly calculates the total for each item.

1. Select the **cell** that will contain the formula. In our example, we'll select cell **D2**.

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D2					
: [X] [✓] [fx]					
	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Total</b>	
2	Empanadas: Beef Picadillo	\$2.99	15	+	
3	Empanadas: Chipotle Shrimp	\$3.99	10		
4	Empanadas: Black Bean & Plantain	\$2.49	20		
5	Tamales: Chicken Tinga	\$2.29	20		
6	Tamales: Vegetable	\$2.29	30		
7	Arepas: Carnitas	\$2.89	10		
8	Arepas: Queso Blanco	\$2.49	20		
9	Empanadas: Apple Cinnamon	\$3.19	40		
10	Beverages: Horchata	\$1.89	25		
11	Beverages: Lemonade	\$1.89	35		
12	Beverages: Tamarindo	\$1.89	10		
13	<b>Total</b>				
14					

*Selecting cell D2*

- Enter the **formula** to calculate the desired value. In our example, we'll type `=B2*C2`.

C2					
: [X] [✓] [fx] =B2*C2					
	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Total</b>	
2	Empanadas: Beef Picadillo	\$2.99	15	=B2*C2 I	
3	Empanadas: Chipotle Shrimp	\$3.99	10		
4	Empanadas: Black Bean & Plantain	\$2.49	20		
5	Tamales: Chicken Tinga	\$2.29	20		
6	Tamales: Vegetable	\$2.29	30		
7	Arepas: Carnitas	\$2.89	10		
8	Arepas: Queso Blanco	\$2.49	20		
9	Empanadas: Apple Cinnamon	\$3.19	40		
10	Beverages: Horchata	\$1.89	25		
11	Beverages: Lemonade	\$1.89	35		
12	Beverages: Tamarindo	\$1.89	10		
13	<b>Total</b>				
14					

*Entering the formula*

- Press **Enter** on your keyboard. The formula will be **calculated** and the result will be displayed in the cell.

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4. Locate the **fill handle** in the lower-right corner of the desired cell. In our example, we'll locate the fill handle for cell **D2**.

	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Total</b>	
2	Empanadas: Beef Picadillo	\$2.99	15	\$44.85	
3	Empanadas: Chipotle Shrimp	\$3.99	10		
4	Empanadas: Black Bean & Plantain	\$2.49	20		
5	Tamales: Chicken Tinga	\$2.29	20		
6	Tamales: Vegetable	\$2.29	30		
7	Arepas: Carnitas	\$2.89	10		
8	Arepas: Queso Blanco	\$2.49	20		
9	Empanadas: Apple Cinnamon	\$3.19	40		
10	Beverages: Horchata	\$1.89	25		
11	Beverages: Lemonade	\$1.89	35		
12	Beverages: Tamarindo	\$1.89	10		
13	<b>Total</b>				
14					

*Locating the fill handle*

5. Click, hold and drag the **fill handle** over the cells you wish to fill. In our example, we'll select cells **D3:D12**.

	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Total</b>	
2	Empanadas: Beef Picadillo	\$2.99	15	\$44.85	
3	Empanadas: Chipotle Shrimp	\$3.99	10		
4	Empanadas: Black Bean & Plantain	\$2.49	20		
5	Tamales: Chicken Tinga	\$2.29	20		
6	Tamales: Vegetable	\$2.29	30		
7	Arepas: Carnitas	\$2.89	10		
8	Arepas: Queso Blanco	\$2.49	20		
9	Empanadas: Apple Cinnamon	\$3.19	40		
10	Beverages: Horchata	\$1.89	25		
11	Beverages: Lemonade	\$1.89	35		
12	Beverages: Tamarindo	\$1.89	10		
13	<b>Total</b>				
14					

*Dragging the fill handle over cells D3:D12*

6. Release the mouse. The formula will be **copied** to the selected cells with **relative references** and the values will be calculated in each cell.

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	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Total</b>	
2	Empanadas: Beef Picadillo	\$2.99	15	\$44.85	
3	Empanadas: Chipotle Shrimp	\$3.99	10	\$39.90	
4	Empanadas: Black Bean & Plantain	\$2.49	20	\$49.80	
5	Tamales: Chicken Tinga	\$2.29	20	\$45.80	
6	Tamales: Vegetable	\$2.29	30	\$68.70	
7	Arepas: Carnitas	\$2.89	10	\$28.90	
8	Arepas: Queso Blanco	\$2.49	20	\$49.80	
9	Empanadas: Apple Cinnamon	\$3.19	40	\$127.60	
10	Beverages: Horchata	\$1.89	25	\$47.25	
11	Beverages: Lemonade	\$1.89	35	\$66.15	
12	Beverages: Tamarindo	\$1.89	10	\$18.90	
13	<b>Total</b>				
14					

*The copied formulas and calculated values*

You can double-click the **filled cells** to check their formulas for accuracy. The relative cell references should be different for each cell, depending on its row.

	A	B	C	D	E
1	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Total</b>	
2	Empanadas: Beef Picadillo	\$2.99	15	\$44.85	
3	Empanadas: Chipotle Shrimp	\$3.99	10	\$39.90	
4	Empanadas: Black Bean & Plantain	\$2.49	20	\$49.80	
5	Tamales: Chicken Tinga	\$2.29	20	\$45.80	
6	Tamales: Vegetable	\$2.29	30	\$68.70	
7	Arepas: Carnitas	\$2.89	10	\$28.90	
8	Arepas: Queso Blanco	\$2.49	20	\$49.80	
9	Empanadas: Apple Cinnamon	\$3.19	40	\$127.60	
10	Beverages: Horchata	\$1.89	25	\$47.25	
11	Beverages: Lemonade	\$1.89	35	\$66.15	
12	Beverages: Tamarindo	\$1.89	10	\$18.90	
13	<b>Total</b>				
14					

Cell references in row 8 are relative to row 8

=B8\*C8

*Checking*

*the copied formulas for accuracy*

### 2.3.3 Absolute References

There may be times when you do not want a cell reference to change when filling cells. Unlike relative references, **absolute references** do not change when copied or filled. You can use an absolute reference to keep a row and/or column **constant**.

An absolute reference is designated in a formula by the addition of a **dollar sign** (\$). It can precede the column reference, the row reference, or both.

<b>\$A\$2</b>	<b>The column and the row do not change when copied</b>
<b>A\$2</b>	<b>The row does not change when copied</b>
<b>\$A2</b>	<b>The column does not change when copied</b>

*The three types of absolute references*

You will usually use the **\$A\$2** format when creating formulas that contain absolute references. The other two formats are used much less frequently.

### 2.3.4 Creating and Copying a Formula Using Absolute References

In our example, we'll use the 7.5% sales tax rate in cell **E1** to calculate the sales tax for all items in **column D**. We'll need to use the absolute cell reference **\$E\$1** in our formula. Since each formula is using the same tax rate, we want that reference to remain constant when the formula is copied and filled to other cells in column D.

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

	A	B	C	D	E
1	<b>Sales Tax</b>				<b>7.5%</b>
2	<b>Menu Item</b>	<b>Price</b>	<b>Quantity</b>	<b>Sales Tax</b>	<b>Total</b>
3	Empanadas: Beef Picadillo	\$2.99	15		
4	Empanadas: Chipotle Shrimp	\$3.99	10		
5	Empanadas: Black Bean & Plantain	\$2.49	20		
6	Tamales: Chicken Tinga	\$2.29	20		
7	Tamales: Vegetable	\$2.29	30		
8	Arepas: Carnitas	\$2.89	10		
9	Arepas: Queso Blanco	\$2.49	20		
10	Empanadas: Apple Cinnamon	\$3.19	40		
11	Beverages: Horchata	\$1.89	25		
12	Beverages: Lemonade	\$1.89	35		
13	Beverages: Tamarindo	\$1.89	10		
14	<b>Total</b>				
15					

*Selecting cell D3*

2. Enter the **formula** to calculate the desired value. In our example, we'll type **=B3\*C3\*\$E\$1**.

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SUM					
: X ✓ fx =(B3*C3)*\$E\$1					
	A	B	C	D	E
1	Sales Tax				7.5%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	\$2.99	= (B3*C3)*\$E\$1		
4	Empanadas: Chipotle Shrimp	\$3.99	10		
5	Empanadas: Black Bean & Plantain	\$2.49	20		
6	Tamales: Chicken Tinga	\$2.29	20		
7	Tamales: Vegetable	\$2.29	30		
8	Arepas: Carnitas	\$2.89	10		
9	Arepas: Queso Blanco	\$2.49	20		
10	Empanadas: Apple Cinnamon	\$3.19	40		
11	Beverages: Horchata	\$1.89	25		
12	Beverages: Lemonade	\$1.89	35		
13	Beverages: Tamarindo	\$1.89	10		
14	Total				
15					

*Entering the formula*

- Press **Enter** on your keyboard. The formula will calculate and the result will display in the cell.
- Locate the **fill handle** in the lower-right corner of the desired cell. In our example, we'll locate the fill handle for cell **D3**.

D3					
: X ✓ fx =(B3*C3)*\$E\$1					
	A	B	C	D	E
1	Sales Tax				7.5%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	\$2.99	15	\$3.36	
4	Empanadas: Chipotle Shrimp	\$3.99	10		
5	Empanadas: Black Bean & Plantain	\$2.49	20		
6	Tamales: Chicken Tinga	\$2.29	20		
7	Tamales: Vegetable	\$2.29	30		
8	Arepas: Carnitas	\$2.89	10		
9	Arepas: Queso Blanco	\$2.49	20		
10	Empanadas: Apple Cinnamon	\$3.19	40		
11	Beverages: Horchata	\$1.89	25		
12	Beverages: Lemonade	\$1.89	35		
13	Beverages: Tamarindo	\$1.89	10		
14	Total				
15					

*Locating the fill handle*

- Click, hold and drag the **fill handle** over the cells you wish to fill, cells **D4:D13** in our example.

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D3 : `=(B3*C3)*$E$1`

	A	B	C	D	E
1					%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	\$2.99	15	\$3.36	
4	Empanadas: Chipotle Shrimp	\$3.99	10		
5	Empanadas: Black Bean & Plantain	\$2.49	20		
6	Tamales: Chicken Tinga	\$2.29	20		
7	Tamales: Vegetable	\$2.29	30		
8	Arepas: Carnitas	\$2.89	10		
9	Arepas: Queso Blanco	\$2.49	20		
10	Empanadas: Apple Cinnamon	\$3.19	40		
11	Beverages: Horchata	\$1.89	25		
12	Beverages: Lemonade	\$1.89	35		
13	Beverages: Tamarindo	\$1.89	10		
14	<b>Total</b>				

*Click, hold and drag the fill handle to copy the formula to adjacent cells*

### *Dragging the fill handle*

6. Release the mouse. The formula will be **copied** to the selected cells with an **absolute reference** and the values will be calculated in each cell.

D3 : `=(B3*C3)*$E$1`

	A	B	C	D	E
1	<b>Sales Tax</b>				<b>7.5%</b>
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	\$2.99	15	\$3.36	
4	Empanadas: Chipotle Shrimp	\$3.99	10	\$2.99	
5	Empanadas: Black Bean & Plantain	\$2.49	20	\$3.74	
6	Tamales: Chicken Tinga	\$2.29	20	\$3.44	
7	Tamales: Vegetable	\$2.29	30	\$5.15	
8	Arepas: Carnitas	\$2.89	10	\$2.17	
9	Arepas: Queso Blanco	\$2.49	20	\$3.74	
10	Empanadas: Apple Cinnamon	\$3.19	40	\$9.57	
11	Beverages: Horchata	\$1.89	25	\$3.54	
12	Beverages: Lemonade	\$1.89	35	\$4.96	
13	Beverages: Tamarindo	\$1.89	10	\$1.42	
14	<b>Total</b>				

### *The copied formulas and calculated values*

You can double-click the **filled cells** to check their formulas for accuracy. The absolute reference should be the same for each cell, while the other references are relative to the cell's row.

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Sales Tax				7.5%
Menu Item	Price	Quantity	Sales Tax	Total
Empanadas: Beef Picadillo				
Empanadas: Chipotle Shrimp				
Empanadas: Black Bean & P				
Tamales: Chicken Tinga	\$2.29	20	\$5.15	
Tamales: Vegetable	\$2.29	30	\$5.15	
Arepas: Carnitas	\$2.89	10	\$2.17	
Arepas: Queso Blanco	\$2.49	20	I =(B9*C9)*\$E\$1	
Empanadas: Apple Cinnamon	\$3.19	40	\$0.00	
Beverages: Horchata	\$1.89	25	\$3.54	
Beverages: Lemonade	\$1.89	35	\$4.96	
Beverages: Tamarindo	\$1.89	10	\$1.42	
			Total	

Relative cell references in row 9 are relative to row 9 while the absolute cell reference remains constant

### Checking the formulas for accuracy

Be sure to include the **dollar sign** (\$) whenever you're making an absolute reference across multiple cells. The dollar signs were omitted in the example below. This caused Excel to interpret it as a relative reference, producing an incorrect result when copied to other cells.

Sales Tax				
Menu Item	Price	Quantity	Sales Tax	
Empanadas: Beef Picadillo	\$2.99	15	\$3.36	
Empanadas: Chipotle Shrimp	\$3.99	10	#VALUE!	
Empanadas: Bla			\$2,401.04	
Tamales: Chicke			#VALUE!	
Tamales: Vegeta			\$168,373.03	
Arepas: Carnita			#VALUE!	
Arepas: Queso Blanco	\$2.49	20	\$8,388,398.27	
Empanadas: Apple Cinnamon	\$3.19	40	I =(B10*C10)*E8	
Beverages: Horchata	\$1.89	25	\$396,354,176.00	
Beverages: Lemonade	\$1.89	35	#VALUE!	
Beverages: Tamarindo	\$1.89	10	\$7,491,094,819.49	
			Total	

Without the dollar sign (\$), the reference to cell E3 was interpreted as a relative reference, leading to incorrect results

### The result of an incorrect absolute reference

### 2.3.5 Using Cell References with Multiple Worksheets

Excel allows you to refer to any cell on any **worksheet**, which can be especially helpful if you want to reference a specific value from one worksheet to another. To do this, you'll simply need to begin the cell reference with the **worksheet name** followed by an **exclamation point (!)**. For example, if you wanted to reference cell **A1** on **Sheet1**, its cell reference would be **Sheet1!A1**.

Note that if a worksheet name contains a **space**, you will need to include **single quotation marks ( ' )** around the name. For example, if you wanted to reference cell **A1** on a worksheet named **July Budget**, its cell reference would be **'July Budget'!A1**.

### 2.3.6 Referencing Cells Across Worksheets

In our example below, we'll refer to a cell with a calculated value between two worksheets. This will allow us to use the **exact same value** on two different worksheets without rewriting the formula or copying data between worksheets.

1. Locate the cell you wish to reference and note its worksheet. In our example, we want to reference cell **E14** on the **Menu Order** worksheet.

	A	B	C	D	E
5	Empanadas: Black Bean & Plantain	\$2.49	20	\$3.74	\$53.54
6	Tamales: Chicken Tinga	\$2.29	20	\$3.44	\$49.24
7	Tamales: Vegetable	\$2.29	30	\$5.15	\$73.85
8	Arepas: Carnitas	\$2.89	10	\$2.17	\$31.07
9	Arepas: Queso Blanco	\$2.49	20	\$3.74	\$53.54
10	Empanadas: Apple Cinnamon	\$3.19	40	\$9.57	\$137.17
11	Beverages: Horchata	\$1.89	25	\$3.54	\$50.79
12	Beverages: Lemonade	\$1.89	35	\$4.96	\$71.11
13	Beverages: Tamarindo	\$1.89	10	\$1.42	\$20.32
14	<b>Total</b>				<b>\$587.65</b>
15					
16					

Menu Order    Catering Invoice    (+)

*Cell E14*

2. Navigate to the desired **worksheet**. In our example, we'll select the **Catering Invoice** worksheet.

12	Beverages: Lemonade	\$1.89	35	\$4.96	\$71.11
13	Beverages: Tamarindo	\$1.89	10	\$1.42	\$20.32
14	<b>Total</b>				<b>\$587.65</b>
15					
16					

Menu Order    **Catering Invoice**    (+)

*Navigating to Sheet2*

3. The **selected worksheet** will appear.
4. Locate and select the **cell** where you want the value to appear. In our example, we'll select cell **B2**.

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B2		✕ ✓ f <sub>x</sub>		
	A	B	C	
1	<b>Total Cost for Requested Services</b>			
2	Menu Items			
3	Paper Items (Plates, silverware, cups)	\$110.87		
4	Rental Equipment (Tables, Chairs, Linens)	\$249.95		
5	Service Fee (18% of menu items ordered)	\$0.00		
6	<b>Total Cost</b>	<b>\$360.82</b>		
7				

Menu Order   **Catering Invoice**   (+)

*Selecting cell B2*

5. Type the **equal sign** (=), the **sheet name** followed by an **exclamation point** (!), and the **cell address**. In our example, we'll type `'Menu Order'!E14`.

SUM		✕ ✓ f <sub>x</sub>		= 'Menu Order'!E14
	A	B	C	
1	<b>Total Cost for Requested Services</b>			
2	Menu Items	= 'Menu Order'!E14		
3	Paper Items (Plates, silverware, cups)	\$110.87		
4	Rental Equipment (Tables, Chairs, Linens)	\$249.95		
5	Service Fee (18% of menu items ordered)	\$113.63		
6	<b>Total Cost</b>	<b>\$1,105.72</b>		
7				

Menu Order   **Catering Invoice**   (+)

*Referencing a cell on Sheet1*

6. Press **Enter** on your keyboard. The **value** of the referenced cell will appear. If the **value** of cell E14 changes on the Menu Order worksheet, it will be **updated** automatically on the Catering Invoice worksheet.

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	A	B	C
1	<b>Total Cost for Requested Services</b>		
2	Menu Items	\$587.65	
3	Paper Items (Plates, silverware, cups)	\$110.87	
4	Rental Equipment (Tables, Chairs, Linens)	\$249.95	
5	Service Fee (18% of menu items ordered)	\$113.63	
6	<b>Total Cost</b>	<b>\$1,105.72</b>	
7			

Menu Order    **Catering Invoice**

*The referenced cell*

If you **rename** your worksheet at a later point, the cell reference will be updated automatically to reflect the new worksheet name.

If you enter a worksheet name incorrectly, the **#REF!** error will appear in the cell. In our example below, we've mistyped the name of the worksheet. Click the **Error** button  and then select the desired option from the drop-down menu to **edit** or **ignore** the error.

	A	B
	Menu Items	#REF!
	Paper Items (Plates, silverware, cups)	
	Rental Equipment (Tables, Chairs, Linens)	
	Service Fee (18% of menu items ordered)	
	<b>Total Cost</b>	<b>#REF!</b>

Menu Order    **Catering Invoice**

*Correcting a cell reference error*

### Exercise 2.3

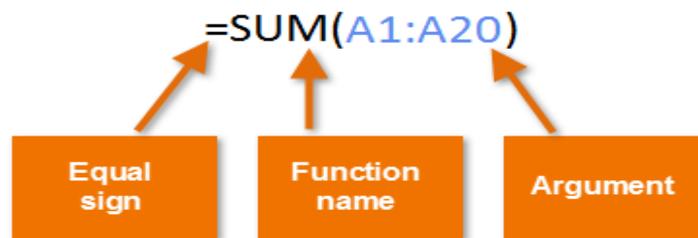
1. Open an existing Excel workbook.
2. Create a formula that uses a **relative reference**. If you are using the example, use the **fill handle** to fill in the formula in cell **E4** through **E14**. Double-click a cell to see the copied formula and the relative cell references.
3. Create a formula that uses an **absolute reference**. If you are using the example, correct the formula in cell **D4** to refer only to the tax rate in cell **E2** as an **absolute reference**, then use the fill handle to fill the formula from cell **D4** to **D14**.
4. Try referencing a cell across **worksheets**. If you are using the example, create a cell reference in cell **B3** on the **Catering Invoice** worksheet for cell **E15** on the **Menu Order** worksheet.

## 2.4 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'll need to understand the different **parts of a function** and how to create **arguments** to calculate values and cell references.

### 2.4.1 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 an **equal 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.



*Syntax of a basic function*

### 2.4.2 Working with Arguments

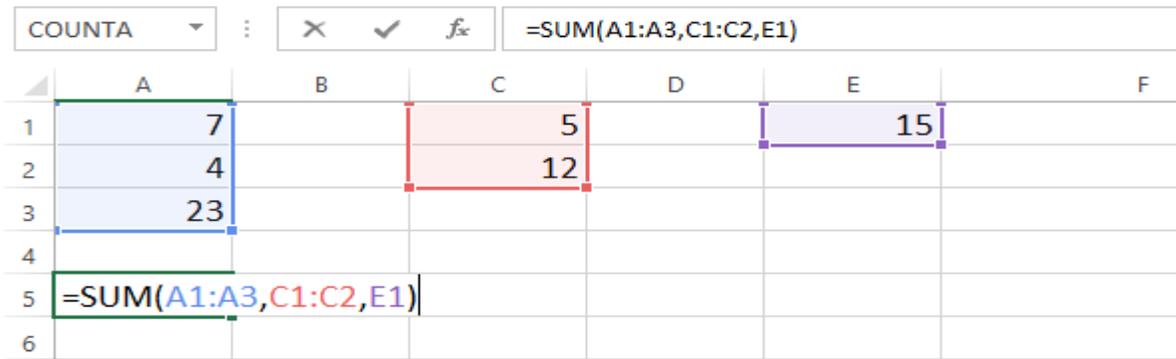
Arguments can refer to both **individual cells** and **cell ranges** and must be enclosed within **parentheses**. You can include one argument or multiple arguments, depending on the syntax required for the function.

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.

COUNTA		=AVERAGE(B1:B9)	
A	B	C	
1	5		
2	8		
3	9		
4	7		
5	5		
6	1		
7	3		
8	2		
9	7		
10	=AVERAGE(B1:B9)		
11			

*A function with a single argument*

Multiple arguments must be separated by a **comma**. For example, the function **=SUM(A1:A3, C1:C2, E2)** will **add** the values of all the cells in the three arguments.



*A function with multiple arguments*

### 2.4.3 Creating a Function

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

- **SUM**: This function **adds** all 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.

### 2. 4.4 Creating a Basic Function

In our example below, we'll 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'll select cell **C11**.

Food Supply Inventory Orders (Non-Perishable Items)					
	Item	Quantity	Price Per Unit	Total Cost	Date Ordered
3	Tomatoes (case of 12)	3	\$17.44	\$52.32	
4	Black Beans (case of 10)	5	\$20.14	\$100.70	
5	All Purpose Flour (50 lb.)	5	\$14.05	\$70.25	
6	Corn Meal/Maza (25 lb.)	5	\$18.69	\$93.45	
7	Brown Rice (25 lb.)	5	\$10.99	\$54.95	
8	Salsa, Medium (1 gallon)	12	\$8.47	\$101.64	
9	Olive Oil (2.5 gallon)	4	\$28.69	\$114.76	
10	Vegetable Wash (1 gallon)	2	\$8.99	\$17.98	
11	<b>Average Price Per Unit</b>				
12	<b>Total Cost</b>				

*Selecting cell C11*

2. Type the **equal 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'll type=**AVERAGE**.

COUNTA : X ✓ fx =AVERAGE

	A	B	C	D	E
1	<b>Food Supply Inventory Orders (Non-Perishable Items)</b>				
2	<b>Item</b>	<b>Quantity</b>	<b>Price Per Unit</b>	<b>Total Cost</b>	<b>Date Ordered</b>
3	Tomatoes (case of 12)	3	\$17.44	\$52.32	
4	Black Beans (case of 10)	5	\$20.14	\$100.70	
5	All Purpose Flour (50 lb.)	5	\$14.05	\$70.25	
6	Corn Meal/Maza (25 lb.)	5	\$18.69	\$93.45	
7	Brown Rice (25 lb.)	5	\$10.99	\$54.95	
8	Salsa, Medium (1 gallon)	12	\$8.47	\$101.64	
9	Olive Oil (2.5 gallon)	4	\$28.69	\$114.76	
10	Vegetable Wash (1 gallon)	2	\$8.99	\$17.98	
11	<b>Average Price Per Unit</b>		=AVERAGE		
12	<div style="background-color: orange; color: white; padding: 5px;">                     Type the function name or select it from the list of suggested functions                 </div>		AVERAGE	Returns the average (arithmetic mean)	
13			AVERAGEA		
14			AVERAGEIF		
			AVERAGEIFS		

Entering the AVERAGE function

- Enter the **cell range** for the **argument** inside **parentheses**. In our example, we'll 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.

COUNTA : X ✓ fx =AVERAGE(C3:C10)

	A	B	C	D	E
1	<b>Food Supply Inventory Orders (Non-Perishable Items)</b>				
2	<b>Item</b>	<b>Quantity</b>	<b>Price Per Unit</b>	<b>Total Cost</b>	<b>Date Ordered</b>
3	Tomatoes (case of 12)	3	\$17.44	\$52.32	
4	Black Beans (case of 10)	5	\$20.14	\$100.70	
5	All Purpose Flour (50 lb.)	5	\$14.05	\$70.25	
6	Corn Meal/Maza (25 lb.)	5	\$18.69	\$93.45	
7	Brown Rice (25 lb.)	5	\$10.99	\$54.95	
8	Salsa, Medium (1 gallon)	12	\$8.47	\$101.64	
9	Olive Oil (2.5 gallon)	4	\$28.69	\$114.76	
10	Vegetable Wash (1 gallon)	2	\$8.99	\$17.98	
11	<b>Average Price Per Unit</b>		=AVERAGE(C3:C10)		
12	<b>Total Cost</b>				
13					

Creating an argument

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- 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**.

C11		: X ✓ fx		=AVERAGE(C3:C10)	
	A	B	C	D	E
1	<b>Food Supply Inventory Orders (Non-Perishable Items)</b>				
2	<b>Item</b>	<b>Quantity</b>	<b>Price Per Unit</b>	<b>Total Cost</b>	<b>Date Ordered</b>
3	Tomatoes (case of 12)	3	\$17.44	\$52.32	
4	Black Beans (case of 10)	5	\$20.14	\$100.70	
5	All Purpose Flour (50 lb.)	5	\$14.05	\$70.25	
6	Corn Meal/Maza (25 lb.)	5	\$18.69	\$93.45	
7	Brown Rice (25 lb.)	5	\$10.99	\$54.95	
8	Salsa, Medium (1 gallon)	12	\$8.47	\$101.64	
9	Olive Oil (2.5 gallon)	4	\$28.69	\$114.76	
10	Vegetable Wash (1 gallon)	2	\$8.99	\$17.98	
11	<b>Average Price Per Unit</b>		<b>\$15.93</b>		
12	<b>Total Cost</b>				
13					

*The completed function and calculated value*

Excel **will not always tell you** if your function contains an error, so it's up to you to check all of your functions.

### 2. 4. 6 Creating 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'll create a function to calculate the **total cost** for a list of recently ordered items using the SUM function.

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

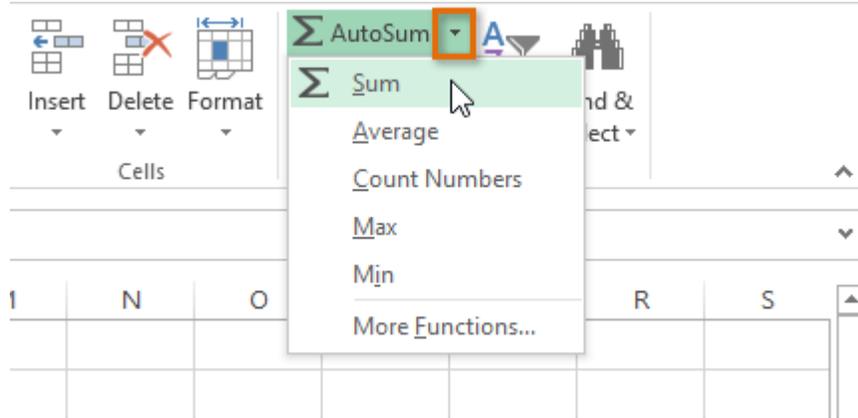
D12		: X ✓ fx			
	A	B	C	D	E
1	<b>Food Supply Inventory Orders (Non-Perishable Items)</b>				
2	<b>Item</b>	<b>Quantity</b>	<b>Price Per Unit</b>	<b>Total Cost</b>	<b>Date Ordered</b>
3	Tomatoes (case of 12)	3	\$17.44	\$52.32	
4	Black Beans (case of 10)	5	\$20.14	\$100.70	
5	All Purpose Flour (50 lb.)	5	\$14.05	\$70.25	
6	Corn Meal/Maza (25 lb.)	5	\$18.69	\$93.45	
7	Brown Rice (25 lb.)	5	\$10.99	\$54.95	
8	Salsa, Medium (1 gallon)	12	\$8.47	\$101.64	
9	Olive Oil (2.5 gallon)	4	\$28.69	\$114.76	
10	Vegetable Wash (1 gallon)	2	\$8.99	\$17.98	
11	<b>Average Price Per Unit</b>		<b>\$15.93</b>		
12	<b>Total Cost</b>				
13					

*Selecting*

*cell D12*

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- 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'll select **Sum**.



*Selecting Sum from the AutoSum command drop-down menu*

- 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.

Food Supply Inventory Orders (Non-Perishable Items)					
	Item	Quantity	Price Per Unit	Total Cost	Date Ordered
3	Tomatoes (case of 12)	3	\$17.44	\$52.32	
4	Black Beans (case of 10)	5	\$20.14	\$100.70	
5	All Purpose Flour (50 lb)	5	\$14.05	\$70.25	
6	Corn Meal (50 lb)	5	\$18.69	\$93.45	
7	Brown Rice (50 lb)	5	\$10.99	\$54.95	
8	Salsa, Medium (1 gallon)	12	\$8.47	\$101.64	
9	Olive Oil (2.5 gallon)	4	\$28.69	\$114.76	
10	Vegetable Wash (1 gallon)	2	\$8.99	\$17.98	
11	<b>Average Price Per Unit</b>		<b>\$15.93</b>		
12	<b>Total Cost</b>			<b>=SUM(D3:D11)</b>	

The cell range is selected automatically based on the location of the function

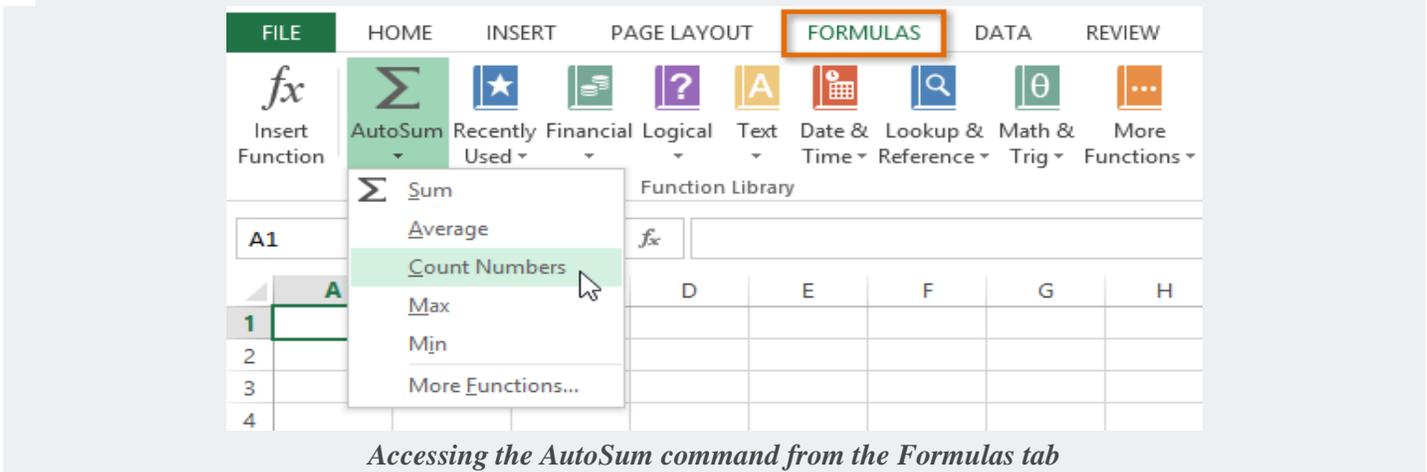
*The inserted function and automatically selected cell range*

- 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**.

Food Supply Inventory Orders (Non-Perishable Items)				
Item	Quantity	Price Per Unit	Total Cost	Date Ordered
Tomatoes (case of 12)	3	\$17.44	\$52.32	
Black Beans (case of 10)	5	\$20.14	\$100.70	
All Purpose Flour (50 lb.)	5	\$14.05	\$70.25	
Corn Meal/Maza (25 lb.)	5	\$18.69	\$93.45	
Brown Rice (25 lb.)	5	\$10.99	\$54.95	
Salsa, Medium (1 gallon)	12	\$8.47	\$101.64	
Olive Oil (2.5 gallon)	4	\$28.69	\$114.76	
Vegetable Wash (1 gallon)	2	\$8.99	\$17.98	
<b>Average Price Per Unit</b>		<b>\$15.93</b>		
<b>Total Cost</b>			<b>\$606.05</b>	

*The completed function and calculated value*

The **AutoSum** command can also be accessed from the **Formulas** tab on the **Ribbon**.



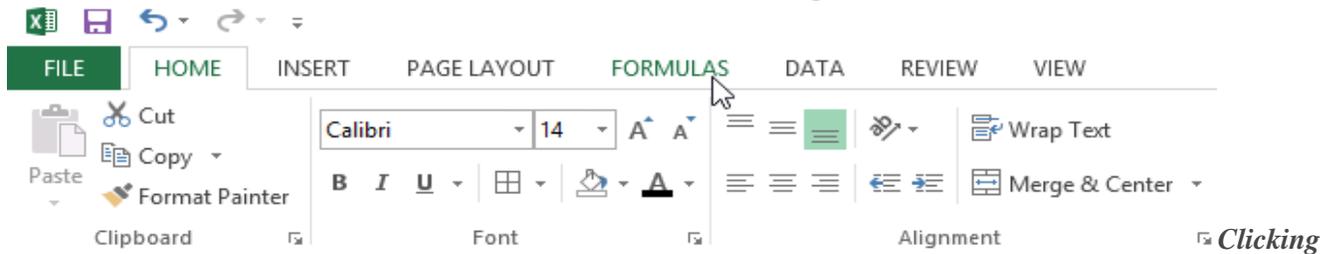
*Accessing the AutoSum command from the Formulas tab*

## 2. 4.6 The Function Library

While there are hundreds of different functions in Excel, the functions you use most frequently will depend on the **kind 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 much more from the **Function Library** on the **Formulas** tab.

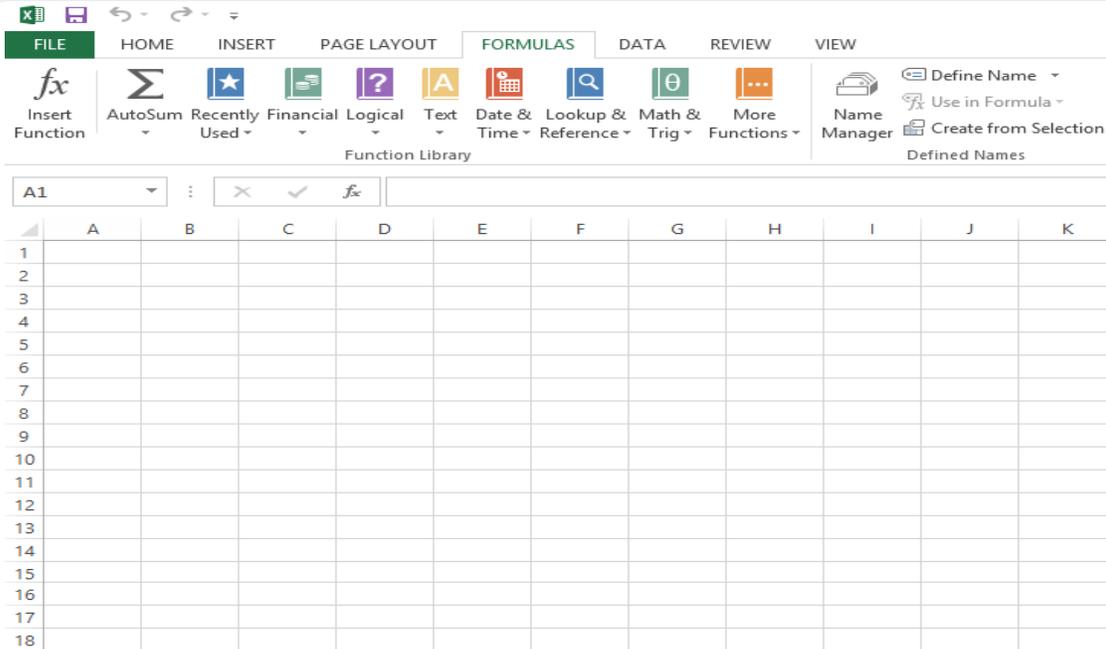
- To access the **Function Library**, select the **Formulas** tab on the **Ribbon**. The **Function Library** will appear.

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### *the Formulas tab*

Click the buttons in the interactive below to learn more about the different types of functions in Excel.

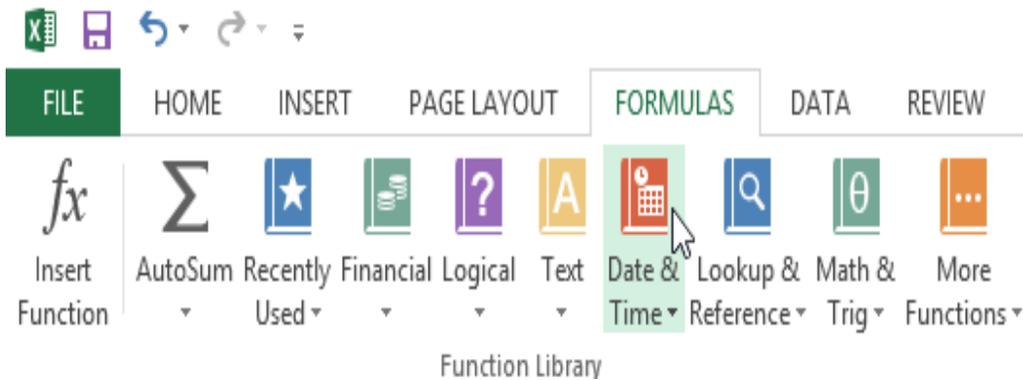


### 2. 4.7 Inserting a Function from the Function Library

In our example below, we'll use a function to calculate the **number of business days** it took to receive the items after they were ordered. In our example, we'll 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'll select cell **D3**.

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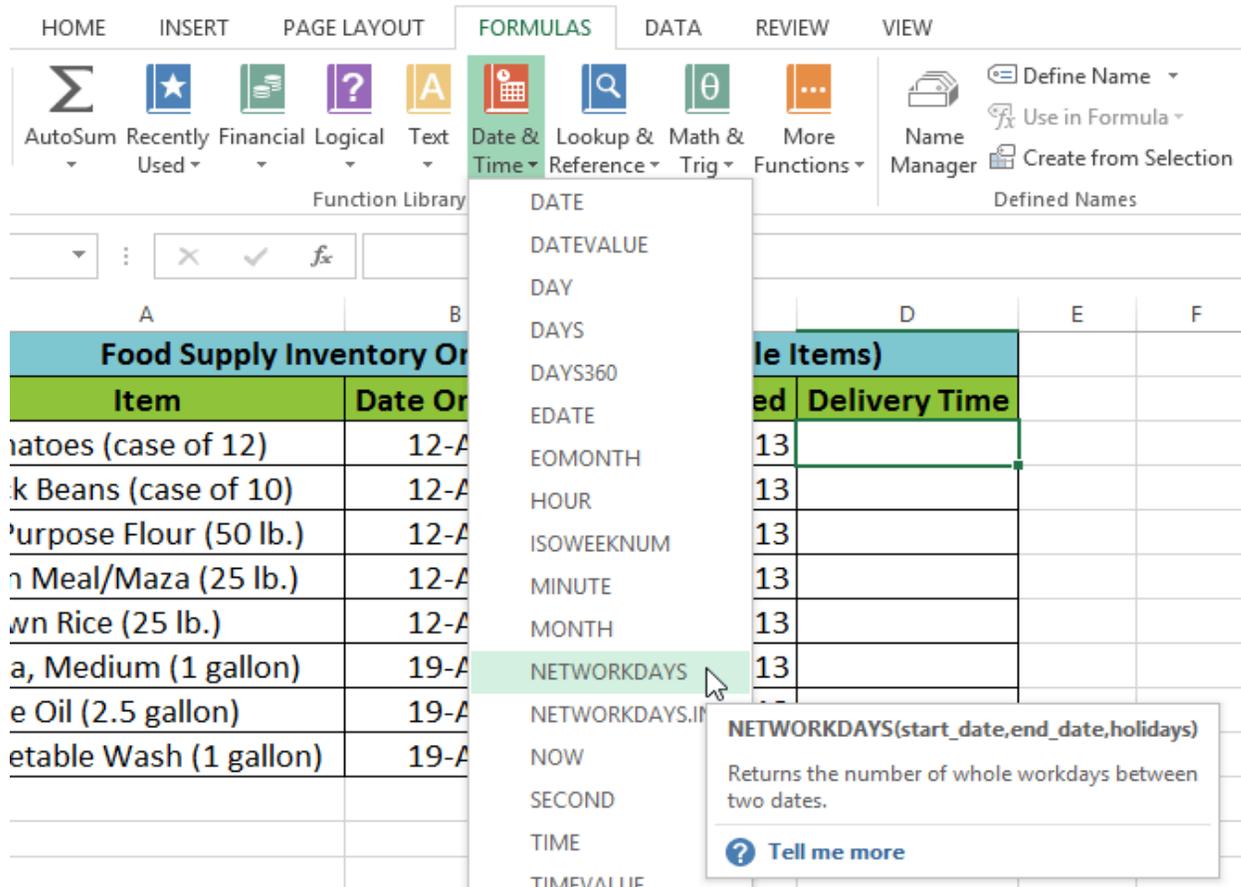


	A	B	C	D	E
1	<b>Food Supply Inventory Orders (Non-Perishable Items)</b>				
2	<b>Item</b>	<b>Date Ordered</b>	<b>Date Received</b>	<b>Delivery Time</b>	
3	Tomatoes (case of 12)	12-Aug-13	15-Aug-13	+	
4	Black Beans (case of 10)	12-Aug-13	17-Aug-13		
5	All Purpose Flour (50 lb.)	12-Aug-13	14-Aug-13		
6	Corn Meal/Maza (25 lb.)	12-Aug-13	15-Aug-13		
7	Brown Rice (25 lb.)	12-Aug-13	15-Aug-13		
8	Salsa, Medium (1 gallon)	19-Aug-13	23-Aug-13		
9	Olive Oil (2.5 gallon)	19-Aug-13	24-Aug-13		
10	Vegetable Wash (1 gallon)	19-Aug-13	21-Aug-13		
11					

*Selecting cell D3*

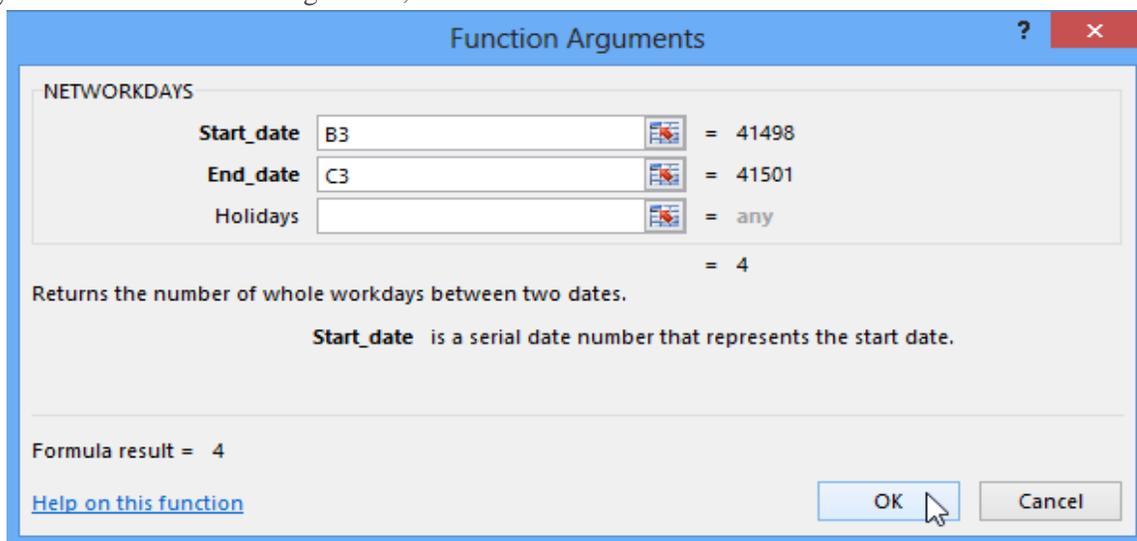
2. Click the **Formulas** tab on the **Ribbon** to access the **Function Library**.
3. From the **Function Library** group, select the desired **function category**. In our example, we'll choose **Date & Time**.
4. Select the **desired function** from the drop-down menu. In our example, we'll select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

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### Selecting the NETWORKDAYS function

5. The **Function Arguments** dialog box will appear. From here, you'll be able to enter or select the cells that will make up the arguments in the function. In our example, we'll enter **B3** in the **Start\_date**: field and **C3** in the **End date**: field.
6. When you're satisfied with the arguments, click **OK**.



