

# Microsoft Excel for Beginners





# Microsoft Excel for Beginners

2.0 hours

This is a basic computer workshop. Microsoft Excel is a spreadsheet program. We use it to create reports that need calculations and charts. In this workshop we will learn how to move around and work inside the spreadsheet.

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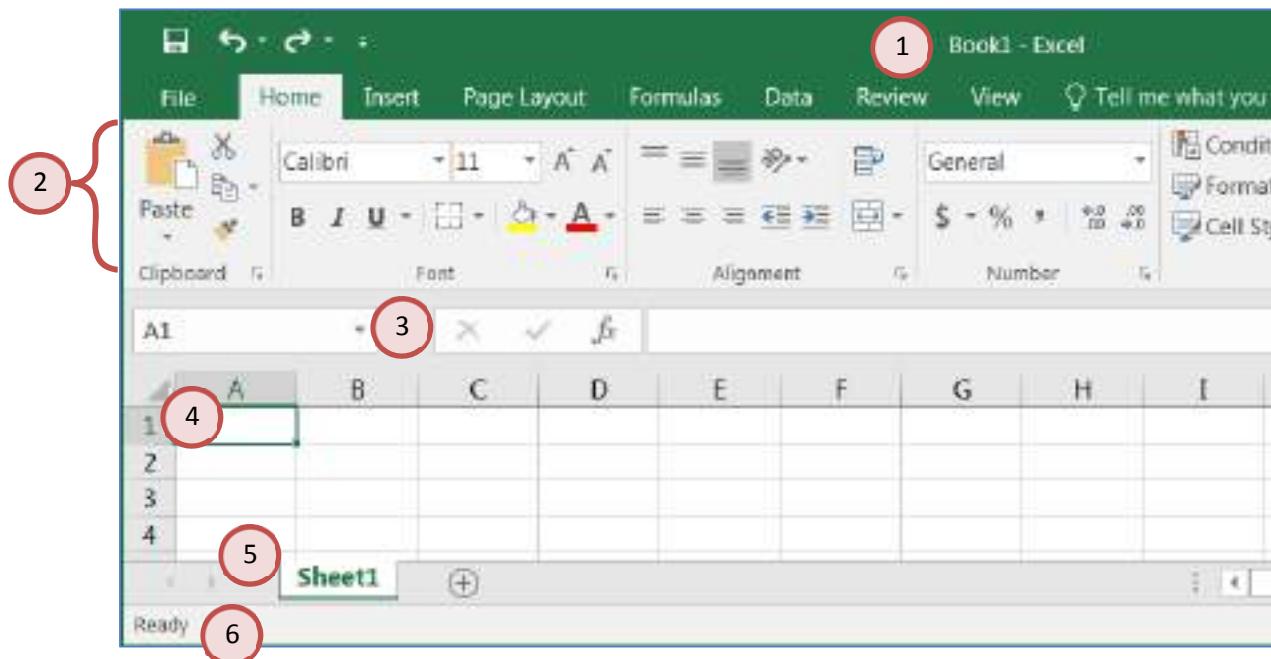
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## Vocabulary

Microsoft Excel is a spreadsheet program. We use it to create reports that need calculations and charts.

1. An Excel file is called a **Workbook**.
  - Default title is Book1
2. **Ribbon** broken into **Tabs** (Home, Insert, Page Layout...)
  - Tabs broken into groups (Clipboard, Font, Alignment)
3. **Name box** (left) and **formula bar** (right)
  - Name box shows address of current cell
  - Formula bar shows contents of current cell
4. **Columns** Headings are Lettered, **Rows** Headings are Numbered
  - Columns of a building, rows of chairs
5. Worksheet navigation buttons, Worksheet tabs
  - Sheet1
6. **Status bar**
  - Excel behaves differently depending on the current "mode"



## Status Bar Modes

- **Ready** mode. This means nothing is being *entered* or *edited* on the spreadsheet.
- **Enter** mode. This mode is when you are doing data entry, just typing in the contents.
- **Edit** mode. Edit the contents of the current cell. Double-click on a cell with data in it, or click inside the formula bar for this mode.
- **Point** mode. Used when linking to cell addresses within a formula or from an Excel dialog window.

## **Keyboard Navigation**

Key	Ready	Enter	Edit	Point
Enter	Move Down		Accept changes and move down	
Shift-Enter	Move Up		Accept changes and move up	
Tab	Move Right		Accept changes and move right	
Shift-Tab	Move Left		Accept changes and move Left	
Arrow Keys	Moves to another cell		Moves between characters in cell	Points to an address of a cell
Home	Moves to first column		Moves to the front of the line in the cell	Points to cell in column A
Ctrl-Home	Moves to the beginning cell of the worksheet (A1)			Points to the beginning of the worksheet

## **Ribbon**

The images of Excel in this packet were copied from a wide screen monitor. With the wide screen the ribbon is stretched across the window and I can see all the buttons. If you are working on a narrower window, Excel will try to clump the groups together and the layout may look a little different than the ones shown here, but all the buttons will be there.



Here we can see how the font group is now three buttons high, and how some of the buttons like Cut and Copy have lost their text labels.



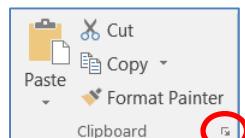
## **Clipboard**

Cut, Copy and Paste are clipboard features built into Windows. The clipboard is a temporary storage place for pictures and data. The Windows clipboard can only store one item at a time. Microsoft Office has a Multi-Clipboard that can store 24 items, but the Paste button and the shortcuts for the Paste option only correspond to the most recently copied item. The clipboard pane must be displayed to be able to use this feature.

Cut – Copies selection to the clipboard. If the selection is text or an image, it will disappear. If it's a cell, Excel waits until you paste it to delete the original cell.

Copy – Copies selection to the clipboard.

Paste – Retrieves most recent text/object on the clipboard.

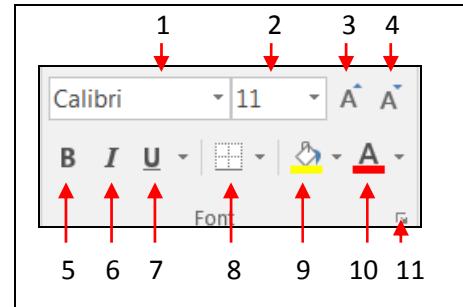


## Formatting Cells

The most formatting options are found on the **Home Tab**. All the options can be found in the Format Cells window. This contains several tabs to help us format the contents of our spreadsheet. This window can be opened by using the  **More Options** button at the end of the **Format**, **Alignment** and **Number** groups. You can also use the Keyboard Shortcut – **Ctrl-1** or choose **Format Cells...** from the right-click shortcut menu.

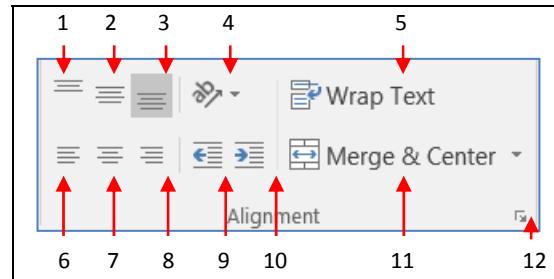
### Font

1. **Font** – Sets the font of the selected cell(s). Fonts are different ways to show the same letters.
2. **Font Size** – Sets the size of the letters (the font). Larger numbers give larger fonts.
3. **Increase Font** – Increases the font size
4. **Decrease Font** – Decreases the font size
5. **Bold** – Makes the selected cell(s) **Bold**
6. **Italic** – Makes the selected cell(s) *Italicized*
7. **Underline** – Makes the selected cell(s) Underlined. The drop down has a double underline.
8. **Borders** – Adds and removes borders for the selected cell(s). The drop down has More Borders...
9. **Fill Color** – Changes the background color of the selected cell(s).
10. **Font Color** – Changes the color of the font of the selected cell(s).
11. **More Options** – This button will open the Format Cells dialog window.



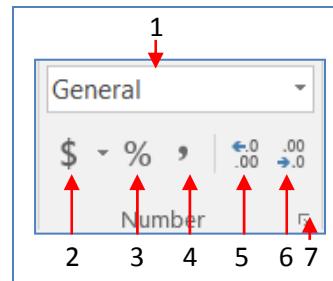
### Alignment

1. **Top Align** – Vertically aligns to the top of the cell.
2. **Middle Align** – Vertically aligns to middle of the cell.
3. **Bottom Align** – Vertically aligns to the bottom of the cell.
4. **Orientation** – Rotates the contents of the cell to the currently displayed option.
5. **Wrap Text** – Displays contents on multiple lines within the cell's column width.
6. **Align Text Left** – Horizontally aligns the contents to the left side of the column.
7. **Center** – Horizontally aligns the contents to the center of the cell.
8. **Align Text Right** – Horizontally aligns the contents to the right side of the cell.
9. **Decrease Indent** – Decreases the space between the text and the cell border
10. **Increase Indent** – Increases the space between the text and the cell border
11. **Merge and Center** – Joins selected (adjacent) cells into one cell and centers the result. If there is data in more than one cell, Excel will only keep the information from the upper left cell.
12. **More Options** – This button will open the Format Cells dialog window to the Alignment Tab.



## Number

1. **Number Format** – Allows you to change the way numeric values are displayed on the spreadsheet. The drop down arrow gives you a list of the most common formats, including a *More Number Formats* option.
2. **Currency Style** – Sets the selected cell(s) to the *Currency Style*, this style keeps the dollar signs on the left side of the cell, and the number on the right side. The drop down arrow gives you a list of other currency formats, such as the Euro (€).
3. **Percent Style** – Sets the selected cell(s) to the *Percent Style*, this style has zero decimal places. Keyboard shortcut - Ctrl-Shift-%. This button can be reset through **Cell Styles** on the Home Tab.
4. **Comma Style** – Sets the selected cell(s) to the *Comma Style*, this style has a comma for every thousand and two decimal places. This button can be reset through
5. **Increase Decimal** – Increases the number of decimal places showing to the right of the decimal.
6. **Decrease Decimal** – Decreases the number of decimal places showing to the right of the decimal.
7. **More Options** – This button will open the Format Cells dialog window to the Number Tab.



## Cells Structures

There are a set number of cells within a Microsoft Excel worksheet. In the Ribbon versions (2007 and later) there are 16,384 columns and 1,048,576 rows. As you insert and delete structures, you are not reducing the number of cells, merely shifting where your data lies on the defined worksheet. Think about moving a painting around on a wall. You're not changing the wall, just the position of the painting.

### **Inserting**

We use **Insert** to make new cells, columns, and rows.

Excel determines what you are trying to insert based on your selection. If a full column is selected, Excel will assume you mean a full column and it will skip the Insert window.

You can insert a cell, row, or column by doing one of the following:

- ⇒ Press Shift - Ctrl - = on the keyboard (ctrl plus)
- ⇒ or from the **Home** tab, in the **Cells** group, choose **Insert**
- ⇒ or open the Right-click menu and choose insert.

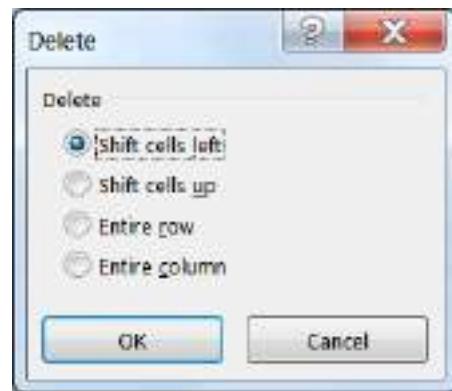
- To insert multiple at once, select the number of cells/rows/columns you would like to insert and follow the steps above.
- The size and format of the new space is determined by the previous row or column.
- This will push the existing cells, columns, or rows to the right or down to make room for the new cells.



## ***Deleting***

We use **Delete** to remove cells, columns, and rows. Excel determines what you are trying to delete based on your selection. You can delete a cell, row, or column by doing one of the following:

- ⇒ Press Shift - Ctrl - - on the keyboard (Ctrl Minus)
- ⇒ or from the **Home** tab, in the **Cells** group, choose **Delete**
- ⇒ or open the Right-click menu and choose insert.



- To delete multiple at once, select the number of cells/rows/columns you would like to delete and follow the steps above.
- This will completely remove the structure, formatting and all, and the rows/columns/cells will shift into this place. If you only intended to delete the contents not the cells, undo and use the Clear Contents option instead.

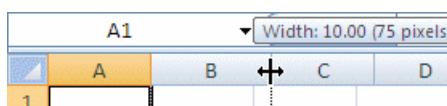
## ***Cell Size (Row Height/Column Width)***

You cannot resize one cell; the structure is dependent on the entire row and column where it resides. The Row Height and Column Width settings can be found under the **Format** menu in the **Cells** group of the **Home** tab.

### *Adjusting with the Mouse*

When we resize we are growing away from the left.

To resize the column, place your mouse cursor between the lines of the column headings. The current column heading is in a box; all you need to do is resize the box to make it wider. Put your mouse along the right side of the heading box until you see the resizing arrow pointing in two directions. Click and drag away from the column letter. When you let go of the mouse, the column will resize.

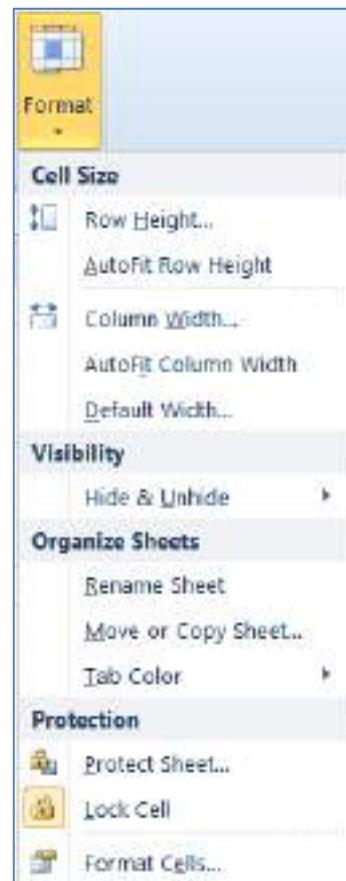


To resize the row, place your mouse cursor between the lines of the row headings. The current row heading is in a box; all you need to do is resize the box to make it wider. Put your mouse along the bottom side of the heading box until you see the resizing arrow pointing in two directions. Click and drag away from the row number. When you let go of the mouse, the row will resize.

### *Auto-fitting*

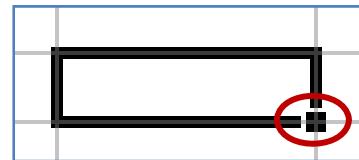
You can use the option found on the Format menu, or place your mouse cursor between the headings, with the two-way arrow to help resize, and double-click. The row or column should AutoFit to the largest data length within its structure.

- To resize multiple at once, select the cells you would like to fit and follow the steps above. If you are using double-click to auto-fit, the entire column/row structures must be selected.



## Fill Handle

The **Fill Handle** is in the bottom right corner of the selected cell. When you place your mouse over this *handle*, it changes from a thick white cross, to a thin black cross. Once you see the thin cross (no arrows) you can click and drag the cell to fill its contents in a single direction (up, down, left or right). If you want to go in two directions, you must first complete one way, let go of the mouse and then drag the handle in the second direction.



When you use the **Fill Handle** to pull down a single number or plain text, it will copy the data. When you use the **Fill Handle** to pull down a text with numbers, a date, a month or a weekday it will fill in a series.

Text	123	Exam 1	2/1/02	February	Friday
Text	123	Exam 2	2/2/02	March	Saturday
Text	123	Exam 3	2/3/02	April	Sunday

When you select two or more numbers (including dates) and then use the **Fill Handle**, Excel will fill in the series, following the original pattern of the selected cells. It can only follow simple addition and subtraction patterns.

123	5	100	2/01/17
124	4	110	2/08/17
125	3	120	2/15/17
126	2	130	2/22/17

## Building an Equation

You can directly type in values, but that data stays constant. If you want to have the answers to your equations update as you change your data, you should use the cell addresses. You will see the cell addresses change colors so you can tell which ones are used in your equation.

### **Type in the exact cell address**

Cells are labeled by their row and column headings. Rows are numbered and go horizontally across (rows of chairs) and columns are lettered and go vertically top to bottom (columns of a building). When we refer to the address of a cell, we use the column letter then the row number such as A1.

- Click in the cell where the answer will appear
- Press the Equal sign (=)
- Type in the cell address you want to use in your equation
- Accept the answer or press the next math operator (+, -, \*, /, ^)

	A	B	C
1	1	2	=a1+b1
2			

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### **Use the mouse to point to the cell address**

The mouse and arrow keys are both "pointers". If you press the equal sign and then use the mouse to click on another cell, Excel will put you into a "POINT" mode, and place the address of the cell you clicked on in your equation.

- Click in the cell where the answer will appear
- Press the Equal sign (=)
- Use the mouse to click on the cell you want to use in your equation
- Accept the answer or press the next math operator (+, -, \*, /, ^)

	A	B	C
1	1	2	=A1
2			

### **Mathematical Operations**

To let Excel know you expect it to "do math" you need start your cell with an equal sign (=).

- |                                                       |       |        |     |
|-------------------------------------------------------|-------|--------|-----|
| - Addition, plus sign (+)                             | = 5+2 | result | 7   |
| - Subtraction, hyphen (-)<br>(also used for negative) | = 5-2 | result | 3   |
| - Multiplication, asterisk (*)                        | = -5  | result | -5  |
| - Division, slash (/)                                 | = 5*2 | result | 10  |
| - Exponent/Power, caret (^)                           | = 5/2 | result | 2.5 |
|                                                       | = 5^2 | result | 25  |

### **AutoSum**

We can build equations to do math on a large number of cells, but there are functions built into Excel that can help us automate the most common ones: Sum, Average, Count, Maximum, Minimum. On the far right of the Home tab you'll find the sigma ( $\Sigma$ ).



When you click on the word AutoSum, you'll get a sum function. There is a dropdown list at the end of the button that will show more function options.

The AutoSum button looks for numbers above or to the left of the cell to choose the range (the set) of numbers.

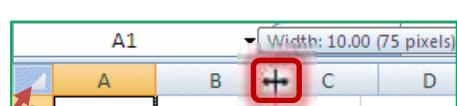
Make sure to press enter or click the check to accept as soon as the function shows up. If you click outside the cell while you see the function, you may break the equation.

A screenshot of an Excel spreadsheet. The table has columns labeled A, B, and C. Rows 1, 2, and 3 contain numerical values: 123, 456, and 789 respectively. Row 4 contains the formula '=SUM(A1:A3)', which is highlighted with a blue selection bar. The formula bar at the top also displays '=SUM(A1:A3)'. A red box highlights the checkmark icon in the formula bar, indicating that the formula is accepted.

## Exercise 1: Customers

LAST	FIRST	ADDRESS	CITY	ST	ZIP	BALANCE	DUE DATE
Adams	Annie	6831 NW 1 Gainesville FL			32655	236	2/10/2017
Appleton	April	P.O. Box 45 Starkie	FL		32689	467	9/15/2018
Arlington	Arnold	234 SE 45 Gainesville FL			32687	128	12/5/2017
Brown	Bobbie	234 Peter Gainesville FL			32687	17	5/25/2017
Bruce	Butch	3245 SE 41 Gainesville FL			32608	106	5/5/2016
Cappers	Cathy	R.R. 2 Box 6 Waldo	FL		34587	392	9/15/2016
Carson	Carly	1948 NW 1 Gainesville FL			32687	432	5/25/2018
Clegg	Carl	9213 Kiwi Gainesville FL			32667	64	6/10/2016
Dawson	Debbie	R.R. 2 Hesok 1 Gainesville FL			32689	366	*****
Edwards	Edgar	5239 NW 1 Gainesville FL			32653	617	*****
Elliott	Emily	P.O. Box 35 Gainesville FL			32689	364	*****
Engle	Elizabeth	9420 Zucc Gainesville FL			32684	511	6/10/2016
Finch	Frank	409 SW 91 Jacksonville FL			32608	157	2/15/2018
Fuller	Francis	123 South Gainesville FL			32156	368	5/15/2018
Gentle	Gary	9420 Hors Gainesville FL			32684	415	2/15/2017
Gloss	Gloria	2345 Kale Gainesville FL			32597	68	2/10/2017
Henderson	Harriet	2980 Rain Gainesville FL			32608	501	1/15/2016
Huey	Harley	9023 Hera Waldo	FL		32658	319	7/5/2016
Iacobelli	Isaac	93 Gator R Jacksonville FL			32268	486	9/15/2018
Jacks	Jerry	539 Cobalt Gainesville FL			32659	409	7/10/2018
Jacobs	Julie	2039 Lem Gainesville FL			32687	106	7/10/2018
Jacobsen	Jeffery	1398 NE 8 Gainesville FL			32687	392	*****
Jenkins	Jennifer	78549 Los Gainesville FL			32658	17	9/10/2016

### Resizing Columns

- 1) Put your mouse on the line between any two Column letters. It will turn into a 2-way arrow.
  - a. Hold down the mouse button and drag to resize
  - b. Double-click between the headings to "AutoFit"
- 2) Select the entire worksheet by clicking on the triangle above the Row 1, left of the Column A
  - a. Try to resize any Column; all the selected columns will change
  - b. Double-click between the headings to have it "Auto fit"

### Freeze Panes (Lock Titles to Top of Page)

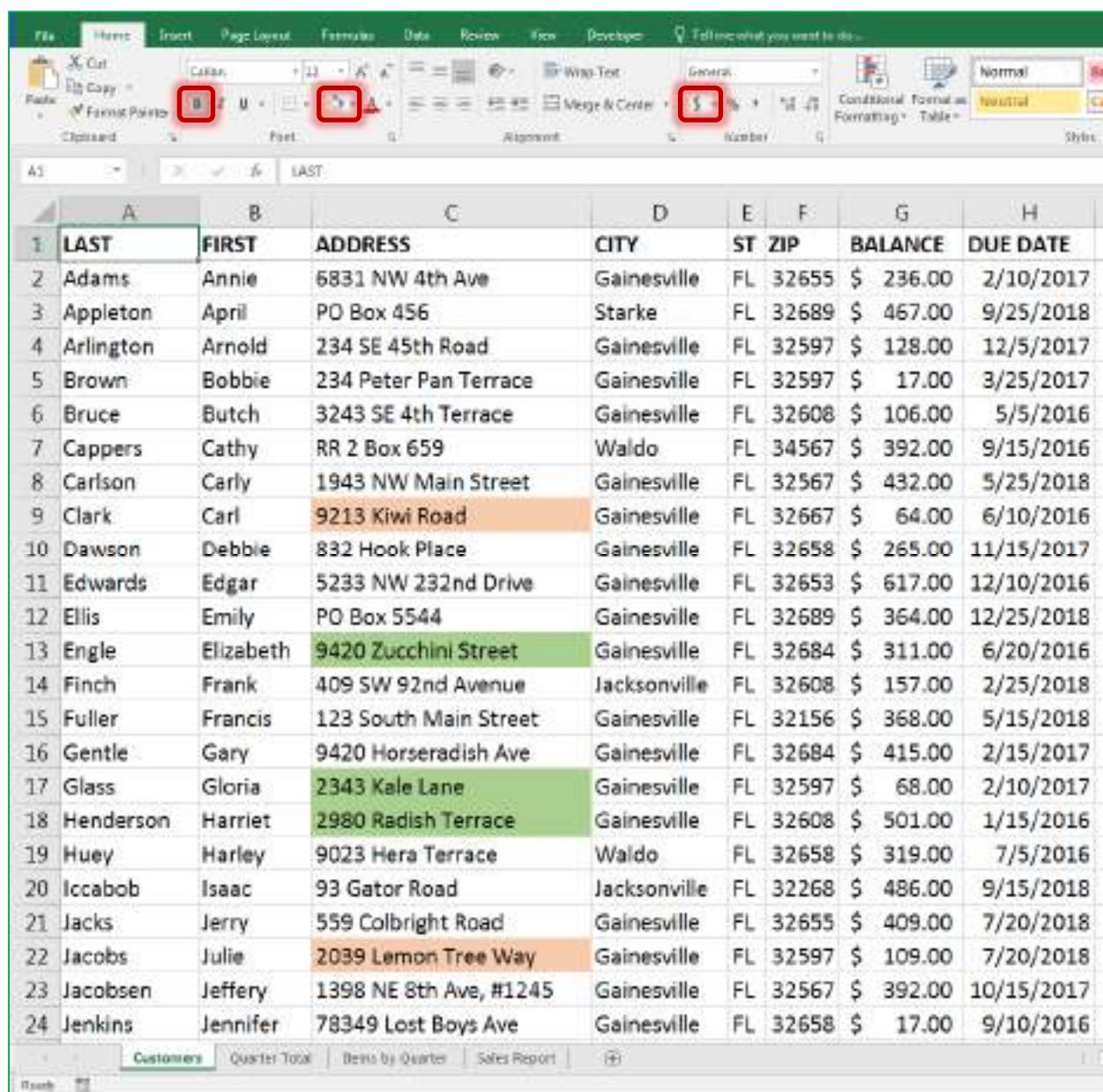
- 1) Press **Ctrl-Home** on the keyboard to return to Cell A1
- 2) Turn to the **View** Tab in the Ribbon
- 3) Find the Option Freeze Panes
  - a. Choose **Freeze Top Row**
  - b. Scroll down through the worksheet to see the titles in Row 1 stay at the top



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## Format

- 1) Click on the Row Heading for Row 1 (click on the number **1**) to select the entire row
  - From the Home Tab, or right-click menu, choose **B** for bold
- 2) Click on the Column Heading for Column G to select the entire Column
  - From the **Home** Tab, choose **\$** for an accounting format
  - Adjust the Column width again
- 3) Find a street name with a "fruit" address and use the **Fill button** (the bucket ) to shade it a peach/orange color
  - Change a few of them to match
- 4) Find a street name with a "vegetable" address and use the Fill bucket to shade a greenish color
  - Change a few of them to match



	A	B	C	D	E	F	G	H
1	LAST	FIRST	ADDRESS	CITY	ST	ZIP	BALANCE	DUEDATE
2	Adams	Annie	6831 NW 4th Ave	Gainesville	FL	32655	\$ 236.00	2/10/2017
3	Appleton	April	PO Box 456	Starke	FL	32689	\$ 467.00	9/25/2018
4	Arlington	Arnold	234 SE 45th Road	Gainesville	FL	32597	\$ 128.00	12/5/2017
5	Brown	Bobbie	234 Peter Pan Terrace	Gainesville	FL	32597	\$ 17.00	3/25/2017
6	Bruce	Butch	3243 SE 4th Terrace	Gainesville	FL	32608	\$ 106.00	5/5/2016
7	Cappers	Cathy	RR 2 Box 659	Waldo	FL	34567	\$ 392.00	9/15/2016
8	Carlson	Carly	1943 NW Main Street	Gainesville	FL	32567	\$ 432.00	5/25/2018
9	Clark	Carl	9213 Kiwi Road	Gainesville	FL	32667	\$ 64.00	6/10/2016
10	Dawson	Debbie	832 Hook Place	Gainesville	FL	32658	\$ 265.00	11/15/2017
11	Edwards	Edgar	5233 NW 232nd Drive	Gainesville	FL	32653	\$ 617.00	12/10/2016
12	Ellis	Emily	PO Box 5544	Gainesville	FL	32689	\$ 364.00	12/25/2018
13	Engle	Elizabeth	9420 Zucchini Street	Gainesville	FL	32684	\$ 311.00	6/20/2016
14	Finch	Frank	409 SW 92nd Avenue	Jacksonville	FL	32608	\$ 157.00	2/25/2018
15	Fuller	Francis	123 South Main Street	Gainesville	FL	32156	\$ 368.00	5/15/2018
16	Gentle	Gary	9420 Horseradish Ave	Gainesville	FL	32684	\$ 415.00	2/15/2017
17	Glass	Gloria	2343 Kale Lane	Gainesville	FL	32597	\$ 68.00	2/10/2017
18	Henderson	Harriet	2980 Radish Terrace	Gainesville	FL	32608	\$ 501.00	1/15/2016
19	Huey	Harley	9023 Hera Terrace	Waldo	FL	32658	\$ 319.00	7/5/2016
20	Iccabob	Isaac	93 Gator Road	Jacksonville	FL	32268	\$ 486.00	9/15/2018
21	Jacks	Jerry	559 Colbright Road	Gainesville	FL	32655	\$ 409.00	7/20/2018
22	Jacobs	Julie	2039 Lemon Tree Way	Gainesville	FL	32597	\$ 109.00	7/20/2018
23	Jacobsen	Jeffery	1398 NE 8th Ave, #1245	Gainesville	FL	32567	\$ 392.00	10/15/2017
24	Jenkins	Jennifer	78349 Lost Boys Ave	Gainesville	FL	32658	\$ 17.00	9/10/2016

## **Exercise 2: Quarter Total**

Turn to the next worksheet at the bottom of the window, **Quarter Total**.

### ***Fill Handle***

- 1) If needed, Move to Cell A1

- a. Hover your mouse over the bottom right corner of the cell until it turns into a thin crosshair/plus sign. This is called the **Fill Handle**.
- b. Drag the Fill Handle down to the bottom of Row 5
- c. Cells A1 through A5 now all say Quarter
- d. **UNDO!**

- 2) Move to Cell A2

- a. In Cell A2 type: 1st Qtr
- b. Press Enter or click the Check to accept
  - i. If needed, return to Cell A2
- c. Drag the Fill Handle for Cell A2 to the bottom of Row 5
  - i. 1st Qtr, 2nd Qtr, 3rd Qtr, 4th Qtr

	A	B
1	Quarter	# Sold
2	1st Qtr	2079
3	2nd Qtr	2095
4	3rd Qtr	2076
5	4th Qtr	2058

### ***Format***

- 1) Select titles in Cells A1 and B1

- a. Bold
- b. Bottom Border
- c. Center

- 2) Select the numbers in Cells B2, B3, B4, and B5

- a. **Comma** Format
- b. Decrease Decimals to zero/none

	A	B	C
1	Quarter	# Sold	
2	1st Qtr	2,079	
3	2nd Qtr	2,095	
4	3rd Qtr	2,076	
5	4th Qtr	2,058	
6			
7			



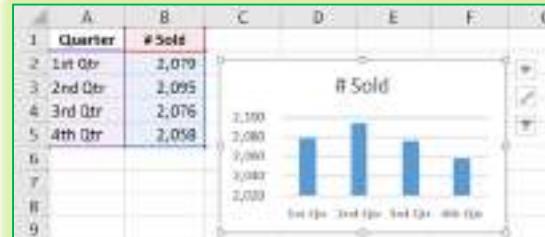
### ***Chart***

- 1) Return to Cell A1 (Ctrl-Home)

- 3) From the **Insert** tab, **Recommended Charts**

- a. Opens the *Insert Chart* window

- 2) Click **OK** to accept the Column Chart option



### **Exercise 3: Items by Quarter**

Turn to the next worksheet at the bottom of the window, **Items by Quarter**.

#### **Insert Rows**

- 1) Select Row 1 and Row 2
  - Click on the row heading 1 and drag to row heading 2
- 2) Right-click Inside the selection
  - Choose *Insert*

	A	B	C	D	E
1	Item	Qtr 1	Qtr 2	Qtr 3	Qtr 4
2	AAA	793	672	701	670
3	BB	684	644	620	631
4	C	602	779	755	757

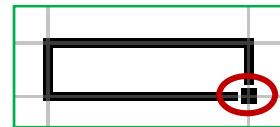
#### **Merged Title**

- 1) In Cell A1 type: Quarterly Sales Report
- 2) Select Cells A1 through E1
  - Click the **Merge and Center** button
- 3) Format: Bold, Fill, Border

	A	B	C	D	E
1	Quarterly Sales Report				
2					
3	Item	Qtr 1	Qtr 2	Qtr 3	Qtr 4
4	AAA	793	672	701	670
5	BB	684	644	620	631
6	C	602	779	755	757

#### **Fill Handle Across**

- 1) In Cell B3, delete Qtr 1, and type: 1st Qtr
- 2) Drag the fill handle for Cell B3 across to Cell E3
- 3) Center and Bold the new titles



The **Fill Handle** is the small square in the bottom right corner of a selected cell.



#### **Total Row (AutoSum)**

- 1) In Cell A8 type: TOTAL
- 2) In Cell B8 Click on the AutoSum button
  - =SUM(B4:B7)
  - Press Enter or click the check to accept (2079)
- 3) Drag the *Fill handle* in Cell B8 to Cell E8 to fill in the "sum" pattern for each quarter

	A	B	C	D	E
1	Quarterly Sales Report				
2					
3	Item	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
4	AAA	793	672	701	670
5	BB	684	644	620	631
6	C	602	779	755	757
7					
8	TOTAL	2079	2095	2076	2058

---

#### **Exercise 4: Sales Report**

Turn to the next worksheet at the bottom of the window, **Sales Report**.

##### **Format**

- 1) Row 1 -> Bold
- 2) Column B -> Accounting (\$)
- 3) Column C -> Centered Aligned
- 4) Cell C5 -> Right Aligned

	A	B	C	D
1	Items	Price	Qty	Total
2	Aaa		10	5
3	Bb		15	10
4	C		20	20
5				GRAND TOTAL:

##### **Math**

Total for each line item will be the Price times the Quantity.

- 1) Go to Cell D2
- 2) From the keyboard Type: =
- 3) With the mouse click on Cell B2 (\$10.00)
  - Cell D2 should now have =B2
- 4) From the keyboard type: \*
- 5) With the mouse click on Cell C2 (5)
  - Cell D2 should now have =B2\*C2
- 6) Press Enter or click the check to accept
  - Answer: \$50.00
  - If needed return to Cell D2
- 7) Drag the Fill Handle for Cell D2 to Cell D4 to fill in the pattern for the formula

	A	B	C	D
1	Items	Price	Qty	Total
2	Aaa	\$ 10.00	5	=B2*C2
3	Bb	\$ 15.00	10	
4	C	\$ 20.00	20	
5				GRAND TOTAL:

	A	B	C	D
1	Items	Price	Qty	Total
2	Aaa	\$ 10.00	5	\$ 50.00
3	Bb	\$ 15.00	10	\$ 150.00
4	C	\$ 20.00	20	\$ 400.00
5				GRAND TOTAL:

##### **Grand Total**

- 1) Move to Cell D5
- 2) From the Home tab click on the AutoSum  $\sum$ 
  - =SUM(D2:D4)
- 4) Press Enter or click the check to accept
  - Answer: \$600.00
- 3) Change Cell B2 to \$12.50 and press enter or click the check to accept
  - Grand Total should be \$612.50

	A	B	C	D
1	Items	Price	Qty	Total
2	Aaa	\$ 12.50	5	\$ 62.50
3	Bb	\$ 15.00	10	\$ 150.00
4	C	\$ 20.00	20	\$ 400.00
5				GRAND TOTAL: \$ 612.50



# Excel Fundamentals



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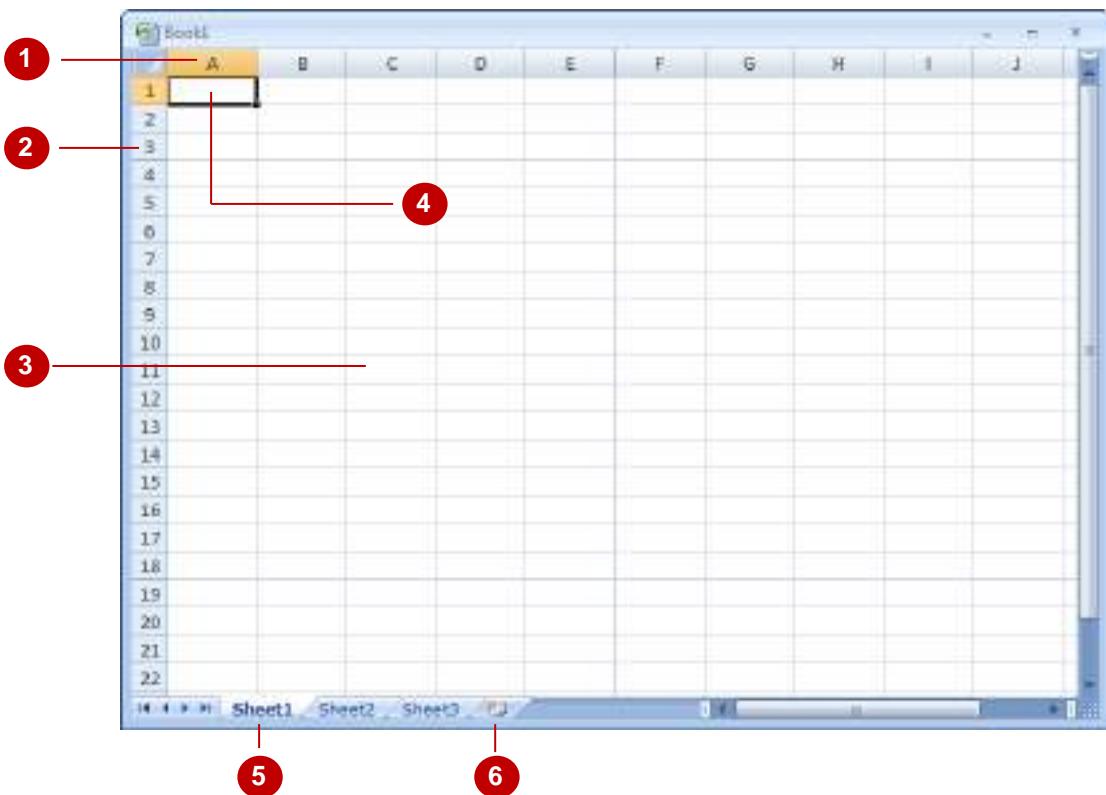
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# UNDERSTANDING WORKBOOKS

In Microsoft Excel the data you enter, whether it consists of numbers, text, or formulas, is stored in a file known as a **workbook**. Workbooks are just like huge electronic books with pages (or

**sheets**) that have been ruled into columns and rows. Before using Excel it is helpful to know what the various parts and elements that make up a workbook are.



- 1 A worksheet (or page) in a workbook contains 16,384 **columns** that are labelled using letters of the alphabet. The first column in a worksheet is labelled column **A**, while the last is labelled **XFD**
- 2 A worksheet (or page) in a workbook contains 1,048,576 **rows** that are labelled using numbers from 1 to 1,048,576
- 3 Where a column and row intersect we get what is known as a **cell**. You enter your data into these cells. Each cell in a worksheet can hold up to 32,767 characters – although it would be unrealistic to ever push it this far. Cells are referred to by their column and row labels. For example, in the screen above the cell we are pointing to is **C11** – this reference is known as the **cell address** and is most important as it is frequently used in commands and formulas
- 4 When you start typing something, you want it to appear somewhere in the worksheet. As a consequence when the Status Bar shows **Ready** mode, at least one cell in the worksheet will be highlighted – this is known as the **active cell**. In the screen above, the active cell is cell **A1** – notice that the column label and the row label also appears coloured to indicate the active cell. You can have more than one active cell – when this occurs you have what is known as a **range**
- 5 A workbook (as you would expect) is made up of pages known as **worksheets**. You can have as many sheets in a workbook as your computer resources can accommodate. As a default, a new blank workbook normally has 3 worksheets labelled **Sheet1**, **Sheet2**, and **Sheet3**. Of course these labels are pretty boring and meaningless and can be changed to something more relevant
- 6 The **Insert Worksheet** button here will insert another worksheet into the current workbook should you need it

## NAVIGATING IN A FILE

---

Arrow Keys	Move one cell to the right, left, up or down
Tab	Move once cell to the right
Ctrl+Home	To beginning file
Ctrl+End	To end of typed information
Home	Beginning of a line
End	End of a line
Page Down	Down one screen
Page Up	Up one screen
F5	To a specific page
Scroll bars	Appear at the right and on the bottom of the screen. You may click the scroll arrows, drag the scroll box or click the scroll bar to move through the document.

# TYPING TEXT OR NUMBERS INTO A WORKSHEET

Generally when you start a new spreadsheet project, the first task is to enter some headings into rows and columns. To type anything into a worksheet you need to make the cell into which

you wish to enter the data active. This can be done in a number of ways but the most common is to click in it first before typing.

## Try This Yourself:

*Before you begin ensure that there is a blank workbook on the screen...*

- 1 Click in cell **A3** to make this the active cell, type **Garden Settings** and press **Enter**

*When you press **Enter** the next cell down automatically becomes the active cell. By the way, even though the text looks like it is in cells A3 and B3 it really only is in cell A3 – since there is nothing in B3, Excel allows the spill over to be displayed giving the illusion it is in 2 cells...*

- 2 Type **Pool Covers** and press **Enter**
- 3 Repeat the above steps and enter the remaining text in column **A** as shown
- 4 Click in cell **B2** to make this the active cell, type **UK** and press **Tab**
- 5 Enter the remaining text in row **2** as shown

A	B	C	D
1			
2			
3	Garden Settings		
4			
5			
6			
7			

A	B	C	D
1			
2			
3	Garden Settings		
4	Pool Covers		
5	Fountains		
6	Large Tubs		
7	Fencing		
8			
9			

A	B	C	D	E
1				
2				
3	Garden Settings			
4	Pool Covers			
5	Fountains			
6	Large Tubs			
7	Fencing			
8				
9				

A	B	C	D	E
1				
2				
3	Garden Settings			
4	Pool Covers			
5	Fountains			
6	Large Tubs			
7	Fencing			
8				
9				

A	B	C	D	E	F
1					
2					
3	UK	AUS	INZ	SPAIN	
4	Garden Settings				
5	Pool Covers				
6	Fountains				
7	Large Tubs				
8	Fencing				
9					

## For Your Reference...

To **save a new document**:

1. Click on the **File Tab** and select **Save As**
2. Locate the storage folder in the **Navigation pane**
3. Type a **File name** and click on **[Save]**

## Handy to Know...

- In the exercise above we have named the workbook **Garden Department Sales** and filed it in **C:\Course Files for Excel 2010**. Each time you start Excel it will most likely assume you want to file your workbooks in a folder called **Documents** which is associated with the user name you use on the computer.

# TYPING SIMPLE FORMULAS IN A WORKSHEET

The whole idea behind Excel is to get it to perform calculations. In order for it to do this you need to type **formulas** in the worksheet. Usually these formulas reference existing numbers, or

even other formulas, already in the worksheet using the cell addresses of these numbers rather than the actual value in them. Formulas must be typed beginning with an equal sign (=).

## Try This Yourself:

*Continue using the previous file with this exercise...*

- 1 Click in cell **B8** to make this the active cell
- 2 Type **=B3+B4+B5+B6+B7** and examine what is happening on the screen
- 3 Press **Tab** to enter the formula and move to the next cell

*Notice that a calculation has now been performed. We have entered a formula in B8 that says "add the values in B3, B4, B5, B6, and B7 and show them here"...*

- 4 Ensure that **C8** is the active cell, type **=SUM(C3:C7)** and press **Tab**

*This is an alternative type of formula known as a "function". Again a calculation will appear in the cell...*

- 5 Click in cell **B8** and notice that the formula you typed appears in the Formula Bar, while the result of the calculation appears in the worksheet
- 6 Repeat step 5 with cell **C8**
- 7 Click on the **File Tab**  and select **Save** to save the additions that have been made

2

A	B	C	D	E
		UK	AUS	NZ SPAIN
3	Garden Setti	17200	17850	18100 63598
4	Pool Covers	21412	25942	24944 53624
5	Fountains	20824	31288	37456 48569
6	Large Tubs	20722	29782	35963 25126
7	Fencing	49254	64750	125811 75863
8		=B3+B4+B5+B6+B7		
9				

3

A	B	C	D	E
		UK	AUS	NZ SPAIN
3	Garden Setti	17200	17850	18100 63598
4	Pool Covers	21412	25942	24944 53624
5	Fountains	20824	31288	37456 48569
6	Large Tubs	20722	29782	35963 25126
7	Fencing	49254	64750	125811 75863
8		129412		
9				
10				

5

A	B	C	D	E
		UK	AUS	NZ SPAIN
3	Garden Setti	17200	17850	18100 63598
4	Pool Covers	21412	25942	24944 53624
5	Fountains	20824	31288	37456 48569
6	Large Tubs	20722	29782	35963 25126
7	Fencing	49254	64750	125811 75863
8		129412	169012	
9				

6

A	B	C	D	E
		UK	AUS	NZ SPAIN
3	Garden Setti	17200	17850	18100 63598
4	Pool Covers	21412	25942	24944 53624
5	Fountains	20824	31288	37456 48569
6	Large Tubs	20722	29782	35963 25126
7	Fencing	49254	64750	125811 75863
8		129412	169012	
9				

## For Your Reference...

To **enter a formula**:

1. Click the cell pointer on the desired cell and type the formula commencing with =
2. Press **Enter**, an arrow key or **Tab** to confirm the data entry and to move the cell pointer to another cell

## Handy to Know...

Operators

- + Addition
- Subtraction
- \* Multiplication
- / Division

# FILLING A SERIES

A **series** refers to a sequence of ordered entries in adjacent cells, such as the days of the week or months of the year. The **fill** technique can be used to create these in a worksheet for you,

reducing the amount of time taken for data entry, and ensuring that the spelling is correct. Excel provides days and months as special built-in **series** that you can access.

## Try This Yourself:

**Open File** Before starting this exercise you **MUST** open the file *E707 Filling\_1.xlsx*...

- 1 Click on cell **A4**
- 2 Move the mouse pointer to the small square (the **fill handle**) at the bottom right corner of the cell until the mouse pointer appears as a thin, black cross
- 3 Drag the mouse pointer to column **F**  
*Excel will fill the range with the first six months of the year...*
- 4 Click on cell **A5** and repeat steps **2** and **3** to create the series of months with their full names  
*You can also fill more than one row at a time...*
- 5 Select the range **A6:A12**
- 6 Repeat steps **2** and **3** to fill across to column **F**
- 7 Examine each of the series created by the filling process

2

A	B	C	D	E	F	G
1						
2						
3	Normal Series					
4	Jan					
5	January					
6	Mon					
7	Monday					
8	Quarter 1					
9	Qtr 1					
10	Q1					
11	1st Day					
12	Serial 002					
13						

3

A	B	C	D	E	F	G
1						
2						
3	Normal Series					
4	Jan	Feb	Mar	Apr	May	Jun
5	January					
6	Mon					
7	Monday					
8	Quarter 1					
9	Qtr 1					
10	Q1					
11	1st Day					
12	Serial 002					
13						

6

A	B	C	D	E	F	G
1						
2						
3	Normal Series					
4	Jan	Feb	Mar	Apr	May	Jun
5	January	February	March	April	May	June
6	Mon	Tue	Wed	Thu	Fri	Sat
7	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2
9	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2
10	Q1	Q2	Q3	Q4	Q1	Q2
11	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day
12	Serial 002	Serial 003	Serial 004	Serial 005	Serial 006	Serial 007
13						
14	Growth Series					

## For Your Reference...

### To fill a series:

1. Click on the first cell in the series
2. Drag from the fill handle across as many columns as required

## Handy to Know...

- As you drag the fill handle across, a **tool tip** appears below the fill pointer displaying the current value in the series. This is really handy when you want to end on a particular month, day or value.

# INSERTING AND DELETING WORKSHEETS

Once you've decided on a structure for your workbook, you may find that there are some worksheets that can be **deleted**. Alternatively, you may find that you need additional blank

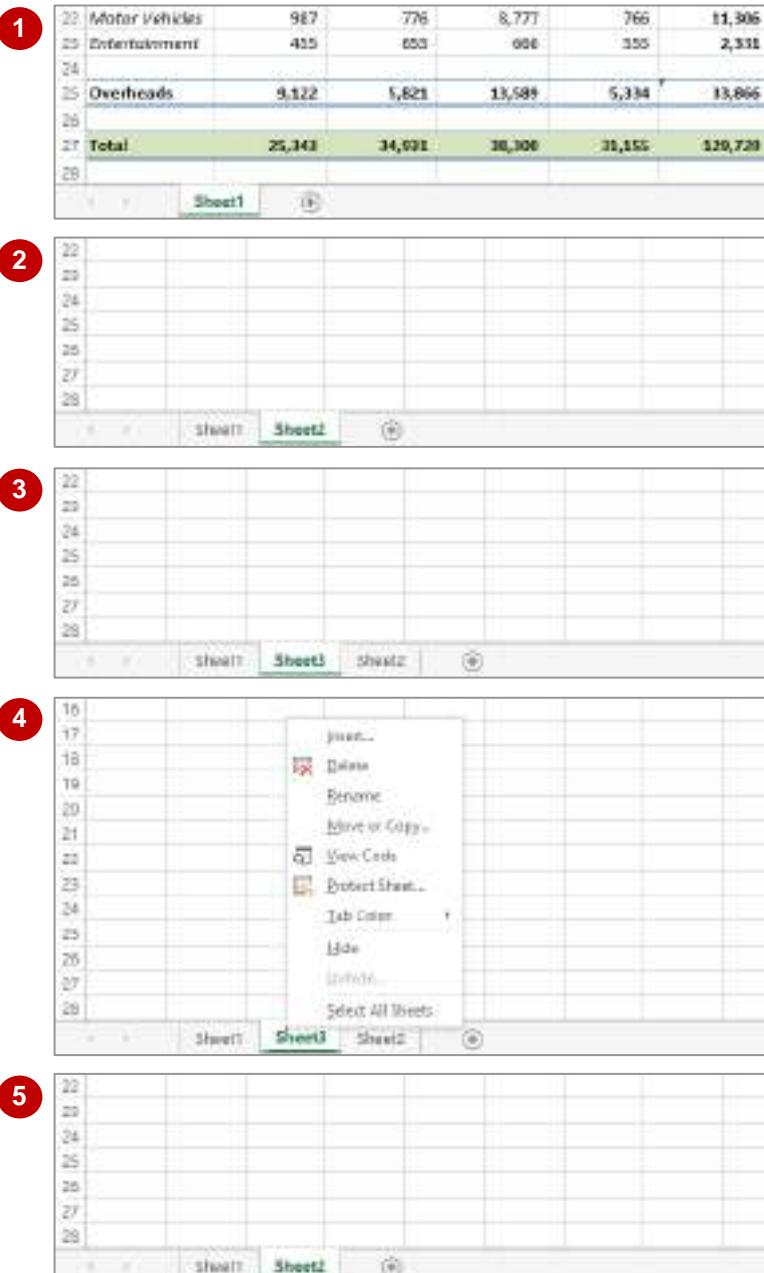
worksheets **inserted**. However, remember that deletion of worksheets is permanent and can't be undone using **Undo**, so always save your workbook before making these changes.

## Try This Yourself:

**Open File**

Before starting this exercise you **MUST** open the file *E1324 Worksheet Techniques\_1.xlsx...*

- 1 Examine the workbook – it currently contains one worksheet named **Sheet1**
- 2 Click on the **New Sheet** icon at the end of the worksheet tabs  
*A new worksheet named Sheet2 will be inserted. You can also use the keyboard shortcut...*
- 3 Press **Shift** + **W** to insert another new worksheet  
*This sheet is named Sheet3 and is inserted before the currently selected sheet. Now let's delete a sheet...*
- 4 Right-click on the **Sheet3** worksheet tab to display the shortcut menu
- 5 Select **Delete** to remove the worksheet  
*As the worksheet contains no data, the sheet will be deleted immediately. If a worksheet contains data, Excel will ask you to confirm your actions...*
- 6 Repeat steps 4 and 5 to delete **Sheet2**



## For Your Reference...

To **insert a new worksheet** into a **workbook**:

- Click on the **New Sheet** icon to the right of the worksheet tabs

To **delete a worksheet** from a **workbook**:

- Right click on the worksheet tab, then select **Delete**

## Handy to Know...

- To insert a worksheet between existing worksheets, right-click on the worksheet tab before which you want to insert a new sheet, then click on **Insert** to display the **Insert** dialog box. Select **Worksheet** and click on **[OK]**.

# COPYING A WORKSHEET

Just as you can copy the contents of cells and ranges within a worksheet, you can **duplicate** worksheets within a workbook. This technique is ideal for replicating layouts. For example, if you

have a budget workbook that contains data for several departments, you can create a worksheet for the first department and then copy it to create identical worksheets for other departments.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1324 Worksheet Techniques\_1.xlsx...

