

Excel Introduction

Courseware Guide

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ICON LEGEND:  Open Exercise File

 Hands-on Exercise

 Important Tips & Tricks

Unit I: Getting Started



Start **Excel** and create a **Blank** workbook

Topic A: Spreadsheet Terminology

Excel is an electronic spreadsheet program that is part of the Microsoft Office suite. You use Excel to organize, calculate, and analyze **data** – which can be **text** or **numbers**. The tasks you can perform range from creating financial reports, graphical charts, or maintaining lists of information.

In Excel, the file is called a **workbook**, which is comprised of one or more **worksheets**. Each worksheet consists of **rows** and **columns** that intersect to form **cells**. Cells contain various kinds of data that you can format, sort, and analyze. It is important to remember that the term **spreadsheet** is a generic term for data organized in rows and columns – it does not explicitly identify whether you are referring to a specific workbook or a given worksheet.

Components of a Spreadsheet

All spreadsheets have common elements. The exhibit below shows some of those common elements.


	A	B	C	D	E	F	G
1	Name	Emp #	Qtr1	Qtr2	Qtr3	Qtr4	Total
2	Kendra James	16	\$ 6,354	\$ 1,846	\$ 3,958	\$ 8,284	\$ 23,442
3	Alan Monder	22	\$ 7,546	\$ 6,574	\$ 5,767	\$ 6,234	\$ 26,121
4	Audrey Kress	27	\$ 7,635	\$ 4,765	\$ 5,256	\$ 7,865	\$ 25,521

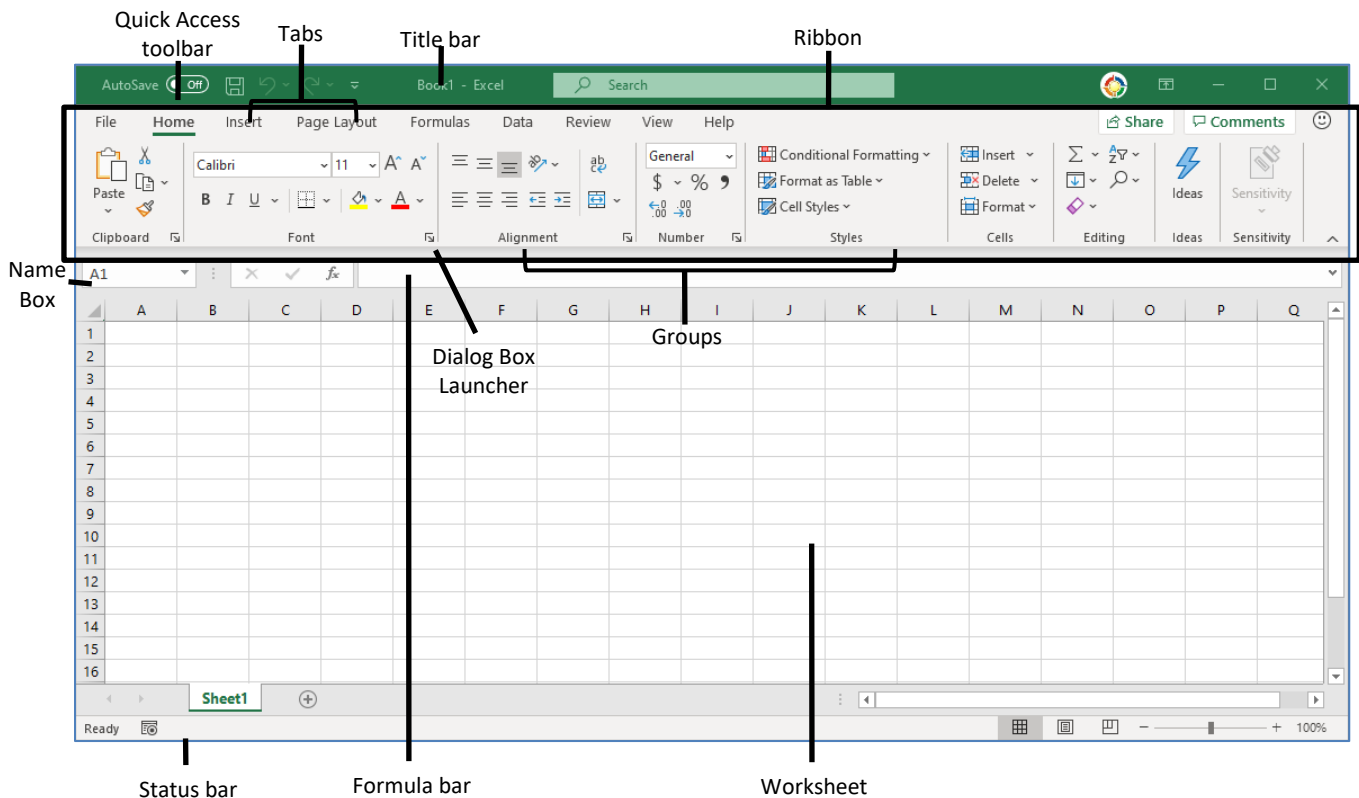
The following table describes common spreadsheet elements.

Item	Description	Limits
Row	A horizontal group of cells in a worksheet and are identified by a unique row number on the left edge of the spreadsheet.	Prior to Office 2007: 65, 536 rows Office 2007 and newer: 1,048,576 rows
Column	A vertical group of cells in a worksheet. Each column is identified by a unique letter value at the top edge of the spreadsheet.	Prior to Office 2007: 256 columns (A thru IV) Office 2007 and newer: 16,384 columns (A thru XFD)
Cell	The intersection of a row # and a column. A cell is identified by its column letter followed by its row number.	17.2 billion cells per sheet Max. characters per cell is 32,767
Label	Data, in this case text, that identifies information in the spreadsheet. These usually appear at the top of a column of information and to the left of a row of information.	
Value	The raw data or a spreadsheet (text and/or numbers) associated with a given label.	

Topic B: The Excel Environment

Components of the Excel Window

Item	Description
Title Bar	Displays the name of the workbook. "Book1" is the default name of the first workbook you start with.
Ribbon	
<ul style="list-style-type: none"> • Tabs 	Contains Groups of related tools. Tabs are either Static or Contextual.
<ul style="list-style-type: none"> • Groups 	A collection of related commands and galleries associated with a Tab.
<ul style="list-style-type: none"> • Commands 	Tools to perform specific actions, or display menus of other commands.
Dialog Box Launcher	Used to open a Dialog Box for a specific Group. Here you would see additional commands beyond what is displayed in the Ribbon. The launcher is a small downward-pointing arrow located in the bottom right corner the Group.
	
Quick Access Toolbar (QAT)	The most important feature of the Ribbon. Provides shortcuts to commonly used commands. Can be easily customized.
Name Box	Shows the location of the active cell.
Formula Bar	Allows the displaying, entering, and editing of content in a cell – such as text numbers, or formulas.
Worksheet	Displays rows and columns of cells.
Status Bar	Shows the status of the spreadsheet, calculations of selected cells, views of the worksheet and zooming.



Back Stage (File tab)

The File tab opens the backstage view, which displays a menu of commonly used file management commands, such as **New**, **Open**, **Info**, **Save As**, **Print**, **Share** and **Options**.

Topic C: Navigation and Selection Techniques



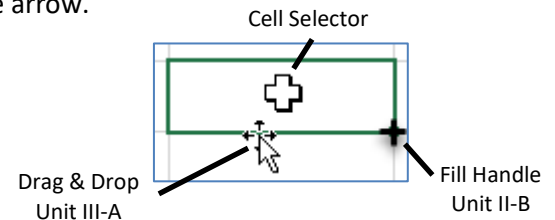
Open [Employee Info.xlsx](#)

Navigating in a Worksheet

At any given time, one cell in the worksheet is the **active cell**. The active cell is where the data you enter will appear. The address of the active cell appears in the Name box, to the left of the Formula bar.

There are several ways you can move around in a worksheet. Some navigation methods make a different cell active, while others, like scrolling with your mouse, move only your view of the worksheet, without changing the active cell. The following table summarizes various worksheet navigation methods.

Action	Result
Click a Cell	Selects a cell.
Arrow Key	Selects an adjacent cell in the direction of the arrow.
Tab	Selects the adjacent cell to the right.
Shift+Tab	Selects the adjacent cell to the left.
Enter	Selects the next cell down.
Shift+Enter	Selects the next cell above.
Ctrl+Home	Selects cell A1.
Ctrl+End	Selects the cell at the intersection of the last row and last column of data in a worksheet.
Directional arrows ↑ ↓ ← →	Moves in the indicated direction.
Page Down/Up	Moves one full screen of rows down or up.
Alt + Page Down/Up	Moves one full screen of columns to the right or left.
Name Box	Clicking in the Name Box and entering the cell value, and pressing Enter



Selection in a Worksheet

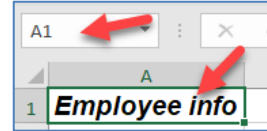
There are several ways you can select content in a worksheet. Selection is necessary for copying, editing, and/or deleting data that resides in a cell, column, or row. The following table summarizes various worksheet selection methods. NOTE: To deselect a cell, hold down the Ctrl Key and click on the cell to be deselected.

Action	Results
Click	Selects a cell.
Click and drag w/ mouse	Select a contiguous range of cells.
Click + Ctrl + Click	Select multiple cells or ranges of cells. How: Select first cell(s), then hold the Ctrl key down and continue to click other non-contiguous (non-neighboring) cells.
Click + Shift + Click	This selects a continuous range of cells with no “whiplash”! How: Click on the first cell, then navigate with mouse until you see last cell you want to, hold the Shift key down and click on last cell.
Select w/ keyboard	Use Shift key in combination with navigation keys or arrows to select cells.
Ctrl + A	Selects the consecutive area, or entire sheet (<i>may have to perform Ctrl+A twice</i>).
Click on a Column letter	Selects all cells in the column.
Click on a Row number	Selects all cells in the row.

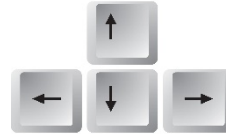
Exercise A-1




1. From **File** tab, select **Open**, then **Browse**,
2. Navigate to the **Excel Introduction** folder and double-click it.
3. Double-click on **Employee Info.xlsx**.
4. Observe the active cell is **A1**, as displayed in the **Name box**.
5. With your mouse, click on cell **A3**, and notice the frame around the cell, and the address in the Name box.



6. Press **Enter** to move down.
7. Press **Tab** to move to the right.
8. Press the **arrow keys** to move up, down, left, and right.
9. Press **Page Down** key, then **Page Up** key.
10. Press **Alt + Page Down**, then **Alt + Page Up**.
11. Press **Ctrl + Home** keys to move to cell A1.
12. Press **Ctrl + End** keys to navigate to the last cell that contains data.
13. Click in the **Name box** and type **A43**, then press **Enter**.
14. Press **Ctrl + Home** to return to A1.