### Clicking 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.

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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	

*The completed function and calculated value*

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 wish to fill. The function will be copied and values for those cells will be calculated relative to their row or column.

Inventory Orders (Non-Perishable Items)		
Date Ordered	Date Received	Delivery Time
12-Aug-13	15-Aug-13	4
12-Aug-13	17-Aug-13	5
12-Aug-13	14-Aug-13	3
12-Aug-13	15-Aug-13	4
12-Aug-13	15-Aug-13	4
19-Aug-13	23-Aug-13	5
19-Aug-13	24-Aug-13	5
19-Aug-13	21-Aug-13	=NETWORKDAYS(B10,C10)

NETWORKDAYS(start\_date, end\_date, [holidays])

*Copying a function to adjacent cells using the fill handle*

## 2.4.8 The Insert Function Command

If you're having trouble finding the right function, the **Insert Function** command allows you to search for functions using **keywords**. While it can be extremely useful, this command is sometimes a little difficult to use. If you don't 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.

## 2.4.9 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. Therefore, we will need to find a function that counts the **total number of cells** within a cell range.

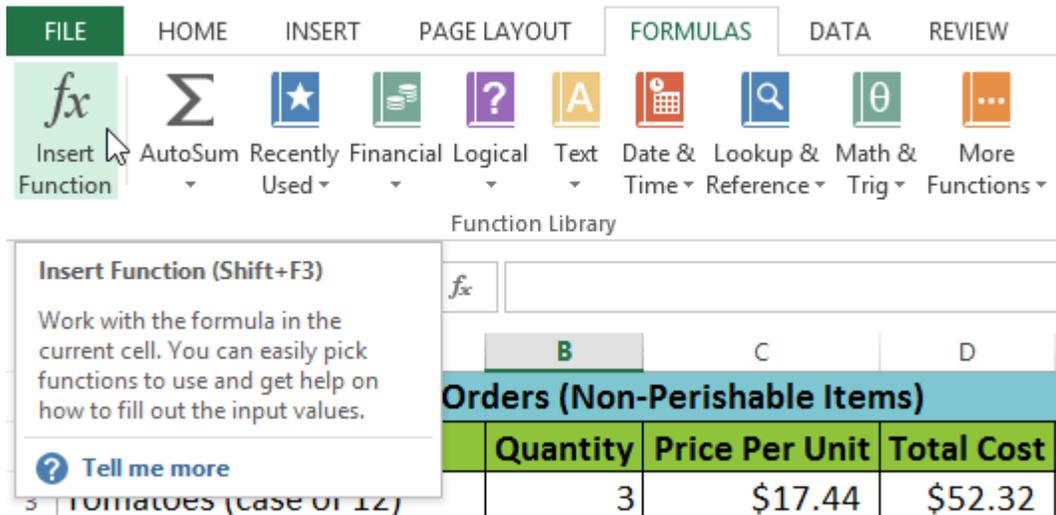
1. Select the **cell** that will contain the function. In our example, we'll select cell **B16**.

Food Supply Inventory Orders (Non-Perishable Items)					
Item	Quantity	Price Per Unit	Total Cost	Date Ordered	
Tomatoes (case of 12)	3	\$17.44	\$52.32		
Black Beans (case of 10)	5	\$20.14	\$100.70		
All Purpose Flour (50 lb.)	5	\$14.05	\$70.25		
Corn Meal/Maza (25 lb.)	5	\$18.69	\$93.45		
Brown Rice (25 lb.)	5	\$10.99	\$54.95		
Salsa, Medium (1 gallon)	12	\$8.47	\$101.64		
Olive Oil (2.5 gallon)	4	\$28.69	\$114.76		
Vegetable Wash (1 gallon)	2	\$8.99	\$17.98		
<b>Average Price Per Unit</b>		<b>\$15.93</b>			
			<b>Total Cost</b>	<b>\$606.05</b>	
<b>Inventory Order Summary</b>					
<b>Total Items Ordered</b>					
<b>Most Expensive Item</b>					
<b>Average Shipping Time</b>					

*Selecting cell B16*

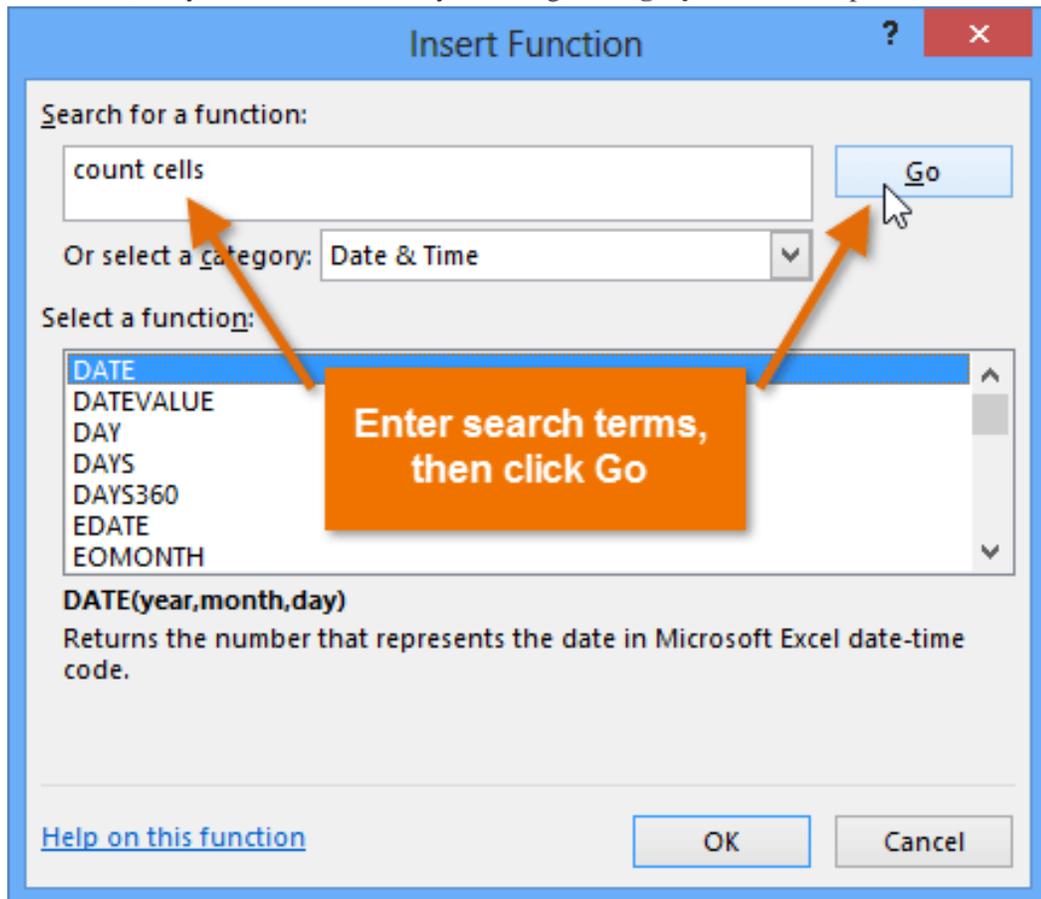
2. Click the **Formulas** tab on the **Ribbon** and then select the **Insert Function** command.

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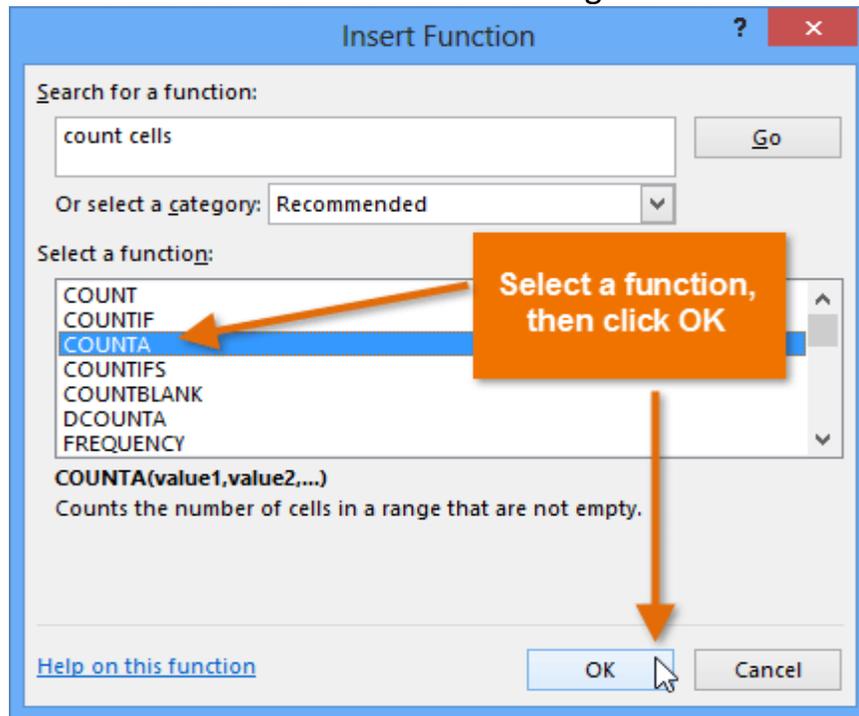
*Selecting the Insert Function command*

3. The **Insert Function** dialog box will appear.
4. Type a few **keywords** describing the calculation you want the function to perform and click **Go**. In our example, we'll type **Count cells**, but you can also search by selecting a **category** from the drop-down list.



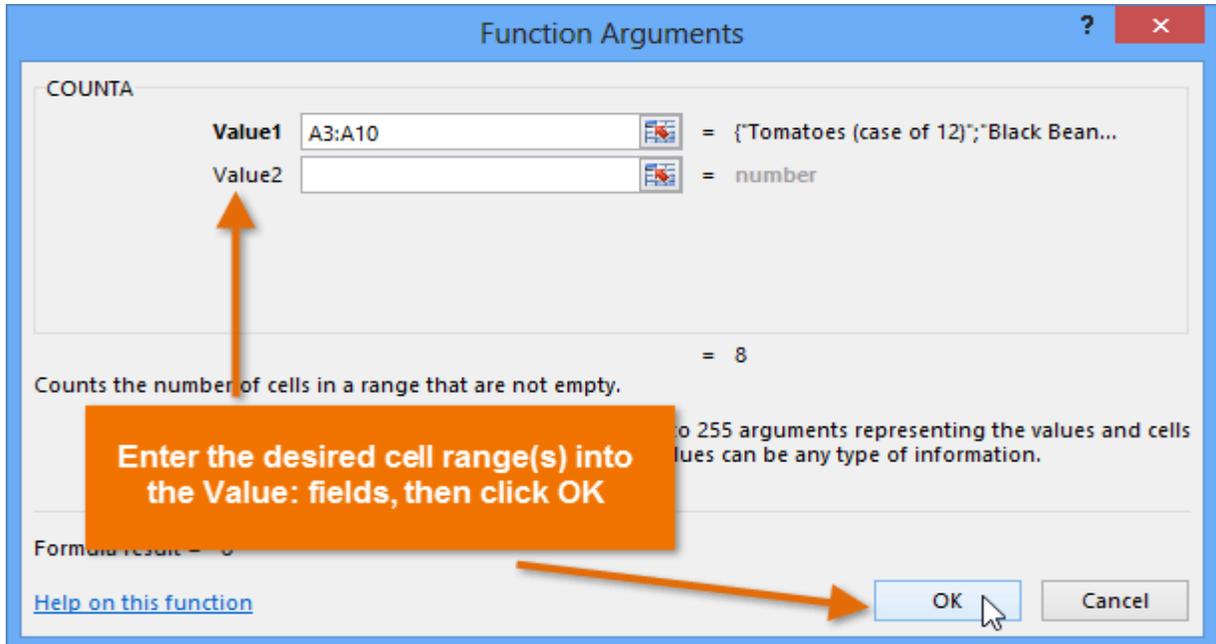
*Searching for a function with keywords*

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



*Selecting a function and clicking OK*

6. The **Function Arguments** dialog box will appear. Select the **Value1:** field and then enter or select the desired cells. In our example, we'll 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're satisfied, click **OK**.



*Entering an argument and clicking 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.

Food Supply Inventory Orders (Non-Perishable Items)					
Item	Quantity	Price Per Unit	Total Cost	Date Ordered	
Tomatoes (case of 12)	3	\$17.44	\$52.32		
Black Beans (case of 10)	5	\$20.14	\$100.70		
All Purpose Flour (50 lb.)	5	\$14.05	\$70.25		
Corn Meal/Maza (25 lb.)	5	\$18.69	\$93.45		
Brown Rice (25 lb.)	5	\$10.99	\$54.95		
Salsa, Medium (1 gallon)	12	\$8.47	\$101.64		
Olive Oil (2.5 gallon)	4	\$28.69	\$114.76		
Vegetable Wash (1 gallon)	2	\$8.99	\$17.98		
<b>Average Price Per Unit</b>		<b>\$15.93</b>			
			<b>Total Cost</b>	<b>\$606.05</b>	
<b>Inventory Order Summary</b>					
Total Items Ordered	<b>8</b>				
Most Expensive Item					
Average Shipping Time					

*The completed function and calculated value*

The inserted function and calculated value

### Exercise 2.4

1. Open an existing Excel workbook. If you want, you can use the [Lesson 16 Practice Workbook](#).
2. Create a function that contains one **argument**. If you're using the example, use the **SUM** function in cell **B16** to calculate the total quantity of items ordered.
3. Use the **AutoSum** command to insert a function. If you are using the example, insert the **MAX** function in cell **B23** and use the cell range **D3:D15** for the argument to find the most expensive item that was ordered.
4. Explore the **Function Library** and try using the **Insert Function** command to search for different types of functions.

## CHAPTER THREE

### 3. Working with Data

#### 3.1 Freezing Panes and View Options

Whenever you're 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.

##### 3.1.1 Freezing 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'll be able to scroll through your content while continuing to view the frozen cells.

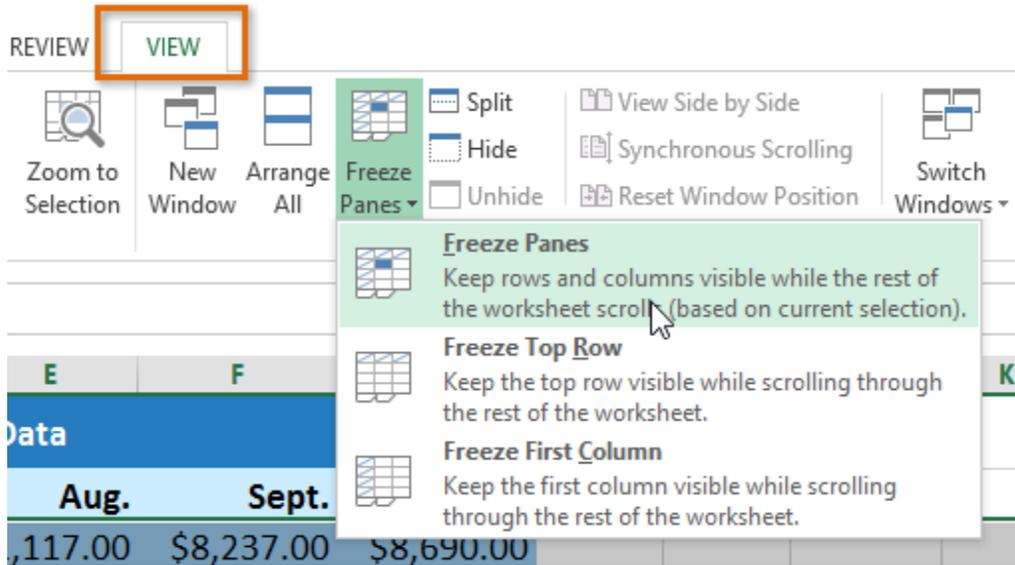
1. Select the **row** below the row(s) you wish to **freeze**. In our example, we want to freeze rows **1** and **2**, so we'll select row **3**.

The screenshot shows an Excel spreadsheet with the following data:

	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

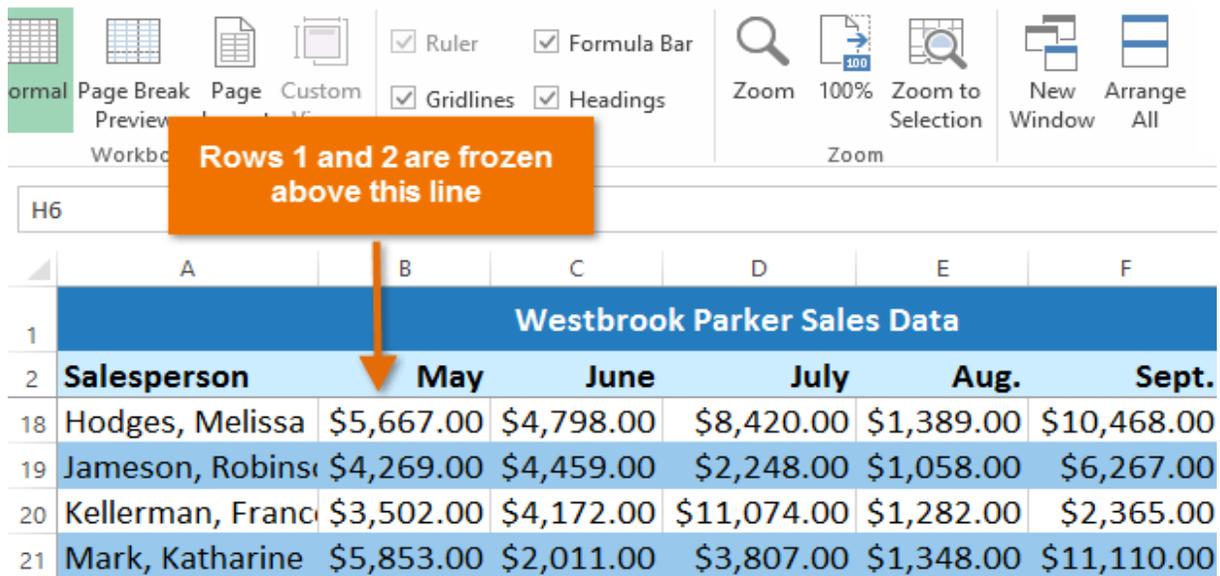
*Selecting row 3*

2. Click the **View** tab on the **Ribbon**.
3. Select the **Freeze Panes** command and then choose **Freeze Panes** from the drop-down menu.



*Clicking Freeze Panes*

- 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've scrolled down to row 18.



*The frozen rows*

### 3.1.2 Freezing Columns

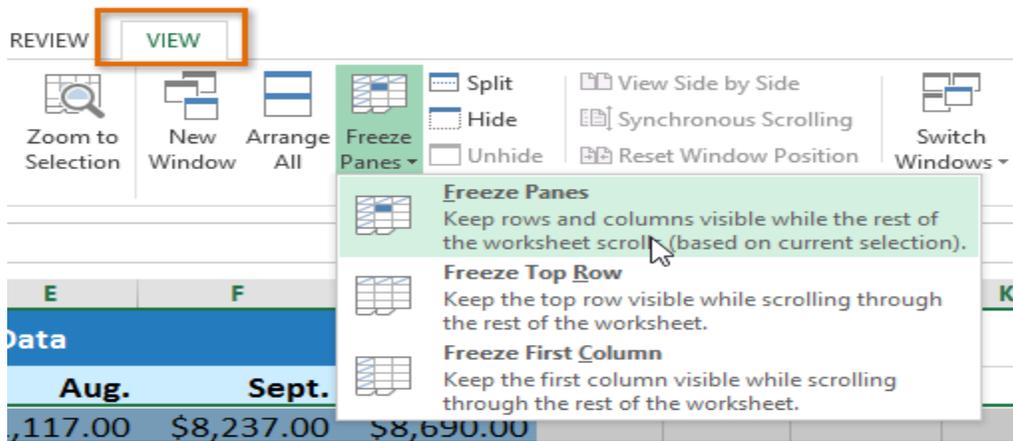
- Select the **column** to the right of the column(s) you wish to **freeze**. In our example, we want to freeze **column A**, so we'll select column **B**.

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

*Selecting column B*

- Click the **View** tab on the **Ribbon**.
- Select the **Freeze Panes** command and then choose **Freeze Panes** from the drop-down menu.



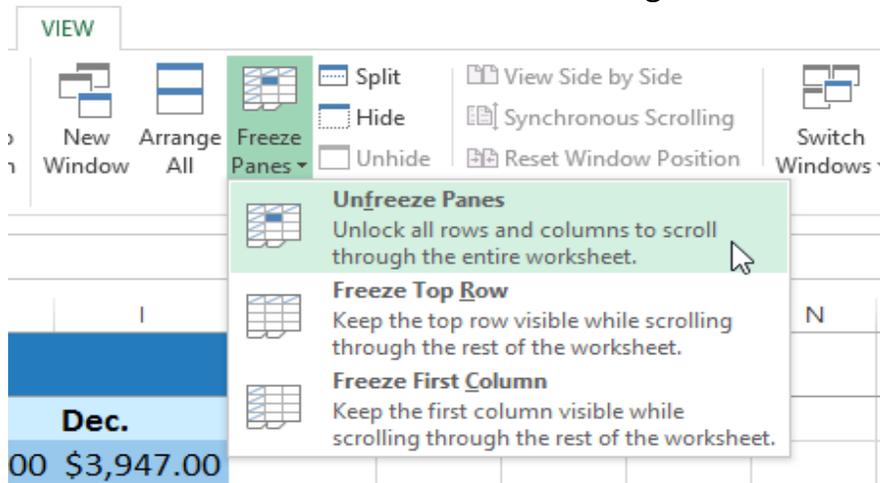
*Clicking Freeze Panes*

- 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've scrolled across to column E.

Parker Sales Data					
Salesperson	Aug.	Sept.	Oct.	Nov.	Dec.
Albertson, Kathy	\$1,117.00	\$8,237.00	\$8,690.00	\$3,947.00	\$3,947.00
Allenson, Carol	\$1,100.00	\$1,042.00	\$9,355.00	\$1,100.00	\$4,411.00
Altman, Zoey	\$2,116.00	\$3,072.00	\$6,702.00	\$2,116.00	\$2,521.00
Bittiman, William	\$1,089.00	\$4,404.00	\$20,114.00	\$4,752.00	\$4,752.00

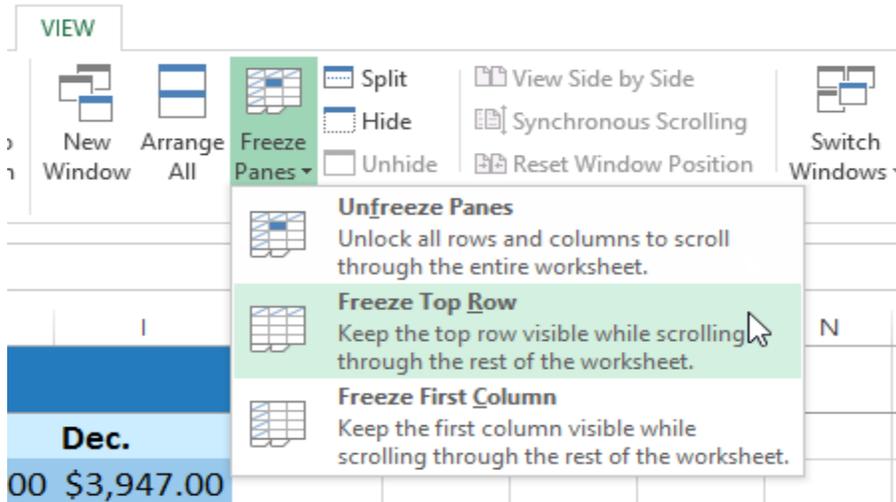
*The frozen column*

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



*Unfreezing a row*

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.



*Freezing only the top row of a workbook*

### 3.1. 3 Other View Options

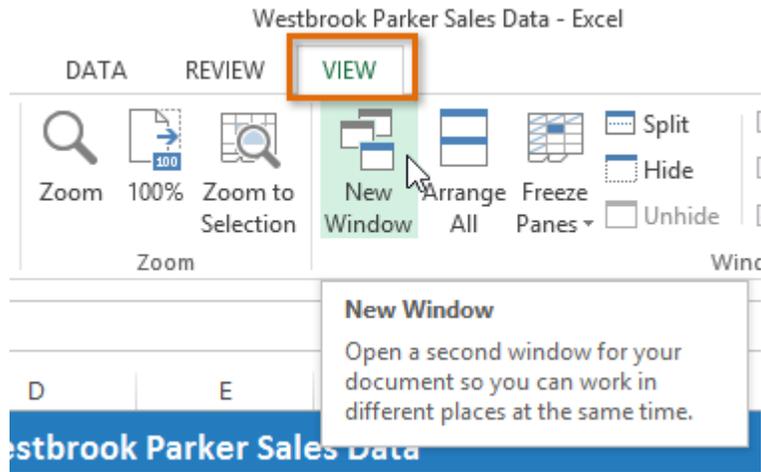
If your workbook contains a lot of content, it can sometimes be difficult to compare different sections. Excel includes many additional options to make your workbooks easier to view and compare. For example, you can choose to **open a new window** for your workbook or **split a worksheet** into separate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

#### 3.1. 3.1 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'll use this feature to compare two different **worksheets** from the same workbook.

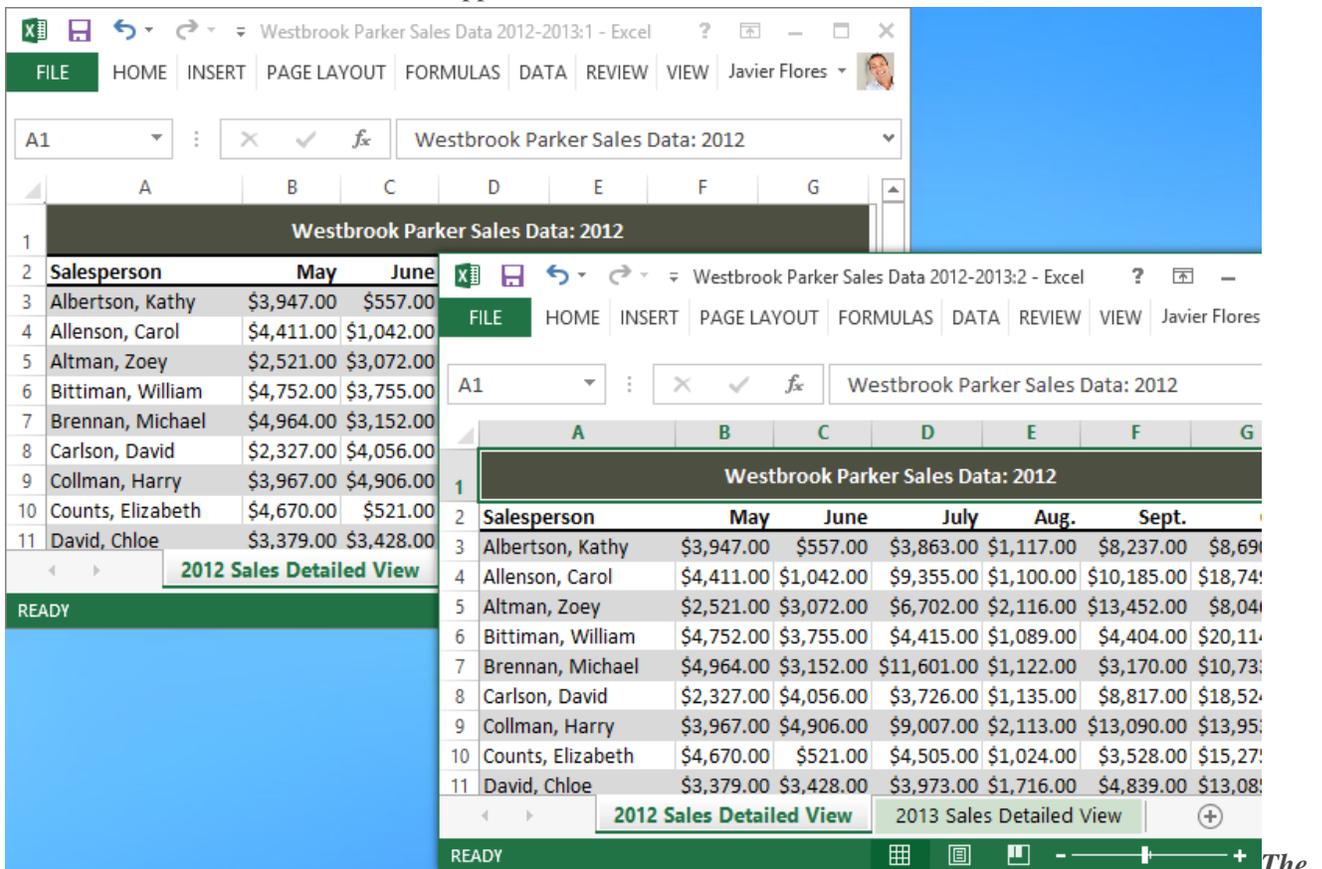
1. Click the **View** tab on the **Ribbon** and then select the **New Window** command.

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*Clicking the New Window command*

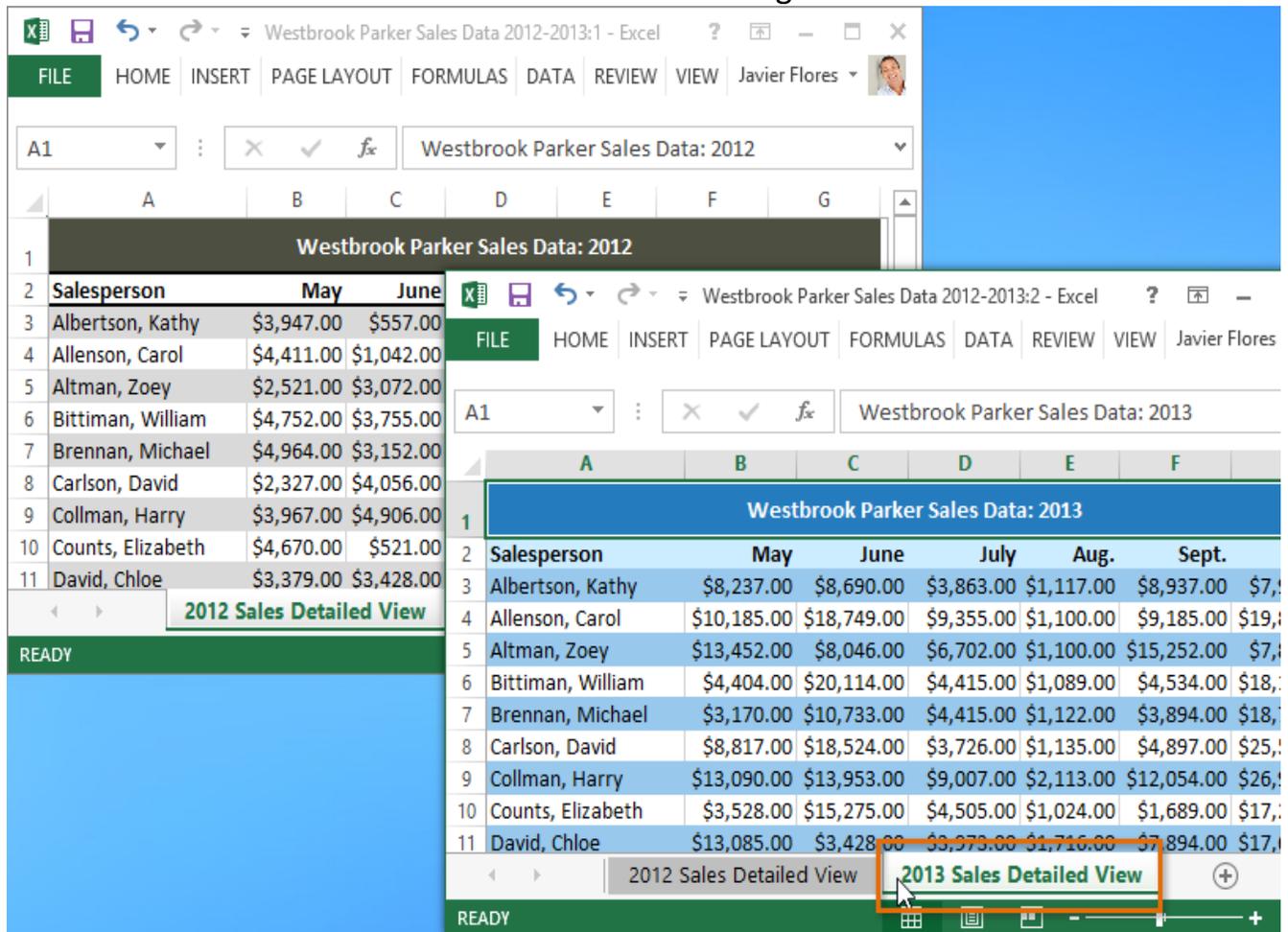
2. A **new window** for the workbook will appear.



*The same workbook open in two separate windows*

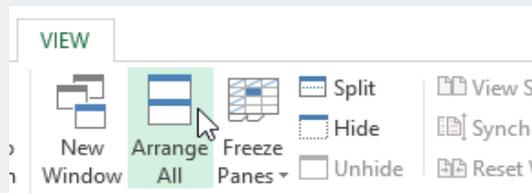
3. You can now compare different worksheets from the same workbook across windows. In our example, we'll select the **2013 Sales Detailed View** worksheet to compare the **2012** and **2013** sales.

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*Selecting a worksheet in a new window*

If you have several windows open at the same time, you can use the **Arrange All** command to rearrange them quickly.



*Clicking Arrange All*

## 3.1. 3.2 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.

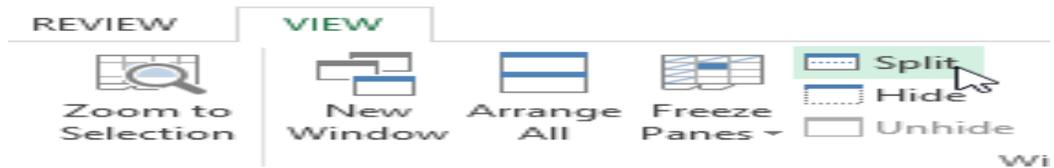
1. Select the **cell** where you wish to split the worksheet. In our example, we'll select cell **C7**.

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Westbrook Parker Sales Data					
Salesperson	May	June	July	Aug.	
Albertson, Kathy	\$3,947.00	\$557.00	\$3,863.00	\$1,117.00	
Allenson, Carol	\$4,411.00	\$1,042.00	\$9,355.00	\$1,100.00	
Altman, Zoey	\$2,521.00	\$3,072.00	\$6,702.00	\$2,116.00	
Bittiman, William	\$4,752.00	\$3,755.00	\$4,415.00	\$1,089.00	
Brennan, Michael	\$4,964.00	\$3,152.00	\$11,601.00	\$1,122.00	
Carlson, David	\$2,327.00	\$4,056.00	\$3,726.00	\$1,135.00	
Collman, Harry	\$3,967.00	\$4,906.00	\$9,007.00	\$2,113.00	

*Selecting cell C7*

- Click the **View** tab on the **Ribbon** and then select the **Split** command.



*Clicking the Split command*

- 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.

Westbrook Parker Sales Data					
Salesperson	May	June	July	Aug.	
Albertson, Kath			\$863.00	\$1,117.00	
Allenson, Carol			\$355.00	\$1,100.00	
Altman, Zoey			\$702.00	\$2,116.00	
Bittiman, William	\$4,752.00	\$3,755.00	\$4,415.00	\$1,089.00	
Smith, Harold	\$5,421.00	\$4,728.00	\$7,158.00	\$1,116.00	
Thomas, Robert	\$3,259.00	\$3,679.00	\$8,406.00	\$2,123.00	
Thompson, Shannon	\$2,943.00	\$3,943.00	\$11,987.00	\$1,183.00	

*The split worksheet*

### Exercise 3.1

- Open an existing Excel workbook.
- Try **freezing** a row or column in place. If you are using the example, freeze the **top two rows** (rows 1 and 2).
- Try opening a **new window** for your workbook.
- Use the **Split** command to split your worksheet into multiple panes.

### 3.2 Sorting Data

As you add more content to a worksheet, organizing that 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.

#### 3.2.1 Types of Sorting

When sorting data, it's important to first decide if you would like the sort to apply to the **entire worksheet** or just a **cell range**.

- **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.

	A	B	C	D
1	Customer Contact List			
2	CONTACT NAME	BILLING ADDRESS	PHONE	EMAIL ADDRESS
3	Bell, William	2201 Treasure Court	206-555-2303	wbell@bishopresearch.com
4	Dean, Hank	3034 Foggy Wharf	308-555-1050	hdean@venturebrewing.com
5	Figgis, Mallory	3520 Sleepy Hearth Dr	425-555-5370	malloryf@archerproperties.com
6	Finn, Jake	1407 Dusty Fawn Ln	605-555-6435	jake@adventureoutfitters.com
7	Kinkade, Chris	1028 Quiet Dale Rd	443-555-4942	chris.kinkade@placervilleins.com
8	Lawson, Miranda	5316 Colonial Pkwy	575-555-9255	mlawson@massairlines.com
9	Reyes, Felicia	8544 Lazy Bluff Ave	316-555-3256	felicia@everlypublishing.com
10	Sebastian, Lil	9060 Easy Evening Ln	207-555-7225	lil@knopeequestrian.com
11	Silva, Vivica	8595 Thunder Brook	360-555-4289	vivica@rileygardensupply.com
12	Stark, Katie	971 Cinder Butterfly St	603-555-2460	katie.stark@ariarealestate.com
13	Torrance, Jill	3160 Amber Gate Rd	605-555-4495	jtorrance@overlookinn.com
14	Yuen, Phillip	5108 Crystal Gate Blvd	913-555-5928	yuenp@corepharmaceuticals.com

*Sorting a sheet*

- **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.

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	A	B	C	D	E
1					
2	EXERCISES	SET 1		SET 2	
3		REPS	WEIGHT (lbs)	REPS	WEIGHT (lbs)
4	Bench Press	14	65	12	75
5	Bench Press ( Decline )	10	60	8	70
6	Triceps Extension	15	35	20	35
7	Average	13.9	50.5	12.5	54
8					
9		Running Log			
10		Date	Distance (miles)	Time (hrs:mins)	
11		25-Jun	2.8	0:45	
12		26-Jun	3	0:44	
13		27-Jun	2.75	0:42	
14		29-Jun	3.25	0:44	
15		30-Jun	3.25	0:45	
16		2-Jul	2.5	0:44	
17		3-Jul	3	+ 0:30	
18		Total	20.55		
19					

*Sorting a cell range*

### 3.2.1.1 Sorting a Sheet

In our example, we'll sort a t-shirt order form alphabetically by **Last Name** (column C).

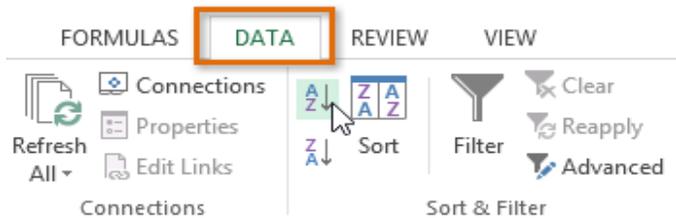
1. Select a **cell** in the column you wish to sort by. In our example, we'll select cell C2.

C2		: X ✓ fx		Chen		
	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	105	Christiana	Chen	Medium	Cash	
3	105	Melissa	White	Small	Debit Card	
4	105	Esther	Yaron	Small	Check	
5	135	Anisa	Naser	Small	Check	
6	135	Chantal	Weller	Medium	Cash	
7	220-A	Juan	Flores	X-Large	Pending	
8	220-B	Malik	Reynolds	Small	Cash	
9	220-B	Avery	Kelly	Medium	Debit Card	
10	105	Derek	MacDonald	Large	Cash	

*Selecting cell C2*

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2. Select the **Data** tab on the **Ribbon** and then click the **Ascending** command  to Sort A to Z, or the **Descending** command  to Sort Z to A. In our example, we'll click the **Ascending** command.