- 1 Right-click on **Sheet1** to display the worksheet shortcut menu
- 2 Select **Move or Copy** to display the **Move or Copy** dialog box
- 3 Click on **Create a copy** so it appears ticked, then click on **[OK]**

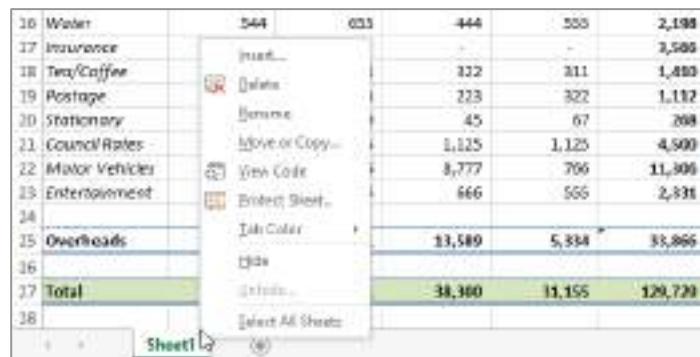
The new worksheet is named **Sheet1 (2)**. Let's create a "template" from this worksheet by deleting unwanted data...

- 4 Select the range **B7:E9**, then press **Del** to clear it
- 5 Repeat step 4 to clear the ranges **B14:E23**, **G7:J9** and **G14:J23**, then press **Ctrl + Home** to return to cell **A1**

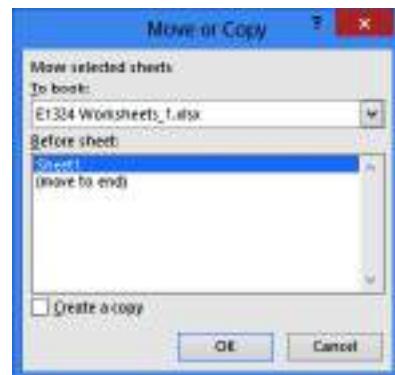
Now we can copy this "template" to create additional worksheets...

- 6 Repeat steps 1 to 3 three times to create three copies of the template worksheet – this time without data
- The final worksheet should be named **Sheet1 (5)**

**1**



**2**



**3**

22 Motor Vehicles	367	770	8,777	706	11,306
23 Entertainment	455	633	686	553	2,331
24					
25 Overheads	9,122	5,821	13,589	5,334	33,866
26					
27 Total	25,343	34,931	38,360	31,155	129,729
28					

**6**

22 Motor Vehicles	987	778	8,777	706	11,306
23 Entertainment	455	655	686	555	2,331
24					
25 Overheads	9,122	5,821	13,589	5,334	33,866
26					
27 Total	25,343	34,931	38,360	31,155	129,729
28					

## For Your Reference...

To **copy a worksheet**:

1. Right-click on the worksheet to copy, then select **Move or Copy**
2. Click on **Create a copy** so it appears ticked
3. Click on **[OK]**

## Handy to Know...

- You can copy the current worksheet using the **HOME** tab by clicking on **Format** in the **Cells** group, then clicking on **Move or Copy Sheet**.
- The **Before sheet** options in the **Move or Copy** dialog box allow you to position the copied worksheet where you want.

# RENAMING A WORKSHEET

By default, Excel names worksheets as **Sheet1**, **Sheet2**, **Sheet3**, etc. These names are fine if you are not planning to share the workbook, but changing these to something more relevant

makes it much easier to understand the purpose of a worksheet. You can also adjust the horizontal scroll bar to make room for longer, more meaningful worksheet names.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file **E1324 Worksheet Techniques\_2.xlsx...**

- 1** Point to the vertical dots between the sheet names and the horizontal scroll bar, as shown

The pointer will change to a double-headed arrow...

- 2** Click and drag the bar across to the right, to the end of column **L**, then release the mouse button

- 3** Double-click on **Sheet1 (5)** to select the worksheet tab name

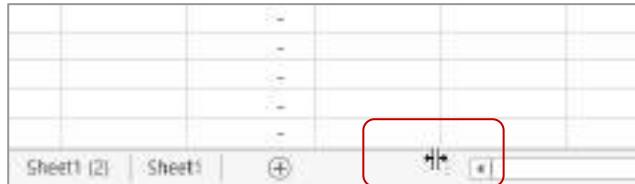
This will also place it into edit mode...

- 4** Type **Comms**, then press **Enter**

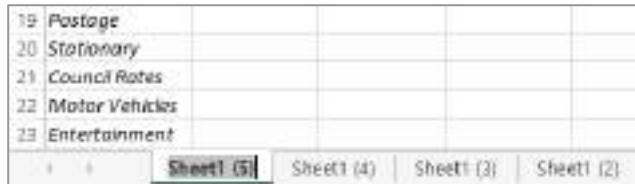
- 5** Repeat steps **3** and **4** to rename the other worksheets:

**Sheet1 (4)** Admin  
**Sheet1 (3)** Shop  
**Sheet1 (2)** IT  
**Sheet1** Maintenance

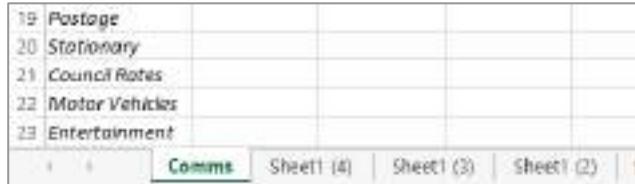
**1**



**3**



**4**



**5**



## For Your Reference...

To **rename a worksheet**:

1. Double click on the current name on the worksheet tab
2. Type the new name and press **Enter**

## Handy to Know...

- You can rename a worksheet by right-clicking on the worksheet tab to display the shortcut menu and clicking on **Rename**.
- A worksheet tab name can contain up to 31 characters including spaces, but it is better to keep it short and succinct.

# MOVING OR COPYING A SHEET TO ANOTHER WORKBOOK

You can **copy** worksheets to other workbooks as required. For example, you might need to keep records for six different divisions – rather than send each division the entire set of records, you

can copy their worksheet to another workbook and send them their data only. If worksheets exist in the other workbook, you will need to determine the order in which to place the copied worksheet.

## Try This Yourself:

**Same File**

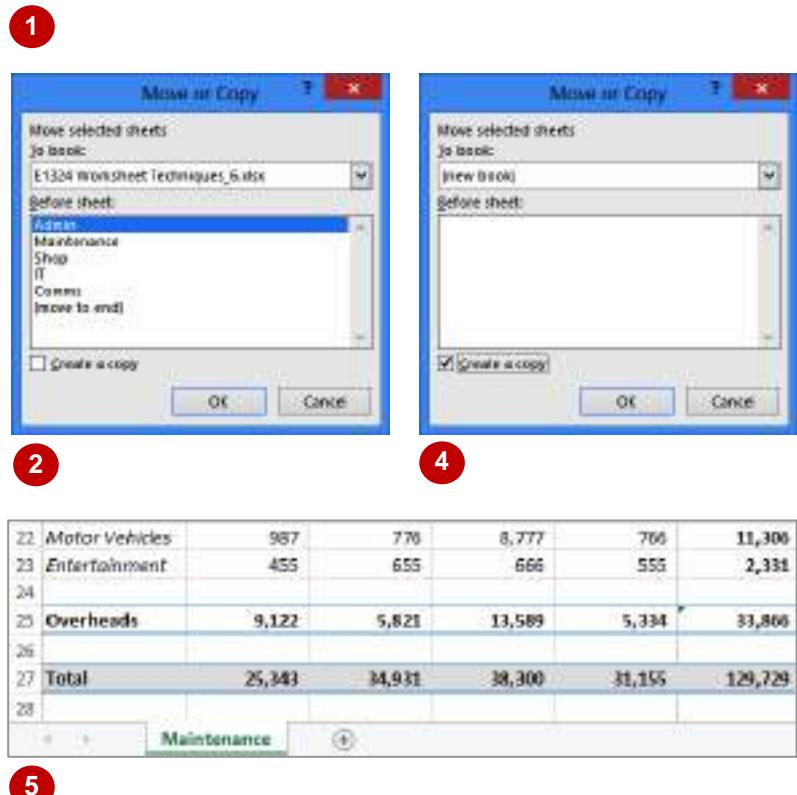
Continue using the previous file with this exercise, or open the file E1324 Worksheet Techniques\_6.xlsx...

- 1 Click on the **Maintenance** worksheet tab

*We'll copy this completed data to another workbook...*

- 2 Right-click on the worksheet tab to display the shortcut menu, then click on **Move or Copy** to display the **Move or Copy** dialog box
- 3 Click on the drop arrow for **To book**, then select **(new book)**
- 4 Click on **Create a copy** so it appears ticked  
*This will create a new workbook as well as making a copy of the worksheet...*
- 5 Click on **[OK]**  
*A new workbook will be created and Maintenance will be the only worksheet in the workbook...*
- 6 Save the new workbook as **Maintenance.xlsx**, then close it

22	Motor Vehicles	987	776	8,777	766	11,306
23	Entertainment	455	655	666	555	2,331
24						
25	Overheads	9,122	5,821	13,589	5,334	33,866
26						
27	<b>Total</b>	25,343	34,931	38,300	31,155	129,729
28						



## For Your Reference...

### To copy a sheet to another workbook:

1. Right click on the worksheet tab, then click on **Move or Copy**
2. Select either **(new book)** or the name of another workbook in **To book**
3. Tick **Create a copy**, then click on **[OK]**

## Handy to Know...

- To copy a worksheet into an existing workbook, make sure that you open the destination workbook first to ensure that it is listed in **To book** in the **Move or Copy** dialog box.

# CHANGING WORKSHEET TAB COLOURS

To make it easier for you to distinguish between worksheets, Excel enables you to change the colours of worksheet tabs. This allows you, for example, to quickly distinguish between different

financial years, departments or months. The **active sheet** appears as underlined in a gradient version of the selected colour, while inactive tabs will display a solid colour background.

## Try This Yourself:

**Same File** Continue using the previous file with this exercise, or open the file E1324 Worksheet Techniques\_7.xlsx...

- 1 Click on the **Admin** worksheet tab to select the worksheet
- 2 Right-click on the worksheet tab to display the shortcut menu, then point to **Tab colour**  
*This will display a palette of colour options...*
- 3 Click on **Red** under **Standard colours** to apply the colour to the tab
- 4 Right-click on the **Maintenance** worksheet tab to display the shortcut menu, click on **Tab colour**, then click on **Blue** under **Standard colours**  
*Notice how the Admin worksheet tab colour is now a solid rather than a gradient...*
- 5 Repeat either technique to apply the following colours:  

<b>Shop</b>	<b>Yellow</b>
<b>IT</b>	<b>Green</b>
- 6 Click on the **Admin** worksheet tab to view the results



## For Your Reference...

To **change the colour of a worksheet tab**:

- 1 Right-click on the worksheet tab to display the shortcut menu
- 2 Point to **Tab colour** to display a palette of colour options
- 3 Click on the desired colour

## Handy to Know...

- To apply the same colour to two or more sheets at once, select them first. Hold down **Shift** to select consecutive worksheets or hold down **Ctrl** to select non-consecutive worksheets.

# GROUPING WORKSHEETS

Worksheet **grouping** enables you to make the same change at once to all selected worksheets. This feature is useful in situations where your worksheets have identical layouts or text. For

example, if you want to format the heading for multiple worksheets, you simply **group** the worksheets, make a change to one worksheet and the other worksheets will reflect the change also.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1324 Worksheet Techniques\_8.xlsx...

- 1 Click on the **Admin** worksheet tab, hold down **Shift**, then click on the **Shop** worksheet tab to select the first three worksheets
- 2 Click in cell **A1** to select the cell
- 3 Click on the **HOME** tab, then click on **Italics** in the **Font** group
- 4 Click on the **Maintenance** worksheet tab, then the **Shop** worksheet tab to see that the changes have been applied here
- 5 Click on the **IT** worksheet tab to see that the changes have *not* been applied to this worksheet

Since this was not part of the grouped sheets the changes have not been applied here. Notice too that clicking on a tab deselects the previous grouping

1

2

3

4

5

## For Your Reference...

### To group worksheet tabs:

1. Click on the first worksheet tab
2. Hold down **Shift**, then click on the last worksheet tab

## Handy to Know...

- To deselect a group, either click on the tab of a worksheet that is not in the group, or right-click on a tab and select **Ungroup Sheets**.
- Most formatting and text changes done on a worksheet in a group will be applied to other sheets in that grouping.

# FREEZING ROWS AND COLUMNS

When you lay out your data in rows and columns, it is most likely that your headings end up at the top or to the left of your data. If you have a large amount of data, you may find that when you

scroll across or down to particular cells, the headings scroll out of view. This problem can be resolved by **freezing** the rows and/or columns that hold the headings.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1324 Worksheet Techniques\_11.xlsx...

- Click on the **Maintenance** worksheet tab, then spend a few moments examining the worksheet

Depending on your screen, it is possible that you won't be able to see all of the figures on the screen at once...

- Click in cell **B6** to select the cell
- Click on the **VIEW** tab, click on **Freeze Panes** in the **Window** group, then select **Freeze Panes**
- Thin black lines appear above and to the left of the selected cell. This indicates that the areas above and to the left are frozen...
- Scroll to the right until **Yearly Average** in column **L** appears next to column **A**
- Scroll down until **Overheads** in row **25** is below row **5**
- Press **Ctrl + Home** to move to cell **B6** – this is our temporary home cell, as the cells above and to the left are frozen
- On the **VIEW** tab, click on **Freeze Panes** in the **Freeze Panes** group, then click on **Unfreeze Panes** to unfreeze the rows and columns

	A	B	C	D	E	F
1	Expenditure	Budget				
2						
3						
4	Expense Type		Last Year			
5		Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total
6						
7	Wages	3,000	3,012	2,900	2,445	10,457
8	Raw Materials	12,963	15,632	22,445	23,232	84,272
9	Freight	258	456	266	344	1,134
10						
11	Direct Costs	16,221	29,110	24,711	25,821	95,863
12						

3

	A	L	M	N	O	P	Q	R
1	Expenditure							
2								
3								
4	Expense Type		Yearly					
5			Average					
6								
7	Wages	30,933						
8	Raw Materials	95,624						
9	Freight	3,257						
10								
11	Direct Costs	100,573						
12								

4

	A	L	M	N	O	P	Q	R
1	Expenditure							
2								
3								
4	Expense Type		Yearly					
5			Average					
6								
25	Overheads	20,900						
26								
27	Total	130,473						
28								
29								
30								
31								

5

## For Your Reference...

To **freeze panes** in a **worksheet**:

- Click in the cell below and to the right of the area you want to freeze/unfreeze
- Click on the **VIEW** tab
- Click on **Freeze Panes** in the **Window** group, then select **Freeze Panes**

## Handy to Know...

- If you want to freeze only the rows above the selected cell (leaving all columns unfrozen), select the cell in column **A** of that row – e.g. to freeze rows **1** to **6**, click in cell **A7**. The same applies to freezing only columns and leaving the rows unfrozen: select the cell in row **1**.

# SELECTING RANGES

A **contiguous range** is any group of selected cells that form either a square or a rectangle. A single cell that is selected is also considered to be a range. Ranges can be selected using the

mouse, the keyboard or a combination of the two. Once selected, you can use the range for input, or apply formatting, or copy the cells as required.

## Try This Yourself:

**Open File** Before starting this exercise you  
MUST open the file **E705  
Ranges\_1.xlsx...**

- 1 Click on cell **B7** to select it  
*Because it is the only cell selected it is the active cell...*
  - 2 Hold down the **Shift** key and click in cell **E10**

Even though a range has been selected, the active cell is B7 – it appears in a different colour and its contents appear in the formula bar. You can keep the range selected and change the active cell within the range using the keyboard...

- 3 Press **Enter** several times and watch the various cells become active through the selection
  - 4 Click in cell **B7**, hold down the mouse button, and drag down to cell **C10** before releasing the mouse

*The previous selection has disappeared and the range B7 to C10 is now selected...*
  - 5 Press **Ctrl** and **Home** to deselect the selected cells and return the cell pointer to cell **A1**

1	A	B	C	D	E	F
<b>Alpheius Global Enterprises</b>						
2 Annual Sales						
3 Health Services						
4						
5						
6	Midweek	Week 1	Week 2	Week 3	Week 4	Week 5
7	Tuesday	21,412	25,942	24,944	63,624	36,241
8	Wednesday	20,824	31,288	37,456	48,569	45,214
9	Thursday	20,722	29,782	36,963	25,126	76,963
10	Friday	49,264	64,750	125,811	75,063	15,429
11						
12	Subtotal	112,212	151,762	224,174	203,182	171,847
13						

	Week 1	Week 2	Week 3	Week 4	Week 5
4					
5					
6 Midweek					
7 Tuesday	21,412	25,942	24,944	53,624	36,241
8 Wednesday	20,824	31,288	37,456	46,580	45,214
9 Thursday	20,722	29,782	35,963	26,126	76,963
10 Friday	49,254	64,750	125,811	75,863	15,429
11					
12 Subtotal	112,212	151,762	224,174	203,182	171,847

	Week 1	Week 2	Week 3	Week 4	Week 5
4					
5					
6 Midweek					
7 Tuesday	21,412	25,942	24,944	53,624	35,241
8 Wednesday	20,824	31,288	37,456	48,569	45,214
9 Thursday	20,722	29,782	35,963	25,126	75,963
10 Friday	49,254	64,750	125,811	75,893	15,429
11					
12 Subtotal	112,212	151,762	224,174	203,182	171,847

		Week 1	Week 2	Week 3	Week 4	Week 5
4						
5	Midweek					
6	Tuesday	21,412	25,942	24,944	53,624	35,241
7	Wednesday	20,824	31,288	37,456	48,569	45,214
8	Thursday	20,722	29,782	35,963	25,126	75,963
9	Friday	49,264	64,500	125,811	75,863	16,429
10						
11						
12	Subtotal	112,212	151,762	224,174	203,182	171,847

## **For Your Reference...**

To **select ranges** with the **mouse**:

1. Click in the left-most cell of the range
  2. Hold down the **Shift** key and click in the last cell, Or
  3. Drag the mouse pointer to the bottom right corner of the range

### **Handy to Know...**

- When a range has been selected it can be used as an **input range**. You can then enter data into the active cell and move the active cell to either the cell below by pressing  or the adjacent cell by pressing .

# SELECTING ROWS

If you want to make changes to an **entire row**, such as bolding all of the headings in a row or changing the font of all the cell entries, you must first select the row. This is done by clicking on the

row header to the left of the row. Remember that any changes you make will apply to every cell in the row all the way across to column XFD, so be careful!

## Try This Yourself:

**Same File** Continue using the previous file with this exercise, or open the file E705 Ranges\_1.xlsx...

- 1 Press **Ctrl** + **Shift** to make cell **A1** the active cell
- 2 Move the mouse pointer to the row heading for row **5**  
Notice that the mouse pointer changes to a black arrow that points towards the row...
- 3 Click once on row heading **5** to select the entire row
- 4 Click in cell **B7** and press **Enter** + **Shift**  
This is the key combination for selecting an entire row...
- 5 Click on the row header for row **7** to select this row
- 6 Hold down **Ctrl** and click on the row header for row **10**  
All rows from 7 to 10 will be selected...
- 7 Click in the row header for row **5**, then hold down the left mouse button and drag down the row headers to row **10**  
This is another technique for selecting rows, but it does require a steady hand!

2

	A	B	C	D	E
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				
4	Midweek	Week 1	Week 2	Week 3	Week 4
5	Tuesday	21,412	26,942	24,944	53,624
6	Wednesday	20,824	31,288	37,456	48,569
7	Thursday	20,722	29,782	35,963	25,126
8	Friday	49,254	64,750	125,811	75,863

3

	A	B	C	D	E
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				
4	Midweek	Week 1	Week 2	Week 3	Week 4
5	Tuesday	21,412	26,942	24,944	53,624
6	Wednesday	20,824	31,288	37,456	48,569
7	Thursday	20,722	29,782	35,963	25,126
8	Friday	49,254	64,750	125,811	75,863

4

	A	B	C	D	E
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				
4	Midweek	Week 1	Week 2	Week 3	Week 4
5	Tuesday	21,412	26,942	24,944	53,624
6	Wednesday	20,824	31,288	37,456	48,569
7	Thursday	20,722	29,782	35,963	25,126
8	Friday	49,254	64,750	125,811	75,863

6

	A	B	C	D	E
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				
4	Midweek	Week 1	Week 2	Week 3	Week 4
5	Tuesday	21,412	26,942	24,944	53,624
6	Wednesday	20,824	31,288	37,456	48,569
7	Thursday	20,722	29,782	35,963	25,126
8	Friday	49,254	64,750	125,811	75,863

7

	A	B	C	D	E
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				
4	Midweek	Week 1	Week 2	Week 3	Week 4
5	Tuesday	21,412	26,942	24,944	53,624
6	Wednesday	20,824	31,288	37,456	48,569
7	Thursday	20,722	29,782	35,963	25,126
8	Friday	49,254	64,750	125,811	75,863

## For Your Reference...

To **select** an entire **row**:

1. Click on the row header of the row that you want to select  
OR
1. Click in any cell in the row and press **Home** + **Shift**

## Handy to Know...

- When **every cell** in a row or column is selected, the corresponding row or column header is filled in dark blue. When only **some** of the cells are selected, the row or column header is filled in orange. These indicators help you locate the active cell(s) on the worksheet.

# SELECTING COLUMNS

If you want to make changes to an **entire column**, such as bolding all of the headings in a column or changing the font of all the cell entries, you must first select the column. This is done by

clicking on the column header directly above the column. Remember that any changes you make will apply to every cell in the column all the way down to row 1,048,576!

## Try This Yourself:

**Same File** Continue using the previous file with this exercise, or open the file E705 Ranges\_1.xlsx...

- 1 Press **Space** + **Shift** to make cell **A1** the active cell
- 2 Move the mouse pointer to the column heading for column **B**  
*Notice that the mouse pointer changes to a black arrow pointing down the column...*
- 3 Click once to select the column  
*This time the row headers change to orange to indicate that at least one cell (but not all) in each row is selected...*
- 4 Click in cell **D6** and press **Shift** + **Space**  
*This key combination also selects an entire column...*
- 5 Click on the column header for column **B** to select it
- 6 Hold down **Ctrl** and click on the column header for column **D**  
*This time, columns B, C, and D are all selected...*
- 7 Click in the column header for column **A**, then hold down the left mouse button and drag the mouse pointer across the column headings to column **E**

2

A	B	C	D	E	F
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				

3

A	B	C	D	E	F
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				
4					
5		Week 1	Week 2	Week 3	Week 4
6	Midweek				Week
7	Tuesday	21,412	25,942	24,944	53,624
8	Wednesday	20,824	31,288	37,466	48,569
9	Thursday	20,722	29,782	35,963	25,126
10	Friday	49,254	64,750	125,811	75,863
11					15

4

A	B	C	D	E	F
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				
4					
5		Week 1	Week 2	Week 3	Week 4
6	Midweek				Week
7	Tuesday	21,412	25,942	24,944	53,624
8	Wednesday	20,824	31,288	37,466	48,569
9	Thursday	20,722	29,782	35,963	25,126
10	Friday	49,254	64,750	125,811	75,863
11					15

6

A	B	C	D	E	F
1	Alpheius Global Enterprises				
2	Annual Sales				
3	Health Services				
4					
5		Week 1	Week 2	Week 3	Week 4
6	Midweek				Week
7	Tuesday	21,412	25,942	24,944	53,624
8	Wednesday	20,824	31,288	37,466	48,569
9	Thursday	20,722	29,782	35,963	25,126
10	Friday	49,254	64,750	125,811	75,863
11					15

## For Your Reference...

To **select** an entire **column**:

1. Click on the column heading of the column that you want to select  
OR
1. Click in any cell in the column and press **Home** + **Ctrl**

## Handy to Know...

- Make sure that you check your worksheet carefully after you've made changes to entire columns. Remember that all of the cells in that column are affected – even those in rows below the visible area.

# UNDERSTANDING FORMATTING

In Excel there are always two aspects to a number: how the number presents on the screen (known as **formatting**) and the underlying value of the number. Take 2% as an example – on the

screen it is formatted to appear as a number with a percentage sign, whereas the real value in the cell is .02.

## Number Formatting – The Veil Placed Over Numbers

All calculations in Excel are performed using numbers – this is only logical. So, when you want to perform a calculation, you type the numbers in various cells, then create formulas to reference those numbers. How do you show what those numbers represent? For example, how do you show you are working with currency, or percentages, or even dates (which in Excel are really *numbers*)?

Excel allows you to show these representations using **number formatting**. With number formatting you change the way a number looks so that it makes immediate sense to the reader of your worksheet. The underlying value of number, however, remains unchanged. For example, instead of showing sales tax in a worksheet as .1 you show it as **10%**, to show **12889.95** as currency it would appear **\$12,889.95** or **€12,889.95** (depending upon the currency you are working with), and to show **44104** as a date you show it as **30-Sep-2020** (remember, dates are actually *numbers* representing the number of days from January 1, 1900).

The following worksheet contains formatted numbers:

A	B	C	D	E	F	G	H	I
1	<b>Sales Earnings</b>							
2				Date Started	Height (Mtr)	Weight (Kg)	Com'n %	Commission
3	No	First Name	Last Name	Started	(Mtr)	(Kg)	Total Sales	%
4	2344	John	Smith	03-Oct-03	1.67	69.30	\$8,220,266.00	2%
5	3433	Mary	Henry	12-Apr-04	2.19	75.22	\$12,771,833.00	2%
6	3233	Harry	Ullin	02-Mar-99	1.45	87.90	\$35,324,399.00	2%
7	5445	Jim	Harrison	04-Jul-92	2.15	95.66	\$17,338,194.00	2%
8	3333	Larry	Graham	14-May-05	2	89.44	\$9,670,630.00	2%
9	4444	David	Jenkins	06-Feb-07	1.23	68.30	\$6,152,310.00	3%
10	3332	Ian	Quinn	26-Mar-95	1.67	69.32	\$36,973,644.00	3%
11	9887	Horace	Smyth	23-Dec-01	1.79	80.48	\$10,755,146.00	3%
12	4646	Yolanda	Victor	05-Jun-89	1.58	80.52	\$5,061,883.00	4%
13	5555	Quentin	Engels	08-Apr-01	1.89	78.40	\$13,329,586.00	5%
14								

With the formatting removed from the numbers the worksheet looks as follows:

A	B	C	D	E	F	G	H	I
1	<b>Sales Earnings</b>							
2				Date Started	Height	Weight	Com'n	Commission
3	No	First Name	Last Name	Started	(Mtr)	(Kg)	Total Sales	%
4	2344	John	Smith	37897	1.65	69.3	8220266	0.02
5	3433	Mary	Henry	38089	2.1	75.22	12771833	0.02
6	3233	Harry	Ullin	36221	1.797	87.9	35324399	0.02
7	5445	Jim	Harrison	33789	2.21	95.66	17338194	0.02
8	3333	Larry	Graham	38485	1.935	89.44	9670630	0.02
9	4444	David	Jenkins	39113	1.63	68.3	6152310	0.03
10	3332	Ian	Quinn	34784	1.862	69.32	36973644	0.03
11	9887	Horace	Smyth	37248	1.77	80.48	10755146	0.03
12	4646	Yolanda	Victor	32664	1.62	80.52	5061883	0.04
13	5555	Quentin	Engels	36984	1.9	78.4	13329586	0.05
14								

Formatting can also be applied as you type. For example, if you type **30/9/2020** Excel will place the number **44104** in the cell but will format this number as a date and show it as you typed it. There are also a range of number formatting options on the ribbon that allow you to apply formatting to numbers after they have been entered into a worksheet.

# APPLYING GENERAL FORMATTING

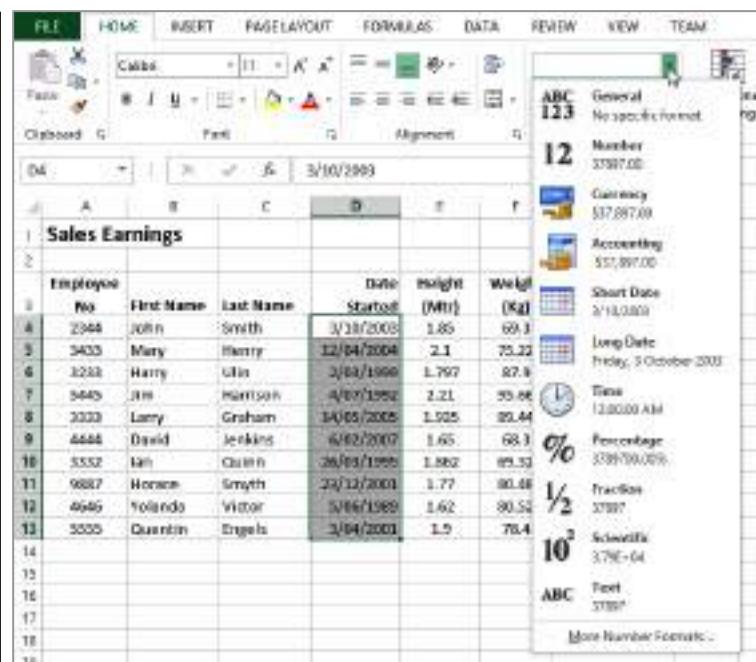
The **Number Format** command in the **Number** group on the **HOME** tab contains a drop arrow that provides a gallery of the more commonly used number formats. You can apply these

formats easily and quickly to a selected cell or range of cells in the worksheet.

## Try This Yourself:

**Open File** Before starting this exercise you MUST open the file *E1315 Number Formatting\_1.xlsx*...

- 1 Click in cell **D4**, hold down **Shift**, then click in cell **D13** to select the range containing dates
- 2 Click on the **HOME** tab, then click on the drop arrow for **Number Format** in the **Number** group to see a gallery of number formats
- 3 Click on **Long Date** to make the short dates in the selected range appear as long dates
- 4 Click in cell **E4**, hold down **Shift**, then click in cell **E13** to select the range containing units of measure
- 5 Click on the drop arrow for **Number Format**, then select **Number** to display these as numbers with **2** decimal places
- 6 Repeat the above steps to change **G4:G13** to **Currency**
- 7 Repeat the above steps and change the following ranges as shown:  
**H4:H14 Percentage**  
**I4:I4 Accounting**  
**G15:I15 Currency**



2

Date	Height (Mtr)	Weight (kg)	Total Sales	Com'n %	Commission
Friday, 3 October 2003	1.85	69.3	\$8,220,266.00	2.00%	\$ 164,405.32
Monday, 12 April 2004	2.10	75.22	\$12,771,833.00	2.00%	\$ 255,436.68
Tuesday, 2 March 1999	1.80	87.9	\$35,324,399.00	2.00%	\$ 706,487.98
Saturday, 4 July 1992	2.21	96.65	\$17,338,194.00	2.00%	\$ 346,653.88
Saturday, 31 May 2005	1.94	89.44	\$9,670,630.00	2.00%	\$ 193,412.60
Tuesday, 6 February 2007	1.65	68.3	\$6,152,310.00	3.00%	\$ 184,569.30
Sunday, 16 March 1995	1.86	69.32	\$36,975,644.00	3.00%	\$ 1,109,209.32
Sunday, 23 December 2001	1.77	80.48	\$10,755,146.00	3.00%	\$ 322,654.88
Monday, 5 June 1989	1.62	80.52	\$5,001,883.00	4.00%	\$ 202,475.32
Tuesday, 3 April 2001	1.90	78.4	\$13,329,586.00	5.00%	\$ 666,479.30
			<b>\$155,597,898.00</b>		<b>\$4,151,394.00</b>

7

## For Your Reference...

To apply **general formatting** to **numbers**:

1. Select the range to format
2. Click on the **HOME** tab, then click on the drop arrow for **Number Format** in the **Number** group
3. Click on the desired number format

## Handy to Know...

- Excel may appear to round values up or down as necessary – however, the value in the cell does not change. Sometimes you'll see minor rounding discrepancies.
- The **Currency** format shows the currency format and symbol appropriate to the country your computer is configured for.

# CHANGING FONTS

The appearance that you choose for your text is referred to as the **font** or **typeface**. Font traditionally refers to a combination of typeface, style and size in points (e.g. Arial Bold 12 pt).

In Excel 2007, **font** just refers to the typeface or shape of the letters. Typical classic fonts include Times New Roman, Arial, Century Gothic and **COPPERPLATE**.

## Try This Yourself:

**Same File** Continue using the previous file with this exercise, or open the file E722 Font Formatting\_1.xls...

- 1 Click in cell **A1** to make the cell with the main heading the active cell
- 2 Click on the drop arrow next to the **Font** command  in the **Font** group on the **Home** tab to display a gallery of available fonts
- 3 Point to **Arial Narrow**, then **Book Antiqua**, **Garamond** and **Gill Sans MT**  
*If you don't have these fonts, try different ones. As you point to each font, the preview will change...*
- 4 Scroll to and click on **Comics Sans MS**, or another font of your choice if you don't have this one  
*This time the font formatting has changed in the cell and is no longer just a preview – it won't change again unless you make another font selection.*

1

A	B	C	D
1 Alpheius Global Enterprises			
2 Revenue			
3			
4	London	Dublin	Melbourne
5			
6 January	1,050,254	1,547,000	1,488,369
7 February	1,524,294	1,685,548	1,599,854
8 March	3,521,487	2,985,448	2,741,221
9 1st Quarter	6,096,035	6,217,996	5,829,444
10			

4

A	B	C	D
1 Alpheius Global Enterprises			
2 Revenue			
3			
4	London	Dublin	Melbourne
5			
6 January	1,050,254	1,547,000	1,488,369
7 February	1,524,294	1,685,548	1,599,854
8 March	3,521,487	2,985,448	2,741,221
9 1st Quarter	6,096,035	6,217,996	5,829,444
10			

## For Your Reference...

To **apply font formatting**:

1. Select the text
2. Click on the drop arrow  for **Font**
3. Point to a font to preview it
4. Click on the font to apply it

## Handy to Know...

- You can jump directly to a font. For example, if you want to preview Garamond, click on the name of the font in the **Font** command and press . Excel will jump to the fonts that start with **G** and **Live Preview** will display the text temporarily. Keep typing the name until you reach the required font.

# CHANGING FONT SIZE

One way that text can be emphasised is by changing the **size** of the font. For example, if your normal text is 11 pt, you may like to make the headings 13 pt or larger. Font size may also

be changed for small detailed items, such as comments or a caption. Main headings in a worksheet usually appear in a slightly larger font size compared to the rest of the data.

## Try This Yourself:

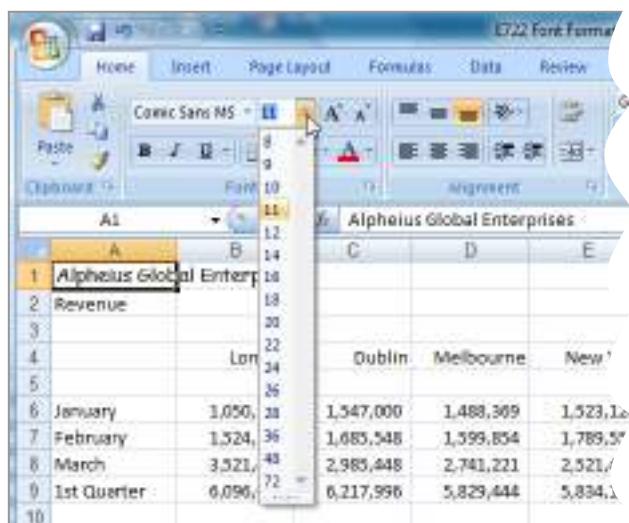
**Same File** Continue using the previous file with this exercise, or open the file E722 Font Formatting\_2.xlsx...

- 1 Click in cell **A1** to make the cell with the main heading the active cell
- 2 Click on the drop arrow next to the **Font Size** command in the **Font** group on the **Home** tab to display a gallery of available sizes
- 3 Point to various sizes and notice how **Live Preview** shows you how the heading will look
- 4 Click on **16** to change the heading to **16 pt**  
*You can also change the font size of parts of a document, and you can use the Mini toolbar...*
- 5 Click in cell **A2**
- 6 Click with the right-mouse button to display the mini-toolbar and the shortcut menu
- 7 Click on the drop arrow next to **Font Size** and click on **14**
- 8 Click in cell **A3** to hide the toolbar

1

A	B	C	D	E
1 Alphelius Global Enterprises				
2 Revenue				
3	London	Dublin	Melbourne	New York
4				

2



8

A	B	C	D	E
1 Alphelius Global Enterprises				
2 Revenue				
3	London	Dublin	Melbourne	New York
4	January	1,050,254	1,547,000	1,488,369
5	February	1,524,294	1,685,548	1,599,854
6	March	3,521,487	2,985,448	2,741,221
7	1st Quarter	6,096,035	6,217,996	5,829,444
8				5,834,123
9				
10				

## For Your Reference...

To **change font size**:

1. Select the cell or range that you want to change
2. Click on the drop arrow of **Font Size**
3. Click on the required font size

## Handy to Know...

- You may have noticed that the text didn't change size when you used the mini toolbar until you actually clicked on a different font size. This is because **Live Preview** doesn't work with the mini toolbar.

# UNDERSTANDING BORDERS

Borders are lines that are placed around the edges of individual cells or ranges. The lines may be thin, thick, solid, dashed, black or coloured, or even double lines. The reason for using borders

is that the lines can be used to group together data or indicate totals, or to draw the user's attention to critical cells that may need special data entry. Here are some examples.

## A Worksheet without and with Borders

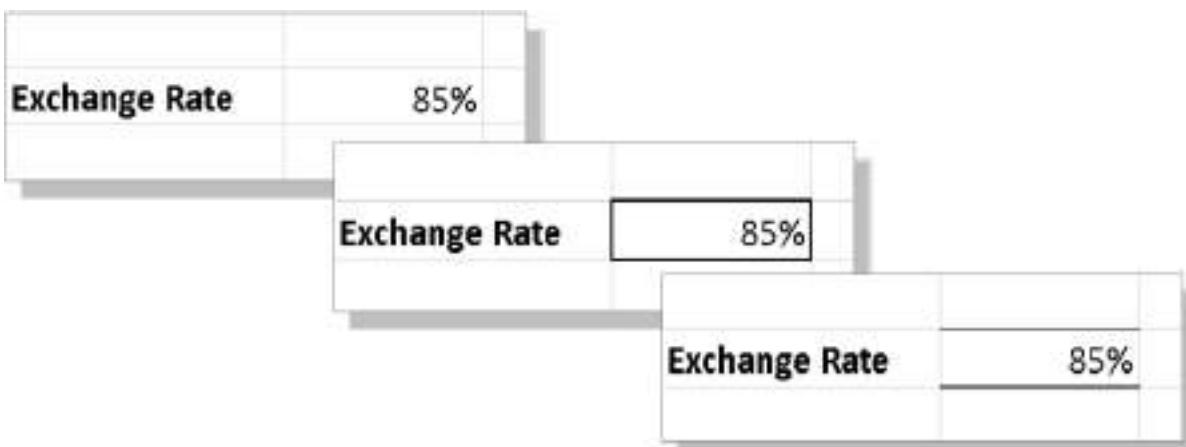
Borders can be used to apply a structure. Here's the same worksheet shown without borders and then with borders applied. The use of borders helps to highlight the totals and separate them from the other data.

The screenshot displays two side-by-side versions of a budget forecast worksheet titled "Alpheius Global Enterprises". Both versions show the same data: Sales, Costs, and Net Income for four cities (Auckland, Dublin, Melbourne, New York) across six months (Jan to Jun). The right version features several borders applied to specific cells to structure the data:

- Header:** The title "Alpheius Global Enterprises" and the subtitle "Budget Forecast for Year" are enclosed in a single-cell border.
- Total Rows:** Row 11 contains a border for the "Total Sales" row, and row 21 contains a border for the "Total Costs" row.
- City Headers:** Row 12 contains a border for the "City" column header, and row 22 contains a border for the "City" column header.
- Month Headers:** Row 13 contains a border for the "Jan" through "Jun" column headers.
- Data Rows:** Rows 14 through 20 contain borders for each city's data rows.
- Grand Total:** Row 22 contains a border for the "Grand Total" row.
- Net Income:** Row 23 contains a border for the "Net Income" row.
- Fixed Costs:** Row 24 contains a border for the "Fixed Costs" row.
- Variable Costs:** Row 25 contains a border for the "Variable Costs" row.
- Exchange Rate:** Row 26 contains a border for the "Exchange Rate" row.

## Border Variations

Borders can be applied to all four sides of a cell, or to individual sides of a cell. The following examples show a cell without a border, with an outside border and a top and double bottom border.



# APPLYING A BORDER TO A RANGE

You can apply a border to a **range** of cells. This allows you to place an outline around them to indicate that the cells are somehow related to each other, or to place borders between cells to

indicate that they are in separate groups. Borders can be used in ranges of cells to create a more form-like appearance. The borders available for single cells can also be applied to ranges.

## Try This Yourself:

**Same File** Continue using the previous file with this exercise, or open the file E730 Applying Borders\_2.xlsx...

- 1 Select the range **A5:A11**
- 2 Click on the drop arrow for **Borders** and select **Outside Borders**
- 3 Click away from the range to see the border  
*An outline has been placed around the cells...*
- 4 Repeat steps 1 and 2 to apply an outline border to each of the following ranges in the order that they are listed:  
**B5:B11, C5:C11, D5:D11, E5:E11, F5:F11, G5:G11, H5:H11, I5:I11, A5:I5, A11:I11**

**B13:B19, C13:C19, D13:D19, E13:E19, F13:F19, G13:G19, H13:H19, I13:I19, A13:I13, A19:I19**

You can hold down and select several of these ranges at once before applying the border...

- 5 Click away from the last selected range to see the result

1

3											
4											
5	<b>Sales</b>		<b>Jan</b>		<b>Feb</b>		<b>Mar</b>		<b>Apr</b>		
6	Auckland	\$105,025	\$154,700	\$148,837	\$163,721						
7	Dublin	\$152,429	\$168,555	\$159,985	\$175,984						
8	Melbourne	\$352,149	\$298,545	\$274,122	\$301,534						
9	New York	\$253,123	\$262,189	\$245,400	\$269,940						
10											
11	<b>Total Sales</b>	\$862,726	\$883,989	\$828,344	\$911,179						
12											

3

3											
4											
5	<b>Sales</b>		<b>Jan</b>		<b>Feb</b>		<b>Mar</b>		<b>Apr</b>		
6	Auckland	\$105,025	\$154,700	\$148,837	\$163,721						
7	Dublin	\$152,429	\$168,555	\$159,985	\$175,984						
8	Melbourne	\$352,149	\$298,545	\$274,122	\$301,534						
9	New York	\$253,123	\$262,189	\$245,400	\$269,940						
10											
11	<b>Total Sales</b>	\$862,726	\$883,989	\$828,344	\$911,179						
12											

Alphelus Global Enterprises											
Budget Forecast for Year											
Quarter	Jan	Feb	Mar	Apr	May	June	July	August	September	October	Total YTD
Sales											
Auckland	\$105,025	\$154,700	\$148,837	\$163,721	\$188,882	\$198,182	\$208,470	\$189,706			
Dublin	\$152,429	\$168,555	\$159,985	\$175,984	\$181,582	\$181,941	\$186,476	\$182,952			
Melbourne	\$352,149	\$298,545	\$274,122	\$301,534	\$280,889	\$284,887	\$281,894	\$282,894	\$284,416	\$285,403	\$3,814,403
New York	\$253,123	\$262,189	\$245,400	\$269,940	\$268,882	\$268,877	\$268,877	\$268,877	\$268,877	\$268,877	\$3,881,877
Total Sales	\$862,726	\$883,989	\$828,344	\$911,179	\$911,179	\$911,179	\$911,179	\$911,179	\$911,179	\$911,179	\$9,761,400
Costs											
Auckland	\$25,180	\$35,452	\$38,987	\$36,875	\$38,894	\$38,892	\$38,892	\$38,892	\$38,892	\$38,892	\$442,465
Dublin	\$99,002	\$98,479	\$97,243	\$96,762	\$98,377	\$97,100	\$96,497	\$96,497	\$96,497	\$96,497	\$961,622
Melbourne	\$239,686	\$234,159	\$235,771	\$236,895	\$236,895	\$236,895	\$236,895	\$236,895	\$236,895	\$236,895	\$2,855,951
New York	\$199,187	\$194,108	\$193,989	\$193,989	\$193,989	\$193,989	\$193,989	\$193,989	\$193,989	\$193,989	\$2,311,278
Total Costs	\$647,057	\$646,750	\$645,531	\$645,865	\$645,865	\$645,865	\$645,865	\$645,865	\$645,865	\$645,865	\$7,611,327
Net Income											
Revenue	\$862,726	\$883,989	\$828,344	\$911,179	\$911,179	\$911,179	\$911,179	\$911,179	\$911,179	\$911,179	\$9,141,378
Gross Costs	\$647,057	\$646,750	\$645,531	\$645,865	\$645,865	\$645,865	\$645,865	\$645,865	\$645,865	\$645,865	\$7,141,378
Net Income	\$215,669	\$237,239	\$182,813	\$265,314	\$265,314	\$265,314	\$265,314	\$265,314	\$265,314	\$265,314	\$2,000,000
Margin %											
Margin %	25%	27%	20%	28%	28%	27%	26%	26%	26%	26%	25%
Margin %	25%	27%	20%	28%	28%	27%	26%	26%	26%	26%	25%

5

## For Your Reference...

To **apply a border** to a **range**:

1. Select the range
2. Click on the drop arrow for **Borders** in the **Font** group on the **Home** tab
3. Click on the border option of your choice

## Handy to Know...

- You can copy a border between cells, for example, from one table to another, using **Paste Special**. Select the cells, click on **Copy** , click on the first cell of the second range and click on the drop arrow for **Paste** . Select **Paste Special**, click on **Formats** and then click on [OK].

# WRAPPING AND MERGING TEXT

Microsoft Excel will allow long cell entries to spill across to other adjacent cells to the right as long as those cells are empty. If those cells contain data the spill-over will be chopped off. If you need

to place long text entries in a cell you can arrange for Microsoft Excel to wrap the text within the cell and also merge that cell with others to accommodate the longer text entry.

## Try This Yourself:

**Open File** Before starting this exercise you **MUST** open the file *E723 Cell Alignment\_9.xlsx*...

**1** Click in cell **A5**

This cell contains a long text entry that spills across several columns...

**2** Click on the **Expand Formula Bar** tool  to the right of the formula bar to see all of the text

**3** Click on the **Wrap Text** command  in the **Alignment** group on the **Home** tab to wrap the text in cell **A5**

Notice how the row height has now increased...

**4** Hold down the  key and click in cell **E5** to select the range **A5:E5**

**5** Click on the drop arrow  for **Merge & Centre**  in the **Alignment** group and select **Merge Cells** to merge the cells in the range

**6** Move the mouse pointer to the bottom of the row **5** heading border and drag the row height up until you reach **30** points

**1**

A	B	C	D	E
1 Alpheius Global Enterprises				
2 Annual Sales				
3 Health Services				
4				
5 The sales figures here have been prepared by our London office and consolidate sales for all divisions including London, Sydney, Rome, and Paris.	Week 1	Week 2	Week 3	Week 4
6				
7 Midweek				

**3**

A	B
1 Alpheius Global I	
2 Annual Sales	
3 Health Services	
4	
5 The sales figures here have been prepared by our London office and consolidate sales for all divisions including London, Sydney, Rome, and Paris.	Week
6	
7 Midweek	

**5**

A	B	C	D	E	F
1 Alpheius Global Enterprises					
2 Annual Sales					
3 Health Services					
4					
5 The sales figures here have been prepared by our London office and consolidate sales for all divisions including London, Sydney, Rome, and Paris.	Week 1	Week 2	Week 3	Week 4	
6					
7 Midweek					

## For Your Reference...

- To wrap text - click in the cell to merge and click on the **Wrap Text** command  in the **Alignment** group on the **Home** tab
- To merge text - click on the drop arrow  for **Merge & Centre**  in the **Alignment** group and select **Merge Cells**

## Handy to Know...

- In the example above, wrapping forced the text into one cell and Excel expanded the row height so that all of the text was accommodated. We then merged the text across several horizontal cells in the exercise above so that we could reduce the row height to a more acceptable level.

# PRACTICE EXERCISE

## Font Formatting

### Tasks:

*Before starting this exercise you MUST have completed all of the topics in the chapter Font Formatting...*

- 1 Open the workbook called **PE\_Font Formatting.xlsx** (it can be found in the same folder as the student files)
- 2 Format the heading in cell **A1** as **Cambria, 36 pt, bold, Orange Accent 2**
- 3 Format the other headings as bold, italic or underline as shown on the following page
- 4 Use **Orange, Accent 2, Lighter 80%** to fill the area behind the headings as shown on the following page
- 5 Add the superscript <sup>1</sup> in cell **H3** and in cell **B27** with the following comment  
**<sup>1</sup> Fee may be reduced as the result of Government Assistance**  
*Your completed worksheet should appear as shown on the following page...*
- 6 Use the **Save As** command to save the workbook as **PE\_Font Formatting (Completed).xlsx**

A	B	C	D	E	F	G	H	I	J
1	<b>Sandy Cove Holiday Program</b>								
2									
3	<b>Reservations for January 2009</b>					Fee per Child per Day <sup>1</sup>	\$33.00		
4									
5	Date	Day	5-6	7-8	9-12	13-14	Total	Fees	
6	6/01/2014	Monday	10	14	15	8	47	\$1,551.00	
7	7/01/2014	Tuesday	9	14	12	7	42	\$1,386.00	
8	8/01/2014	Wednesday	11	15	13	8	47	\$1,551.00	
9	9/01/2014	Thursday	12	16	12	10	50	\$1,650.00	
10	10/01/2014	Friday	11	15	15	12	53	\$1,749.00	
11									
12	13/01/2014	Monday	15	18	20	14	67	\$2,211.00	
13	14/01/2014	Tuesday	14	19	17	12	62	\$2,046.00	
14	15/01/2014	Wednesday	16	20	18	13	67	\$2,211.00	
15	16/01/2014	Thursday	17	17	17	15	66	\$2,178.00	
16	17/01/2014	Friday	16	20	20	17	73	\$2,409.00	
17									
18	20/01/2014	Monday	16	20	20	13	69	\$2,277.00	
19	21/01/2014	Tuesday	14	18	17	12	61	\$2,013.00	
20	22/01/2014	Wednesday	16	20	18	14	68	\$2,244.00	
21	23/01/2014	Thursday	18	19	17	15	69	\$2,277.00	
22	24/01/2014	Friday	17	20	20	17	74	\$2,442.00	
23									
24	Total Children		81	97	92	71	341	\$11,253.00	
25									
26									
27								<sup>1</sup> Fee may be reduced as the result of Government Assistance	
28									

# PRACTICE EXERCISE

## Cell Alignment

**Tasks:**
**Completed:**

Before starting this exercise you **MUST** have completed all of the topics in the chapter Cell Alignment...

- 1 Open the workbook called **PE\_Cell Alignment1.xlsx** (it can be found in the same folder as the student files)
- 2 Right-align the fees
- 3 Left align the range **B6:B21**
- 4 Centre align cells **B23, B25** and **B27**
- 5 Use the **Save As** command to save the workbook as **PE\_Cell Alignment1 (Completed).xlsx**

	A	B	C	D	E	F
1		<b>Hedgehog - Garden Maintenance Service</b>				
2		<b>Fee Calculator</b>				
3						
4		Please type x for the Service Required				
5						
6		<b>Maintenance Type</b>	<b>Service Required</b>	<b>Fee</b>		
7						
8	Garden	x	\$50.00			
9	Hedge	x	\$75.00			
10	Lawns					
11	Tree					
12	All					
13						
14		<b>Frequency</b>				
15						
16	Weekly					
17	Fortnightly					
18	Monthly					
19	Quarterly	x				
20	Six Monthly					
21	Annually					
22						
23	<b>Fee per visit</b>		\$125.00			
24						
25	<b>Annual Fee</b>		\$500.00			
26						
27	<b>Discounted Annual Fee</b>		\$475.00			
28						

# PRACTICE EXERCISE

## Number Formatting

**Tasks:**
**Completed:**

Before starting this exercise you **MUST** have completed all of the topics in the chapter Number Formatting...

- 1** Open the workbook called **PE\_Number Formatting.xlsx** (it can be found in the same folder as the student files)

- 2** On the **Cargo** worksheet, apply formatting to the dates and figures so that they appear as shown in sample A on the next page

This will involve applying a date format, thousands separator, setting the number of decimals and applying the currency format...

- 3** On the **Purchases** worksheet, apply formatting so that the figures appear as shown in sample B on the following page

The currency formats should be \$, € Euro (€ 123), R English (South Africa) and ETB Amharic (Ethiopia) respectively. You'll need to widen the columns a little to make room for the characters added by the formatting...