15. Practice the **selection techniques** covered in the previous page, including:
 - a. **Click** on a cell
 - b. **Click on a cell and drag** with your mouse to select a range
 - c. Select a range of cells, then holding the **Ctrl** key down, **click** on other cell(s).
 - d. **Click** on a cell, hold your **Shift** key down, then **click** on another cell further down to the right.
 - e. Click on a **Column E** to select all cells in that column.
 - f. Click on **Row 5** to select all cells in that row.
 - g. Click on cell **D7**, then press **Ctrl+A** (selects a continuous data).
 - h. Press **Ctrl+A** again, and notice it selects the entire sheet.
 - i. Click on cell **J1**, then press **Ctrl+A**. Notice it selects the entire sheet.
 - j. Click on cell **D3**, then from the keyboard, hold the **Shift** key down and press the  down arrow key to select with the keyboard.
 - k. Use the Zoom slider to increase or decrease the visible amount of the worksheet.



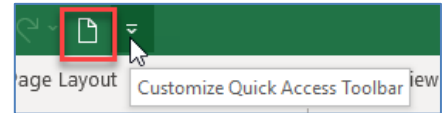
- l. Close **Employee Info.xlsx** (Ctrl+W).

Unit II: Entering and Editing Content

Topic A: Creating a New Workbook

To create a new workbook while Excel is open, you can use one of the following methods:

- From the **File** tab, select **New**, then **Blank workbook**.
- **Ctrl+N** keyboard shortcut.
- Customize the **Quick Access Toolbar** to add the **New** command for single click access.



Topic B: Entering and Editing Content

Entering Text and Values

As soon as you create a workbook, you can begin entering content in cells. Content can be either textual, numeric, functions or formulas. By default, textual entries will left align in a cell, whereas numeric entries will be right aligned. As a general rule, start your data entry in cell A1, then continue down and out as needed.

	A	B	C	D	E	F	G
1	Outlander Spices						
2	<u>Bonus sales in the northern region</u>						
3							
4	Name	Emp #	Qtr1	Qtr2	Qtr3	Qtr4	Total
5	Kendra James	16	\$6,354.00	\$4,846.00	\$3,958.00	\$8,284.00	
6	Pamela Carter	25	\$8,484.00	\$5,858.00	\$5,858.00	\$4,555.00	
7	Julie George	29	\$9,595.00	\$5,859.00	\$4,879.00	\$3,432.00	
8							
9						Total	\$0.00

Overflowing Content

If **text** that you type is wider than the cell they are being entered, it will *appear to go* into the next cell if that adjacent is empty. If the adjacent cell is not empty, the text will be truncated to fit the width of the cell you entered it into. **Numeric** values will never appear leave the cell in which they are entered. If the long numeric value does not fit in the cell, Excel will display a row of # characters. This is an indicator the cell is too narrow to display the value in full. See the exhibit below for examples:

The text in cell A1 appears to spill over into adjacent cells

The Formula bar shows that B1, the active cell, is actually empty

The same text in cell A3 is truncated by the presence of data in C3.

Numbers that are too long for a cell are replaced with #####

Editing Content

If you make an error while entering content in a cell, you can correct it at any time. To make edits, do any of the following once the cell has been selected:



- Type over the content.
- Click on the Formula bar.
- Double-click the cell to be edited.
- Press F2 (Edit).

Edit Mode



The moment you start typing in a cell – or the Formula bar, you are in the Edit mode. Excel expects you to accept your data entry when completed by either pressing Enter, Tab, or an arrow key. *If you want to cancel the data entry, simply press the **Esc** key.*

Undo/Redo Edits

If you make a mistake in Excel, it is easy to correct. Simply click the  **Undo button** on the Quick Access toolbar, or press **Ctrl+Z**. The Undo command reserves the 100 most recent actions – even beyond a save point if you have not closed the file. If the Undo too far, press  or **Ctrl+Y** to **Redo** the last reversed command.

Exercise B-1



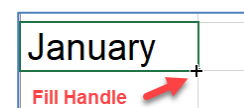
1. Create a **new** workbook (**Ctrl+N**).
2. In cell **A1**, begin typing **Outlander Spices**. Notice the text also is appearing in the Formula bar, and that the Home tab of the ribbon is grayed out. While typing, you are in the Edit mode.
3. Press **Enter**.
4. Notice the text in cell A1 overflows into the adjacent cells.
5. In cell **A2**, type **Sales**, then press **Enter**.
6. Select cell **A4**, type **Month** and press **Tab**.
7. In cell **B4**, enter **Region 1**, then press **Enter**. Notice it have returned you to the far left of the next row.
8. In cell **A5**, enter **January**, then press **Tab**.
9. In **B5**, enter **21000**, then press **Enter**.
10. Notice the number you just typed aligns to right of the cell.
11. Select cell **A2**. If you want to append the text that is already in the cell, **click in the Formula bar** to the right of the existing “Sales” text, press the spacebar then type **Report**.
12. Double-click on cell **B5** and change the **1** to a **4** to now read **24000**, pressing **Enter** when done.

AutoFill

When you want to enter a series of numbers, days of the week, months, or other sequential data, you can use the AutoFill feature to complete the list. The fill handle is a small square in the lower-right corner of the select cell or range of cells. When you point to the fill handle, the pointer changes to a plus sign (+). You can click and drag the pointer in any direction to fill in the range.

To use AutoFill:

1. Select the cell containing the value that will start the list or series.
2. Point to the fill handle until the pointer changes to a + symbol.
3. Drag the fill handle over the adjacent cells that you want to fill.



For numbers and dates you can select two cells with a desired range, and AutoFill will continue with the same increments. For example, you could use this technique to fill a range of with even numbers or dates a week apart. After releasing the fill handle, look for the **Fill Options** menu to control the fill process. **This is a huge time saver!**

	A	B	C	D	E
1	Outlander Spices				
2	Sales				
3					
4	Month	Region 1	Region 2	Region 3	Region 4
5	January	24000			
6	February				
7	March				
8	April				
9	May				
10	June				
11	July				
12	August				
13	September				
14	October				
15	November				
16	December				
17					
18					
19					

Exercise A-2



1. Select cell **B4**.
2. Point to the fill handle, as shown.
3. When your pointer is the + plus sign, press and hold the mouse button as you drag the fill handle to your right to **E4**, as shown.
4. Release the mouse button.
5. Select **A5**, use AutoFill to fill down to **A16** to complete the rest of the months of the year.
6. Close the file without saving (Ctrl+W).

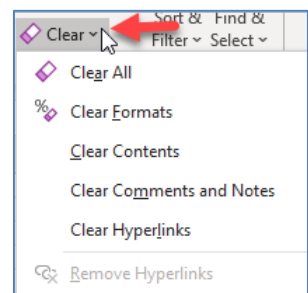
Month	Region 1
January	24000

Region 1				
24000				Region 4

The Clear Command

While it may be obvious that pressing the Delete key will remove the contents of a selected cell or range, it may not be removing everything out of the cell. Excel's **Clear** command has a set of powerful options for determining what is removed from a cell or range. Found on the Home tab, in the Editing group, the Clear command drop-down menu allows you choose what to remove:

- **Clear All:** Removes all everything (content, formatting, and comments).
- **Clear Formats:** Removes only the formatting, leaving the contents intact.
- **Clear Contents:** This is assigned to the **Delete** key, removing contents- but leaving the formatting intact.
- **Clear Comments and Notes:** Removes comments and notes but leaves the content and formatting intact.
- **Clear Hyperlinks:** Removes the hyperlinks but leaves everything else intact.



Topic C: Entering and Editing Formulas



Open **Sales.xlsx**

Formulas

Formulas perform numeric calculations, such as adding, multiplying, and dividing. All formulas in Excel start with the equal sign (=). A formula can refer to a value, a cell address, or another formula. All formulas contain operators - characters that indicate the type of arithmetic operation the formula will perform.

The following table shows some common arithmetic operators you can use:

Operator	Used For ...	Example
+	Addition	=A7+A9
-	Subtraction	=A7-A9
*	Multiplication	=A7*A9
/	Division	=A7/A9
^	Exponents	=A7^3 means A7 raised to the third power (A7 ³), or A7*A7*A7

Entering Formulas

To enter a formula, select the cell where you want the result to appear, type the formula, and press Enter. For example, if there are number values in A2 and A3, and you want to add them and show the result in A4, you select A4, type =A2+A3, and press Enter. The sum will appear in A4. If A4 is the active cell, the formula appears in the formula bar.

Formulas are based on the values contained in the cells in your worksheet. If you change the value in a cell that a formula refers to, the result of the formula will change to reflect the new value.

The Order of Operations

When a formula contains more than one arithmetic operator, Excel performs the calculations in the following order:

1. Parentheses
2. Exponents
3. Multiplication and/or Division
4. Addition and/or Subtraction

Using Parentheses to Change the Order

You can change the order in which the operations are calculated by placing parentheses around the part of the formula you want to be calculated first. For example, in the formula **G7*(B5+B9)**, the addition of the two cells would occur prior to the multiplication.

Exercise B-1



1. Open **Sales.xlsx**.
2. Select cell **G5**.
3. Type = **c5+d5+e5+f5**, pressing **Enter** when you are done.

4. Select **G5** and observe the Formula bar.



5. Select **F5**.
6. Type **1000**, and press **Enter**.
7. Observe that the formula has updated to reflect the new value in **F5**.

Using the Mouse to Enter Cell References in Formulas

You can use the mouse to enter cell references for a formula, which often times can be quicker and more intuitive than typing each cell reference. To do so:

1. Select the cell where you want to enter the formula.
2. Type = (to begin a formula).
3. Click the cell for which you want to enter a reference.
4. Type the operator you want.
5. Repeat Steps 3 and 4 until your formula is complete.
6. Press Enter.

Exercise B-2



1. Select cell **G6**.
2. To begin the formula, type =.
3. Using your mouse, click on cell **C6**, then type +.
4. Click on cell **D6**, and type +.
5. Complete the formula as shown using the mouse to enter the cell addresses.
6. Press **Enter**.
7. In **G7**, enter a formula to calculate the total sales for Julie George.

=C6+D6+E6+F6

Editing Formulas

You can edit formulas to adapt to changes in the worksheet or to correct mistakes. You edit a formula just as you would edit any other cell. Simply select the cell and edit the formula in the Formula bar – or you can double-click the cell and enter the correct formula and press Enter when you are done.

Exercise B-3



1. Observe **G9**, the total is incorrect.
2. Select **G9** and observe the formula bar and notice it is only adding G5+G6, but not adding G7.
3. Click in the Formula bar **at the end** of the formula.
4. Type **+G7**, and press Enter.
5. Observe **G9** is now correct.
6. Close the **Sales.xlsx** without saving (Ctrl+W).

Topic D: Saving and Updating Workbooks

Saving a workbook stores your data for future use. Every time you change anything in a worksheet, you will need to save (update) it if you want to keep your changes.

When you save a workbook for the first time, Excel opens the “Save As” dialog box, where you first choose a location for your file. Once you have chosen a location, you assign a name to the file. You can also use the Save As dialog box to create a new file based on your current file.

When you save a file, it is an Excel workbook by default. However, you can also save it in a variety of formats, including those in the following table.