### *Clicking the Ascending command*

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

	A	B	C	D	E	F
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	

*The sorted worksheet*

### 3.2.1.2 Sorting a Range

In our example, we'll select a **separate table** in our t-shirt order form to sort the number of shirts that were ordered on different dates.

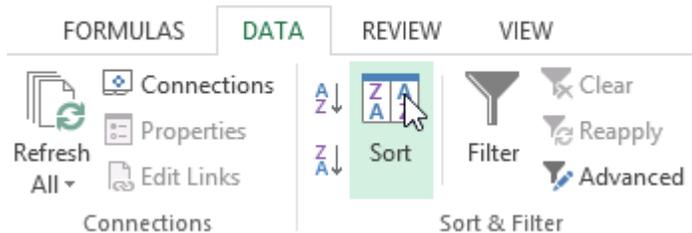
1. Select the **cell range** you wish to sort. In our example, we'll select cell range **A13:B17**.

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	A	B	C	D
1	Homeroom #	First Name	Last Name	T-Shirt Size
2	110	Kris	Ackerman	Large
3	105	Nathan	Albee	Medium
4	220-B	Samantha	Bell	Medium
5	110	Matt	Benson	Medium
6	105	Christiana	Chen	Medium
7	110	Gabriel	Del Toro	Medium
8	220-A	Brigid	Ellison	Small
9	220-A	Juan	Flores	X-Large
10	220-B	Tyrese	Hanlon	X-Large
11				
12	Total Orders By Date			
13	Date	Orders		
14	Friday, April 05, 2013	4		
15	Friday, April 12, 2013	7		
16	Friday, April 19, 2013	10		
17	Friday, April 26, 2013	6		
18				

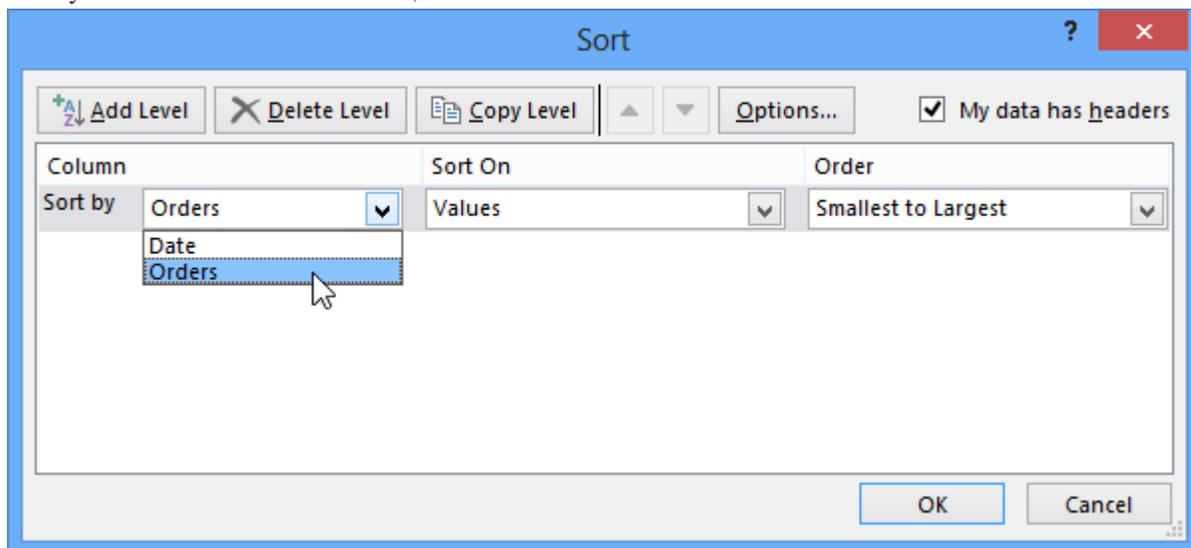
*Selecting cell range A13:B17*

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



*Clicking the Sort command*

3. The **Sort** dialog box will appear. Choose the **column** you wish to sort by. In our example, we want to sort the data by the number of t-shirt orders, so we'll select **Orders**.

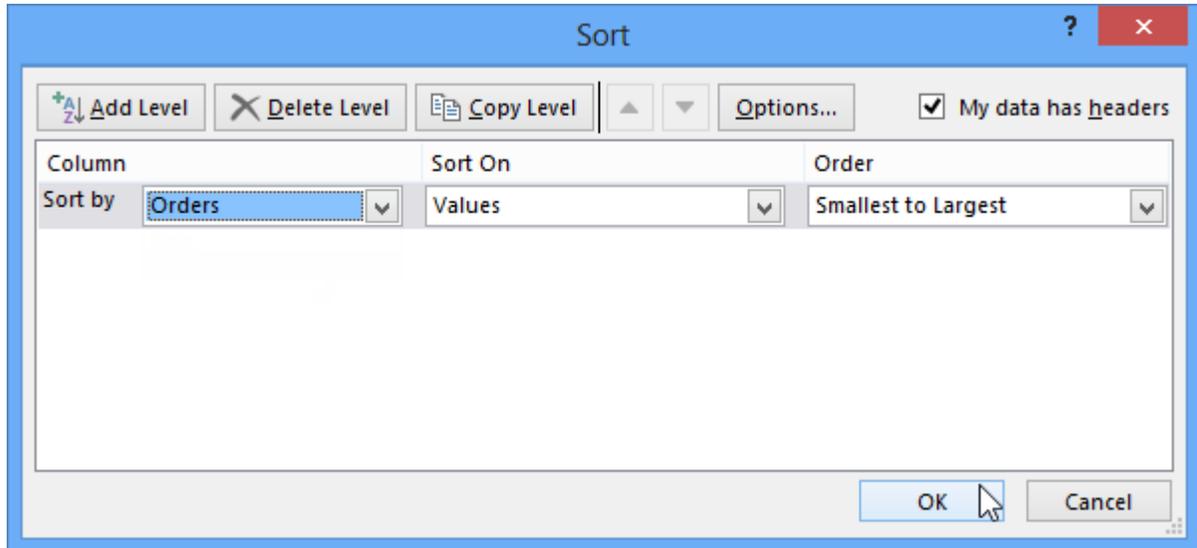


*Selecting*

*a column to sort by*

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- Decide the **sorting order** (either ascending or descending). In our example, we'll use **Smallest to Largest**.
- Once you're satisfied with your selection, click **OK**.



*Clicking OK*

- 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.

1	Homeroom #	First Name	Last Name	T-Shirt Size
2	110	Kris	Ackerman	Large
3	105	Nathan	Albee	Medium
4	220-B	Samantha	Bell	Medium
5	110	Matt	Benson	Medium
6	105	Christiana	Chen	Medium
7	110	Gabriel	Del Toro	Medium
8	220-A	Brigid	Ellison	Small
9	220-A	Juan	Flores	X-Large
10	220-B	Tyrese	Harlon	X-Large
11				
12	Total Orders By Date			
13	Date	Orders		
14	Friday, April 05, 2013	4		
15	Friday, April 26, 2013	6		
16	Friday, April 12, 2013	7		
17	Friday, April 19, 2013	10		
18				

*The sorted cell range*

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If your data isn't 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 below, we forgot to include a hyphen in cell A18, causing our sort to be slightly inaccurate.

	A	B	C	D
1	Homeroom #	First Name	Last Name	T-Shirt Size
16	135	Jordan	Weller	Large
17	135	Alex	Yuen	Large
18	220A	Christopher	Peyton-Gomez	Small
19	220-A	Brigid	Ellison	Small
20	220-A	Juan	Flores	X-Large
21	220-A	Chevonne	Means	Medium

*A small typo in cell A18 causing an incorrect sort*

### 3.2.1.3 Custom Sorting

Sometimes, you may find that the default sorting options can't 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'll create a custom list to sort from smallest to largest.

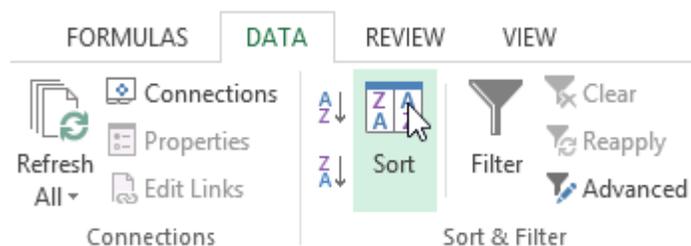
1. Select a **cell** in the column you wish to sort by. In our example, we'll select cell **D2**.

D2 : Large

	A	B	C	D	E	F
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	

*Selecting cell D2*

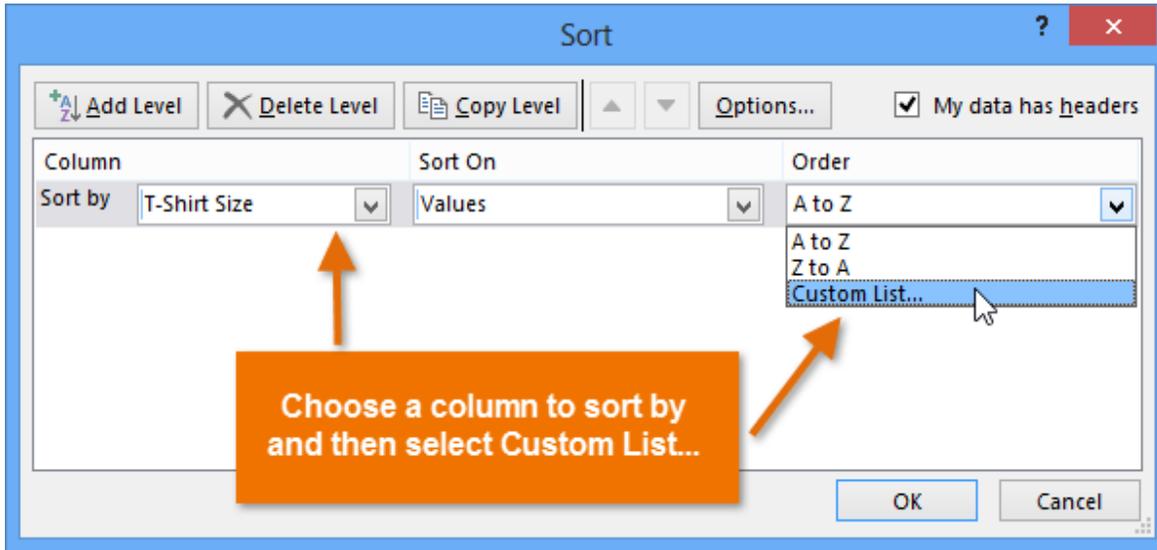
2. Select the **Data** tab, then click the **Sort** command.



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### *Clicking the Sort command*

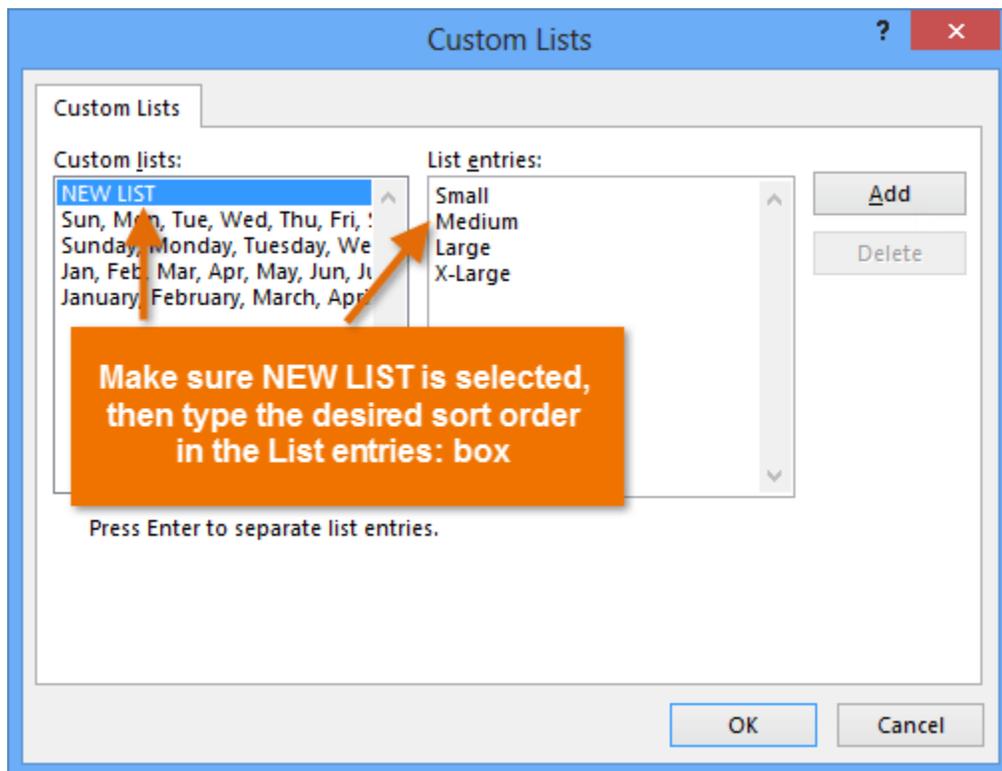
- The **Sort** dialog box will appear. Select the **column** you want to sort by, then choose **Custom List...** from the **Order** field. In our example, we will choose to sort by **T-Shirt Size**.



*Selecting*

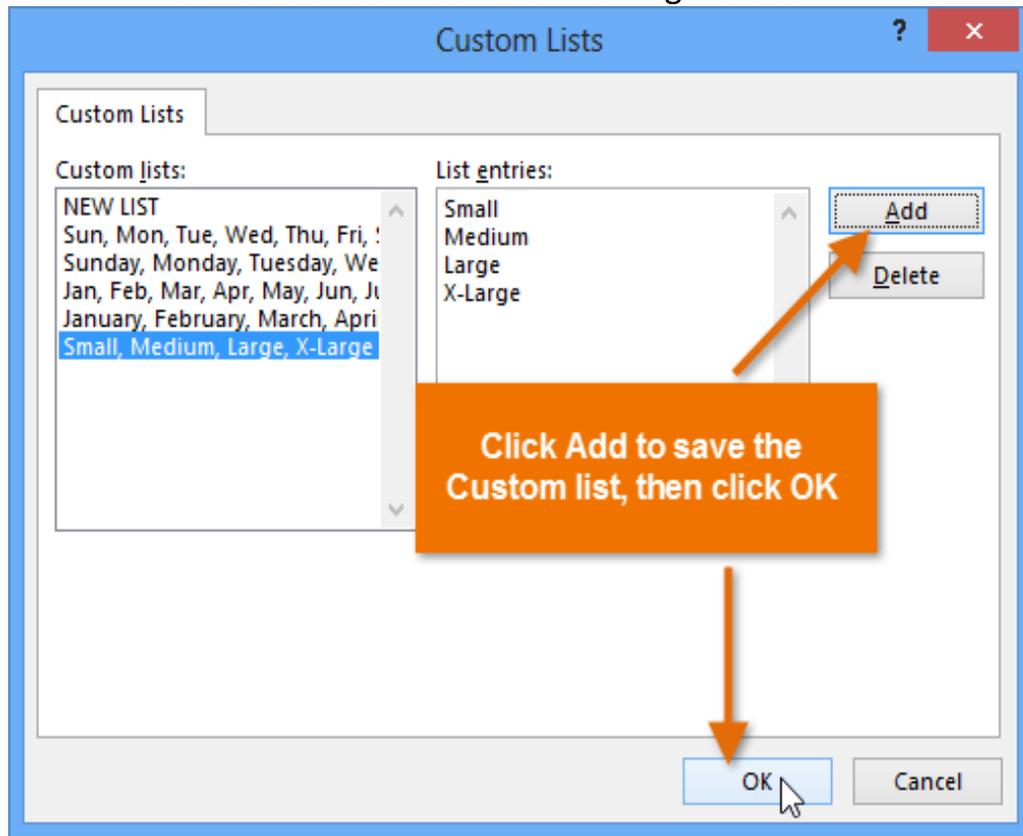
### *Custom List... from the Order: field*

- The **Custom Lists** dialog box will appear. Select **NEW LIST** from the **Custom Lists:** box.
- 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'll type **Small, Medium, Large, and X-Large**, pressing **Enter** on the keyboard after each item.



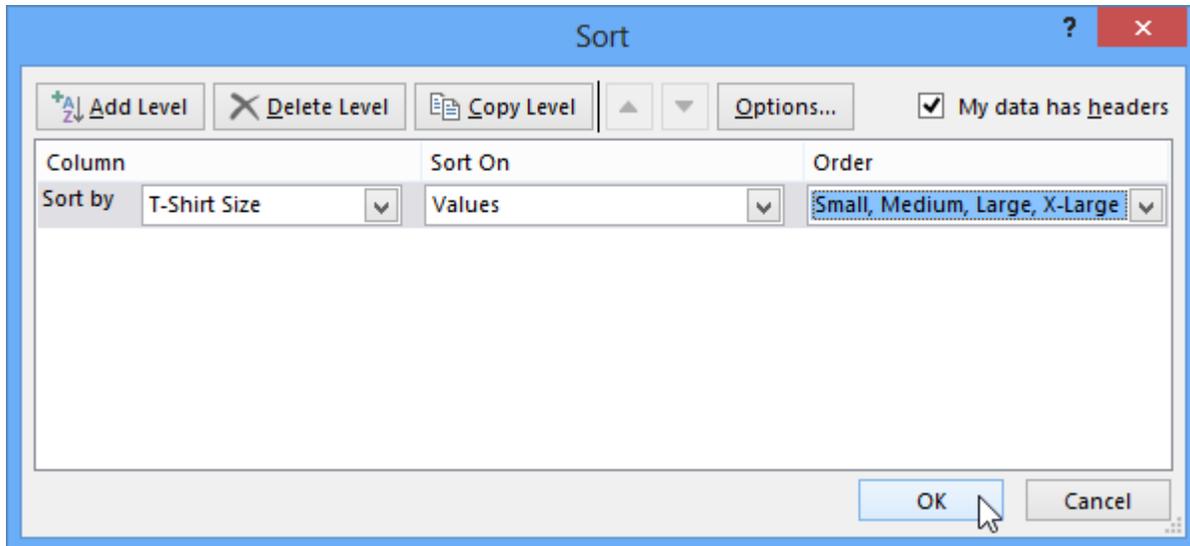
### *Creating a Custom list*

- 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**.



*Clicking OK to select the custom list*

7. The **Custom Lists** dialog box will close. Click **OK** in the **Sort** dialog box to perform the custom sort.



*Clicking OK to sort the worksheet*

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.

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	A	B	C	D	E	F
1	<b>Homeroom #</b>	<b>First Name</b>	<b>Last Name</b>	<b>T-Shirt Size</b>	<b>Payment Method</b>	
2	220-A	Brigid	Ellison	Small	Cash	
3	220-B	Michael	Lazar	Small	Cash	
4	135	Anisa	Naser	Small	Pending	
5	220-A	Christopher	Peyton-Gomez	Small	Check Bounced	
6	220-B	Malik	Reynolds	Small	Cash	
7	220-B	Windy	Shaw	Small	Cash	
8	105	Melissa	White	Small	Debit Card	
9	105	Esther	Yaron	Small	Check	
10	105	Nathan	Albee	Medium	Check	
11	220-B	Samantha	Bell	Medium	Check	
12	220-B	Avery	Kelly	Medium	Debit Card	
13	220-A	Chevonne	Means	Medium	Money Order	
14	135	James	Panarello	Medium	Check	
15	135	Chantal	Weller	Medium	Cash	
16	110	Kris	Ackerman	Large	Money Order	
17	105	Derek	MacDonald	Large	Cash	

*The worksheet sorted by t-shirt size*

### 3.2.1. 4 Sorting 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'll sort by **cell color** to quickly see which t-shirt orders have outstanding payments.

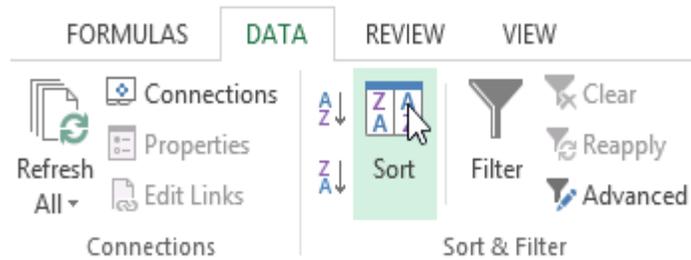
1. Select a **cell** in the column you wish to sort by. In our example, we'll select cell **E2**.

	A	B	C	D	E	F
1	<b>Homeroom #</b>	<b>First Name</b>	<b>Last Name</b>	<b>T-Shirt Size</b>	<b>Payment Method</b>	
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	Ellison	Small	Cash	
8	105	Melissa	White	Small	Debit Card	
9	105	Esther	Yaron	Small	Check	
10	135	Chantal	Weller	Medium	Cash	

*Selecting cell E2*

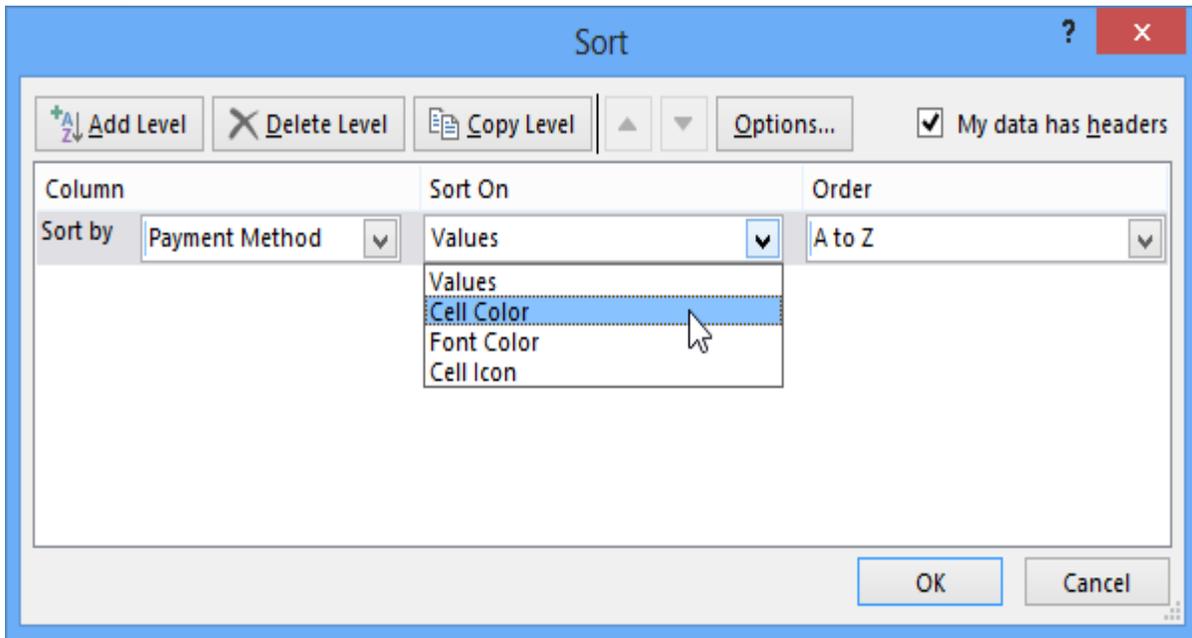
2. Select the **Data** tab, then click the **Sort** command.

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*Clicking the Sort command*

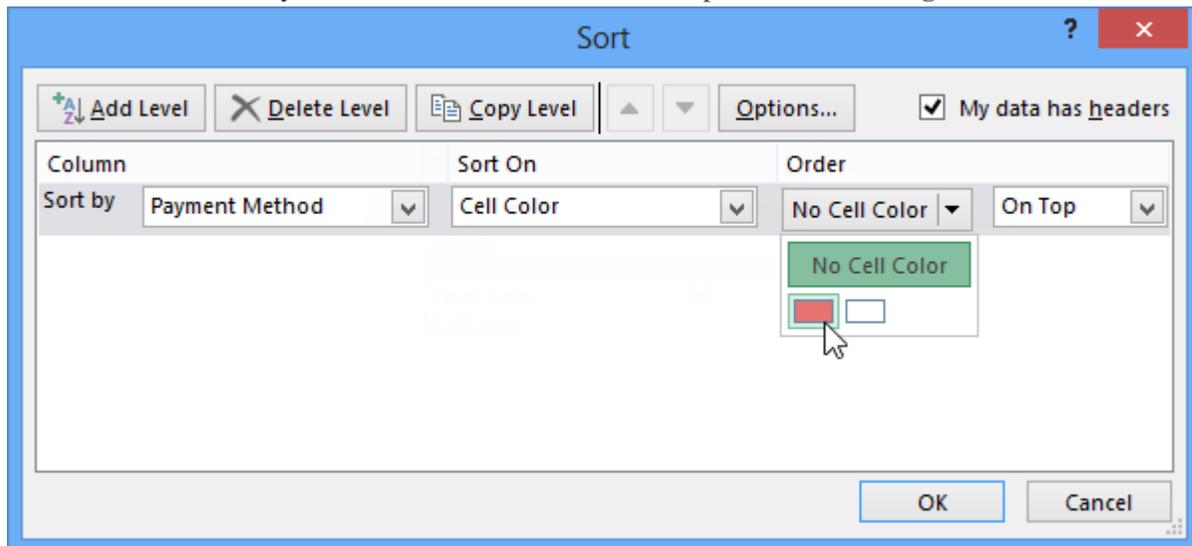
3. The **Sort** dialog box will appear. Select the column you wish to sort by and then decide whether you'll sort by **Cell Color**, **Font Color**, or **Cell Icon** from the **Sort On** field. In our example, we'll sort by **Payment Method** (column E) and **Cell Color**.



*Choosing*

*to sort by cell color*

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



*Choosing*

*a cell color to sort by*

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- 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.

E2 : X ✓ fx Check Bounced						
	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	105	Sidney	Kelly	Medium	Check Bounced	
4	135	Anisa	Naser	Small	Pending	
5	110	Regina	Olivera	Large	Pending	
6	220-A	Juan	Flores	X-Large	Pending	
7	135	Alex	Yuen	Large	Wrong Amount	
8	220-B	Malik	Reynolds	Small	Cash	
9	220-B	Windy	Shaw	Small	Cash	
10	220-B	Michael	Lazar	Small	Cash	

*The worksheet sorted by cell color*

### 3.2.2 Sorting Levels

If you need more control over how your data is sorted, you can add multiple **levels** to any sort. This allows you to sort your data by **more than one column**.

#### To Add a Level:

In our example below, we'll sort the worksheet by **Homeroom Number** (column A) and then by **Last Name** (column C).

- Select a **cell** in the column you wish to sort by. In our example, we'll select cell **A2**.

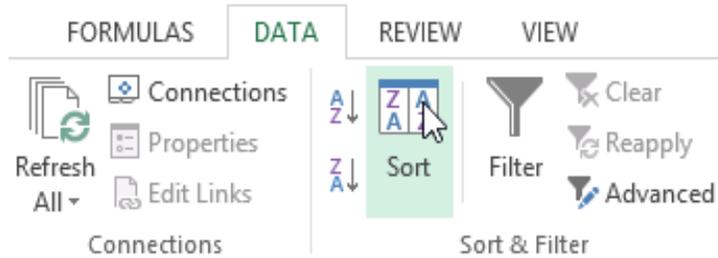
A2 : X ✓ fx 220-B						
	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	220-B	Malik	Reynolds	Small	Cash	
3	220-B	Windy	Shaw	Small	Cash	
4	220-B	Michael	Lazar	Small	Cash	
5	220-A	Brigid	Ellison	Small	Cash	
6	135	Chantal	Weller	Medium	Cash	
7	105	Christiana	Chen	Medium	Cash	
8	110	Gabriel	Del Toro	Medium	Cash	
9	105	Derek	MacDonald	Large	Cash	
10	135	Lia	Richards	X-Large	Cash	

*cell A2*

*Selecting*

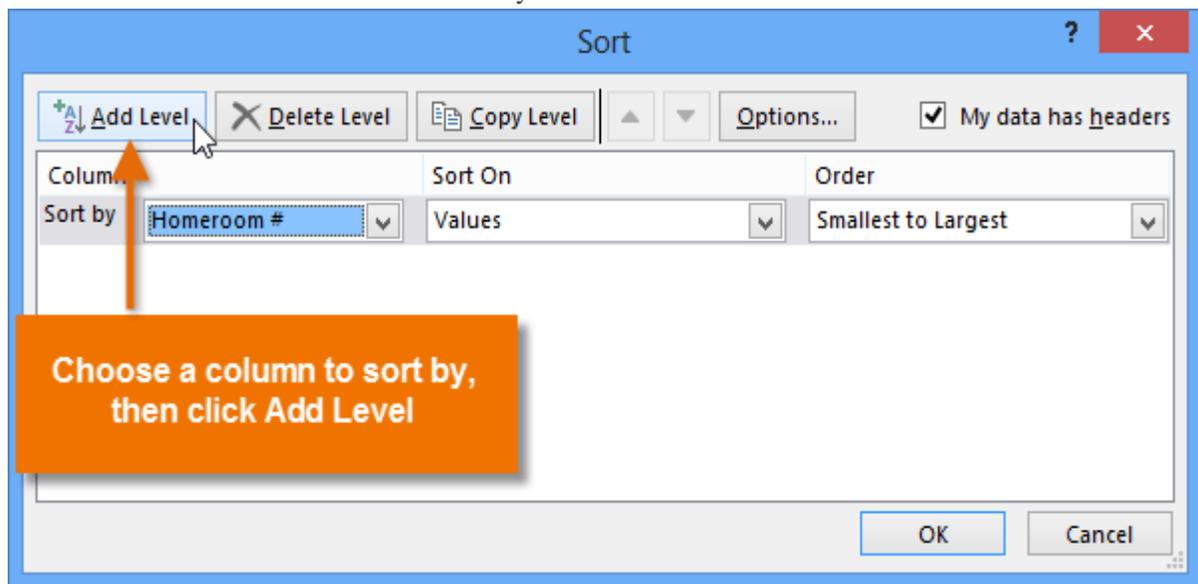
- Click the **Data** tab, then select the **Sort** command.

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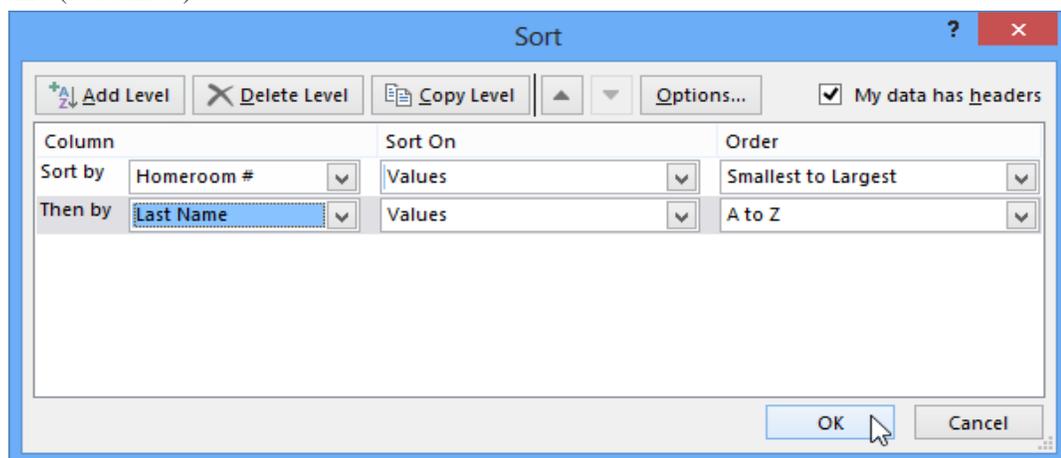
*Clicking the Sort command*

3. The **Sort** dialog box will appear. Select the first column you wish to sort by. In this example, we will sort by **Homeroom #** (column A).
4. Click **Add Level** to add another column to sort by.



*Clicking Add Level*

5. Select the next column you wish to sort by, then click **OK**. In our example, we'll sort by **Last Name** (column C).



*Sorting by Homeroom # and Last Name*

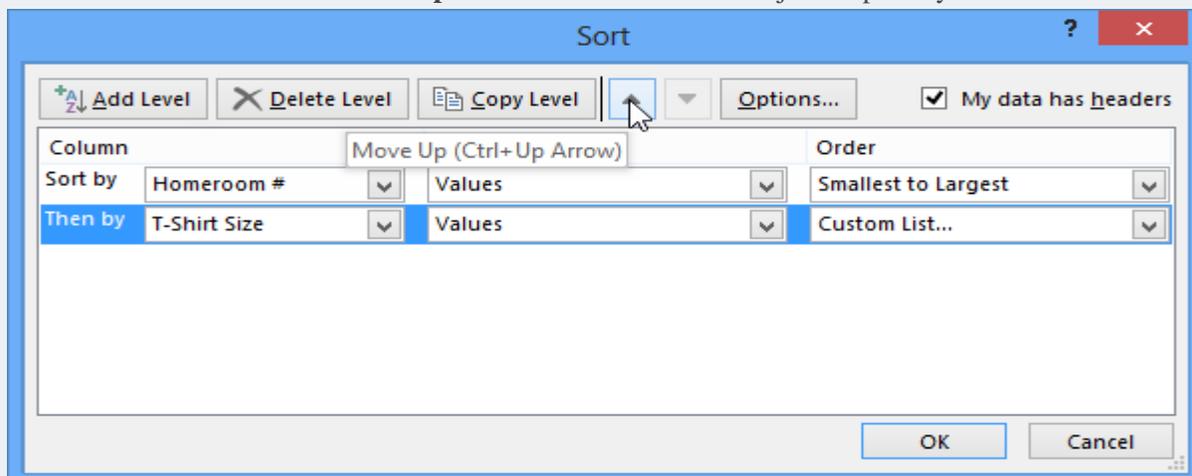
6. The worksheet will be **sorted** according to the selected order. In our example, the homeroom numbers are sorted numerically. Within each homeroom, students are sorted alphabetically by last name.

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	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	105	Nathan	Albee	Medium	Check	
3	105	Christiana	Chen	Medium	Cash	
4	105	Sidney	Kelly	Medium	Check Bounced	
5	105	Derek	MacDonald	Large	Cash	
6	105	Melissa	White	Small	Debit Card	
7	105	Esther	Yaron	Small	Check	
8	110	Kris	Ackerman	Large	Money Order	
9	110	Matt	Benson	Medium	Money Order	
10	110	Gabriel	Del Toro	Medium	Cash	

*The worksheet sorted by homeroom number and last name*

If you need to change the order of a multi-level sort, it's easy to control which column is sorted first. Simply select the desired **column** and then click the **Move Up** or **Move Down** arrow to adjust its priority.



*Changing the sorting priority for a column*

### Exercise 3.2

1. Open an existing Excel workbook.
2. **Sort a worksheet** in ascending  or descending  order. If you are using the example, sort by **Homeroom #** (column **A**).
3. Sort a **cell range**. If you are using the example, sort the cell range in the cell range **G3:H7** from highest to lowest by **Orders** (column **H**).
4. Add a **level** to the sort and sort it by **cell color**, **font color**, or **cell icon**. If you are using the example, add a second level to sort by **cell color** in column **E**.
5. Add another level and sort it using a **custom list**. If you are using the example, create a custom list to sort by **T-Shirt Size** (column **D**) in the order of Small, Medium, Large, and X-Large.
6. Change the **sorting priority**. If you are using the example, re-order the list to sort by **T-Shirt Size** (column **D**), **Homeroom #** (column **A**), and **Last Name** (column **C**).

### 3.3 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 that you need.

#### 3.3.1 Filtering Data

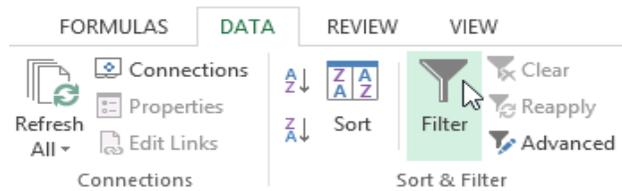
In our example, we'll apply a filter to an equipment log worksheet to display only the laptops and projectors that are available for check-out.

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.

	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	Sela 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

*A worksheet with a header row*

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



*Clicking 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 wish to filter. In our example, we will filter column **B** to view only certain types of equipment.

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	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 Lumina Z-60 Digital Camera	27-Jul-13	06-Aug-13	Sela 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

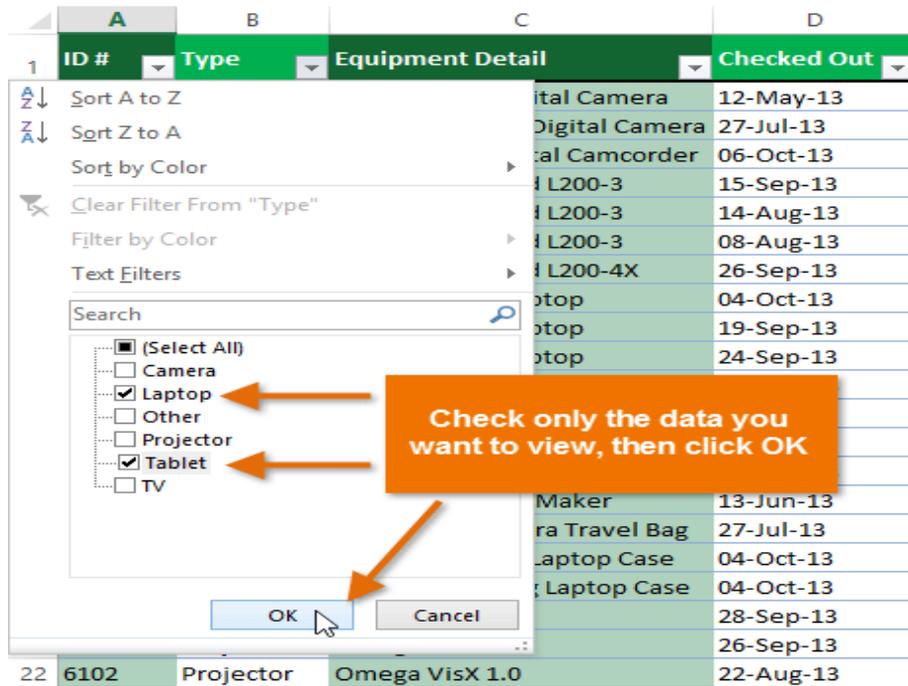
*Clicking the drop-down arrow for column B*

- The **Filter** menu will appear.
- Uncheck** the box next to **Select All** to quickly deselect all data.

	A	B	C	D
1	ID #	Type	Equipment Detail	Checked Out
			Digital Camera	12-May-13
			Digital Camera	27-Jul-13
			Digital Camcorder	06-Oct-13
			L200-3	15-Sep-13
			L200-3	14-Aug-13
			L200-3	08-Aug-13
			L200-4X	26-Sep-13
			aptop	04-Oct-13
			aptop	19-Sep-13
			aptop	24-Sep-13
			aptop	25-Aug-13
			500-1	05-Oct-13
			500-1	01-Oct-13
			am Printer II	04-Aug-13
			Maker	13-Jun-13
			ra Travel Bag	27-Jul-13
			aptop Case	04-Oct-13
			aptop Case	04-Oct-13
				28-Sep-13
				26-Sep-13
22	6102	Projector	Omega VisX 1.0	22-Aug-13

*Unchecking Select All*

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



*Choosing data to filter and clicking OK*

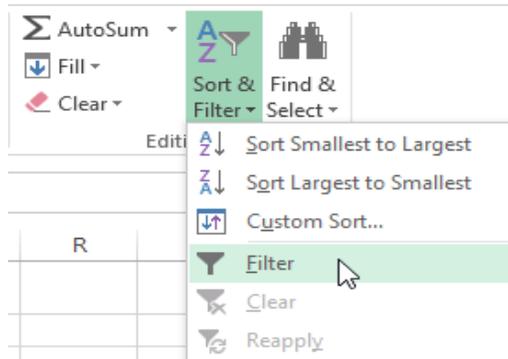
- The data will be **filtered**, temporarily hiding any content that doesn't match the criteria. In our example, only laptops and tablets are visible.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
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
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
31						
32						

*The*

*filtered data*

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



*Accessing Filter options from the Home tab*

### 3.3.2 Apply Multiple Filters

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

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

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
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	Checked Out: (Showing All)	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
31						
32						

*Clicking the drop-down arrow for column D*

2. The **Filter** menu will appear.
3. **Check** or **uncheck** the boxes depending on the data you wish to filter, then click **OK**. In our example, we'll uncheck everything except **August**.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
5	1021	Laptop	15" EDI SmartPad L200-3	Sort Oldest to Newest	01-Oct-13	Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3	Sort Newest to Oldest	16-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	Sort by Color	15-Aug-13	Jennifer Weiss
8	1025	Laptop	15" EDI SmartPad L200-4X	Clear Filter From "Checked Out"	04-Oct-13	Min Seung
9	1031	Laptop	17" Saris X-10 Laptop	Filter by Color		Nick Ortiz
10	1032	Laptop	17" Saris X-10 Laptop	Date Filters	26-Sep-13	Stanley Geyer
11	1033	Laptop	17" Saris X-10 Laptop	Search (All)	27-Aug-13	George D'Agosta
12	1034	Laptop	17" Saris X-10 Laptop	(Select All)		Jay Peralta
26	1011	Tablet	10" Saris SlimTab Pro	2013		Jay Peralta
27	1012	Tablet	10" Saris SlimTab Pro	August		August Zorn
31				September		
32				October		
33						
34						
35						
36						
37						
38						
39						
40						
41						

*Choosing data to filter and clicking OK*

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- 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.

	A	B	C	D	E	F
1	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
31						
32						

*The filtered data*

### 3.3.3 Clearing a Filter

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

- Click the **drop-down arrow** for the filter you wish to clear. In our example, we'll clear the filter in column **D**.

	A	B	C	D	E	F
1	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
31						
32						

*Clicking the drop-down arrow for column D*

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

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	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
6	1022	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	14-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

*Clearing a filter*

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

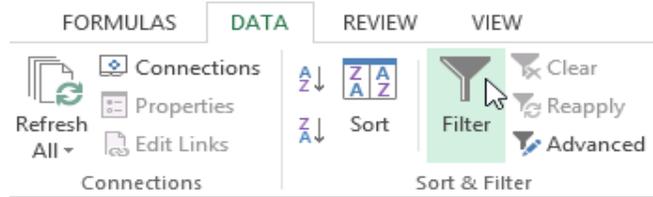
	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	15-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
8	1025	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

*cleared filter*

*The*

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



*Clicking the Filter command to remove filters*

### 3.3.4 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.

#### 3.3.4.1 Filtering with Search

Excel allows you to **search** for data that contains an exact phrase, number, date, and more. In our example, we'll 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've already added filters to your worksheet, you can skip this step.
2. Click the **drop-down arrow** for the column you wish to filter. In our example, we'll filter column **C**.