- 4** Use the **Save As** command to save the workbook as **PE\_Number Formatting (Completed).xlsx**

**A**

<b>African Adventure</b>					
Cargo Fees Summary					
Trip Dates	2014	7/02/2014	22/02/2014		
Item	Kg	Cost per Kg	\$2.58	\$AUD	
Art	2,547	\$6,571.26			
Fabric	1,780	\$4,592.40			
Clothing	685	\$1,767.30			
Furniture	4,850	\$12,513.00			
Pottery	3,850	\$9,933.00			
<b>Total</b>	<b>13,712</b>	<b>\$35,376.96</b>			

**B**

<b>African Adventure</b>						
Purchase Summary						
Conversion Rate as at February 2014						
	2013	2014	0.6511	9.714	17.464	
Item	\$ AUD	\$ AUD	% Inc	Euros	Rand	Birr
Art	\$45,832.00	\$69,048.00	50.65%	€ 44,957.00	R 670,732.00	ETB1,205,854.00
Fabric	\$75,486.00	\$81,310.00	7.72%	€ 52,941.00	R 789,845.00	ETB1,419,998.00
Clothing	\$66,892.00	\$75,026.00	12.16%	€ 48,849.00	R 728,803.00	ETB1,310,254.00
Furniture	\$87,563.00	\$118,336.00	35.14%	€ 77,049.00	R 1,149,516.00	ETB2,066,620.00
Pottery	\$25,874.00	\$37,755.00	45.92%	€ 24,582.00	R 366,752.00	ETB659,353.00
<b>Total</b>	<b>\$301,647.00</b>	<b>\$381,475.00</b>		<b>€ 248,378.00</b>	<b>R 3,705,648.00</b>	<b>ETB6,662,079.00</b>

# UNDERSTANDING FUNCTIONS

Imagine having to create a formula that calculated the monthly payments on a loan, or the average of over 100 cells – these would require complex or long formulas that would be

time consuming to develop. This is the role of hundreds of arithmetic functions that have been pre-programmed in Excel for you.

## Functions Overview

Functions are simply pre-programmed formulas already provided for you in Excel which can perform calculations covering a wide range of categories including statistics, date and time arithmetic, financial calculations, lists, engineering, and more.

Just like normal formulas that you create, functions must start with an **equal sign**. The equal sign is then followed by the **name** of the function (usually a descriptive name which indicates the purpose of the function). Most functions also require additional information known as **arguments** which are supplied to the function in brackets after the function name. Functions are therefore written as follows:

**=name(arguments)**

The arguments are quite often cell or range references that contain values that can be used in the function. For example, the commonest function is the **SUM** function which, as its name suggests, is used to sum or add values together. If you wanted to add all of the values in the cells from **B10** to **D15** you would write this function as:

**=SUM(B10:D15)**

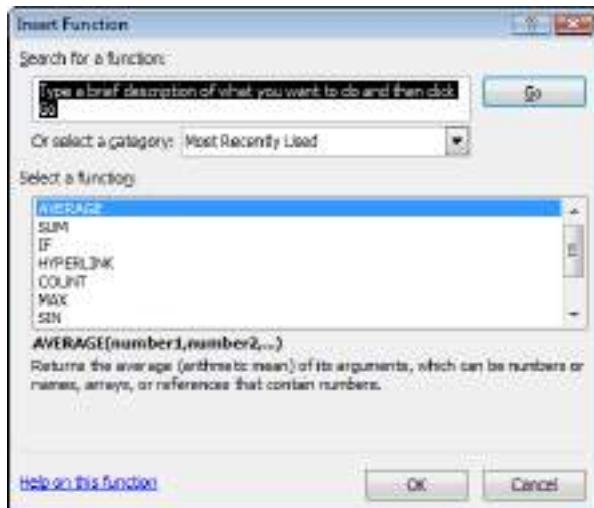
As you can see this is much simpler than writing your own referential formula which would look like:

**=B10+B11+B12+B13+B14+B15+D10+D11+D12+D13+D14+D15**

Imagine writing and proofing a formula where you had to add 200 cells!

## Typing Functions

If you are familiar with the function that you need you can type it into a cell exactly the same way you type any other formula. If you are not sure if Excel has a function or you can't quite remember how it is written you can use the **Insert Function** tool  on the Formula Bar to assist you. When you click on this tool the **Insert Function** dialog box will be presented to you which lists the most recently used or common functions and also allows you to search for other functions that you might need.



The **Insert Function** dialog box will also type the function out for you and then provide you with a further dialog box to guide you through the process of specifying the arguments that the function needs to perform its calculation.

# USING THE SUM FUNCTION TO ADD

One of the most used functions is the **SUM** function. This function allows you to add the values in a range of cells. The function is written as: **=SUM(range or ranges to add)**. You can

type the function, and then use the pointing technique to fill in the arguments. Excel then paints marquees around the cells involved helping you to track your progress.

## Try This Yourself:

**Open File** Before starting this exercise you **MUST** open the file *E710 Formulas\_4.xlsx*...

- 1 Click on **B9** then type **=sum(** to start the formula
- 2 Click on **B6** to point to this cell as the start, hold down the **Shift** key and click on **B8**  
Notice the relative addressing details, *3R x 1C*, that appear in the tool tip...
- 3 Type **)** and press **Enter** to complete the function
- 4 Click on **B9**, then move the mouse pointer to the fill handle on the lower right corner of the cell and drag across to **E9** to fill the selected range with the equivalent functions
- 5 Click on the **Copy** command on the **Clipboard** group on the **Home** tab
- 6 Click on **B14**, hold down **Ctrl** and then click on cells **B19** and **B24**
- 7 Release **Shift** and press **Enter** to paste equivalent functions into the worksheet

1

	A	B	C	D
1	Alpheius Global Enterprises			
2	Revenue Takings Last 12 Months			
3		Auckland	Dublin	Melbourne
4				
5	January	1,000,254	1,547,000	1,469,369
6	February	1,524,294	1,685,548	1,599,854
7	March	3,521,487	2,985,448	2,741,221
8	1st Quarter	=sum('	SUM(number1, [number2], ...)	
9				
10	April	2,531,225	2,621,389	2,453,999
11	May	550,998	850,554	838,874
12	June			

2

	A	B	C	D
1	Alpheius Global Enterprises			
2	Revenue Takings Last 12 Months			
3		Auckland	Dublin	Melbourne
4				
5	January	1,000,254	1,547,000	1,469,369
6	February	1,524,294	1,685,548	1,599,854
7	March	3,521,487	2,985,448	2,741,221
8	1st Quarter	=sum(B6:B8)	(3x1C)	
9				
10	April	2,531,225	2,621,389	2,453,999
11	May	550,998	850,554	838,874
12	June			

7

	A	B	C	D	E
1	Alpheius Global Enterprises				
2	Revenue Takings Last 12 Months				
3		Auckland	Dublin	Melbourne	New York
4					
5	January	1,000,254	1,547,000	1,469,369	1,523,124
6	February	1,524,294	1,685,548	1,599,854	1,789,562
7	March	3,521,487	2,985,448	2,741,221	2,521,447
8	1st Quarter	8,096,035	6,217,996	5,829,444	5,834,123
9					
10	April	2,531,225	2,621,389	2,453,999	2,847,441
11	May	550,998	850,554	818,874	837,228
12	June	838,223	826,779	879,114	983,225
13	1st Quarter	3,920,449	4,399,221	4,161,987	4,367,894
14					
15	July	1,906,092	1,641,664	1,507,774	1,306,448
16	August	1,392,666	1,411,487	1,349,662	1,400,116
17	September	3,332,211	223,323	302,332	673,322
18	1st Quarter	5,661,759	3,306,324	3,179,661	3,459,896
19					
20	October	2,311,234	1,298,877	1,299,567	1,342,112
21	November	1,234,455	2,341,122	1,004,065	384,005
22	December	2,590,332	3,213,332	844,365	12,665,444
23	1st Quarter	6,136,021	6,853,331	4,028,488	14,332,111
24					
25	Total				

## For Your Reference...

To **type a sum function** for a **contiguous range**:

1. Type **=sum(**
2. Select the range of cells
3. Type **)**
4. Press

## Handy to Know...

- You can also use the **Sum** command in the **Editing** group on the **Home** tab of the **Ribbon** to have Excel automatically enter a sum function based on a range of cells.
- You can also type the name of a function in upper or lowercase – it is not case sensitive.

# CALCULATING AN AVERAGE

The **AVERAGE** function allows you to average the values in a range of cells. It is written in much the same way as the **SUM** function, for example, =**AVERAGE(range of cells to average)**. The

average function can be applied using the **Functions Wizard**, a part of Excel that steps you through the process of creating a function or you can type it in yourself if you are comfortable with it.

## Try This Yourself:

**Same File** Continue using the previous file with this exercise, or open the file E710 Formulas\_6.xlsx...

- 1 Click on **B29** then click on the **Insert Function** tool  to display the **Insert Function** dialog box
- 2 Click on **AVERAGE** in **Select a function** then click on **[OK]** to display the **Function Arguments** dialog box
- 3 Click on the **Range Selector** tool  for **Number1** to roll up the wizard, then hold down **Ctrl** and select the following ranges  
**B6:B8**  
**B11:B13**  
**B16:B18**  
**B21:B23**
- 4 Press **Enter** to complete the range specifications, then click on **[OK]** to complete the process  
*Let's use the AutoSum function...*
- 5 Click on **B34**, then click on the drop arrow for the **Sum** command  on the **Editing** group, then select Average
- 6 Click on **B9**, hold down **Ctrl** and click on **B14**, **B19** and **B24**, then press **Enter** to complete the formula



	A	B	C	D	E	F	G
1	January	1,050,254	1,547,008	1,498,368	1,623,124		
2	February	1,524,294	1,685,518	1,599,851	1,780,551		
3	3rd Quarter	3,920,448	4,399,221	4,151,987	4,367,894		
4	April	2,531,225	2,621,899	2,453,999	2,547,441		
5	May	560,998	880,554	918,874	837,228		
6	June	888,201	926,778	879,111	983,295		
7	2nd Quarter	3,920,448	4,399,221	4,151,987	4,367,894		
8	July	1,050,882	1,621,651	1,507,774	1,396,438		
9	August	1,392,666	1,441,447	1,349,552	1,400,116		
10	September	2,035,711	223,323	322,332	673,322		
11	3rd Quarter	6,661,701	3,306,324	3,179,651	3,459,891		
12	October	2,311,234	1,298,877	1,299,567	1,342,112		
13	November	1,234,451	2,341,122	1,884,666	324,551		
14	December	2,590,332	3,213,332	844,355	12,665,444		
15	4th Quarter	6,136,021	6,863,331	4,028,481	14,332,111		
16	Total	22,814,261	20,776,872	17,189,577	27,994,014		
17	Monthly Average	B21:B23					



## For Your Reference...

To **insert an average function**:

1. Click in the cell then click on the **Insert Function** tool 
2. Click on **AVERAGE** in **Select a function**
3. Insert the required ranges then click on **[OK]**

## Handy to Know...

- You can type queries like "How do I work out the monthly payment for a car loan?" into the **Search** box in the **Insert Function** dialog box. Once you have selected a function from the **Select a function** list, the **Function Arguments** dialog box will help you to enter the values into the function.

# FINDING A MINIMUM VALUE

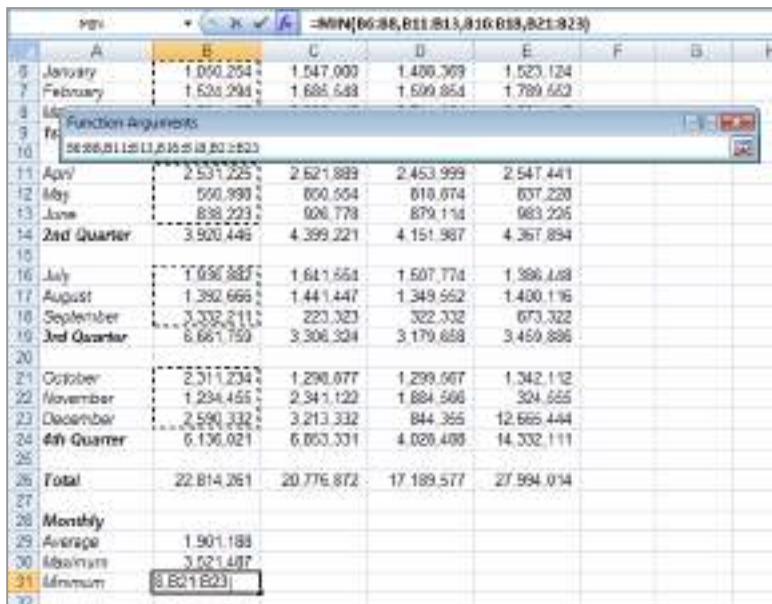
The **Minimum** or **MIN** function allows you to extract the lowest value from a range of values. It is written in much the same way as the **SUM** function. For example, =MIN(range of cells).

The function can be applied using the **Function Wizard**, or by typing the function in detail directly into the cell.

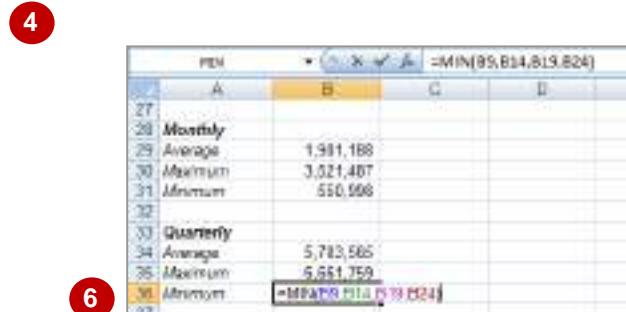
## Try This Yourself:

**Same File** Continue using the previous file with this exercise, or open the file E710 Formulas\_8.xlsx...

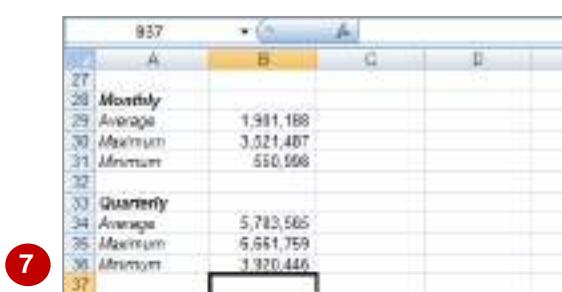
- 1 Click on **B31** then click on the **Insert Function** tool  to display the **Insert Function** dialog box
- 2 Click on the drop arrow  for the **Or select a category** box and click on **Statistical**
- 3 Scroll down and click on **MIN** in **Select a function** then click on **[OK]** to display the **Function Arguments** dialog box
- 4 Click on the **Range Selector** tool  to roll up the wizard, then hold down **Ctrl** and select the following ranges:  
**B6:B8      B16:B18  
B11:B13      B21:B23**
- 5 Press **Enter** to complete the range specifications, then click on **[OK]** to complete the process  
*Let's simply type the function this time...*
- 6 Click on **B36** and type **=MIN(B9,B14,B19,B24)**
- 7 Press **Enter** to complete the formula



A	B	C	D	E	F	G
January	1,090,254	1,547,000	1,400,309	1,523,124		
February	1,620,294	1,685,543	1,509,854	1,789,652		
March						
April	2,531,225	2,621,889	2,453,999	2,547,441		
May	590,980	600,564	610,674	637,220		
June	838,223	926,778	879,114	983,226		
2nd Quarter	3,920,446	4,399,221	4,151,987	4,367,894		
July	1,056,887	1,641,564	1,507,774	1,586,468		
August	1,382,666	1,441,447	1,349,562	1,400,116		
September	3,332,211	223,323	322,332	673,322		
3rd Quarter	8,681,759	3,306,324	3,179,688	3,459,886		
October	2,311,234	1,290,677	1,299,067	1,342,112		
November	1,234,455	2,341,122	1,884,566	324,655		
December	2,591,332	3,213,332	844,365	12,565,444		
4th Quarter	6,136,021	6,653,331	4,020,488	14,332,111		
Total	22,814,261	20,776,872	17,189,577	27,994,014		
Monthly						
Average	1,901,188					
Maximum	3,521,487					
Minimum	550,566					



A	B	C	D
Monthly			
Average	1,901,188		
Maximum	3,521,487		
Minimum	550,566		
Quarterly			
Average	5,713,565		
Maximum	5,551,759		
Minimum	-1,370,446		



A	B	C	D
Monthly			
Average	1,901,188		
Maximum	3,521,487		
Minimum	550,566		
Quarterly			
Average	5,713,565		
Maximum	5,551,759		
Minimum	-1,370,446		

## For Your Reference...

To *insert a minimum function*:

1. Click in the cell then click on the **Insert Function** tool 
2. Click on **MIN** in **Select a function**
3. Insert the required ranges then click on **[OK]**

## Handy to Know...

- You might use a **Minimum** function in real life to find the lowest value in a large range of numbers. For example, in a large inventory it can be used to work out which product is the slowest seller.

# COMMON ERROR MESSAGES

Microsoft Excel has some in-built messages that can assist you when something goes wrong with a formula. These messages appear in the cell that contains the formula, and sometimes also

other formula cells that depend upon it. The messages are always prefixed with a hash sign (#) and appear with a code. The more common error messages are listed below.

## A Line of Hash (#) Signs

Sometimes referred to as “tramlines”, a line of hash signs usually occurs because a column is not wide enough to display the numbers in the cell or formula. Widening the column will correct this problem – you can drag the column heading until the value in the cell appears as it should.

B2						540000234778
A	B	C	D	E	F	
1						
2	#TRAMLINE					
3						
4						
5						

## #DIV/0!

This message means you are trying to divide a value by zero – this is mathematically impossible. In the example at the left we are trying to find the average number of persons per household. All is fine as long as there is a value greater than zero in cell B3 (Houses). As soon as we change this to a zero an error message appears in the formula cell (B5).

To prevent the error you will need to enter a value greater than zero into cell B3, the divisor cell.

B5						=B2/B3
A	B	C	D			
1						
2	People	192,664				
3	Houses	0				
4						
5	Persons/house	#DIV/0!				
6						

## #VALUE!

In this message Excel is advising that something in the formula is not a value and therefore a calculation can't be made.

A close examination of the example at the left shows cell B3 contains the word “three”. Therefore the formula in cell B5 is trying to divide 192,664 (in cell B2) with a word, which doesn't make sense.

To fix the error, a value (a number) will need to be entered in cell B3.

B5						=B2/B3
A	B	C	D			
1						
2	People	192,664				
3	Houses	Three				
4						
5	Persons/house	#VALUE!				
6						

## #NAME?

This message appears when text is found in a formula that can't be matched to either a legitimate function or range name.

In the example to the left, the formula has been entered as =SOME(B3:B7) – there is no such function as **SOME**, and presumably the author should have typed =SUM(B3:B7).

B9						=SOME(B3:B7)
A	B	C	D	E		
1						
2	Inventory					
3	Giraffes	34				
4	Tigers	54				
5	Lions	23				
6	Elephants	29				
7	Bats	103				
8						
9	Total	#NAME?				
10						

# PRACTICE EXERCISE

## Formulas And Functions

---

**Tasks:**
**Completed:**

Before starting this exercise you MUST have completed all of the topics in the chapter **Formulas And Functions**...

- 1** Open the workbook called **PE\_Formulas And Functions.xlsx** (it can be found in the same folder as the student files)
- 2** Create a formula that calculates the gross pay for each employee, then use a function to calculate the total of the gross pay  
*The total for Gross Pay should appear in E14...*
- 3** Create a formula that calculates the tax as being 20% of the gross pay for each employee, then create a total for the tax
- 4** Create a formula to calculate the net pay for each employee and then a total of the net pay
- 5** Create a formula that calculates the superannuation as being 8% of the gross pay for each employee, then create a total for superannuation
- 6** Use functions to determine the average, maximum and minimum values for each column, setting the number of decimal places to 2  
*Your worksheet should appear as shown on the following page...*
- 7** Use the **Save As** command to save the workbook as **PE\_Formulas And Functions (Completed).xlsx**

	A	B	C	D	E	F	G	H	I
1	<b>Clever Quentin's Used Cars</b>								
2	<b>Weekly Payroll</b>								
3	Department: Vehicle Sales								
4									
5									
6	First Name	Last Name	Hours	Rate	Gross Pay	Tax	Net Pay	Superannuation	
7	Virginia	Bernard	16	25.90	414.40	82.88	331.52	33.15	
8	Catherine	Harvest	24	16.40	393.60	78.72	314.88	31.49	
9	Steve	Jones	40	28.50	1,140.00	228.00	912.00	91.20	
10	Sam	McGregor	40	25.70	1,028.00	205.60	822.40	82.24	
11	Sandra	O'Shea	35	29.60	1,036.00	207.20	828.80	82.88	
12	Eddie	Smith	40	28.50	1,140.00	228.00	912.00	91.20	
13									
14	<b>Totals</b>				5,152.00	1,030.40	6,182.40	412.16	
15									
16	<b>Average</b>		32.5	25.77	858.67	171.73	686.93	68.69	
17	<b>Maximum</b>		40	29.60	1,140.00	228.00	912.00	91.20	
18	<b>Minimum</b>		16	16.40	393.60	78.72	314.88	31.49	
19									
20									

# UNDERSTANDING QUICK ANALYSIS

The **Quick Analysis** tools were developed in response to the fact that users weren't using or even aware of the more powerful analytical tools found in Excel. So Excel decided to combine

**Live Preview** with some of these tools to create the **Quick Analysis** tools.

## The Quick Analysis Button

The **Quick Analysis** button appears when a range is selected in a worksheet. Clicking on the button displays the **Quick Analysis** gallery which contains quick analysis tools that can be applied to the selected data.

The tools have been organised along tabs at the top – **FORMATTING**, **CHARTS**, **TOTALS**, **TABLES**, and **SPARKLINES**.

When you click on a tab, options specific to that tab are presented.

	A	B	C	D	E	F	G	H	I
1									
2	Sales								
3		Week 1	Week 2	Week 3	Week 4				
4									
5	Monday	296,114	365,042	429,746	123,445	1,411,347			
6	Tuesday	70,500	78,967	85,689	117,015	352,571			
7	Wednesday	520,830	360,389	344,483	110,585	1,236,292			
8	Thursday	83,296	520,242	62,467	112,728	798,733			
9	Friday	320,140	63,353	87,801	112,158	810,242			
10									
11	Total	1,490,880	1,607,573	930,201	582,931	4,611,985			
12									
13									
14									
15									
16									
17									
18									
19									
20									

FORMATTING CHARTS TOTALS TABLES SPARKLINES
  
Data Bars Color Scale Icon Set Greater Than Top 10% Clear Format

Conditional Formatting uses rules to highlight interesting data.

## Using Quick Analysis Tools With Live Preview

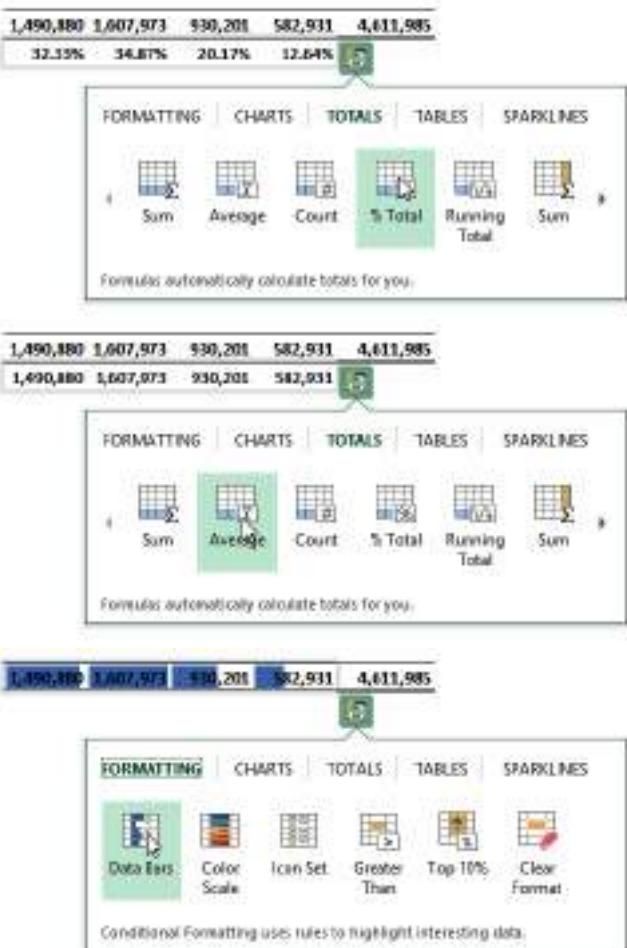
Most of the **Quick Analysis** tools in the **Quick Analysis** gallery provide a Live Preview of the changes in the worksheet when you point to an option.

This is very useful if you are not sure of the formatting or type of analysis you require as it provides you with a preview of what the data would look like if you selected that specific option.

At the right we have selected only the totals from the worksheet shown above. We have pointed to options from the **TOTALS** tab (% Total and Average) and from the **FORMATTING** tab (Data Bars).

Live Preview has either presented another row of analysed data or has formatted the selection accordingly.

All of these tools are also available on the ribbon but using the **Quick Analysis** tools is much quicker.



# QUICK FORMATTING

The first tab in the **Quick Analysis** gallery is **FORMATTING**. This tab provides access to the conditional formatting tools of Excel. These are the tools that allow you to analyse data by

colouring it or presenting it in a slightly different way. In the **Quick Analysis** gallery you can apply data bars, colour high and low values, values over or below a value, and more.

## Try This Yourself:

**Open File**

Before starting this exercise you **MUST** open the file **E1355 Quick Analysis\_1.xlsx...**

**1**

Click in cell **B5**, hold down **Shift**, then click in cell **E9** to select the range **B5:E9**

**2**

Point to the bottom of the selected range so that the **Quick Analysis** button appears, as shown, then click on it to see the **Quick Analysis** gallery

**3**

On the **FORMATTING** tab, point to **Data Bars** to see data bars representing the size of the selected values

**4**

Point to **Colour Scale** to see colours used to signify the scale of values (from red for low to green for high)

**5**

Point to **Top 10%** to see the top 10% of values

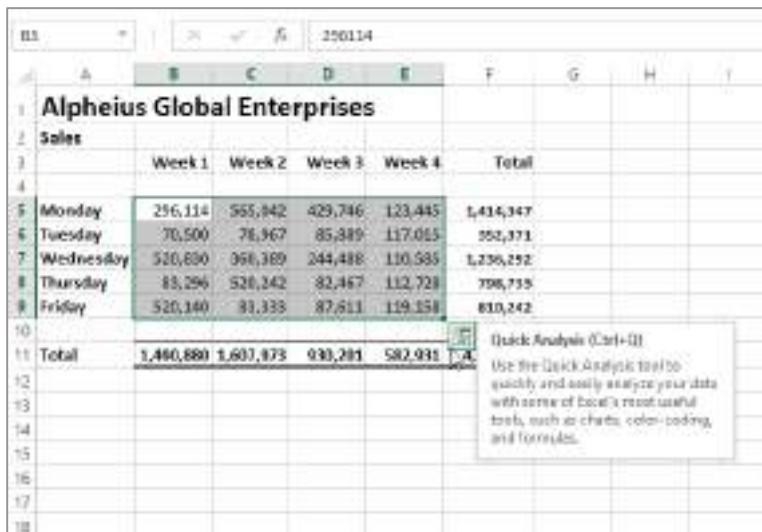
**6**

Click on **Greater Than** to see the **Greater Than** dialog box

**7**

Type **200000** in **Format cells that are GREATER THAN**, then click in cell **A1** to see the changes

**2**



**3**



**6**



## For Your Reference...

To apply **Quick Formatting** in a **worksheet**:

- Select the range to be formatted, then click on the **Quick Analysis** button
- Choose the desired formatting from the **FORMATTING** tab

## Handy to Know...

- Quick Formatting** applies conditional formatting, not the standard formatting.
- The **Clear Format** option in the **Quick Analysis** gallery will clear any conditional formatting that has been applied.

# QUICK CHARTING

Charts aren't all that difficult to create in Excel, especially with the **Recommended Charts** feature. However, deciding what style and type of chart can be daunting. Fortunately the **Charts**

tools provide a way of seeing what the different charts will look like without having to first create the chart.

## Try This Yourself:

**Same File**

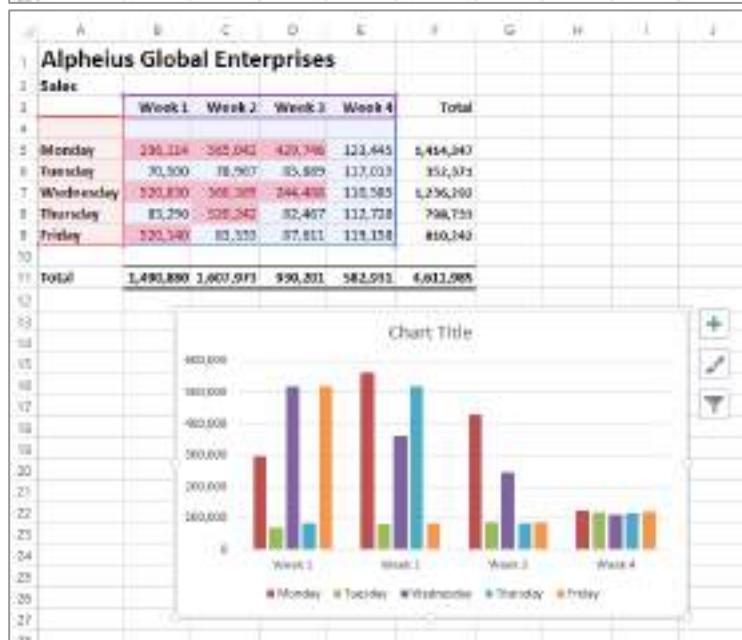
Continue using the previous file with this exercise, or open the file E1355 Quick Analysis\_2.xlsx...

- 1 Click in cell **A3**, hold down **Shift**, then click in cell **E9** to select the range **A3:E9**
- 2 Click on the **Quick Analysis** button, then click on the **CHARTS** tab to see a range of recommended chart types for this range
- 3 Point to **Clustered Column** to see a Live Preview of the chart with the **Week** as the legend
- 4 Point to **Line**, then **Stacked Area**, then **Stacked Column** to see how these options appear in Live Preview
- 5 Point to the second **Clustered Column** to see a preview of the chart with the **Days** as the legend
- 6 Click on the second **Clustered Column** to create a chart in the worksheet

3



6



## For Your Reference...

To use the **Quick Charting tools**:

1. Select the range to be charted, then click on the **Quick Analysis** button
2. Choose the desired option from the **CHARTS** tab

## Handy to Know...

- When creating a chart you'll need to ensure that the range you select includes the labels to be used on the chart.

# QUICK TOTALS

The **TOTALS** tab in the **Quick Analysis** gallery has some useful tools and options to help you build your worksheet. You can use the options to analyse data and perform alternate arithmetic

operations (e.g. *AVERAGE* instead of *SUM*) or use the options to create the totals and calculations in the first place.

## Try This Yourself:

**Open File**

Before starting this exercise you **MUST** open the file *E1355 Quick Analysis\_3.xlsx*...

**1**

Click in cell **B5**, hold down **Shift**, then click in cell **E9** to select the range **B5:E9**

**2**

Click on the **Quick Analysis** button, then click on the **TOTALS** tab to see the calculation options for this range

**3**

Point to **Vertical Sum** to see a preview of the totals for each column

**4**

Point to **Horizontal Sum** to see a preview of the totals for each row

**5**

Point to the other options and study the results – do not click on any at this stage

**6**

Click on **Vertical Sum** to create column totals

**7**

Click on the **Quick Analysis** button again, click on the **TOTALS** tab, then click on **Horizontal %** to see the percentages for each day of the week

**3**

Alpheius Global Enterprises				
Sales	Week 1	Week 2	Week 3	Week 4
Monday	296,114	565,042	429,746	123,445
Tuesday	70,500	78,967	85,889	117,015
Wednesday	520,830	360,389	244,488	110,585
Thursday	83,296	520,242	82,867	112,728
Friday	520,140	83,333	87,611	119,158
	1,490,880	1,607,973	910,201	582,931

FORMATTING CHARTS TOTALS TABLES SPARKLINES

Sum Average Count %Total Running Total

Formulas automatically calculate totals for you.

**6**

Alpheius Global Enterprises				
Sales	Week 1	Week 2	Week 3	Week 4
Monday	296,114	565,042	429,746	123,445
Tuesday	70,500	78,967	85,889	117,015
Wednesday	520,830	360,389	244,488	110,585
Thursday	83,296	520,242	82,867	112,728
Friday	520,140	83,333	87,611	119,158
	1,490,880	1,607,973	910,201	582,931

**7**

Alpheius Global Enterprises				
Sales	Week 1	Week 2	Week 3	Week 4
Monday	296,114	565,042	429,746	123,445
Tuesday	70,500	78,967	85,889	117,015
Wednesday	520,830	360,389	244,488	110,585
Thursday	83,296	520,242	82,867	112,728
Friday	520,140	83,333	87,611	119,158
	1,490,880	1,607,973	910,201	582,931

## For Your Reference...

To **create Quick Totals** in a **worksheet**:

1. Select the range to be totalled/calculated and click on the **Quick Analysis** button
2. Choose the desired calculation methodology from the **TOTALS** tab

## Handy to Know...

- Always check any operation that performs calculations and embeds formulas for you to ensure that the correct cells and ranges are included in totals.

# QUICK SPARKLINES

**Sparklines** are mini charts that are embedded into a worksheet, usually immediately adjacent to the data. **Sparklines** are only relatively new in Excel and probably haven't gained the

acceptance or understanding that Microsoft would like. So, you'll now find them in the **Quick Analysis** tools where you can easily implement them without too much head scratching.

## Try This Yourself:

**Open File**

Before starting this exercise you **MUST** open the file **E1355 Quick Analysis\_4.xlsx...**

**1** Click in cell **B5**, hold down **Shift**, then click in cell **E9** to select the range **B5:E9**

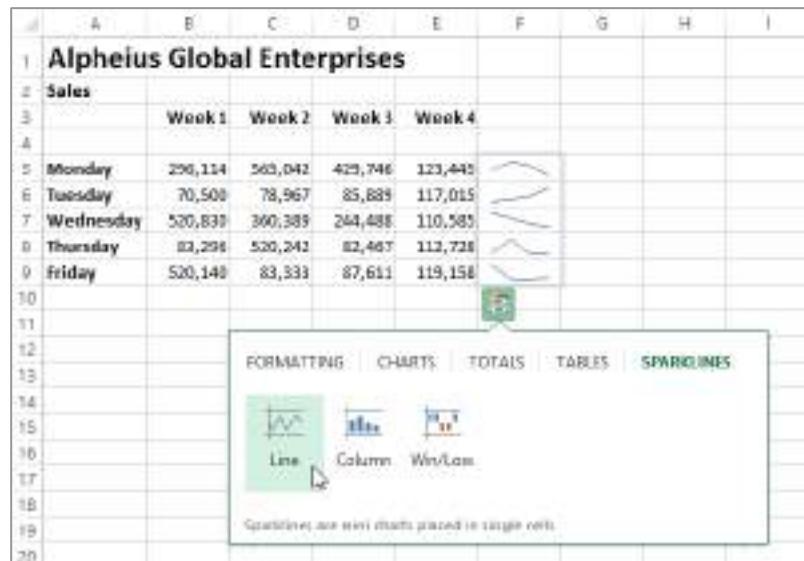
**2** Click on the **Quick Analysis** button, then click on the **SPARKLINES** tab

**3** Point to **Line** to display a line drawing showing trends for each row across the four weeks

**4** Point to **Column** to display the trend as columns rather than a continuous line

**5** Click on **Column** to add Sparklines in column **F**

Notice that after the Sparklines have been created the **SPARKLINE TOOLS** tab on the ribbon is now available so that you can further enhance or modify the Sparklines



**3**



**5**

## For Your Reference...

To use **Quick Sparklines** in a **worksheet**:

1. Select the range to be analysed, then click on the **Quick Analysis** button
2. Choose the desired **Sparkline** from the **SPARKLINES** tab

## Handy to Know...

- The **Win/Loss** is a special type of **Sparkline** that shows positives above an imaginary line and negatives below it. You need to have values range from the negative to the positive to make any good use of it.

# QUICK TABLES

In computer terminology a **table** is created when data is organised into rows and columns. You'd think then that a worksheet would be a table – but it is not in the Excel definition. In Excel a table

does have columns and rows of continuous data. But it must also have headings which provide filter buttons. Creating a table is not hard, but it is much easier using **Quick Tables**.

## Try This Yourself:

**Open File**  
Before starting this exercise you MUST open the file E1355 Quick Analysis\_5.xlsx...

- 1 Click in any cell containing data
- 2 Hold down **Ctrl** + **Shift**, then press **Space** to select all of the non-empty cells around the current cell
- 3 Using the scroll bars, scroll to the bottom right corner of the selection, click on the **Quick Analysis** button, then click on the **TABLES** tab
- 4 Click on **Table** to turn the selected range into a table
- 5 Scroll across and on the drop arrow for **Position** to see sorting and filtering options
- 6 Click on **Select All** to remove the tick, then click on **Effective People Leader** so it appears ticked
- 7 Click on **[OK]** to see only those people with this position title

The screenshots illustrate the process of creating a table from a selected range. Step 1 shows a range of data. Step 2 shows the 'Quick Analysis' button. Step 3 shows the 'Tables' tab selected. Step 4 shows the 'Table' option being chosen. Step 5 shows the 'Position' column's dropdown menu with filtering applied. Step 6 shows the 'OK' button being clicked. Step 7 shows the final filtered table.

## For Your Reference...

To use **Quick Tables** to create a **table**:

1. Select the entire data to be used as a table
2. Click on the **Quick Analysis** button
3. Click on the **TABLES** table, then click on **Table**

## Handy to Know...

- A drawback of using **Quick Tables** is that all of the data must be selected first. Using the normal operation to create a table (the **Table** command on the **INSERT** tab of the ribbon) only one cell in the table needs to be selected.

# PRACTICE EXERCISE

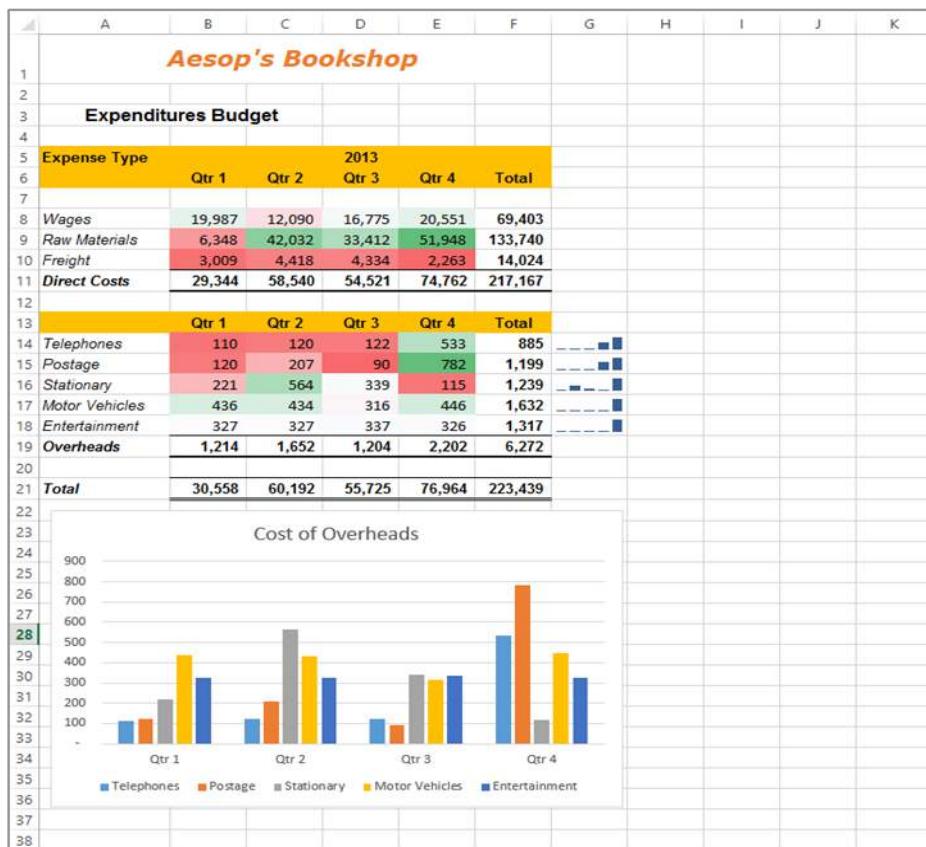
## The Quick Analysis Tools

**Tasks:**
**Completed:**

Before starting this exercise you **MUST** have completed all of the topics in the chapter **The Quick Analysis Tools**...

- 1** Open the workbook **PE\_Quick Analysis.xlsx** (it can be found in the same folder as the student files)
- 2** Use the **Quick Analysis** tools to apply a colour scale to the data in the worksheet
- 3** Use the **Quick Analysis** tools to create a chart for the **Overheads** data. This chart should be a clustered column chart that has the column headings as the x axis, and displays the legend at the bottom of the chart. Make the chart title **Cost of Overheads**.
- 4** Reposition the chart below the data
- 5** Use the **Quick Analysis** tools to create **Sparklines** for the **Qtr1** to **Qtr4** and **Total** columns for **Overheads**
- 6** Use the **Save As** command to save the workbook as **PE\_Quick Analysis (Completed).xlsx**

Your worksheet should appear as shown on the following page...



# PRINTING A WORKSHEET

Traditionally, **printing** means producing your document on paper, but in today's Web and online world it might mean printing to the Web or to another file. Excel gives you a lot of control

over what and how much to print, as well as enabling you to select the printer to use. You can print one or multiple copies of a document, one or multiple pages and even collate copies.

## Try This Yourself:

*Continue using the previous file with this exercise...*

- 1 Click on **File Tab**  then select **Print** to display the **Print** dialog box

*Your dialog box may appear a little different to the one shown, as the available options will depend on the make and model of printer that you are using...*

- 2 Click on **Print** to print the pages

1



2



## For Your Reference...

To **close a workbook**:

1. Click on the **File Tab**  and select **Close**

## Handy to Know...

- If you save your workbook using the close command, the workbook will be closed without the prompting message above.
- Excel allows you to have a number of workbooks open at the same time. When you close a workbook when others are still open one of the others will then appear.

# THE CHARTING PROCESS

**Charts** provide a way of seeing trends in the data in your worksheet. The charting feature in Excel is extremely flexible and powerful and allows you to create a wide range of charts from

any of the **Insert** commands in the **Charts** group on the

## Inserting Charts

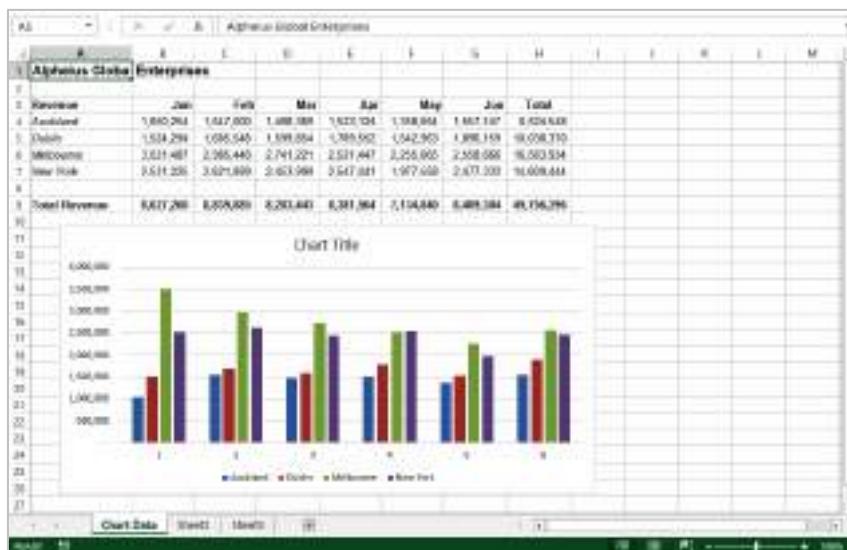
The first step when creating a chart is to select the data from the worksheet that you want to chart. It is important to remember that the selected range (which can be either contiguous or non-contiguous), should include *headings* (e.g. names of months, countries, departments, etc). These become *labels* on the chart. Secondly, the selected range should not (normally) include totals as these are inserted automatically when a chart is created.

The second step is to create a chart using the **INSERT** tab on the ribbon. You can choose a **Recommended Chart** where Excel analyses the selected data and suggests several possible chart layouts.

Alternatively you can create the chart yourself from scratch by choosing one of the **Insert** commands in the **Charts** group. Charts that you create in Excel can be either *embedded* into a worksheet, or they can exist on their own sheets, known as **chart sheets**.

## Embedded Charts

Charts that appear within a worksheet are known as embedded charts. A chart is really an object that sits on top of the worksheet – unlike numbers and letters, charts are not actually placed into worksheet cells.



## Chart Sheets

If you want to keep your chart separate from the data you can move the chart to its own sheet. Chart sheets make it easier and more convenient to work with your chart because you'll see more of it on the screen – since the data is not there!

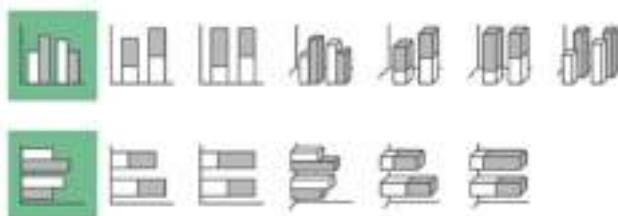


# CHOOSING THE RIGHT CHART

A chart is far more effective at communicating results, outcomes or trends than a table of figures displaying the same information. Different **chart types** have been created to

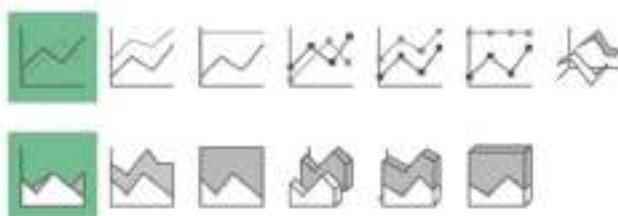
communicate different types of information. Some charts show simple relationships between values, while others are designed for quite technical purposes. Here is a summary of the use of different chart types.

## Column, Bar



These chart types, either in 2D or 3D, are used to compare values across categories. For example, they could compare the populations of different countries.

## Line, Area



Lines in 2D or 3D are useful for showing trends such as sales or employment figures. An area chart is a line chart with the area below the line filled in.

## Surface



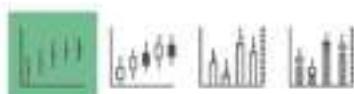
The surface chart plots trends in two dimensions. You could use this to plot departmental sales figures over time. The chart then shows you the trends between departments, as well as the sales trends over time.

## Pie, Doughnut



If you want to show proportion, such as the sales figures from different departments that make up a total, then the pie and doughnut charts are for you. The only variation between the doughnut chart and the pie chart is that the doughnut chart can display more than one series of values.

## Stock



The stock chart type has been designed to show the stock figures for a day, and the trend over time. At its simplest, you can plot the high, low and close figures, and at its most complex, the volume, open, high, low, and close. It can be adapted to show the relationships between any five sets of values.

## XY (Scatter)



Scatter diagrams are used to display the relationship between two variables. For example, you could research the age and price of a series of cars, and plot the values you find. You could also investigate the height and weight relationship of a group of people.

## Radar



A radar diagram is designed to show the change in values from a central point. For example, it can be used to show mobile telephone coverage, including multiple networks and multiple measurements.

# USING A RECOMMENDED CHART

If you are undecided about the best type of chart for the data you have selected to graph, then you may wish to use Excel's **Recommended Charts** feature. This feature analyses your

selected data and presents you with what it considers to be the best way to chart that data. Several alternatives are presented and you simply choose the one you like most.

## Try This Yourself:

**Open File**

Before starting this exercise you **MUST** open the file *E1317 Charting\_1.xlsx*...

**1**

Click in cell **A3**, hold down **Shift**, then click in cell **G7** to select the range **A3:G7**

**2**

Click on the **INSERT** tab, then click on **Recommended Charts** in the **Charts** group

The *Insert Chart* dialog box will display with a number of recommended chart options...

**3**

Click on each of the alternatives in the left pane to see a preview of how the chart will appear in the right pane and spend a few moments reading the descriptions

**4**

Click on **Line chart** (the second alternative in the left pane), then click on **[OK]** to embed the chart in the worksheet

**5**

Point to the top border of the chart, then click and drag the chart immediately below the data

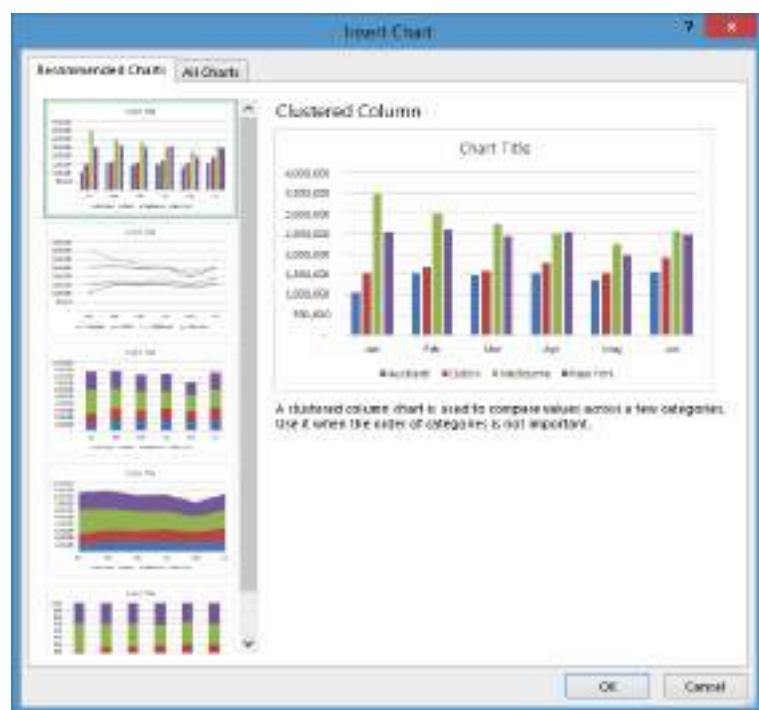
**6**

Click in cell **A1** to deselect the chart

A	B	C	D	E	F	G	H
<b>Alphelus Global Enterprises</b>							
Revenue	Jan	Feb	Mar	Apr	May	June	Total
Auckland	1,050,254	1,547,300	1,418,360	1,523,124	1,358,154	1,557,147	8,524,548
Dublin	1,521,234	1,085,548	1,359,004	1,710,152	1,542,963	1,039,319	10,838,378
Melbourne	3,521,487	2,769,446	2,741,224	2,521,447	2,295,985	2,050,990	16,583,904
New York	2,631,205	2,521,209	2,413,998	2,547,441	1,977,158	2,477,332	14,589,444
<b>Total Revenue</b>	<b>8,627,260</b>	<b>8,036,285</b>	<b>8,283,443</b>	<b>8,381,544</b>	<b>7,134,840</b>	<b>8,405,304</b>	<b>45,750,298</b>

**1**

You can also use the Quick Analysis tool that appears at the bottom right corner of a selected range to create a quick chart. However, this method will not allow you to preview a wide variety of charts.



**2**

## For Your Reference...

To use the **Recommended Charts** feature:

1. Select the data to be charted
2. Click on the **INSERT** tab, then click on **Recommended Charts** in the **Charts** group
3. Click on the desired chart and click on **[OK]**

## Handy to Know...

- When selecting data for a chart you should include headings (e.g. names of the month, regions, etc.) but not the totals derived from the data. In the example above the names of the months and the cities are selected but the total revenue and the regional totals are not.

# CREATING A NEW CHART FROM SCRATCH

The easiest way to create a chart is by using the **Recommended Chart** feature. However, you can create a chart yourself from scratch using

**INSERT** tab of the ribbon. This may be faster if you have a specific style of chart in mind.

## Try This Yourself:

### Open File

Before starting this exercise you **MUST** open the file *E1317 Charting\_1.xlsx*...

1

Click in cell **A3**, hold down **Shift**, then click in cell **G7** to select the range **A3:G7**

Note that we have selected the data including headings but excluding the totalling...