Format	File Extension	Description
Excel Workbook	.xlsx	This is the default workbook format for Excel 2007 and higher.
Excel 97-2003 Workbook	.xls	“Compatibility Mode” will be demonstrated in the Title Bar.
Excel Workbook with Macro	.xlsm	Only Excel 2007 and higher
Text (Tab delimited)	.txt	Files saved in plain text format can be opened by any word processor or text editor. Values are delimited (separated) by tabs.
CSV (Comma delimited)	.csv	Data fields in a CSV file are delimited by commas.
Portable Document File	.pdf	This option saves the file in the popular Adobe PDF format so that anyone with the free Adobe Reader program can open the file.

Updating a Workbook

Each time you save a workbook, Excel updates the workbook file with the latest changes. You should update your workbooks frequently so that your changes are not lost. To save changes in a workbook, click the Save button on the Quick Access toolbar or press **Ctrl+S**.

Save Options

As you create workbooks in Excel, it is important to save your work frequently. You save a workbook by using the Save and Save As commands.

To save a workbook for the first time, you use the Save As command. On the File tab, click Save As. (You can also click the Save button on the Quick Access toolbar or press Ctrl+S.) Under Location, select where you want to save the document. For example, to save a document to a folder on your computer:

1. On the File tab, click Save As.
2. Under Location, click Computer.
3. Select a recent folder from the list or click Browse.
4. If necessary, navigate to the desired folder.
5. Edit the File name box to give the workbook a unique name.
6. If desired, from the Save as type list, select an option.
7. Click Save.

You can use the Save command to save a previously saved workbook with its current name and in its current location. The Save command updates a file, writing to the disk any changes you have made.



Using AutoRecover (for files stored on your computer or a network file share)

When you are working, you might forget to save regularly. This means that if Excel closes unexpectedly, you might lose any work completed since the last time you saved. Excel provides an automatic save feature called *AutoRecover*, is found in the Save section of the Excel Options dialog box. You can specify how often Excel should automatically save a file. To specify the number of minutes between automatic saves:

1. On the File tab, click Options to open the Excel Options dialog box.
2. In the left pane, click Save to display the save options.

3. Check "Save AutoRecover information every."
4. Enter a number in the box or use the arrow buttons to specify the number of minutes for the interval.
5. Click OK.

AutoRecover saves drafts of any open workbook at the specified interval. Excel takes AutoRecover a step further by automatically saving workbooks and drafts that you have not already saved. Even if you close a workbook without saving it, you can still recover the changes you made.

The steps for recovering a workbook depend on whether you closed a new file or closed a previously saved one that you edited and subsequently closed without updating.

To recover a newly created file that you closed without saving:

1. Click the File tab and then click Open.
2. At the bottom of the window, click Recover Unsaved Workbooks to open the folder containing unsaved drafts.
3. Select the file and click Open.
4. In the banner that appears at the top of the workbook, click Save As.

If another file is open, you can also click Info on the File tab and then click Manage Versions. Choose Recover Unsaved Workbooks.

To recover a previously saved file that you edited and then closed without updating:

1. Open the saved version of the file.
2. On the File tab, click Info.
3. Under Versions, select a version with the label "(when I closed without saving)," as shown near the bottom of Exhibit 1-6.

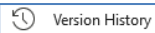
To delete a draft version, click Info on the File tab. Under Versions, right-click the draft you want to delete and choose Delete This Version.



AutoSave  (for files stored in SharePoint or OneDrive for Business)

AutoSave is enabled when a file is stored on OneDrive, OneDrive for work or school, or SharePoint in Microsoft 365. It automatically saves your users' changes to the cloud as they are working. And, if other people are working on the same file, AutoSave lets them see changes in a matter of seconds. Without AutoSave enabled, users collaborating on the same workbook at the same time will not be able to see each other in real-time and instead they will continue to see Updates Available when changes are made by others.

Things to Remember about AutoSave

- If AutoSave is enabled and you have made edits you do not wish to save, use the Undo command (Ctrl+Z) to undo the edits back to the opening version of the workbook.
- If you have already closed the workbook, but wish to recover the workbook back before the last round of edits, click the file name in the Title bar and select  to restore the workbook to an earlier version.

Unit III: Modifying a Worksheet

 Open Data.xlsx

Topic A: Moving and Copying Data

Moving Data

You can move and copy data between cells, ranges, and worksheets, and even from one workbook to another. When you cut or copy data Excel places it on the clipboard, an area of memory that stores data temporarily. You can then “paste” the data from the clipboard into a new location. NOTE: In Excel, once data has been cut or copied, you can press **Enter** to paste.



To Cut Data:

1. Select the data you want to move.
2. Click the **Cut** Icon (T: Home, G: Clipboard), right-click and select **Cut**, or press **Ctrl+ X**.
3. Select the cell that you want to move the data to.
4. Click the **Paste** Icon (T: Home, G: Clipboard) or press **Ctrl+ V** (or **Enter**).

NOTE: You use Cut or Ctrl+ X only to move a cell's data, but not to delete the data. Data that has been cut is not removed from the original cell until it is pasted into another cell.

Copying Data

When you need to use the same data in several places, it is best to copy it (for accuracy), rather than type it repeatedly at each location. You can copy data within a worksheet between worksheets, between workbooks, and among other applications. You can copy all or part of a cell's contents, or the content in a range of cells.

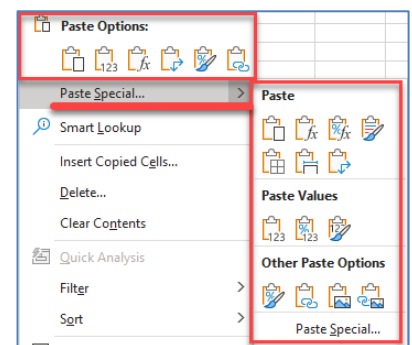
To Copy Data:

1. Select the data you want to copy.
2. Click the **Copy** Icon (T: Home, G: Clipboard), right-click and select **Copy**, or press **Ctrl+C**.
3. Select the cell that you want to move the data to.
4. Click the **Paste** Icon (T: Home, G: Clipboard) or press **Ctrl+ V** (or **Enter**).

Using Paste Special and Paste Options

To control what is being pasted, click the arrow on the Paste button to display the Paste Options menu. You can point to the Paste Special icons to see a **preview** of the pasted result in the destination cell, this is called **Live Preview**.

In addition, when you paste the copied data, the Paste Options button appears next to the destination cell. You can click this button or press the Ctrl key to display the Paste Options shortcut menu.



Exercise A-1



1. Open **Data.xlsx**.
2. Select **D7**, then press **Ctrl+X** for Cut.
3. Click on cell **D19**, and press **Enter** to Paste.
4. Copy the cell **D19** by right-clicking on the cell and selecting **Copy**.
5. Click in cell **D7**, and press **Enter** to Paste.

Drag-and-Drop

Drag-and-drop is a method of moving or copying data. Dragging is the act of pointing to a cell, holding down the mouse button, and then moving the pointer without releasing the mouse button. Dropping is releasing the mouse button after the pointer reaches the destination cell.

To move the contents of a cell by using the drag-and-drop method:

1. Select the cell that contains the data you want to move.
2. Point to the border of the cell. The pointer changes to a **four-headed arrow**.
3. Drag the cell to where you want to move the data. As you drag, a cell outline shows where the data will go when you release the mouse button.
4. Release the mouse button when the pointer reaches the destination cell.

To copy a cell's contents to another cell:

1. Select the cell that contains the data you want to copy
2. Point to the border of the cell until the pointer changes to a **four-headed arrow** and do one of these options:
 3. Drag the cell by holding down the secondary mouse button (normally the right button).
 3. Hold the Ctrl key down.
4. Drag to the destination cell, release the mouse button first, followed by the Ctrl key.

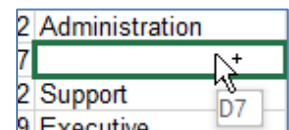
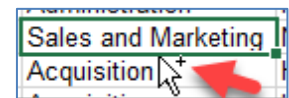
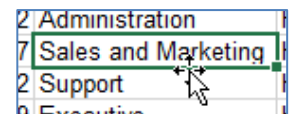
Cut and Paste vs Drag-and-Drop

How you move and copy data between cells is a matter of preference. However, when the destination cell is not visible on the screen, cutting and pasting is usually most effective. If you have to scroll vertically or horizontally to get to the destination cell, use the Cut and Paste method. For short moves within the current view, however, it is often faster and easier to simply drag the formula to its destination cell and drop it there. NOTE: Cut and Paste uses the Office Clipboard, Drag-and-Drop does not.

Exercise A-2

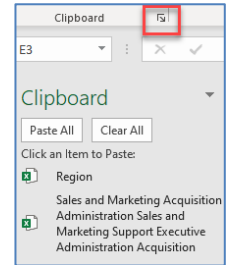


1. Select cell **D19** and press the **Delete** key.
2. Click on cell **D7** and point to the edge of the cell, as shown.
3. Press and hold the mouse button as you **drag** the cell contents down to cell **D19**, releasing the button once **D19** is highlighted. The contents have been moved.
4. With **D19** still selected, point to the edge of that cell, and press and hold the **Ctrl** key. You will notice a small plus sign next to the mouse point indicating you are copying.
5. While holding the **Ctrl** key, drag the contents back to D7, releasing the mouse button first, then releasing the Ctrl Key. You have copied the contents.



The Office Clipboard

Microsoft Office applications include a special Clipboard, called the Office Clipboard, which expands the functionality of copy/paste and cut/paste. The Office Clipboard can hold up to 24 items, so you are not limited to pasting the most recently cut or copied item. In addition, all items stored in the Office Clipboard are available to all open Microsoft Office applications. To open the Clipboard task pane, click the dialog box launcher button in the bottom-right corner of the Clipboard group.



Topic B: Moving, Copying, and Viewing Formulas

 [Open Formulas.xlsx](#)

Moving Formulas

You move formulas the same way as any other data. If you move a formula from one location to another the calculation that was performed at the first location will be performed at the new location. Any references you used in the formula will remain the same.

Copy Formulas

When the same formula is needed in several locations, copy it to those locations instead of retyping it in each cell. Formulas are copied the same as any other data. Any references in the formula are adjusted to reflect the new location of the copied formula. (This is different from moving a formula, which retains its original cell references.)



Relative Cell References

By default, Excel uses relative cell references in formulas. Excel adjusts relative cell references when you copy a formula to a new location. For example, if you have a formula contained in D1 that refers to cell C1, and you copy the formula to D2, the reference in the formula automatically changes to C2.

Copying a Formula with AutoFill

You can use AutoFill to copy a formula to adjacent cells. Here is how:

1. Select the cell containing the formula you want to copy.
2. Point to the fill handle until the pointer changes to a+ symbol.
3. Drag the fill handle over the adjacent cells to which you want to copy the formula.

Exercise B-1




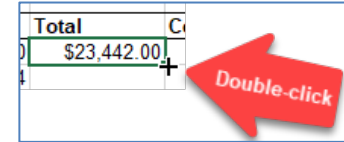
1. Open **Formulas.xlsx**.
2. Select **G5**, enter **=C5+D5+E5+F5**, pressing **Enter** when done.
3. Select cell **G5**, press **Ctrl+C** to copy the contents.
4. Click on cell **G6**, and press **Enter** to paste, then observe the formula bar and note the cell references adjusted by one row from the original formula.
5. Delete the contents in **G6**.
6. Select cell **G5** once again and point to the fill.
7. Drag down to **G6** as shown, noticing it copied the formula and adjusted the references.