	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 Camer	06-Aug-13	06-Aug-13	Sela 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

*Clicking the drop-down arrow for column C*

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'll type **saris** to find all Saris brand equipment.
4. When you're done, click **OK**.

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	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
2	3000			12-May-13	15-May-13	Shannon Nguyen
3	3005			27-Jul-13	06-Aug-13	Sela Shepard
4	3070			06-Oct-13		Min Seung
5	1021			15-Sep-13	01-Oct-13	Sofie Ragnar
6	1022			14-Aug-13	16-Aug-13	Hank Sorenson
7	1023			08-Aug-13	15-Aug-13	Jennifer Weiss
8	1025					Min Seung
9	1031					Nick Ortiz
10	1032					Stanley Geyer
11	1033					George D'Agosta
12	1034			25-Aug-13	27-Aug-13	Jay Peralta
13	2050			05-Oct-13	06-Oct-13	Anthony Liddell
14	2051			01-Oct-13	05-Oct-13	Sofie Ragnar
15	3800			04-Aug-13	05-Aug-13	Hank Sorenson
16	3900			13-Jun-13	20-Jun-13	Clint Gosse
17	4800			27-Jul-13	06-Aug-13	Sela Shepard
18	4900			04-Oct-13		Jay Peralta
19	4905			04-Oct-13		Nick Ortiz
20	6100			28-Sep-13	01-Oct-13	Win Armitage
21	6101			26-Sep-13	27-Sep-13	Michael Earley
22	6102	Projector	Omega VisX 1.0	22-Aug-13	23-Aug-13	Jamila Kyle

*Entering a search term and clicking OK*

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

	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	Sela Shepard
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
15	3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
16	3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse
23	6200	Projector	Saris Lux T-80	01-Sep-13	04-Sep-13	Jolie Chaturvedi
24	6301	Projector	Saris Lux T-81 Lite	10-Sep-13		Marques Herndon
25	6302	Projector	Saris Lux T-81 Lite	08-Sep-13	15-Sep-13	Dean Sorenson
26	1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta
27	1012	Tablet	Saris SlimTab Pro	29-Sep-13		August Zorn
31						
32						

*The worksheet filtered by the search term*

3.3.4.2 Using 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've already filtered our worksheet to only show items with "Other" in the Type column, but we'd 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've already added filters to your worksheet, you can skip this step.
2. Click the **drop-down arrow** for the column you wish to filter. In our example, we'll filter column C.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
13	2050	Other	EDI SmartBoard L500-1	05-Oct-13	06-Oct-13	Anthony Liddell
14	2051	Other	EDI SmartBoard L500-1	01-Oct-13	05-Oct-13	Sofie Ragnar
15	3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
16	3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse
17	4800	Other	7N Deluxe Camera Travel Case	27-Jul-13	06-Aug-13	Sela Shepard
18	4900	Other	7N Light Rolling Laptop Case	04-Oct-13		Jay Peralta
19	4905	Other	7N Heavy Rolling Laptop Case	04-Oct-13		Nick Ortiz
31						

*Clicking the drop-down arrow for column C*

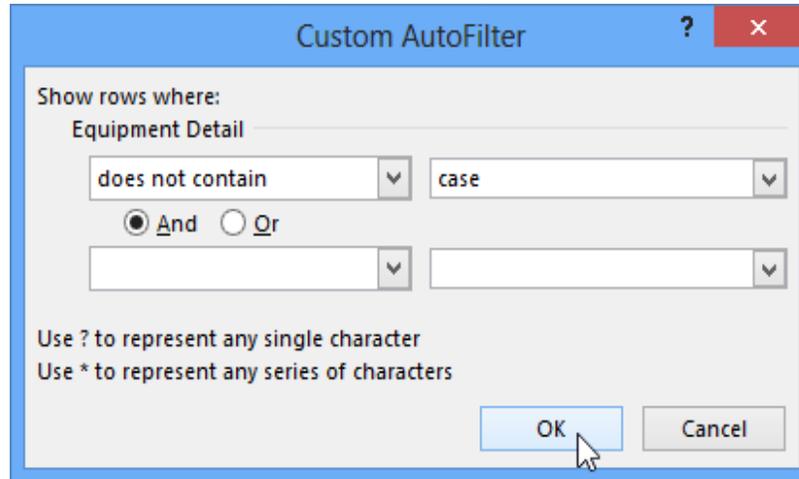
3. The **Filter** menu will appear. Hover the mouse over **Text Filters** and then select the desired text filter from the drop-down menu. In our example, we'll choose **Does Not Contain...** to view data that does not contain specific text.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
13	2050	Other	EDI SmartBoard L500-1	05-Oct-13	06-Oct-13	Anthony Liddell
14	2051	Other	EDI SmartBoard L500-1	01-Oct-13	05-Oct-13	Sofie Ragnar
15	3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
16	3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse
17	4800	Other	7N Deluxe Camera Travel Case	27-Jul-13	06-Aug-13	Sela Shepard
18	4900	Other	7N Light Rolling Laptop Case	04-Oct-13		Jay Peralta
19	4905	Other	7N Heavy Rolling Laptop Case			Nick Ortiz
31						

*Selecting a text filter*

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



### *Applying a text filter*

- 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"**.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
13	2050	Other	EDI SmartBoard L500-1	05-Oct-13	06-Oct-13	Anthony Liddell
14	2051	Other	EDI SmartBoard L500-1	01-Oct-13	05-Oct-13	Sofie Ragnar
15	3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
16	3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse
31						

### *The applied text filter*

### 3.3.4.3 Using Advanced Date Filters

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

- 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've already added filters to your worksheet, you can skip this step.
- Click the **drop-down arrow** for the column you wish to filter. In our example, we will filter column **D** to view only a certain range of dates.

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	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		Sela Shepard
4	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
5	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
6	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
7	3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
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

*Clicking the drop-down arrow for column D*

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

	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		15-May-13	Shannon Nguyen
3	3005	Camera	Saris Zoom Z-60 Digital Camera		06-Aug-13	Sela Shepard
4	3070	Camera	Omega PixL Digital Camcorder			Min Seung
5	1021	Laptop	15" EDI SmartPad L200-3		01-Oct-13	Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3		16-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3		15-Aug-13	Jennifer Weiss
8	1025	Laptop	15" EDI SmartPad L200-4X			
9	1031	Laptop	17" Saris X-10 Laptop			
10	1032	Laptop	17" Saris X-10 Laptop			
11	1033	Laptop	17" Saris X-10 Laptop			
12	1034	Laptop	17" Saris X-10 Laptop			
13	2050	Other	EDI SmartPad L200-3			
14	2051	Other	EDI SmartPad L200-3			
15	3800	Other	U-GO 1000			
16	3900	Other	U-GO 1000			
17	4800	Other	7N D			
18	4900	Other	7N L			
19	4905	Other	7N H			
20	6100	Projector	Omega			
21	6101	Projector	Omega			
22	6102	Projector	Omega VisX 1.0	22-Aug-13		

*Selecting a date filter*

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

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
7	3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
31						
32						

*The applied date filter*

### 3.3.4 4 Use Advanced Number Filters

**Advanced number filters** allow you to manipulate numbered data in many different ways. In this example, we will display only certain kinds of equipment based on the range of ID numbers.

1. Select the **Data** tab on the Ribbon, then click the **Filter** command. A **drop-down arrow** will appear in the header cell for each column. Note: If you've already added filters to your worksheet, you can skip this step.
2. Click the **drop-down arrow** for the column you wish to filter. In our example, we'll filter column **A** to view only a certain range of ID numbers.

	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	Sela Shepard
4	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
5	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
6	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
7	3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
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

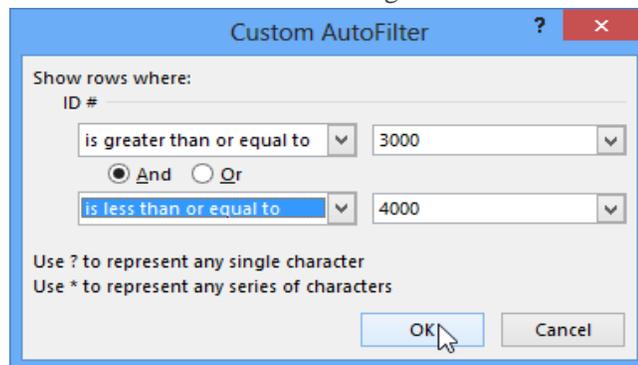
*Clicking the drop-down arrow for column A*

3. The **Filter** menu will appear. Hover the mouse over **Number Filters** and then select the desired number filter from the drop-down menu. In our example we will choose **Between...** to view ID numbers between a specific number range.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
			Digital Camera	12-May-13	15-May-13	Shannon Nguyen
			Digital Camera	27-Jul-13	06-Aug-13	Sela Shepard
			Digital Camcorder	06-Oct-13		Min Seung
			L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
			L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
			L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
					04-Oct-13	Min Seung
						Nick Ortiz
						Stanley Geyer
					26-Sep-13	George D'Agosta
					27-Aug-13	Jay Peralta
					06-Oct-13	Anthony Liddell
					05-Oct-13	Sofie Ragnar
					05-Aug-13	Hank Sorenson
					20-Jun-13	Clint Gosse
					06-Aug-13	Sela Shepard
						Jay Peralta
						Nick Ortiz
					01-Oct-13	Win Armitage
					27-Sep-13	Michael Earley
22	6102	Projector	Omega VisX 1.0	22-Aug-13	23-Aug-13	Jamila Kyle

*Selecting a number filter*

- The **Custom AutoFilter** dialog box will appear. Enter the desired **number(s)** to the right of each filter, then click **OK**. In our example, we want to filter for ID numbers greater than or equal to **3000**, but less than or equal to **4000**, which will display ID numbers in the 3000-4000 range.



*Applying a number filter and clicking OK*

- The data will be filtered by the selected number filter. In our example, only items with an ID number between **3000** and **4000** are visible.

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	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	Sela Shepard
4	3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
15	3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
16	3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse
31						

*The applied number filter*

### Exercise 3.3

1. Open an existing Excel workbook.
2. Apply a **filter** to a column. If you are using the example, filter the **Type** column (column **B**) so it displays only **laptops** and **cameras**.
3. Add another filter by **searching**. If you are using the example, search for **EDI** brand equipment in the **Equipment Detail** column (column **C**).
4. **Clear** both filters.
5. Use an advanced **text filter** to view data that does not contain a certain word or phrase. If you are using the example, display data that **does not contain** the word **saris** (this should exclude all Saris brand equipment).
6. Use an advanced **date filter** to view data from a certain time period. If you are using the example, display only the equipment that was **checked out** in **September 2013**.
7. Use an advanced **number filter** to view numbers **less than** a certain amount. If you are using the example, display all items with an **ID#** below **3000**.

## 3.4 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.

### 3.4.1 Grouping Rows or Columns

1. Select the **rows** or **columns** that you wish to group. In this example, we'll select columns **A**, **B** and **C**.

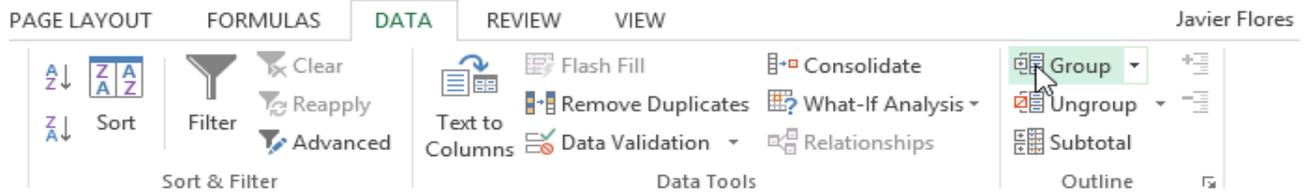
	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Date
2	220-B	Malik	Reynolds	Small	7-Oct
3	105	Melissa	White	Small	14-Oct
4	220-B	Windy	Shaw	Small	Pending
5	105	Esther	Yaron	Small	7-Oct
6	220-A	Brigid	Ellison	Small	7-Oct
7	220-B	Michael	Lazar	Small	7-Oct
8	135	Anisa	Naser	Small	Pending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

*Selecting*

*columns to group*

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



### *Clicking the Group command*

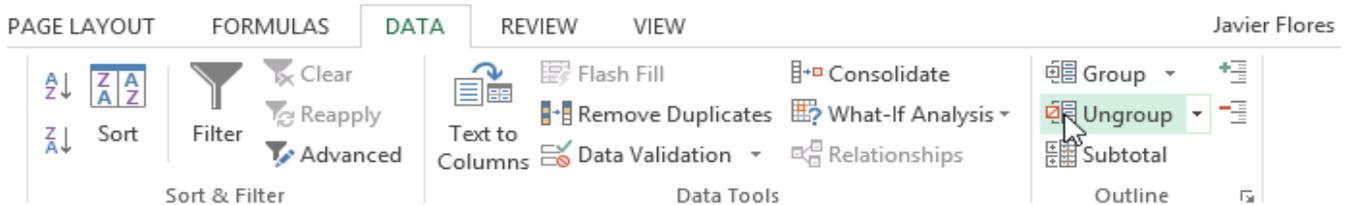
3. The selected rows or columns will be **grouped**. In our example, columns **A**, **B** and **C** are grouped together.

The screenshot shows an Excel spreadsheet with columns A, B, and C grouped together. A bracket above the column headers indicates the group. The data is as follows:

	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

### *The grouped columns*

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



### *Clicking the Ungroup command*

## 3.4.2 Hide and Show Groups

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

1					
2					
	A	B	C	D	E
1	<b>Homeroom #</b>	<b>First Name</b>	<b>Last Name</b>	<b>T-Shirt Size</b>	<b>Payment Date</b>
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

*Hiding a group*

- The group will be **hidden**. To show a hidden group, click the **Show Detail** button .

1				
2				
	D	E	F	G
1	<b>T-Shirt Size</b>	<b>Payment Date</b>		
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		

*Clicking the Show Detail button to show the hidden group*

### 3.4.3 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. The **Subtotal** command 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,

#### 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.

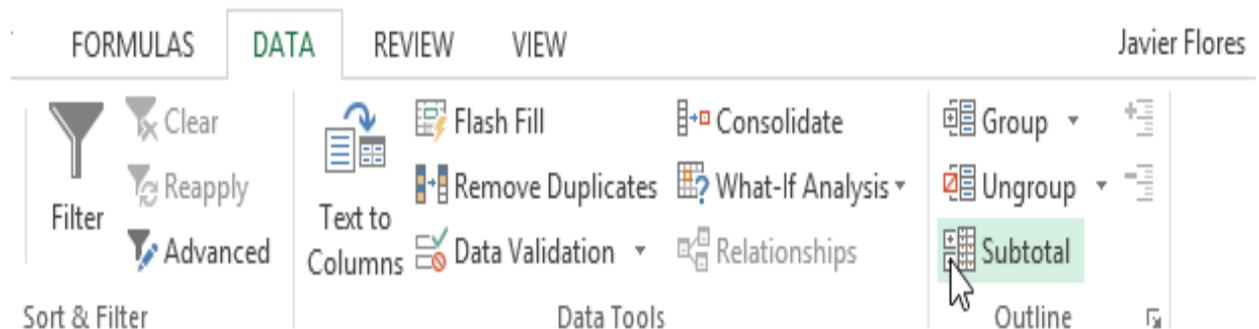
- First, **sort** your worksheet by the data you wish to subtotal. In this example, we will create a subtotal for each t-shirt size, so our worksheet has been sorted by t-shirt size from smallest to largest.

## Microsoft Office Excel 2013 Training Manual

	A	B	C	D	E
1	<b>Homerom #</b>	<b>First Name</b>	<b>Last Name</b>	<b>T-Shirt Size</b>	<b>Payment Date</b>
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
11	105	Sidney	Kelly	Medium	11-Oct
12	105	Nathan	Albee	Medium	5-Oct

*The worksheet sorted by t-shirt size*

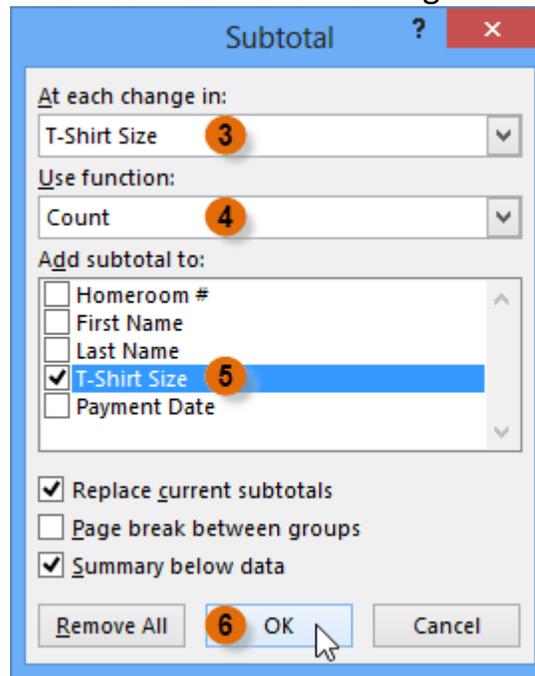
2. Select the **Data** tab and then click the **Subtotal** command.



*Clicking 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 wish to subtotal. In our example, we'll select **T-Shirt Size**.
4. Click the drop-down arrow for the **Use function:** field to select the **function** you wish to use. In our example, we'll 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'll select **T-Shirt Size**.
6. When you're satisfied with your selections, click **OK**.

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### *Creating a subtotal*

- 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.

1	2	3	A	B	C	D	E
1	2	3	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			<b>Small Count</b>		8		
11	105	Christiana	Chen	Medium	5-Oct		
12	105	Sidney	Kelly	Medium	11-Oct		
13	105	Nathan	Albee	Medium	5-Oct		
14	110			Medium	11-Oct		
15	220-B			Medium	13-Oct		
16	135			Medium	11-Oct		
17	135	Chantal	Weller	Medium	11-Oct		
18	220-A	Chevonne	Means	Medium	13-Oct		
19	110	Matt	Benson	Medium	15-Oct		
20	220-B	Samantha	Bell	Medium	15-Oct		
21			<b>Medium Count</b>		10		

### *The outlined and subtotaled data*

### 3.4.4 Viewing Groups by Level

When you create subtotals, your worksheet 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 1 2 3 to the left of the worksheet. In our example, we'll 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'll select **level 1**, which contains only the **grand count**, or total number of t-shirts ordered.

	A	B	C	D	E
1	<b>Homeroom #</b>	<b>First Name</b>	<b>Last Name</b>	<b>T-Shirt Size</b>	<b>Payment Date</b>
33			<b>Grand Count</b>	27	
34					
35					

*Viewing data at the lowest level*

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

	A	B	C	D	E
1	<b>Homeroom #</b>	<b>First Name</b>	<b>Last Name</b>	<b>T-Shirt Size</b>	<b>Payment Date</b>
10			<b>Small Count</b>	8	
21			<b>Medium Count</b>	10	
27			<b>Large Count</b>	5	
32			<b>X-Large Count</b>	4	
33			<b>Grand Count</b>	27	
34					

*Viewing data at the next level*

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

	A	B	C	D	E
1	<b>Homeroom #</b>	<b>First Name</b>	<b>Last Name</b>	<b>T-Shirt Size</b>	<b>Payment Date</b>
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			<b>Small Count</b>	8	
11	105	Christiana	Chen	Medium	5-Oct
12	105	Sidney	Kelly	Medium	11-Oct
13	105	Nathan	Albee	Medium	5-Oct

*Viewing data at the highest level*

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

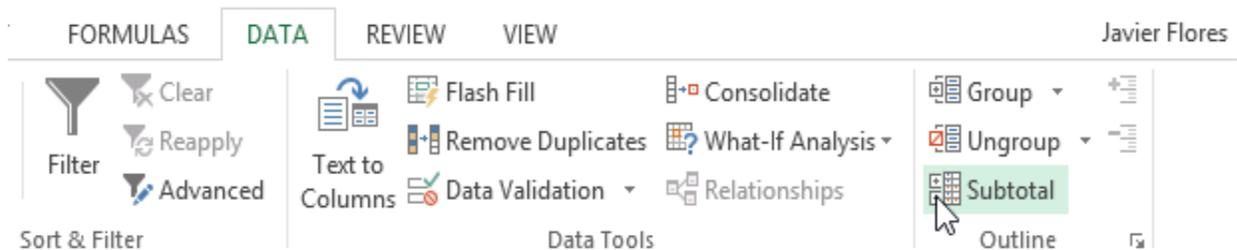
	A	B	C	D	E
1					
10			<b>Small Count</b>	8	
21			<b>Medium Count</b>	10	
22	110	Kris	Ackerman	Large	Pending
23	135	Jordan	Weller	Large	1-Oct
24	135	Alex	Yuen	Large	5-Oct
25	105	Derek	MacDonald	Large	1-Oct
26	110	Regina	Olivera	Large	Pending
27			<b>Large Count</b>	5	
32			<b>X-Large Count</b>	4	
33			<b>Grand Count</b>	27	
34					

*Showing and hiding the new groups within the outline*

### 3. 4.5 Remove Subtotals

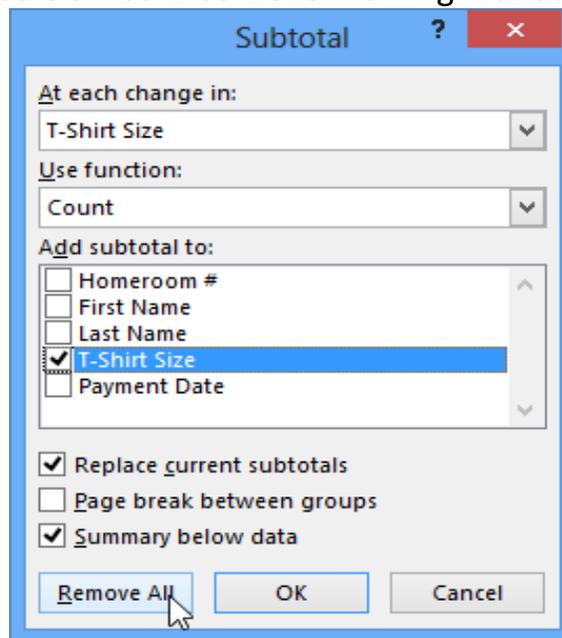
Sometimes, you may not want to keep subtotals in your worksheet, especially if you want to reorganize the data in different ways. If you no longer wish to use subtotalling, you'll need **remove it** from your worksheet.

1. Select the **Data** tab and then click the **Subtotal** command.



*Clicking the Subtotal command*

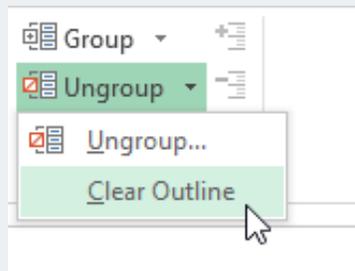
2. The **Subtotal** dialog box will appear. Click **Remove All**.



*Removing subtotals*

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 and then choose **Clear Outline**.



*Removing all groups*

### Exercise 3.4

1. Open an existing Excel workbook.
2. Try **grouping** a range of rows or columns together. If you are using the example, group columns **D** and **E**.
3. Use the **Show** and **Hide Detail** buttons to hide and unhide the group.
4. Try **ungrouping** the group. If you are using the example, **ungroup** columns **D** and **E**.
5. **Outline** your worksheet using the **Subtotal** command. If you are using the example, outline by **t-shirt size**.
6. **Remove subtotals** from your worksheet.

### 3.5 Tables

Once you've entered information into a worksheet, you may want to format your data as a **table**. Just like regular formatting, tables can improve the **look and feel** of your workbook, but they'll also help to **organize** your content and make your data easier to use. Excel includes several **tools** and **pre-defined table styles**, allowing you to create tables quickly and easily.

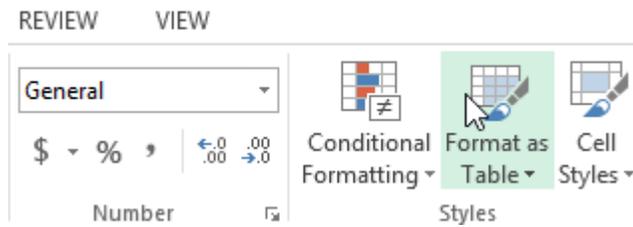
### 3.5.1 Formatting Data as a Table

1. Select the **cells** you want to format as a table. In our example, we'll select the cell range **A4:D10**.

	A	B	C	D	E
1			Date:	11/13/10	
2			Invoice #:	145-10	
3			Customer:	Café Aurora	
4	Quantity	Description	Unit Price	Line Total	
5	5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00	
6	7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00	
7	9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00	
8	6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00	
9	3	Penne, Massaman Curry Flavor	\$14.00	\$42.00	
10	4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00	
11					

*Selecting a cell range to format as a table*

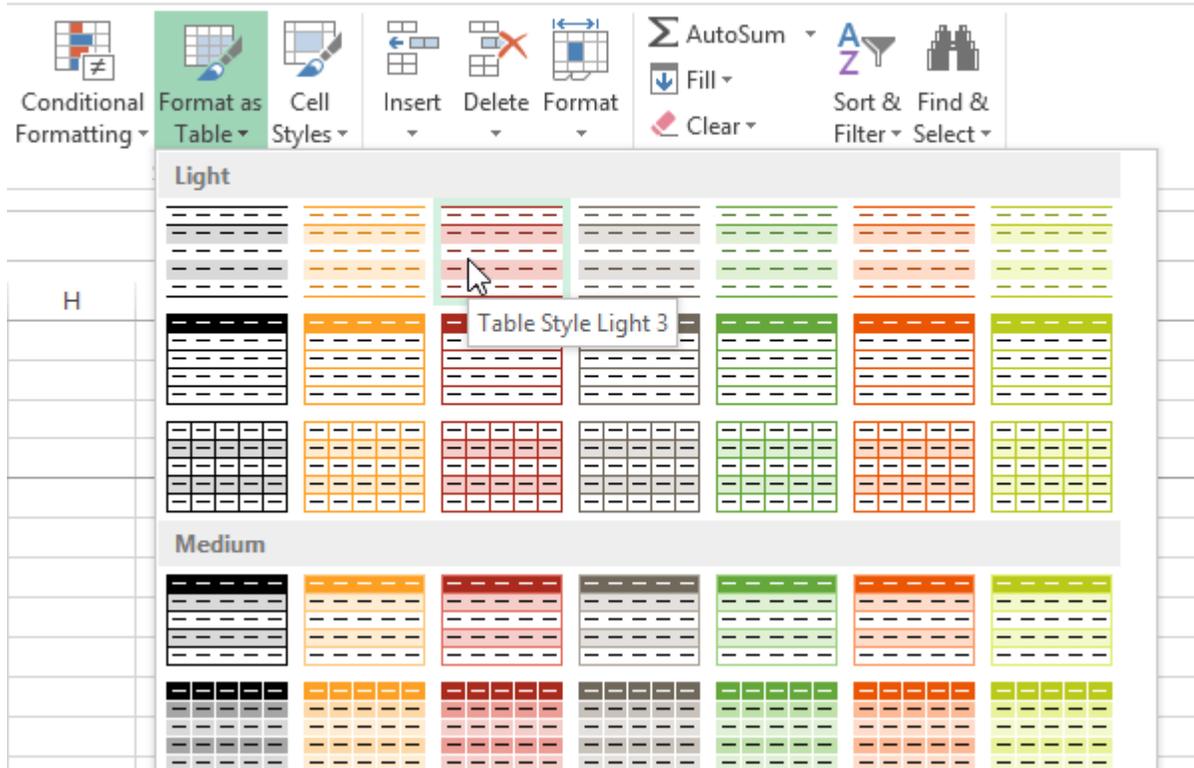
2. From the **Home** tab, click the **Format as Table** command in the **Styles** group



*Clicking the Format as Table command*

3. Select a **table style** from the drop-down menu.

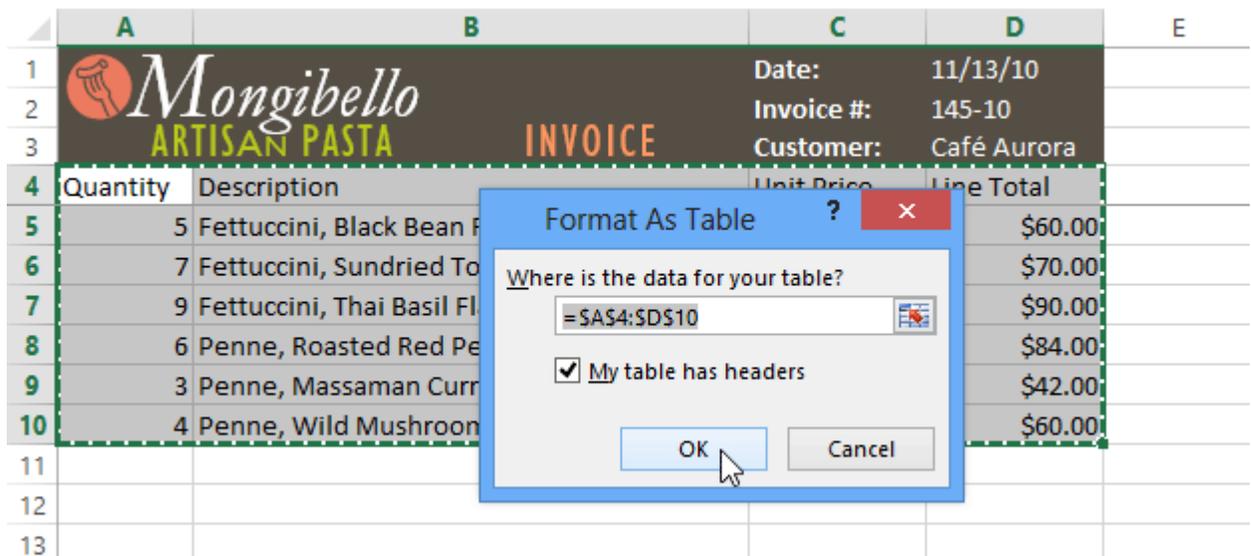
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*Choosing*

*a table style*

4. A dialog box will appear, confirming the selected **cell range** for the table.
5. If your table has **headers**, check the box next to **My table has headers**, then click **OK**.



*Clicking OK*

6. The cell range will be formatted in the selected table style.

Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00
7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00
9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00
6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00
3	Penne, Massaman Curry Flavor	\$14.00	\$42.00
4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00

The cell range formatted as a table

### 3.5.2 Modifying Tables

It's easy to modify the look and feel of any table after adding it to a worksheet. Excel includes many different options for customizing a table, including **adding rows or columns**, changing the **table style**, and more.

#### 3.5.2.1 Add Rows or Columns to a Table

If you need to fit more content in your table, Excel allows you to modify the **table size** by including additional rows and columns. There are two simple ways to change the table size:

- Begin typing new content after the last row or column in the table. The row or column will be included in the table automatically.

Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00
7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00
9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00
6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00
3	Penne, Massaman Curry Flavor	\$14.00	\$42.00
4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00
8	Breadsticks, Garlic & Olive Oil		\$0.00

Typing a new row below an existing table

- Click, hold and drag the **bottom-right corner** of the table to create additional rows or columns.

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Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00
7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00
9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00
6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00
3	Penne, Massaman Curry Flavor	\$14.00	\$42.00
4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00
8	Breadsticks, Garlic & Olive Oil	\$4.00	\$32.00

*Dragging the table border to create more rows*

### 3.5.2.2 Changing the Table Style

1. Select **any cell** in your table, then click the **Design** tab.

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW **TABLE TOOLS**  
DESIGN

Clipboard Font Alignment

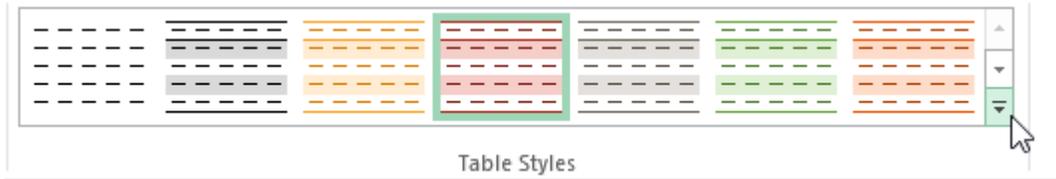
A5 : 5

Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00
7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00
9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00
6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00
3	Penne, Massaman Curry Flavor	\$14.00	\$42.00
4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00
8	Breadsticks, Garlic & Olive Oil	\$4.00	\$32.00

*Clicking the Design tab*

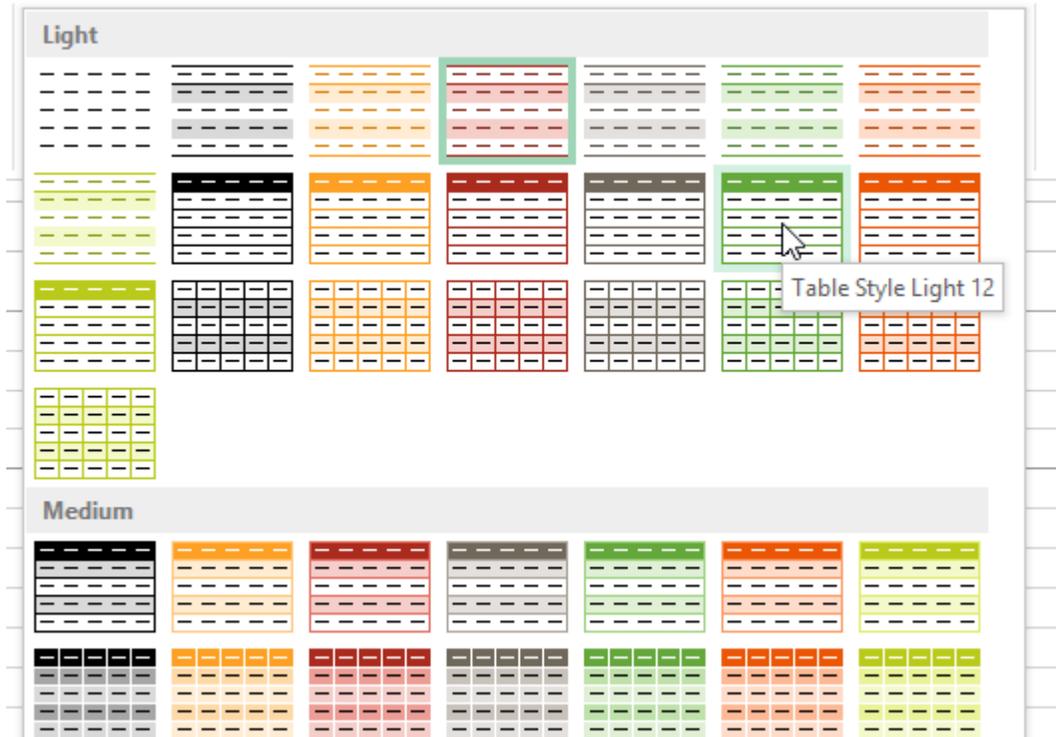
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- Locate the **Table Styles** group and click the **More** drop-down arrow to see all of the table styles.



*Clicking the More drop-down arrow*

- Select the desired style.



*Choosing a new table style*

- The selected table style will appear.

	A	B	C	D	E
1	 <b>Mongibello</b> ARTISAN PASTA	<b>INVOICE</b>	Date:	11/13/10	
2			Invoice #:	145-10	
3			Customer:	Café Aurora	
4	<b>Quantity</b>	<b>Description</b>	<b>Unit Price</b>	<b>Line Total</b>	
5	5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00	
6	7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00	
7	9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00	
8	6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00	
9	3	Penne, Massaman Curry Flavor	\$14.00	\$42.00	
10	4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00	
11	8	Breadsticks, Garlic & Olive Oil	\$4.00	\$32.00	
12					

*The new table style*

### 3.5.2.3 Modify the Table Style Options

You can turn various options **on** or **off** to change the appearance of any table. There are six options: **Header Row**, **Total Row**, **Banded Rows**, **First Column**, **Last Column**, and **Banded Columns**.

1. Select **any cell** in your table.
2. From the **Design** tab, **check** or **uncheck** the desired options in the **Table Style Options** group. In our example, we'll check **Total Row** to automatically include a **total** for our table.



*Checking the Total Row option*

3. The table style will be modified. In our example, a **new row** has been added to the table with a **formula** that will automatically calculate the total value of the cells in column D.

	A	B	C	D	E
1			Date:	11/13/10	
2			Invoice #:	145-10	
3			Customer:	Café Aurora	
4	Quantity	Description	Unit Price	Line Total	
5	5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00	
6	7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00	
7	9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00	
8	6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00	
9	3	Penne, Massaman Curry Flavor	\$14.00	\$42.00	
10	4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00	
11	8	Breadsticks, Garlic & Olive Oil	\$4.00	\$32.00	
12	<b>Total</b>			<b>\$438.00</b>	
13					

*The table with a total row*

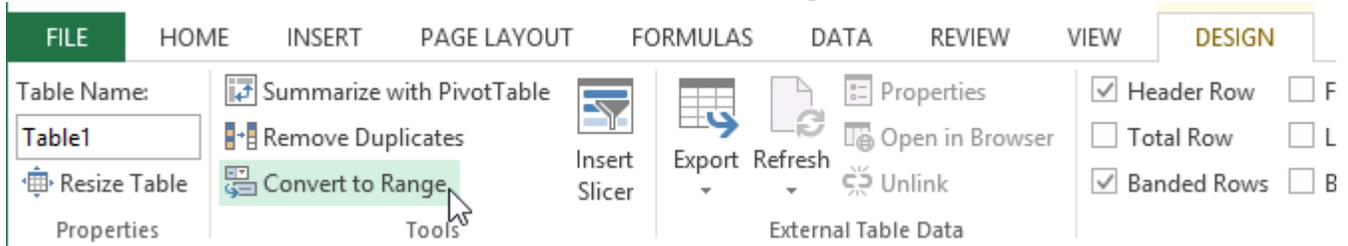
These options can affect your table style in various ways, depending on the type of content in your table. You may need to experiment with a few different options to find the exact style you want.

### 3.5.3 Removing a Table

Sometimes, you may not want to use the additional features included with tables, such as the Sort and Filter drop-down arrows. You can **remove** a table from the workbook while still preserving the table's formatting elements, like font and cell color.

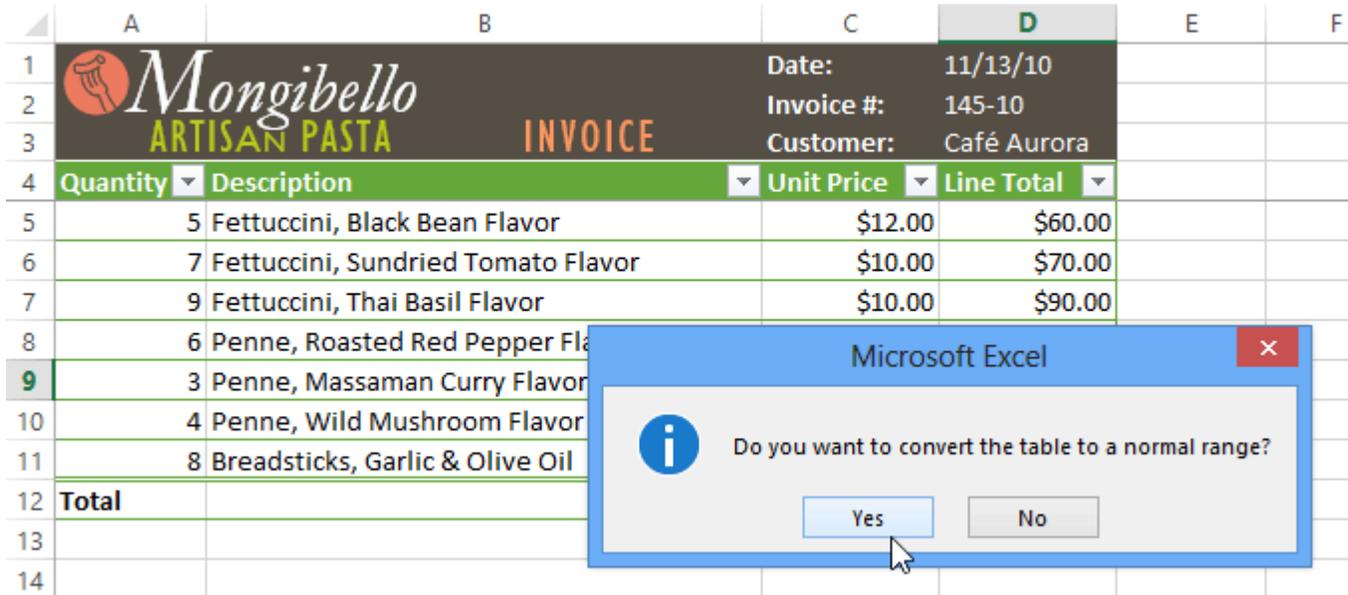
1. Select **any cell** in your table. The **Design** tab will appear.
2. Click the **Convert to Range** command in the **Tools** group.

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*Clicking Convert to Range*

3. A dialog box will appear. Click Yes.



*Removing a table*

4. The range will no longer be a table, but the cells will retain their data and formatting.

Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	\$12.00	\$60.00
7	Fettuccini, Sundried Tomato Flavor	\$10.00	\$70.00
9	Fettuccini, Thai Basil Flavor	\$10.00	\$90.00
6	Penne, Roasted Red Pepper Flavor	\$14.00	\$84.00
3	Penne, Massaman Curry Flavor	\$14.00	\$42.00
4	Penne, Wild Mushroom Flavor	\$15.00	\$60.00
8	Breadsticks, Garlic & Olive Oil	\$4.00	\$32.00
<b>Total</b>			<b>\$438.00</b>

*cell range formatted as a normal range*

*The*

## Exercise 3.5

1. Open an existing Excel workbook.
2. Format a range of cells as a **table**. If you are using the example, format the cell range **A1:E13**.
3. **Add** a row or column to the table.
4. Choose a new **table style**.
5. Change the **table style options**. If you are using the example, add a **total row**.
6. **Remove** the table.