2

Click on the **INSERT** tab, then click on **Insert Column Chart** in the **Charts** group to see a gallery of **Column** chart types

3

Under **2-D Column**, click on **Clustered Column**

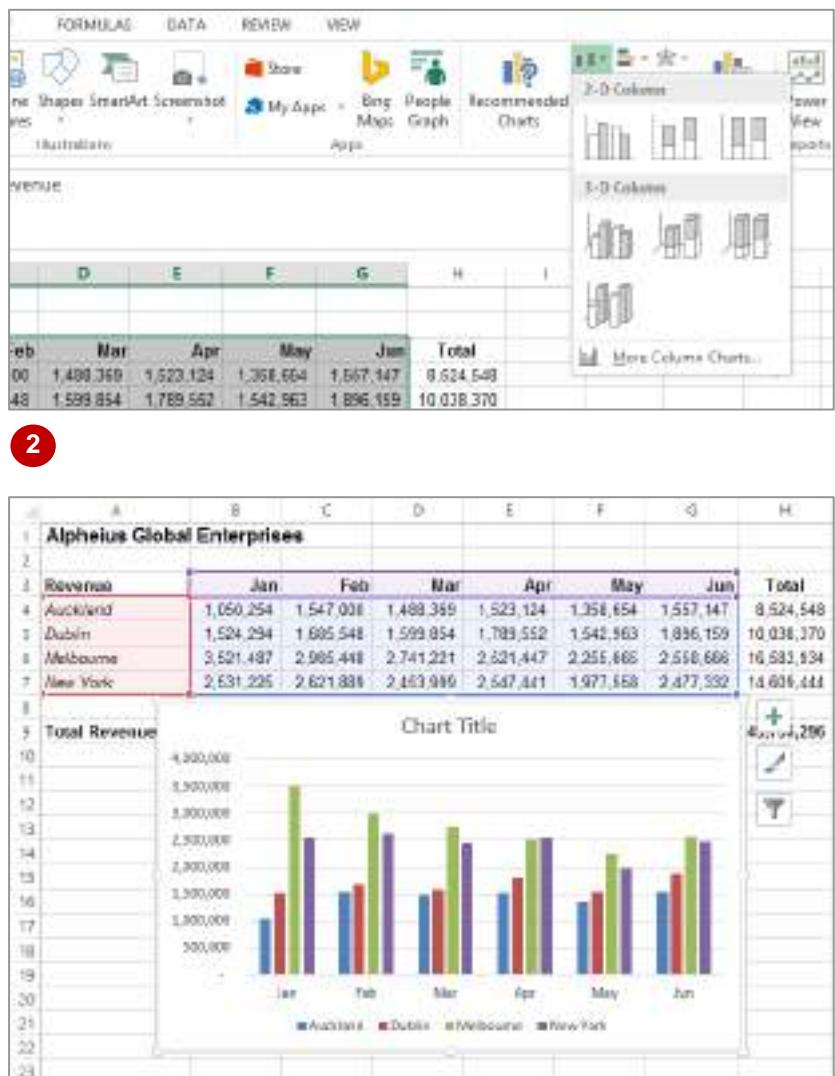
The chart will be embedded in the worksheet. The chart will be active (selected) and you'll see additional tabs on the ribbon for working with the chart...

4

Point to the chart, then click to select it and drag the chart so that it is underneath the data, as shown

5

Click in cell **A1** to deselect the chart



## For Your Reference...

To *create a chart from scratch*:

1. Select the range to chart
2. Click on the **INSERT** tab, then click on the appropriate **Insert** command in the **Charts** group
3. Click on the desired chart type

## Handy to Know...

- When a chart gallery appears after you've used the **Insert chart** command, you can point over each image in the gallery to see a Live Preview of the chart in the worksheet. This will help you to select the right chart for your needs.

# WORKING WITH AN EMBEDDED CHART

By default, new charts are placed in the active worksheet, which is usually the one that contains the data. Charts are placed over the top of the worksheet, **embedded as objects**. When you

want to work with a chart you must select it – this can be done by clicking on the chart. The chart itself is made up of many objects and these too can be selected by clicking on them.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1317 Charting\_2.xlsx...

**1**

Point to the border of the chart and click once to select the chart as an object

The border of the chart will thicken to indicate that the chart is selected, the range of data used for the chart will be coloured, the ribbon will show chart-specific tabs and commands, and additional tools will appear to the right of the chart...

**2**

Click on the chart **legend** to make it the active object in the chart

**3**

Click on the **vertical axis** to make it the active object

**4**

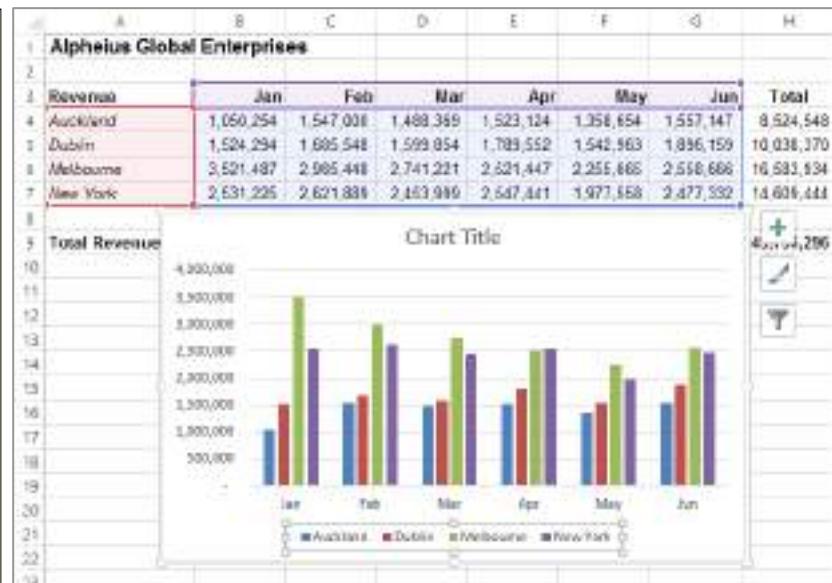
Click on the **horizontal axis** to make it the active object

**5**

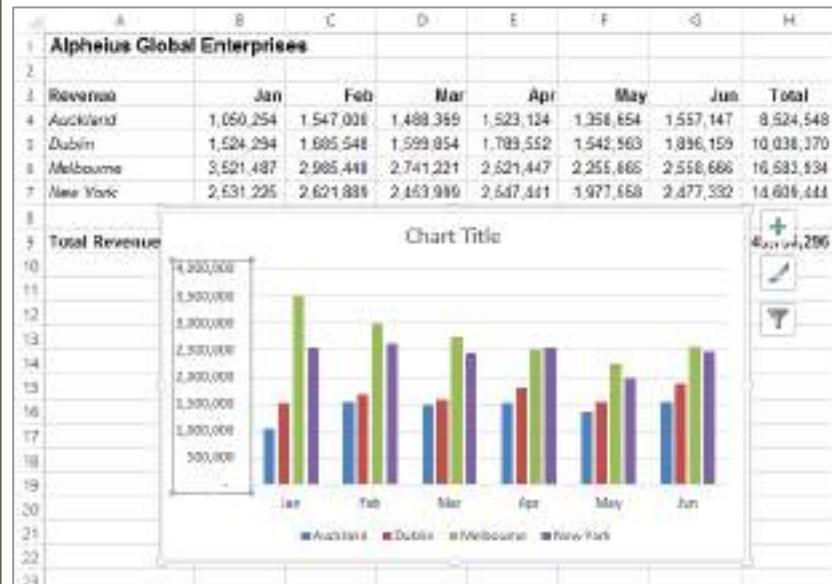
Click on the border of the chart to make the overall chart the active object again – notice that the range of data has been coloured again

**6**

Click in cell **A1** to deselect the chart



**2**



**3**

## For Your Reference...

To **select a chart** and its **objects**:

1. Click on the border of the chart to select an embedded chart
2. Click on the various objects of a chart to select them

## Handy to Know...

- Once an object is selected, be it a chart, a legend on the chart, or the like, you can right-click on the object to see a shortcut menu specific to the selected object.

# RESIZING A CHART

There are two main ways to resize a chart if you are not satisfied with its current size. A chart that has been selected can be resized by dragging one of the sizing handles around its border.

These handles appear with dots in them. You can also resize a chart using commands in the **Size** group on the **CHART TOOLS: FORMAT** tab that appears when the chart is selected.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1317 Charting\_3.xlsx...

- 1 Click on the chart to select it
- 2 Point to the sizing handle on the left border of the chart until the mouse pointer changes to a double arrow
- 3 Hold down the left mouse button and drag left until the chart appears as shown  
*You can also resize a chart from the ribbon...*

3



4



## For Your Reference...

To **resize** a chart:

1. Select the chart, then click on and drag a sizing handle on the border of the chart, or Click on the **CHART TOOLS: FORMAT** tab, then click on up/down spinner arrows for **Shape Height** and **Shape Width** in the **Size** group

## Handy to Know...

- If you wish to change the size of a chart quickly and easily, clicking on and dragging the resize handles is the best option whereas if you want to resize a chart to a specific size it is best to resize the chart using the tools in the **Size** group on the **CHART TOOLS: FORMAT** tab.

# REPOSITIONING A CHART

It's unlikely that a chart embedded in the worksheet by Excel will be exactly where you would like it to be. You can easily relocate a chart to a more appropriate position by clicking

on and dragging the border of the chart to the desired location. The chart obviously must be selected before it can be dragged to a new position.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1317 Charting\_4.xlsx...

- 1 Click on the chart to select it
- 2 Point to the border of the chart until the mouse pointer changes to a four-headed arrow
- 3 Hold down the left mouse button and drag the chart below the data so that the **Total Revenue** row in the worksheet is visible
- 4 Click in cell **A1** to deselect the chart

2



3



## For Your Reference...

To move a chart:

1. Click on the chart to select it
2. Move the mouse pointer to the border of the chart until the mouse pointer changes to a four-headed arrow
3. Drag the chart to a new location

## Handy to Know...

- You can use the standard cut and paste commands to move a chart. Select the chart, click on the **HOME** tab, then click on **Cut** in the **Clipboard** group to copy it to the clipboard. Click in a new location and, on the **HOME** tab, click on **Paste** in the **Clipboard** group to paste the chart.

# PRINTING AN EMBEDDED CHART

When you print a worksheet, Excel will print whatever is in or **embedded** in that worksheet (including charts). This makes it easy and convenient to print both the chart and its

underlying data. All you need to do is to position the chart in the appropriate location then access the print commands in the usual way.

## Try This Yourself:

### Open File

*Before starting this exercise you MUST open the file E1317 Charting\_5.xlsx...*

1

Click on the **FILE** tab, then click on **Print** to see a preview of the data and the chart

*Not all of the chart or data may be visible so we'll change the orientation to landscape...*

2

Click on **Portrait Orientation** in **Settings** then select **Landscape Orientation**

3

Click on [**Print**] to print the chart

*If you don't have a printer connected or you don't wish to print, click on the Back arrow to display the workbook again*

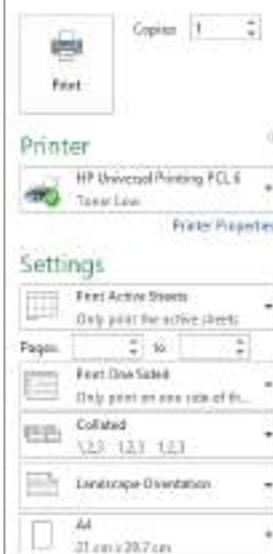
1

## Print



2

## Print



## For Your Reference...

To **print** an **embedded chart**:

1. Click on the **FILE** tab, then click on **Print**
2. Click on [**Print**]

## Handy to Know...

- If you only want to print the chart and not the data, click on the chart to select it, click on the **FILE** tab, then click on **Print**. You will notice that only the chart will appear in the preview.

# CREATING A CHART SHEET

Charts can either be stored in a worksheet or in a separate sheet of their own known as a **chart sheet**. Chart sheets separate the chart from the underlying data and are useful especially if you

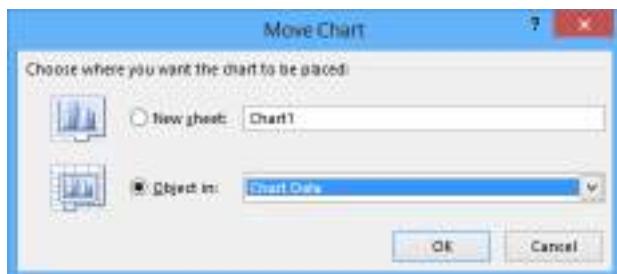
are interested in printing the chart on its own page. Charts can be shifted back and forth between a worksheet and a chart sheet.

## Try This Yourself:

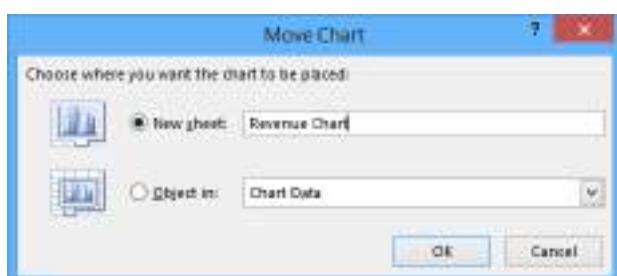
**Same File**

- 1 Click on the chart to select it and display the **CHART TOOLS: DESIGN** and **CHART TOOLS: FORMAT** tabs
- 2 Click on the **CHART TOOLS: DESIGN** tab, then click on **Move Chart** in the **Location** group to display the **Move Chart** dialog box
- 3 Click on **New Sheet**, then type **Revenue Chart**  
*This will become the sheet name for the chart...*
- 4 Click on **[OK]** to move the embedded chart to its own sheet
- 5 Click on the **Chart Data** worksheet tab to see the data again  
*Notice that the chart is no longer embedded on this worksheet*

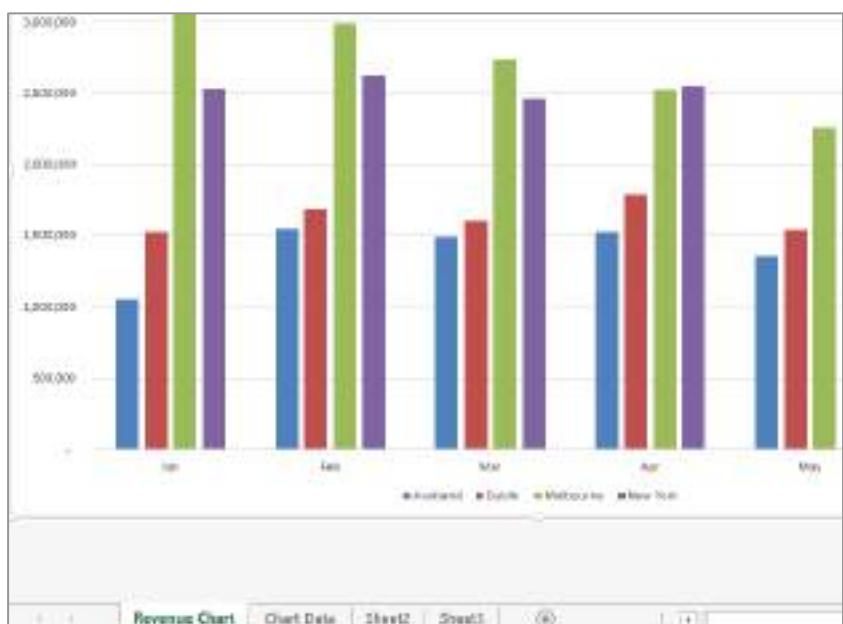
2



3



4



## For Your Reference...

To *create a chart sheet*:

1. Click on the **CHART TOOLS: DESIGN** tab, then click on **Move Chart** in the **Location** group
2. Click on **New Sheet**, type a name for the sheet and click on **[OK]**

## Handy to Know...

- Keeping charts on their own sheets makes them easier to work with as they do not obstruct the data.

# CHANGING THE CHART TYPE

When you create a chart, you may not always achieve the result that you desire. Fortunately, the process for changing a chart type is quite simple. You just need to have an understanding

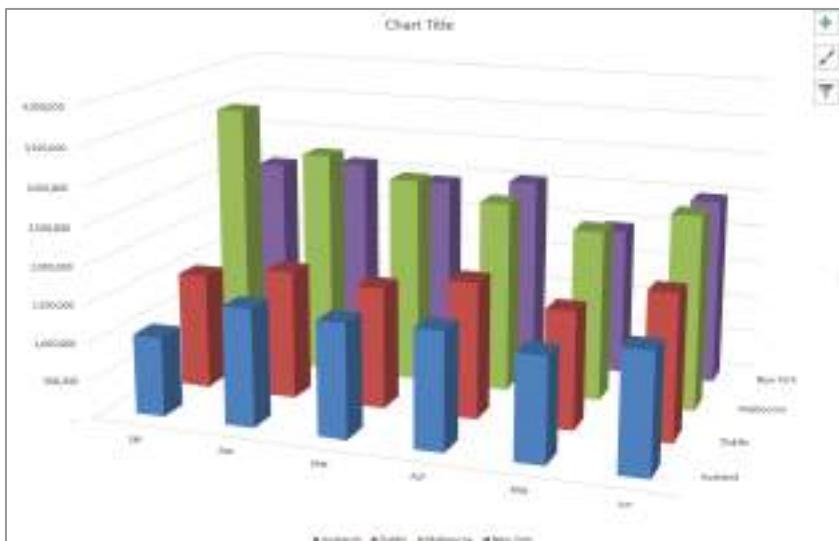
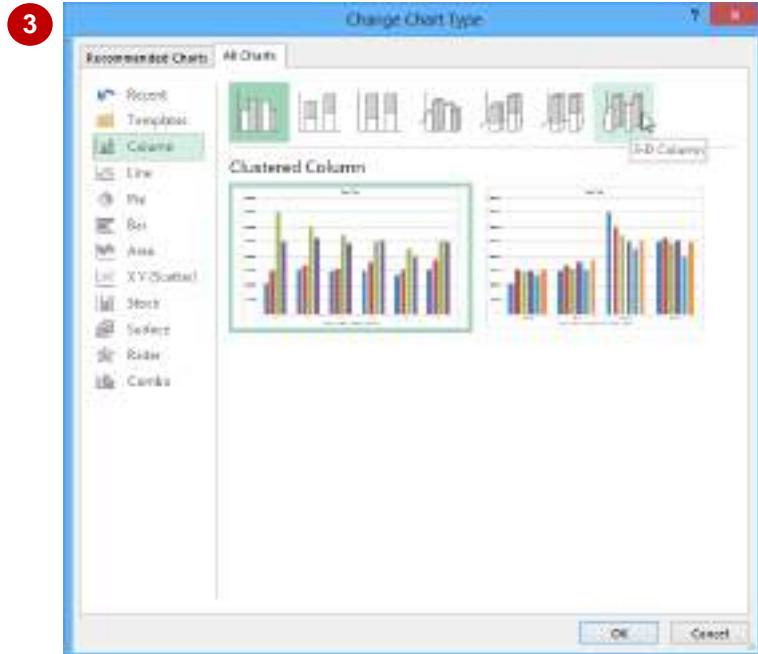
of what each chart type is designed for and to select the format that best suits your purpose. Just be aware that some chart types are designed for specialised applications.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1317 Charting\_7.xlsx...

- 1 Click on the **Revenue Chart** worksheet tab to see the chart, then click anywhere on the chart to select it and display the chart commands on the ribbon
- 2 Click on the **CHART TOOLS: DESIGN** tab, then click on **Change Chart Type** in the **Type** group to display the **Change Chart Type** dialog box
- 3 Click on **3-D Column**, as shown
- 4 Click on **[OK]** to apply the change to the chart
- 5 Click on the **Chart Data** worksheet tab to return to the worksheet



4

## For Your Reference...

To **change** the **chart type**:

1. Ensure the chart or chart sheet is selected
2. Click on the **CHART TOOLS: DESIGN** tab, then click on **Change Chart Type** in the **Type** group
3. Click on the desired chart and click on **[OK]**

## Handy to Know...

- You can use **Change Chart Type** in the **Type** group on the **CHART TOOLS: DESIGN** tab for either embedded charts or charts that have their own worksheet tabs.

# CHANGING THE CHART LAYOUT

Excel has a gallery of **chart layouts** that can be applied to an existing chart that is either in its own worksheet or embedded into the data worksheet. **Chart layouts** are the way

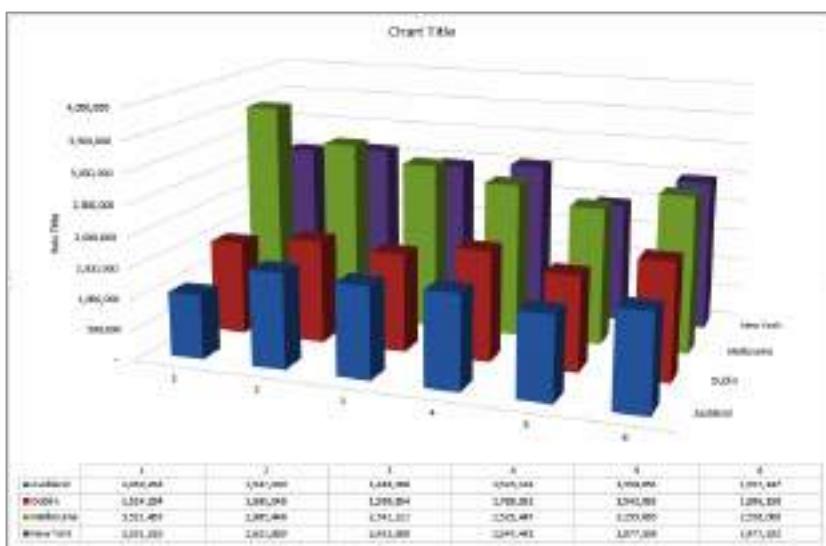
elements of the chart are placed within the chart. Different layout options can therefore change the appearance of your chart and its readability.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1317 Charting\_8.xlsx...

- 1 Click on the **Revenue Chart** worksheet tab to see the chart, then click anywhere on the chart to select it and see the **CHART TOOLS: DESIGN** and **CHART TOOLS: FORMAT** tabs
- 2 Click on the **CHART TOOLS: DESIGN** tab, then click on **Quick Layout** in the **Chart Layouts** group to display a gallery of layout options
- 3 Click on **Layout 3** to apply this chart layout to the chart
- 4 Repeat steps 2 and 3 to select other **chart layouts** and see how they appear when applied to the chart
- 5 Click on **Quick Layout** in the **Chart Layouts** group and click on **Layout 5**
- 6 Click on the **Chart Data** worksheet tab to display this worksheet



## For Your Reference...

To **change** the **chart layout**:

1. Ensure the chart or chart sheet is selected
2. Click on the **CHART TOOLS: DESIGN** tab, then click on **Quick Layout** in the **Chart Layouts** group
3. Select the desired layout

## Handy to Know...

- **Chart layouts** are predefined themes created by Microsoft. Even if you choose one of these layouts you can still make your own modifications to the way the elements and objects are positioned and how they appear.

# CHANGING THE CHART STYLE

The style of a chart refers to its colour scheme and overall appearance and can impact the clarity of the content of the chart. Choosing a predefined chart style can save valuable time

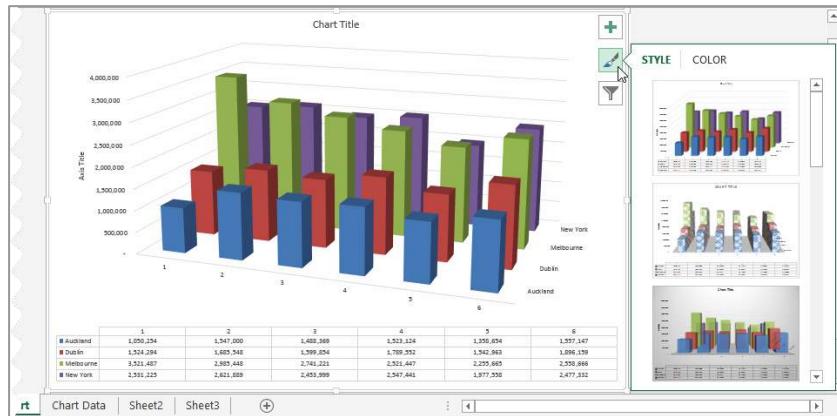
and effort. Excel also makes it easy to change chart styles if you decide the style you have chosen is not appropriate.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1317 Charting\_9.xlsx...

- 1 Click on the **Revenue Chart** worksheet tab to see the chart, then click anywhere on the chart to select it
- 2 Click on the **Chart Styles** tool to the right of the chart to see a gallery of style options, as shown
- 3 Scroll through the gallery and point to each style to see how your chart will look in Live Preview
- 4 Scroll to and click on **Style 9**
- 5 Click on the **Chart Styles** tool to the right of the chart to close the gallery
- 6 Click on the **Chart Data** worksheet tab



## For Your Reference...

To **change** the **chart style**:

1. Ensure the chart or chart sheet is selected
2. Click on the **Chart Styles** tool to the right of the chart
3. Click on the desired style

## Handy to Know...

- Instead of using the **Chart Styles** tool to the right of the chart, you can also choose chart styles from the **CHART TOOLS: DESIGN** tab on the ribbon when a chart is selected.

# PRINTING A CHART SHEET

You can print an embedded chart simply by printing the worksheet as if it is a standard worksheet. You can also print a chart sheet in exactly the same way. To print a chart sheet, the

simply ensure that the chart sheet is active, then click on the **FILE** tab, click on **Print**, apply the print settings as desired and click on **[Print]**.

## Try This Yourself:

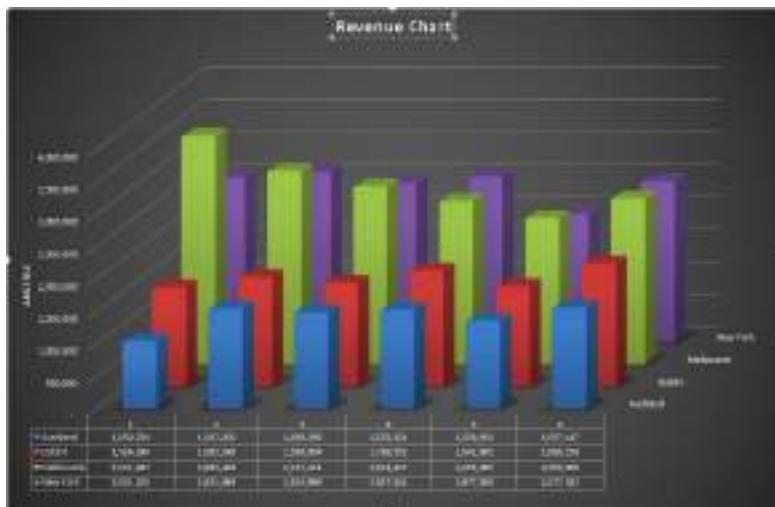
**Same File**

Continue using the previous file with this exercise, or open the file E1317 Charting\_10.xlsx...

- 1 Click on the **Revenue Chart** worksheet tab
- 2 Click on the **Chart Title** text box, select the text, then type **Revenue Chart** to change the title
- 3 Repeat step 2 to change the **Axis Title** to **Euros**
- 4 Click on the **FILE** tab, then click on **Print** to see the print options and a preview of the chart

No further adjustment is required here so we can go ahead and print it...

- 5 If you wish to print the chart, click on **[Print]**
- If you don't have a printer connected or wish to save paper, click on the Back arrow to return to the worksheet...
- 6 Click on the **Chart Data** worksheet tab



2



4

## For Your Reference...

To **print a chart sheet**:

1. Click on the chart sheet tab
2. Click on the **FILE** tab, then click on **Print**
3. Click on **[Print]**

## Handy to Know...

- When you preview a chart prior to printing, it may not appear as clearly as you would like. This is due to the screen resolution, not the chart itself. The printed version of the chart will appear clearer than the preview.

# EMBEDDING A CHART INTO A WORKSHEET

Charts can either be presented in their own sheets or they can be embedded into a worksheet that contains data. In fact, you can move a chart back and forth between its own

sheet and a worksheet as often as you wish without impacting at all on the chart. Sometimes it is easier to work with a chart in its own sheet, but it may be necessary to print the chart with its data.

## Try This Yourself:

**Same File**

Continue using the previous file with this exercise, or open the file E1317 Charting\_11.xlsx...

- 1 Click on the **Revenue Chart** worksheet tab
- 2 Click on the **CHART TOOLS: DESIGN** tab, then click on the **Move Chart** tool in the **Location** group to display the **Move Chart** dialog box
- 3 Click on **Object in**, then click on the drop arrow and click on **Sheet 2**
- 4 Click on **[OK]** to move the chart to the worksheet
- 5 Reposition the chart by dragging it to the top left of the sheet, then drag the resizing handles to resize it as shown
- 6 Click on the **Chart Data** worksheet tab

3



4



5



## For Your Reference...

To embed a chart in a worksheet:

1. Click on the **CHART TOOLS: DESIGN** tab, then click on **Move Chart** in the **Location** group
2. Click on the drop arrow, select the sheet to embed it into, then click on **[OK]**

## Handy to Know...

- Embedding is normally only done when it is necessary to print the worksheet and the data together.

# DELETING A CHART

If you no longer require a chart you can easily delete it. With embedded charts you must first select the chart in the worksheet and then press the  key to delete the chart. With charts in

chart sheets you can delete the sheet by right clicking on the chart sheet tab and choosing the deletion option.

## Try This Yourself:

**Same File**

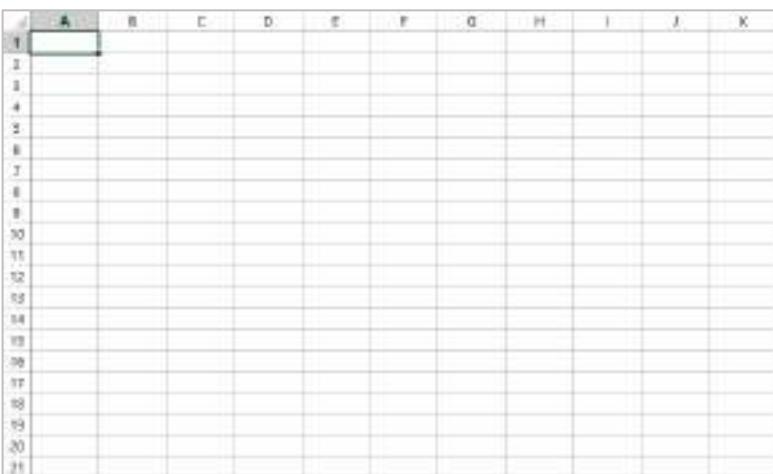
Continue using the previous file with this exercise, or open the file E1317 Charting\_12.xlsx...

- 1 Click on **Sheet 2** to see the chart in the worksheet, then click on the chart to select it
- 2 Press  to delete the chart

1



2



## For Your Reference...

To **delete** a **chart**:

1. Click on the worksheet to see the chart, then click on the chart to select it
2. Press 

## Handy to Know...

- Because it is so easy to delete a chart object it is also easy to delete it by accident! Remember, you can use the **Undo** feature in Excel to restore accidental deletions.

# PRACTICE EXERCISE

## Creating Charts

**Tasks:**
**Completed:**

*Before starting this exercise you MUST have completed all of the topics in the chapter Creating Charts...*

- 1 Open the workbook called **PE\_Creating Charts.xlsx** (it can be found in the same folder as the student files)
- 2 Create a **Clustered Column** chart showing the sales of products for the months of **January** through to **June**
- 3 Drag the chart down below the data and resize it so that it is the same width as the data, keeping the proportions as far as possible
- 4 Change the chart type to **3-D Stacked Column** and change the chart title to **Sales**

*The chart should appear as shown in sample A on the following page...*

- 5 Create a **Pie in 3-D** chart of the products and their totals then place it on its own chart sheet called **Product Sales**
- 6 Change the **Chart Title** to **Product Sales**
- 7 Change the layout to **Layout 6**

*The chart should appear as shown in sample B on the following page...*

- 8 Print the pie chart
- 9 Use the **Save As** command to save the workbook as **PE\_Creating Charts (Completed).xlsx**

**Files required for exercise:**

*PE\_Creating Charts.xlsx*

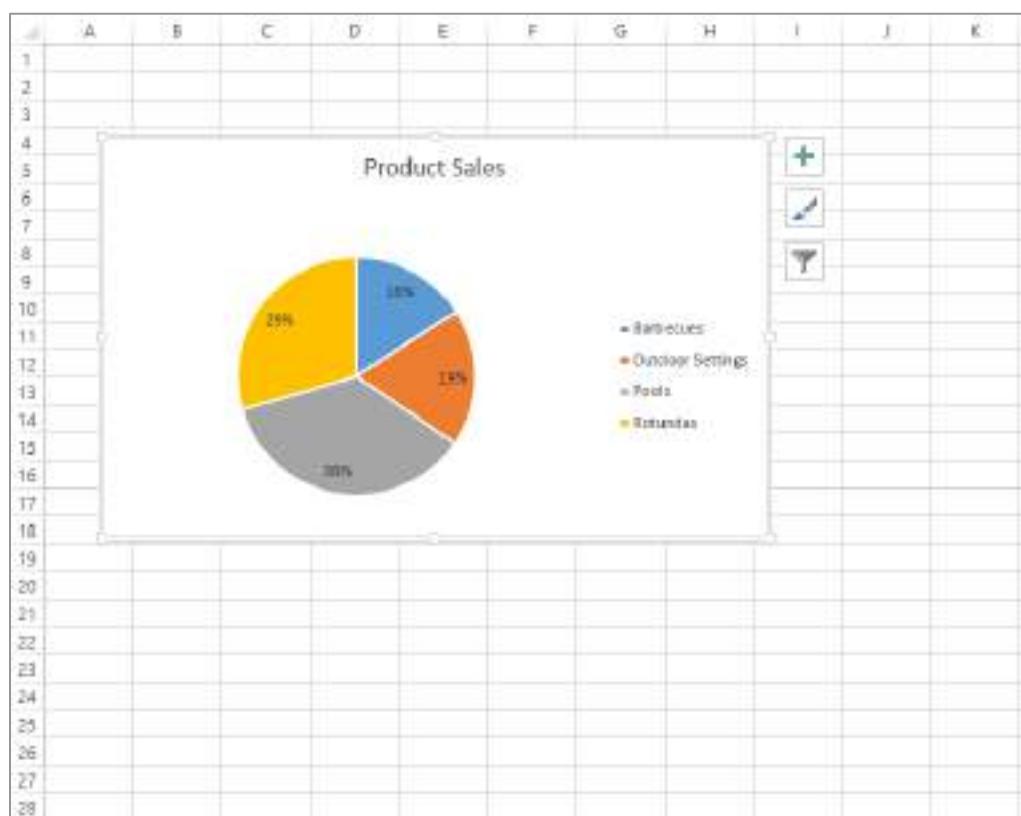
**Files/work created by student:**

*PE\_Creating Charts (Completed).xlsx, 1 printed copy of the Product Sales chart*

**Exercise Completed:**

# PRACTICE EXERCISE SAMPLE

## Creating Charts

**A****B**



# **Microsoft EXCEL Training**

## **Level 1**

## *Introduction*

In this introductory course to Excel, participants will explore Excel activities that go beyond the basic. After successful completion of this session, participants can expect to have the skills required to work efficiently in an existing worksheet and to also create new worksheets from a template and from scratch.

## *Topics Include*

- Create a basic worksheet by entering text, values, and formulas.
- Change the appearance of worksheet data by using a variety of formatting techniques.
- Create formulas by using some of Excel's built-in functions.
- Filter and sort Excel data.
- Plan, create and modify charts.
- Prepare a document for printing by using a variety of printing options.

## *Prerequisite*

Comfortable with Windows 7, or OSX

## *Platform*

Windows, OSX

## *Software*

Microsoft Excel 2013, Microsoft Excel 2010 (Windows)

Microsoft Excel 2011 (MAC)

## *Instructor*

Anna Neagu – Application Support Consultant

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## 1. Opening Excel

### Using Windows 7

1. Click on the **Start** Button.
2. In the Search Program and Files box type **Excel**.
3. Click on **Excel 2013** from the Program results.
4. The Microsoft Excel 2013 program will open.

### Using Windows 8

1. Press the **Windows key** on the keyboard.
2. Type **Excel**.
3. Click on **Excel 2013** under the Apps results.

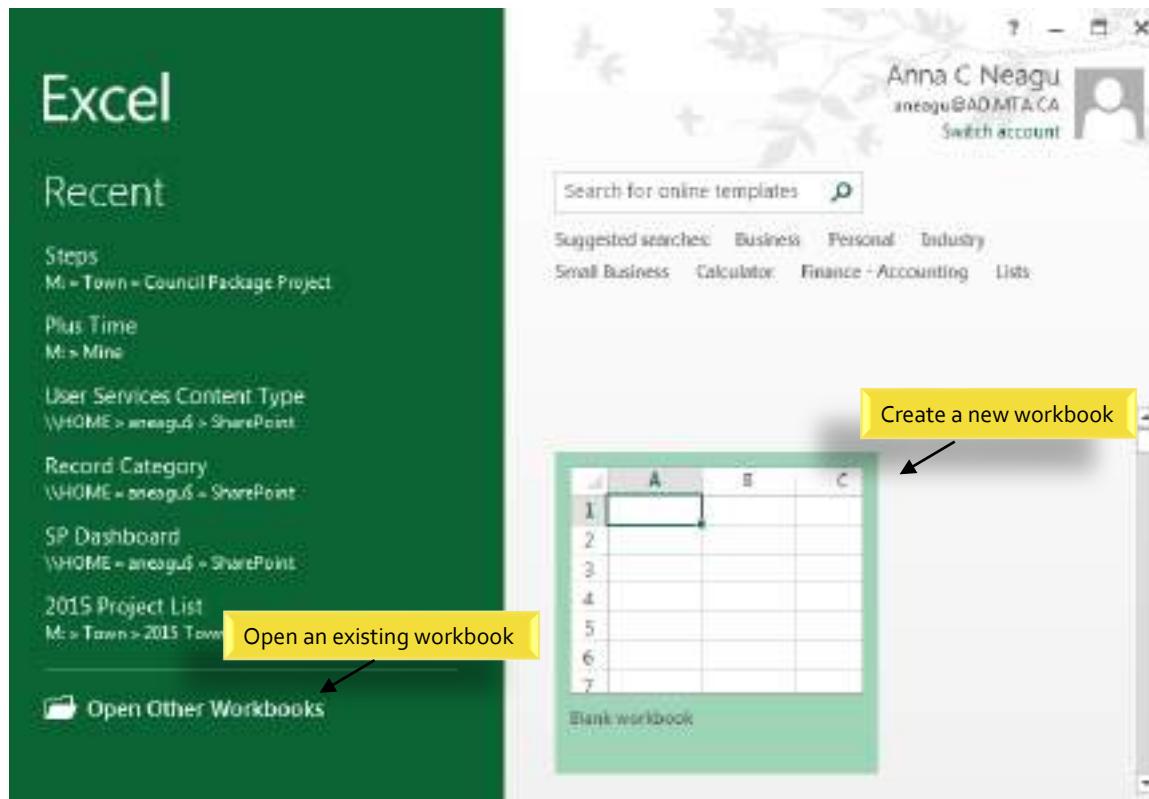
### Using iOS 7

1. Click on **Launchpad**.
2. Select Microsoft Excel.

## 2. Getting Started

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, and access your recently edited workbooks.

1. From the **Excel Start Screen**, locate and select **Blank workbook** to access the Excel interface.
2. Click **Open Other Workbooks** to work on an existing workbook.



*To set up Excel so it automatically opens a new workbook*

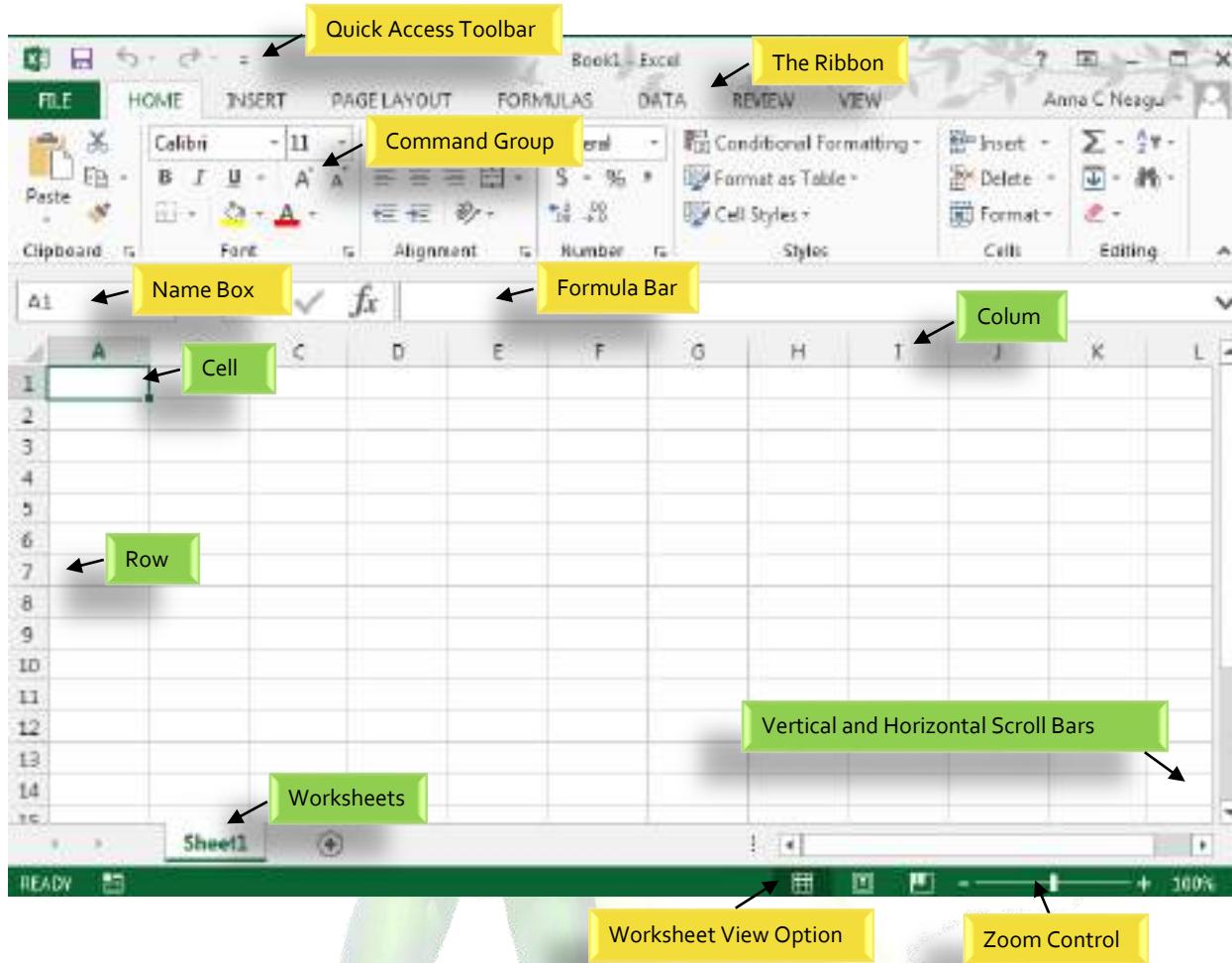
1. Click **File** then **Options**.
2. On the **General** tab, under **Start up options**, uncheck the **Show the Start screen when this application starts** box.
3. The next time you start Excel, it opens a blank workbook automatically similar to older versions of Excel.

## 2.1. The Excel Interface

After starting Excel, you will see two windows - one within the other. The outer window is the **Application Window** and the inner window is the **Workbook Window**. When maximized, the Excel Workbook Window blends in with the Application Window.

After completing this module, you should be able to:

- Identify the components of the Application Window.
- Identify the components of the Workbook Window.



### 2.1.1. The Application Window

The Application Window provides the space for your worksheets and workbook elements such as charts. The components of the Application Window are described below.

#### The Quick Access Toolbar

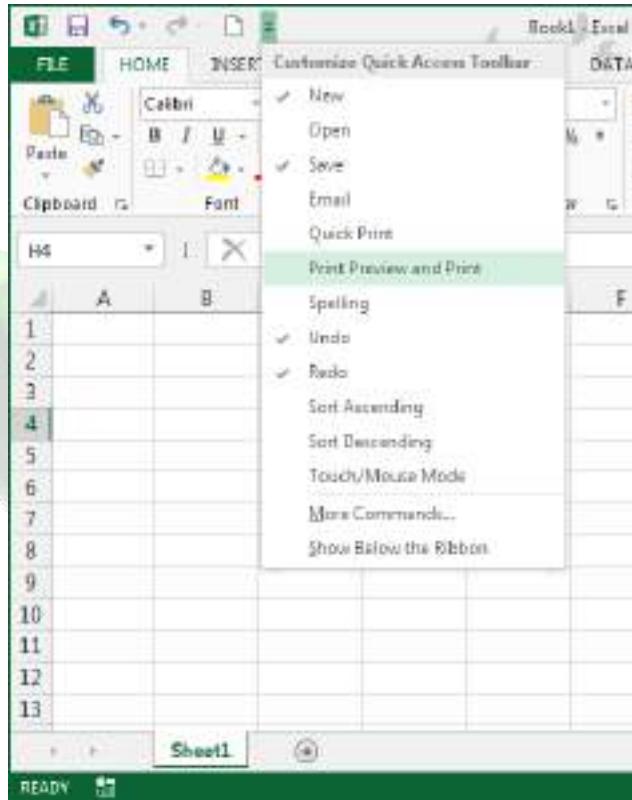
The **Quick Access Toolbar** lets you access common **commands** no matter which tab is selected.

By default, it includes the **Save**, **Undo**, and **Repeat** commands. You can add other commands depending on your preference.

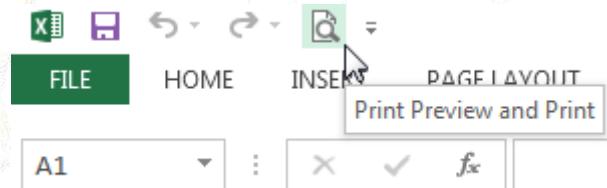
#### *To add commands to the Quick Access toolbar*

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**.

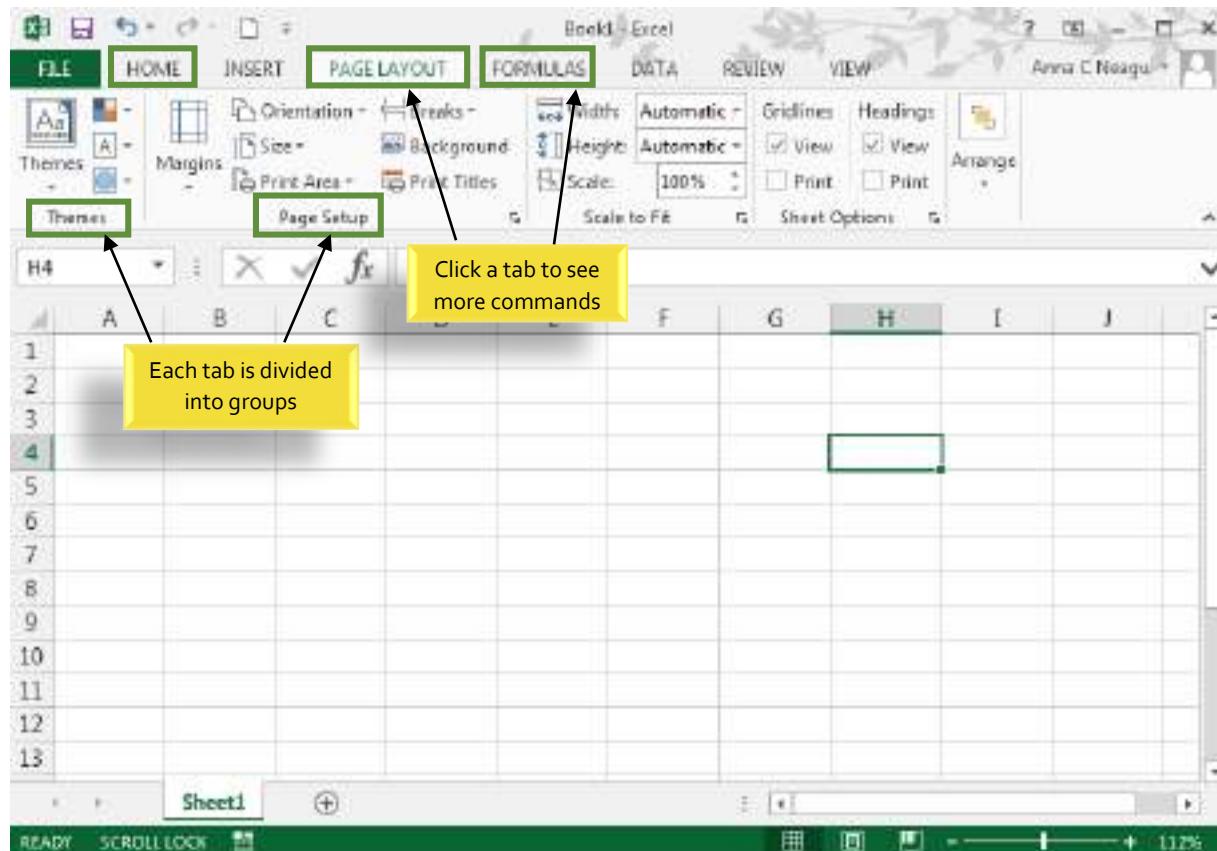


3. The command will be **added** to the Quick Access toolbar.



## □ The Ribbon

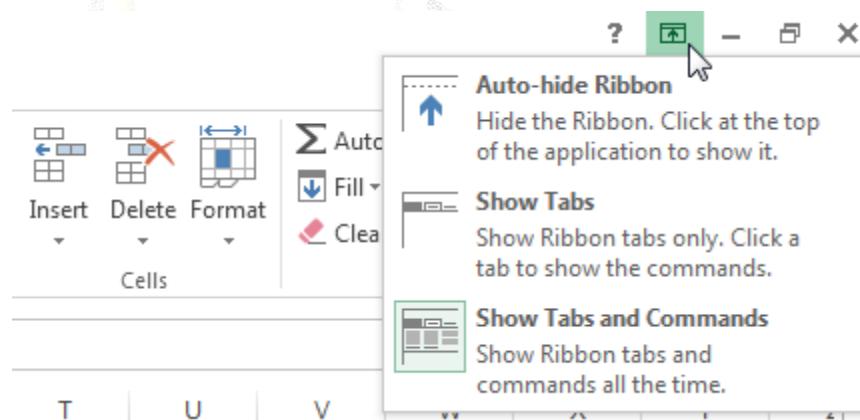
Excel 2013 uses a **tabbed Ribbon system** instead of traditional menus. The **Ribbon** contains **multiple tabs**, each with several **groups of commands**. You will use these tabs to perform the most **common tasks** in Excel.



### To minimize and maximize the Ribbon

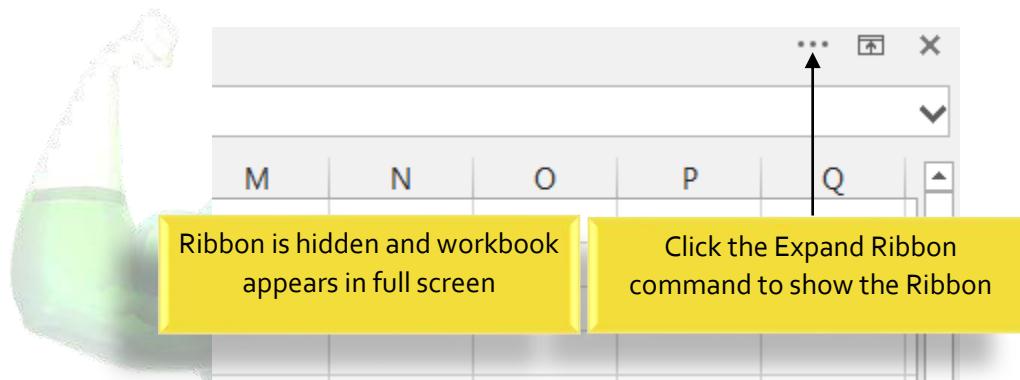
The Ribbon is designed to respond to your current task, but you can choose to **minimize** it if you find that it takes up too much screen space.

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



2. Select the desired **minimizing option** from the drop-down menu:

- 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.

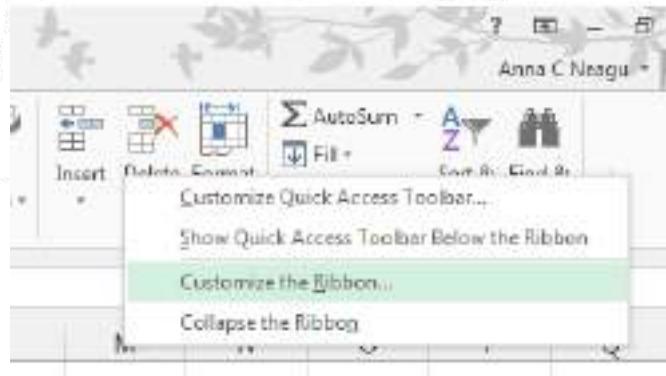


- Show Tabs:** This option hides all command groups when not in use, but **tabs** will remain visible. To **show the Ribbon**, simply click a tab.
- Show Tabs and Commands:** This option maximizes the Ribbon. All of the tabs and commands will be visible. This option is selected by default when you open Excel for the first time.