	Total	C
0	\$23,442.00	
4	\$17,927.31	

	Total	C
0	\$23,442.00	

Exercise B-1 (continued)

8. Press **Ctrl+Z** to undo the copying of the formula.
9. Again select cell **G5** and point to the fill handle, but instead of dragging down, **double-click the fill handle** and notice it copies the formula down the column for each of the other employees until it hits a blank row.
10. Click in **G6**, observing the formula in the Formula bar, then using the  down arrow key to move through the other formulas, note how each has the references adjusting given the new location.

**Limitations of Relative Cell References**

Relative references are the default in Excel, and they make it simple for you to copy most formulas to several places. Sometimes, however, you would not want Excel to adjust references when you copy a formula. There will likely be times when you will want to copy a formula but retain its original cell references.

Exercise B-2

1. Observe that cell **H2** contains a commission rate we will use to calculate the commissions for each employee.
2. In **H5**, enter **=G5*H2** to calculate Shannon's commission.
1. Select **H5** and **double-click** the fill handle to copy the formula down for all the other employees.
2. Select cell **H6** and observe the formula in the Formula bar.
3. Select cell **H7** and observe the formula in the Formula bar.
4. Given that the references in the formula are relative (by default), as the formula was copied it no longer referenced the commission rate in **H2**, thus giving unexpected results in each of the copied formulas.
5. Press **Ctrl+Z** to undo the copying of the formula.

Comm	
\$	937.68
\$	-
	#VALUE!
	#####
\$	-
	#VALUE!

**Absolute Cell References**

When you do not want a reference to change when you copy it, you can use an *absolute reference*. To make a reference absolute, insert a dollar sign in front of both the column letter and the row number of the reference. For example, to create an absolute reference to cell A1, you would enter **\$A\$1** in a formula. When you copy an absolute reference to another location, Excel does not adjust the reference. You can enter a cell reference and then press F4 to make that reference absolute. This is often faster and easier than manually entering multiple dollar signs in a formula.

Mixed References

You can create *mixed references* by placing a dollar sign in front of only the column letter or only the row number. When you copy the formula, the relative part of the reference will adjust relative to the new location, but the absolute part will not. You can cycle through the reference possibilities by pressing F4 when you are entering a reference. NOTE: Whichever item has a \$ in front of it, locks that element. **\$A\$1** both row and column are locked, **\$A1** only column is locked, **A\$1** only the row is locked, **A1** nothing is locked and is referred as relative address.

Exercise B-3

1. Select cell **H5**.
2. Place the insertion point in the Formula bar at the end of the formula as shown.
3. Press the function key of **F4** to change the reference to **\$H\$2**.
4. Press **Enter**.
5. Select **H5** and copy the formula down for all the other employees by double-clicking the fill handle.
6. Observe the copied formulas and note that it adjusted the relative cell references for each employee but the absolute reference, **\$H\$2**, remained unchained.
7. Change cell **H2** to **8**, press Enter, and note all commissions have been updated.

<i>fx</i>	=G5*H2
-----------	--------

<i>fx</i>	=G5*\$H\$2
-----------	------------

Comm	
\$	937.68
\$	717.09
\$	623.66
\$	424.40
\$	241.82

Cell Referencing


On occasion there may be a need to refer to another cells content. Here is how:

1. Click the cell that will contain the reference.
2. Press "="
3. Click on the cell that is to be referenced.
4. Press Enter

**Viewing Formulas in a Worksheet**

You can display the formulas in a worksheet rather than their results. This is extremely helpful when you want to audit your Worksheet.

There are two ways to display formulas in a worksheet:

- Click Show Formulas Icon (T: Formulas, G: Formula Auditing).
- Press Ctrl+ (accent grave key located above Tab key). NOTE: This is a toggle on, toggle off command.

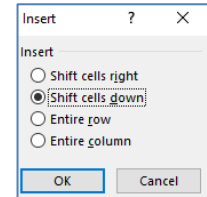
Qtr4	Total	Comm
8284	=C5+D5+E5+F5	=G5*\$H\$2
7355.44	=C6+D6+E6+F6	=G6*\$H\$2
7307.18	=C7+D7+E7+F7	=G7*\$H\$2

Once the formulas are displayed in a worksheet, they can also be printed. To display the formula results again, click Show Formulas or press Ctrl + '.

Topic C: Inserting and Deleting Cells, Rows, and Columns

Inserting Cells

1. Select where the cells are to be inserted.
2. Press Ctrl + "+" (on numeric keypad) or **right-click** and choose "Insert...".
3. Select the direction you want the existing cell(s) to be shifted (right or down) to make room for the new cell(s).



Inserting Rows and Columns

When you insert entire rows or columns, they will be inserted on top of (row) or to the left of (column) whatever is selected.

1. Select entire row or column to be inserted
2. Press Ctrl + "+" (on numeric keypad).

OR

- **Right-click** on the row you want a new row to be inserted **above**, or **right-click** on a column you want a new column to be inserted to the **left** of, and then choose "Insert" from the shortcut menu.



If you want to insert multiple rows or columns simultaneously, select the number of rows or columns that equals the number of rows or columns you want to insert, then perform the Insert command.

Deleting Rows and Columns





1. Select entire row or column to be deleted
2. Right-click on the selected area and choose "Delete" from the menu **or** press Ctrl + "-" (on numeric keypad).

Understanding Impact to Existing Formulas

When cells, rows, or columns are inserted, any existing formulas will be adjusted as necessary, regardless of whether the cells referenced in those formulas were relative or absolute. However, if you delete cells, rows, or columns that have cells being referenced in existing formulas, those formulas will be "broken", and you will see the #REF error in those cells. The formulas will need to be edited for correction.

Exercise C-1





1. Right-click on row **5** and choose **Insert** from the menu.
2. Undo the inserted row with **Ctrl+Z** or .
3. Right-click on column **C** and choose **Insert** from the menu.
4. Undo the inserted column with **Ctrl+Z** or .
5. Select rows **5 through 8**, as shown.
6. Right-click on the selection and choose **Insert** from the menu.
7. Observe that because four rows were selected, that four new rows were inserted above the selection.
8. Undo the inserted rows with **Ctrl+Z** or .
9. Select columns **C through E**, as shown.
10. Right-click on the selection and choose **Insert** from the menu.
11. Observe that because three columns were selected that three new columns were inserted to the left of the selection.
12. Undo the inserted columns with **Ctrl+Z** or .

4	Name
5	Shannon Lee
6	Melinda McGregor
7	James Overmire
8	Roger Williams
9	Angie Phillips

	C	D	E
	Outlander Spices		
	sales for the northern region		
	Qtr1	Qtr2	Qtr3
1	\$6,354.00	\$4,846.00	\$3,958.00
2	\$4,908.42	\$4,740.03	\$923.42

Exercise C-1 (continued)

-  13. Right-click on row **1** and **Insert** a new row.
14. Observe that the commission rate previously in cell H2 has moved to H3.
15. Press **Ctrl+`** to show the formulas and notice that all the cell references in our existing formulas have been adjusted, even the absolute references previously pointing to cell H2.
16. Press **Ctrl+`** to hide the formulas, then **Ctrl+Z** or  to undo the inserted row.
17. Click on row **2** and press the **Delete** key to clear the contents from the row. Note the commission formulas are blank because the commission rate number have been cleared, but the commission formulas remain intact.
18. Undo the clearing of the content in row **2**.
19. Right-click on row **2** and choose **Delete**. Note how this has “broken” all the commission formulas as they were referring to a cell located in that deleted row.
20. **Undo** the deletion of row **2**.
21. Close **Formulas.xlsx**.

	Comm
0	#REF!
1	#REF!
1	#REF!
0	#REF!
1	#REF!
3	#REF!

Unit IV: Functions



Open **Northern Sales.xlsx**

Topic A: Entering Functions

The Structure of Functions

Performing calculations on each value in a range of cells can be complicated and time consuming. For example, if you have a range of 20 cells a formula that adds the value in each cell will be long. To simplify such long or complex tasks use Excel functions. If you insert cells within the range used in a function, the function will automatically adjust to include the new cells.

A function is a predefined formula that performs a specific calculation or other action on numbers or text. You specify the values on which the function performs the calculations. Functions have the following structure, or syntax:

=FUNCTIONNAME(ARGUMENT1,ARGUMENT2, ...)

Like formulas, functions begin with an equal sign. Following that is the name of the function and then a set of parentheses enclosing the input values for the function.

Arguments are the input values of a function. Arguments can be numbers, text, cell addresses, ranges, or other functions or formulas. NOTE: When an argument is bracketed by “[” and “]” this implies that the argument is optional.

The SUM Function

One of the most commonly used functions is SUM, which calculates the total of all of the values listed in its arguments. It has the following structure:

=SUM(number1,number2, ...)

Examples of SUM functions and comparison to a formula:

	A
1	10
2	20
3	30
4	40

Exhibit: Sample data

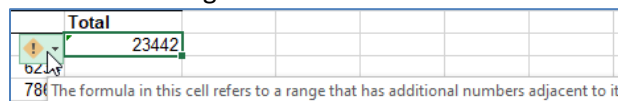
Function	Equivalent Formula	Result
=SUM(A1,A2)	=A1+A2	30
=SUM(A1,A4)	=A1+A4	50
=SUM(A2,100)	=A2+100	120
=SUM(A1:A4)	=A1+A2+A3+A4	100

Contiguous range references

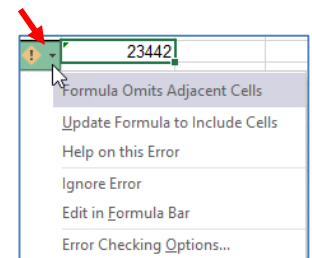
To enter a contiguous range of cells in a formula or function, type the first cell in the range, followed by a colon (:), and the last cell in the range. For example, in the example above, the sum of cells A1, A2, A3, and A4 is written as: **=SUM(A1:A4)**

Exercise A-1

1. Open **Northern Sales.xlsx**.
2. Select **G5**, and type **=sum(C5:F5)**
3. Type **)** or simply press **Enter** and the closing parentheses will be added (*if working with a single pair of parentheses*).
4. Select **G5** and notice the Error Checking button as shown below.



5. Click the **Error Checking** button and note the warning that there was data in adjacent cells (B5) that was omitted. As we did not want that data (Emp #), this is not an actual error – *just an alert*. You can disregard the warning as the small green triangle in the upper-left corner of the cell does not appear when you print the spreadsheet.
6. Edit **F5** to read **1000**, pressing **Enter** when done. Observe the change in **G5**.



Using the Mouse to Enter a Range Reference

Faster yet, to create a range using the mouse click on the first cell of the range and drag the mouse through the cells that are to be used in the Function. This will create a range value when the mouse is released.

Exercise A-2

1. Select cell **G6**, and type **=SUM(**
2. With your mouse, click and drag from C7 to F7, as shown.
3. Press **Enter** when done.
4. Copy the function you just created in **G7** down using the fill handle (double-click).

Qtr1	Qtr2	Qtr3	Qtr4	Total
6354	7546	7635	9595	23442
7546	6574	5767	6234	=sum(C6:F6)
7635	4765	5256	7865	SUM(number1, [number2], ...)