## 3.6 Charts

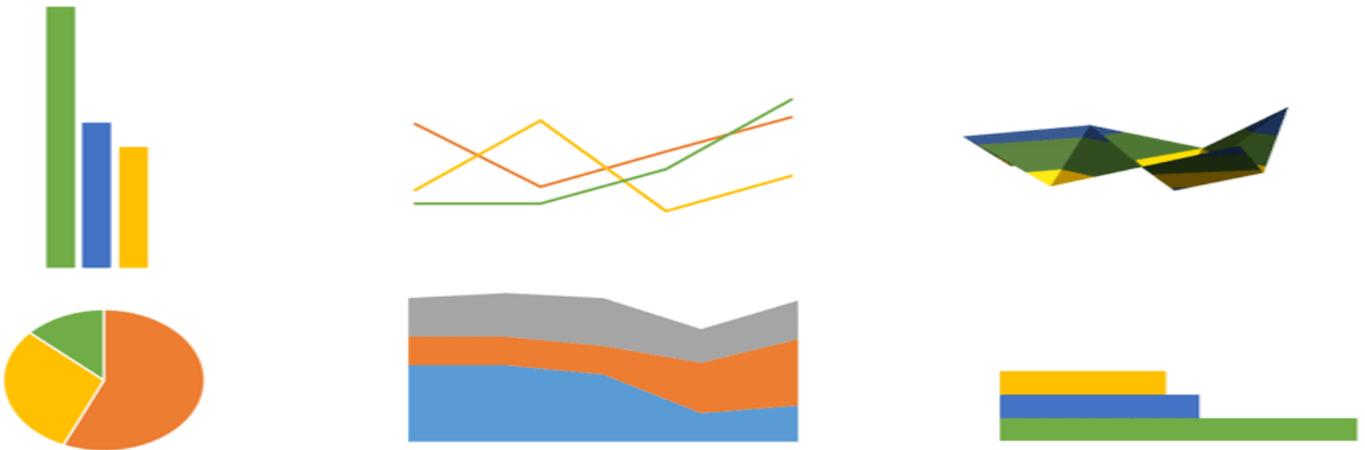
It can often be difficult to interpret Excel workbooks that contain a lot of data. **Charts** allow you to illustrate your workbook data **graphically**, which make it easy to visualize **comparisons** and **trends**.

### 3.6.1 Understanding Charts

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

Click the arrows in the slideshow below to learn more about the types of charts in Excel.

## Types of Charts

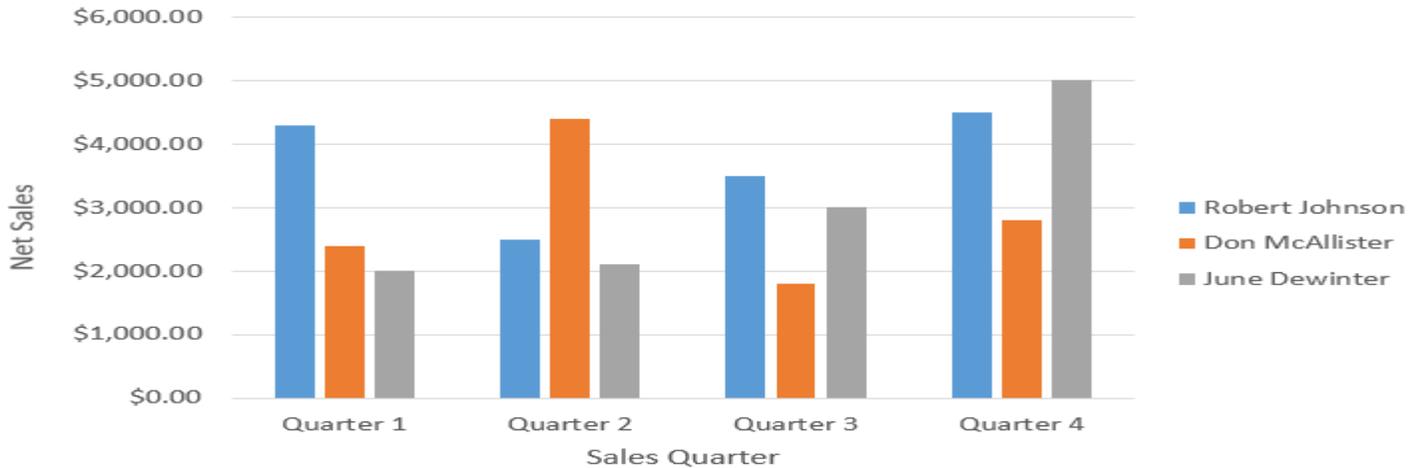


Excel has a wide variety of chart types, each with its own advantages. Click the arrows to see some of the different types of charts available in Excel.

In addition to chart types, you'll need to understand how to **read a chart**. Charts contain several different elements, or parts that can help you interpret the data.

Click the buttons in the interactive below to learn about the different parts of a chart.

Sales Team Epsilon: Net Sales per Quarter



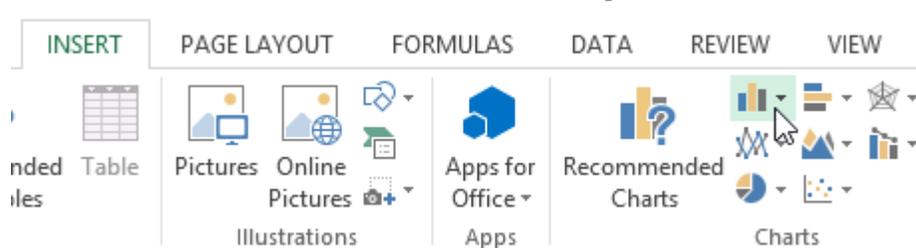
### 3.6.2 Inserting a Chart

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'll select cells A1:F6.

	A	B	C	D	E	F	G
1	Genre	2008	2009	2010	2011	2012	
2	Classics	\$18,580	\$49,225	\$16,326	\$10,017	\$26,134	
3	Mystery	\$78,970	\$82,262	\$48,640	\$49,985	\$73,428	
4	Romance	\$24,236	\$131,390	\$79,022	\$71,009	\$81,474	
5	Sci-Fi & Fantasy	\$16,730	\$19,730	\$12,109	\$11,355	\$17,686	
6	Young Adult	\$35,358	\$42,685	\$20,893	\$16,065	\$21,388	
7							
8							

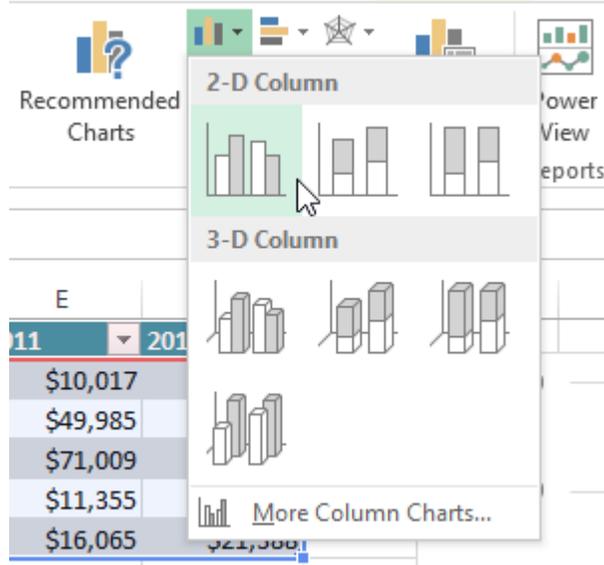
Selecting cells A1:F6

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



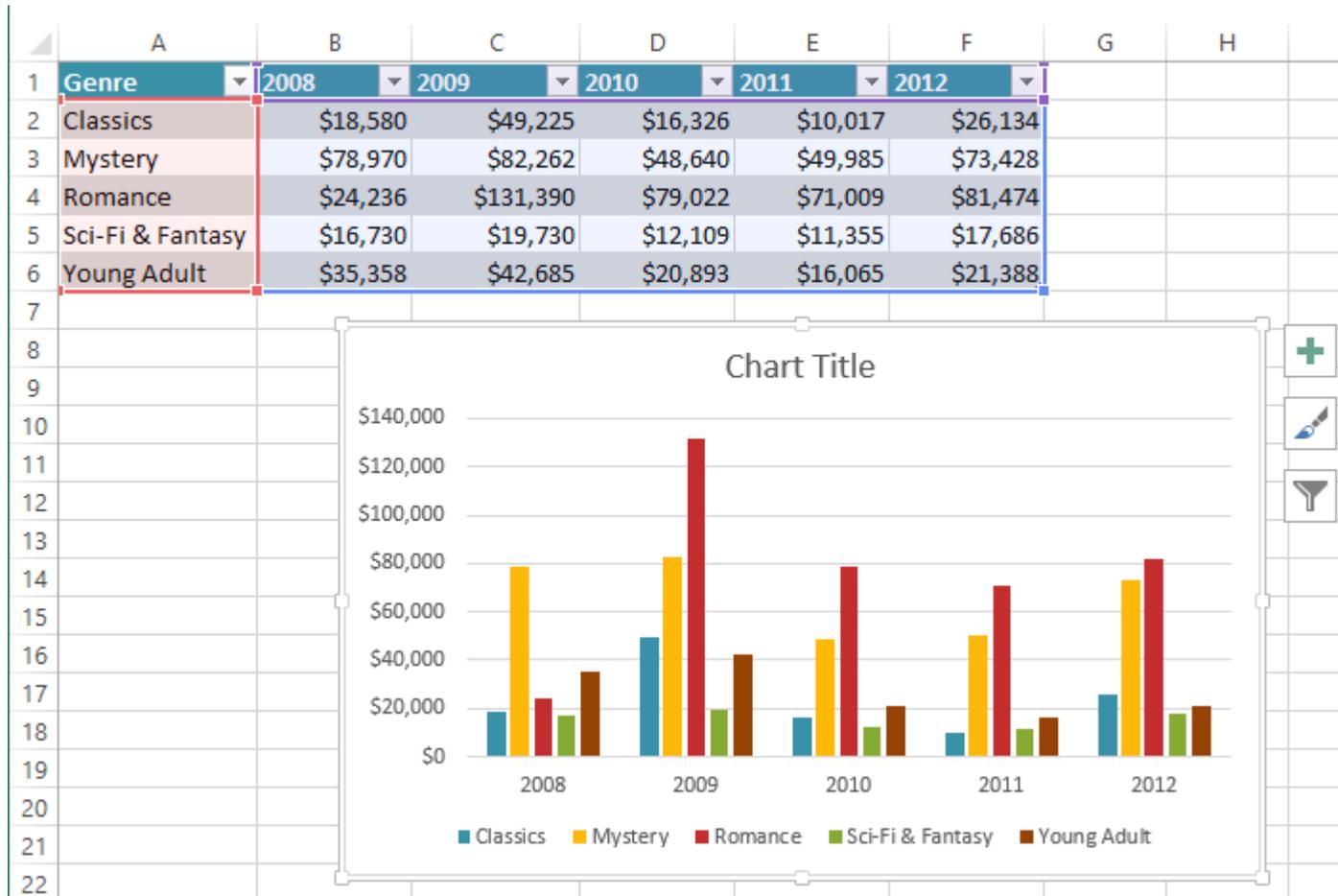
Clicking the Column chart command

3. Choose the desired **chart type** from the drop-down menu.



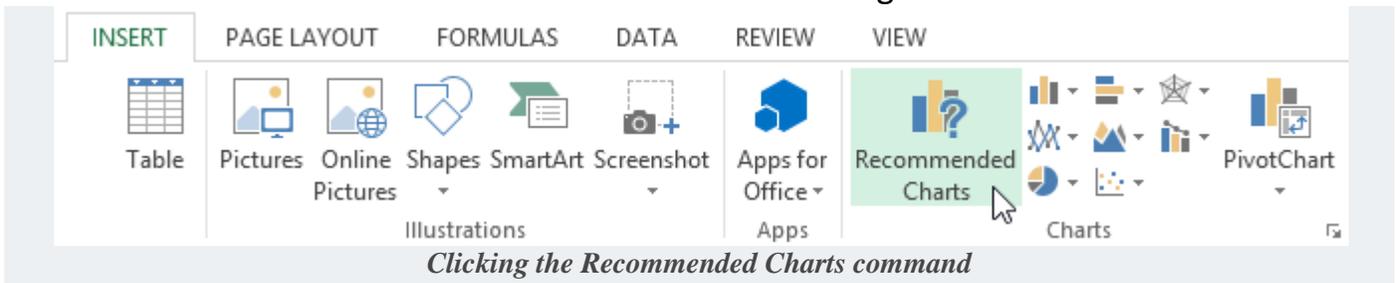
*Choosing a chart type*

- The selected chart will be inserted in the worksheet.



*The inserted chart*

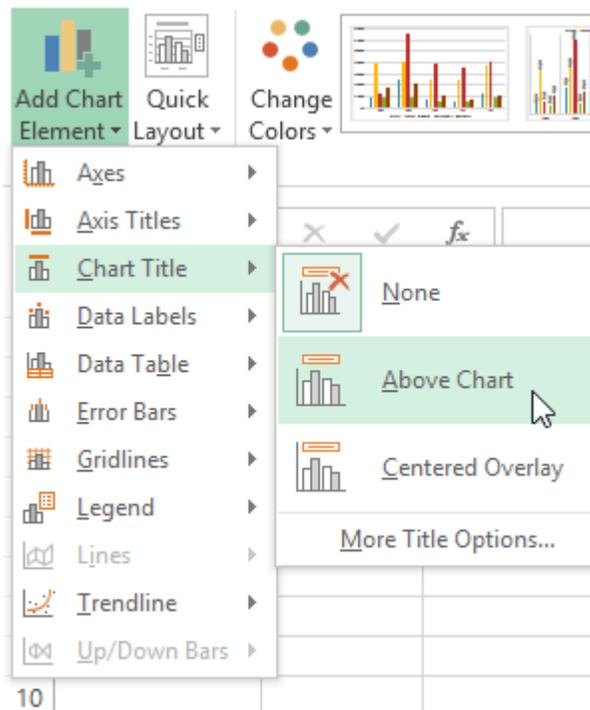
If you're not sure which type of chart to use, the **Recommended Charts** command will suggest several different charts based on the source data.



### 3.6.3 Chart Layout and Style

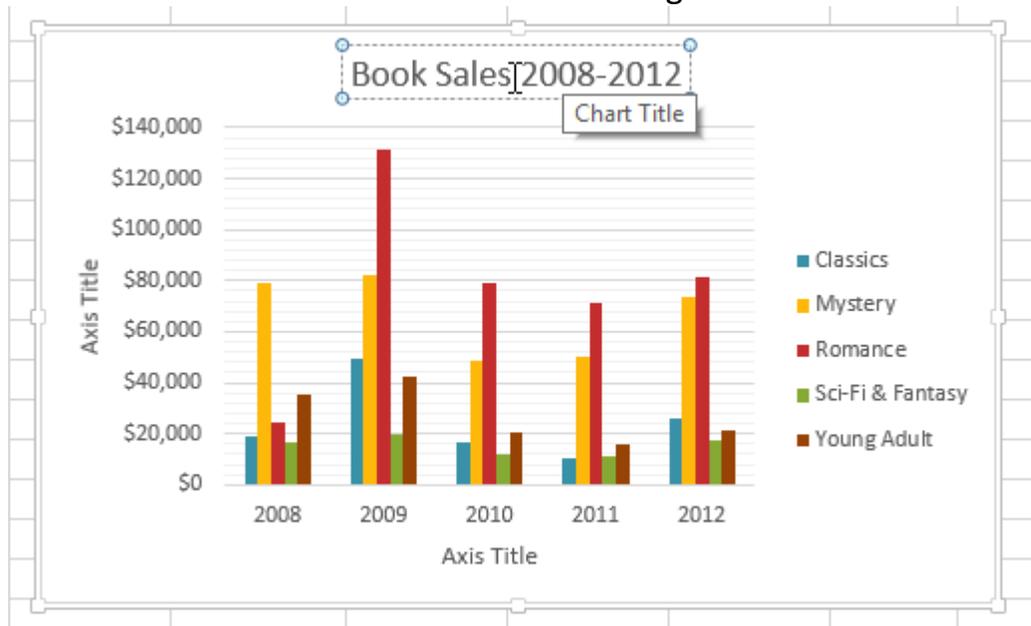
After inserting a chart, there are several things you might want to change about the way your data is displayed. It's easy to edit a chart's **layout** and **style** from the **Design** tab.

- 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 and then choose the **desired element** from the drop-down menu.



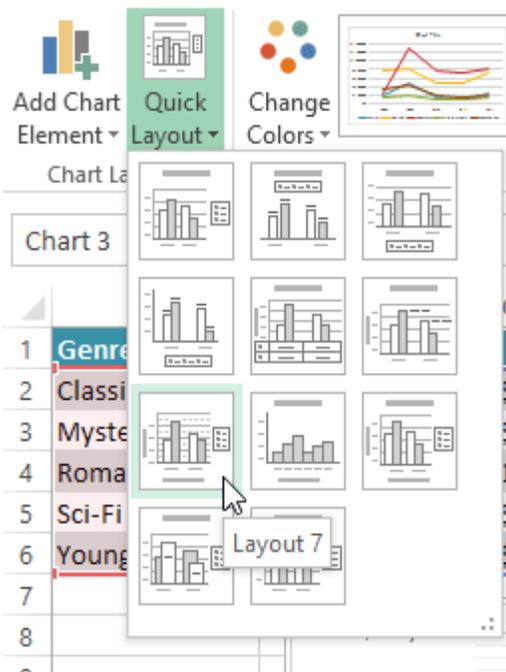
*Adding a chart title*

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



*Editing the chart title placeholder text*

- If you don't want to add chart elements individually, you can use one of Excel's pre-defined layouts. Simply click the **Quick Layout** command and then choose the **desired layout** from the drop-down menu.



*Choosing a chart layout*

- 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.

CHART TOOLS  
DESIGN    FORMAT

Chart Styles

Style 6

	2009	2010	2011	2012
0	\$49,225	\$16,326	\$10,017	\$26,134
0	\$82,262	\$48,640	\$49,985	\$73,428
6	\$121,390	\$79,077	\$71,009	\$81,171

Select a style or click the drop-down arrow to see more styles

*Choosing a new chart style*

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

Book Sales 2008-2012

Year	Classics	Mystery	Romance	Sci-Fi & Fantasy	Young Adult
2008	\$18,000	\$78,000	\$22,000	\$15,000	\$35,000
2009	\$48,000	\$82,000	\$130,000	\$18,000	\$42,000
2010	\$15,000	\$48,000	\$78,000	\$10,000	\$20,000
2011	\$8,000	\$50,000	\$70,000	\$10,000	\$15,000
2012	\$25,000	\$75,000	\$80,000	\$15,000	\$20,000

Chart formatting shortcuts

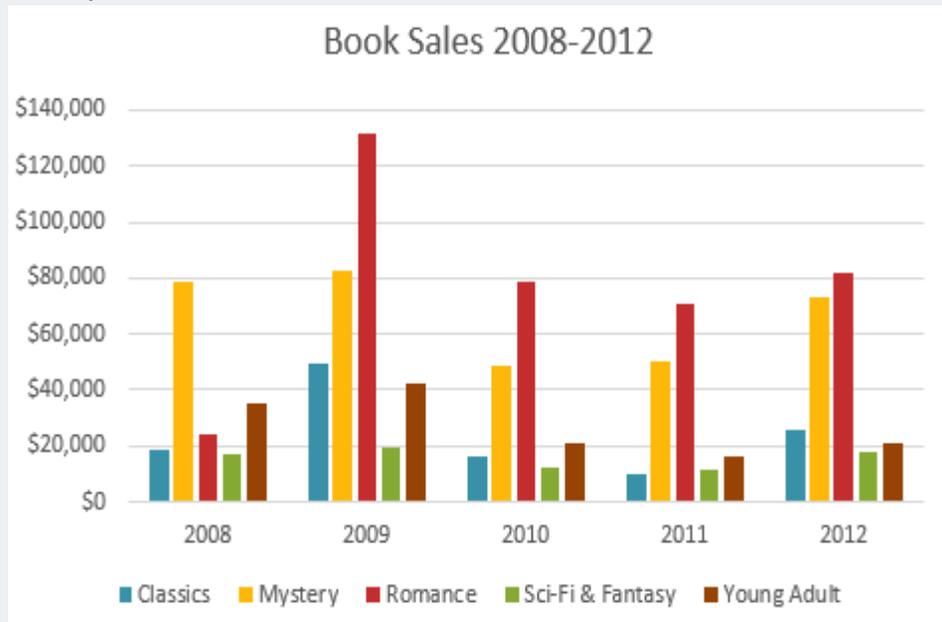
**3.6.4 Other Chart Options**

There are lots of 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.

**3.6.4.1 Switching Row and Column Data**

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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 that the chart will group the data **by genre**, with columns for **each year**. In both cases, the chart contains the same data—it's just organized differently.



*The data grouped by year, with columns for each genre*

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

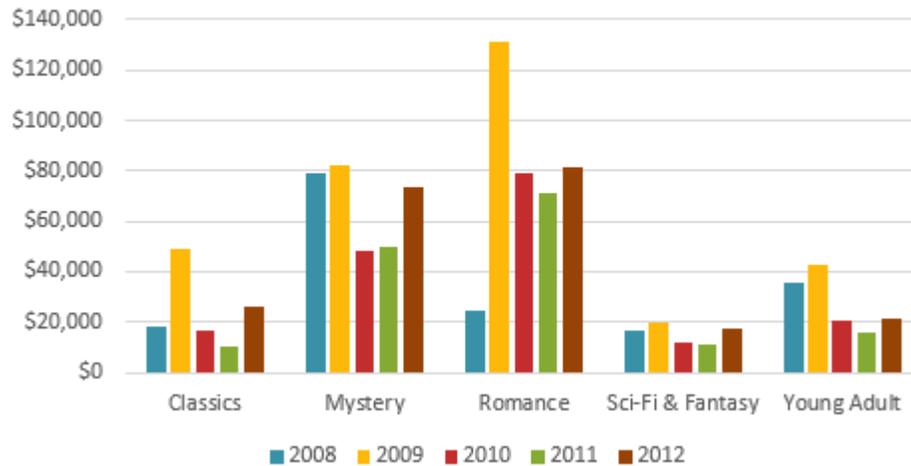


*Clicking the Switch Rows/Columns command*

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

## Microsoft Office Excel 2013 Training Manual

### Book Sales 2008-2012



*The switched row and column data*

### 3.6.4.2 Changing the Chart Type

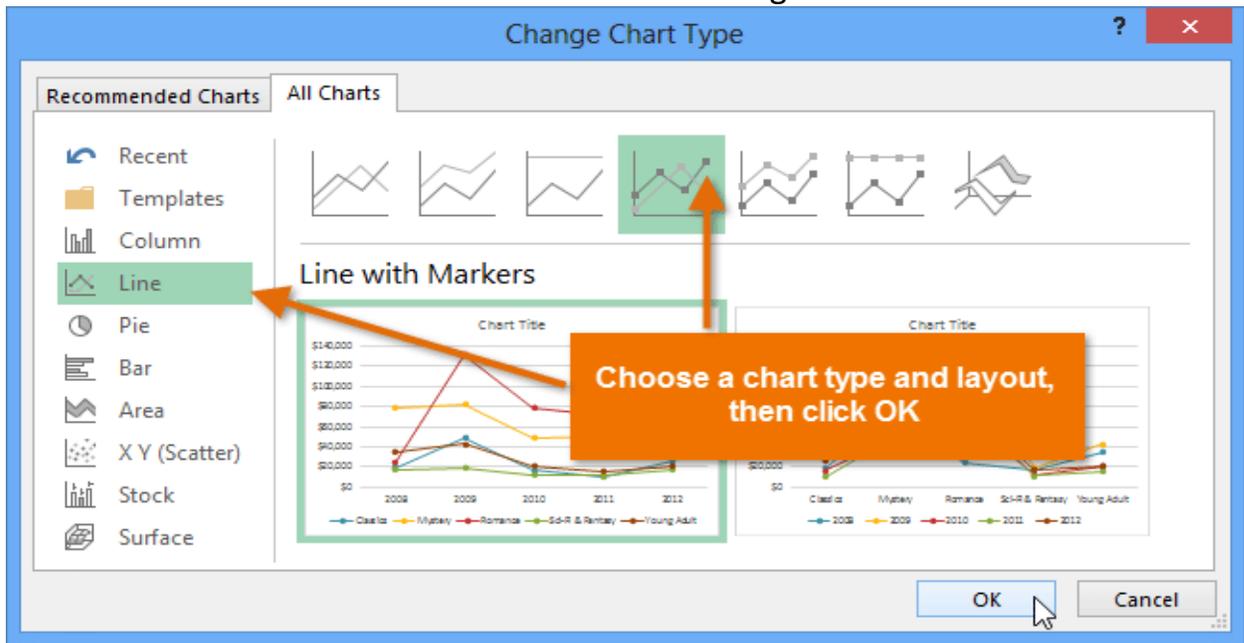
If you find that your data isn't well suited to a certain chart, it's easy to switch to a new **chart type**. In our example, we'll change our chart from a **Column** chart to a **Line** chart.

1. From the **Design** tab, click the **Change Chart Type** command.



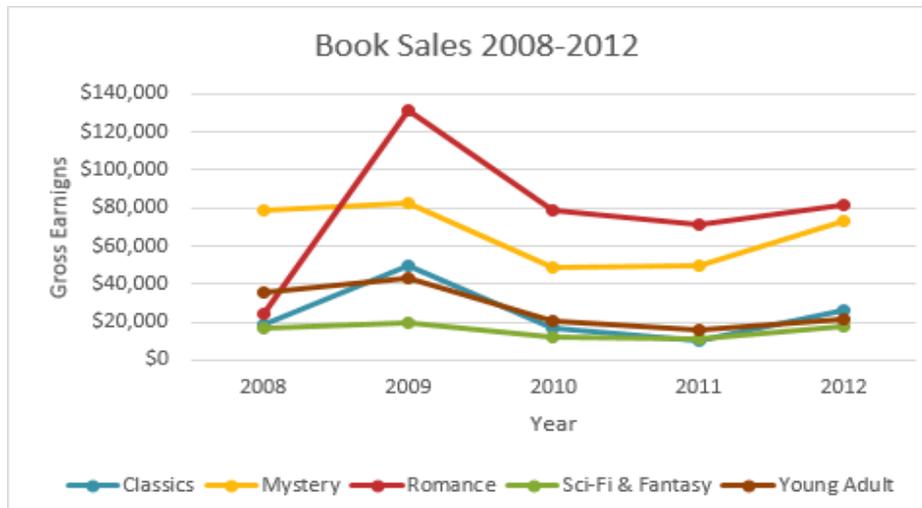
*Clicking the Change Chart Type command*

2. The **Change Chart Type** dialog box will appear. Select a new chart **type** and **layout**, then click **OK**. In our example, we'll choose a **Line** chart.



*Choosing a new chart type*

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.



*The new chart type*

### 3.6.4.3 Moving 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.

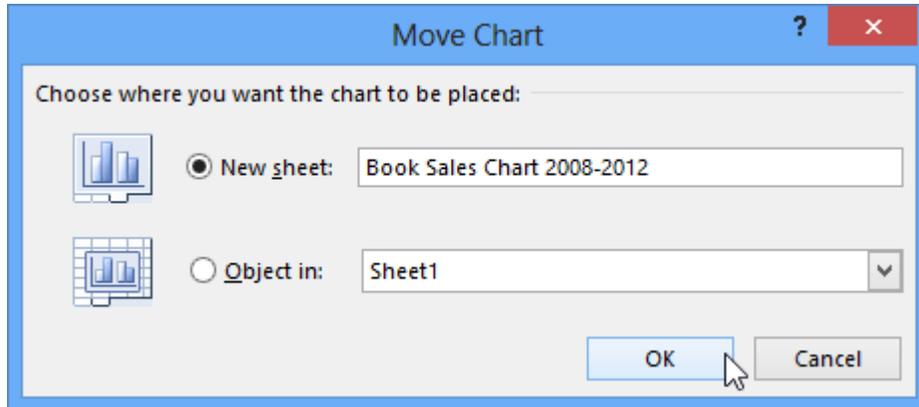
1. Select the **chart** you wish to move.
2. Click the **Design** tab and then select the **Move Chart** command.

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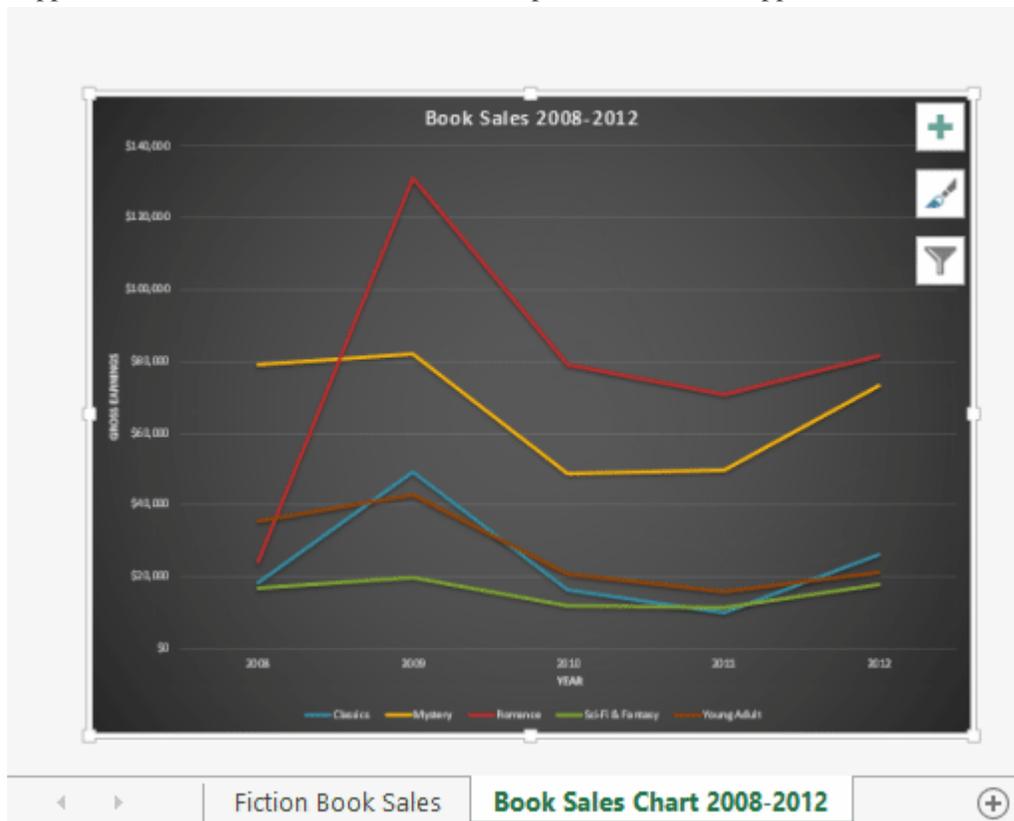
### *Clicking the Move Chart command*

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



### *Moving the chart to a new worksheet*

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



### *The chart on its own worksheet*

## Exercise 3.6

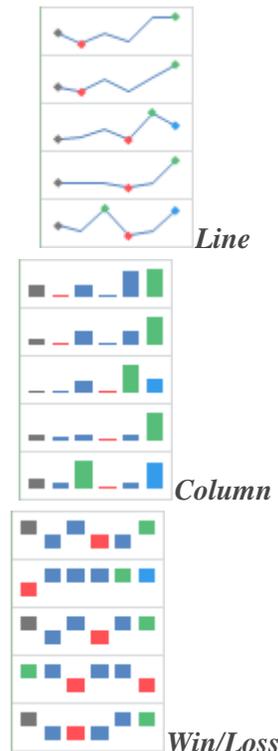
1. Open an **existing Excel workbook**.
2. Use worksheet data to create a **chart**. If you are using the example, use the cell range **A1:F6** as the source data for the chart.
3. Change the **chart layout**. If you are using the example, select **Layout 8**.
4. Apply a **chart style**.
5. **Move** the chart. If you are using the example, move the chart to a **new worksheet** named **Book Sales Data: 2008-2012**.

## 3.7 Sparklines

Sometimes, you might want to **analyze** and view **trends** in your data without creating an entire chart. **Sparklines** are miniature charts that fit into a **single cell**. Since they're so compact, it's easy to include lots of sparklines in a workbook.

### 3.7.1 Types of Sparklines

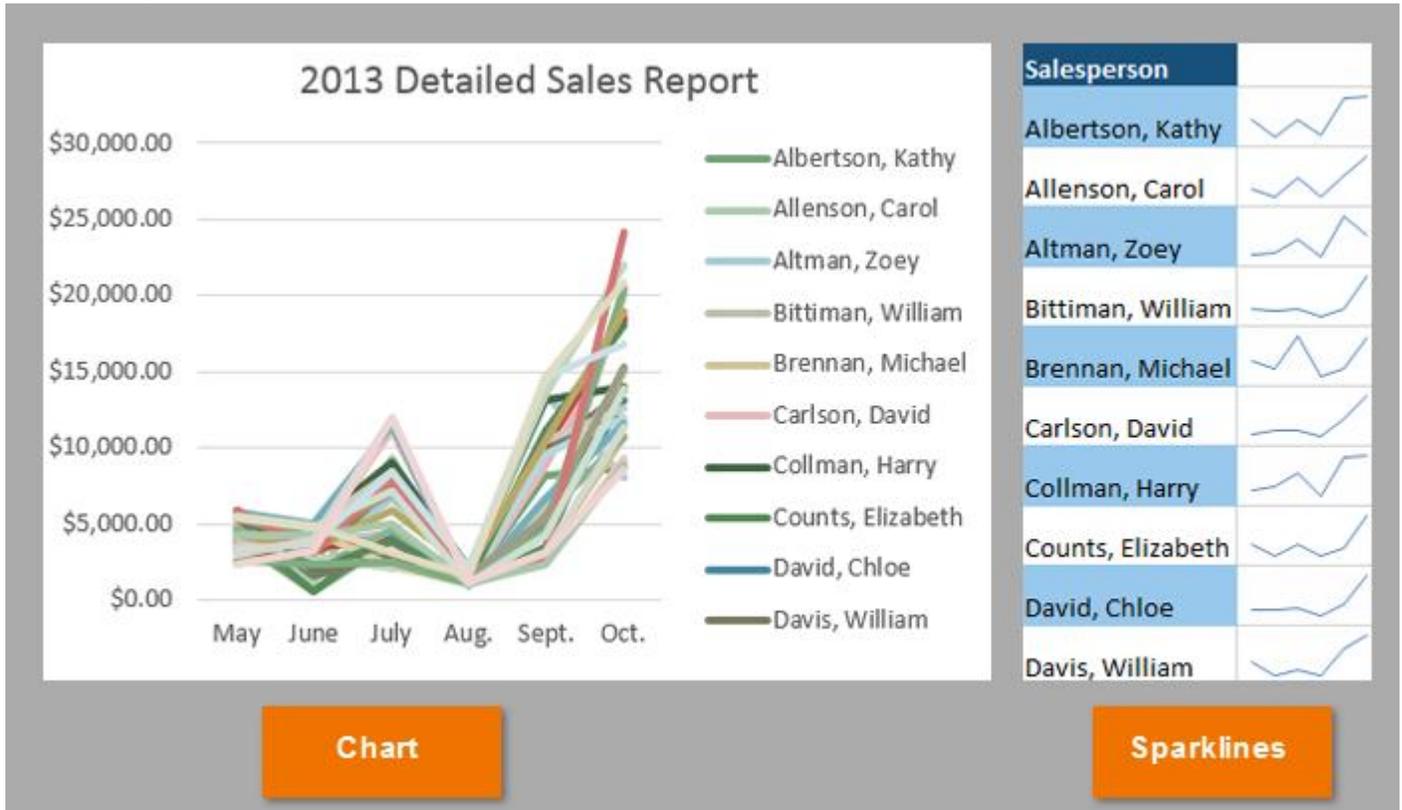
There are three different types of sparklines: **Line**, **Column**, and **Win/Loss**. **Line** and **Column** work the same as line and column charts. **Win/Loss** is similar to **Column**, except it only shows whether each value is **positive or negative**, instead of how **high** or **low** the values are. All three types can display **markers** at important points, such as the **highest** and **lowest** points, to make them easier to read.



### 3.7.2 Why Use Sparklines?

Sparklines have certain advantages over charts. For example, imagine you have 1,000 rows of data. A traditional chart would have 1,000 data series to represent all of the rows, making relevant data hard to find. But if you placed a sparkline on each row, it will be right next to its **source data**, making it easy to see **relationships** and **trends** for multiple data series at the same time.

In the image below, the chart is extremely cluttered and hard to follow, but the sparklines allow you to clearly follow each salesperson's data.



*The same data visualized in a chart and in sparklines*

Sparklines are ideal for situations where you need a clear overview of the data **at a glance** and where you don't need all the features of a full chart. On the other hand, charts are ideal for situations where you want to represent the data in **greater detail**, and they are often better for **comparing** different data series.

### 3.7.3 Creating Sparklines

Generally, you will have one sparkline for each row, but you can create as many as you want in any location. Just like **formulas**, it's usually easiest to create a **single sparkline** and then use the **fill handle** to create sparklines for the adjacent rows. In our example, we'll create sparklines to help visualize **trends** in sales over time for each salesperson.

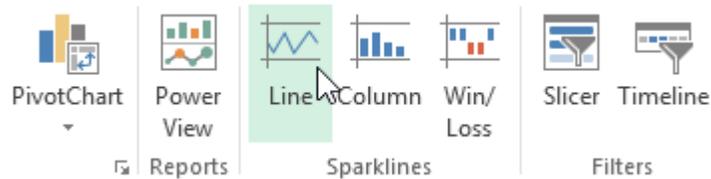
1. Select the **cells** that will serve as the source data for the **first sparkline**. In our example, we'll select the cell range **B2:G2**.

## Microsoft Office Excel 2013 Training Manual

	A	B	C	D	E	F	G
1	Salesperson	May	June	July	Aug.	Sept.	Oct.
2	Albertson, Kathy	\$3,947.00	\$557.00	\$3,863.00	\$1,117.00	\$8,237.00	\$8,690.00
3	Allenson, Carol	\$4,411.00	\$1,042.00	\$9,355.00	\$1,100.00	\$10,185.00	\$18,749.00
4	Altman, Zoey	\$2,521.00	\$3,072.00	\$6,702.00	\$2,116.00	\$13,452.00	\$8,046.00
5	Bittiman, William	\$4,752.00	\$3,755.00	\$4,415.00	\$1,089.00	\$4,404.00	\$20,114.00

*Selecting cells B2:G2*

2. Select the **Insert** tab, then choose the desired **Sparkline** from the **Sparklines** group. In our example, we'll choose **Line**.



*Clicking the Line command*

3. The **Create Sparklines** dialog box will appear. Use the mouse to select the cell where the sparkline will appear, then click **OK**. In our example, we'll select cell **H2** and the cell reference will appear in the **Location Range** field.

The image shows a portion of the Excel spreadsheet with the 'Create Sparklines' dialog box open. The dialog box has two sections: 'Choose the data that you want' with 'Data Range: B2:G2' and 'Choose where you want the sparklines to be placed' with 'Location Range: \$H\$2'. An orange callout box with the text 'Use the mouse to select the desired cell, then click OK' points to the 'OK' button. A dashed green box highlights cell H2 in the spreadsheet.

*Selecting a location for the sparkline and clicking OK*

4. The sparkline will appear in the specified cell.

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	A	B	C	D	E	F	G	H
1	Salesperson	May	June	July	Aug.	Sept.	Oct.	
2	Albertson, Kathy	\$3,947.00	\$557.00	\$3,863.00	\$1,117.00	\$8,237.00	\$8,690.00	
3	Allenson, Carol	\$4,411.00	\$1,042.00	\$9,355.00	\$1,100.00	\$10,185.00	\$18,749.00	
4	Altman, Zoey	\$2,521.00	\$3,072.00	\$6,702.00	\$2,116.00	\$13,452.00	\$8,046.00	
5	Bittiman, William	\$4,752.00	\$3,755.00	\$4,415.00	\$1,089.00	\$4,404.00	\$20,114.00	

*sparkline*

5. Click, hold and drag the **fill handle** to create sparklines in adjacent cells.

	A	B	C	D	E	F	G	H
1	Salesperson	May	June	July	Aug.	Sept.	Oct.	
2	Albertson, Kathy	\$3,947.00	\$557.00	\$3,863.00	\$1,117.00	\$8,237.00	\$8,690.00	
3	Allenson, Carol	\$4,411.00	\$1,042.00	\$9,355.00	\$1,100.00	\$10,185.00	\$18,749.00	
4	Altman, Zoey	\$2,521.00	\$3,072.00	\$6,702.00	\$2,116.00	\$13,452.00	\$8,046.00	
5	Bittiman, William	\$4,752.00	\$3,755.00	\$4,415.00	\$1,089.00	\$4,404.00	\$20,114.00	
6	Brennan, Michael	\$4,964.00	\$3,152.00	\$11,601.00	\$1,122.00	\$3,170.00	\$10,733.00	
7	Carlson, David	\$2,327.00	\$4,056.00	\$3,726.00	\$1,135.00	\$8,817.00	\$18,524.00	
8	Collman, Harry	\$3,967.00	\$4,906.00	\$9,007.00	\$2,113.00	\$13,090.00	\$13,953.00	
9	Counts, Elizabeth	\$4,670.00	\$521.00	\$4,505.00	\$1,024.00	\$3,528.00	\$15,275.00	
10	David, Chloe	\$3,379.00	\$3,428.00	\$3,973.00	\$1,716.00	\$4,839.00	\$13,085.00	
11	Davis, William	\$5,363.00	\$1,562.00	\$2,945.00	\$1,176.00	\$9,642.00	\$13,714.00	
12	Dumlao, Richard	\$3,275.00	\$2,779.00	\$7,549.00	\$1,101.00	\$5,850.00	\$15,065.00	

*Dragging the fill handle to create sparklines in adjacent cells*

6. Sparklines will be created for the selected cells. In our example, the sparklines show clear **trends** in sales over time for each salesperson in our worksheet.