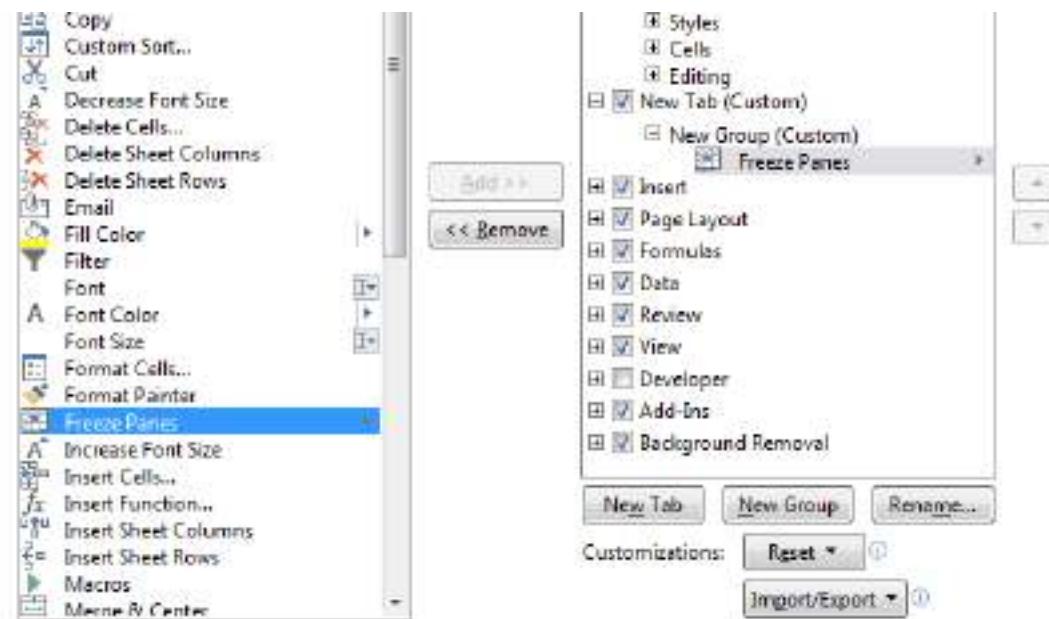
### To Customize the Ribbon in Excel 2013

You can customize the Ribbon by creating your own **tabs** with whichever commands you want. Commands are always housed within a **group**, and you can create as many groups as you want in order to keep your tab organized. If you want, you can even add commands to any of the default tabs, as long as you create a custom group in the tab.

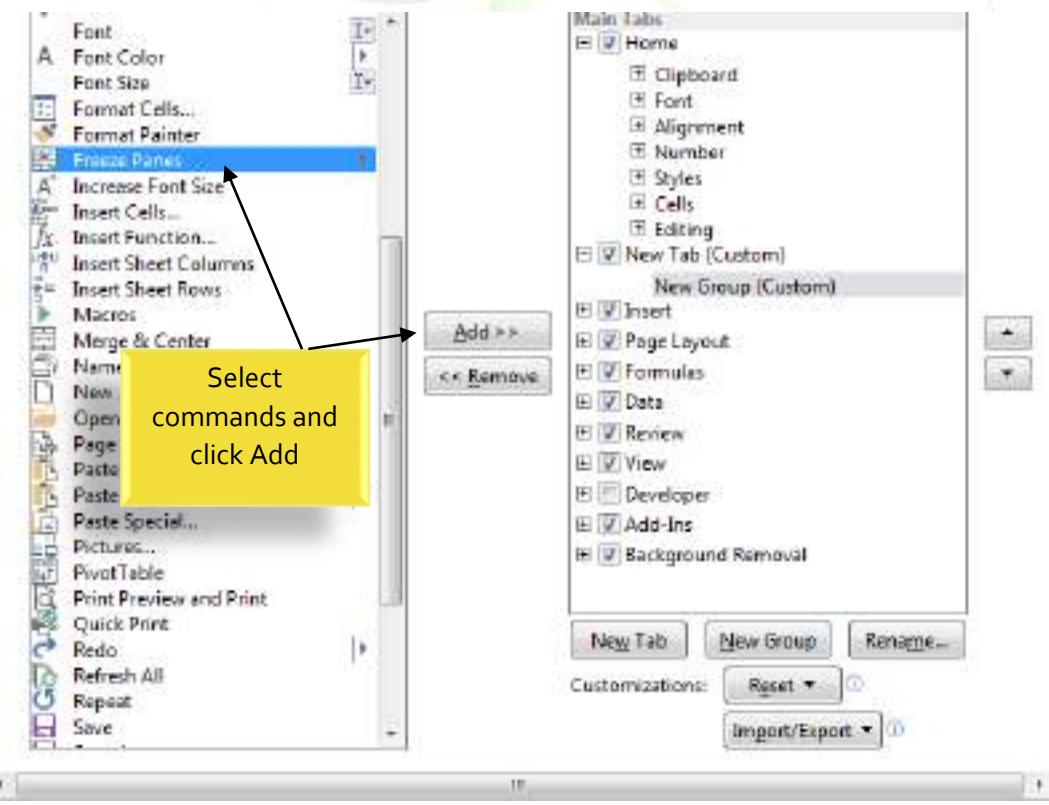
1. Right-click the **Ribbon** and then select **Customize the Ribbon...** from the drop-down menu.



2. The **Excel Options** dialog box will appear. Locate and select **New Tab**.



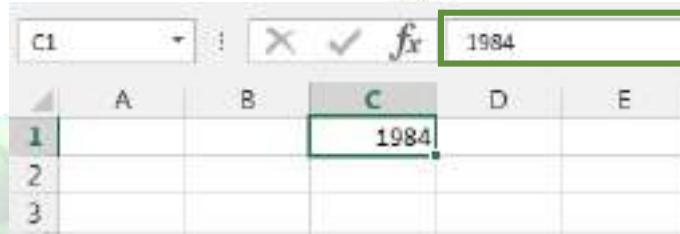
3. Make sure the **New Group** is selected, select a **command**, and then click **Add**. You can also drag commands directly into a group.
4. When you are done adding commands, click **OK**. The commands will be added to the Ribbon.



#### The Formula Bar

In the **formula bar**, you can enter or edit **data**, a **formula**, or a **function** that will appear in a specific cell.

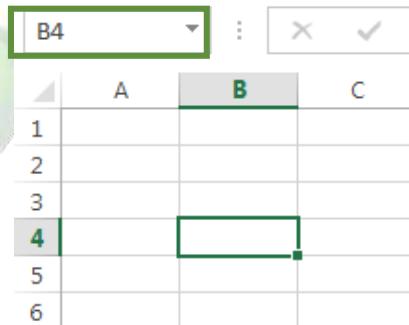
In the image below, cell C1 is selected and 1984 is entered into the formula bar. Note how the data appears in both the formula bar and in cell C1.



#### The Name Box

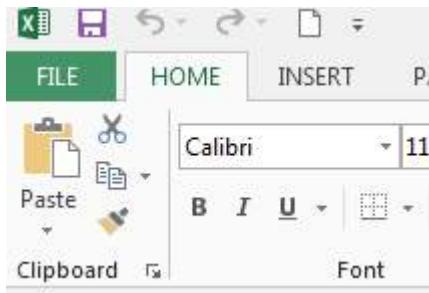
The **Name box** displays the **location**, or "name" of a **selected cell**.

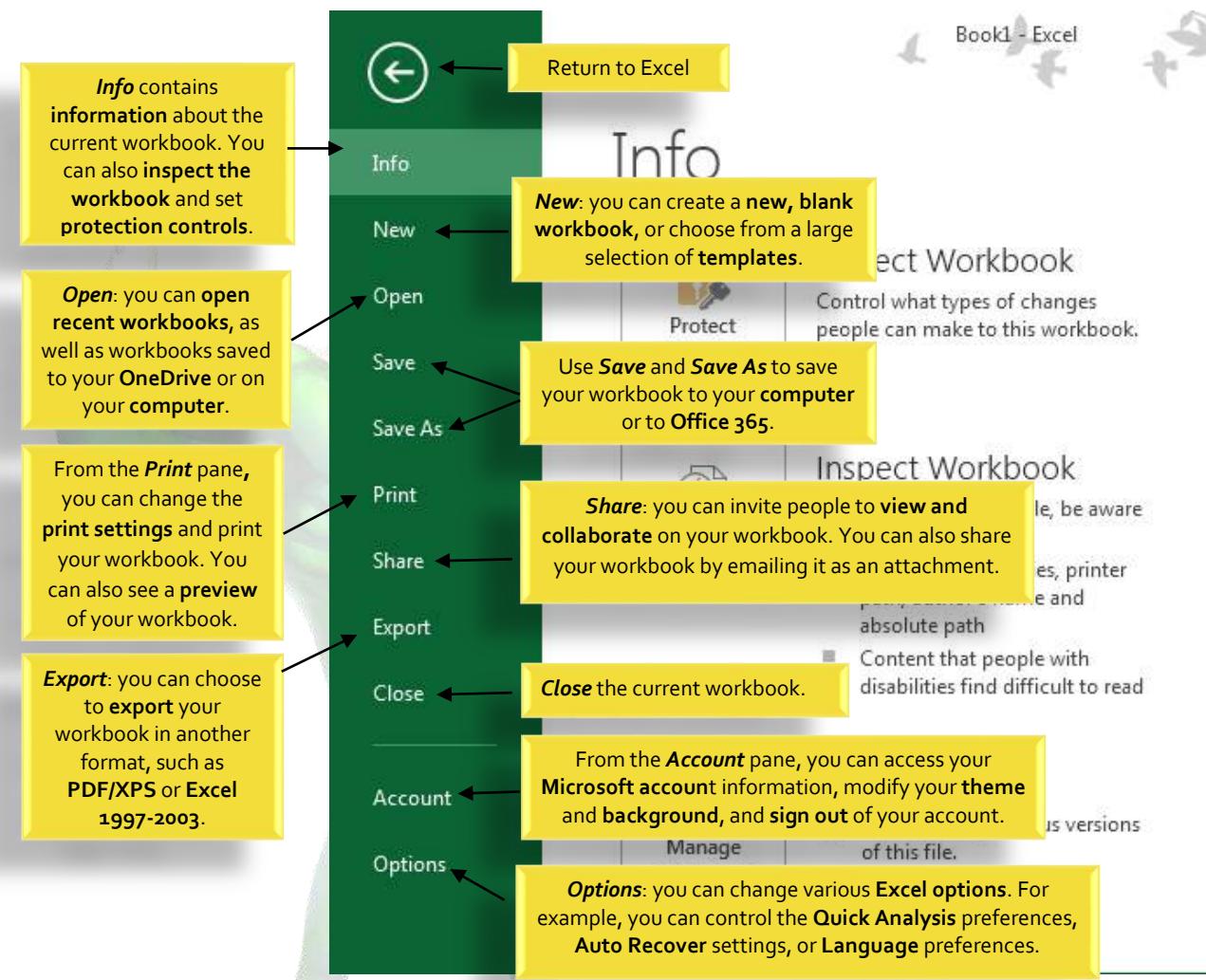
In the image below, cell B4 is selected. Note that cell B4 is where column B and row 4 intersect.



#### The Backstage View (The File Menu)

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

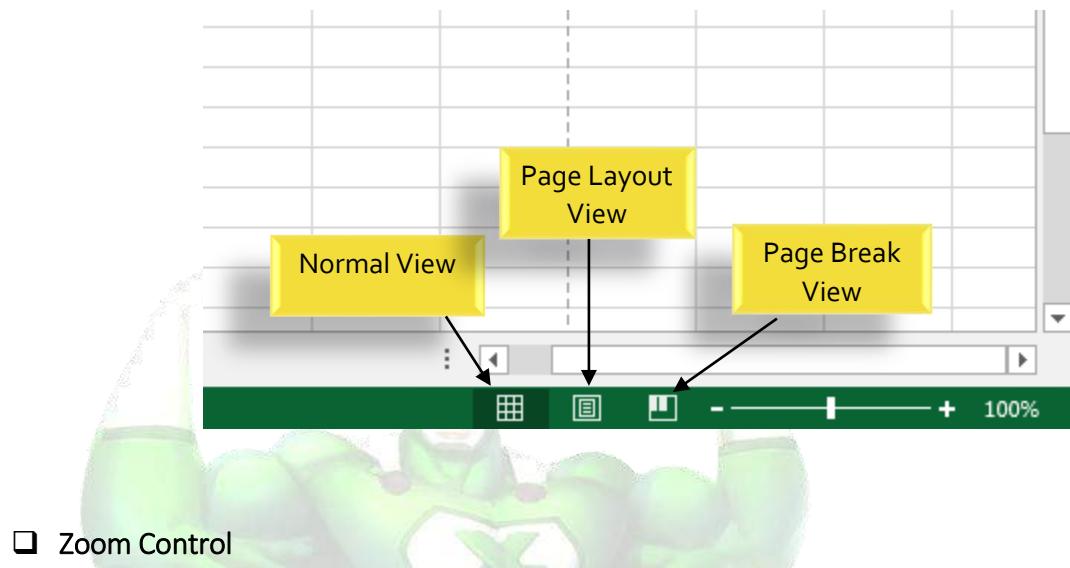




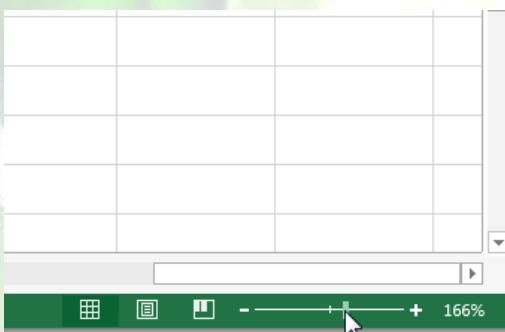
## □ The Worksheet Views

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.



To use the **Zoom control**, click and drag the **slider**. The number to the right of the slider reflects the **zoom percentage**.



## Challenge!

1. Open Excel 2013.
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).

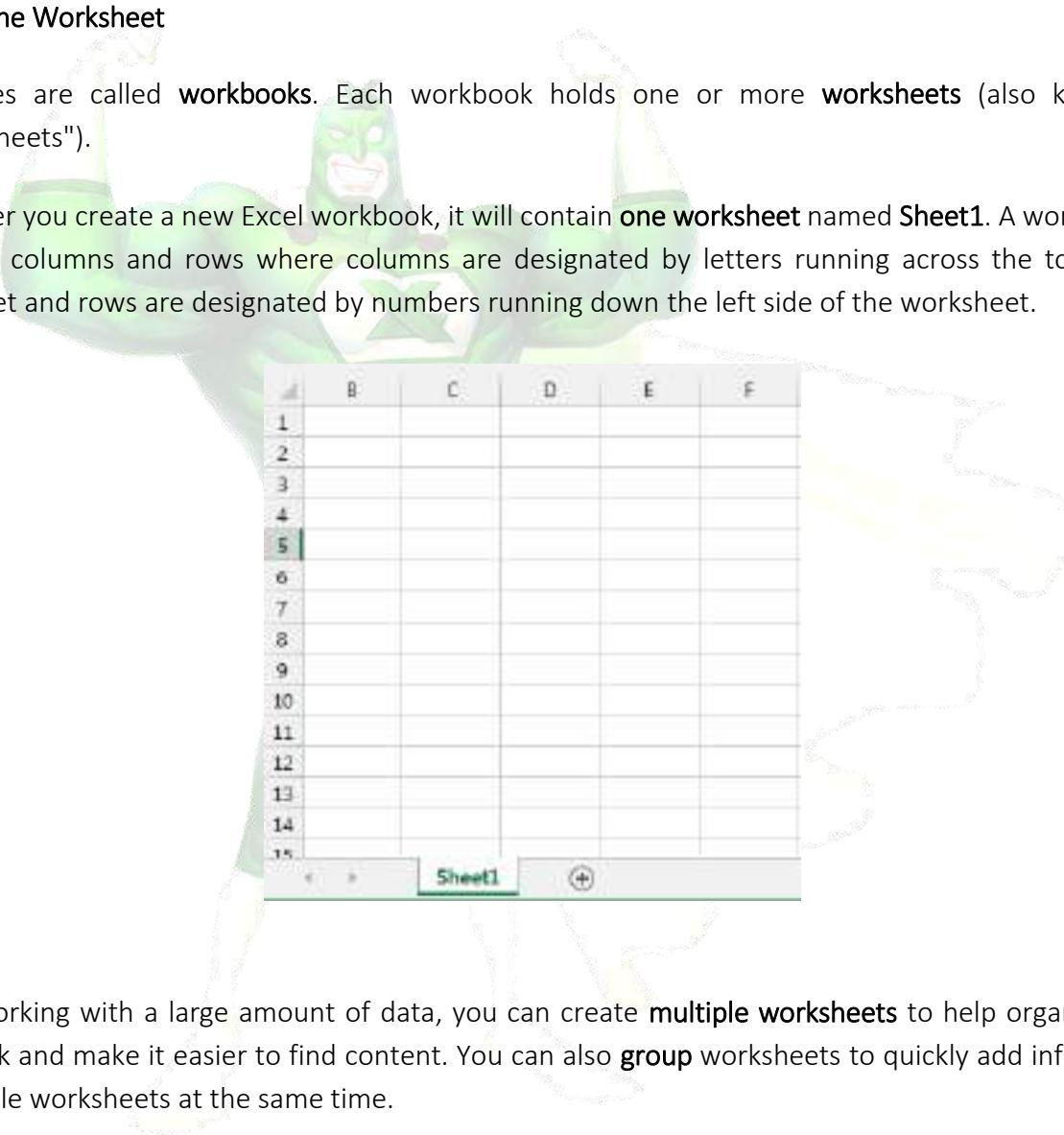
## 2.1.2. The Workbook Window

In Excel 2013, when you open up a new workbook it now contains only 1 worksheet. There can be a max of 1,048,576 rows and 16,384 columns in an excel work sheet.

### The Worksheet

Excel files are called **workbooks**. Each workbook holds one or more **worksheets** (also known as "spreadsheets").

Whenever you create a new Excel workbook, it will contain **one worksheet** named **Sheet1**. A worksheet is a grid of columns and rows where columns are designated by letters running across the top of the worksheet and rows are designated by numbers running down the left side of the worksheet.



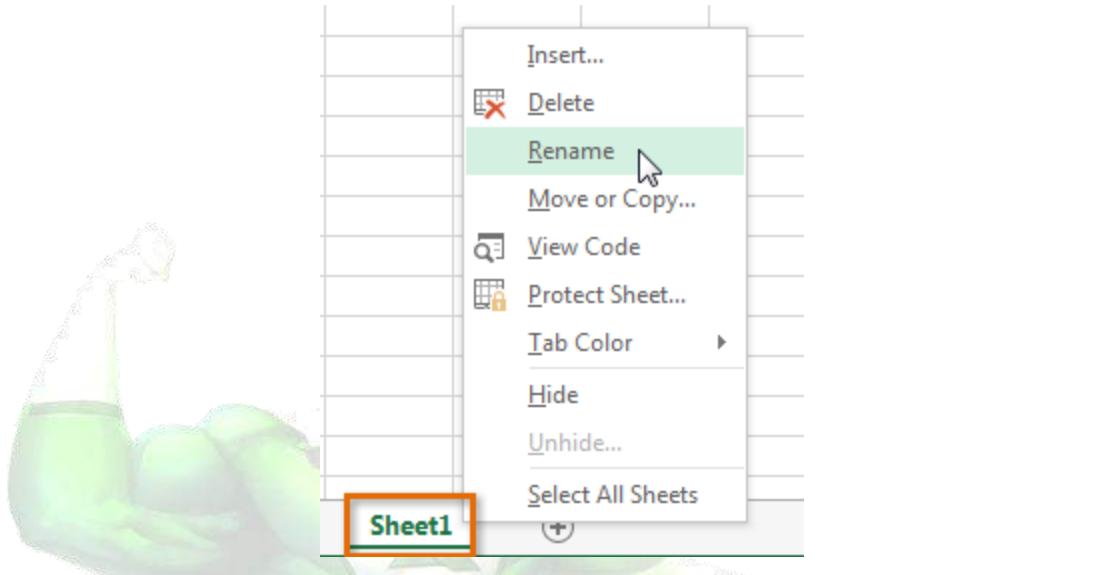
	B	C	D	E	F
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

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

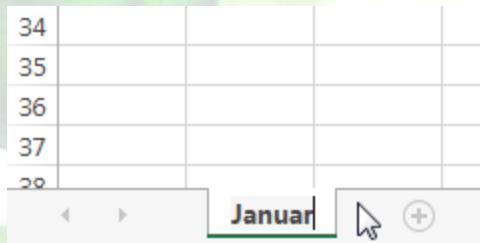
### *To rename a worksheet*

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

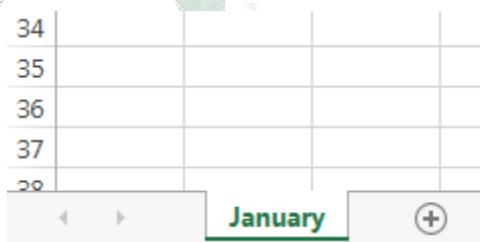
1. Right-click the **worksheet** you wish to rename, then select **Rename** from the **worksheet** menu.



2. Type the desired name for the worksheet.



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



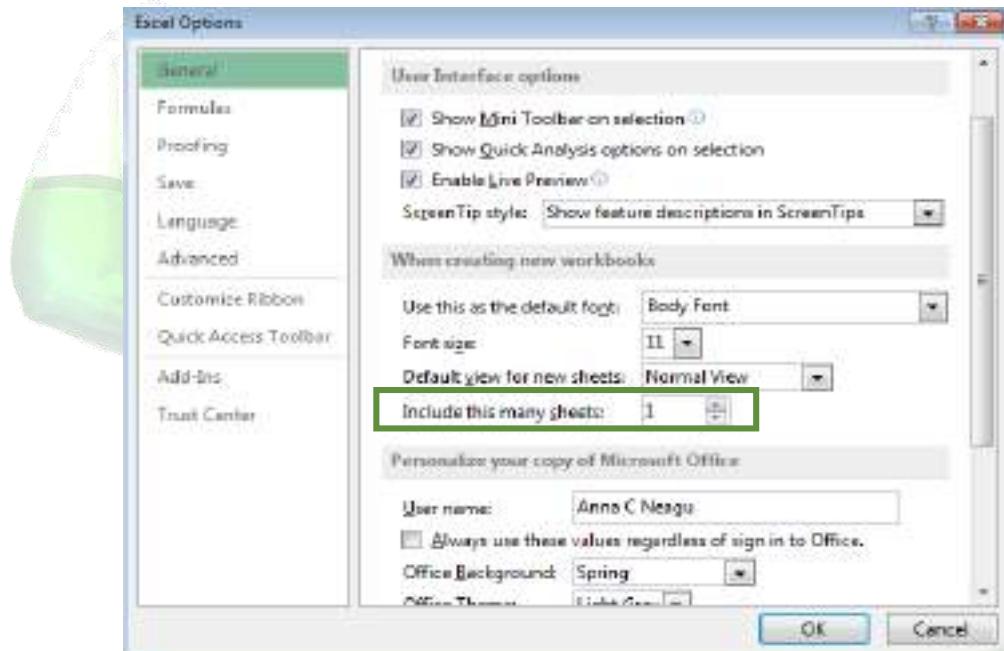
### To insert a new worksheet

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



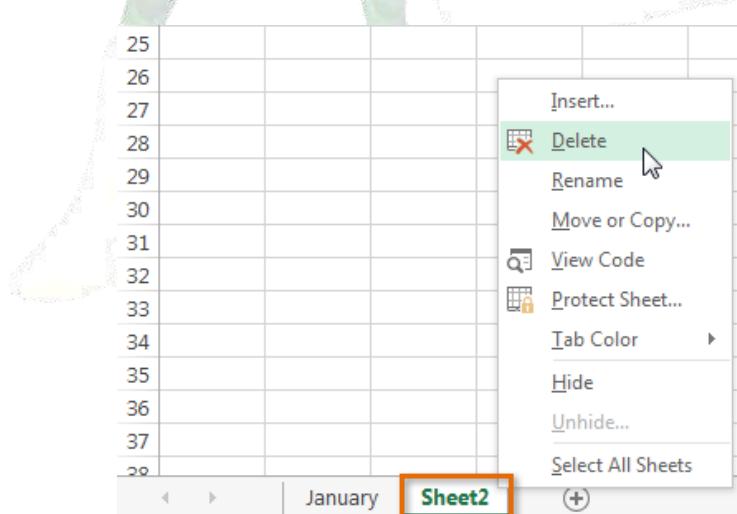
2. A new, blank worksheet will appear.

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

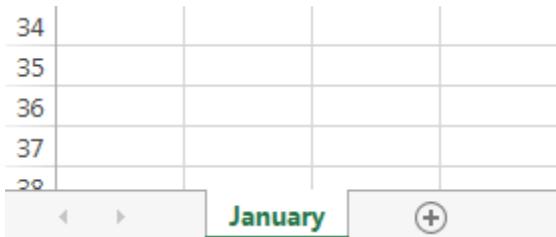


### To delete a worksheet

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



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



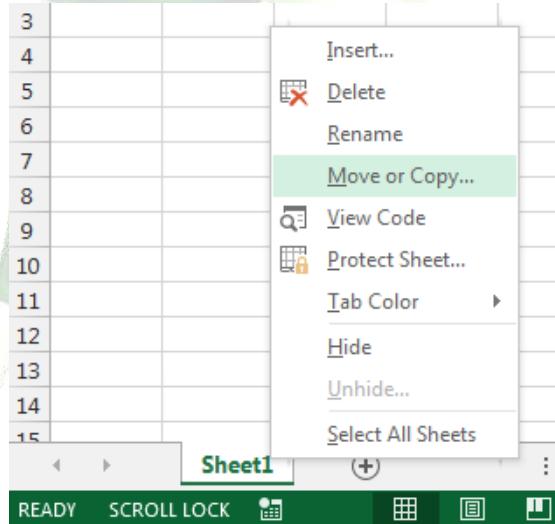
Alternatively, from the **Home Tab** in the **Cells Group** click on **Delete** and select **Delete Sheet**.

**Warning:** The Undo button will not undo the deletion of a worksheet.

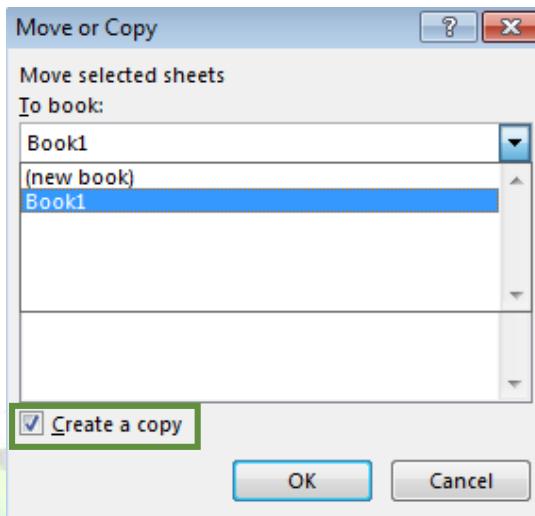
### To copy a worksheet

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

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

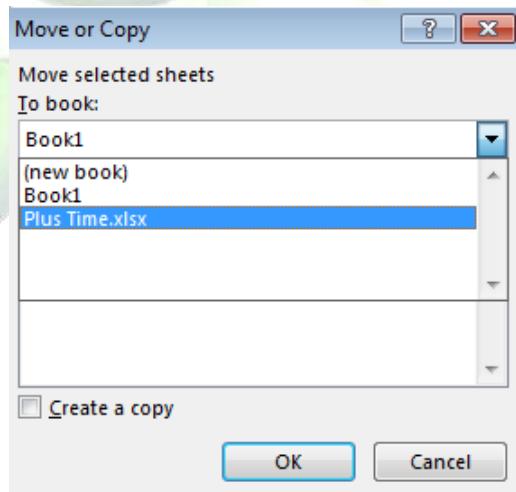


2. The **Move or Copy** dialog box will appear. Choose where the sheet will appear in the **Before sheet:** field. In our example, we'll choose **(move to end)** to place the worksheet to the right of the existing worksheet.
3. Check the box next to **Create a copy**, then click **OK**.



4. The worksheet will be **copied**. It will have the same title as the original worksheet, as well as a **version number**.

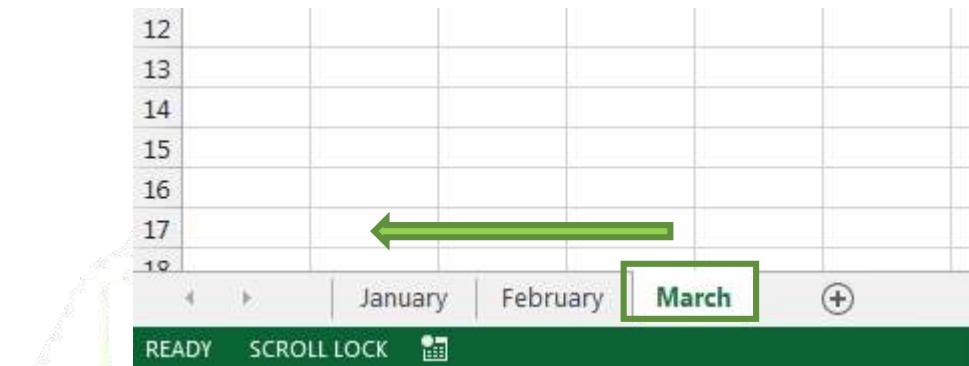
**TIP:** You can also copy a worksheet to an entirely different **workbook**. You can select any workbook that is currently open from the **To book:** drop-down menu.



### To move a worksheet

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

1. Select the **worksheet** you 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.

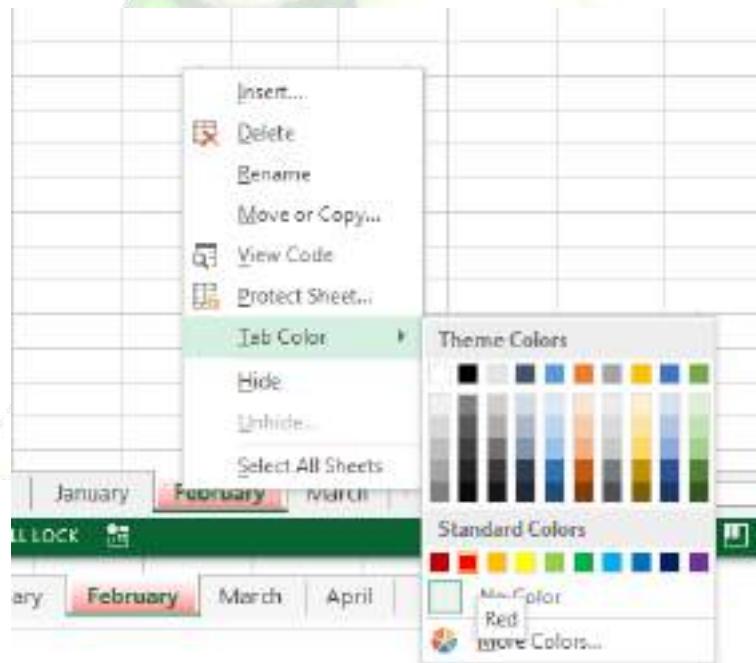


- Release the mouse. The worksheet will be moved.

#### To change the worksheet color

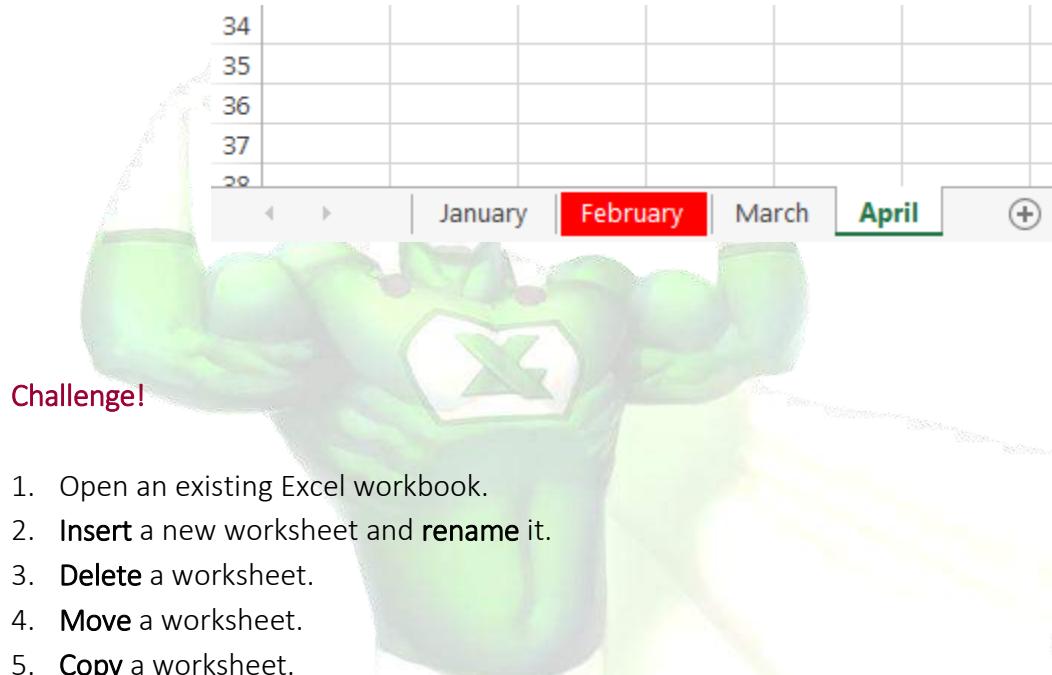
You can change a worksheet's **color** to help organize your worksheets and make your workbook easier to navigate.

- Right-click the desired worksheet, and hover the mouse over **Tab Color**. The **Color** menu will appear.
- 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**.



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

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.

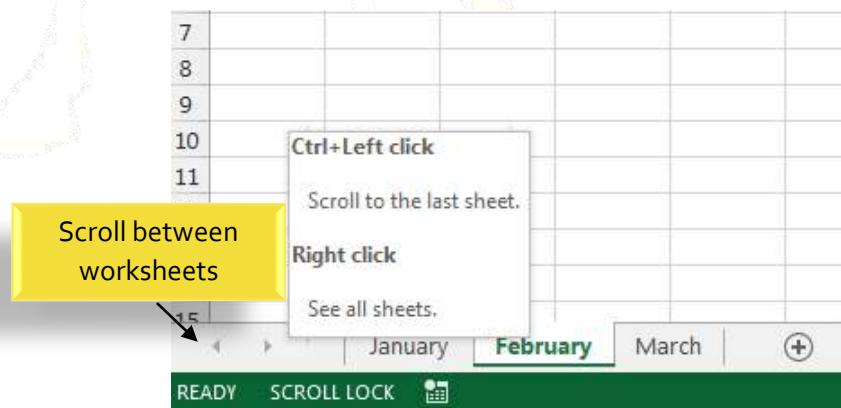


### Challenge!

1. Open an existing Excel workbook.
2. **Insert** a new worksheet and **rename** it.
3. **Delete** a worksheet.
4. **Move** a worksheet.
5. **Copy** a worksheet.

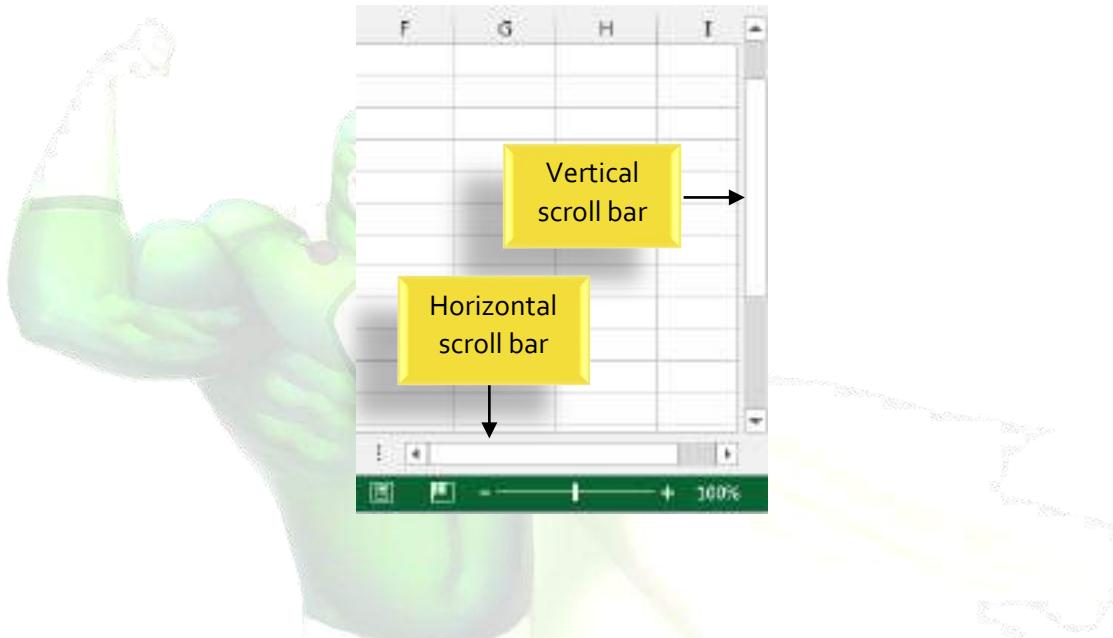
### □ The Scrolling Buttons

These buttons scroll the display of sheet tabs one at a time or to display the first and last grouping of sheet tabs and are located to the left of the sheet tabs.



## □ The Scroll Bars

Your spreadsheet may frequently have more data than you can see on the screen at once. Click, hold and drag the vertical or horizontal scroll bar depending on what part of the page you want to see.

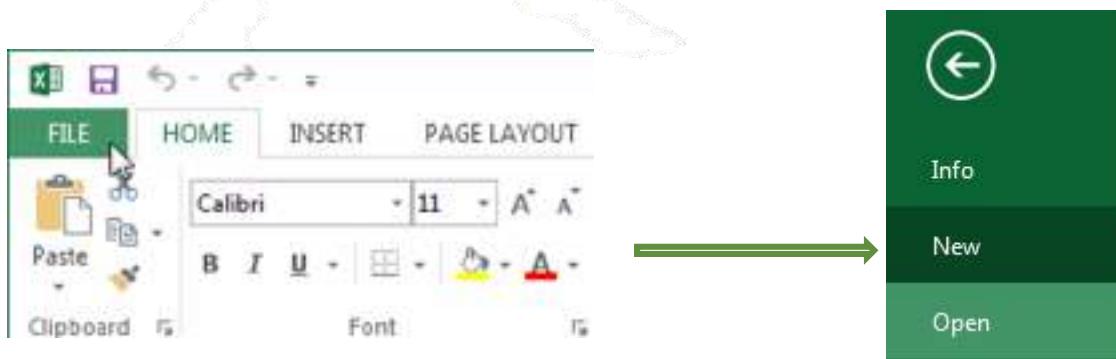


## 2.2. Creating and Opening Workbooks

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 predesigned **template**—or **open an existing workbook**.

### 2.2.1. Create a new blank workbook

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

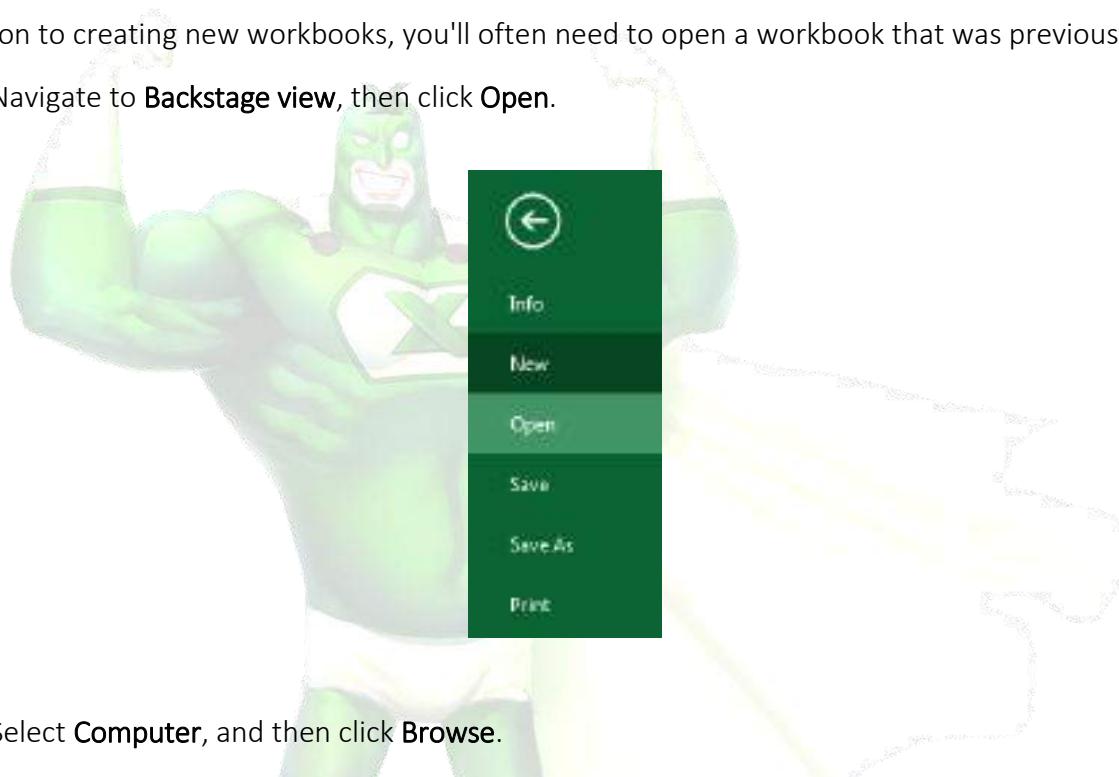


2. Select **New**, then click **Blank workbook**.
3. A new blank workbook will appear.

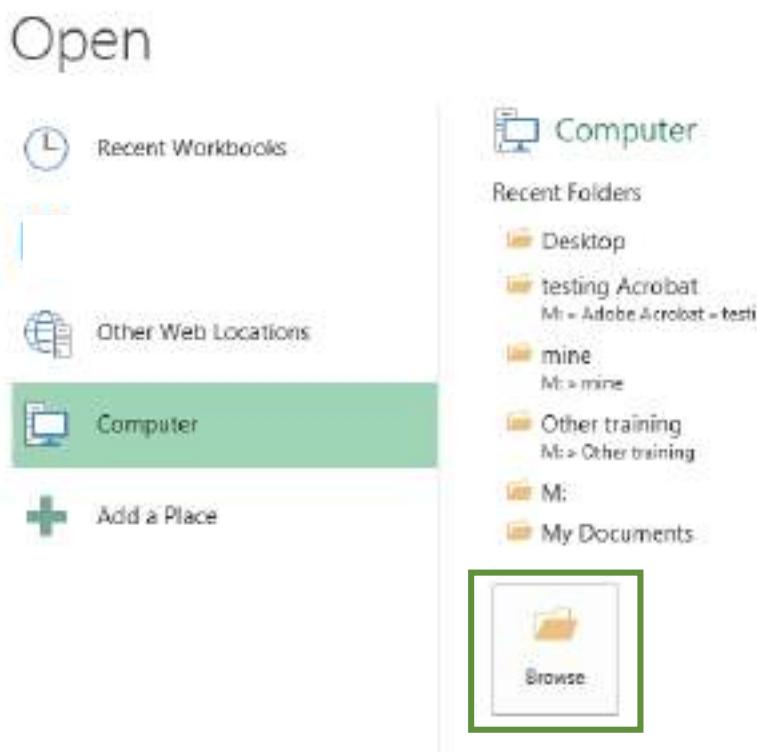
### 2.2.2. Open an existing workbook

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

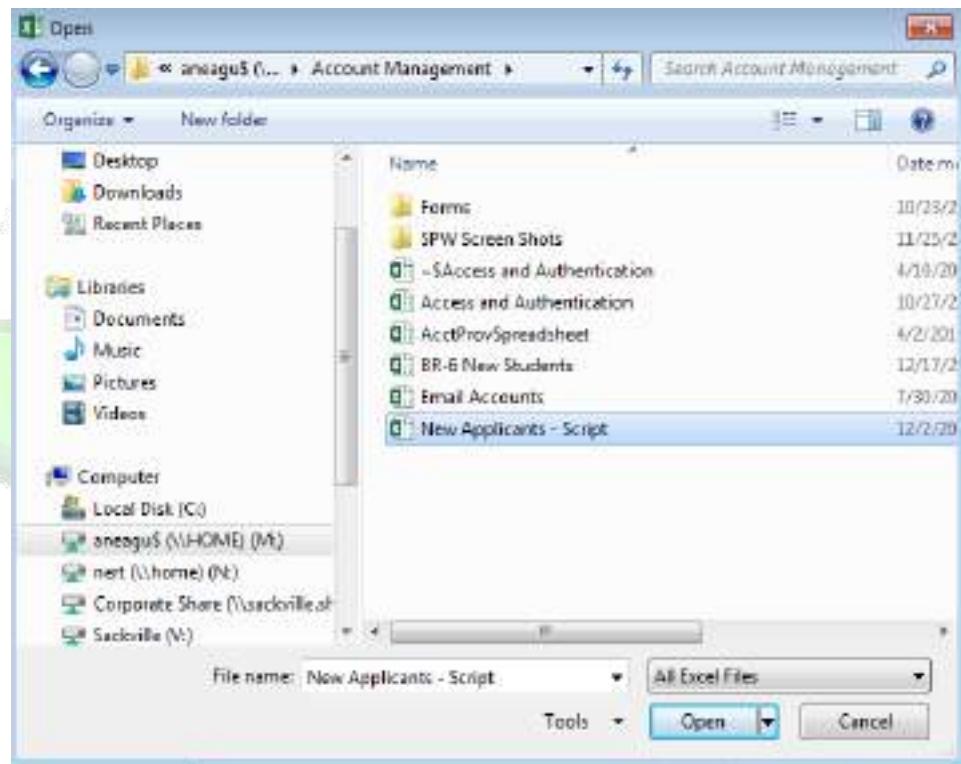
1. Navigate to **Backstage view**, then click **Open**.



2. Select **Computer**, and then click **Browse**.



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



**TIP:** If you've opened the desired workbook recently, you can browse your **Recent Workbooks** rather than searching for the file.

## Open

Recent Workbooks

Other Web Locations

Computer

Add a Place

Recent Workbooks

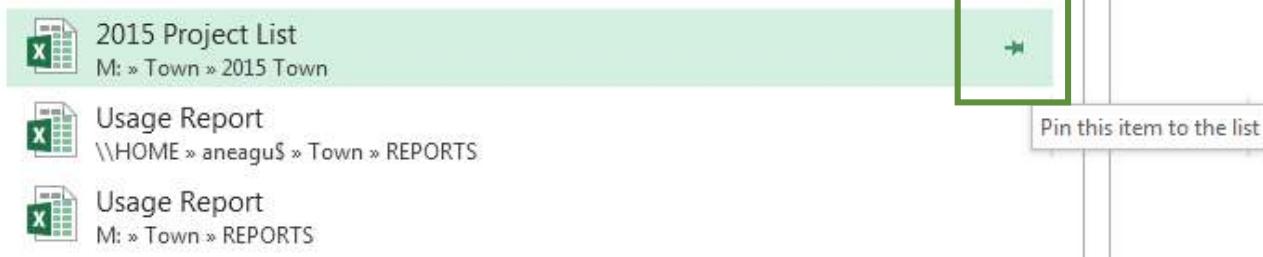
- 2015 Project List  
M:\Town\2015 Town
- Usage Report  
V:\HOME\aneagus\Town\REPORTS
- Usage Report  
M:\Town\REPORTS
- Plus Time  
M:\Mine
- Usage  
M:\Town\REPORTS
- Steps  
M:\Town\Council Package Project

### To pin 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** and then click **Open**. Your **recently edited workbooks** will appear.
2. Hover the mouse over the **workbook** you wish to pin. A **pushpin icon** ➤ will appear next to the workbook. Click the **pushpin icon**.

### Recent Workbooks

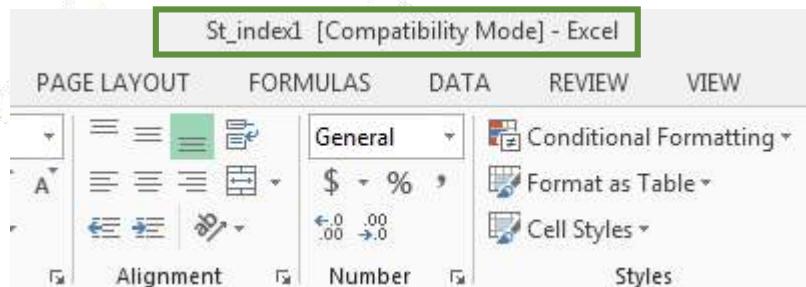


3. The workbook will stay in Recent Workbooks. To **unpin** a workbook, simply click the pushpin icon again.

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

### 2.2.3. 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 that was used to create the workbook. For example, if you open a workbook created in Excel 2003, you can only use tabs and commands found in Excel 2003.

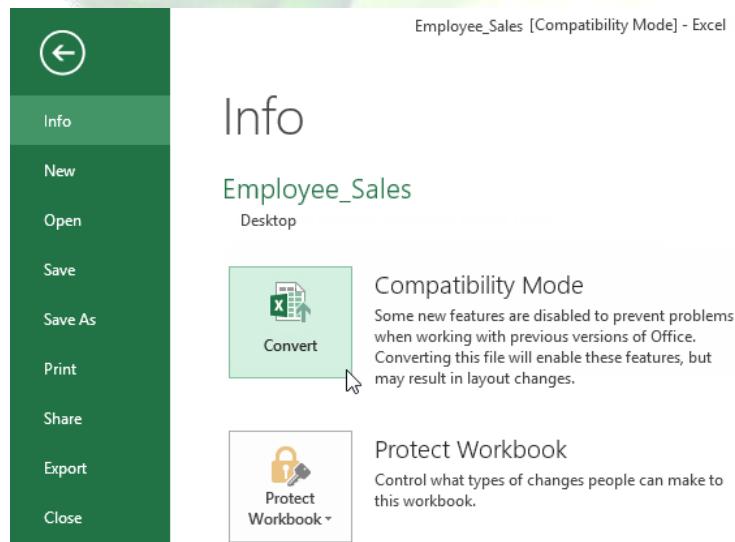
In order to exit Compatibility mode, you'll need to **convert** the workbook to the current version type. However, if you're collaborating with others who only have access to an earlier version of Excel, it's best to leave the workbook in Compatibility mode so the format will not change.

### 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.

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



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

### Challenge!

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

## 2.3. 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 with previous versions of Excel, you can save files **locally** to your computer. But unlike older versions, Excel 2013 also lets you save a workbook to **the cloud** using **OneDrive**. You can also **export** and **share** workbooks with others directly from Excel.

### 2.3.1. Save and Save As

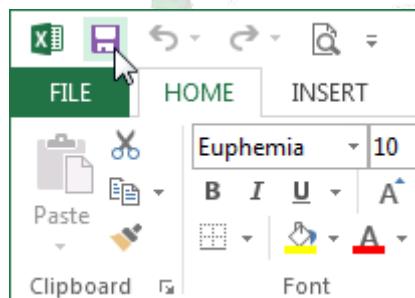
Excel offers two ways to save a file: **Save** and **Save As**. These options work in similar ways, with a few important differences:

- 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

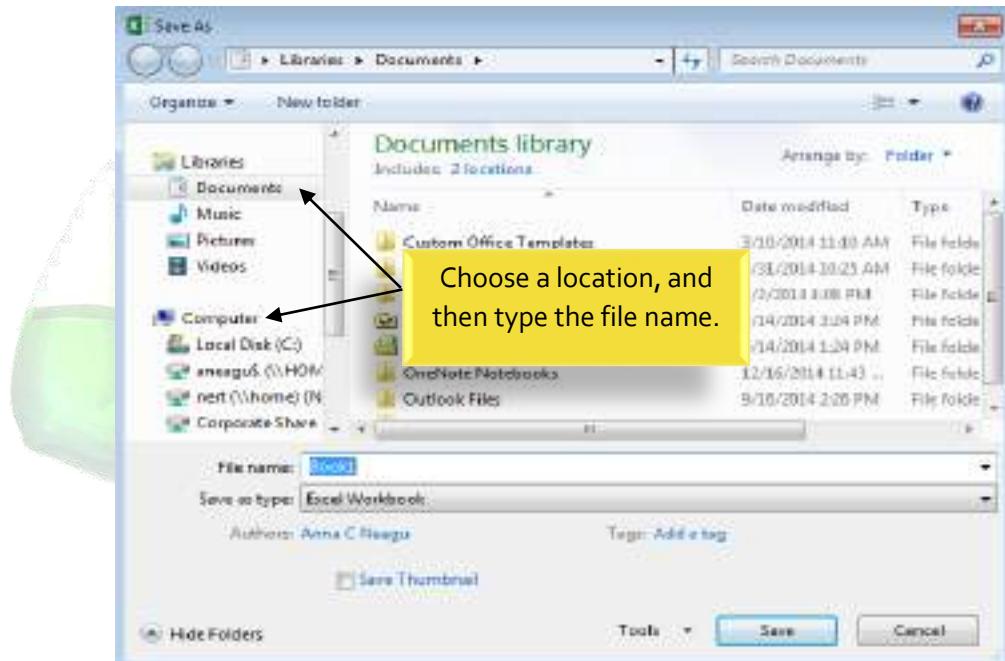
It's important to **save your workbook** whenever you start a new project or make changes to an existing one. Saving early and often can prevent your work from being lost. You'll also need to pay close attention to **where you save** the workbook so it will be easy to find later.