Topic B: AutoSum

Entering references for a long range in a sum formula can be a tedious task prone to error. Excel's AutoSum feature automatically inserts the Sum formula and arguments for a function

Applying AutoSum


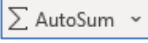
When you select a cell and click the AutoSum button, Excel guesses the range of values you want to use as the argument. For example, if you use the button at the bottom of a column of numbers, Excel assumes that the cells above the current cell should be used as the function argument. However, this guess is not always what you want. You can either accept this argument or enter your own. **Shortcut key: Alt+=.**

#	Qtr1	Q
16	6354	
22	7546	
27	7635	
29	9595	
42	8765	
	=SUM(C5:C9)	
	SUM(number	

Using AutoSum to enter several functions

AutoSum can also enter SUM functions at several locations simultaneously. For example, if you want to enter totals at the bottom of several columns of values, select all the cells that should contain the SUM function and then click the Auto Sum button. Although this process is simple and fast, you need to ensure that the cells you select for inserting the functions are correct.

Exercise B-1

1. Select cell **C10**.
2. From the **Home** tab, **Editing** group, click the  button (not drop-down arrow).
3. Observe the highlighted cells in the worksheet.
4. Press **Enter**.
5. Select cells **D10:G10**.
6. Click , and note that all column totals have been added to the worksheet.

#	Qtr1	Q
16	6354	
22	7546	
27	7635	
29	9595	
42	8765	
	=SUM(C5:C9)	
	SUM(number	

Topic C: Other Common Functions**Statistical functions**

Excel provides hundreds of functions, from simple to complex. The functions list includes frequently used functions such as AVERAGE, MIN, MAX, COUNT, and COUNTA.

The AVERAGE Function

The AVERAGE function calculates the arithmetic mean of a list of values. The function has the following syntax:

=AVERAGE(number1,number2, ...)

In this function, the arguments *number 1* and *number2* specify the values to be used in the calculation. Commas separate each argument. The average is determined by summing the values in the arguments and then dividing that sum by the number of values. Excel does not include blank cells when calculating the average. If the ranges you specify have no values in them, AVERAGE returns an error.

The MIN Function

The MIN function returns the smallest number from a list of values. This function has the following syntax:

=MIN(number1,number2, ...)

The MAX Function

The MAX function returns the largest number in a list of values and has the following syntax:

=MAX(number1,number2, ...)

The COUNT Function

The COUNT function will recognize **only cells that contain numbers**; it will not count any cells that are blank or that contain text. This function has the following syntax:

=COUNT(value1,value2, ...)

The COUNTA Function

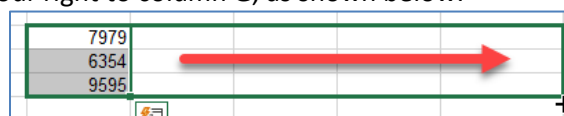
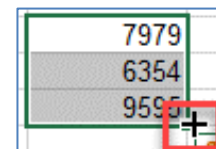
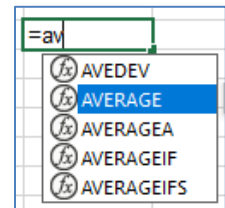
The COUNTA function will recognize **only cells that contain non-blanks**; it will not count any cells that are blank. This function has the following syntax:

=COUNTA(value1,value2, ...)

Exercise C-1




1. Select cell **C12**, type **=av**
2. You will see the AutoComplete list of functions that begin with “AV”
3. Either use the down-arrow key to highlight “**AVERAGE**”, then press Tab to select it – or double-click “**AVERAGE**” with your mouse to select it.
4. Select the cells you want to average by click and dragging from **C5:C9**, pressing **Enter** when you are done.
5. In **C13**, type **=min(**
6. Select cells **C5:C9**, pressing Enter when you are done.
7. In **C14**, type **=max(**
8. Select cells **C5:C9**, pressing Enter when you are done.
9. To copy each of these functions to the neighboring columns, select **C12:C14**.
10. Once the range is selected use your pointer to grab the **fill handle**.
11. Drag the fill handle to your right to column **G**, as shown below.



12. Close **Northern Sales.xlsx** without saving (CTRL+W).

Unit V: Formatting

 Open Regional Sales.xlsx

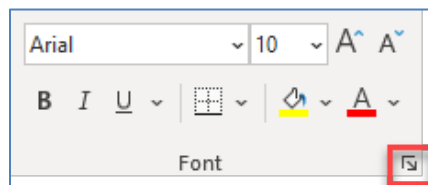
Topic A: Text Formatting

Text and Cell Formatting

You can format text and values by changing the font, font size, style, and color. You can format all the text in an active cell or only a selected portion of it. You can also select multiple cells and apply formatting to all of them at once. Formatting is very similar to Excel. As a general rule, you should wait to do formatting until after all the data entry and formula/function creation is done.

The Font Group

The fastest way to apply formatting is to use the commands in the Font group. This group (T: Home) provides tools for applying commonly used formats, such as boldface, italics, text color, background color, and borders. To format cells by using the Font group, select the cell or range you want to format and then click the formatting button you want. You can select a font and font size from the drop-down lists.



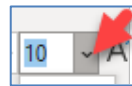
This Dialog Box Launcher opens Format Cells dialog box.

Formatting Non-Contiguous Ranges.

You can quickly apply formatting to cells that are not adjacent to each other. To do this in one step, you can select them as a non-contiguous (non-neighboring) range. To select a non-contiguous range, select the first cell or range; then hold down the **Ctrl** key and select other cells or ranges you want to include. You can then format this range as you would format any other selection.

Exercise A-1



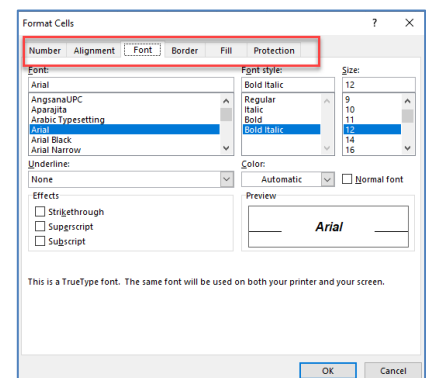
1. Open **Regional Sales.xlsx**.
2. Make sure cell **A1** is selected.
3. In the Font group, click **B Bold**, then change the font size to **14** points. 
4. Click on cell **A2**, then holding the **Ctrl** key down, also click on cell **b**. You have now selected non-contiguous cells and can quickly apply the same formatting to both cells at the same time.
5. In the Font group, click **B Bold**, then **I Italic**, and change the font size to **14** points.

The Format Cells Dialog Box

The Format Cells dialog box provides several formatting options. With the Font tab, you can set the font, style, size, and other options.

To use the Format Cells dialog box to format cells:

1. Select the cell or range you want to format.
2. Use the Dialog Box Launcher in the Font group, or right-click the selection and choose Format Cells to open the Format Cells dialog box.
3. In the Font tab apply the desired formatting options. You can see what the formatted cells will look like in the Preview box. Then click OK.



Topic B: Row and Column Formatting

Column Width and Row Height

You can apply various formats, such as borders and alignment, to customize the appearance of one or more cells in a row or column. You can also adjust the cell height and width. Doing so affects an entire row or column-you cannot change the height or width of an individual cell.

Excel automatically adjusts row height to accommodate the size of data in a row, while column widths need to be adjusted manually. There are several ways you can change column widths/row heights:

- **Drag the column border.** When you point to the border between two column headings, the pointer changes to a two-headed arrow. You can then drag the border to the left or right to decrease or increase the column width.
- **Double-click the column border (AutoFit).** This automatically sizes the column to fit the widest data it contains.
- **(Rarely Used) Set a specific numeric column size.** To do this, right-click a column label/row label and choose Column Width/Row Height. Then enter a width/height value and click OK.



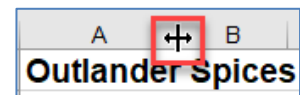
Setting the Width of Multiple Columns or Heights of Multiple Rows

To set several contiguous columns to the same width, select the columns and then use one of the methods above to change the width. This method also works for setting row height.

Exercise B-1

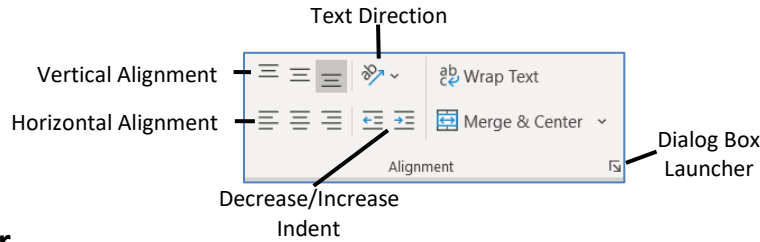


1. Select **A4**.
2. Point to the border between column **A** and **B** until you see the double-arrows.
3. Click and drag to the right until the date in **A4** is visible.
4. Put your pointer between columns **B** and **C** and double-click when you see the double-arrow. Observe it AutoFitted column B.
5. AutoFit column **G** (place pointer between G and H).
6. AutoFit column **A** and notice it used the regional titles as the widest entries in that column.
7. Reduce the width of column **A** so that the date is still visible in A4.
8. Select columns **C:H**, then place your pointer to the right of any of those column borders and drag to the right approximately ½ inch. Observe all the selected columns received the same width.
9. Select rows **2** and **14**, then place your pointer below either selected row and drag down about ¼ inch when you see the double-arrow. Observe that both rows have the same height.



Alignment Options

Alignment in Excel refers to the location of data in a cell. For example, the data you type can be aligned to the left, right, or center of a cell. Data can also be aligned vertically at the top, bottom, or middle of a cell. By default, text is aligned to the left and bottom of the cell, while values are aligned to the right and bottom. To align the contents of a cell or a range of cells, select the cell or range and click an alignment button in the Alignment group.



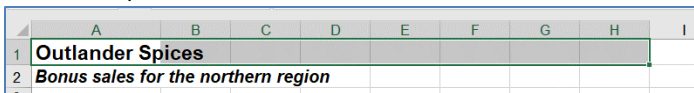
Merge & Center

The Merge & Center Icon centers data over a range of cells (instead of within a single column). To use it, select the cell containing the data you want to merge and center, and select the rest of the cells over which you want to center the data, then click the Merge & Center Icon (T: Home, G: Alignment).

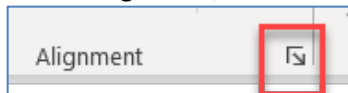
NOTE: As convenient as Merge & Center may seem, it actually puts limitations on what you can do with the data later - given that merged cells may prevent simple copy/paste, affect accuracy of formulas referring to those cell, and prevent you sorting the data. A better way is shown below:

Using Center Across Selection

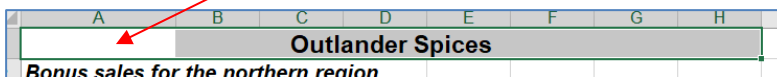
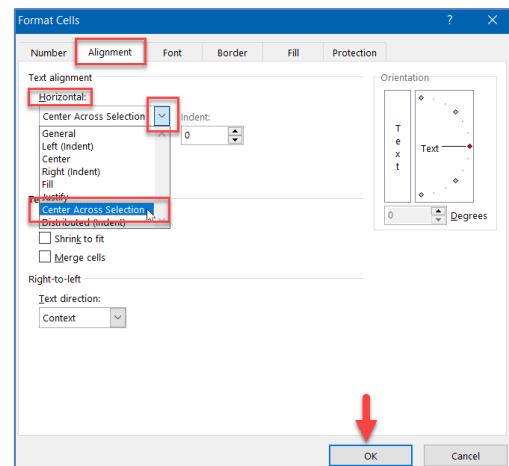
1. Whenever possible create all “titles” in Column A. After you have created your worksheet you can center that title across all the columns used in your worksheet.
2. Select the cell that contains your title and all other cells you want the title centered across (but not the entire row).