## Microsoft Office Excel 2013 Training Manual

	A	B	C	D	E	F	G	H
1	<b>Salesperson</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>	<b>Sept.</b>	<b>Oct.</b>	
2	Albertson, Kathy	\$3,947.00	\$557.00	\$3,863.00	\$1,117.00	\$8,237.00	\$8,690.00	
3	Allenson, Carol	\$4,411.00	\$1,042.00	\$9,355.00	\$1,100.00	\$10,185.00	\$18,749.00	
4	Altman, Zoey	\$2,521.00	\$3,072.00	\$6,702.00	\$2,116.00	\$13,452.00	\$8,046.00	
5	Bittiman, William	\$4,752.00	\$3,755.00	\$4,415.00	\$1,089.00	\$4,404.00	\$20,114.00	
6	Brennan, Michael	\$4,964.00	\$3,152.00	\$11,601.00	\$1,122.00	\$3,170.00	\$10,733.00	
7	Carlson, David	\$2,327.00	\$4,056.00	\$3,726.00	\$1,135.00	\$8,817.00	\$18,524.00	
8	Collman, Harry	\$3,967.00	\$4,906.00	\$9,007.00	\$2,113.00	\$13,090.00	\$13,953.00	
9	Counts, Elizabeth	\$4,670.00	\$521.00	\$4,505.00	\$1,024.00	\$3,528.00	\$15,275.00	
10	David, Chloe	\$3,379.00	\$3,428.00	\$3,973.00	\$1,716.00	\$4,839.00	\$13,085.00	
11	Davis, William	\$5,363.00	\$1,562.00	\$2,945.00	\$1,176.00	\$9,642.00	\$13,714.00	
12	Dumlao, Richard	\$3,275.00	\$2,779.00	\$7,549.00	\$1,101.00	\$5,850.00	\$15,065.00	

*Sparklines filled to multiple rows*

### 3.7.4 Modifying Sparklines

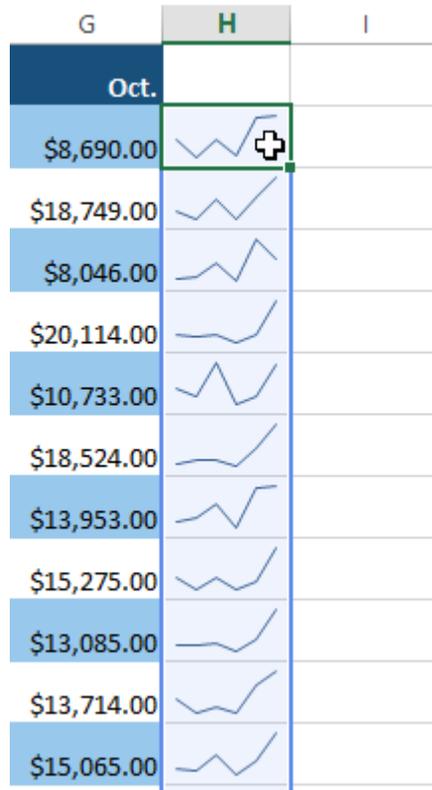
It's easy to change the way sparklines appear in your worksheet. Excel allows you to customize a sparkline's **markers**, **style**, **type**, and more.

#### 3.7.4.1 To Display Markers

Certain points on a sparkline can be emphasized with **markers**, or dots, making the sparkline more readable. For example, in a line with a lot of **ups and downs**, it might be difficult to tell which values are the highest and lowest points. Showing the **High Point** and **Low Point** will make them easier to identify.

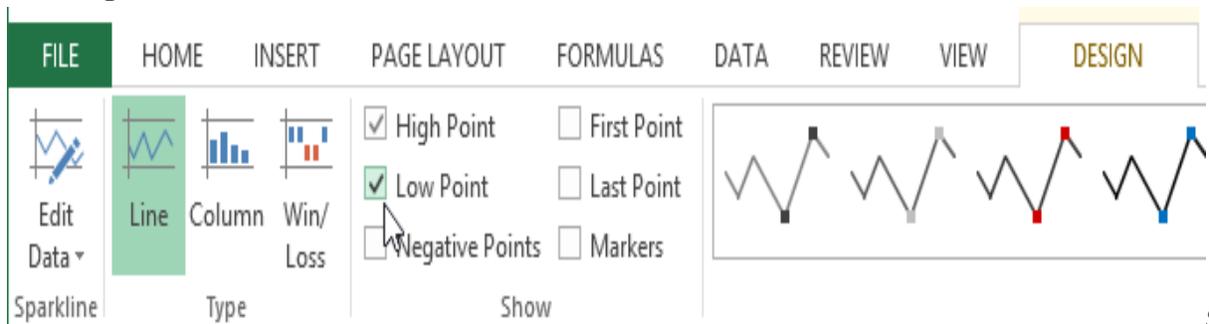
1. Select the **sparkline(s)** that you want to change. If they are **grouped** in adjacent cells, you'll only need to click on one sparkline to select them all.

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*Selecting a group of sparklines*

- From the **Design** tab, select the desired option(s) from the **Show** group. In our example, we'll select **High Point** and **Low Point**.



*Showing*

*the High and Low points on the sparklines*

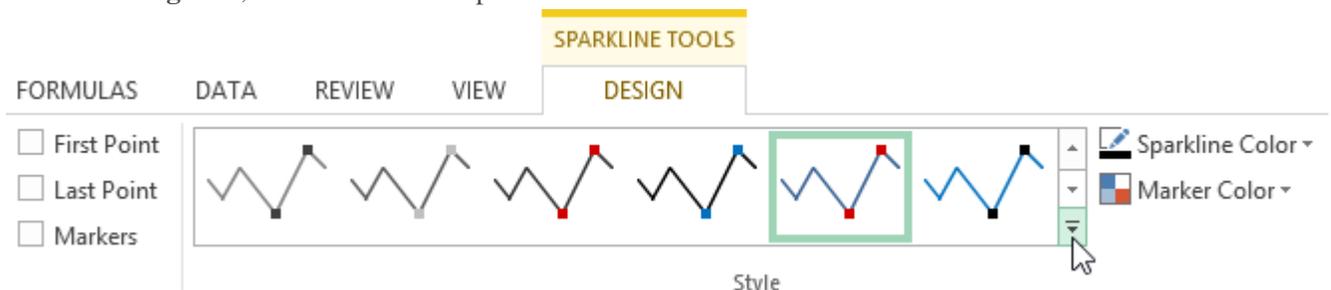
- The sparkline(s) will update to show the selected markers.

G	H	I
Oct.		
\$8,690.00		
\$18,749.00		
\$8,046.00		
\$20,114.00		
\$10,733.00		
\$18,524.00		
\$13,953.00		
\$15,275.00		
\$13,085.00		
\$13,714.00		
\$15,065.00		

*The sparklines with high and low markers*

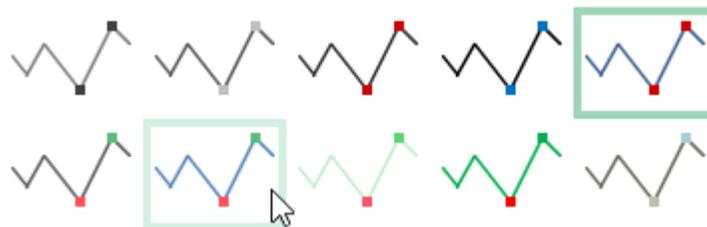
### 3.7.4.2 Changing the Sparkline Style

1. Select the **sparkline(s)** that you want to change.
2. From the **Design** tab, click the **More** drop-down arrow.



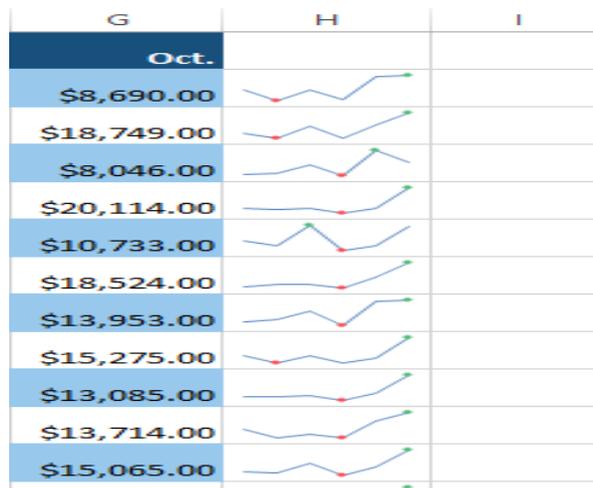
*Clicking the More drop-down arrow*

3. Choose the desired **style** from the drop-down menu.



*Choosing a sparkline style*

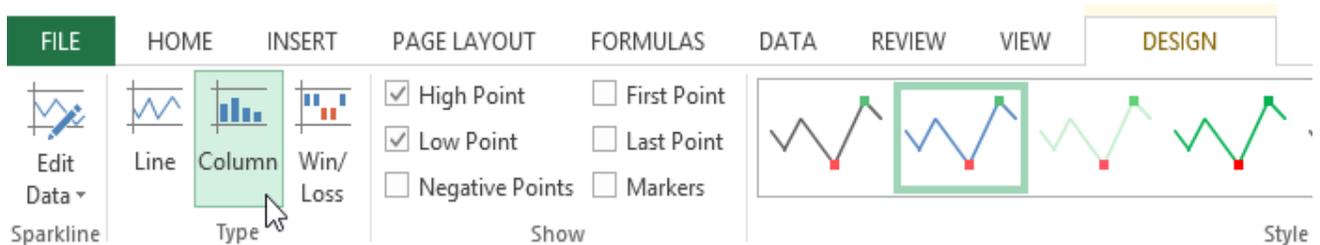
4. The sparkline(s) will update to show the selected style.



The new sparkline style

### 3.7.4.3 Changing the Sparkline Type

1. Select the **Sparkline(s)** that you want to change.
2. From the **Design** tab, select the desired **Sparkline type**. In our example, we'll select **Column**.



Choosing a new sparkline type

3. The sparkline(s) will update to reflect the new type.



The new sparkline type

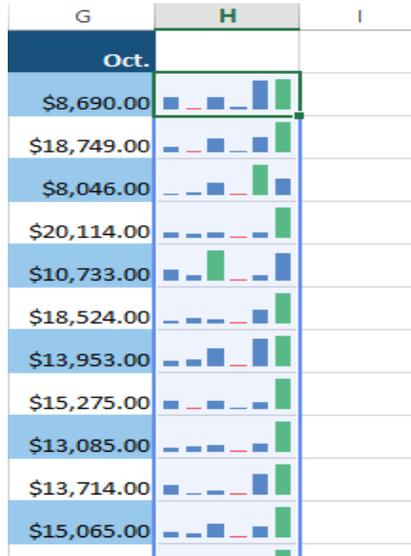
Some sparkline types will be better suited for certain types of data. For example, **Win/Loss** is best suited for data where there could be **positive** and **negative** values (such as **net earnings**).

### 3.7.5 Changing the Display Range

By default, each sparkline is scaled to fit the maximum and minimum values of its **own data source**: the maximum value will go to the top of the cell and the minimum will go to the bottom. However, this doesn't show how high or low the values are when compared to the other sparklines. Excel allows you to modify the sparkline **display range**, which makes it easier to **compare** sparklines.

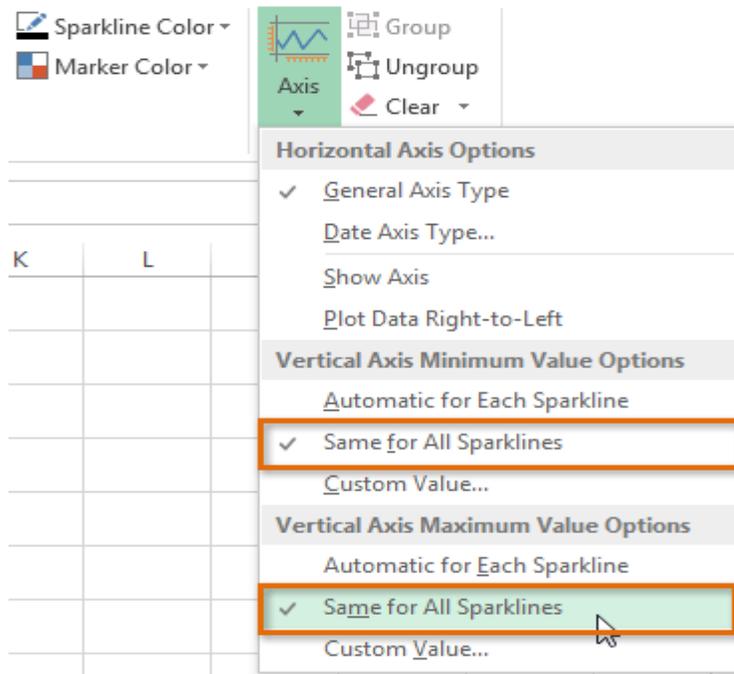
#### To Change the Display Range:

1. Select the **sparklines** that you want to change.



*Selecting a group of sparklines*

2. From the **Design** tab, click the **Axis** command. A drop-down menu will appear.
3. Below **Vertical Axis Minimum Value Options** and **Vertical Axis Maximum Value Options**, select **Same for All Sparklines**.



*Modifying the sparklines' display range*

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- The sparklines will update to reflect the new display range. In our example, we can now use the sparklines to compare trends for each salesperson.



*The updated display range*

### Exercise 3.7

- Open an **existing Excel workbook**.
- Create a **Sparkline** on the first row of data. If you are using the example, create a Sparkline for the first salesperson on row 3.
- Use the **fill handle** to create spark lines for the remaining rows.
- Create markers for the **High Point** and **Low Point**.
- Change the **Sparkline type**.
- Change the **Display Range** to make the spark lines easier to compare.

## CHAPTER FOUR

### 4. Doing More with Excel

#### 4.1 Track Changes and Comments

##### 4.1.1 Introduction

Suppose someone asked you to proofread or collaborate on a workbook. If you had a printed copy, you might use a red pen to edit cell data, mark spelling errors, or add comments in the margins. Excel allows you to do all of these things electronically using the **Track Changes** and **Comments** features.

##### 4.1.2 Understanding Track Changes

When you turn on the **Track Changes** feature, every cell you edit will be **highlighted** with a unique border and indicator. Selecting a marked cell will show the details of the change. This allows you and other reviewers to see what's been changed before accepting the revisions permanently.

Time	Item	Facilitator
	Welcome	Exec team
	Relationships exercise	Garth
		Garth, Dean, Liz
0:15	Break	
2:00	Cady Falls hike (strategy game?)	Tyler
1:00	Lunch (with strategy game team)	
0:15	Strategy debrief	Julia
1:00	Getting to know your team	See Liz for info
1:00	Strengths exercise	
0:15	Break/Snack	
0:45	Redwoods hike	
1:00	Team building exercise	
2:00	Dinner	
12:00		

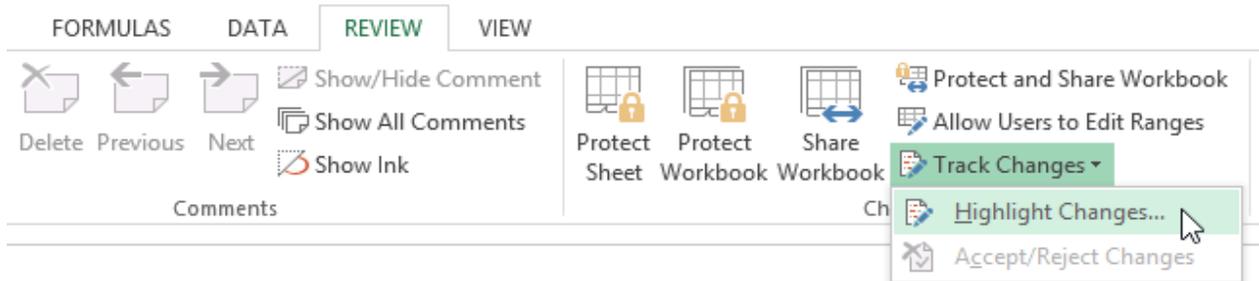
*worksheet with tracked changes*

There are some changes that Excel **cannot** track. Before using this feature, you may want to review Microsoft's list of [changes that Excel does not track or highlight](#).

You cannot use Track Changes if your workbook includes **tables**. To remove a table, select it, click the **Design** tab, and then click **Convert to Range**.

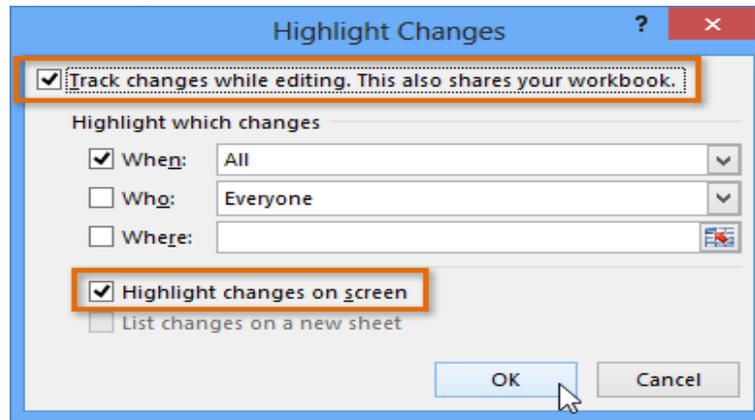
### 4.1.3 Turning on Track Changes

1. From the **Review** tab, click the **Track Changes** command and then select **Highlight Changes...** from the drop-down menu.



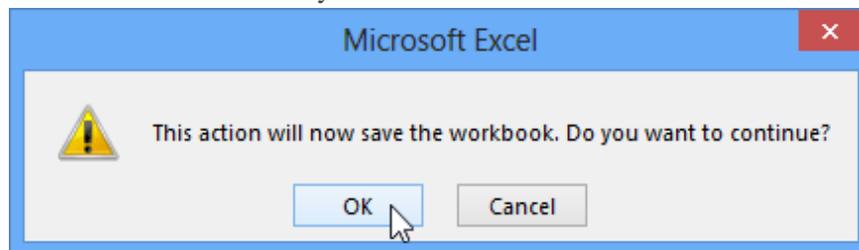
*Selecting Highlight Changes...*

2. The **Highlight Changes** dialog box will appear. Check the box next to **Track changes while editing**. Verify the box is checked for **Highlight changes on screen**, then click **OK**.



*Turning on Track Changes*

3. If prompted, click **OK** to allow Excel to save your workbook.



*Clicking OK to save the workbook*

4. Track Changes will be **turned on**. A **triangle** and **border color** will appear in any cell you edit. If there are multiple reviewers, each person will be assigned a different color.
5. Select the edited cell to see a summary of the tracked changes. In our example below, we've changed the content of cell E11 from "?" to **"Tyler"**.

Time	Item	Facilitator
1:00	Breakfast, welcome	Exec team
0:30	Introduction	Garth
1:00	Work relationships exercise	Garth, Dean, Liz
0:15	Break	
2:00	Cady Falls hike (strategy game?)	?
1:00	Lunch (with strategy game team)	
0:15	Strategy debrief	TBD

Item	Facilitator
Breakfast, welcome	Exec team
Introduction	Garth
Work relationships exercise	Garth, Dean, Liz
Break	
Cady Falls hike (strategy game?)	Tyler
Lunch (with strategy game team)	
Strategy debrief	TBD
?	See Liz for info
Strengths exercise	

**Javier Flores, 4/15/2013 10:23 AM:**  
 Changed cell E11 from '?' to 'Tyler'.

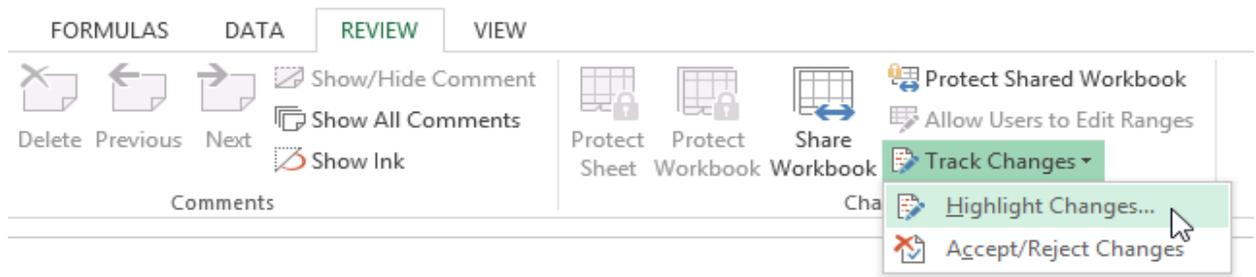
*Using the Track Changes feature*

When you turn on Track Changes, your workbook will be "shared" automatically. Shared workbooks are designed to be stored where other users can access and edit the workbook at the same time, such as a network. However, you can also track changes in a local or personal copy, as seen throughout this lesson.

#### 4.1. 4 Listing Changes on a Separate Worksheet

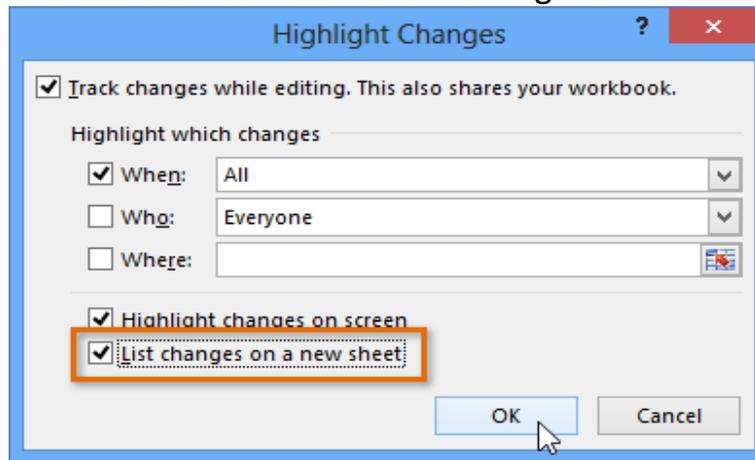
You can also view changes on a new worksheet, sometimes called the **Tracked Changes history**. The history lists everything in your worksheet that has been changed, including the "old value" (previous cell content) and the "new value" (current cell content).

1. **Save** your workbook.
2. From the **Review** tab, click the **Track Changes** command and then select **Highlight Changes...** from the drop-down menu.



*Selecting Highlight Changes...*

3. The **Highlight Changes** dialog box will appear. Check the box next to **List changes on a new sheet**, then click **OK**.



*Listing changes on a new worksheet and clicking OK*

- The tracked changes will be listed on their own worksheet, called **History**.

	A	B	C	D	E	F	G	H	I
	<b>Action</b>							<b>New</b>	<b>Old</b>
1	<b>Number</b>	<b>Date</b>	<b>Time</b>	<b>Who</b>	<b>Change</b>	<b>Sheet</b>	<b>Range</b>	<b>Value</b>	<b>Value</b>
2	1	4/15/2013	11:21 AM	Javier Flores	Cell Change	Agenda Planner	E6	Tyler	?
3	2	4/15/2013	11:21 AM	Javier Flores	Cell Change	Agenda Planner	E8	Julia	TBD
4	3	4/15/2013	11:21 AM	Javier Flores	Cell Change	Agenda Planner	D9	Getting to know your team	??
5	4	4/15/2013	11:21 AM	Javier Flores	Cell Change	Agenda Planner	D11	Break/snack	Break
6									
7	The history ends with the changes saved on 4/15/2013 at 11:21 AM.								
8									

*A summary of all changes on their own worksheet*

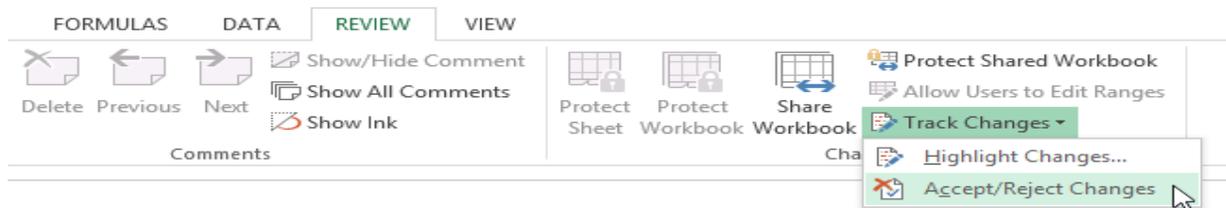
To **remove** the History worksheet from your workbook, you can either **save** your workbook again or uncheck the box next to **List changes on a new sheet** in the **Highlight Changes** dialog box.

### 4.1.5 Reviewing Changes

Tracked changes are really just "suggested" changes. To become permanent, the changes must be **accepted**. On the other hand, the original author may disagree with some of the tracked changes and choose to **reject** them.

#### To Review Tracked Changes

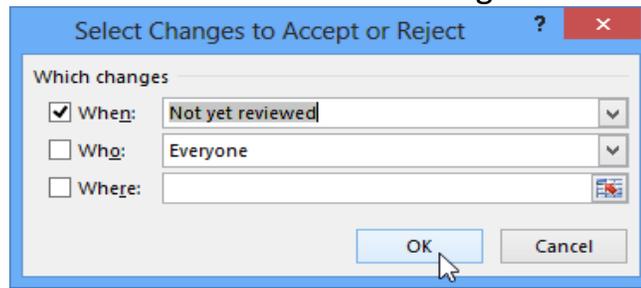
- From the **Review** tab, click **Track Changes** and then select **Accept/Reject Changes** from the drop-down menu.



*Selecting Accept/Reject Changes*

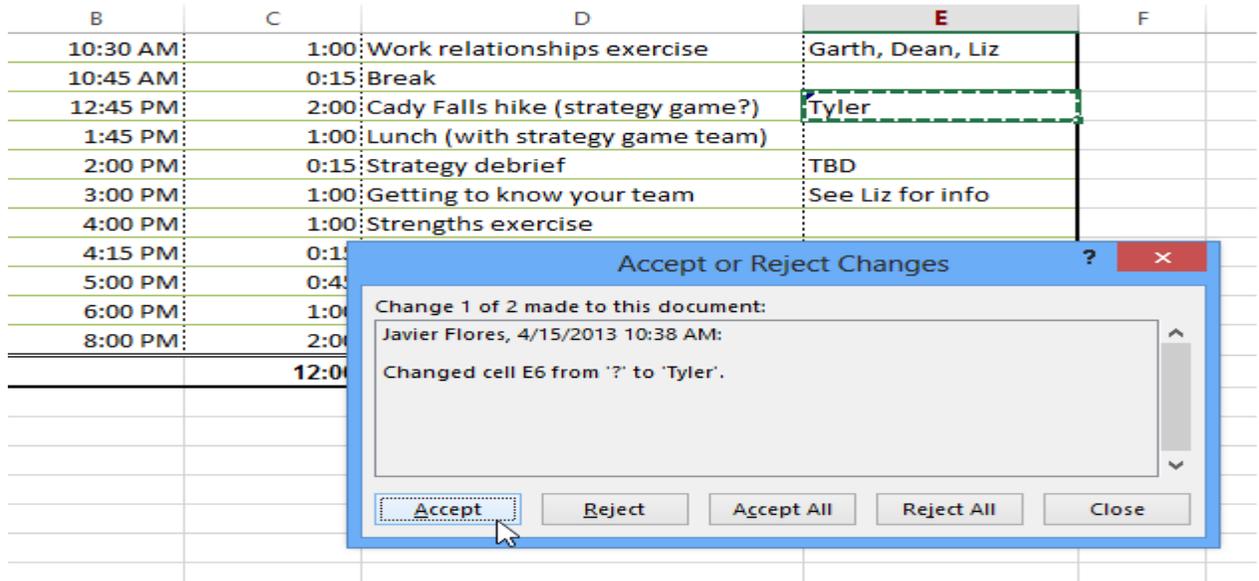
- If prompted, click **OK** to save your workbook.
- A dialog box will appear. Make sure the box next to the **When:** field is checked and set to **Not yet reviewed**, then click **OK**.

## Microsoft Office Excel 2013 Training Manual



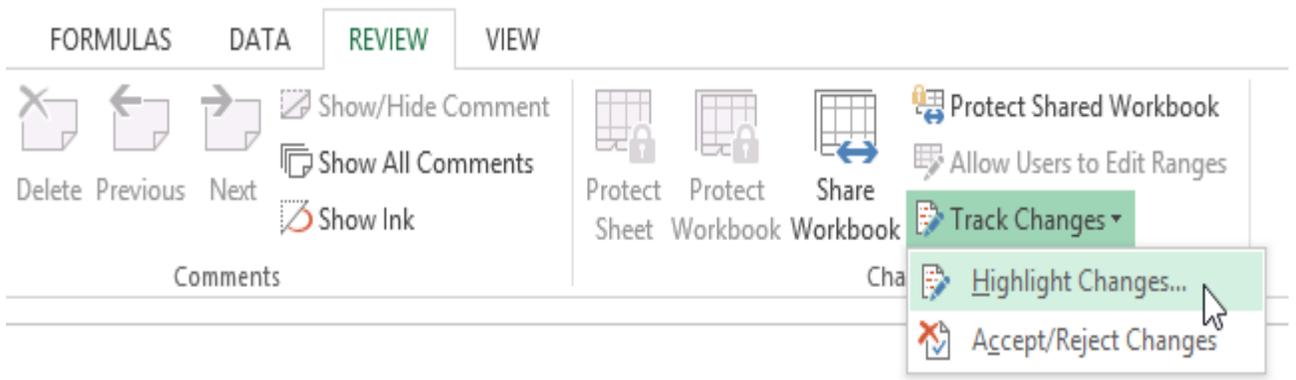
*Clicking OK*

4. A dialog box will appear. Click **Accept** or **Reject** for each change in the workbook. Excel will move through each change automatically until you have reviewed them all.



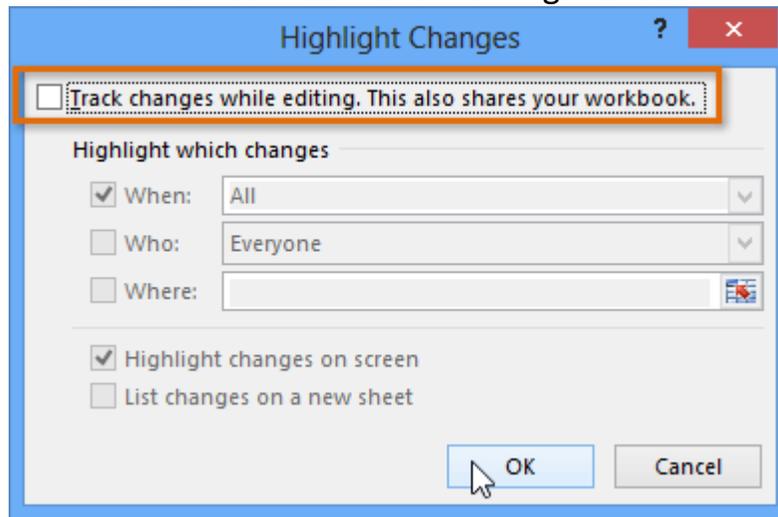
*Accepting a change*

5. Even after accepting or rejecting changes, the tracked changes will still appear in your workbook. To remove them completely, you'll need to **turn off** Track Changes. From the **Review** tab, click **Track Changes** and then select **Highlight Changes...** from the drop-down menu.



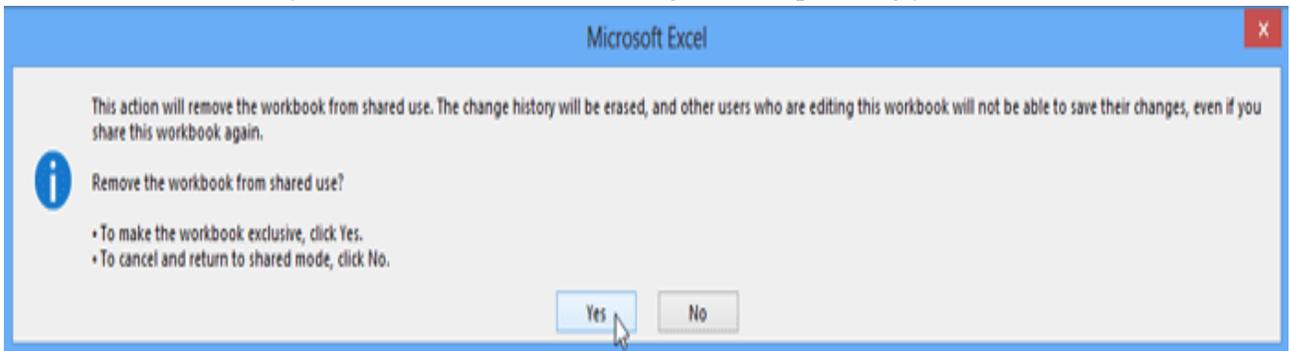
*Clicking Highlight Changes...*

6. A dialog box will appear. Uncheck the box next to **Track changes while editing**, then click **OK**.



*Turning off Track Changes*

7. Click **Yes** to confirm that you want to turn off Track Changes and stop sharing your workbook.



*Confirming that Track Changes will be turned off*

To accept or reject all the changes at once, click **Accept All** or **Reject All** in the Accept or Reject Changes dialog box.

Turning off Track Changes will remove any tracked changes in your workbook. You will not be able to view, accept, or reject changes; instead, all changes will all be accepted **automatically**. Always review the changes in your worksheet before turning off Track Changes.

### 4.1.6 Comments

Sometimes, you may want to add a **comment** to provide feedback instead of editing the contents of a cell. While often used in combination with Track Changes, you don't necessarily need to have Track Changes turned on to use comments.

#### 4.1.6.1 Adding a Comment

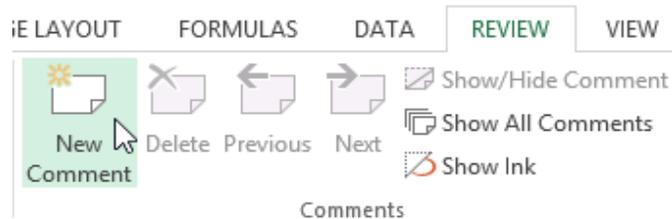
1. Select the **cell** where you want the comment to appear. In our example, we'll select cell **E8**.

## Microsoft Office Excel 2013 Training Manual

	A	B	C	D	E	F
1	Start	End	Time	Item	Facilitator	
2	8:00 AM	9:00 AM	1:00	Breakfast, welcome	Exec team	
3	9:00 AM	9:30 AM	0:30	Introduction	Garth	
4	9:30 AM	10:30 AM	1:00	Work relationships exercise	Garth, Dean, Liz	
5	10:30 AM	10:45 AM	0:15	Break		
6	10:45 AM	12:45 PM	2:00	Cady Falls hike (strategy game?)	Tyler	
7	12:45 PM	1:45 PM	1:00	Lunch (with strategy game team)		
8	1:45 PM	2:00 PM	0:15	Strategy debrief	TBD	
9	2:00 PM	3:00 PM	1:00	Getting to know your team	See Liz for info	
10	3:00 PM	4:00 PM	1:00	Strengths exercise		
11	4:00 PM	4:15 PM	0:15	Break		
12	4:15 PM	5:00 PM	0:45	Redwoods hike	Dean	
13	5:00 PM	6:00 PM	1:00	Team building exercise	Garth, exec team	
14	6:00 PM	8:00 PM	2:00	Dinner		
15	Total		12:00			

*Selecting cell E8*

- From the **Review** tab, click the **New Comment** command.



*Clicking the New Comment command*

- A **comment box** will appear. Type your comment, then click anywhere outside the box to close the comment.

C	D	E	F	G	H
Time	Item	Facilitator			
1:00	Breakfast, welcome	Exec team			
0:30	Introduction	Garth			
1:00	Work relationships exercise	Garth, Dean, Liz			
0:15	Break				
2:00	Cady Falls hike (strategy game?)	Tyler			
1:00	Lunch (with strategy game team)				
0:15	Strategy debrief	TBD			
1:00	Getting to know your team	See Liz for info			
1:00	Strengths exercise				
0:15	Break				
0:45	Redwoods hike	Dean			
1:00	Team building exercise	Garth, exec team			
2:00	Dinner				
12:00					

*Adding a comment*

- The comment will be added to the cell, represented by the **red triangle** in the top-right corner.

# Microsoft Office Excel 2013 Training Manual

	A	B	C	D	E	F
1	Start	End	Time	Item	Facilitator	
2	8:00 AM	9:00 AM	1:00	Breakfast, welcome	Exec team	
3	9:00 AM	9:30 AM	0:30	Introduction	Garth	
4	9:30 AM	10:30 AM	1:00	Work relationships exercise	Garth, Dean, Liz	
5	10:30 AM	10:45 AM	0:15	Break		
6	10:45 AM	12:45 PM	2:00	Cady Falls hike	Tyler	
7	12:45 PM	1:45 PM	1:00	Lunch (with strategy game team)		
8	1:45 PM	2:00 PM	0:15	Strategy debrief	TBD	
9	2:00 PM	3:00 PM	1:00	Getting to know your team	See Liz for info	
10	3:00 PM	4:00 PM	1:00	Strengths exercise		
11	4:00 PM	4:15 PM	0:15	Break		
12	4:15 PM	5:00 PM	0:45	Redwoods hike	Dean	
13	5:00 PM	6:00 PM	1:00	Team building exercise	Garth, exec team	
14	6:00 PM	8:00 PM	2:00	Dinner		
15	Total		12:00			

The added comment

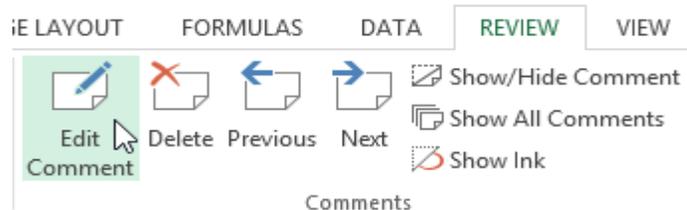
5. Select the cell again to view the comment.

C	D	E	F	G	H
Time	Item	Facilitator			
1:00	Breakfast, welcome	Exec team			
0:30	Introduction	Garth			
1:00	Work relationships exercise	Garth, Dean, Liz			
0:15	Break				
2:00	Cady Falls hike (strategy game?)	Tyler			
1:00	Lunch (with strategy game team)				
0:15	Strategy debrief	TBD			
1:00	Getting to know your team	See Liz for info			
1:00	Strengths exercise				
0:15	Break				
0:45	Redwoods hike	Dean			
1:00	Team building exercise	Garth, exec team			
2:00	Dinner				
12:00					

Selecting a cell to view a comment

## 4.1.6.2 Editing a Comment

1. Select the cell containing the comment you wish to edit.
2. From the **Review** tab, click the **Edit Comment** command.



# Microsoft Office Excel 2013 Training Manual

## *Clicking the Edit Comment command*

3. The **comment box** will appear. Edit the comment as desired, then click anywhere outside the box to close the comment.

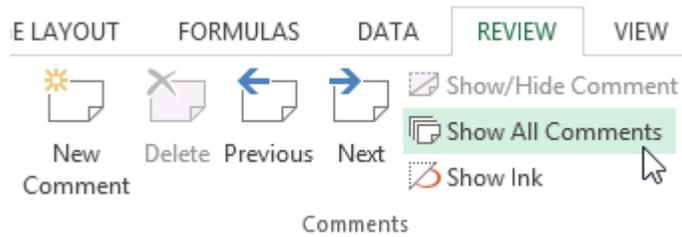
Time	Item	Facilitator			
1:00	Breakfast, welcome	Exec team			
0:30	Introduction	Garth			
1:00	Work relationships exercise	Garth, Dean, Liz			
0:15	Break				
2:00	Cady Falls hike (strategy game?)	Tyler			
1:00	Lunch (with strategy game team)				
0:15	Strategy debrief	TBD			
1:00	Getting to know your team	See Liz for info			
1:00	Strengths exercise				
0:15	Break				
0:45	Redwoods hike	Dean			
1:00	Team building exercise	Garth, exec team			
2:00	Dinner				
12:00					

**Javier Flores:**  
Julia might be willing to lead this activity...  
**Julia Fillory:** Sure, I'd be glad to!

*Editing a comment*

### 4.1.6.3 Showing or Hiding Comments

1. From the **Review** tab, click the **Show All Comments** command to view every comment in your worksheet at the same time.



*Clicking the Show All Comments command*

2. All comments in the worksheet will appear. Click the **Show All Comments** command again to hide them.

## Microsoft Office Excel 2013 Training Manual

	D	E	F	G	H
Item		Facilitator			
Breakfast, welcome		Exec team			
Introduction		Garth			
Work relationships exercise		Garth, Dean, Liz			
Break					
Cady Falls hike (strategy game?)		Javier Flores			
Lunch (with strategy game team)		Javier Flores		Javier Flores: Julia might be willing to lead this activity...	
Strategy debrief		Julia Fillory		Julia Fillory: Sure, I'd be glad to!	
Getting to know your team		Seamus			
Strengths exercise					
Break/snack					
Redwoods hike		Dean			
Team building exercise		Garth			
Dinner					

*Viewing all comments at the same time*

You can also choose to show and hide individual comments by selecting the desired cell and then clicking the **Show/Hide Comment** command.

The screenshot shows the **REVIEW** ribbon in Microsoft Excel 2013. The **Comments** group contains the **Show/Hide Comment** button, which is highlighted. Other buttons in the group include **Edit Comment**, **Delete Comment**, **Previous Comment**, **Next Comment**, **Show All Comments**, and **Show Ink**. Below the ribbon, the spreadsheet is visible with the **Lunch (with strategy game team)** cell selected. A comment box for **Javier Flores** is displayed over this cell, containing the text: "I think the game during the hike will be enough--we don't need two back-to-back".

	C	D	E
Item		Facilitator	
1:00: Breakfast, welcome		Exec team	
0:30: Introduction		Garth	
1:00: Work relationships exercise		Garth, Dean, Liz	
0:15: Break			
2:00: Cady Falls hike (strategy game?)		Javier Flores	
1:00: Lunch (with strategy game team)		Javier Flores	
0:15: Strategy debrief		Julia Fillory	
1:00: Getting to know your team		Seamus	
1:00: Strengths exercise			
0:15: Break/snack			
0:45: Redwoods hike		Dean	
1:00: Team building exercise		Garth, exec team	
2:00: Dinner			
12:00			

*Showing and hiding individual comments*

4.1.6.4 Deleting a Comment

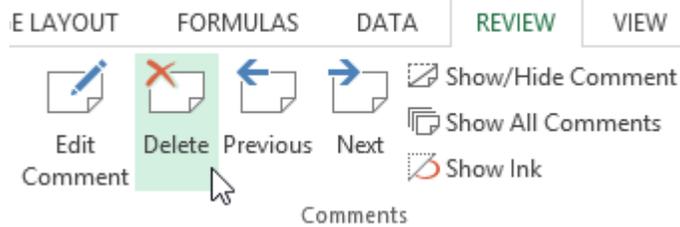
1. Select the **cell** containing the comment you wish to delete. In our example, we'll select cell **E8**.