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



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**, then click **Browse**. Alternatively, you can click **OneDrive** to save the file to your OneDrive.
4. The **Save As** dialog box will appear. Select the **location** where you wish to save the workbook.

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



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

### *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 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**.

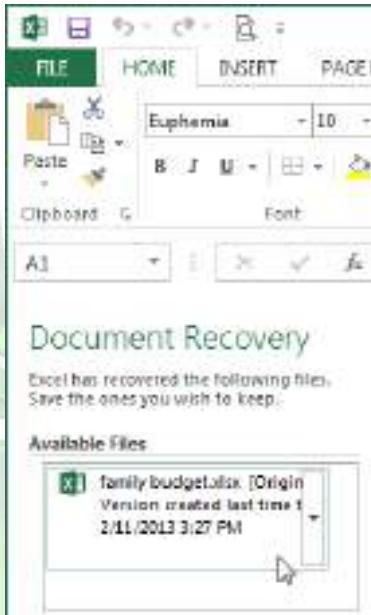
#### 2.3.2. AutoRecover

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*

- Open Excel 2013. If **auto-saved versions** of a file are found, the **Document Recovery** pane will appear.

- Click to open an available file. The workbook will be recovered.



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

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

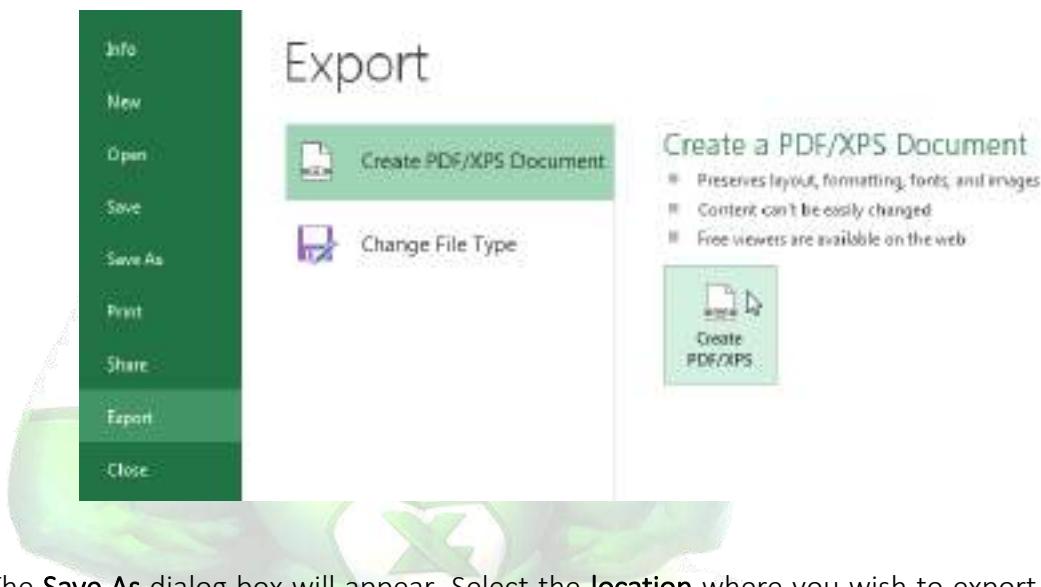
### 2.3.3. Exporting workbooks

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

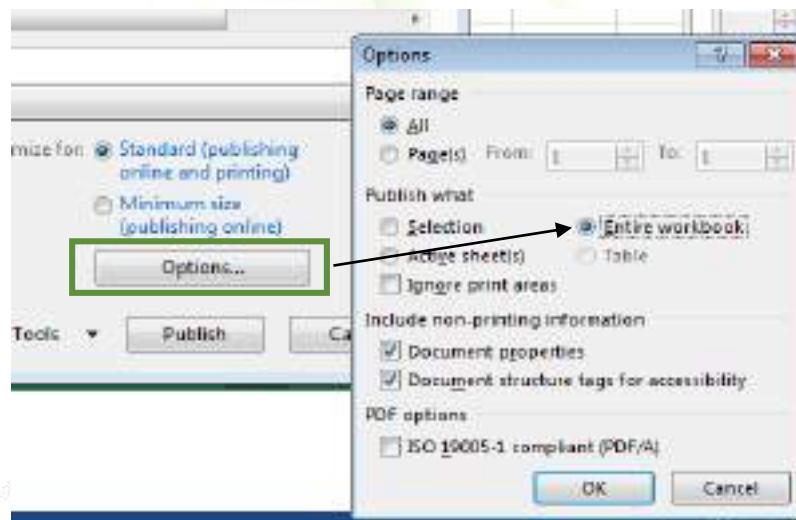
Exporting your workbook as an **Adobe Acrobat document**, commonly known as a **PDF file**, can be especially useful if sharing a workbook with someone who does not have Excel. A PDF will make it possible for recipients to view, but not edit, the content of your workbook.

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



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

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



### To export a workbook in other file types

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

1. Click the File tab to access Backstage view.
2. Click Export, then select Change File Type.
3. Select a common file type, then click Save As.
4. The Save As dialog box will appear. Select the location where you wish to export the workbook, enter a **file name**, and then click **Save**.

### Challenge!

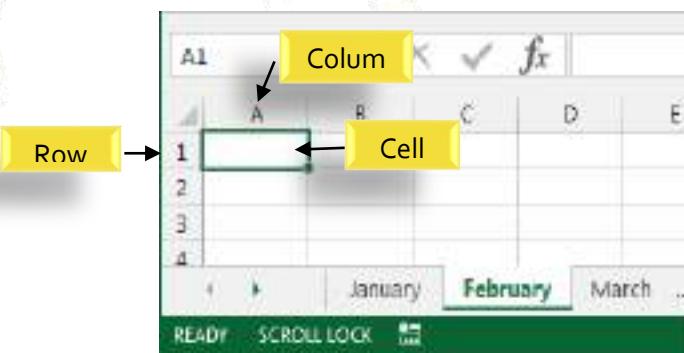
5. Create a **new blank workbook**.
6. Use the **Save** command to save the workbook to your desktop.
7. Save the workbook to **OneDrive** and **invite someone else** to view it.
8. **Export** the workbook as a PDF file.

## 3. Cell Basics

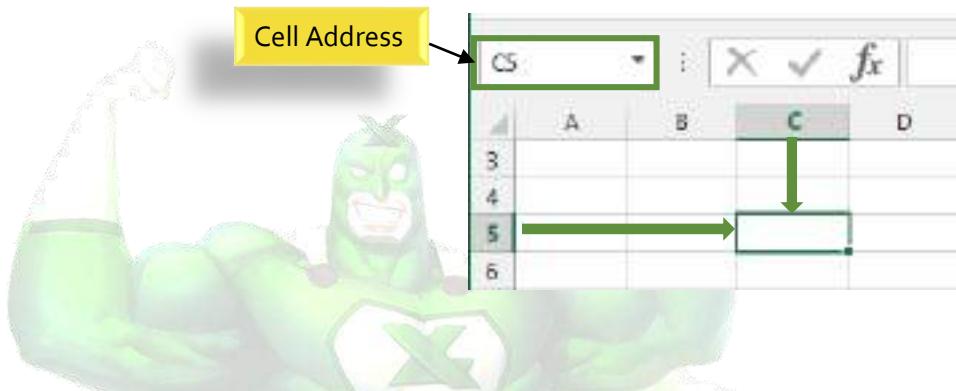
Whenever you work with Excel, you'll enter information, or **content**, into **cells**. Cells are the basic building blocks of a worksheet. You'll need to learn the basics of **cells** and **cell content** to calculate, analyze, and organize data in Excel.

### 3.1. Understanding Cells

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



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



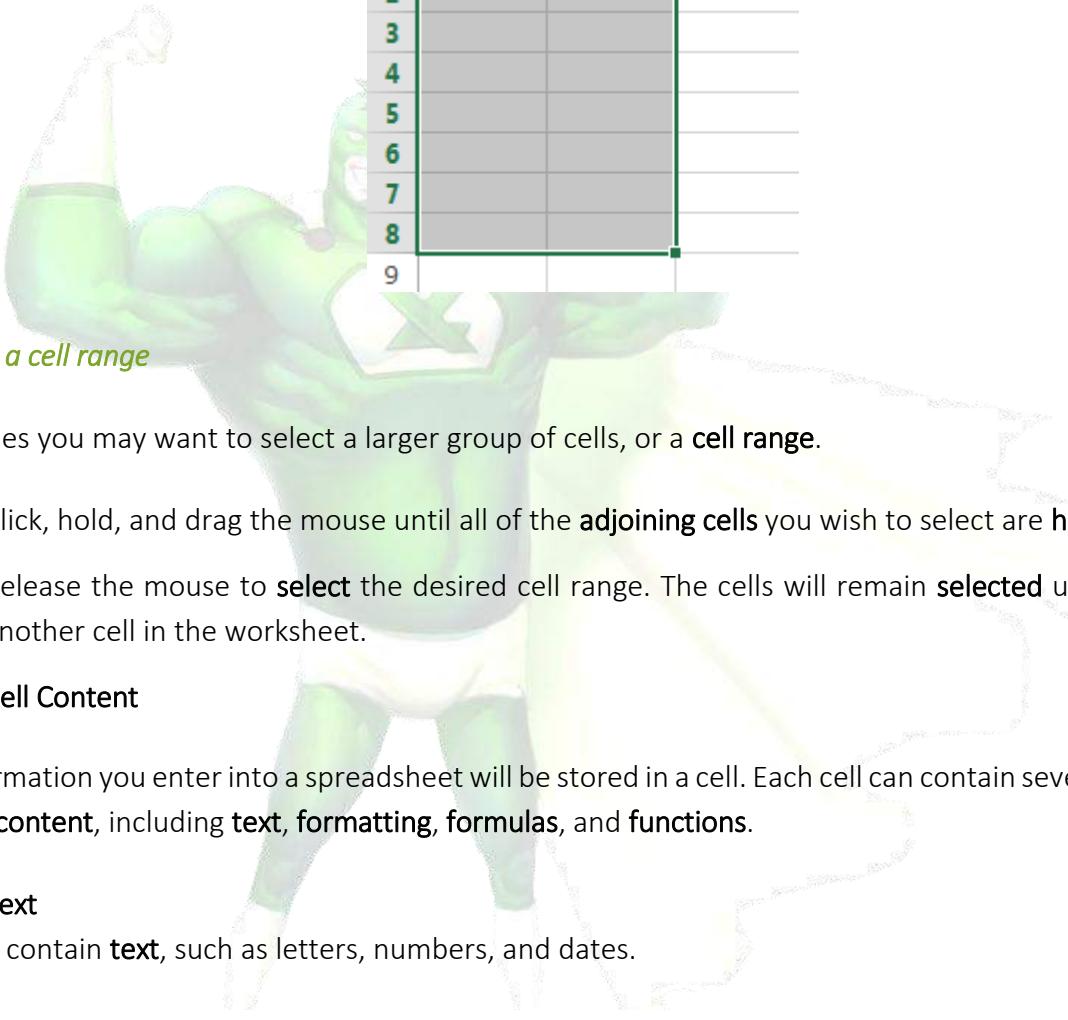
You can also select **multiple cells** at the same time. A group of cells is known as a **cell range**. Rather than a single cell address, you will refer to a cell range using the cell addresses of the **first** and **last** cells in the cell range, separated by a **colon**. For example, a cell range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

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

- Cell range **A1:A8**

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

- Cell range **A1:B8**



A1	B	C
1		
2		
3		
4		
5		
6		
7		
8		
9		

To select a cell range

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

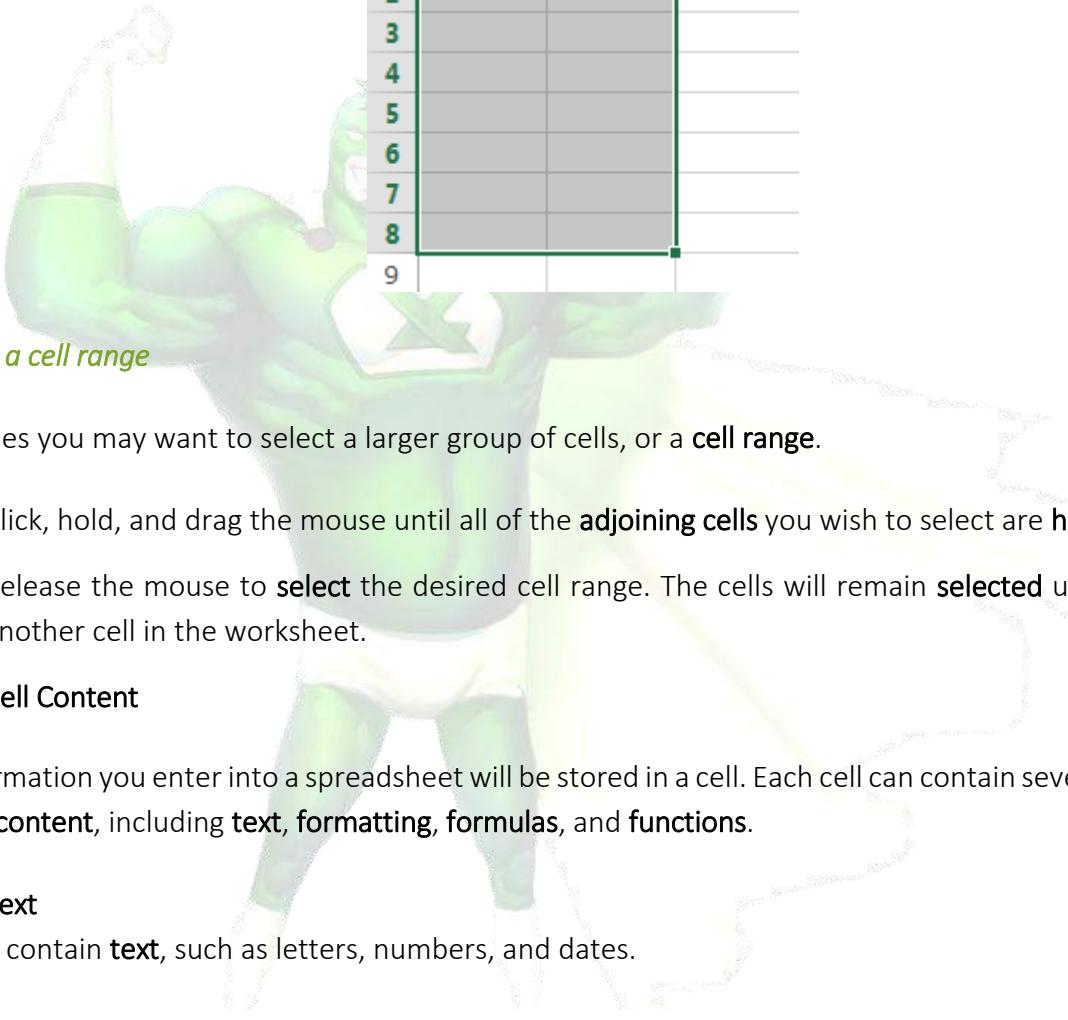
1. Click, hold, and drag the mouse until all of the **adjoining cells** you wish to select are **highlighted**.
2. Release the mouse to **select** the desired cell range. The cells will remain **selected** until you click another cell in the worksheet.

### 3.2. 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.



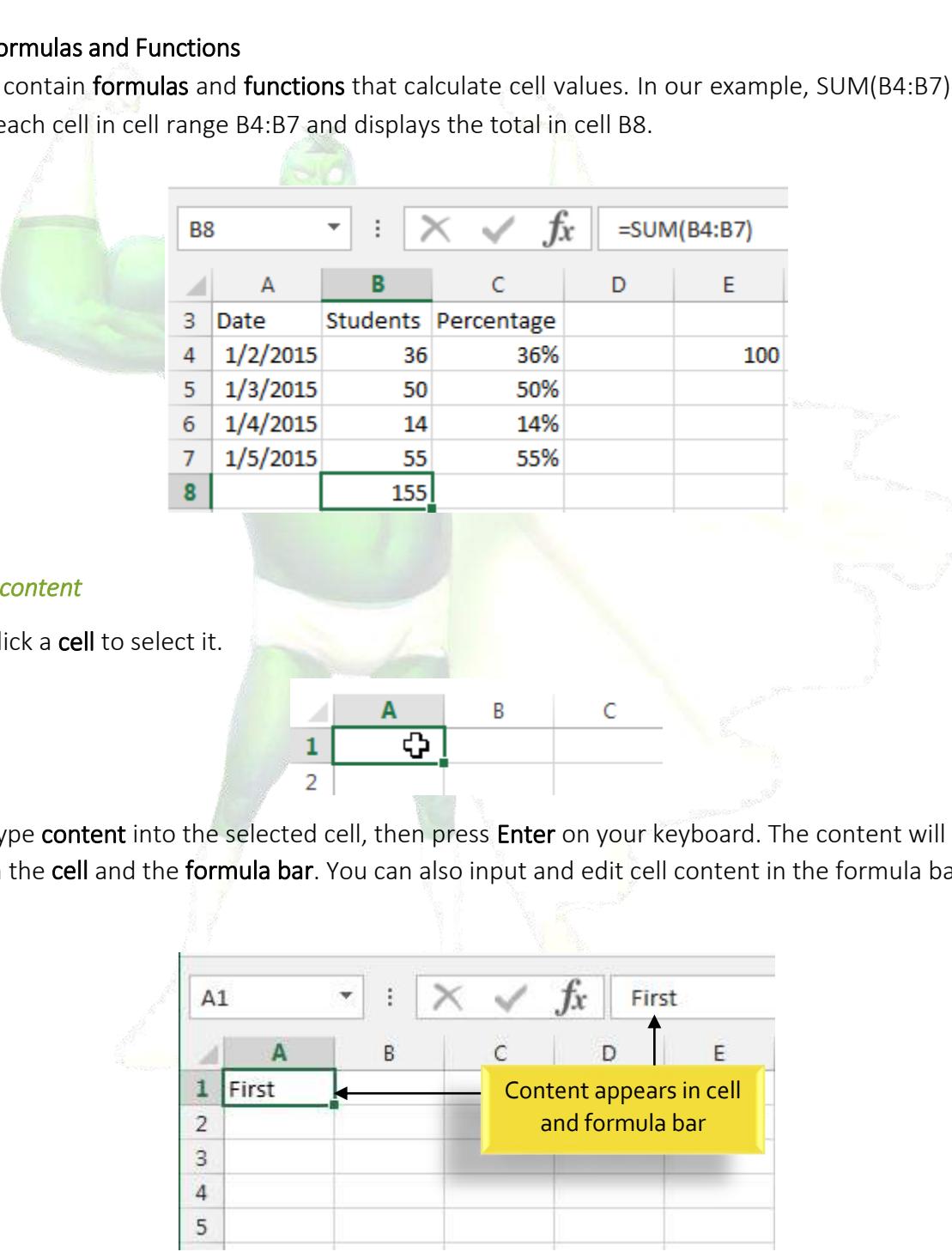
A	B	C	
1	Date	Sales	Percentage of Total
2	5/6/2013	65	0.71
3	5/7/2013	78	0.78
4	5/8/2013	112	0.86
5	5/9/2013	54	0.28
6	5/10/2013	99	0.49
7	5/11/2013	189	0.65
8	5/12/2013	120	0.57
9			

### 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**.

### Formulas and Functions

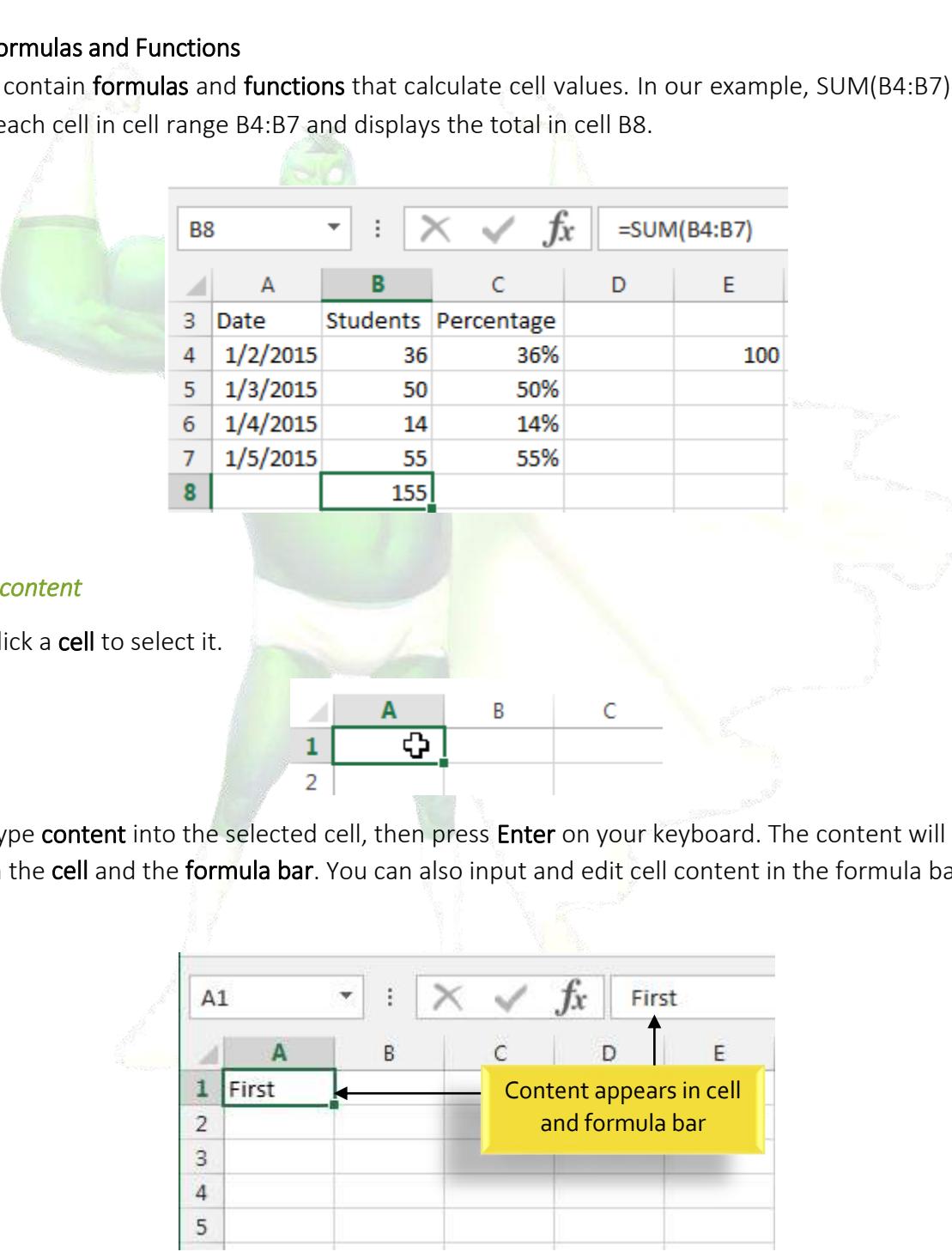
Cells can contain **formulas** and **functions** that calculate cell values. In our example,  $\text{SUM}(\text{B4:B7})$  adds the value of each cell in cell range B4:B7 and displays the total in cell B8.



	A	B	C	D	E
3	Date	Students	Percentage		
4	1/2/2015	36	36%		100
5	1/3/2015	50	50%		
6	1/4/2015	14	14%		
7	1/5/2015	55	55%		
8		155			

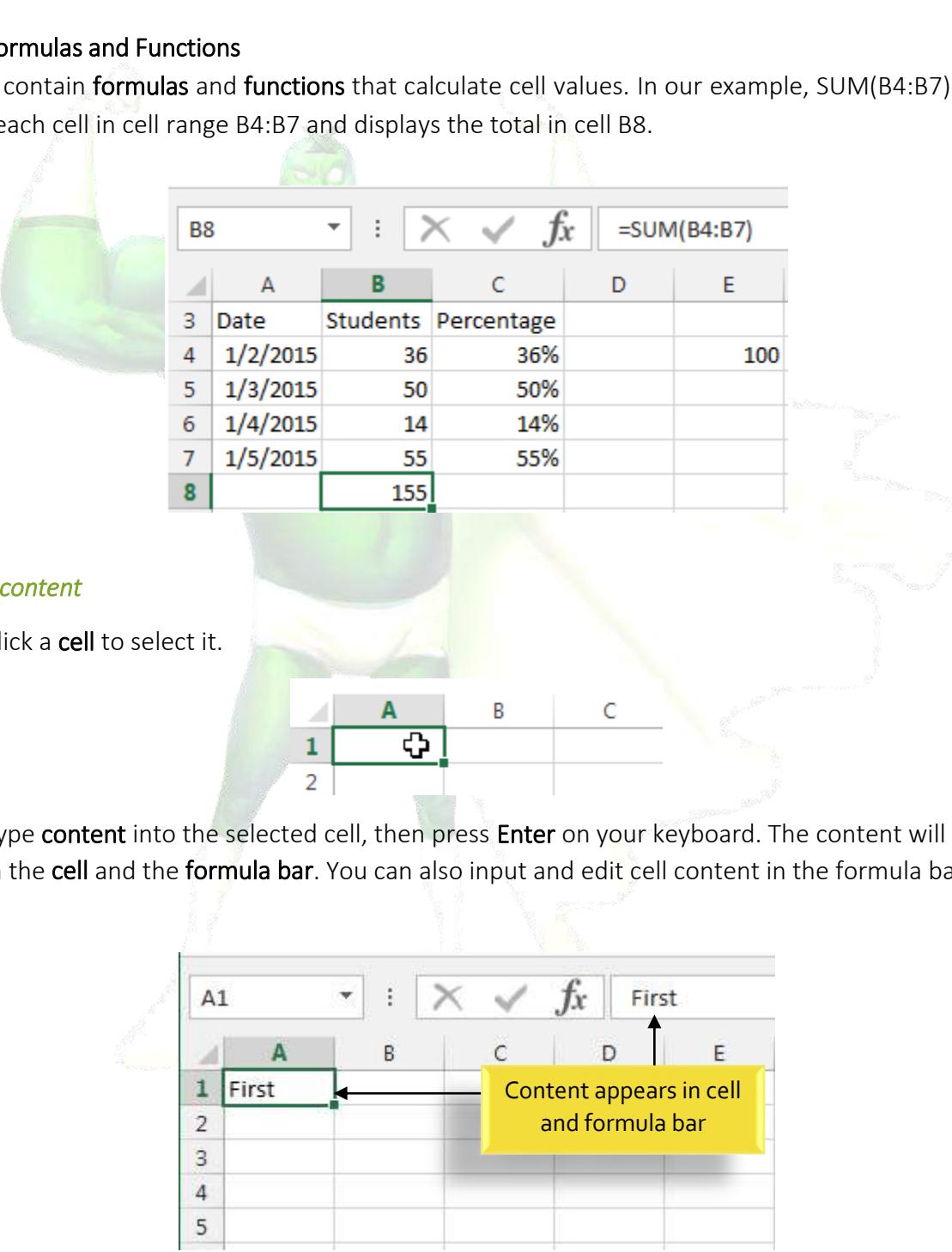
#### To insert content

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



A	B	C
1	+	
2		

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



A	B	C	D	E
1	First			
2				
3				
4				
5				

Content appears in cell  
and formula bar

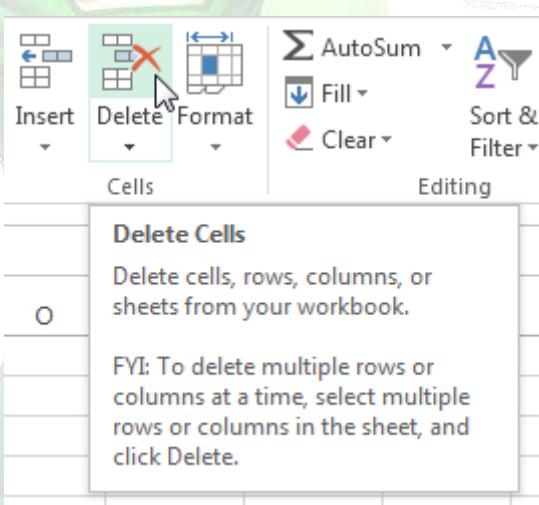
## To delete cell content

1. Select the **cell** with content you wish to delete.
2. Press the **Delete** or **Backspace** key on your keyboard. The cell's contents will be deleted.

## To delete cells

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

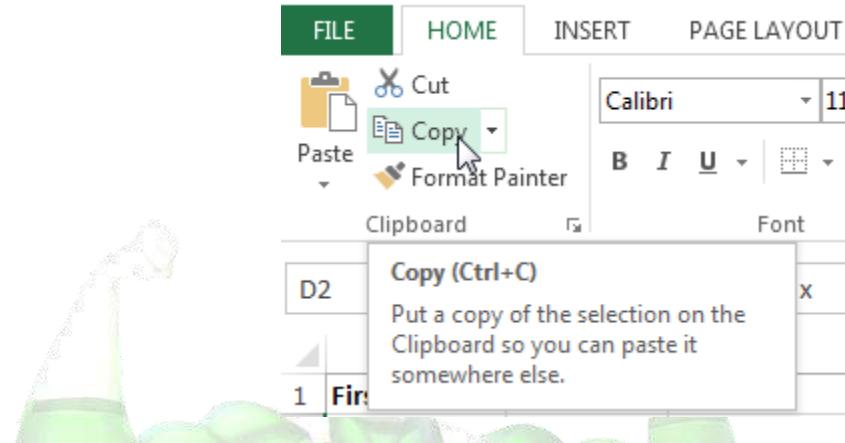
1. Select the **cell(s)** you wish to delete.
2. Select the **Delete** command from the **Home** tab on the **Ribbon**.
3. The cells below will **shift up**.



## To copy and paste cell content

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

1. Select the **cell(s)** you wish to **copy**.
2. Click the **Copy** command on the **Home** tab, or press **Ctrl+C** on your keyboard.

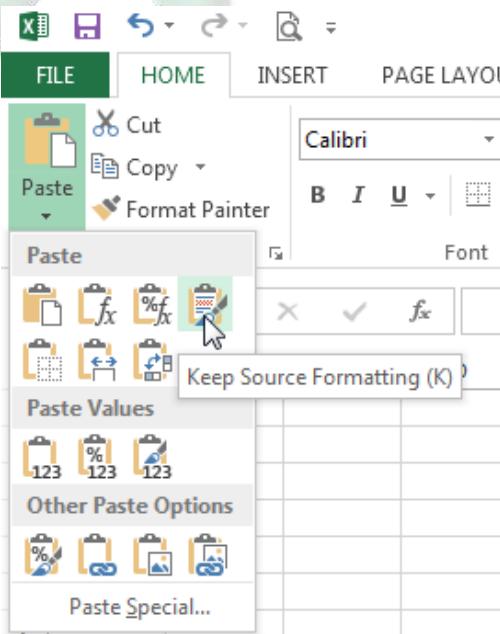


3. Select the **cell(s)** where you wish to **paste** the content. The copied cells will now have a **dashed box** around them.
4. Click the **Paste** command on the **Home** tab, or press **Ctrl+V** on your keyboard.
5. The content will be **pasted** into the selected cells.

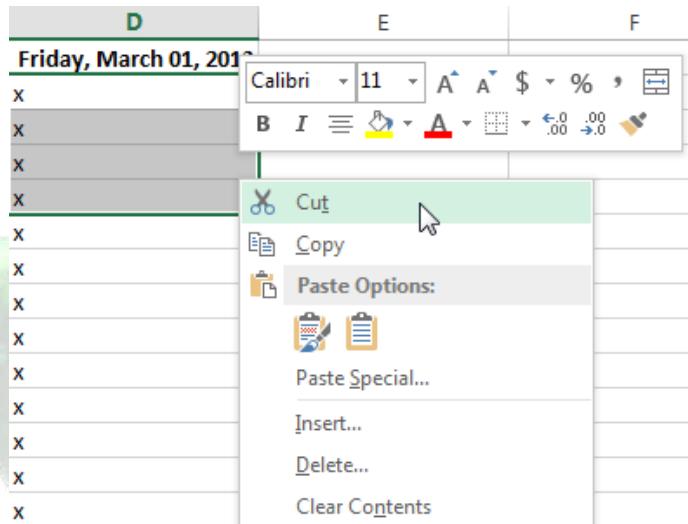
#### To access more paste options

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.



 **TIP:** Rather than choosing commands from the Ribbon, you can 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** that are also located on the Ribbon.



### To drag and drop cells

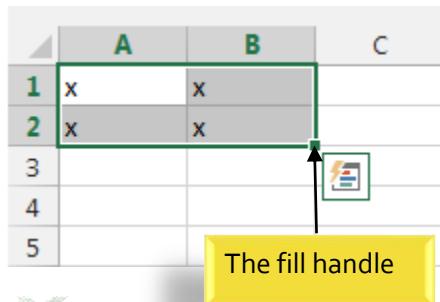
Rather than cutting, copying, and pasting, you can **drag and drop** cells to move their contents.

1. Select the **cell(s)** you 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 four arrows**.
3. Click, hold, and drag the cells to the **desired location**.
4. Release the mouse, and the cells will be **dropped** in the selected location.

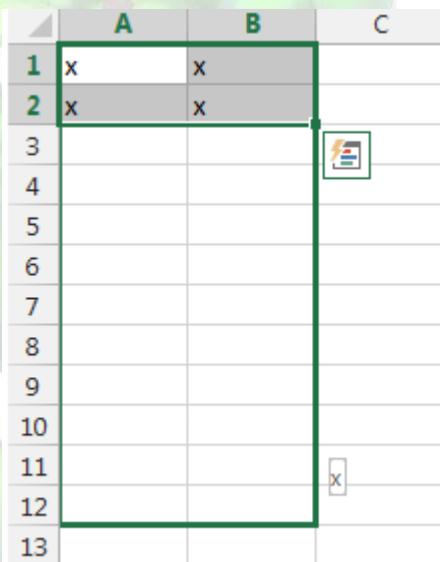
### To use the fill handle

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

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



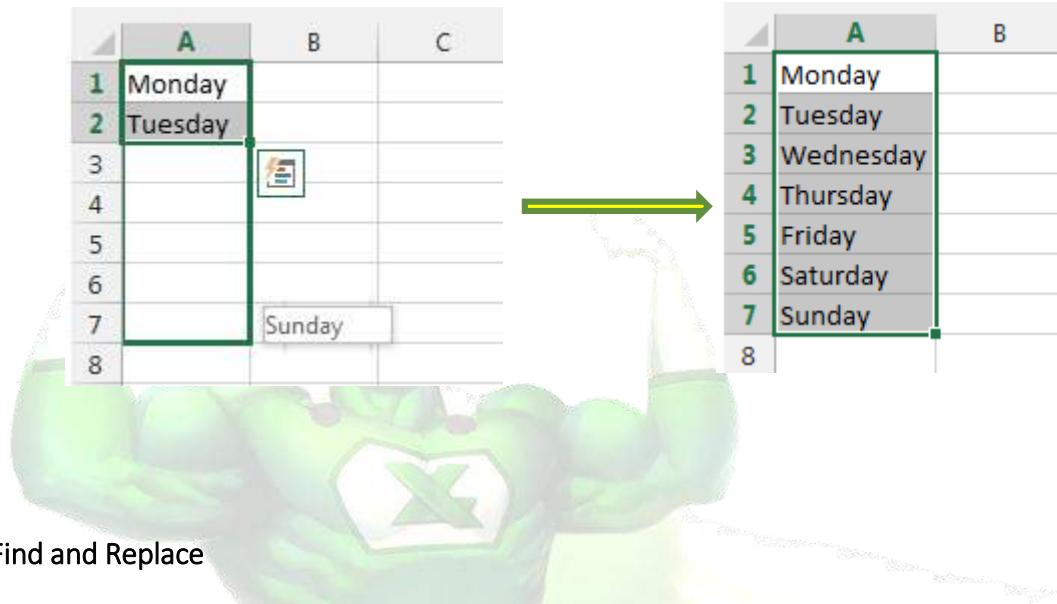
2. Click, hold, and drag the **fill handle** until all of the cells you wish to fill are **selected**.



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

### *To continue a series with the fill handle*

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



### 3.3. Find and Replace

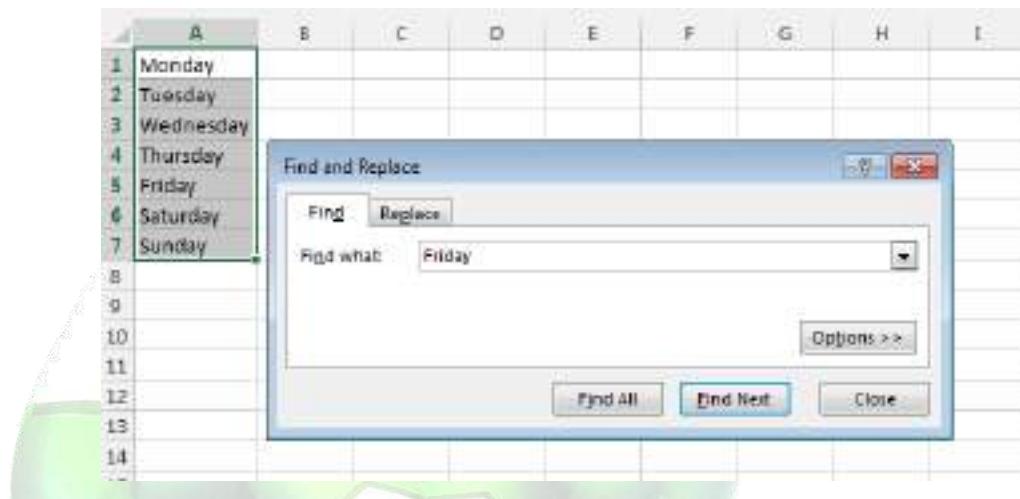
When working with a lot of data in Excel, it can be difficult and time consuming to locate specific information. You can easily search your workbook using the **Find** feature, which also allows you to modify content using the **Replace** feature.

#### To find content

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



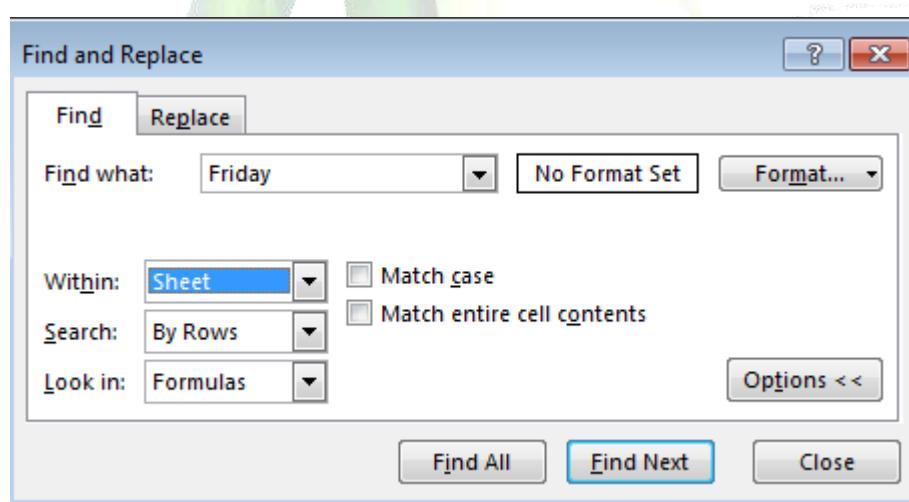
2. The **Find and Replace** dialog box will appear. Enter the **content** you wish to find.
3. Click **Find Next**. If the content is found, the cell containing that content will be **selected**.



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

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

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



### To replace 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.

1. From the **Home** tab, click the **Find and Select** command, then select **Replace...** from the drop-down menu.
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**.
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:
  - **Replace** will replace individual instances.
  - **Replace All** will replace every instance of the text throughout the workbook. In our example, we'll choose this option to save time.
7. A dialog box will appear, confirming the number of replacements made. Click **OK** to continue.
8. When you are finished, click **Close** to exit the Find and Replace dialog box.

### Challenge!

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.
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.
8. Use the **Find** feature to locate content in your workbook.

## 4. Formatting Cells

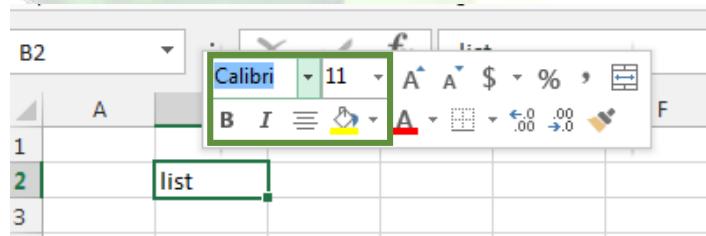
All cell content uses the same **formatting** by default, which can make it difficult to read a workbook with a lot of information. Basic formatting can customize the **look and feel** of your workbook, allowing you to draw attention to specific sections and making your content easier to view and understand.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

## 4.1. Font Formatting

### To change the font

By default, the font of each new workbook is set to Calibri. However, Excel provides a variety of other fonts 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.
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.



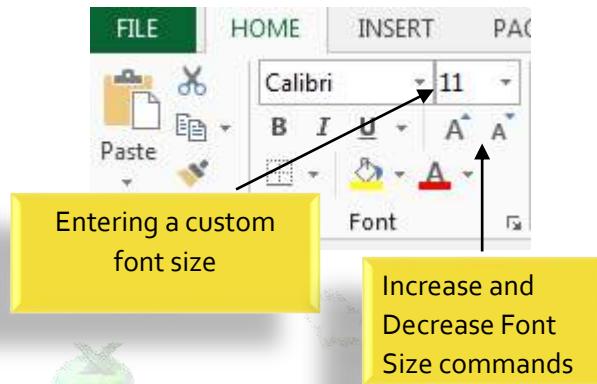
4. The text will change to the **selected font**.

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

### To change the font size

1. Select the **cell(s)** you wish to modify.
2. Click the **drop-down arrow** next to the **Font Size** command on the **Home** tab. The **Font Size** drop-down menu will appear.
3. Select the desired **font size**. A **live preview** of the new font size will appear as you hover the mouse over different options.
4. The text will change to the **selected font size**.

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



*To change the font color*

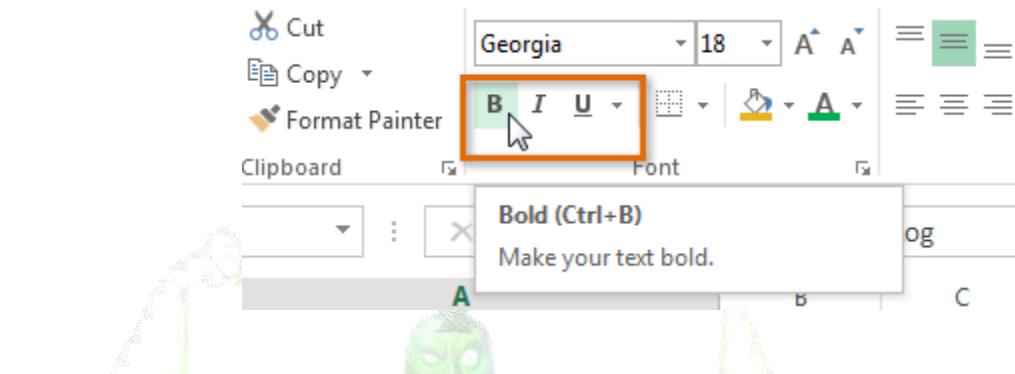
1. Select the **cell(s)** you wish to modify.
2. Click the **drop-down arrow** next to the **Font Color** command on the **Home** tab. The **Color** menu will appear.
3. Select the desired **font color**. A **live preview** of the new font color will appear as you hover the mouse over different options.



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

*To use the Bold, Italic, and Underline commands*

1. Select the **cell(s)** you wish to modify.
2. Click the **Bold (B)**, **Italic (I)**, or **Underline (U)** command on the **Home** tab. In our example, we'll make the selected cells **bold**.



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

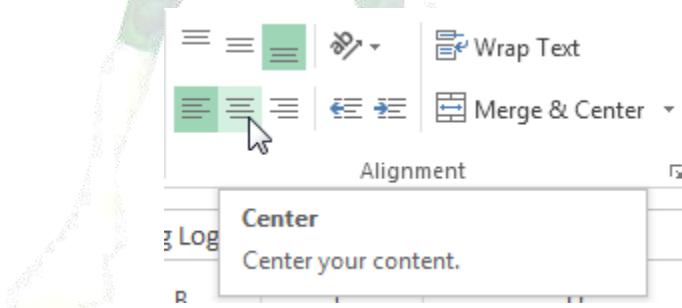
 **TIP:** You can also press **Ctrl+B** on your keyboard to make selected text **bold**, **Ctrl+I** to apply **italics**, and **Ctrl+U** to apply an **underline**.

## 4.2. 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.

### To change horizontal text alignment

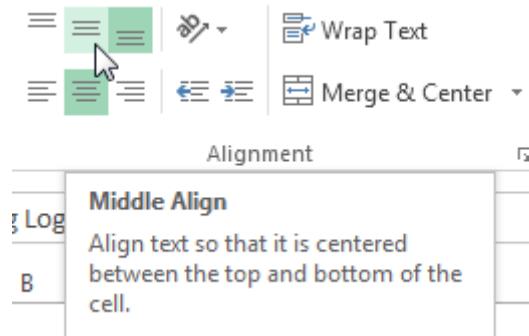
1. Select the **cell(s)** you wish to modify.
2. Select one of the three **horizontal alignment** commands on the **Home** tab. In our example, we'll choose **Center Align**.



3. The text will **realign**.

### To change vertical text alignment

1. Select the **cell(s)** you wish to modify.
2. Select one of the three **vertical alignment** commands on the **Home** tab. In our example, we'll choose **Middle Align**.



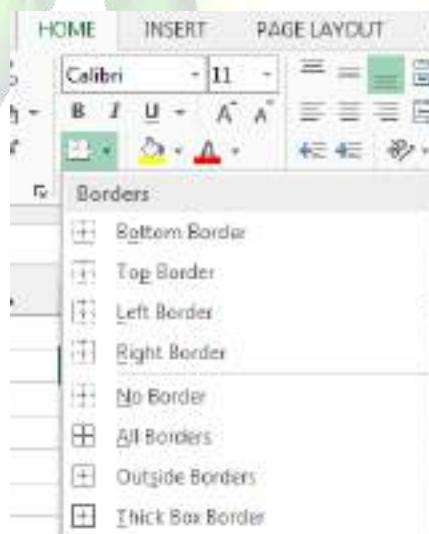
3. The text will **realign**.

#### 4.3. Cell borders and fill colors

**Cell borders** and **fill colors** allow you to create clear and defined boundaries for different sections of your worksheet.

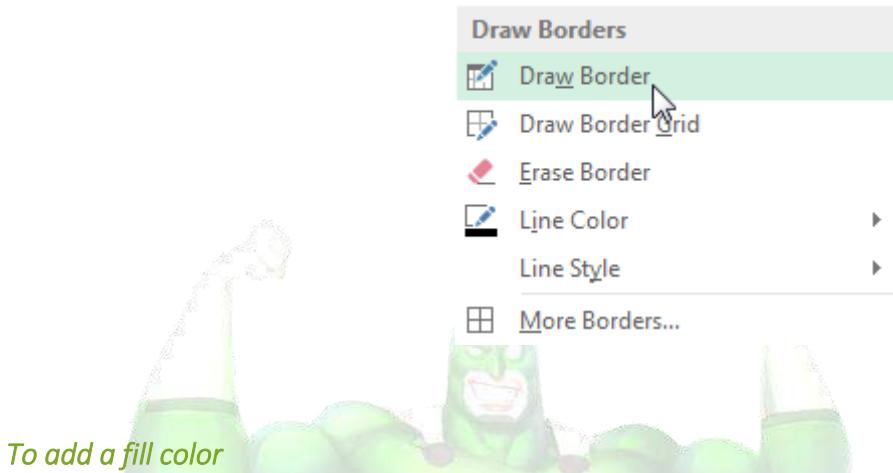
##### To add a border

1. Select the **cell(s)** you wish to modify.
2. Click the **drop-down arrow** next to the **Borders** command on the **Home** tab. The **Borders** drop-down menu will appear.

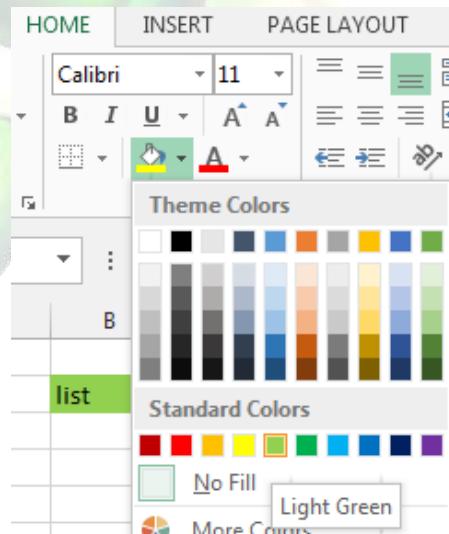


3. Select the **border style** you want to use.
4. The **selected border style** will appear.

 **TIP:** 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.



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



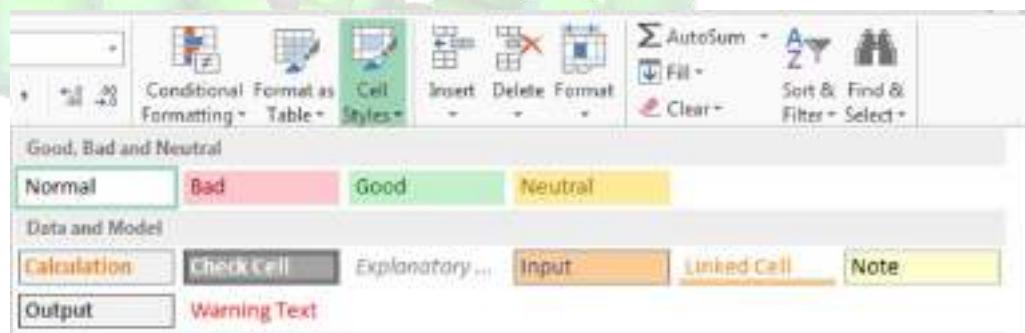
4. The **selected fill color** will appear in the selected cells.

## 4.4. Cell styles

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

### To apply a cell style

1. Select the **cell(s)** you wish to modify.
2. Click the **Cell Styles** command on the **Home** tab, then choose the **desired style** from the drop-down menu.



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

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

## 4.5. Formatting text and numbers

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

### To apply number formatting

1. Select the **cells(s)** you wish to modify.
2. Click the drop-down arrow next to the **Number Format** command on the **Home** tab. The Number Formatting drop-down menu will appear.
3. Select the **desired formatting option**.
4. The selected cells will change to the new **formatting style**.