3. From the Home Tab, Alignment dialog box launcher, choose Alignment, Horizontal, **Center Across Selection**.



4. Click OK.
5. Your title should now be centered, and will remain centered if you change column widths, or insert new columns
(Note: In this example, the title text is still in cell A1).



Exercise B-2

- Center the "Outlander Spices" title by selection **A1:H1**, then using **Center Across Selection**.
- Select the labels in **A6:H6**, then hold your **Ctrl** key down and drag over **A16:H16**.
- Press **B** **Bold** in Font group, and **Center** in the Alignment group.

Name	Emp #	Qtr1	Qtr2	Qtr3	Qtr4	Total	Comm
Kendra James	16	6354	4846	3958	8284	23442	937.68
Alan Monder	22	7546	6574	5767	6234	26121	1044.84
Audrey Kress	27	7635	4765	5256	7865	25521	1020.84
Julie George	29	9595	5859	4879	3432	23765	950.6
Totals		31130	22044	19860	25815	98849	3953.96

Bonus sales for the southern region

Name	Emp #	Qtr1	Qtr2	Qtr3	Qtr4	Total	Comm
Michael Bobrow	16	5493	8732	7722	3990	25937	1037.48
Karen Anderson	22	8765	3224	8865	4936	25790	1031.6
James Hanover	27	3440	3958	5784	4601	17783	711.32
Kelly Palmatier	29	3716	8917	5662	3324	21619	864.76
Totals		21414	24831	28033	16851	91129	3645.16

- Select **A11** and **A21** ("Totals") and change the alignment to **Align Right**.

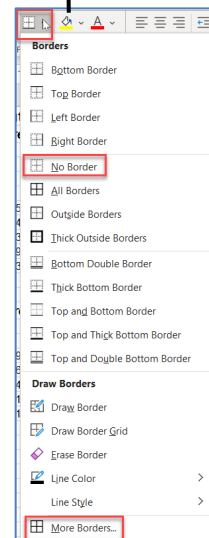
Cell Borders and Shading

Click the Borders Icon (T: Home, G: Font) to display a menu of border styles that you can apply to cells or ranges. For more options, choose More Borders to open the Format Cells dialog box with the Border tab active. To apply shading of selected cells, click on the Fill Icon or Fill Icon drop down arrow for different color choices


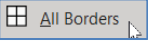
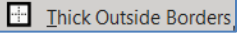
Removing borders

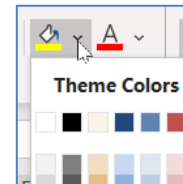
If you no longer want a border on a cell or range, you can remove it. Select the cell or range containing the border you want to remove. Then, from the Borders menu, choose No Border.

Shading



Exercise B-3

- Select **A6:H11**, hold the **Ctrl** key down, and select **A16:H21**.
- In the Font group, click the arrow  for the **Border** menu.
- Select .
- Click on any cell to deselect the selection.
- Select the labels in **A6:H6**, then hold your **Ctrl** key down and drag over **A16:H16**.
- Change the border to .
- Leave the cells selected and click the drop-down arrow for **Shading** and choose a light fill color.
- Click on any cell to deselect the selection.



Name	Emp #	Qtr1	Qtr2	Qtr3	Qtr4	Total	Comm
Kendra James	16	6354	4846	3958	8284	23442	937.68
Alan Monder	22	7546	6574	5767	6234	26121	1044.84
Audrey Kress	27	7635	4765	5256	7865	25521	1020.84
Julie George	29	9595	5859	4879	3432	23765	950.6
Totals		31130	22044	19860	25815	98849	3953.96

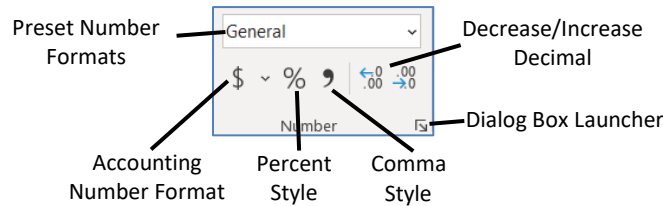
Bonus sales for the southern region

Name	Emp #	Qtr1	Qtr2	Qtr3	Qtr4	Total	Comm
Michael Bobrow	16	5493	8732	7722	3990	25937	1037.48
Karen Anderson	22	8765	3224	8865	4936	25790	1031.6
James Hanover	27	3440	3958	5784	4601	17783	711.32
Kelly Palmatier	29	3716	8917	5662	3324	21619	864.76
Totals		21414	24831	28033	16851	91129	3645.16

Topic C: Number Formatting

The Number Group

Numbers, including date and time data, can be displayed in many different formats. Actual cell values are not affected when you apply formatting. Dollar signs (\$), percent signs (%), and decimal places are examples of number formatting. By using number formats, you can make your worksheets easier to understand and call attention to specific data. The Number group provides several tools for formatting numbers.

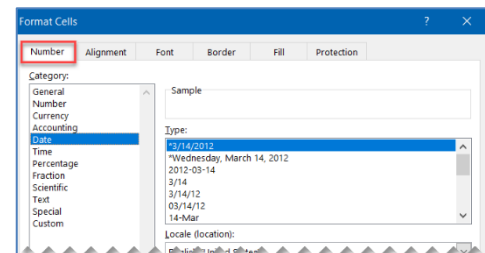


Sometimes number formatting will make the data too wide to be displayed at the current column width. When this happens, Excel displays a series of hash tag (#) instead of a truncated number. If ### are displayed, either increase the column width or change the formatting of the number.




Outlander Spices								
Bonus sales for the northern region								
7/18/2020 14:23							Comm_rate:	4%
Name	Emp #	Qtr1	Qtr2	Qtr3	Qtr4	Total	Comm	
Kendra James	16	\$ 6,354	\$ 4,846	\$ 3,958	\$ 8,284	\$ 23,442	\$ 938	
Alan Monder	22	\$ 7,546	\$ 6,574	\$ 5,767	\$ 6,234	\$ 26,121	\$ 1,045	
Audrey Kress	27	\$ 7,635	\$ 4,765	\$ 5,256	\$ 7,865	\$ 25,521	\$ 1,021	
Julie George	29	\$ 9,595	\$ 5,859	\$ 4,879	\$ 3,432	\$ 23,765	\$ 951	
Totals		\$ 31,130	\$ 22,044	\$ 19,860	\$ 25,815	\$ 98,849	\$ 3,954	
Bonus sales for the southern region								
Name	Emp #	Qtr1	Qtr2	Qtr3	Qtr4	Total	Comm	
Michael Bobrow	16	\$ 5,493	\$ 8,732	\$ 7,722	\$ 3,990	\$ 25,937	\$ 1,037	
Karen Anderson	22	\$ 8,765	\$ 3,224	\$ 8,865	\$ 4,936	\$ 25,790	\$ 1,032	
James Hanover	27	\$ 3,440	\$ 3,958	\$ 5,784	\$ 4,601	\$ 17,783	\$ 711	
Kelly Palmatier	29	\$ 3,716	\$ 8,917	\$ 5,662	\$ 3,324	\$ 21,619	\$ 865	
Totals		\$ 21,414	\$ 24,831	\$ 28,033	\$ 16,851	\$ 91,129	\$ 3,645	

The Format Cell dialog box

The Number tab in the Format Cells dialog box offers a variety of number formats, including dates, times, fractions, and scientific notation. To open the Format Cells dialog box with the Number tab active, click the Dialog Box Launcher button in the Number group on the Ribbon.



Exercise C-1

1. Select **C7:H11**, hold the **Ctrl** key down, and select **C17:H21**.
2. In the Number group, apply the  Accounting format.
3. You may notice some cells have the number/hash tags appearing in the cells.
4. Leaving the cells selected, click the  **Decrease Decimal** button **twice**, to display the values as whole dollars. This should resolve the width of the values and allow the values to be displayed correctly. If not adjust the widths of the affected columns.
5. Select cell **H4** and apply the  **Percent Style** to it.
6. Select the date in **A4** and use the preset **Number Format** drop-down menu to select **Short Date**.



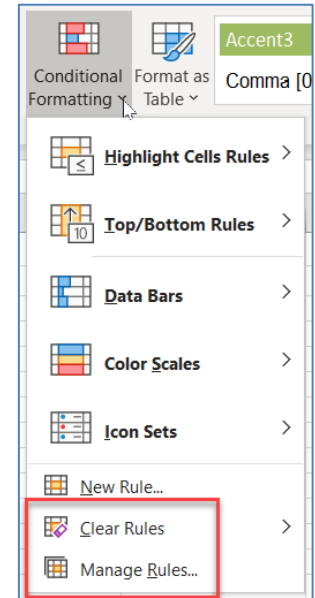
Topic D: Conditional Formatting

Applying Conditional Formatting

Conditional formatting is formatting that is applied to data only if one or more specific conditions are met. You can use color or other formatting to highlight values that meet a condition that you set. For example, you can highlight in green all sales figures that exceed \$75,000 or highlight in red all sales figures that do not meet a certain quota, or any duplicate values. You can apply conditional formatting based on a cell value or a formula.

To conditionally format data:

1. Select the cell or range containing the values to which you want to apply conditional formatting.
2. In the Styles group, click Conditional Formatting.
3. Do one of the following:
 - Choose a condition and rule from the menu.
 - Choose New Rule. Then specify a condition and format in the New Formatting Rule dialog box.



Modifying Conditional Formatting Rules

You can use the **Rules Manager** to edit or delete conditional formatting rules.

To edit a conditional formatting rule after you have applied it:

1. From the Conditional Formatting menu, choose Manage Rules to open the Conditional Formatting Rules Manager dialog box.
2. Double-click the rule you want to edit to open the Edit Formatting Rule dialog box.
3. Select settings as needed. For example, to make data bars more accurately reflect their proportions to one another, select Number from the Type list under Minimum, and then type 0 (zero) in the Value box.
4. Click OK to close the Editing Formatting Rule dialog box.
5. Click Apply to apply the revised conditional format.
6. Click OK to close the Condition Formatting Rules Manager.

Data Bars

You can create the effect of a bar chart superimposed on a table of values by applying *data bars*. Data bars show the values in cells relative to other cells in a range. A data bar's length represents the cell's value.

It is often helpful to widen the column in which you apply data bars. The bars' lengths are affected by the column width.

To create data bars:

1. Select the range of cells in which you want to display data bars.
2. Click Conditional Formatting Icon (T: Home, G: Styles), choose Data Bars, and select an option.