C	D	E	F	G	H
<b>Time</b>	<b>Item</b>	<b>Facilitator</b>			
1:00	Breakfast, welcome	Exec team			
0:30	Introduction	Garth			
1:00	Work relationships exercise	Garth, Dean, Liz			
0:15	Break				
2:00	Cady Falls hike (strategy game?)	Tyler			
1:00	Lunch (with strategy game team)				
0:15	Strategy debrief	Julia			
1:00	Getting to know your team	See Liz for info			
1:00	Strengths exercise				
0:15	Break				
0:45	Redwoods hike	Dean			
1:00	Team building exercise	Garth, exec team			
2:00	Dinner				
<b>12:00</b>					

**Javier Flores:**  
Julia might be willing to lead this activity...  
**Julia Fillory:** Sure, I'd be glad to!

Selecting cell E8

2. From the **Review** tab, click the **Delete** command in the **Comments** group.



Clicking the Delete command

3. The comment will be deleted.

C	D	E	F
<b>Time</b>	<b>Item</b>	<b>Facilitator</b>	
1:00	Breakfast, welcome	Exec team	
0:30	Introduction	Garth	
1:00	Work relationships exercise	Garth, Dean, Liz	
0:15	Break		
2:00	Cady Falls hike (strategy game?)	Tyler	
1:00	Lunch (with strategy game team)		
0:15	Strategy debrief	Julia	
1:00	Getting to know your team	See Liz for info	
1:00	Strengths exercise		
0:15	Break		
0:45	Redwoods hike	Dean	
1:00	Team building exercise	Garth, exec team	
2:00	Dinner		
<b>12:00</b>			

## Exercise 4.1

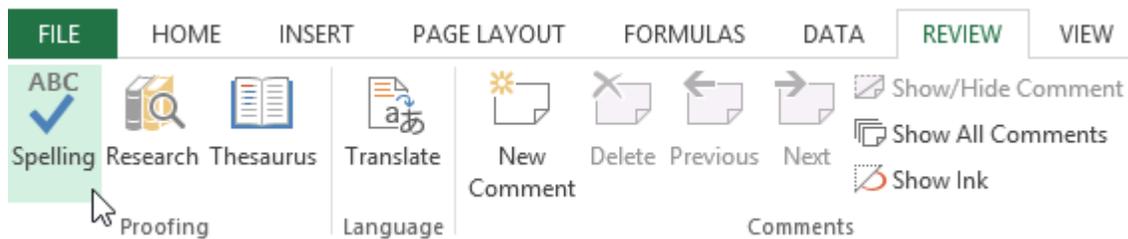
1. Open an existing Excel workbook.
2. Turn on **Track Changes**.
3. Delete, add, or edit the text in several cells. Notice how the edited cells are **highlighted**.
4. **Accept** all of the tracked changes and then **turn off** Track Changes.
5. Add a few **comments** to different cells in your worksheet.
6. Show all of the comments, then hide them.

## 4.2 Finalizing and Protecting Workbooks

Before sharing a workbook, you'll want to make sure that it doesn't include any spelling errors or information that you wish to keep private. Fortunately, Excel includes several tools to help **finalize** and **protect** your workbook, such as **Spell Check** and the **Document Inspector**.

### 4.2.1 Using Spell Check

1. From the **Review** tab, click the **Spelling** command.

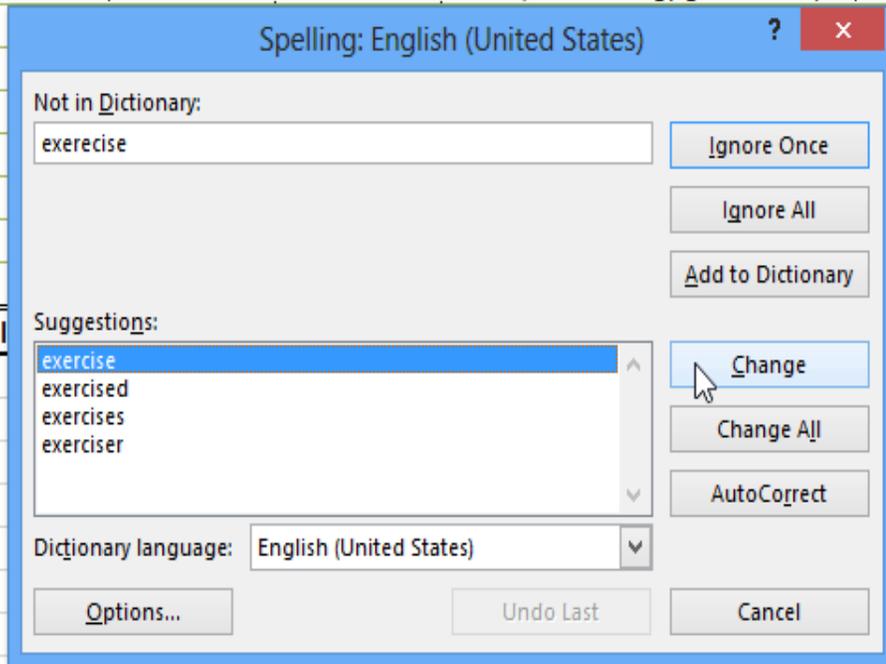


*Clicking the*

*Spelling command*

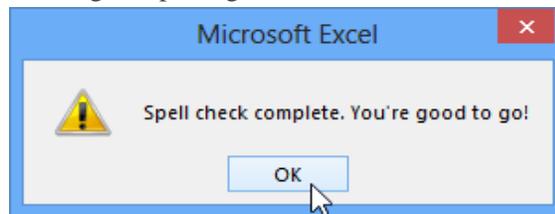
2. The **Spelling** dialog box will appear. For each spelling error in your worksheet, Spell Check will try to offer **suggestions** for the correct spelling. Choose a suggestion and then click **Change** to correct the error.

6	Start	End	Time	Item	Facilitator
7	8:00 AM	9:00 AM	1:00	Breakfast, welcome	Exec team
8	9:00 AM	9:30 AM	0:30	Introduction	Garth
9	9:30 AM	10:30 AM	1:00	Work relationships exercise	Garth, Dean, Liz
10	10:30 AM	10:45 AM	0:15	Break	
11	10:45 AM	12:45 PM	2:00	Cady Falls hike (stratgy game?)	Tyler
12	12:45 PM	1:45 PM	1:00	Lunch (with strategy game team)	



*Using Spell Check to correct spelling errors*

3. A dialog box will appear after reviewing all spelling errors. Click **OK** to close Spell Check.



*Closing Spell Check*

If there are no appropriate suggestions, you can also enter the correct spelling manually.

### 4.2.2 Ignoring Spelling "Errors"

Spell Check **isn't always correct**. It will sometimes mark certain words as incorrect, even if they're 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:

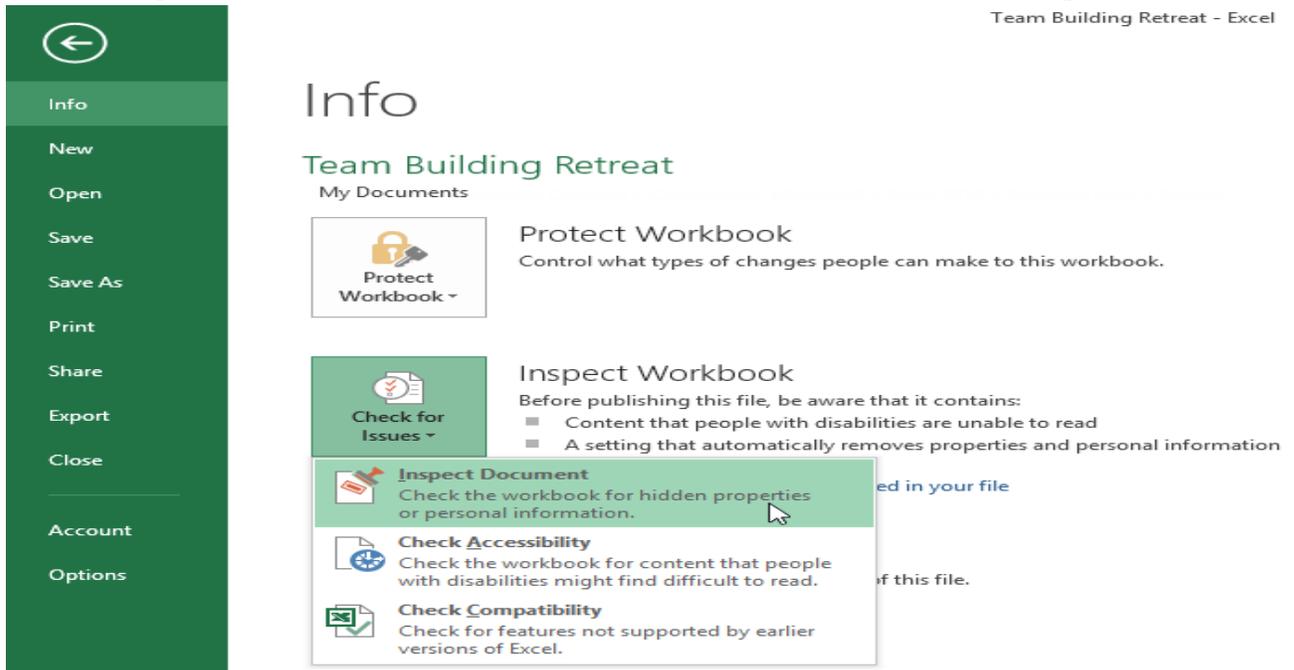
- **Ignore Once:** This will skip the word without changing it.
- **Ignore All:** This will skip the word without changing it and also skip all other instances of the word in your worksheet.
- **Add:** This adds the word to the dictionary so it will never appear as an error again. Make sure the word is spelled correctly before choosing this option.

### 4.2.3 Document Inspector

Whenever you create or edit a workbook, certain **personal information** may be added to the file automatically. You can use the Document Inspector to remove this kind of information before sharing a workbook with others. Because some changes may be permanent, it's a good idea to save an additional copy of your workbook before using the Document Inspector to remove information.

#### To Use the Document Inspector:

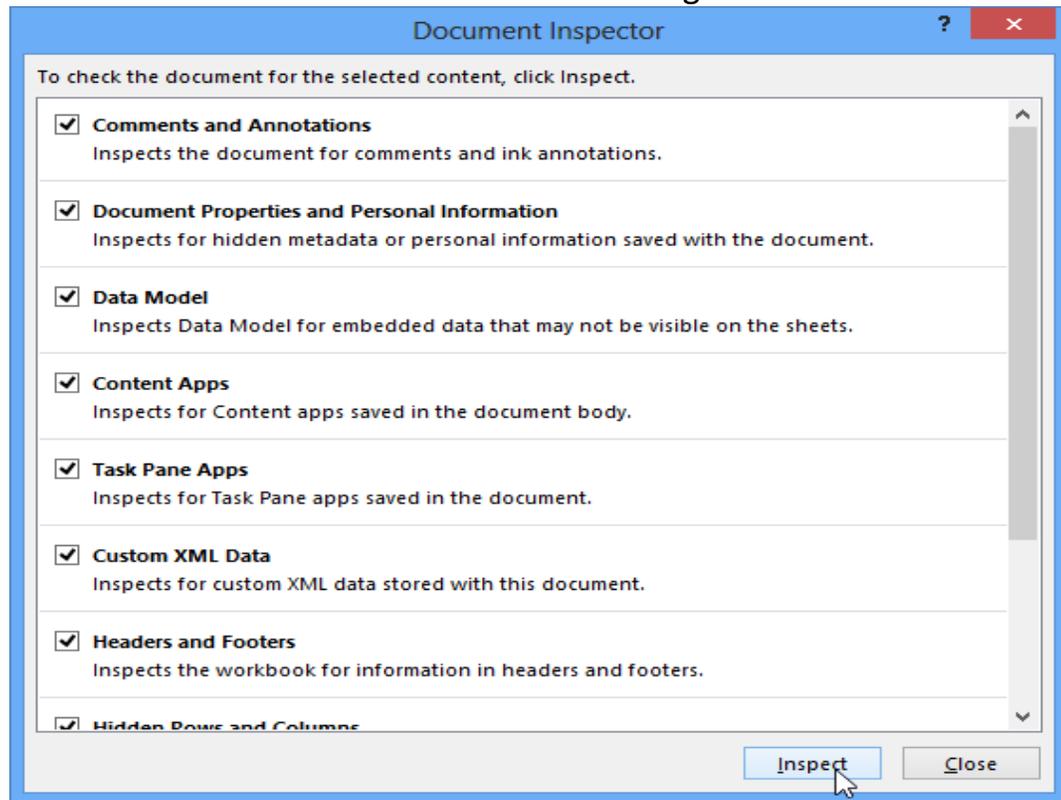
1. Click the **File** tab to access **Backstage view**.
2. From the **Info** pane, click **Check for Issues** and then select **Inspect Document** from the drop-down menu.



#### *Clicking Inspect Document*

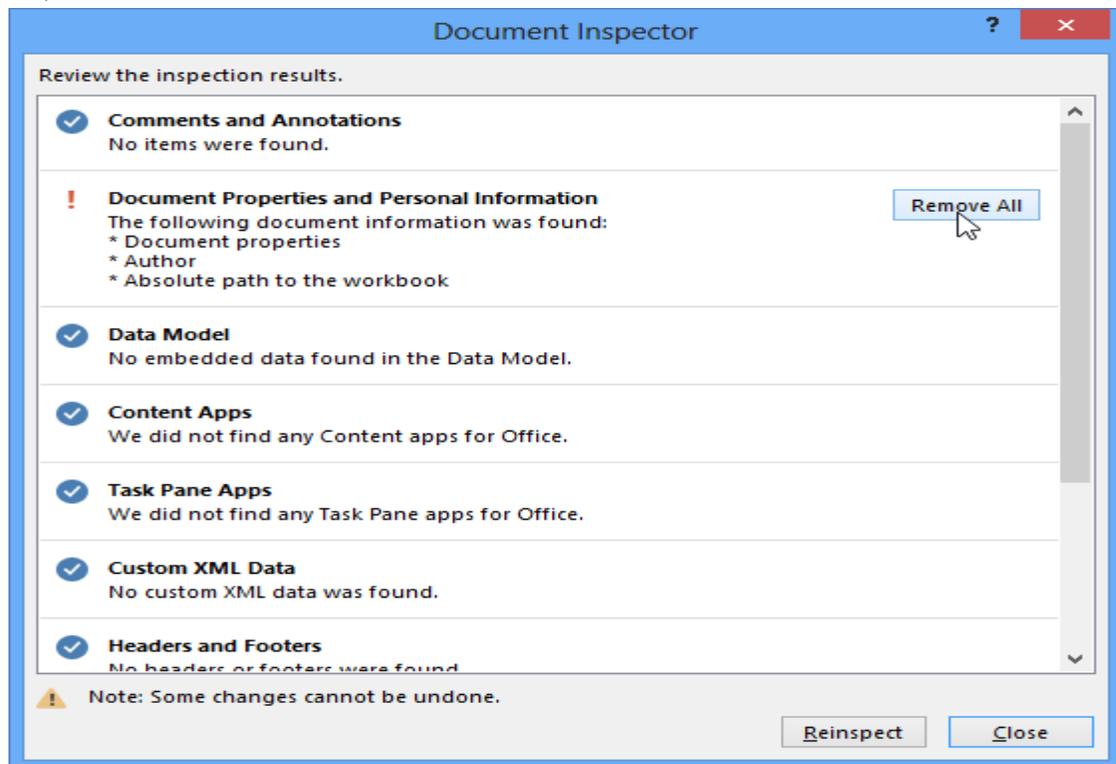
3. The **Document Inspector** will appear. Check or uncheck the boxes, depending on the content you wish to review, then click **Inspect**. In our example, we'll leave everything selected.

## Microsoft Office Excel 2013 Training Manual



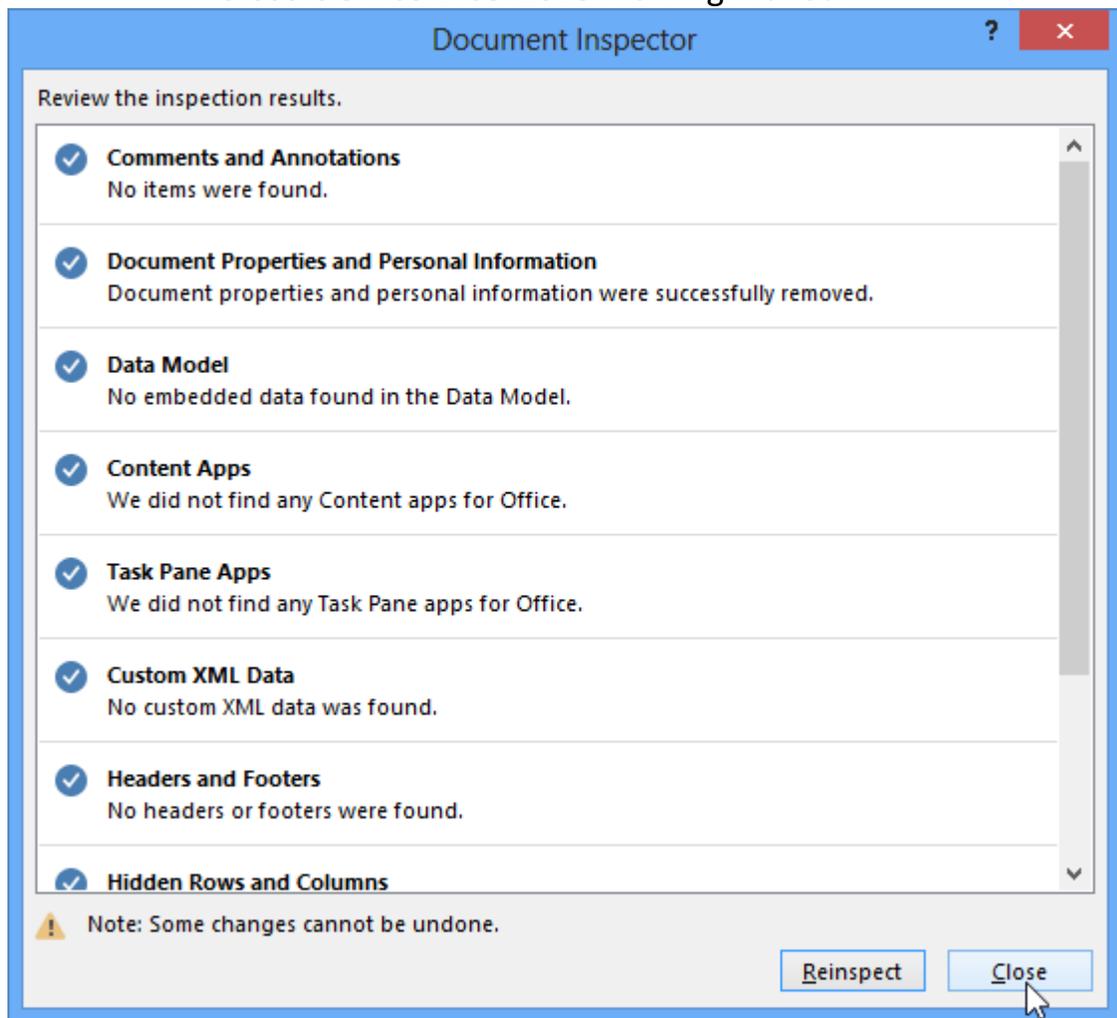
### *Inspecting the workbook*

4. The **inspection results** will appear. In our example, we can see our workbook contains some personal information, so we'll click **Remove All** to remove that information from the workbook.



### *Removing personal information from the workbook*

5. When you're done, click **Close**.



*Closing the Document Inspector*

## 4.2.4 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'll 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.



# Info

## Team Building Retreat

My Documents



### Protect Workbook

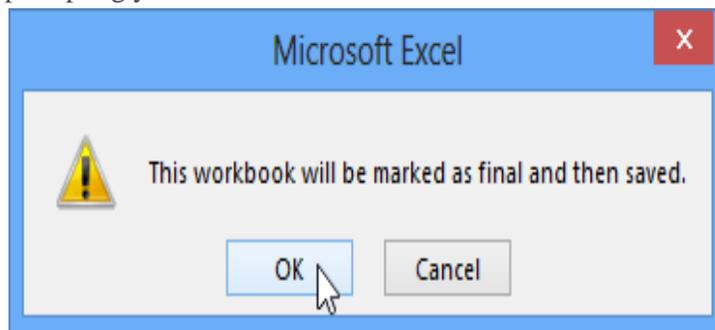
Control what types of changes people can make to this workbook.

- 
**Mark as Final**  
 Let readers know the workbook is final and make it read-only.
- 
**Encrypt with Password**  
 Require a password to open this workbook.
- 
**Protect Current Sheet**  
 Control what types of changes people can make to the current sheet.
- 
**Protect Workbook Structure**  
 Prevent unwanted changes to the structure of the workbook, such as adding sheets.
- 
**Restrict Access**  
 Grant people access while removing their ability to edit, copy, or print.
- 
**Add a Digital Signature**  
 Ensure the integrity of the workbook by adding an invisible digital signature.

Browser View Options

*Selecting Mark as Final*

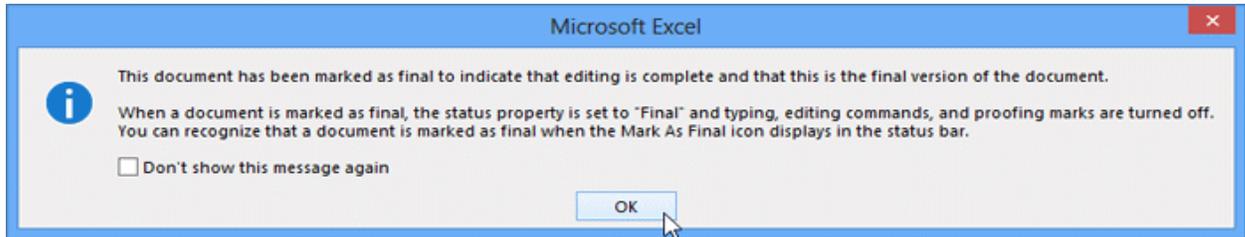
4. A dialog box will appear prompting you to save. Click **OK**.



*Clicking OK to save the workbook*

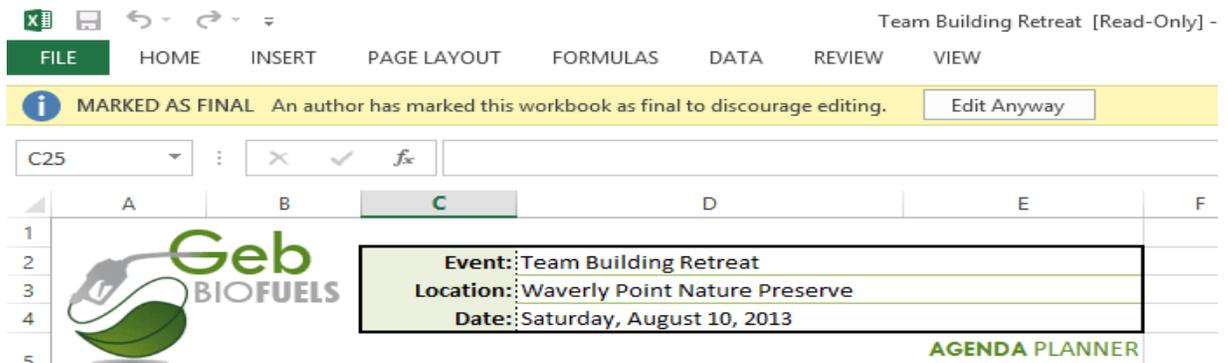
# Microsoft Office Excel 2013 Training Manual

- Another dialog box will appear. Click **OK**.



*Clicking OK*

- The workbook will be marked as final.



*A workbook 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.

## Exercise 4.2

- Open an existing Excel workbook.
- Run the **Spell Check** to correct any spelling errors in the workbook.
- Use the **Document Inspector** to check the workbook. If you are using the example, remove all personal information from the workbook.
- Protect** the workbook by marking it as final.

## 4.3 Conditional Formatting

Imagine that 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.

### 4.3.1 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'll need to create a **conditional formatting rule**. For example, a conditional formatting rule might be: "**If the value is less than \$2,000, color the cell red.**" By applying this rule, you'd be able to quickly see which cells contain values under \$2,000.

## Microsoft Office Excel 2013 Training Manual

	A	B	C	D	E
1	<b>Salesperson</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>
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

*Conditional formatting marking values less than \$2000*

### 4.3.2 Creating a Conditional Formatting Rule

In our example, we have a worksheet containing sales data and we'd like to see which salespeople are meeting their monthly sales goals. The sales goal is \$4,000 per month, so we'll create a conditional formatting rule for any cells containing a value higher than 4000.

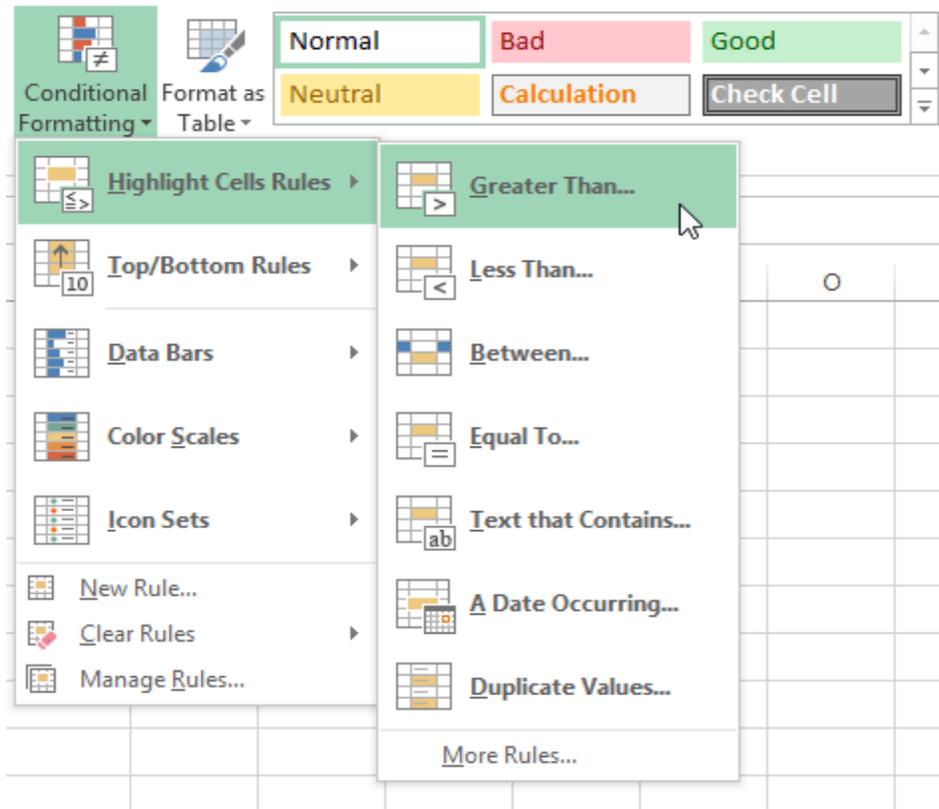
1. Select the **desired cells** for the conditional formatting rule.

	A	B	C	D	E
1	<b>Salesperson</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>
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

*Selecting the desired cells*

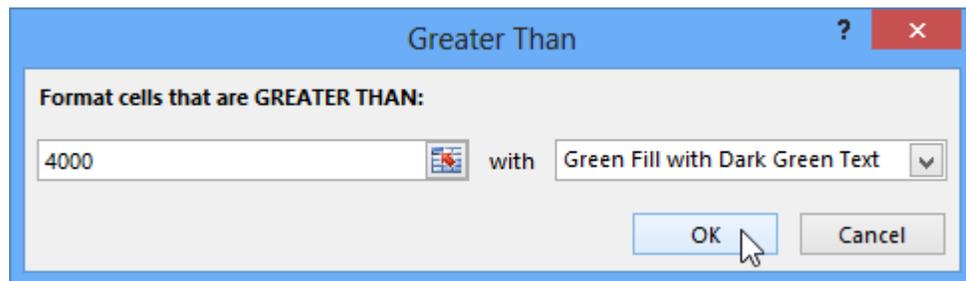
2. From the **Home** tab, click the **Conditional Formatting** command. A drop-down menu will appear.
3. Hover the mouse over the desired **conditional formatting type** and then select the **desired rule** from the menu that appears. In our example, we want to **highlight cells** that are **greater than** \$4,000.

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### *Selecting a conditional formatting rule*

4. A dialog box will appear. Enter the **desired value(s)** into the blank field. In our example, we'll enter 4000 as our value.
5. Select a **formatting style** from the drop-down menu. In our example, we'll choose **Green Fill with Dark Green Text**, then click **OK**.



### *Creating a conditional formatting rule*

6. The conditional formatting will be applied to the selected cells. In our example, it's easy to see which salespeople reached the \$4,000 sales goal for each month.

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	A	B	C	D	E
1	<b>Salesperson</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>
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

*Conditional formatting applied to the data*

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

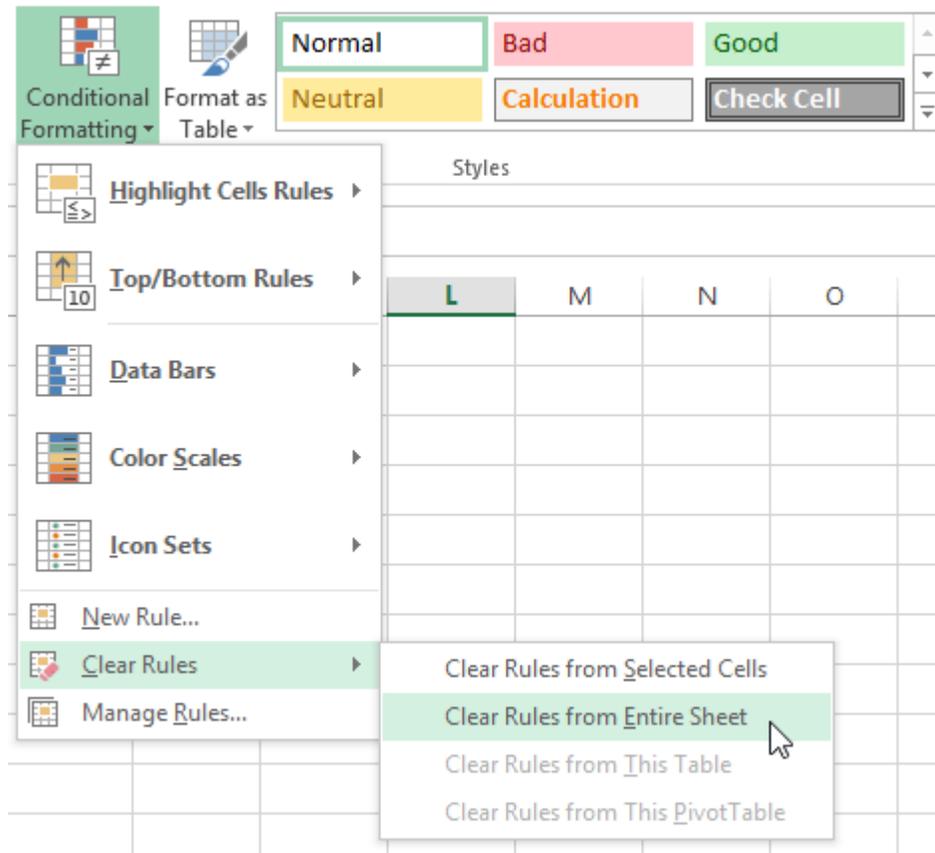
	A	B	C	D	E
1	<b>Salesperson</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>
2	Albertson, Kathy	\$3,947.00	\$557.00	\$3,863.00	\$1,117.00
3	Allenson, Carol	\$4,411.00	\$1,042.00	\$9,355.00	\$1,100.00
4	Altman, Zoey	\$2,521.00	\$3,072.00	\$6,702.00	\$2,116.00
5	Bittiman, William	\$4,752.00	\$3,755.00	\$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

*A worksheet with multiple conditional formatting rules*

### 4.3.3 Removing 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 wish to clear. In our example, we'll select **Clear Rules from Entire Sheet** to remove all conditional formatting from the worksheet.

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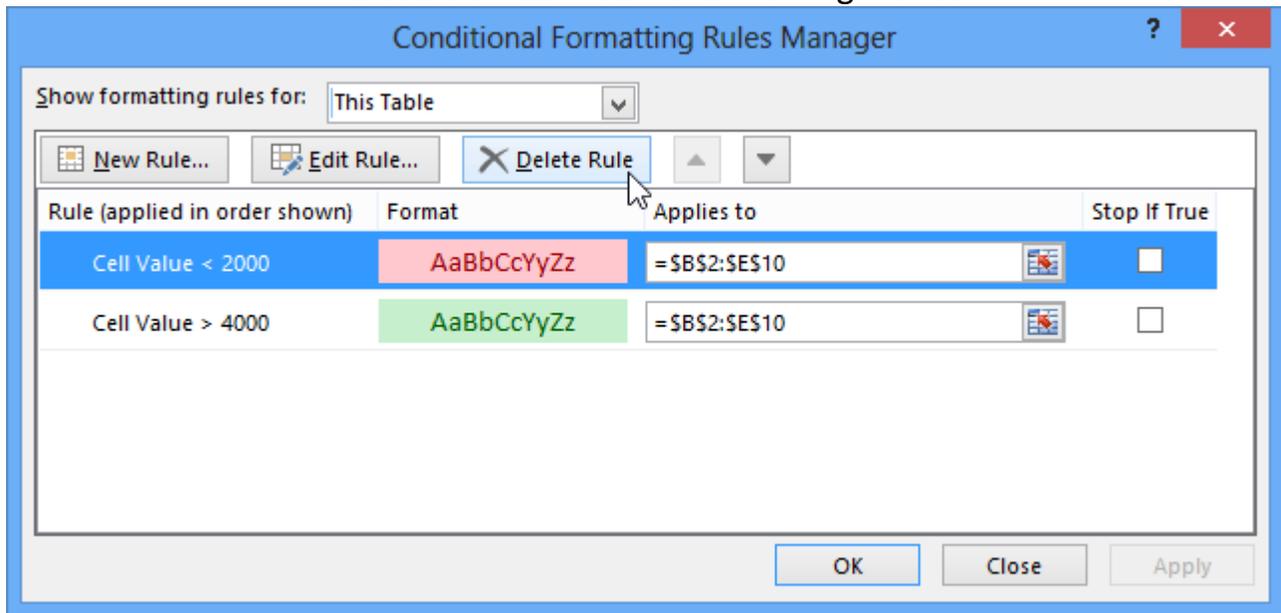
### *Removing conditional formatting rules*

- The conditional formatting will be removed.

	A	B	C	D	E
1	<b>Salesperson</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>
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

### *The conditional formatting removed from the worksheet*

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



*Deleting an individual rule*

### 4.3.4 Conditional Formatting Presets

Excel has a number of pre-defined styles, or **presets**, that 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

*Data Bars*

- **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, **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

*Color Scales*

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

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↓ \$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

### 4.3. 5 Using Preset Conditional Formatting

1. Select the **desired cells** for the conditional formatting rule.

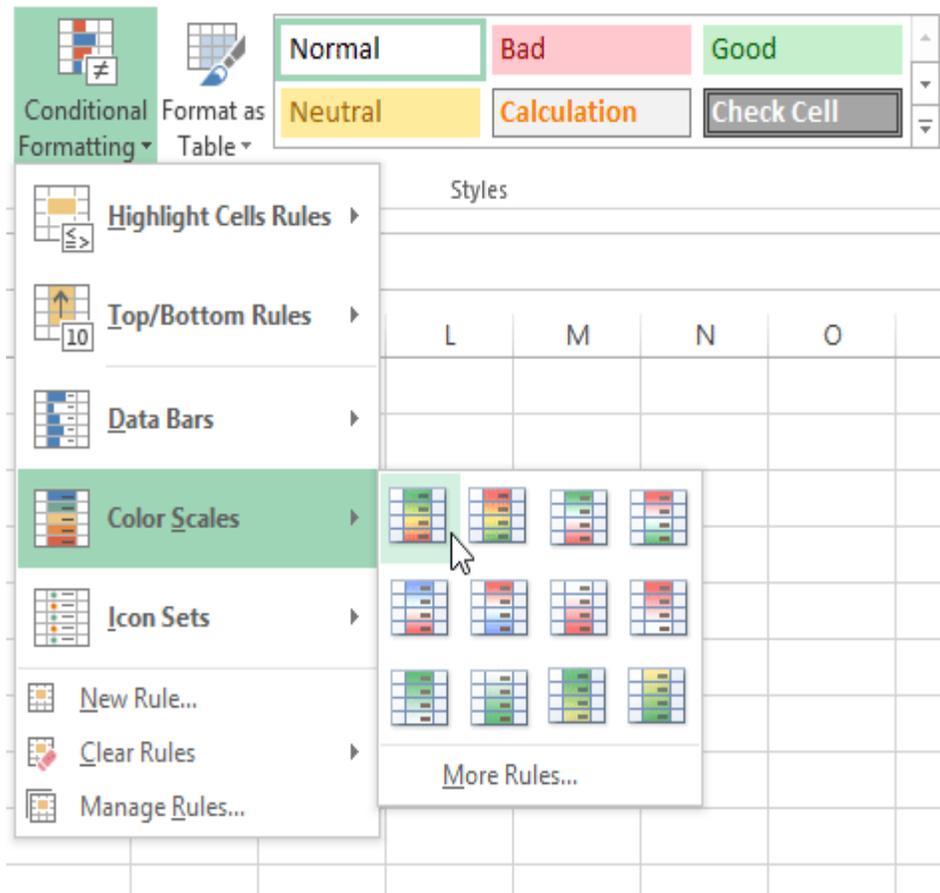
	A	B	C	D	E
1	<b>Salesperson</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>
2	Albertson, Kathy	\$3,947.00	\$557.00	\$3,863.00	\$1,117.00
3	Allenson, Carol	\$4,411.00	\$1,042.00	\$9,355.00	\$1,100.00
4	Altman, Zoey	\$2,521.00	\$3,072.00	\$6,702.00	\$2,116.00
5	Bittiman, William	\$4,752.00	\$3,755.00	\$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

Selecting

the desired cells

2. Click the **Conditional Formatting** command. A drop-down menu will appear.
3. Hover the mouse over the **desired preset** and then choose a **preset style** from the menu that appears.

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### *Applying a preset conditional formatting rule*

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

	A	B	C	D	E
1	<b>Salesperson</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>
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

### *The applied conditional formatting preset*

### Exercise 4.3

1. Open an **existing Excel workbook**.
2. Apply conditional formatting to a range of cells with **numerical values**. If you are using the example, apply a rule for the sales data (cells B3:G23) that will fill cells with green if their values are over \$9,000.
3. Apply a second conditional formatting rule to the same set of cells. If you are using the example, apply a **preset** conditional formatting rule.
4. Clear all conditional formatting rules from the worksheet.

## 4.4 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.

### 4.4.1 Using PivotTables to Answer Questions

Suppose 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 very 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	<b>Salesperson</b>	<b>Region</b>	<b>Account</b>	<b>Order Amount</b>	<b>Month</b>	
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	

*A worksheet containing sales data*

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

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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
<b>Grand Total</b>	<b>\$23,565.00</b>

*A completed PivotTable*

Once you've 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
<b>Grand Total</b>	<b>\$23,565.00</b>

*Pivoting data to answer different questions*

### 4.4.2 Create a PivotTable

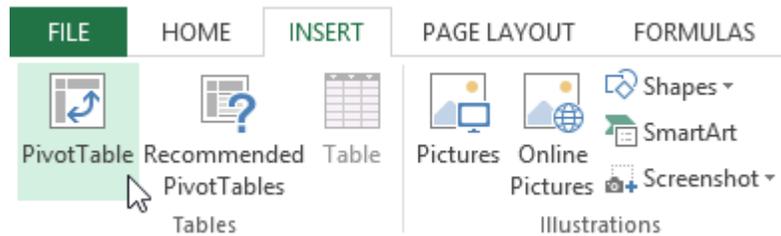
1. Select the **table** or **cells** (including column headers) containing the data you want to use.

	A	B	C	D	E	F
1	<b>Salesperson</b>	<b>Region</b>	<b>Account</b>	<b>Order Amount</b>	<b>Month</b>	
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	

*Selecting cells for a PivotTable*

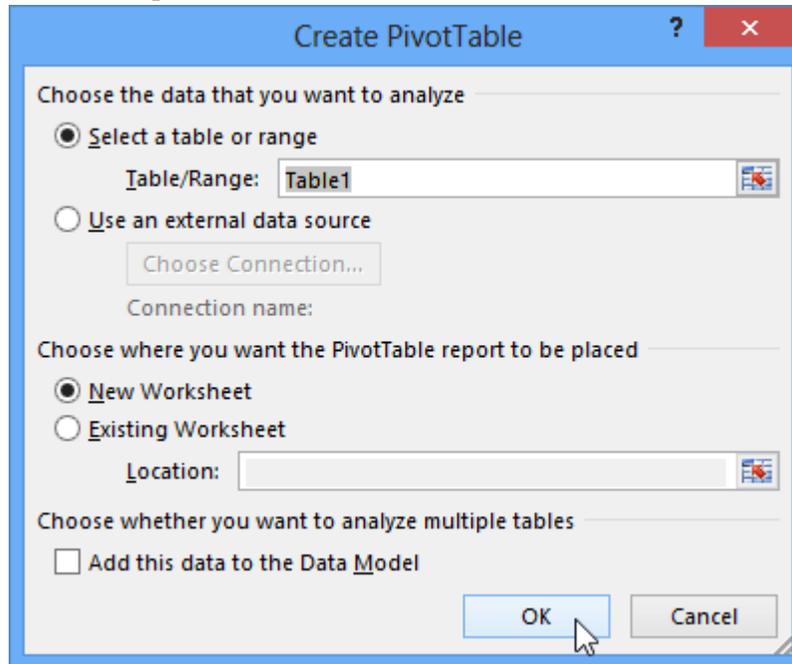
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- From the **Insert** tab, click the **PivotTable** command.