## Challenge!

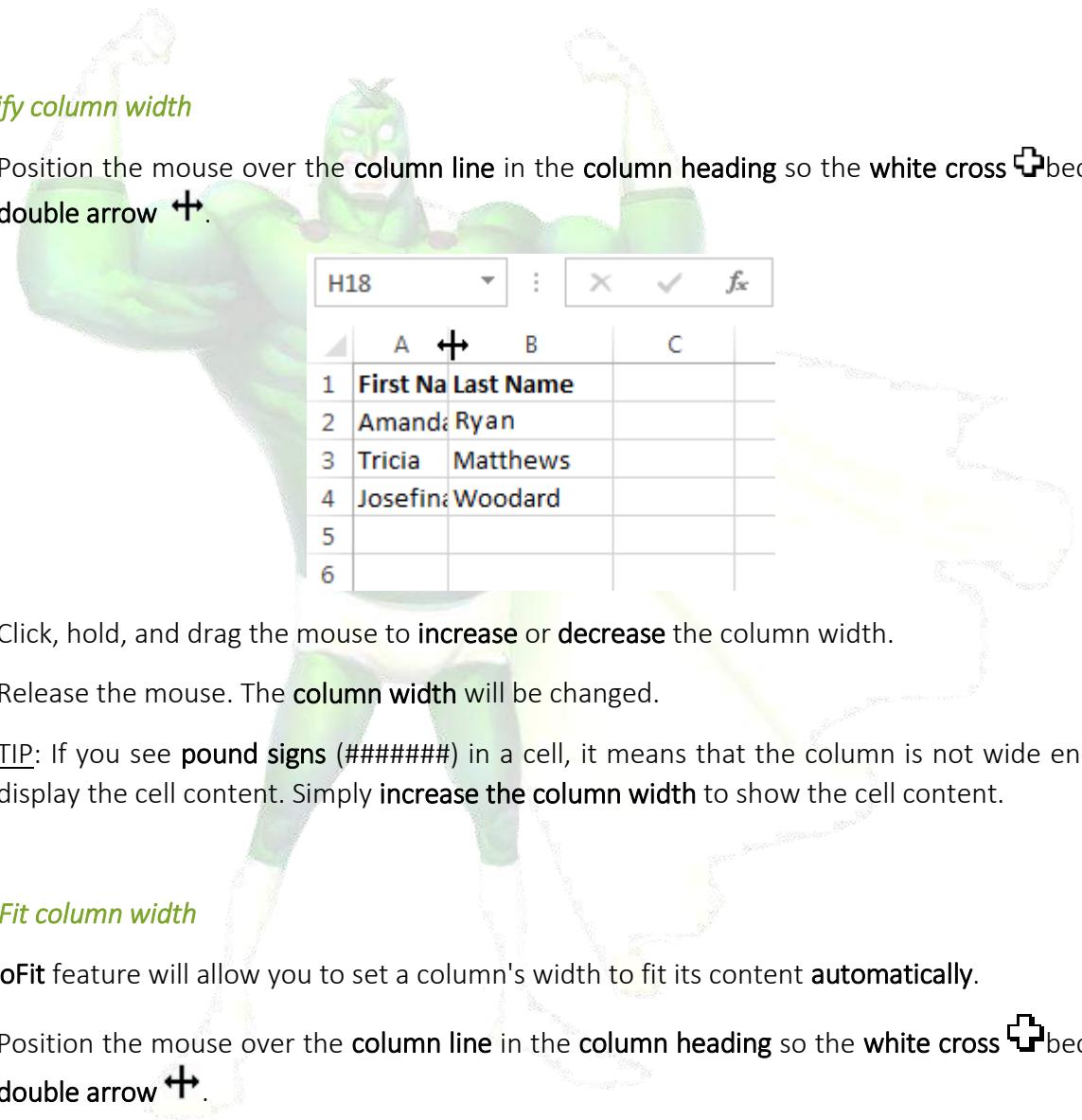
1. Open an existing Excel 2013 workbook.
2. Select a **cell** and change the **font style**, **size**, and **color** of the text.
3. Apply **bold**, **italics**, or **underline** to a cell.
4. Try changing the **vertical** and **horizontal text alignment** for some cells.
5. Add a **border** to a cell range.
6. Change the **fill color** of a cell range.
7. Try changing the **formatting** of a number.

## 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 different ways, including **wrapping text** and **merging cells**.

### To modify column width

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



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

2. Click, hold, and drag the mouse to **increase** or **decrease** the column width.
3. Release the mouse. The **column width** will be changed.

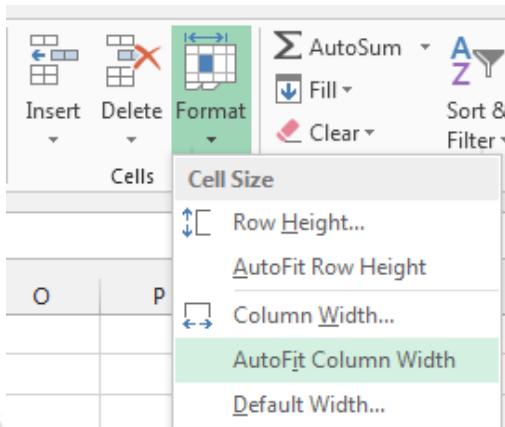
 **TIP:** If you see **pound signs** (# #####) in a cell, it means that the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content.

### To AutoFit column width

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

1. Position the mouse over the **column line** in the **column heading** so the **white cross**  becomes a **double arrow** .
2. Double-click the mouse. The **column width** will be changed automatically to fit the content.

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



### To modify row height

1. Position the **cursor** over the **row line** so the white cross becomes a double arrow .
2. Click, hold, and drag the mouse to **increase** or **decrease** the row height.
3. Release the mouse. The **height** of the selected row will be changed.

### To modify all rows or columns

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

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				
2				
3				
4				
5				

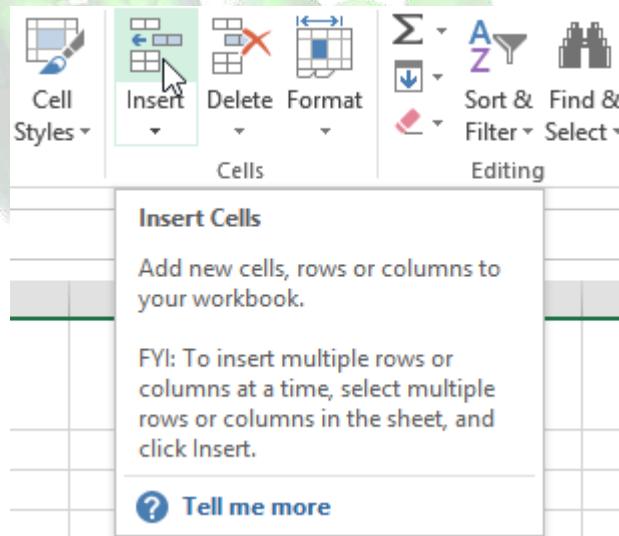
2. Position the mouse over a **row line** so the white cross becomes a double arrow .
3. Click, hold, and drag the mouse to **increase** or **decrease** the row height.
4. Release the mouse when you are satisfied with the **new row height** for the worksheet.

## 5.1. 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.

### To insert rows

1. Select the **row heading** below where you want the new row to appear.
2. Click the **Insert** command on the **Home** tab.



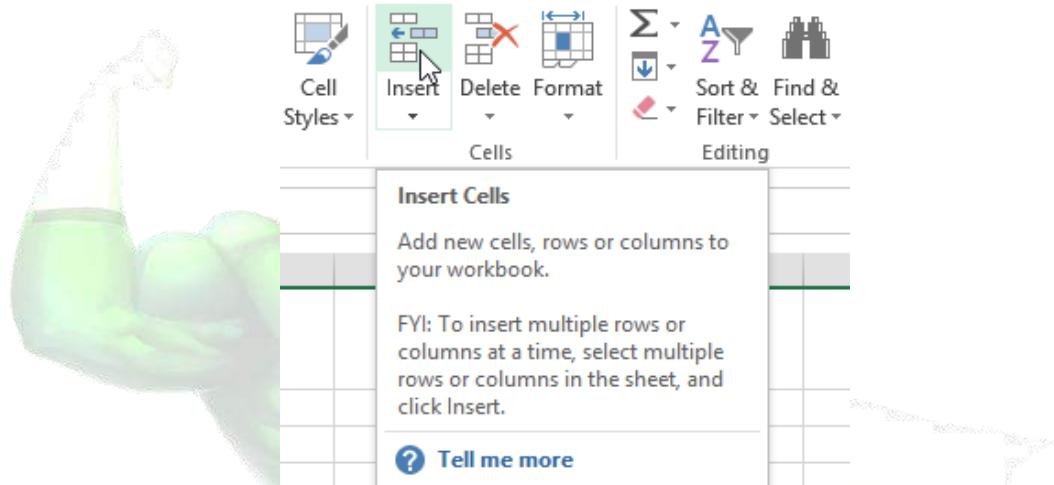
3. The **new row** will appear **above** the selected row.

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



### To insert columns

1. Select the **column heading** to the right of where you want the new column to appear.
2. Click the **Insert** command on the **Home** tab.



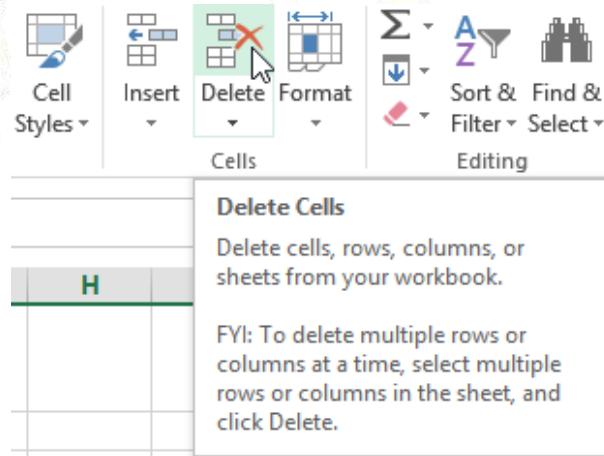
3. The **new column** will appear **to the left** of the selected column.

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

### To delete rows

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

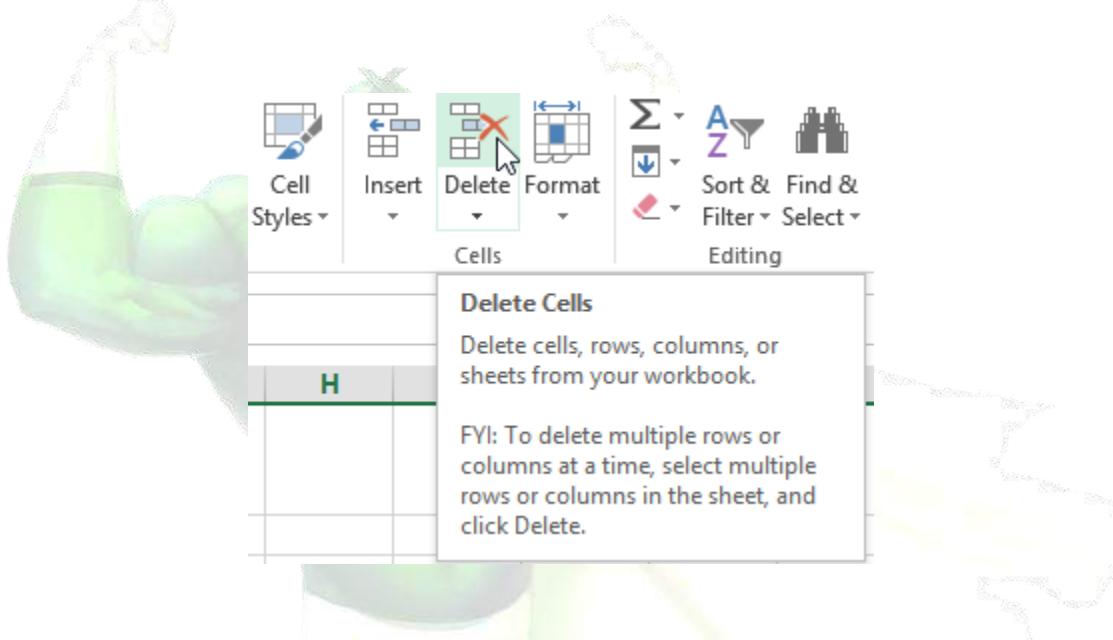
1. Select the **row(s)** you want to delete.
2. Click the **Delete** command on the **Home** tab.



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

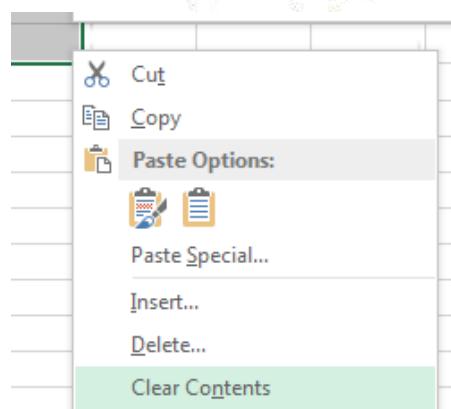
#### To delete columns

1. Select the **columns(s)** you want to delete.
2. Click the **Delete** command on the **Home** tab.



3. The **selected columns(s)** will be deleted, and the columns to the right will **shift left**.

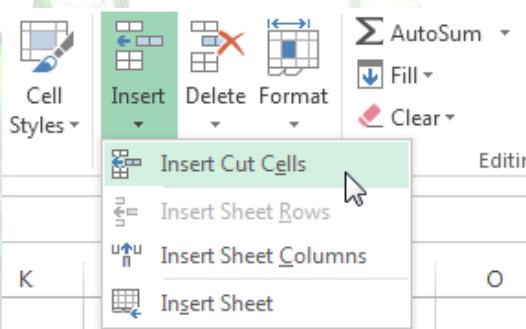
**TIP:** It's important to understand the difference between **deleting** a row or column and simply **clearing its contents**. If you want to remove the **content** of a row or column without causing others to shift, right-click a **heading**, then select **Clear Contents** from the drop-down menu.



### To move a row or column

Sometimes you may want to **move** a column or row to rearrange the content of your worksheet.

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.
2. Select the **column heading** to the right of where you want to move the column. For example, if you want to move a column between columns B and C, select column C.
3. Click the **Insert** command on the **Home** tab, then select **Insert Cut Cells** from the drop-down menu.



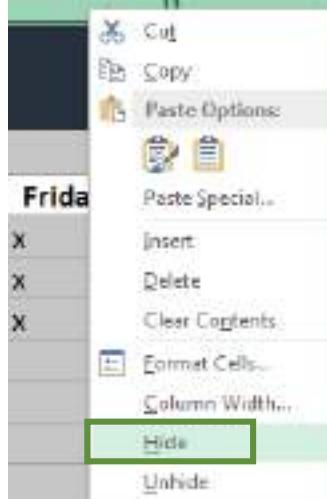
4. The column will be **moved** to the selected location, and the columns to the right will **shift right**.

**TIP:** 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.

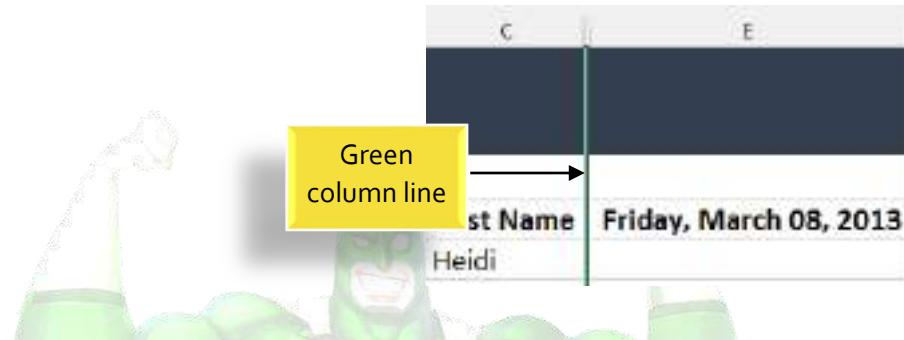
### To hide and unhide a row or column

At times, you may want to **compare** certain rows or columns without changing the organization of your worksheet. Excel allows you to **hide** rows and columns as needed.

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



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

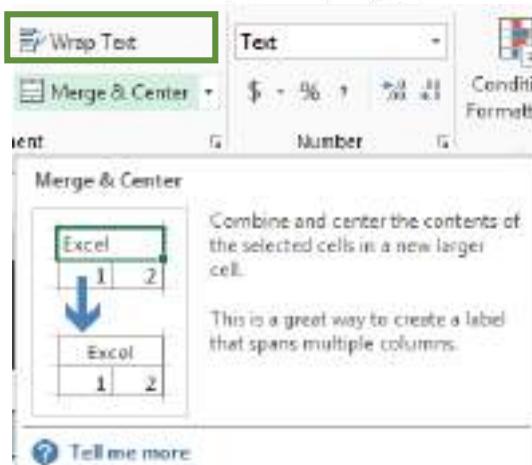


- To **unhide** the columns, select the columns to the **left** and **right** of the hidden columns (in other words, the columns on **both sides** of the hidden columns).
- Right-click the mouse, then select **Unhide** from the **formatting** menu. The hidden columns will reappear.

## 5.2. 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 cell contents to be displayed **on multiple lines**. Merging allows you to combine a cell with adjacent, empty cells to create **one large cell**.

- Select the cells you wish to wrap.
- Select the **Wrap Text** command on the **Home** tab.

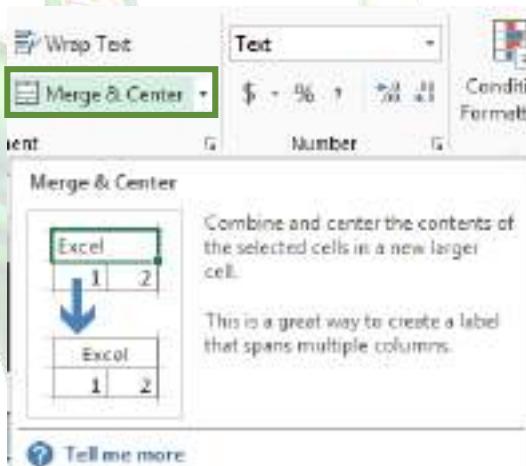


- The text in the selected cells will be **wrapped**.

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

### To merge cells using the Merge & Center command

- Select the **cell range** you want to merge together.
- Select the **Merge & Center** command on the **Home** tab.

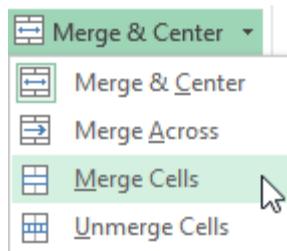


- The selected cells will be **merged**, and the text will be **centered**.

### To access 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 selected cells



## Challenge!

1. Open an existing Excel 2013 workbook.
2. Modify the **width** of a column.
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.
7. Try **merging** some cells together.

## 6. Formulas and Functions

One of the most powerful features in Excel is the ability to **calculate** numerical information using **formulas**.

### 6.1. Simple 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.

#### *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.

<b>Addition</b>	+
<b>Subtraction</b>	-
<b>Multiplication</b>	*
<b>Division</b>	/
<b>Exponents</b>	^

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

### Understanding cell references

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

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

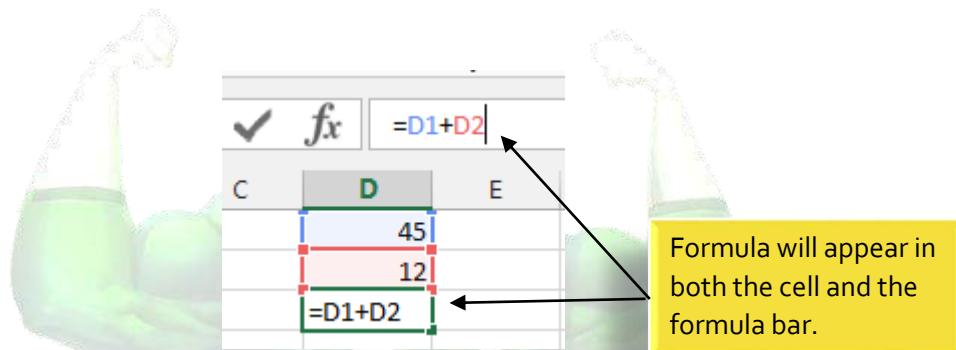
The formula calculates and displays the answer to the equation A1 plus A2

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

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

### To create a formula

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



1. Type the **cell address** of the cell you wish to reference first in the formula: cell **D1** in our example. A **blue border** will appear around the referenced cell.
  2. Type the **mathematical operator** you wish to use. In our example, we'll type the **addition sign (+)**.
  3. Type the **cell address** of the cell you wish to reference second in the formula: cell **D2** in our example. A **red border** will appear around the referenced cell.
  4. Press **Enter** on your keyboard. The formula will be **calculated**, and the **value** will be displayed in the cell.
- TIP:** If the result of a formula is too large to be displayed in a cell, it may appear as **pound signs** (# #####) instead of a value. This means that the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content.

### Modifying values with cell references

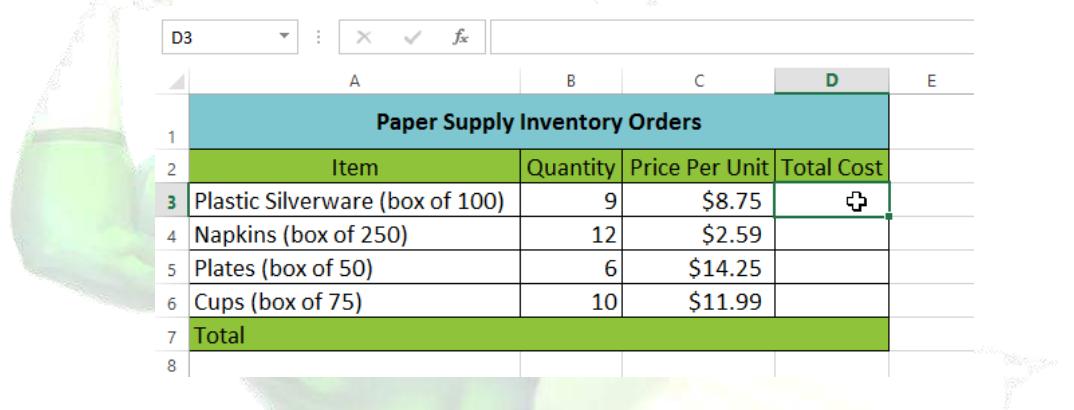
The true advantage of cell references is that they allow you to **update data** in your worksheet without having to rewrite formulas.

- TIP:** Excel **will not always tell you** if your formula contains an error, so it's up to you to check all of your formulas.

**To create a formula using the point-and-click method**

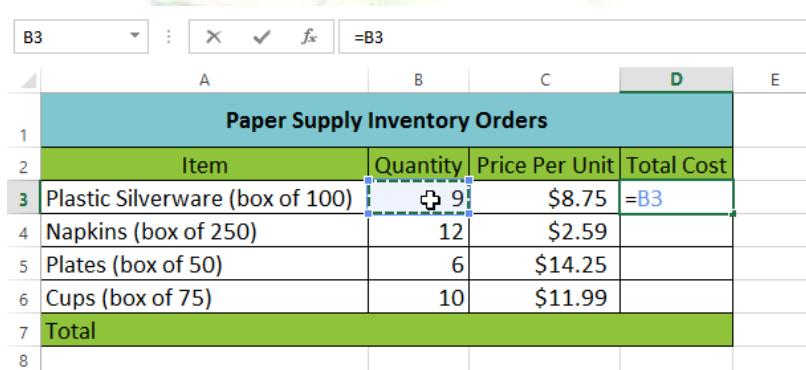
Rather than typing cell addresses manually, you can **point and click** on the cells you wish to include in your formula. This method can save a lot of time and effort when creating formulas. In our example below, we'll create a formula to calculate the cost of ordering several boxes of plastic silverware.

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



Paper Supply Inventory Orders				
	Item	Quantity	Price Per Unit	Total Cost
3	Plastic Silverware (box of 100)	9	\$8.75	+ <b>D3</b>
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	Total			
8				

2. Type the **equals sign (=)**.
3. Select the **cell** 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.



Paper Supply Inventory Orders				
	Item	Quantity	Price Per Unit	Total Cost
3	Plastic Silverware (box of 100)	+ <b>B3</b>	\$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	Total			
8				

4. Type the **mathematical operator** you wish to use. In our example, we'll type the **multiplication sign (\*)**.
5. Select the **cell** 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.

	A	B	C	D	E
1	Paper Supply Inventory Orders				
2	Item	Quantity	Price Per Unit	Total Cost	
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	Total				
8					

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

	A	B	C	D	E
1	Paper Supply Inventory Orders				
2	Item	Quantity	Price Per Unit	Total Cost	
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	Total				
8					

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.

### To edit 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.
  2. 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.
  3. A **border** will appear around any referenced cells.
  4. When finished, press **Enter** on your keyboard or select the **Enter** command ✓ in the formula bar.
  5. The formula will be **updated**, and the **new value** will be displayed in the cell.
-  **TIP:** If you change your mind, you can press the **Esc** key on your keyboard or click the **Cancel** command ✕ in the formula bar to avoid accidentally making changes to your formula.

 **TIP:** To show all of the formulas in a spreadsheet, you can hold the **Ctrl** key and press ` (grave accent). The grave accent key is usually located in the upper-left corner of the keyboard. You can press **Ctrl+`** again to switch back to the normal view.

## Challenge!

1. Open an existing Excel workbook.
2. Create a simple addition formula using **cell references**.
3. Try modifying the **value** of a cell referenced in a formula.
4. Try using the **point-and-click method** to create a formula.
5. **Edit** a formula using the formula bar.

## 6.2. 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.

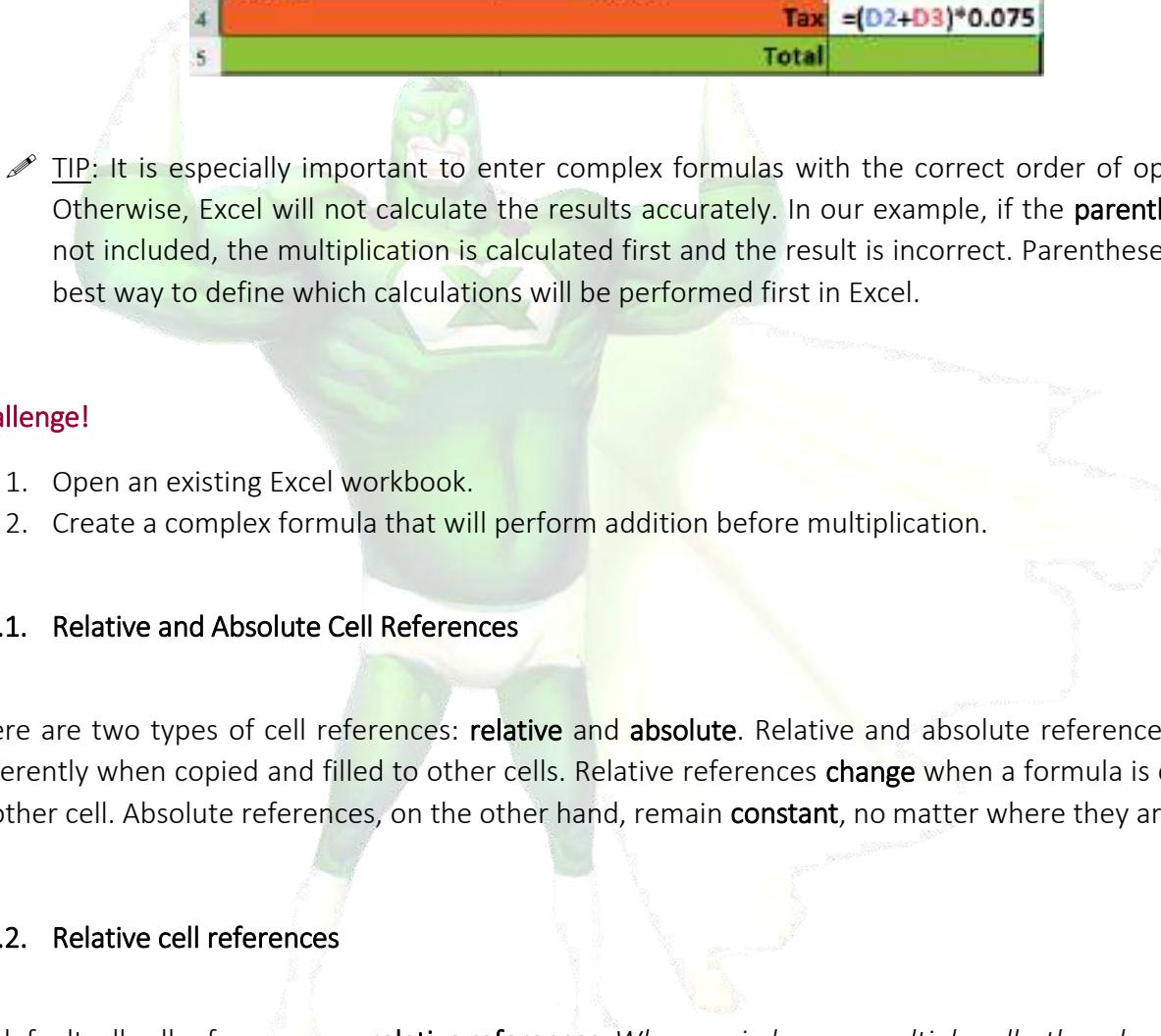
### *Order of operations*

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

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

### *Creating complex formulas*

In the example below, we will demonstrate how Excel solves a complex formula using the order of operations. Here, we want to calculate the cost of **sales tax** for an 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	
1	Menu Item	Price	Quantity	Total
2	Item 1	\$2.29	20	\$45.80
3	Item 2	\$2.29	30	\$68.70
4			Tax	=( <b>D2+D3</b> )*0.075
5				Total

 **TIP:** 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 which calculations will be performed first in Excel.

## Challenge!

1. Open an existing Excel workbook.
2. Create a complex formula that will perform addition before multiplication.

### 6.2.1. 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.

### 6.2.2. Relative cell 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.

#### To create and copy 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 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**.
2. Enter the **formula** to calculate the desired value. In our example, we'll type **=B2\*C2**.

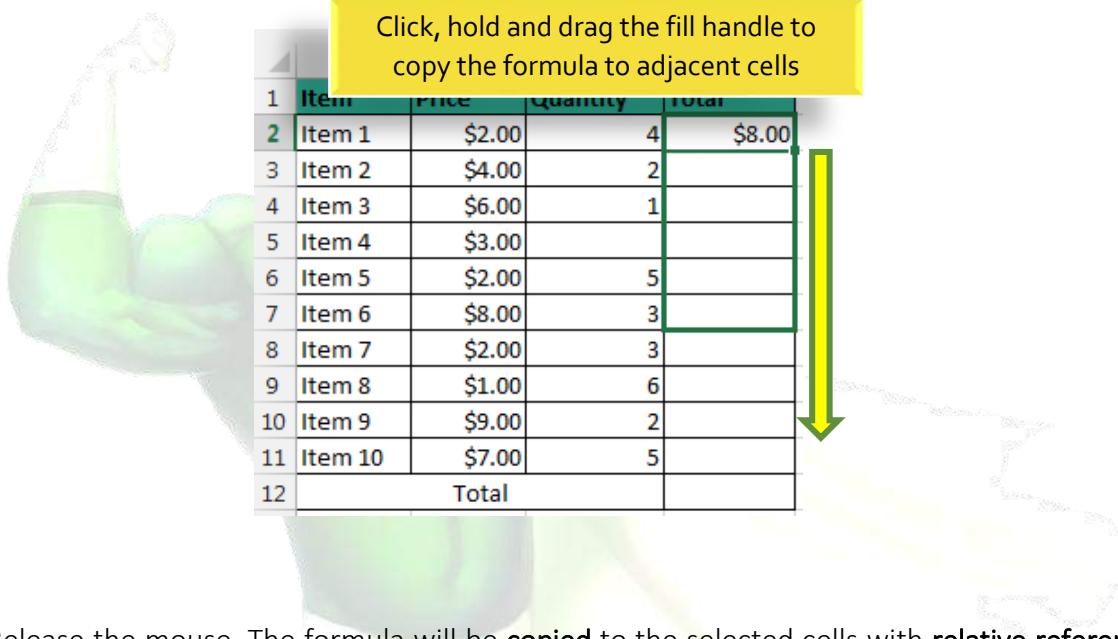
	A	B	C	D
1	Item	Price	Quantity	Total
2	Item 1	\$2.00	4	=B2*C2
3	Item 2	\$4.00	2	
4	Item 3	\$6.00	1	
5	Item 4	\$3.00		
6	Item 5	\$2.00	5	
7	Item 6	\$8.00	3	
8	Item 7	\$2.00	3	
9	Item 8	\$1.00	6	
10	Item 9	\$9.00	2	
11	Item 10	\$7.00	5	
12	Total			

3. Press **Enter** on your keyboard. The formula will be **calculated**, and the result will be displayed in the cell.
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
1	Item	Price	Quantity	Total
2	Item 1	\$2.00	4	\$8.00
3	Item 2	\$4.00	2	
4	Item 3	\$6.00	1	
5	Item 4	\$3.00		
6	Item 5	\$2.00	5	
7	Item 6	\$8.00	3	
8	Item 7	\$2.00	3	
9	Item 8	\$1.00	6	
10	Item 9	\$9.00	2	
11	Item 10	\$7.00	5	
12	Total			

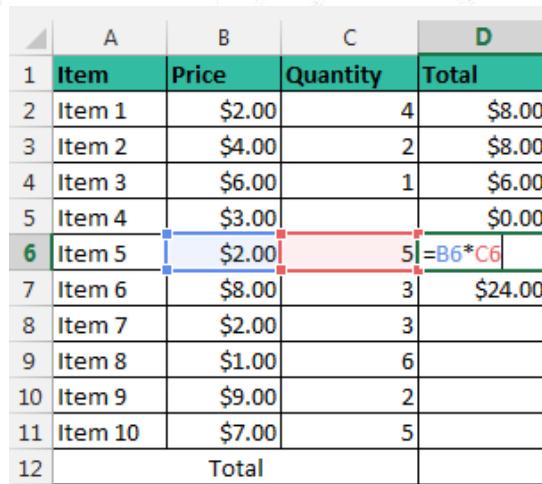
The fill handle

- Click, hold, and drag the **fill handle** over the cells you wish to fill.



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

 **TIP:** 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 their rows.



	A	B	C	D
1	Item	Price	Quantity	Total
2	Item 1	\$2.00	4	\$8.00
3	Item 2	\$4.00	2	\$8.00
4	Item 3	\$6.00	1	\$6.00
5	Item 4	\$3.00		\$0.00
6	Item 5	\$2.00	5	=B6*C6
7	Item 6	\$8.00	3	\$24.00
8	Item 7	\$2.00	3	
9	Item 8	\$1.00	6	
10	Item 9	\$9.00	2	
11	Item 10	\$7.00	5	
12	Total			

### 6.2.3. Absolute cell 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.

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

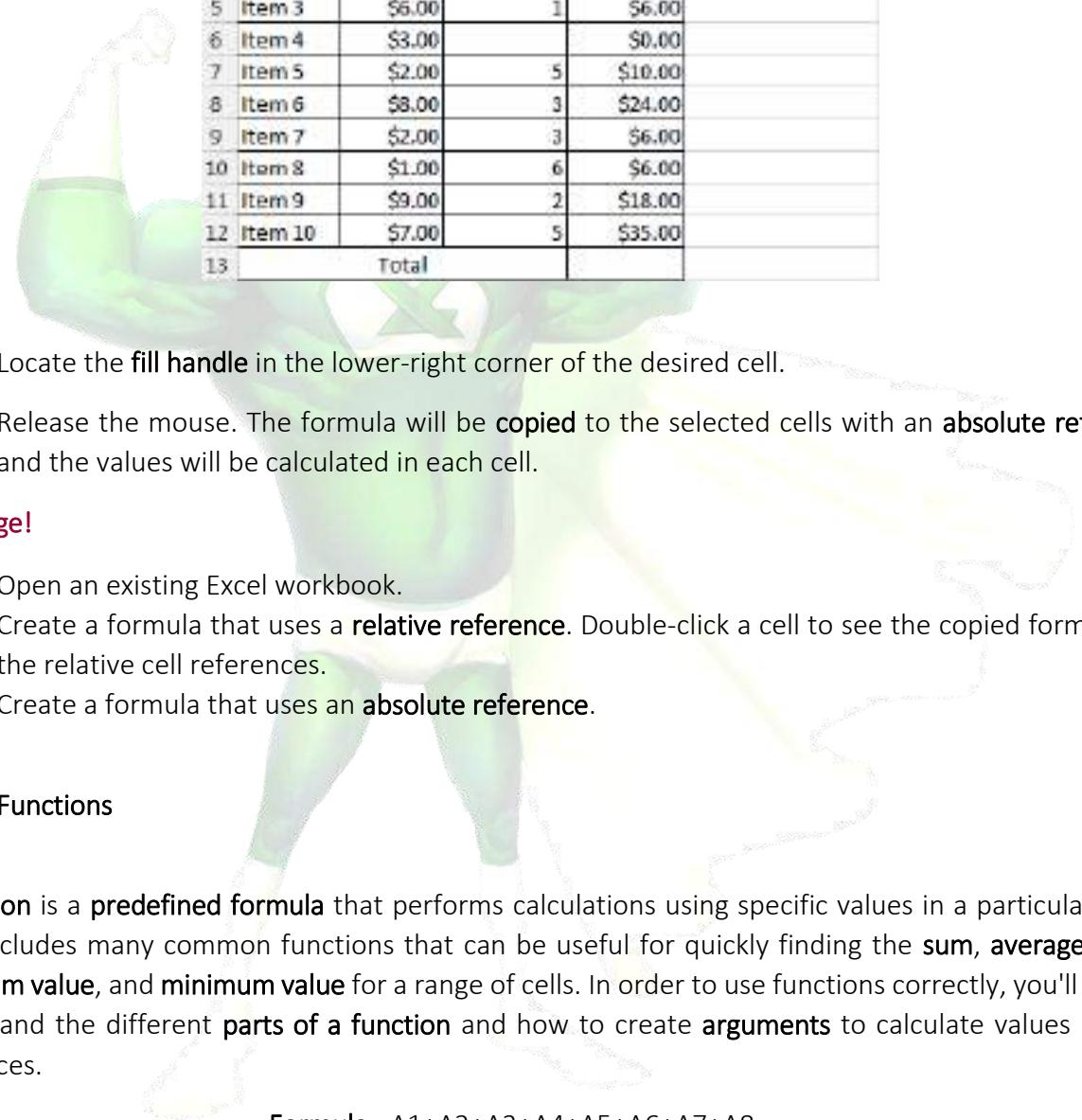
You will generally use the **\$A\$2** format when creating formulas that contain absolute references. The other two formats are used much less frequently.

 **TIP:** When writing a formula, you can press the **F4** key on your keyboard to switch between relative and absolute cell references. This is an easy way to quickly insert an absolute reference.

#### To create and copy 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**.
2. Enter the **formula** to calculate the desired value. In our example, we'll type **=(B3\*C3)\*\$E\$1**.
3. Press **Enter** on your keyboard. The formula will calculate, and the result will display in the cell.



Sales Tax					7.50%
Item	Price	Quantity	Total	Tax	
Item 1	\$2.00	4	\$8.00	=	$=B3*C3*\$E\$1$
Item 2	\$4.00	2	\$8.00		
Item 3	\$6.00	1	\$6.00		
Item 4	\$3.00		\$0.00		
Item 5	\$2.00	5	\$10.00		
Item 6	\$8.00	3	\$24.00		
Item 7	\$2.00	3	\$6.00		
Item 8	\$1.00	6	\$6.00		
Item 9	\$9.00	2	\$18.00		
Item 10	\$7.00	5	\$35.00		
Total					
13					

4. Locate the **fill handle** in the lower-right corner of the desired cell.
5. 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.

### Challenge!

1. Open an existing Excel workbook.
2. Create a formula that uses a **relative reference**. Double-click a cell to see the copied formula and the relative cell references.
3. Create a formula that uses an **absolute reference**.

### 6.3. Functions

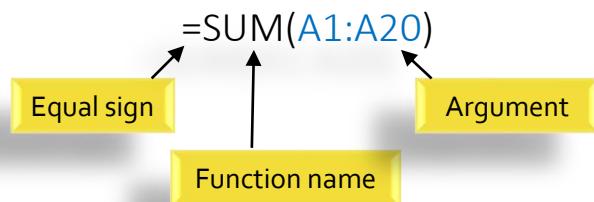
A **function** is a **predefined formula** that performs calculations using specific values in a particular order. Excel includes many common functions that can be useful for quickly finding the **sum**, **average**, **count**, **maximum value**, and **minimum value** for a range of cells. In order to 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.

Formula =A1+A2+A3+A4+A5+A6+A7+A8

Function =SUM(A1:A8)

#### The parts of a function

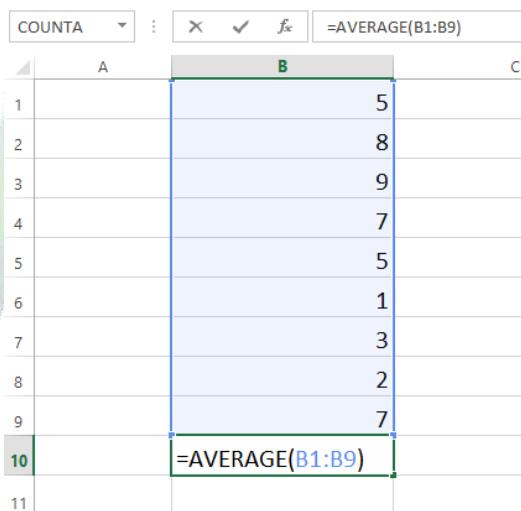
In order to work correctly, a function must be written a specific way, which is called the **syntax**. The basic syntax for a function is an **equals sign (=)**, the **function name** (SUM, for example), and one or more **arguments**. Arguments contain the information you want to calculate.



### 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.



A screenshot of a Microsoft Excel spreadsheet. The table has three columns labeled A, B, and C. Column A contains row numbers from 1 to 10. Column B contains values: 5, 8, 9, 7, 5, 1, 3, 2, 7, and an empty cell at row 10. Column C is empty. The formula `=AVERAGE(B1:B9)` is entered into cell B10. The formula bar at the top also shows `=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			

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	B	C	D	E	F
1	34		65		6	
2	21		23			
3	56					
4						
5	=SUM(A1:A3,C1:C2,E1)					
6						

### 6.3.1. Creating a function

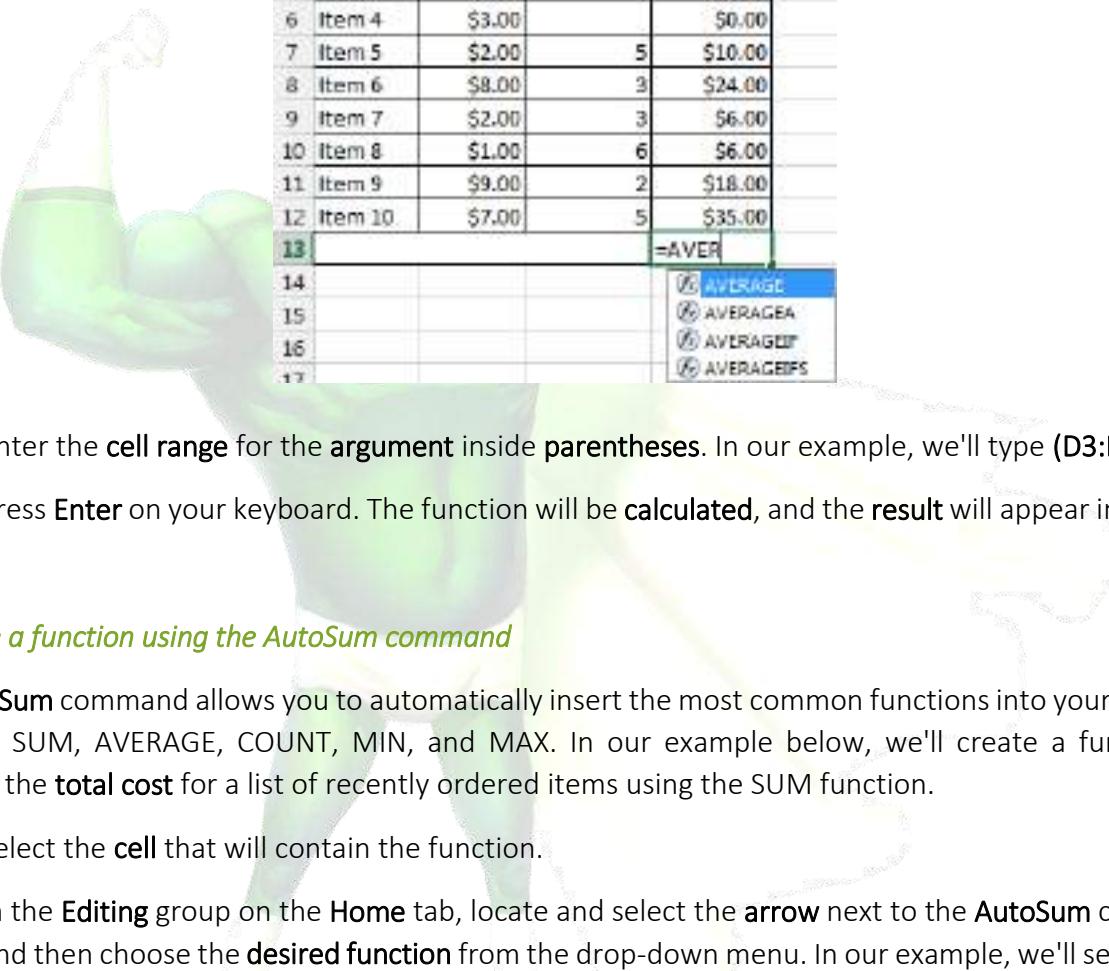
Excel has a variety of functions available. Here are some of the most common functions you'll use:

- **SUM:** This function **adds** all of the values of the cells in the argument.
- **AVERAGE:** This function determines the **average** of the values included in the argument. It calculates the sum of the cells and then divides that value by the number of cells in the argument.
- **COUNT:** This function **counts** the number of cells with numerical data in the argument. This function is useful for quickly counting items in a cell range.
- **MAX:** This function determines the **highest cell value** included in the argument.
- **MIN:** This function determines the **lowest cell value** included in the argument.

#### To create a basic function

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



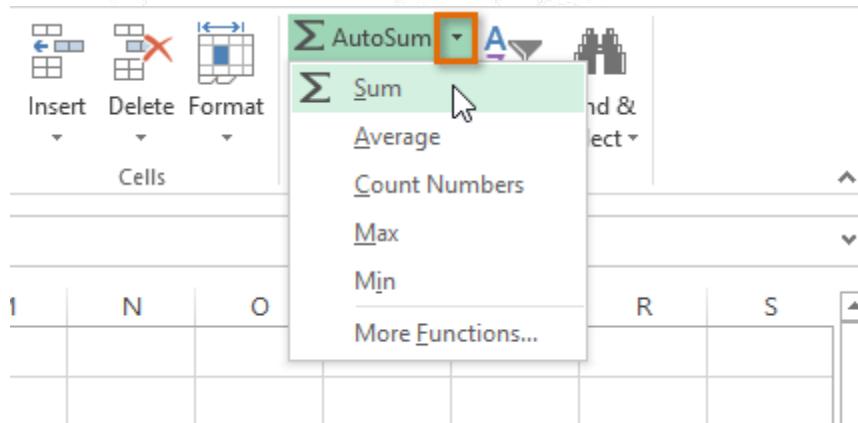
	A	B	C	D	
1	Sales Tax				
2	Item	Price	Quantity	Total	Tax
3	Item 1	\$2.00	4	\$8.00	
4	Item 2	\$4.00	2	\$8.00	
5	Item 3	\$6.00	1	\$6.00	
6	Item 4	\$3.00		\$0.00	
7	Item 5	\$2.00	5	\$10.00	
8	Item 6	\$8.00	3	\$24.00	
9	Item 7	\$2.00	3	\$6.00	
10	Item 8	\$1.00	6	\$6.00	
11	Item 9	\$9.00	2	\$18.00	
12	Item 10	\$7.00	5	\$35.00	
13				=AVER	
14					<input checked="" type="checkbox"/> AVERAGE
15					<input type="checkbox"/> AVERAGEA
16					<input type="checkbox"/> AVERAGEIF
17					<input type="checkbox"/> AVERAGEIFS

- Enter the **cell range** for the **argument** inside parentheses. In our example, we'll type **(D3:D12)**.
- Press **Enter** on your keyboard. The function will be **calculated**, and the **result** will appear in the cell.

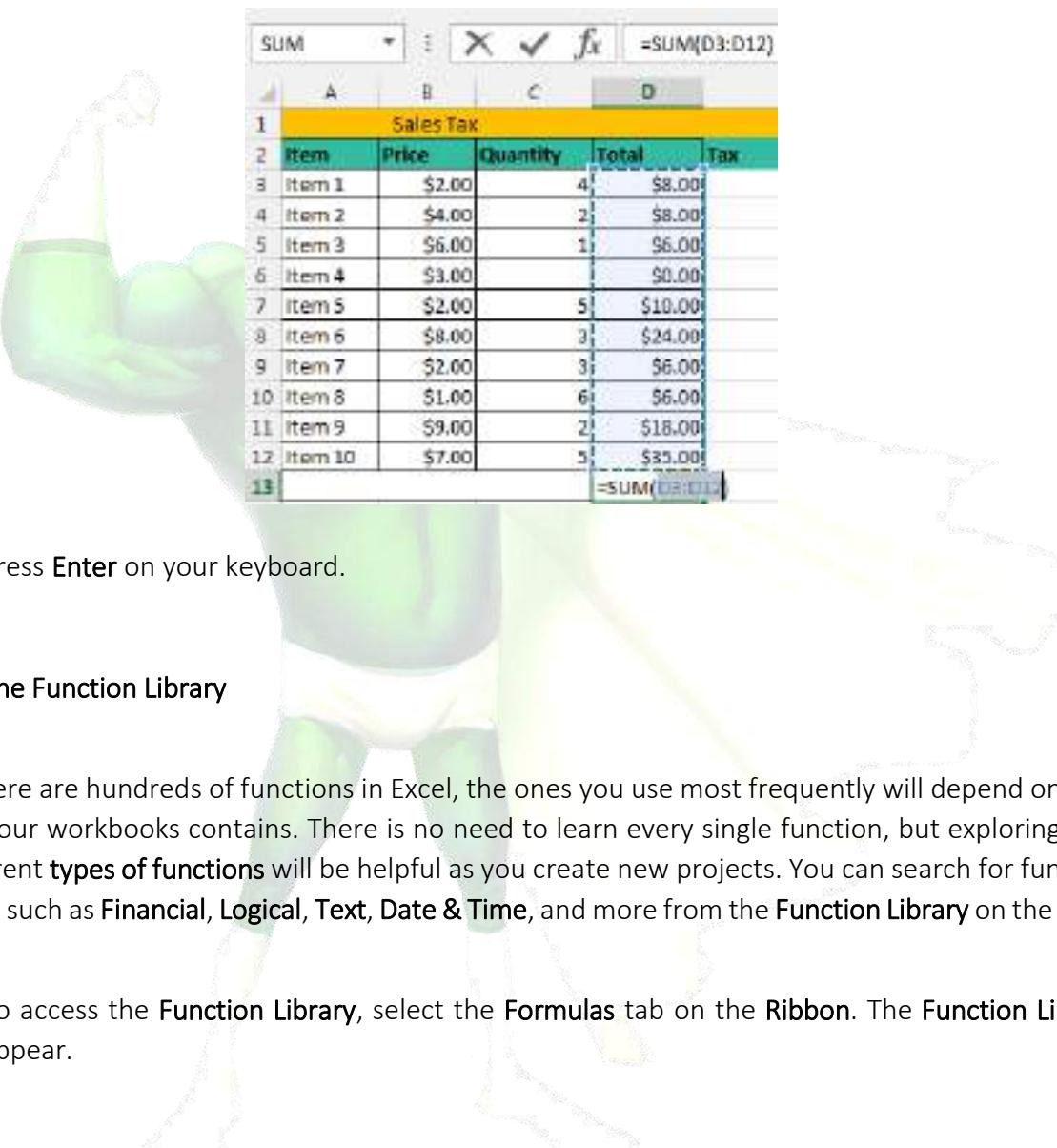
#### To create a function using the AutoSum command

The **AutoSum** command allows you to automatically insert the most common functions into your formula, including SUM, AVERAGE, COUNT, MIN, and MAX. In our example below, we'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 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**.



3. The selected **function** will appear in the cell. If logically placed, the AutoSum command will **automatically** select a cell range for the argument. You can also manually enter the desired cell range into the argument.