Qtr1	
\$	6,354
\$	7,546
\$	7,635
\$	9,595

Color Scales

Like data bars, color scales are used to format cells depending on their values. Color scales are applied based on a continuum of colors that correspond to the cell's values. This continuum can be based on shades of one color; for instance, the lowest values can be a dark green while the highest values show a light green. You can also show a transition between two or three colors, such as greens for lower values, yellows for middle values, and reds for higher values.

Qtr1	
\$	6,354
\$	7,546
\$	7,635
\$	9,595

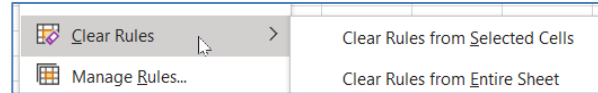
Icon Sets

You can also use conditional formatting to divide values graphically into groups. For example, you can assign stars to show ratings, arrows to show direction, or colored flags to indicate acceptance. To create this effect, apply *icon set* conditional formatting.

Qtr1	
◆ \$	6,354
▲ \$	7,546
▲ \$	7,635
● \$	9,595
\$	31,130

Clearing rules

To clear a rule and delete it from the Conditional Formatting Rules Manager, you can use either of the following methods:



- Select the cell or range containing the rule. Click Conditional Formatting and choose Clear Rules, Clear Rules from Selected Cells. (Or choose Clear Rules, Clear Rules from Entire Sheet to clear all rules.)
- Click Conditional Formatting and choose Manage Rules. From the "Show formatting rules for" list, select This Worksheet. Select the rule you want to clear and click Delete Rule.

Exercise D-1



1. Select **C7:F10** and apply **Conditional Formatting, Highlight Cell Rule, Greater Than...** and enter **7500**.
2. Click **OK** and observe which cells are highlighted.
3. Change cell **E8** to **8000** and notice the highlight change after you press **Enter**.

	Qtr1	Qtr2	Qtr3	Qtr4
\$	6,354	\$ 4,846	\$ 3,958	\$ 8,284
\$	7,546	\$ 6,574	\$ 8,000	\$ 6,234
\$	7,635	\$ 4,765	\$ 5,256	\$ 7,865
\$	9,595	\$ 5,859	\$ 4,879	\$ 3,432

Topic E: Additional Formatting Options

The Format Painter

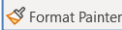
You can use the Format Painter to copy formats from one cell or range to other cells. This can save a lot of time, especially if you are working with multiple worksheets and you want to ensure that your data formatting is consistent. Use the following steps:

1. Select the cell or range that has the formatting you want to copy.
2. In the Clipboard group on the Home tab, click Format Painter to copy the selection's formatting.
3. Select the cell or range to which you want to copy the formatting.

To clear formatting, select the cell or range you want to clear. In the Editing group, click the Clear button and choose Clear Formats.

Exercise E-1




1. Select cell **C7** and click the  **Format Painter** in the Clipboard group.
2. **Click and drag** over the quarterly sales figures for the Southern Region, cells **C17:F20**.
3. Observe the conditional formatting has been copied to those cells.

	Qtr1	Qtr2	Qtr3	Qtr4
\$	5,493	\$ 8,732	\$ 7,722	\$ 3,990
\$	8,765	\$ 3,224	\$ 8,865	\$ 4,936
\$	3,440	\$ 3,958	\$ 5,784	\$ 4,601
\$	3,716	\$ 8,917	\$ 5,862	\$ 3,324

4. Remove all conditional formatting by selecting **Condition Formatting, Clear Rules, Clear Rules from entire sheet**.
5. Close **Regional Sales.xlsx** without saving (Ctrl+W).

Unit VI: Chart

 [Open 2013 sales.xlsx](#)

Topic A: Chart Basics

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

Understanding Charts

Excel has several different **types of charts**, allowing you to choose the one that best fits your data. Not all chart types are appropriate for all data, so in versions 2013 and newer, Excel now will offer **recommended chart types** based upon the data you have selected.



TIP: Most “Charting Accidents” are due to not selecting the correct data, so selection is critical. You can select both the data labels and values at the same time. If labels and values are separated, use the CTRL key to select the non-contiguous data.

Anatomy of a Chart

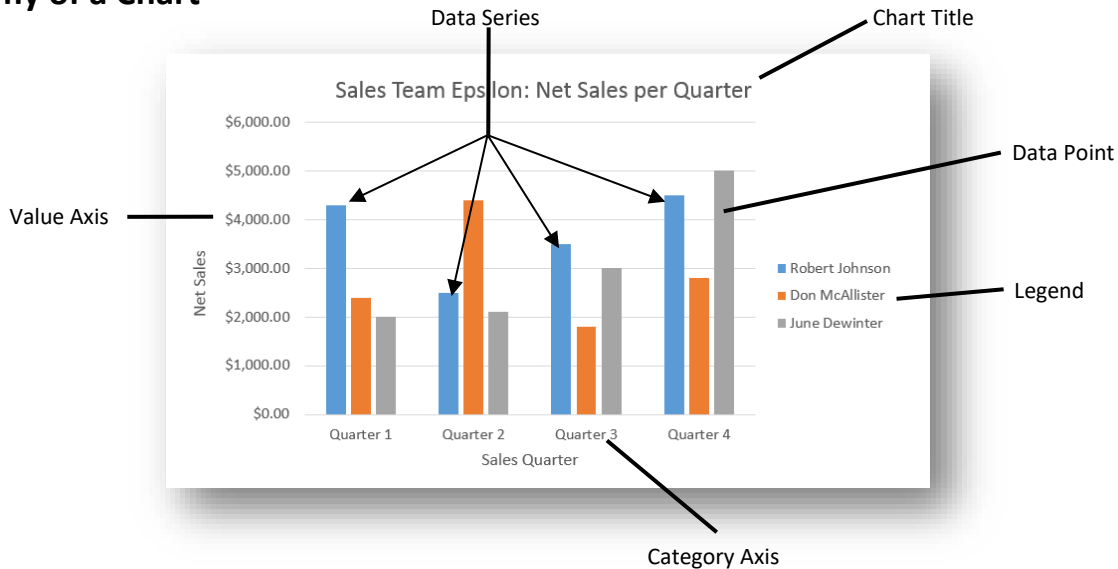


Chart Elements

Value Axis: The **vertical axis** (also known as the **Y axis**) is part of the chart that provides the scale for all data points in the chart, based on the values in the selected range. In this example, the measured value is each salesperson's net sales.

Category Axis: The **horizontal axis** (also known as the **X axis**) is the part of the chart that identifies the categories in the chart, as defined in the first row of data in the selected range. In this example, each sales quarter is placed in its own **group**.

Data Point: Is one data **value** from a specific cell in the selected range.

Data Series: The **data series** consists of the related data points in a chart.

Legend: The **legend** identifies which data series each **color** on the chart represents. In this example, the legend identifies the different salespeople in the chart.

Chart Title: The title should clearly describe what the chart is illustrating.

Creating and Moving a Chart

To create a chart:

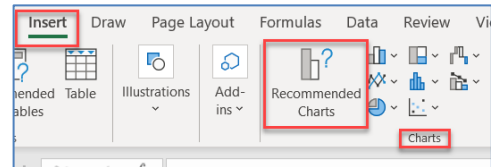
1. Select the data that you want to include in the chart. This data should include all values you want to display in the chart, plus any text that identifies those values.
2. On the Ribbon, click the Insert tab.
3. In the Charts group, click the desired chart type; then choose a sub-type from the gallery to insert the chart in the worksheet.
4. While the chart is selected, Excel displays two Chart Tools contextual tabs, labeled Design and Format. Use the options on these tabs to format and customize the chart as needed.
5. If necessary, move the chart to the desired location on the worksheet. To move a chart, point to an empty area in it or to a chart border, and drag it.

Chart data

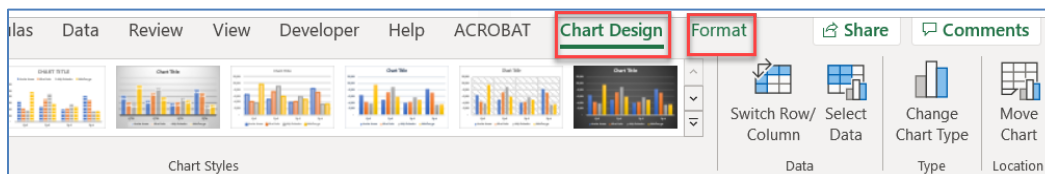
There is a link between the data from which you create a chart and the chart itself. Therefore, if you update any of the source data, the change is reflected immediately in any charts based on that data.

Exercise A-1

1. Open **2013 sales.xlsx**.
2. Select cells **A4:E8**.
3. Click on the **Insert** tab, and in the **Charts** group select **Recommended Charts**.



4. Scroll through the recommended chart types. Select one to preview it on the right using the actual data in your worksheet.
5. Select the **first** chart type (**Clustered Column**) and click **OK**.
6. Observe that the chart appears as an object on the worksheet, and that two new contextual tabs now appear in the **Ribbon, Chart Design and Format**. NOTE: These appear only when a chart is selected.



7. Change cell **B5** to **9000**, pressing **Enter** when done, and see the chart update to reflect the edit.

Moving Charts within Workbooks


In addition to moving a chart on a worksheet, you can move a chart to a separate sheet, known as a chart sheet. A chart sheet shows only the chart, not the data from which it was drawn.

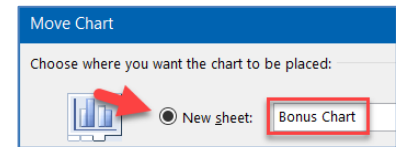
To move a chart to a separate chart sheet:

1. Click the chart to select it and to display the Chart Tools tabs.
2. Click the Design tab.
3. In the Location group, click Move Chart to open the Move Chart dialog box.
4. Select New sheet and enter a name for the chart sheet. (Excel provides a default name that you can edit.)
5. Click OK.

To move a chart from a chart sheet to a worksheet, open the Move Chart dialog box, select Object in, and select the worksheet in which you want to place the chart.

Exercise A-2

1. With the chart selected, from the **Chart Design** tab, **Location** group on the far right, click  **Move Chart**.
2. In the **Move Chart** dialog box, select **New Sheet**, and edit the name to read **Bonus Chart**.
3. Click **OK**.
4. Observe that it has created a new sheet to hold the chart, is still dynamically connected to the data, and is already set for full size printing.

**Pie Chart**

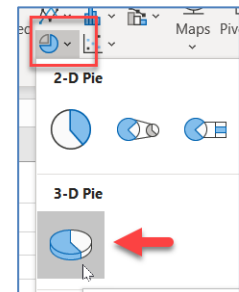
Pie charts are a popular data presentation format. Pie charts reveal the relative size of data points within a single data series. The pie is the sum of all data points in the series; each data point presents a percentage of the whole pie.

However, pie charts are typically not an effective chart type to use when one or more values in your data series are zero or negative values—these cannot be represented visually in a pie chart. Also, too many categories can result in overly small pie slices that do not communicate the data effectively.

Exercise A-3

1. Return to **Sheet 1** and select the label and values in cells **A4:A8**.
2. Hold the **Ctrl** Key down and select the label and values in cells **F4:F8**.