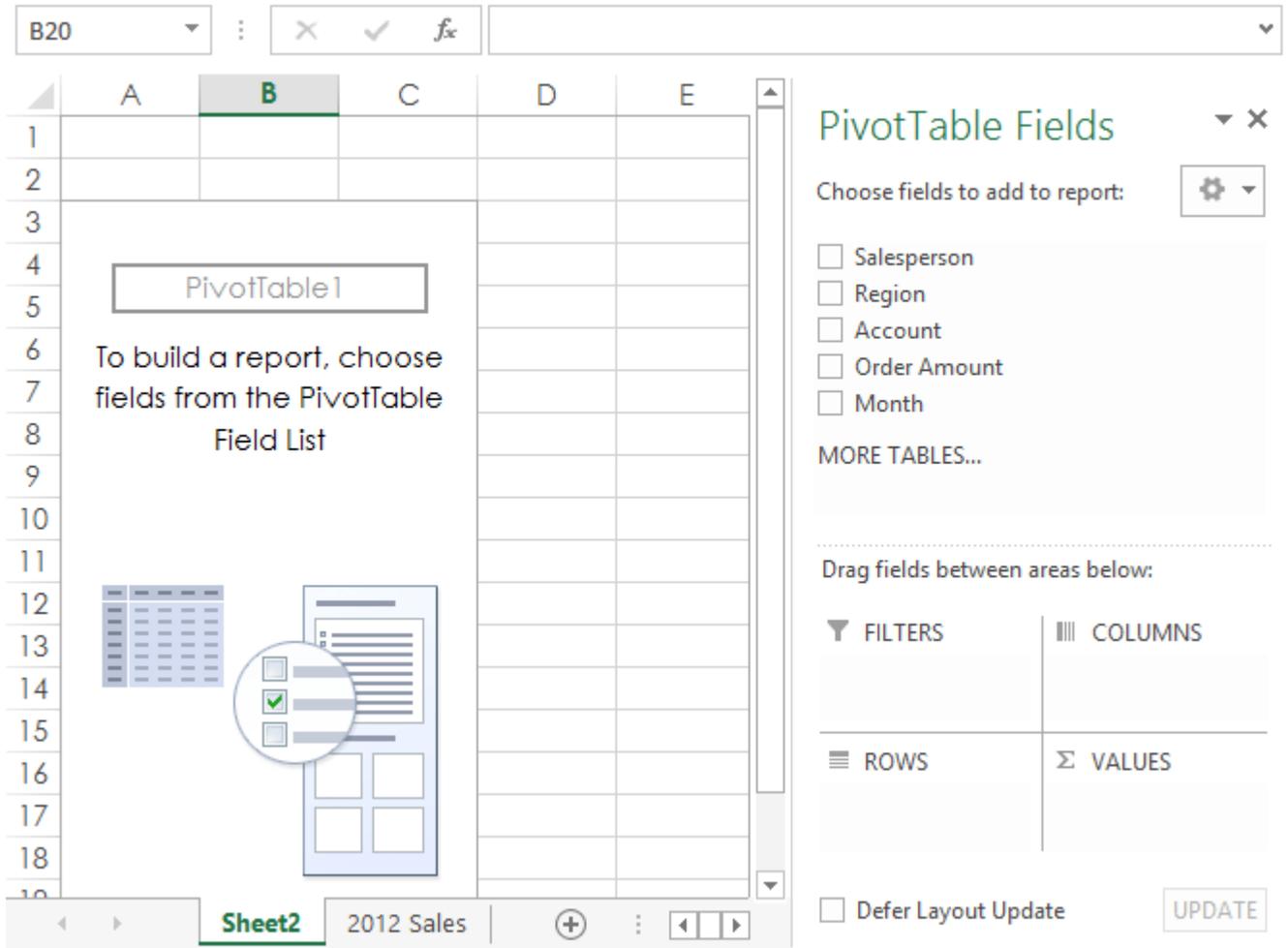
### *Clicking the PivotTable command*

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



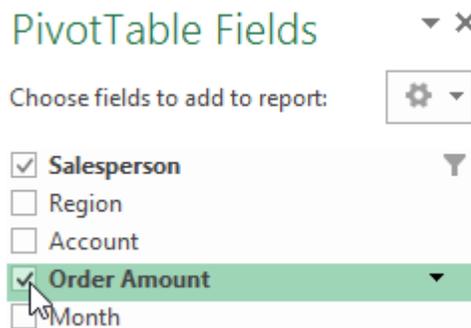
### *Creating a PivotTable*

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



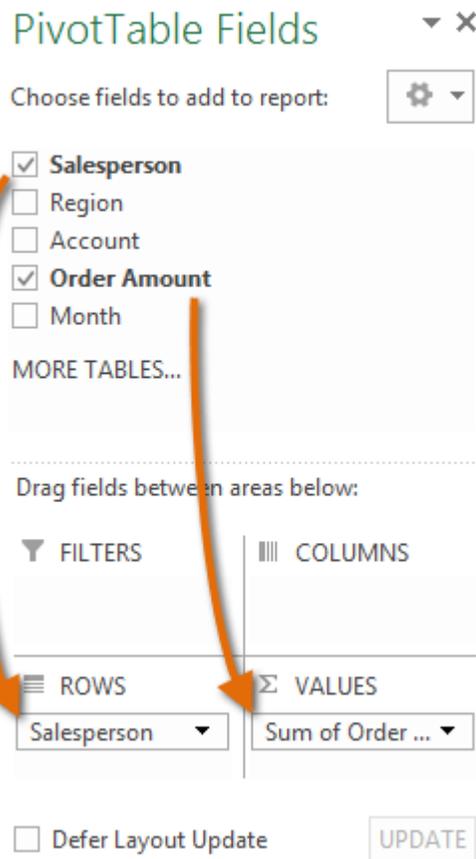
*A blank PivotTable on its own worksheet*

- Once you create a PivotTable, you'll 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 wish to add. In our example, we want to know the total **amount** sold by each **salesperson**, so we'll check the **Salesperson** and **Order Amount** fields.



*Checking the desired fields*

- 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.



*Adding fields to the PivotTable*

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

Row Labels	Sum of Order Amount
Albertson, Kathy	2650
Brennan, Michael	3700
Davis, William	1935
Dumlao, Richard	1490
Flores, Tia	4565
Post, Melissa	1690
Thompson, Shannon	3160
Walters, Chris	4375
<b>Grand Total</b>	<b>23565</b>

**Total amount sold by each salesperson**

**PivotTable Fields**

Choose fields to add to report:

- Salesperson
- Region
- Account
- Order Amount
- Month

MORE TABLES...

Drag fields between areas below:

FILTERS	COLUMNS
ROWS	VALUES
Salesperson	Sum of Order ...

Defer Layout Update UPDATE

*The PivotTable calculating the selecting fields*

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** that 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
<b>Grand Total</b>	<b>\$23,565.00</b>

*A sorted and formatted PivotTable*

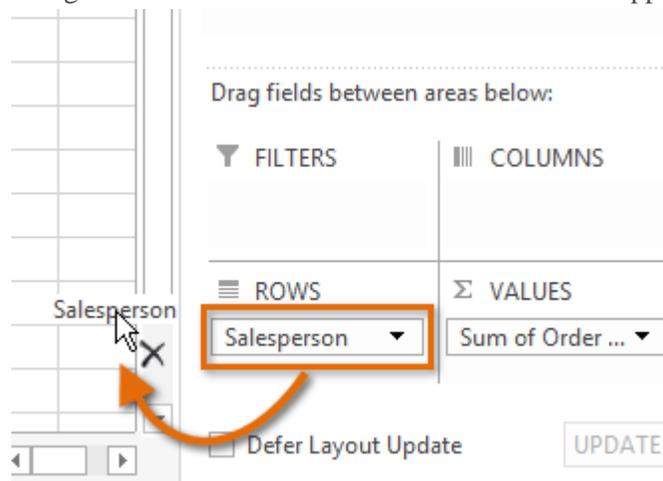
### 4.4. 3 Pivoting Data

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'd 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.

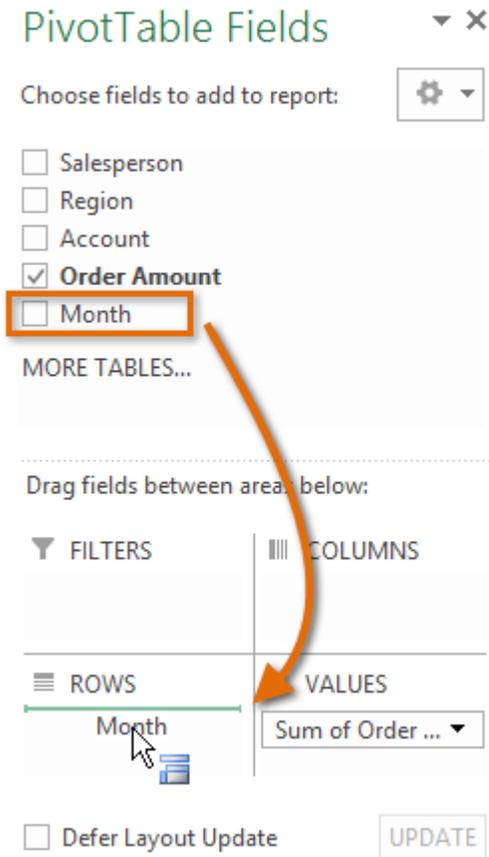
#### 4.4. 3.1 Changing Rows

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



*Removing a field*

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



*Adding a 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.

Row Labels	Sum of Order Amount
January	9090
February	9160
March	5315
<b>Grand Total</b>	<b>23565</b>

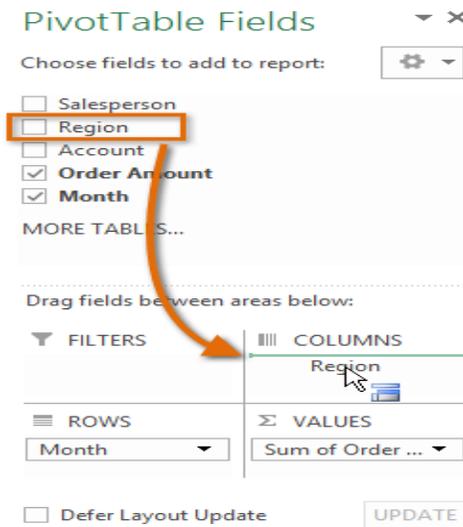
*updated PivotTable*

*The*

### 4.4. 3.2 Adding Columns

So far, our PivotTable has only shown **one column** of data at a time. In order to show **multiple columns**, you'll 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'll use the **Region** field.



*Adding a field to the Column area*

- 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	
<b>Grand Total</b>	<b>4340</b>	<b>3160</b>	<b>10875</b>	<b>5190</b>	<b>23565</b>	

*The PivotTable with columns*

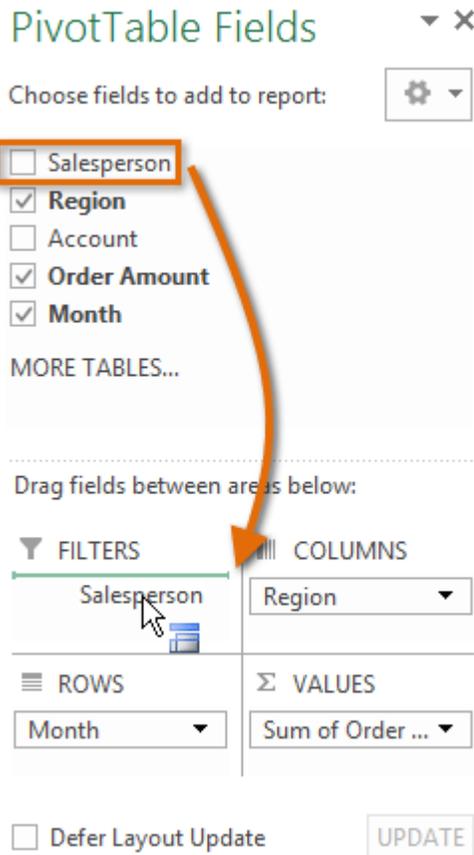
#### 4.4.4 Filters

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 that you need.

##### 4.4.4.1 Adding a Filter

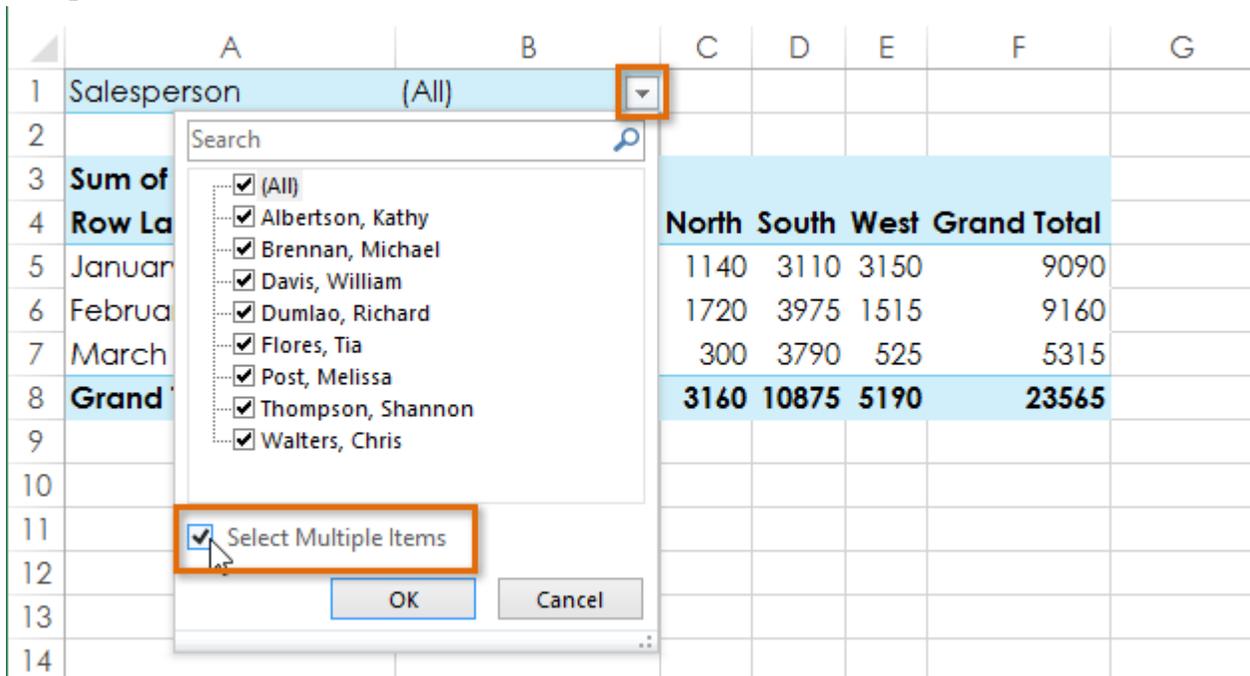
In our example, we'll filter out certain salespeople to determine how they affect the total sales.

- Drag a field from the **Field List** to the **Filters** area. In this example, we'll use the **Salesperson** field.



*Adding a field to the Filters area*

- The **filter** will appear above the PivotTable. Click the **drop-down arrow**, then check the box next to **Select Multiple Items**.



*Checking the box for Select Multiple Items*

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

	A	B	C	D	E	F	G
1	Salesperson	(All)					
2							
3	<b>Sum of</b>		<b>North</b>	<b>South</b>	<b>West</b>	<b>Grand Total</b>	
4	<b>Row Labels</b>						
5	January		1140	3110	3150	9090	
6	February		1720	3975	1515	9160	
7	March		300	3790	525	5315	
8	<b>Grand Total</b>		<b>3160</b>	<b>10875</b>	<b>5190</b>	<b>23565</b>	

*Choosing*

*data to filter and clicking OK*

4. The PivotTable will adjust to reflect the changes.

	A	B	C	D	E	F	G
1	Salesperson	(Multiple Items)					
2							
3	<b>Sum of Order Amount</b>	<b>Column Labels</b>					
4	<b>Row Labels</b>	<b>East</b>	<b>North</b>	<b>South</b>	<b>West</b>	<b>Grand Total</b>	
5	January		925	1140	2755	3150	7970
6	February		1375	1720	1220	1515	5830
7	March		350	300	2525	525	3700
8	<b>Grand Total</b>		<b>2650</b>	<b>3160</b>	<b>6500</b>	<b>5190</b>	<b>17500</b>

*The updated PivotTable*

### 4.4.5 Slicers

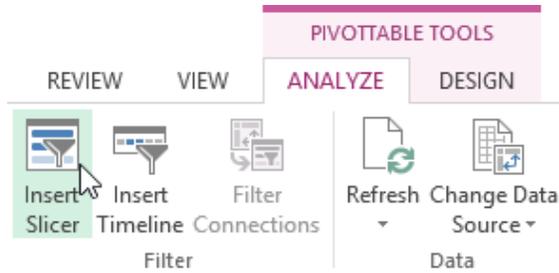
**Slicers** make filtering data in PivotTables even easier. Slicers are basically just **filters**, but they're easier and faster to use, allowing you to instantly pivot your data. If you frequently filter your PivotTables, you may want to consider using slicers instead of filters.

#### 4.4.5.1 Adding a Slicer

1. Select any cell in the PivotTable.

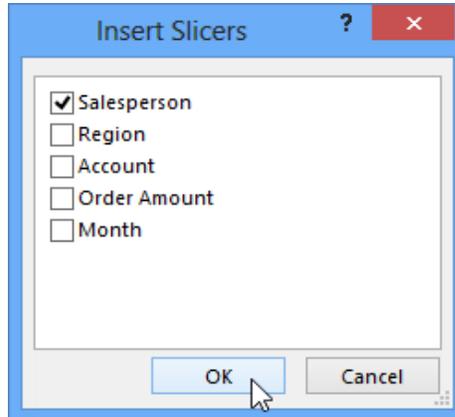
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- From the **Analyze** tab, click the **Insert Slicer** command.



### *Clicking the Insert Slicer command*

- A dialog box will appear. Select the desired **field**. In our example, we'll select **Salesperson**, then click **OK**.



### *Choosing a field and clicking OK*

- 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 of the different salespeople, and **six** of them are currently selected.

	A	B	C	D	E	F	G
1	Salesperson	(Multiple Items)					
2							
3	<b>Sum of Order Amount</b>	<b>Column Labels</b>					
4	<b>Row Labels</b>	<b>East</b>	<b>North</b>	<b>South</b>	<b>West</b>	<b>Grand Total</b>	
5	January	925	1140	2755	3150	7970	
6	February	1375	1720	1220	1515	5830	
7	March	350	300	2525	525	3700	
8	<b>Grand Total</b>	<b>2650</b>	<b>3160</b>	<b>6500</b>	<b>5190</b>	<b>17500</b>	
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

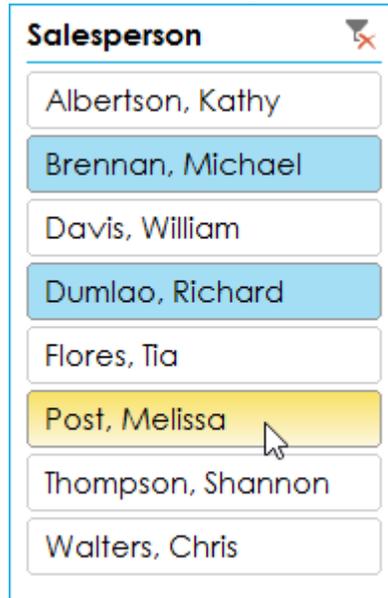
  

Salesperson	
<input checked="" type="checkbox"/>	Albertson, Kathy
<input checked="" type="checkbox"/>	Brennan, Michael
<input checked="" type="checkbox"/>	Davis, William
<input checked="" type="checkbox"/>	Dumlao, Richard
<input checked="" type="checkbox"/>	Flores, Tia
<input type="checkbox"/>	Post, Melissa
<input checked="" type="checkbox"/>	Thompson, Shannon
<input type="checkbox"/>	Walters, Chris

### *The inserted slicer*

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- 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.



*Selecting items from the slicer*

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

### 4.4.6 Pivot Charts

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

#### 4.4.6.1 Creating a PivotChart

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

- Select any cell in your PivotTable.

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The screenshot displays an Excel spreadsheet with a PivotTable. The PivotTable is located in the range B4:E13. The PivotTable Fields task pane is open on the right side of the screen. The PivotTable data is as follows:

Row Labels	January	February	March	Grand Total
Albertson, Kathy	\$925.00	\$1,375.00	\$350.00	\$2,650.00
Brennan, Michael	\$2,750.00	\$550.00	\$400.00	\$3,700.00
Davis, William	\$1,100.00	\$235.00	\$600.00	\$1,935.00
Dumlao, Richard	\$400.00	\$965.00	\$125.00	\$1,490.00
Flores, Tia	\$1,655.00	\$985.00	\$1,925.00	\$4,565.00
Post, Melissa	\$765.00	\$575.00	\$350.00	\$1,690.00
Thompson, Shannon	\$1,140.00	\$1,720.00	\$300.00	\$3,160.00
Walters, Chris	\$355.00	\$2,755.00	\$1,265.00	\$4,375.00
<b>Grand Total</b>	<b>\$9,090.00</b>	<b>\$9,160.00</b>	<b>\$5,315.00</b>	<b>\$23,565.00</b>

The PivotTable Fields task pane shows the following configuration:

- Choose fields to add to report:  Salesperson,  Region,  Account,  Order Amount,  Month
- Drag fields between areas below:
  - FILTERS: Salesperson
  - COLUMNS: Month
  - ROWS: (empty)
  - VALUES: Sum of Order Amount

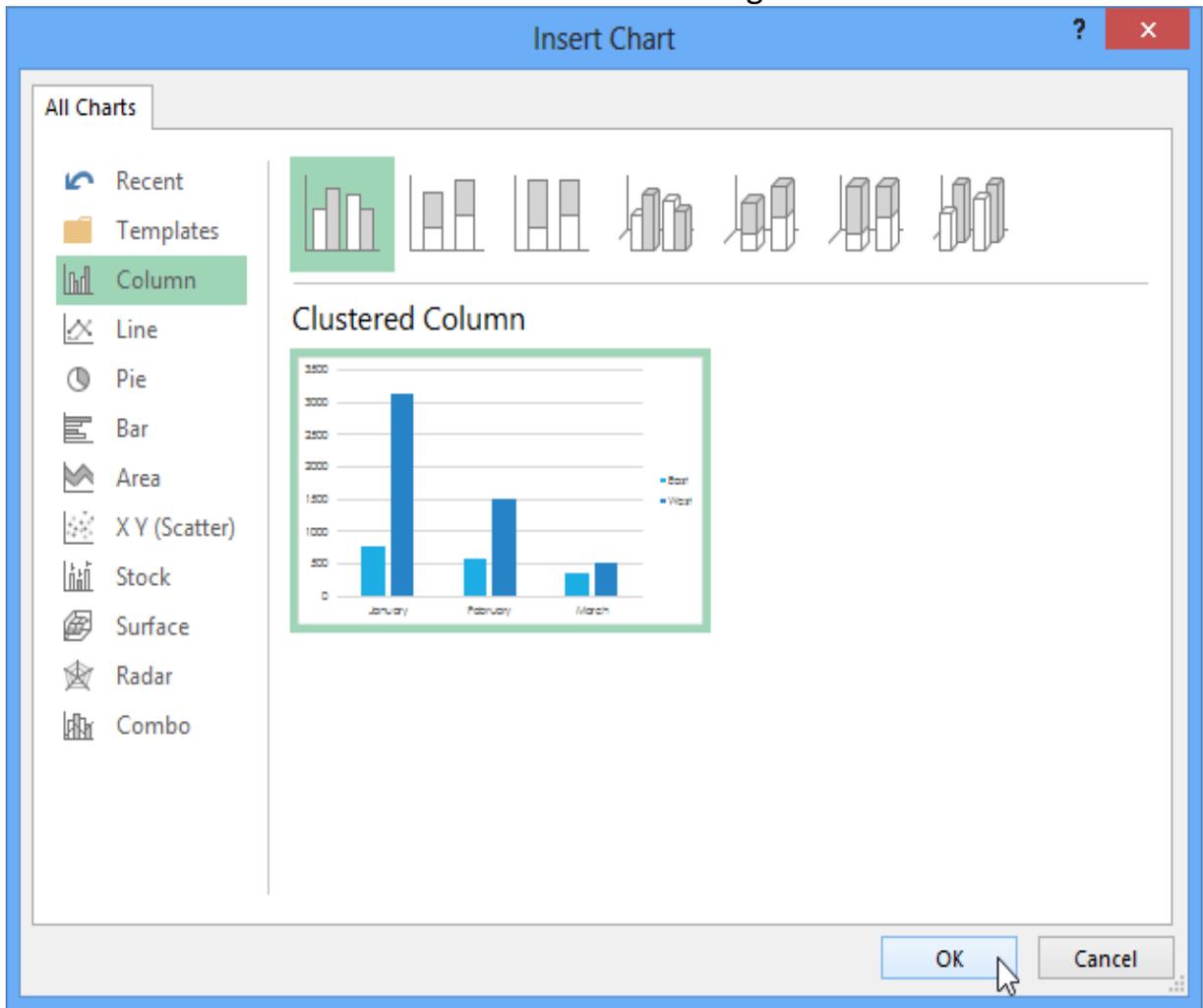
*Clicking a cell in the PivotTable*

- From the **Insert** tab, click the **PivotChart** command.

The screenshot shows the Microsoft Excel 2013 ribbon with the **ANALYZE** tab selected. The **PivotChart** command is highlighted in the **Charts** group. The ribbon also shows the **DESIGN** tab and the **Reports** group.

*Clicking the PivotChart command*

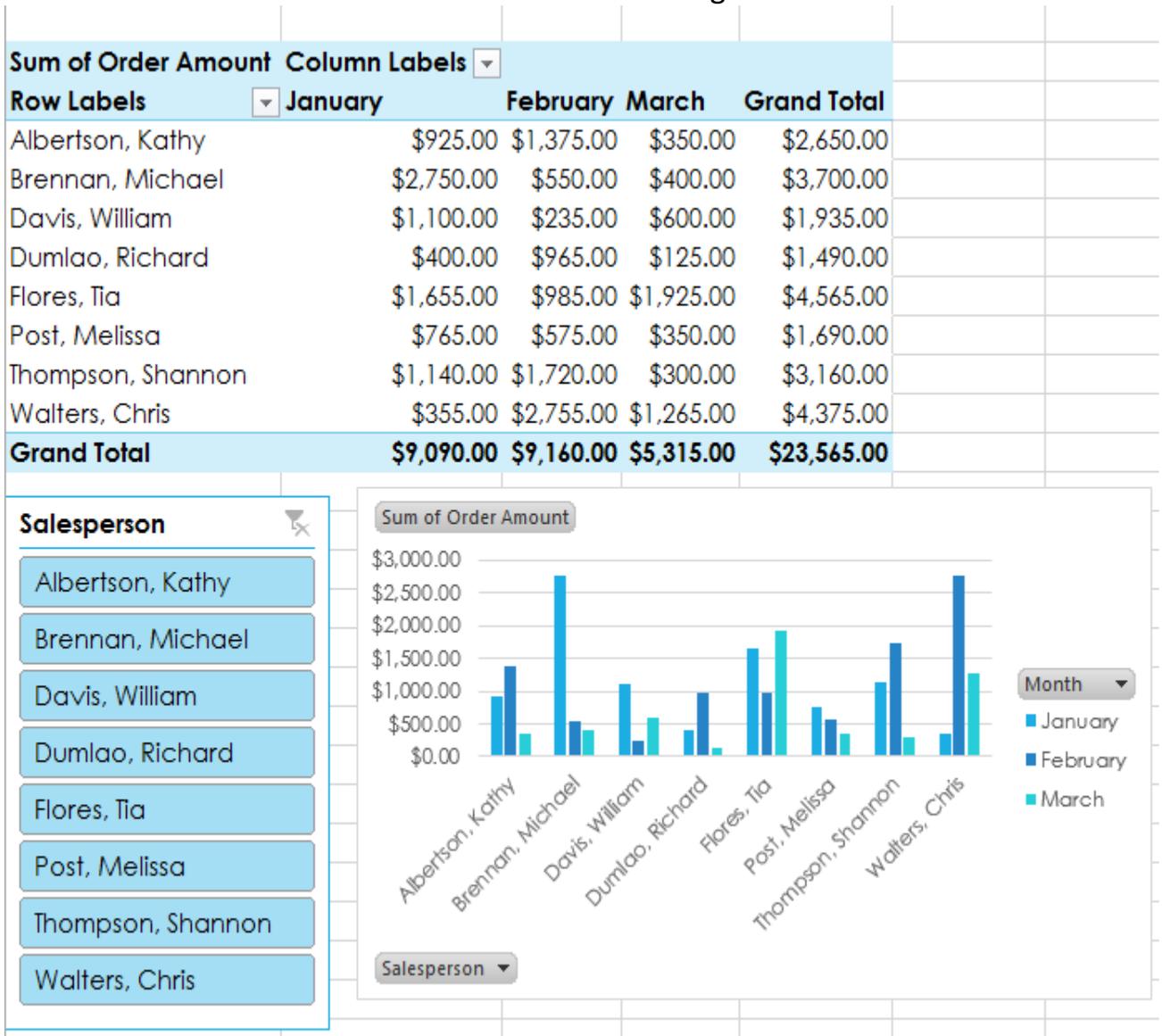
- The **Insert Chart** dialog box will appear. Select the desired **chart type** and **layout**, then click **OK**.



*Choosing a chart type and clicking OK*

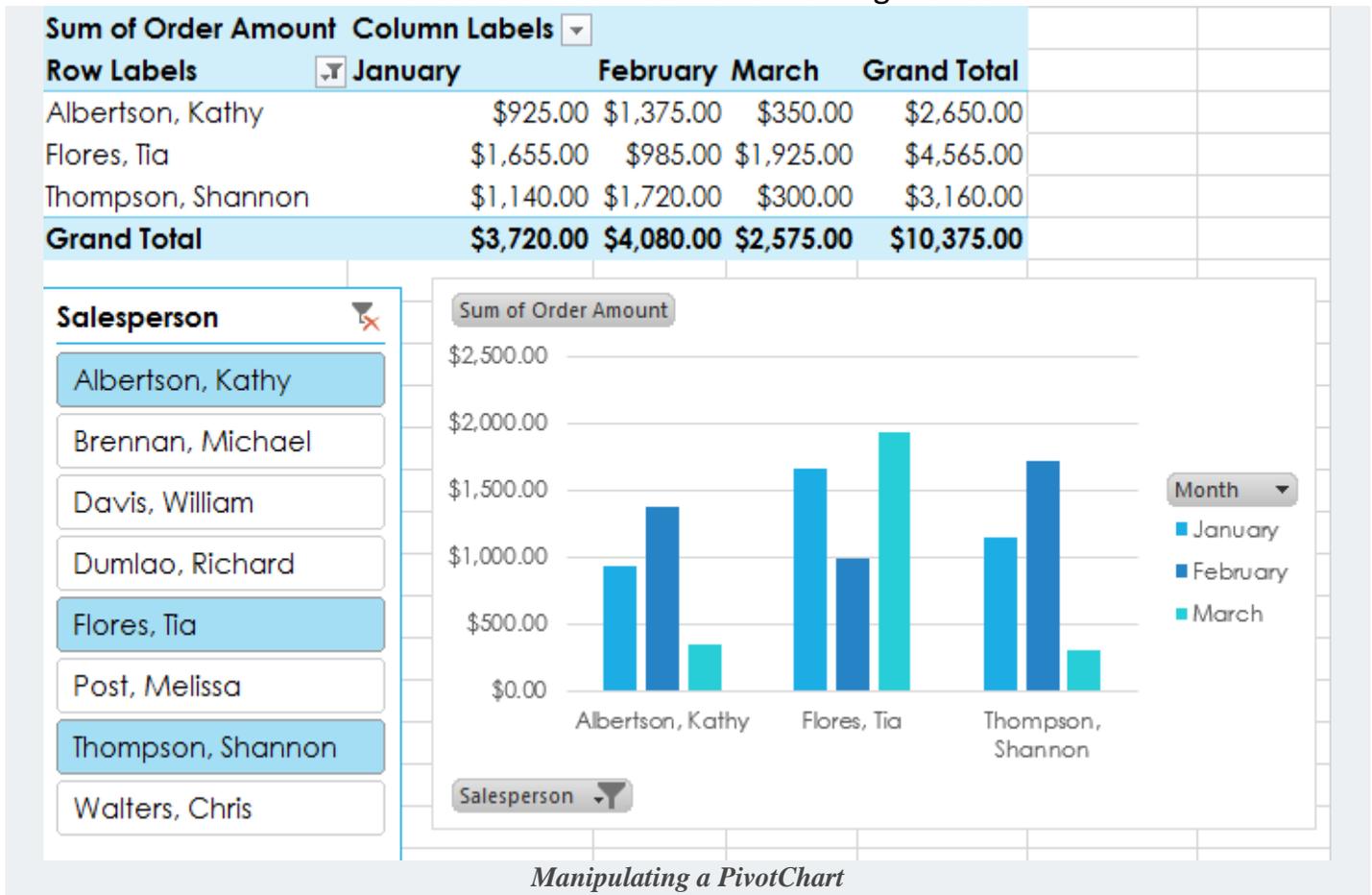
4. The PivotChart will appear.

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*The inserted PivotChart*

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



### Exercise 4.4

1. Open an existing Excel workbook.
2. Create a **PivotTable** using the data in the workbook.
3. Experiment by placing different fields in the **Rows** and **Columns** areas.
4. Filter the report with a **slicer**.
5. Create a **PivotChart**.
6. If you are using the **example**, use the PivotTable to answer the question, "**Which salesperson sold the lowest amount in January?**" Hint: First decide which **fields** you need in order to answer the question

## 4.5 What-If Analysis

Excel includes many powerful tools to perform complex mathematical calculations, such as **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**.

### 4.5.1 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'll use a couple of examples to show how to use Goal Seek.

#### To Use Goal Seek (Example 1):

Imagine that you're 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 don't know what the fifth grade will be, we can go ahead and 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 that we'll need to make on that assignment.

	A	B	C	D
1	Assignment	Grade		
2	Test 1	58		
3	Paper 1	70		
4	Test 2	72		
5	Paper 2	60		
6	Test 3	60		
7	Final Grade	=AVERAGE(B2:B6)		
8				

*Using a function to calculate the final grade for the class*

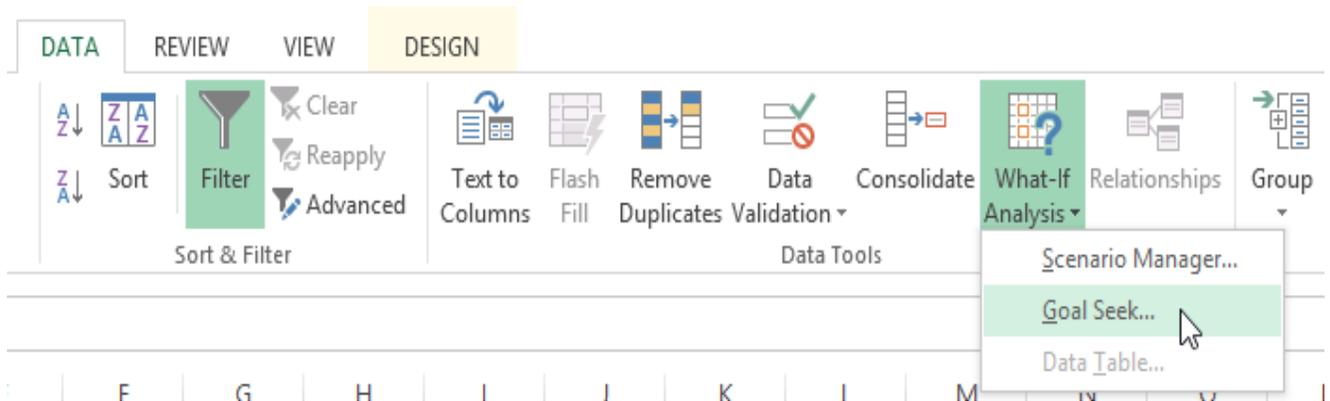
1. Select the cell whose value you wish to change. Whenever you use Goal Seek, you'll need to select a cell that already contains a **formula** or **function**. In our example, we'll select cell **B7** because it contains the formula `=AVERAGE (B2:B6)`.

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B7	:	X	✓	f <sub>x</sub>	=AVERAGE(B2:B6)
	A	B	C	D	
1	Assignment	Grade			
2	Test 1	58			
3	Paper 1	70			
4	Test 2	72			
5	Paper 2	60			
6	Test 3				
7	Final Grade	65			
8					
9					

*Selecting cell B7*

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



*Selecting Goal Seek... from the drop-down menu*

- A dialog box will appear with three fields:
  - Set cell:** The cell that will contain the desired result. In our example, cell **B7** is already selected.
  - To value:** The desired result. In our example, we'll enter **70** because we need to earn at least that to pass the class.
  - By changing cell:** The cell where Goal Seek will place its answer. In our example, we'll select cell **B6**, because we want to determine the grade we need to earn on the final assignment.
- When you're done, click **OK**.

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B6 :    *f<sub>x</sub>* =AVERAGE(B2:B6)

	A	B	C	D	E	F
1	<b>Assignment</b>	<b>Grade</b>				
2	Test 1	58				
3	Paper 1	70				
4	Test 2	72				
5	Paper 2	60				
6	Test 3					
7	Final Grade	65				
8						
9						
10						
11						
12						
13						
14						
15						
16						

**Goal Seek** ? ✕

Set cell:

To value:

By changing cell:

*Entering the desired values into the dialog box and clicking OK*

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

**Goal Seek Status** ? ✕

Goal Seeking with Cell B7 found a solution.

Target value: 70

Current value: 70

*Clicking OK*

- 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.

	A	B	C	D	E	F	G
1	<b>Assignment</b>	<b>Grade</b>					
2	Test 1	58					
3	Paper 1	70					
4	Test 2	72					
5	Paper 2	60					
6	Test 3	90					
7	Final Grade	70					
8							
9							

**Value determined by Goal Seek**

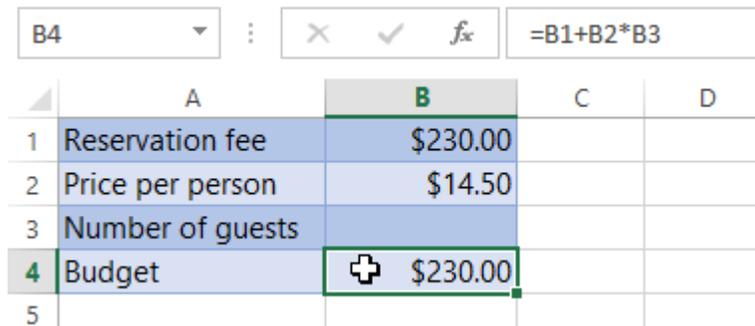
*The completed Goal Seek and calculated value*

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### To Use Goal Seek (Example 2):

Imagine that you're planning an event and you'd like 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.

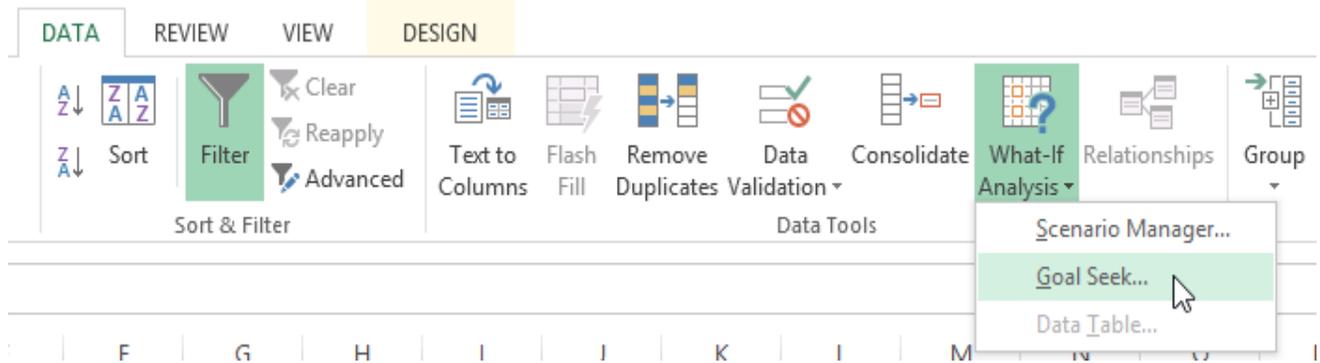
1. Select the cell whose value you wish to change. In our example, we'll select cell **B4**.



	A	B	C	D
1	Reservation fee	\$230.00		
2	Price per person	\$14.50		
3	Number of guests			
4	Budget	\$230.00		
5				

*Selecting cell B4*

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



*Selecting Goal Seek... from the drop-down menu*

3. A dialog box will appear with three fields:
  - **Set cell:** The cell that will contain the desired result. In our example, cell **B4** is already selected.
  - **To value:** The desired result. In our example, we'll enter **500** because we only want to spend \$500.
  - **By changing cell:** The cell where Goal Seek will place its answer. In our example, we'll select cell **B3**, because we want to know how many guests we can invite without spending more than \$500.
4. When you're done, click **OK**.

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The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D
1	Reservation fee	\$230.00		
2	Price per person	\$14.50		
3	Number of guests			
4	Budget	\$230.00		

The Goal Seek dialog box is open with the following settings:

- Set cell: B4
- To value: 500
- By changing cell: \$B\$3

*Entering the desired values into the dialog box and clicking OK*

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

The Goal Seek Status dialog box displays the following information:

- Goal Seeking with Cell B4 found a solution.
- Target value: 500
- Current value: \$500.00

*Clicking OK*

- 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'll need to round the answer up or down. Since rounding up would cause us to exceed our budget, we'll **round down** to 18 guests.

The screenshot shows the Excel spreadsheet after the Goal Seek operation. The formula bar now displays the result: 18.6206896551724. The spreadsheet data is as follows:

	A	B	C	D
1	Reservation fee	\$230.00		
2	Price per person	\$14.50		
3	Number of guests	18.6207		
4	Budget	\$500.00		

*The completed Goal Seek and the calculated value*

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'll need to **round up or down**, depending on the situation.

## 4.5.2 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**. Rather than 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** let you substitute values for **multiple cells** (up to 32) at the same time. You can create as many scenarios as you want and then compare them without changing the values manually. In the example below, we're using scenarios to compare different venues for an upcoming event.

	A	B	C	D	E	F	G	H	I
1	Reservation fee	\$0.00							
2	Price per person	\$30.00							
3	Number of guests	21							
4	Budget	\$630.00							
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									

*Using the Scenario Manager to compare different options*

For more information about scenarios, check out [this article](#) from Microsoft.

- **Data tables** allow you to take one or two variables in a formula and replace them with **as many different values as you want**, and then view the results in a table. This option is especially powerful because it shows **multiple results** at the same time, unlike scenarios or Goal Seek. In the example below, we can view 24 possible results for a car loan.

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Loan Amount	20000				
Term (months)	60				
Interest Rate					
Payment	(\$333.33)	36	48	60	72
	5.5%	-\$603.92	-\$465.13	-\$382.02	-\$326.76
	6.0%	-\$608.44	-\$469.70	-\$386.66	-\$331.46
	6.5%	-\$612.98	-\$474.30	-\$391.32	-\$336.20
	7.0%	-\$617.54	-\$478.92	-\$396.02	-\$340.98
	7.5%	-\$622.12	-\$483.58	-\$400.76	-\$345.80
	8.0%	-\$626.73	-\$488.26	-\$405.53	-\$350.66

**Terms (months)** points to the 60 in the Term (months) cell.

**Interest rates** points to the 5.5% to 8.0% range in the Interest Rate column.

**Results (monthly payments)** points to the range of monthly payment values from 36 to 72 months.

### *Data tables*

For more information about data tables, check out [this article](#) from Microsoft.

## Exercise 4.5

1. Open an **existing Excel workbook**.
2. Use **Goal Seek** to determine an unknown value. If you're using the example, go to the **History Class** worksheet and use Goal Seek to determine what grade you would need on **Test 3** to earn a final grade average of **90**.