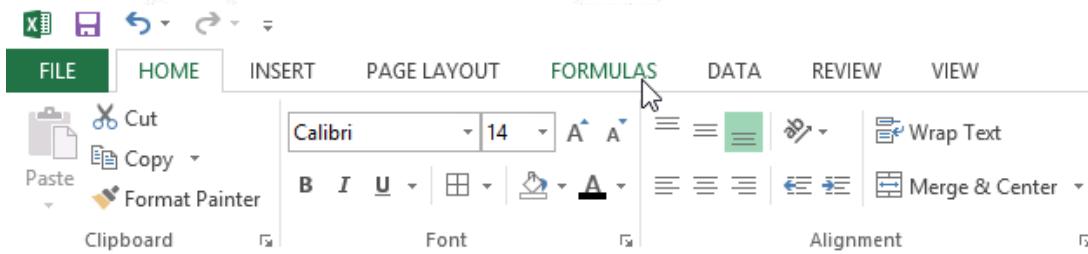
Sales Tax				
Item	price	Quantity	Total	Tax
Item 1	\$2.00	4	\$8.00	
Item 2	\$4.00	2	\$8.00	
Item 3	\$6.00	1	\$6.00	
Item 4	\$3.00		\$9.00	
Item 5	\$2.00	5	\$10.00	
Item 6	\$8.00	3	\$24.00	
Item 7	\$2.00	3	\$6.00	
Item 8	\$1.00	6	\$6.00	
Item 9	\$9.00	2	\$18.00	
Item 10	\$7.00	3	\$35.00	
13			=SUM(D3:D12)	

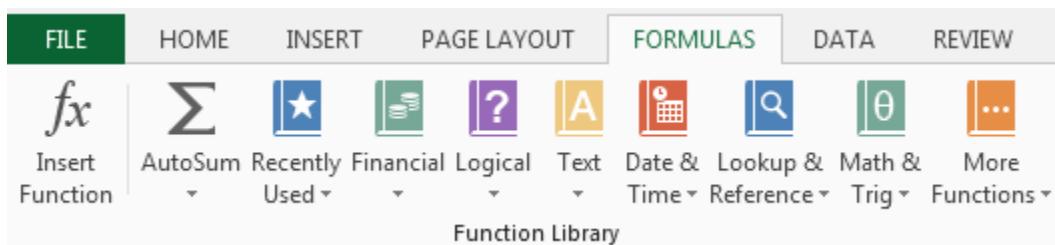
4. Press **Enter** on your keyboard.

### 6.3.2. The Function Library

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

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





- If you're having trouble finding the right function, the **Insert Function** command allows you to search for functions using keywords.
- The **AutoSum** command allows you to automatically return results for common functions, like **SUM**, **AVERAGE**, and **COUNT**.
- The **Recently Used** command gives you access to functions that you have recently worked with.
- The **Financial** category contains functions for financial calculations like determining a payment (**PMT**) or interest rate for a loan (**RATE**).
- Functions in the **Logical** category check arguments for a value or condition. For example, if an order is over \$50 add \$4.99 for shipping, but if it is over \$100, do not charge for shipping (**IF**).
- The **Text** category contains functions that work with the text in arguments to perform tasks, such as converting text to lowercase (**LOWER**) or replacing text (**REPLACE**).
- The **Date & Time** category contains functions for working with dates and time and will return results like the current date and time (**NOW**) or the seconds (**SECOND**).
- The **Lookup & Reference** category contains functions that will return results for finding and referencing information. For example, you can add a hyperlink (**Hyperlink**) to a cell or return the value of a particular row and column intersection (**INDEX**).
- The **Math & Trig** category includes functions for numerical arguments. For example, you can round values (**ROUND**), find the value of Pi (**PI**) multiply (**PRODUCT**), subtotal (**SUBTOTAL**), and much more.
- More Functions** contains additional functions under categories for **Statistical**, **Engineering**, **Cube**, **Information**, and **Compatibility**.

#### To insert a function from the Function Library

1. Select the **cell** that will contain the function.
2. Click the **Formulas** tab on the **Ribbon** to access the **Function Library**.
3. From the **Function Library** group, select the desired **function category**.
4. Select the **desired function** from the drop-down menu.

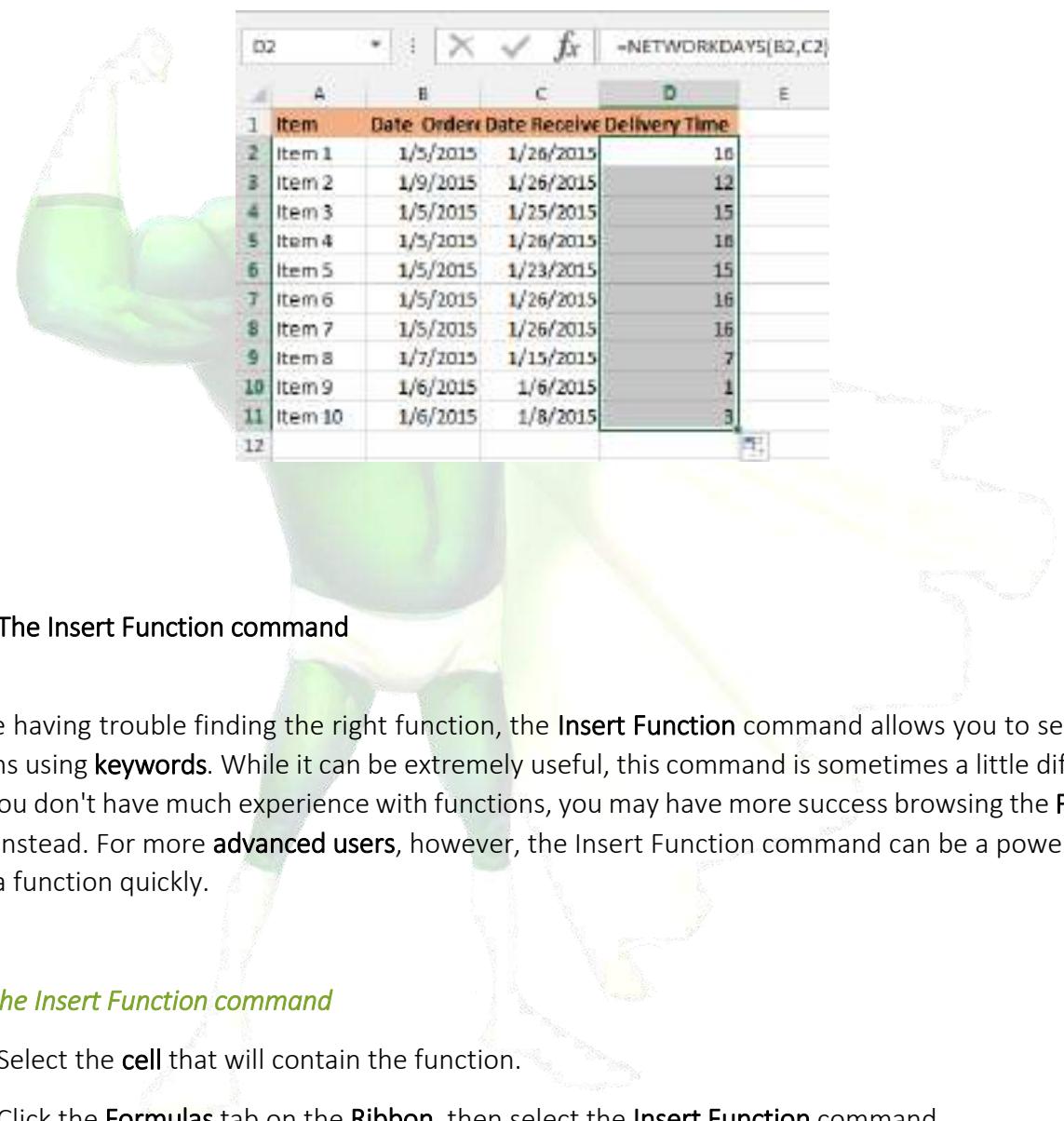
The screenshot shows the Microsoft Excel ribbon with the 'FORMULAS' tab selected. A dropdown menu is open under the 'Function Library' section, specifically for the 'Date & Time' category. The 'NETWORKDAYS' function is highlighted in the list. The main worksheet area shows a table with columns: Item, Date Ordered, Date Received, Delivery Time, and a formula cell D2 containing '=NETWORKDAYS(B2,C2)'. The formula bar also displays this formula.

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.

The screenshot shows the 'Function Arguments' dialog box for the 'NETWORKDAYS' function. The 'Start\_date' argument is set to cell B2, which contains the value 42009. The 'End\_date' argument is set to cell C2, which contains the value 42000.3694. The 'Holidays' argument is set to 'any'. Below the dialog, the formula result is displayed as 16. The formula bar at the top of the worksheet shows the formula =NETWORKDAYS(B2,C2).

6. When you're satisfied with the arguments, click **OK**.
7. The function will be **calculated**, and the **result** will appear in the cell.

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 rows or columns.



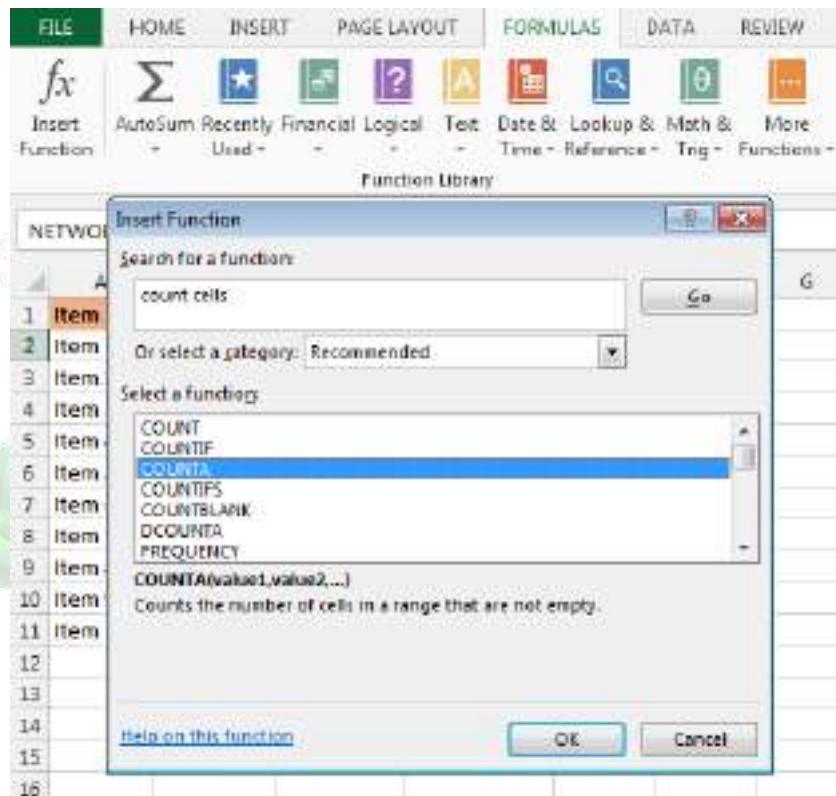
	A	B	C	D	E
1	Item	Date Order	Date Received	Delivery Time	
2	Item 1	1/5/2015	1/26/2015	16	
3	Item 2	1/9/2015	1/26/2015	12	
4	Item 3	1/5/2015	1/25/2015	15	
5	Item 4	1/5/2015	1/26/2015	18	
6	Item 5	1/5/2015	1/23/2015	15	
7	Item 6	1/5/2015	1/26/2015	16	
8	Item 7	1/5/2015	1/26/2015	16	
9	Item 8	1/7/2015	1/15/2015	7	
10	Item 9	1/6/2015	1/6/2015	1	
11	Item 10	1/6/2015	1/8/2015	3	
12					

### 6.3.3. 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.

#### To use the **Insert Function** command

1. Select the **cell** that will contain the function.
2. Click the **Formulas** tab on the **Ribbon**, then select the **Insert Function** command.
3. The **Insert Function** dialog box will appear.
4. Type a few **keywords** describing the calculation you want the function to perform, then click **Go**.
5. Review the **results** to find the desired function, then click **OK**.



6. The **Function Arguments** dialog box will appear.
7. When you're satisfied, click **OK**.
8. The function will be **calculated**, and the **result** will appear in the cell.

### Challenge!

1. Open an existing Excel 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.
4. Explore the **Function Library**, and try using the **Insert Function** command to search for different types of functions.

## Excel Formulas You Should Definitely Know

### 1. SUM

Formula: =SUM(5, 5) or =SUM(A1, B1) or =SUM(A1:B5)

The SUM formula does exactly what you would expect. It allows you to add 2 or more numbers together. You can use cell references as well in this formula.

### 2. COUNT

Formula: =COUNT(A1:A10)

The count formula counts the number of cells in a range that have numbers in them.

	A	B	C	D
1		1	Formula Result	9
2		2	Formula	=COUNT(A1:A10)
3		3		
4		4		
5		5		
6		6		
7		7		
8		8		
9	doesn't work with text			
10		10		

It only counts the cells where there are numbers.

### 3. COUNTA

Formula: =COUNTA(A1:A10)

Counts the number of non-empty cells in a range. It will count cells that have numbers and/or any other characters in them.

The COUNTA Formula works with all data types.

A	B	C	D
1	1	Formula Result	10
2	2	Formula	=COUNTA(A1:A10)
3	3		
4	4		
5	5		
6	6		
7	7		
8	8		
9	This works with text		
10	10		

It counts the number of non-empty cells no matter the data type.

#### 4. LEN

Formula: =LEN(A1)

The LEN formula counts the number of characters in a cell. This includes spaces!

A	B	C	D
1 I love Excel		Formula Result	12
2 IlloveExcel		Formula	=LEN(A1)
3			
4		Formula Result	10
5		Formula	=LEN(A2)

Notice the difference in the formula results: 10 characters without spaces in between the words, 12 with spaces between the words.

#### 5. VLOOKUP

Formula: =VLOOKUP(lookup\_value, table\_array, col\_index\_num, range\_lookup)

Basically, VLOOKUP lets you **search for specific information** in your spreadsheet. For example, if you have a list of products with prices, you could search for the price of a specific item.

We're going to use VLOOKUP to find the price of the **Photo frame**. You can probably already see that the price is \$9.99, but that's because this is a simple example. Once you learn how to use VLOOKUP, you'll be able to use it with larger, more complex spreadsheets, and that's when it will become truly useful.

	A	B	C	D	E	F
1	Item	Price				
2	Spice rack	\$19.99				
3	Stationery	\$5.49				
4	Gift basket	\$25.99				
5	Cutting board	\$24.99				
6	Landscape painting	\$35.99				
7	Greeting card	\$4.99				
8	T-shirt	\$15.49				
9	Scarf	\$29.99				
10	Coffee mug	\$8.99				
11	Tea set	\$16.99				
12	Serving bowl	\$12.99				
13	Wrapping paper	\$3.99				
14	Photo frame	\$9.99				
15	Handmade soap	\$4.49				
16	Gourmet hot cocoa	\$5.99				

As with any formula, you'll start with an equal sign (=). Then, type the formula name.

=VLOOKUP("Photo frame")

The second argument is the **cell range that contains the data**. In this example, our data is in A2:B16. As with any function, you'll need to use a comma to separate each argument:

=VLOOKUP("Photo frame", A2:B16

Note: It's important to know that VLOOKUP will **always search the first column** in this range. In this example, it will search column A for "Photo frame". In some cases, you may need to move the columns around so that the first column contains the correct data.

The third argument is the **column index number**. It's simpler than it sounds: The first column in the range is 1, the second column is 2, etc. In this case, we are trying to find the **price of the item**, and the prices are contained in the **second column**. That means our third argument will be 2:

=VLOOKUP("Photo frame", A2:B16, 2

The fourth argument tells VLOOKUP whether to look for **approximate matches**, and it can be either TRUE or FALSE. If it is TRUE, it will look for approximate matches. Generally, this is only useful if the first column has numerical values that have been sorted. Since we're only looking for exact matches, the fourth argument should be FALSE. This is our last argument, so go ahead and close the parentheses:

=VLOOKUP("Photo frame", A2:B16, 2, FALSE)

And that's it! When you press enter, it should give you the answer, which is 9.99.

<i>f(x)</i>	=VLOOKUP("Photo frame", A2:B16, 2, FALSE)
C	D E F G

9.99

## 6. IF Statements

Formula: =IF(logical\_statement, return this if logical statement is true, return this if logical statement is false).

Example

Let's say a salesperson has a quota to meet. You used VLOOKUP to put the revenue next to the name. Now you can use an IF statement that says: "IF the salesperson met their quota, say "Met quota", if not say "Did not meet quota"

=IF(C3>D3, "Met Quota", "Did Not Meet Quota")

This IF statement will tell us if the first salesperson met their quota or not. We would then copy and paste this formula along all the entries in the list. It would change for each sales person.

A	B	C	D	E	
1	Master List				
2	Sales Person ID	Sales Person Name	Sales Person Revenue	Quota	Met Quota?
3	1	John	\$ 232,103.00	\$ 500,000.00	Did Not Meet Quota
4	2	Joe	\$ 835,477.00	\$ 500,000.00	Met Quota
5	3	Jen	\$ 116,371.00	\$ 500,000.00	Did Not Meet Quota
6	4	Frank	\$ 393,841.00	\$ 500,000.00	Did Not Meet Quota
7	5	Mark	\$ 989,303.00	\$ 500,000.00	Met Quota
8	6	Amanda	\$ 641,883.00	\$ 500,000.00	Met Quota
9	7	Erik	\$ 525,894.00	\$ 500,000.00	Met Quota
10	8	Mike	\$ 732,195.00	\$ 500,000.00	Met Quota
11	9	Matt	\$ 513,372.00	\$ 500,000.00	Met Quota
12	10	Josh	\$ 961,561.00	\$ 500,000.00	Met Quota
13	11	Shea	\$ 235,652.00	\$ 500,000.00	Did Not Meet Quota
14					
15		Formula			
16		=IF(C3>D3, "Met Quota", "Did Not Meet Quota")			

## 7. Working with Data

Whenever you're working with a lot of data, it can be difficult to **compare** information in your workbook.

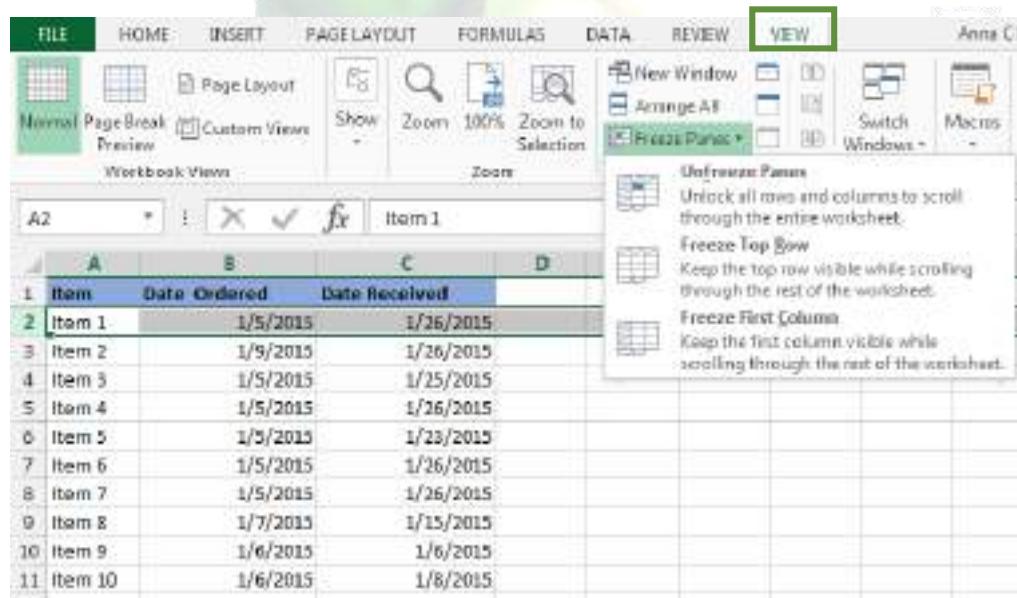
### 7.1 Freezing Panes and View Options

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.

#### To freeze rows

You may want to see certain rows or columns all the time in your worksheet, especially **header cells**. By **freezing** rows or columns in place, you'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**.
2. Click the **View** tab on the Ribbon.
3. Select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.



Item	Date Ordered	Date Received
Item 1	1/5/2015	1/26/2015
Item 2	1/9/2015	1/26/2015
Item 3	1/5/2015	1/25/2015
Item 4	1/5/2015	1/26/2015
Item 5	1/3/2015	1/23/2015
Item 6	1/5/2015	1/26/2015
Item 7	1/5/2015	1/26/2015
Item 8	1/7/2015	1/15/2015
Item 9	1/6/2015	1/6/2015
Item 10	1/6/2015	1/8/2015

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.

#### To freeze columns

1. Select the **column** to the right of the column(s) you wish to **freeze**.

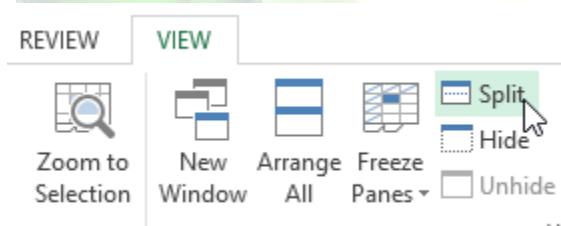
2. Click the **View** tab on the Ribbon.
3. Select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.
4. The column will be **frozen** in place, as indicated by the **gray line**. You can **scroll across** the worksheet while continuing to view the frozen column on the left.

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

### *To split a worksheet*

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

1. Select the **cell** where you wish to split the worksheet.
2. Click the **View** tab on the **Ribbon**, then select the **Split** command.



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

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

### Challenge!

1. Open an existing Excel workbook.
2. Try **freezing** a row or column in place.
3. Use the **Split** command to split your worksheet into multiple panes.

## 7.2 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.

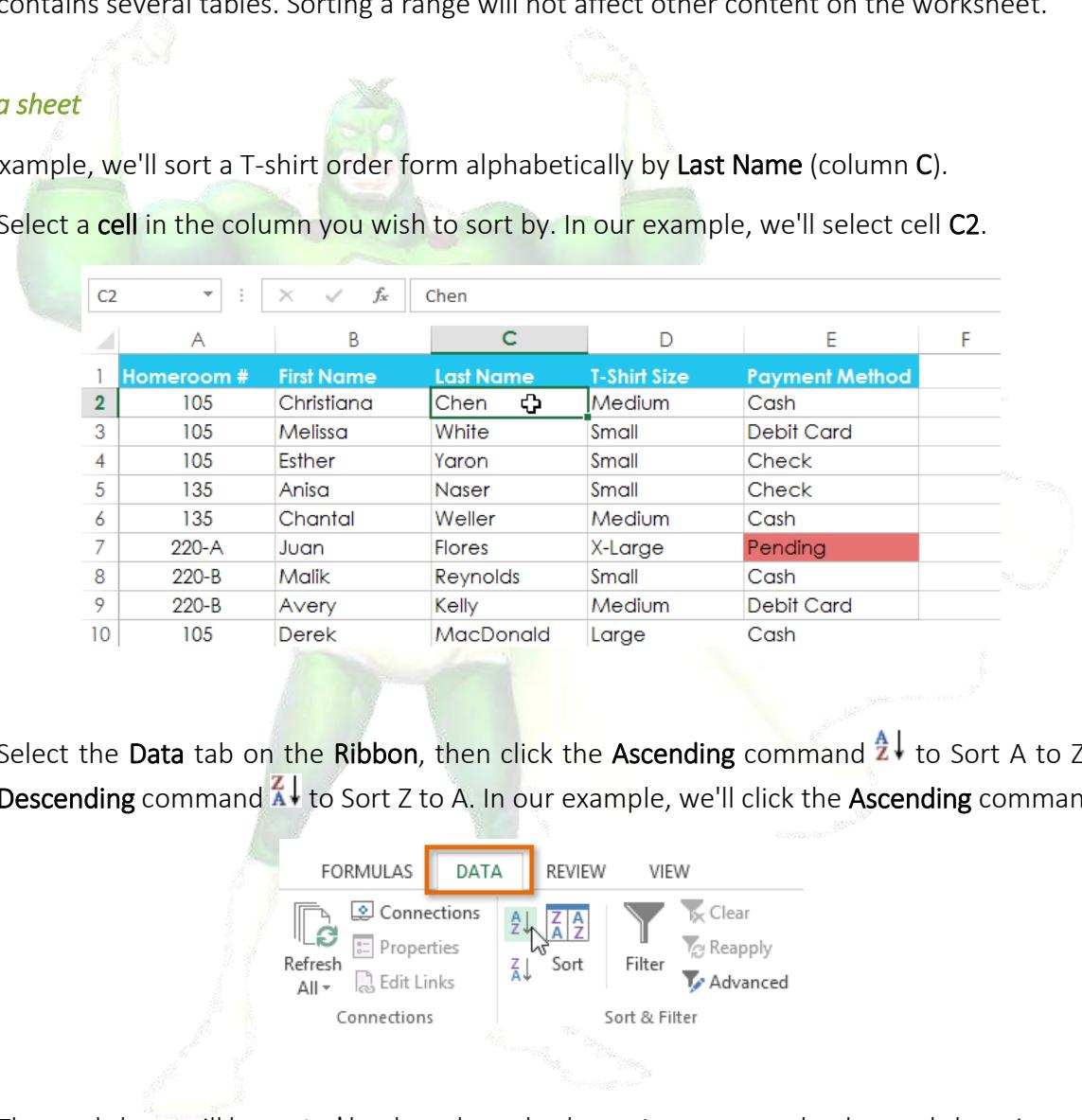
When sorting data, it's important to first decide if you would like the sort to apply to the **entire worksheet** or just a **cell range**.

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

### To sort a sheet

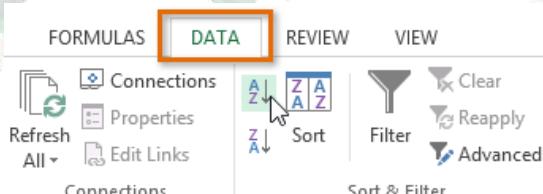
In our example, we'll sort a T-shirt order form alphabetically by **Last Name** (column C).

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

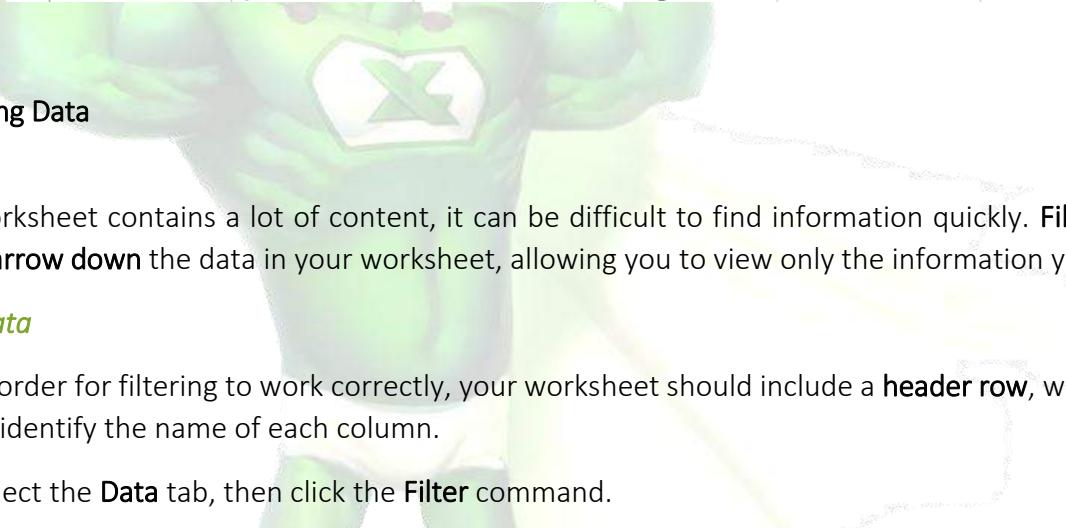


	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	105	Christiana	Chen	Medium	Cash	
3	105	Melissa	White	Small	Debit Card	
4	105	Esther	Yaron	Small	Check	
5	135	Anisa	Naser	Small	Check	
6	135	Chantal	Weller	Medium	Cash	
7	220-A	Juan	Flores	X-Large	Pending	
8	220-B	Malik	Reynolds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

2. Select the **Data** tab on the **Ribbon**, 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.



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



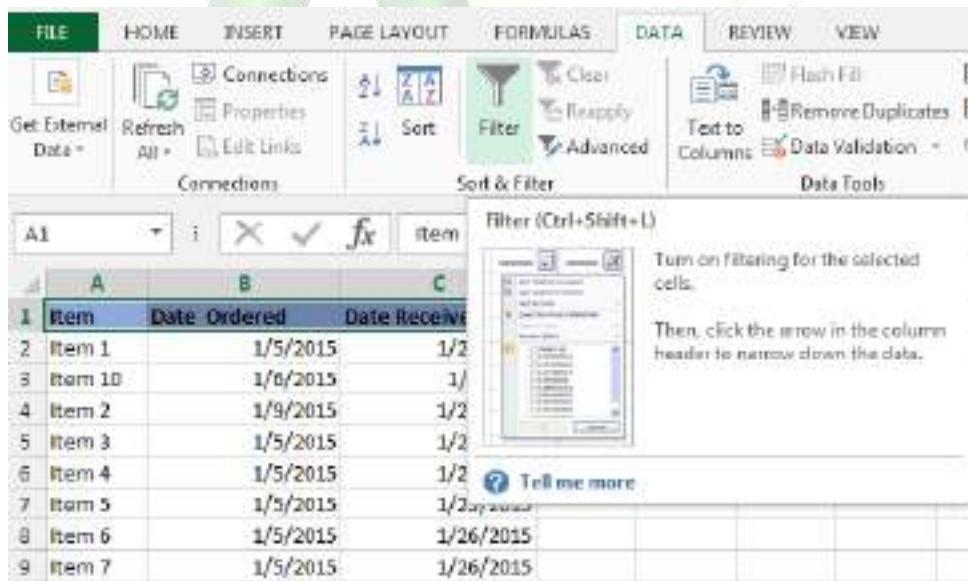
	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	110	Kris	Ackerman	Large	Money Order	
3	105	Nathan	Albee	Medium	Check	
4	220-B	Samantha	Bell	Medium	Check	
5	110	Matt	Benson	Medium	Money Order	
6	105	Christiana	Chen	Medium	Cash	
7	110	Gabriel	Del Toro	Medium	Cash	
8	220-A	Brigid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

### 7.3 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 you need.

#### To filter data

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



	A	B	C
1	Item	Date Ordered	Date Received
2	Item 1	1/5/2015	1/2
3	Item 10	1/6/2015	1/
4	Item 2	1/9/2015	1/2
5	Item 3	1/5/2015	1/2
6	Item 4	1/5/2015	1/2
7	Item 5	1/3/2015	1/2
8	Item 6	1/5/2015	1/26/2015
9	Item 7	1/5/2015	1/26/2015

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.

5. The **Filter** menu will appear.
6. **Uncheck** the box next to **Select All** to quickly deselect all data.
7. **Check** the boxes next to the data you wish to filter, then click **OK**.

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

## 8. Working with Charts

Creating a chart in Microsoft Office Excel is quick and easy. Excel provides a variety of chart types that you can choose from when you create a chart. Excel offers Pie, Line, Bar, and Column charts to name but a few. Showing data in a chart can make it clearer, more interesting and easier to read. Charts can also help you evaluate your data and make comparisons between different values.

### 8.1. Understanding charts

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

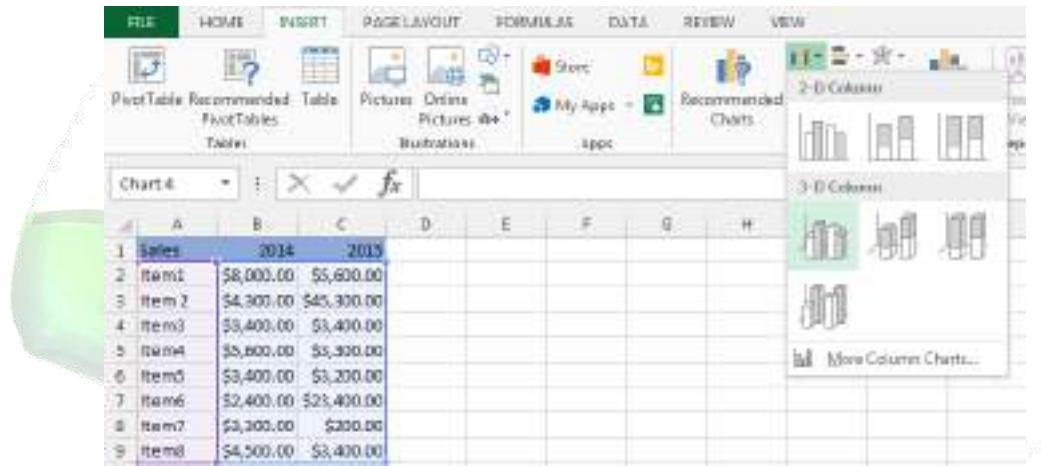
#### Types of Charts:

- Column charts** use vertical bars to represent data. They can work with many different types of data, but they're most frequently used for comparing information.
- Line charts** are ideal for showing trends. The data points are connected with lines, making it easy to see whether values are increasing or decreasing over time.
- Pie charts** make it easy to compare proportions. Each value is shown as a slice of the pie, so it's easy to see which values make up the percentage of a whole.
- Bar charts** work just like Column charts, but they use horizontal bars instead of vertical bars.
- Area charts** are similar to line charts, except that the areas under the lines are filled in.
- Surface charts** allow you to display data across a 3D landscape. They work best with large data sets, allowing you to see a variety of information at the same time.

#### *To insert a chart*

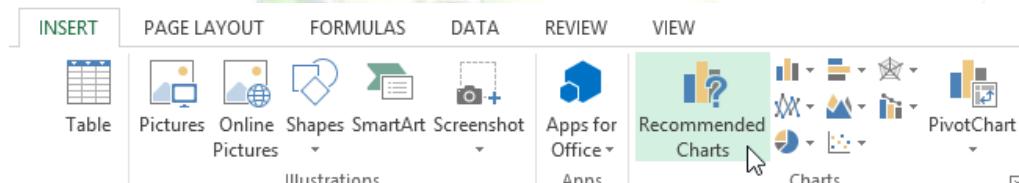
1. **Select the cells** you want to chart, including the column titles and row labels. These cells will be the source data for the chart.

2. From the **Insert** tab, click the desired Chart command.
3. Choose the desired chart type from the drop-down menu.



4. The selected chart will be inserted in the worksheet.

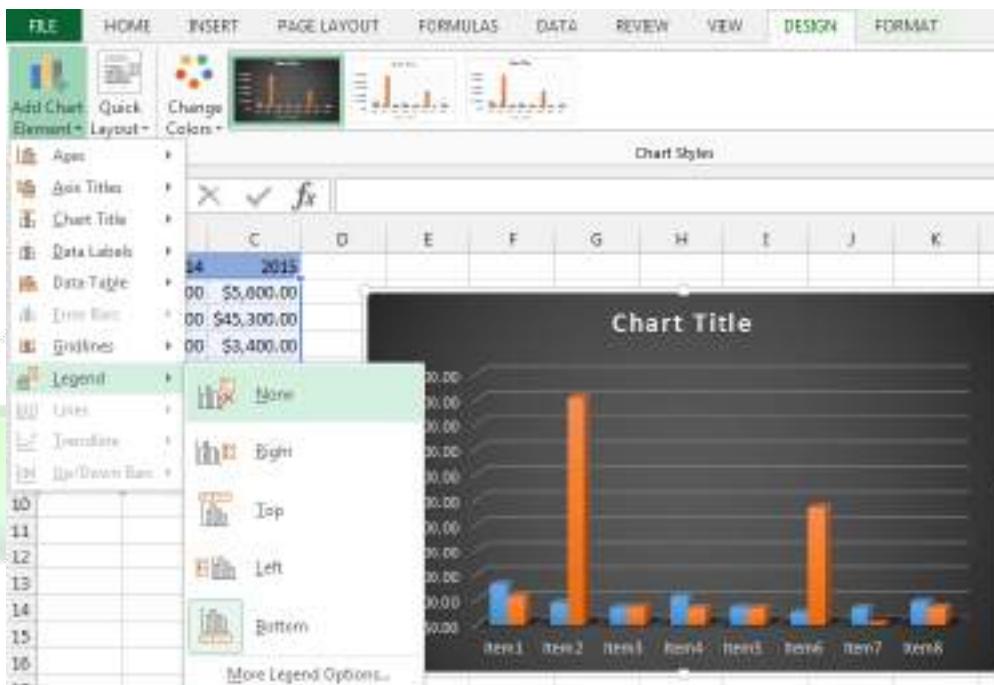
 **TIP:** If you're not sure which type of chart to use, the **Recommended Charts** command will suggest several different charts based on the source data.



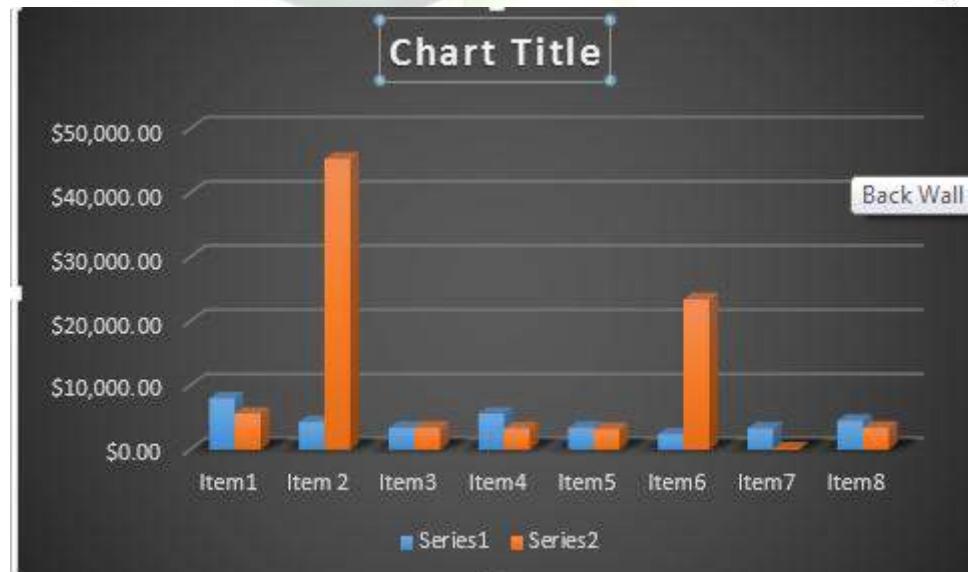
## 8.2. Chart layout and style

After inserting a chart, there are several things you may want to change about the way your data is displayed. It'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, then choose the **desired element** from the drop-down menu.



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



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



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



### 8.3. 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.

#### To switch row and column data

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

1. Select the **chart** you wish to modify.

- From the **Design** tab, select the **Switch Row/Column** command.



- The rows and columns will be **switched**.

### To change 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.

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



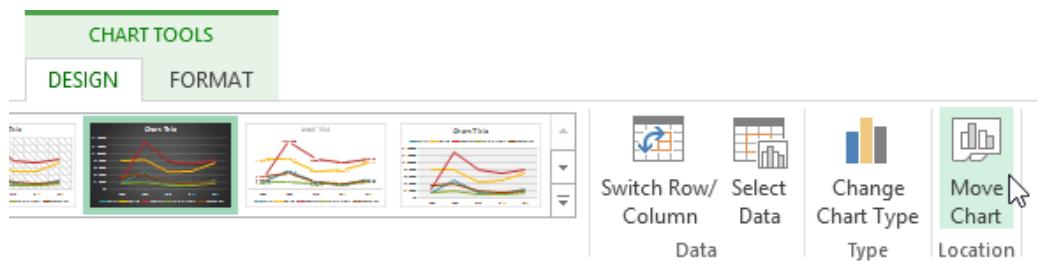
- The **Change Chart Type** dialog box will appear.

- The selected chart type will appear.

### To move a chart

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

- Select the **chart** you wish to move.
- Click the **Design** tab, then select the **Move Chart** command.



3. The **Move Chart** dialog box will appear. Select the **desired location** for the chart.
4. Click **OK**.
5. The chart will appear in the selected location.

### Challenge!

1. Open an **existing Excel workbook**.
2. Use worksheet data to create a **chart**.
3. Change the **chart layout**.
4. Apply a **chart style**.
5. **Move** the chart.

## 9. Printing Workbooks

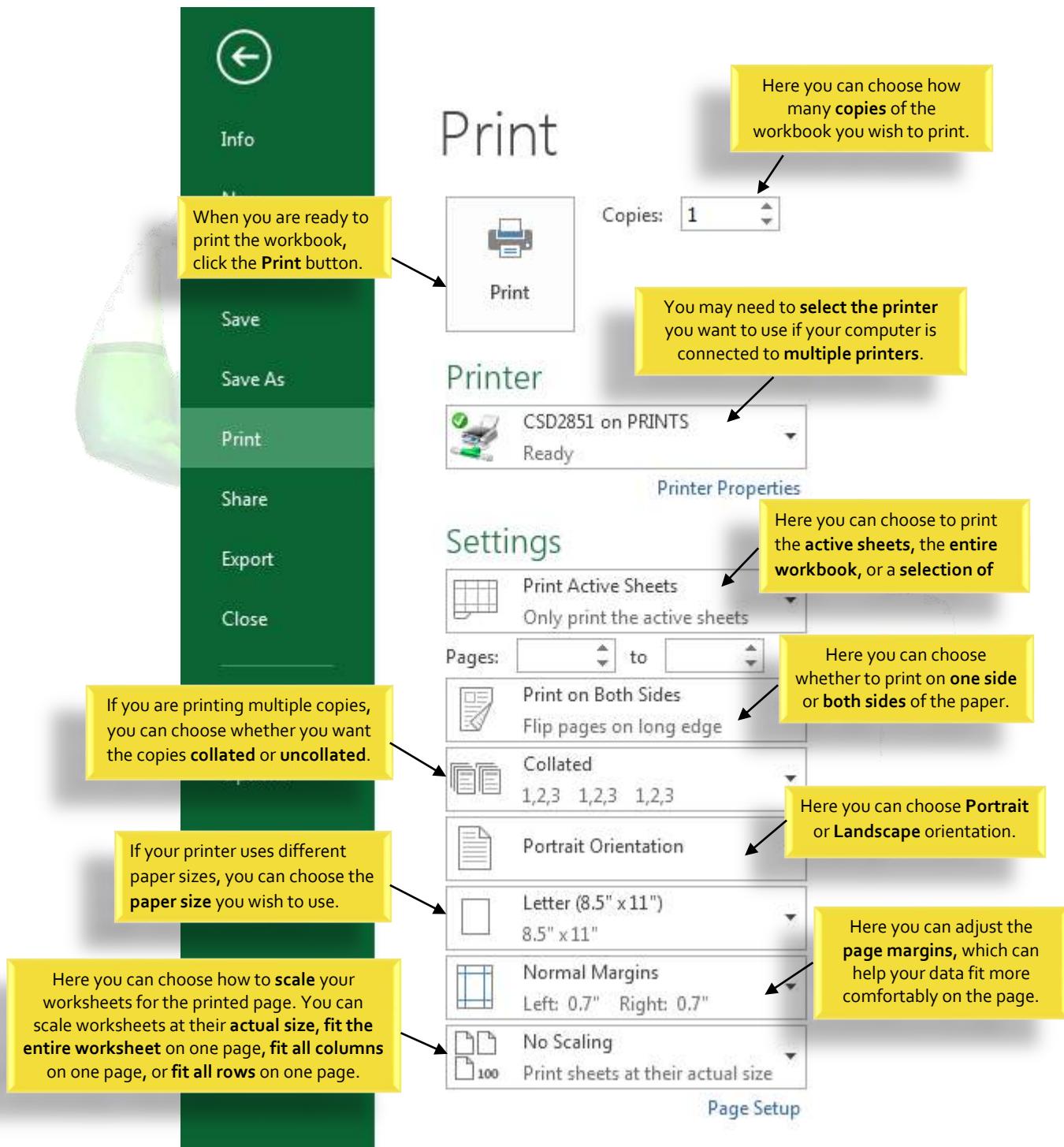
There may be times when you want to **print a workbook** to view and share your data **offline**. Once you've chosen your **page layout** settings, it's easy to preview and print a workbook from Excel using the **Print** pane.

### To access the Print pane

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



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



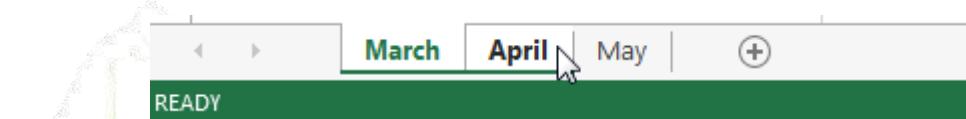
## 9.1. Choosing a print area

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.

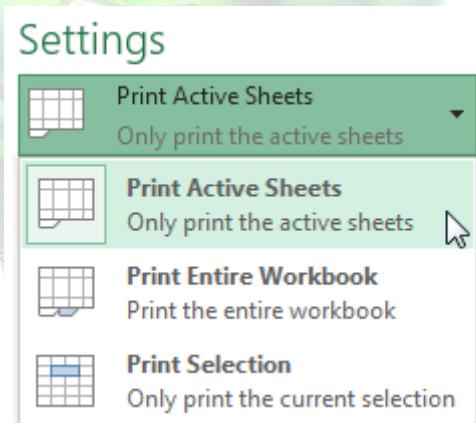
## To print active sheets

Worksheets are considered active when **selected**.

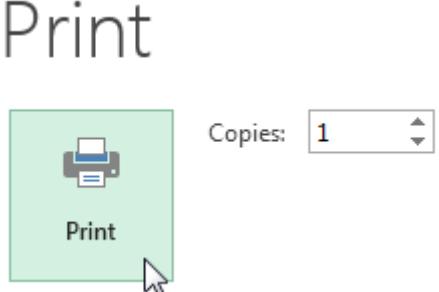
1. Select the **worksheet** you want to print. To print **multiple worksheets**, click the first worksheet, hold the **Ctrl** key on your keyboard, then click any other worksheets you want to select.



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



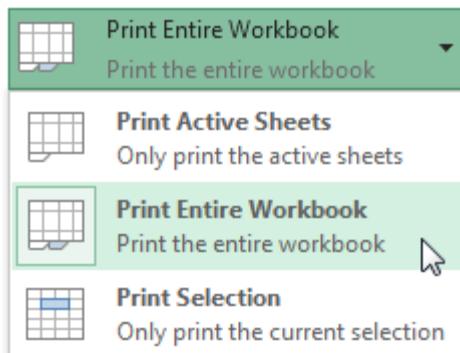
4. Click the **Print** button.



## To print the entire workbook

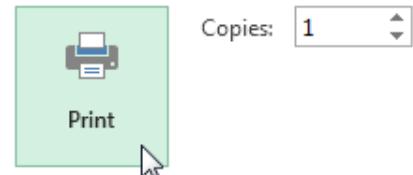
1. Navigate to the **Print** pane.
2. Select **Print Entire Workbook** from the **Print Range** drop-down menu.

## Settings



- Click the **Print** button.

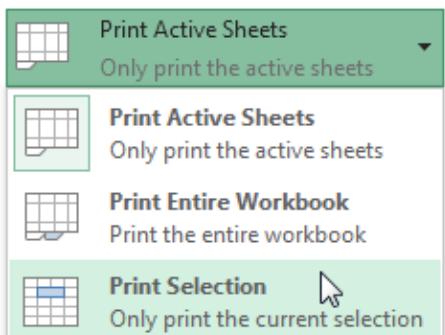
## Print



### To print a selection

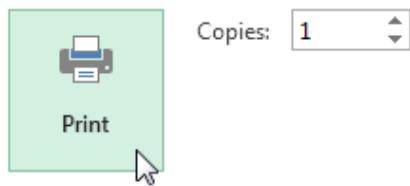
- Select the **cells** you wish to print.
- Navigate to the **Print** pane.
- Select **Print Selection** from the **Print Range** drop-down menu.

## Settings



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

# Print



**TIP:** 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**.

	A	B	C
1	Sales	2014	2015
2	Item1	\$8,000.00	\$5,600.00
3	Item 2	\$4,300.00	\$45,300.00
4	Item3	\$3,400.00	\$3,400.00
5	Item4	\$5,600.00	\$3,300.00
6	Item5	\$3,400.00	\$3,200.00
7	Item6	\$2,400.00	\$23,400.00
8	Item7	\$3,300.00	\$200.00
9	Item8	\$4,500.00	\$3,400.00
10			

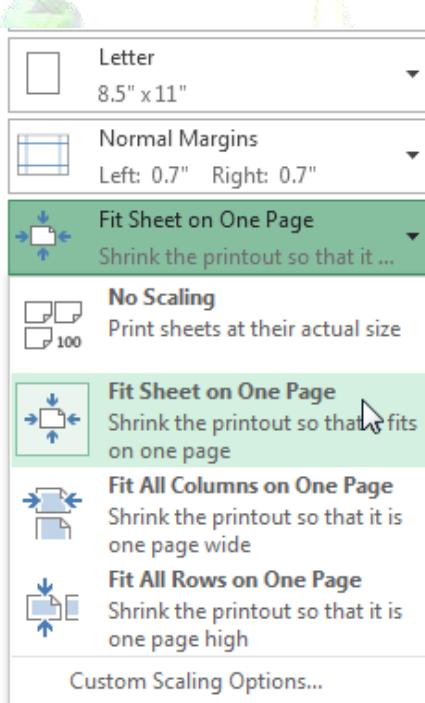
## 9.2. Fitting and scaling content

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

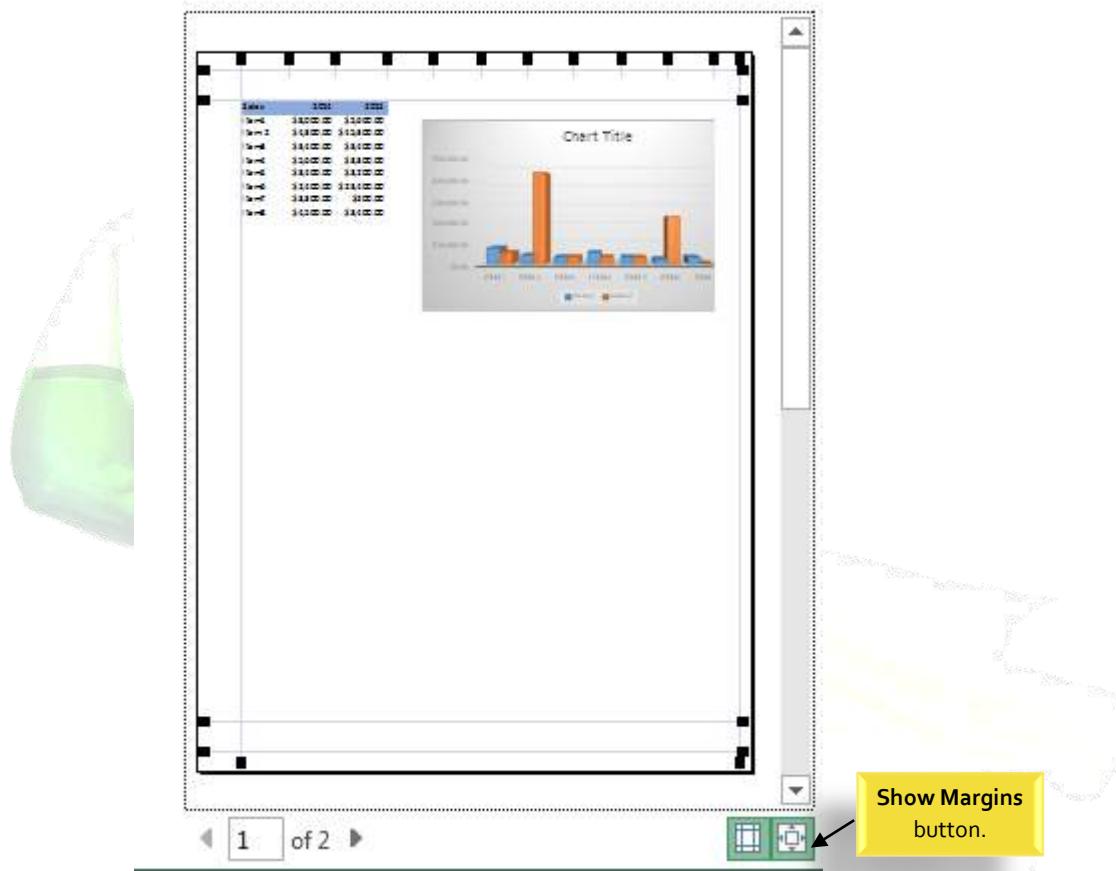


3. The worksheet will be **condensed** to fit onto a single page.
4. When you're satisfied with the scaling, click **Print**.

## To modify 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.



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

### Challenge!

1. Open an existing Excel workbook.
2. Try printing two **active worksheets**.
3. Try printing only a **selection** of cells.
4. Try the **scaling** feature to condense your workbook content.
5. Adjust the **margins** from the **Preview pane**.