Outlander Spices					
Bonus Sales (2013)					
Name	Qtr1	Qtr2	Qtr3	Qtr4	Total
Kendra James	6,900	4,846	3,958	8,284	\$ 23,988
Mike Smith	4,222	7,245	4,213	7,111	\$ 22,791
Kelly Palmatier	3,716	8,917	5,662	3,324	\$ 21,619
Julie George	9,595	5,859	4,879	3,432	\$ 23,765
Totals	\$ 24,433	\$ 26,867	\$ 18,712	\$ 22,151	\$ 92,163



3. From the **Insert** tab, **Charts** group, click the **Pie chart** menu and select **3-D Pie** from the list.
4. Move your pointer to the edge of the chart, and once you see the **four-way arrow**, drag the chart below the data.
5. Change cell **B5** to **15000** to see both charts update.

**Topic B: Formatting Charts and Other Options****Modifying Charts**

You can modify charts in a variety of ways, including changing the chart type, applying various predefined styles and layouts, and customizing labels.

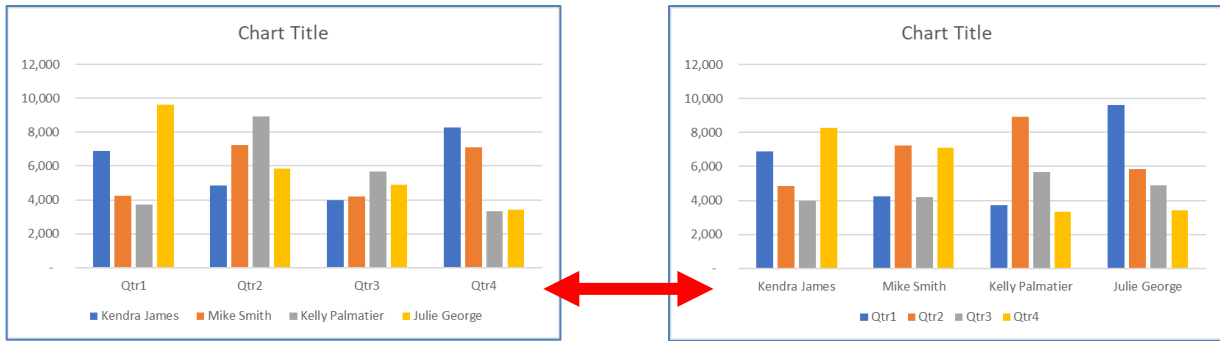
To Switch Row and Column Data:

Sometimes you may want to change the way charts **group** your data. In both cases, the chart contains the same data—it is just organized differently.

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



3. The **legend** and **category axis** will be switched.



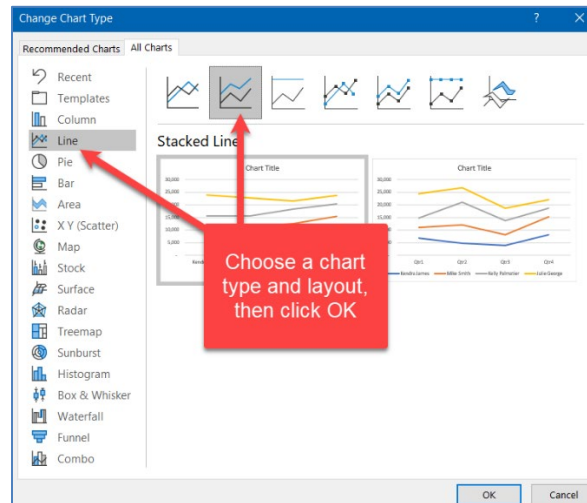
To Change the Chart Type, Style, and Options:

If you find that your data is not well suited to a certain chart, it is easy to switch to a new **chart type**.

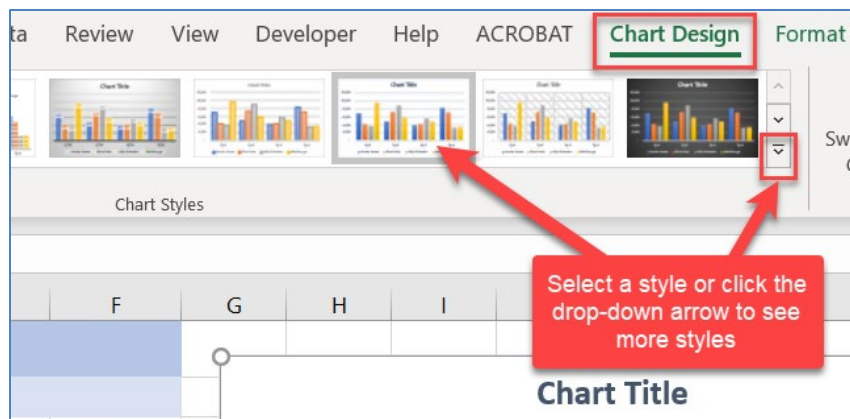
1. From the Chart **Design** tab, **Type** group, click the **Change Chart Type** command.



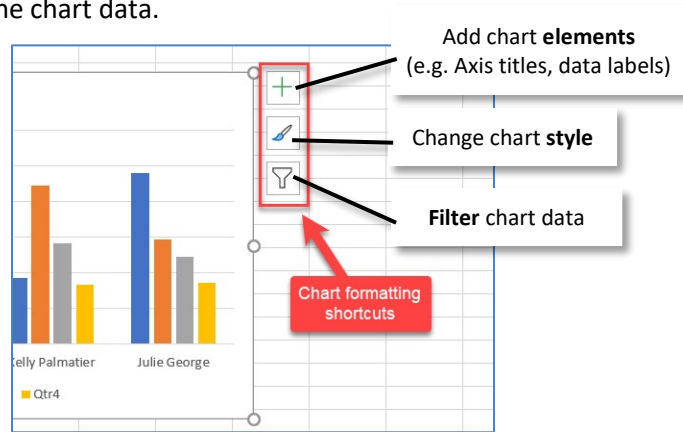
2. The **Change Chart Type** dialog box will appear. Select a new chart **type** and **layout**, then click **OK**.



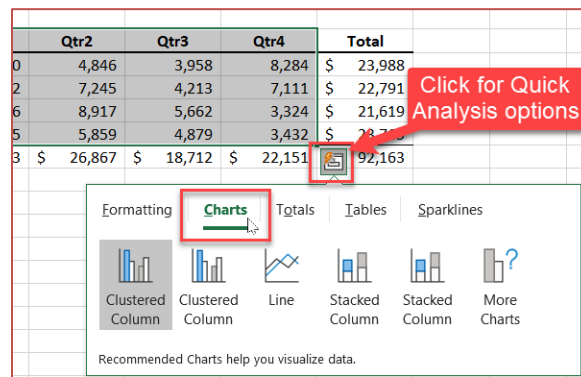
- Excel also includes several different **chart styles**, which allow you to quickly modify the look and feel of your chart. To change the chart style, select the **desired style** from the **Chart styles** group.



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



TIP: Charts can also be created “on the fly” by using the **Quick Analysis** icon that appears after selecting cells.



Exercise A-4

- Practice **modifying** charts by using:
 - Switch Row and Column.**
 - Change chart type.
 - Change the chart style.
 - Add chart elements, like data labels.
- Close **2013 sales.xlsx** (Ctrl+W).

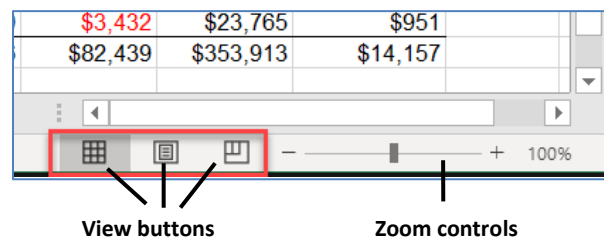
Unit VII: Printing

Open **Bonus sales.xlsx**

Topic A: Preparing to Print

View Options


When you are viewing a worksheet the status bar contains buttons that provide viewing options. The **Normal View** button on the left is the default option. Click the middle **Page Layout** button to switch to Page Layout view. You can drag the slider on the right side of the status bar to **zoom** in and out to see more pages or more detail.

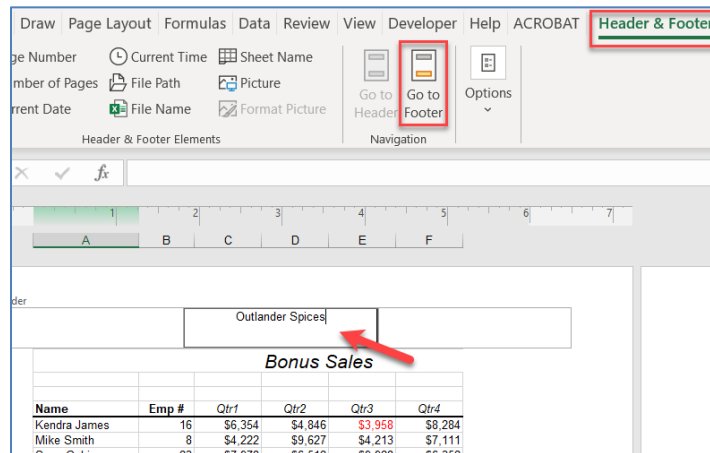



Previewing a Worksheet

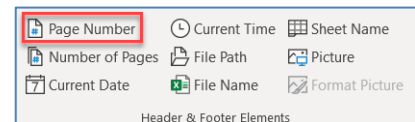
To preview a worksheet as it will look when printed, click the File tab, and then click Print (Ctrl + P). Previewing a worksheet allows you to see how your page setup choices will affect a printout.

Exercise A-1

1. Open **Bonus sales.xlsx**.
2. Using the **View** buttons in the lower-right corner, switch to  **Page Layout** view.
3. Observe that Page Layout view is like a “working print preview” where you can still edit your worksheet, but you also see your data as it will appear on a printed page. You can **add or edit Headers and Footers** in Page Layout.
4. Click in the center **Header** box and type **Outlander Spices**.



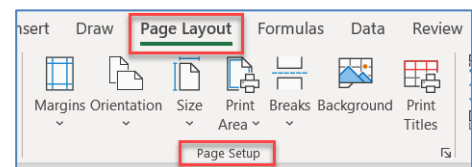
5. Observe the contextual **Header & Footer** tab that now appears in the Ribbon.
6. In that same tab, in the **Navigation** group, select **Go to Footer**.
7. In the center Footer box, click the **Page Number** field to add page numbers to your print out.
8. Click on **Go to Header** in the **Navigation** group, then select any cell in the middle of your worksheet to see your header and footer information.
9. Click the  **Normal** view button to exit **Page Layout**.



Topic B: Page Setup Options

Page Orientation, Scaling, and Options

The Page Layout tab in the Ribbon contains the Page Setup group, where you can change margins, orientation, and paper size. The challenge is that when you make setup changes here, you will not be able to visually see how it impacts the printed page without returning to Print Preview or Page Layout view. Thus, it is recommended that you make your page setup changes directly from the Print screen so that you can see the impact of those changes in the preview of the printed page.




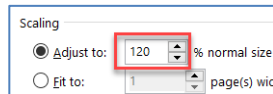
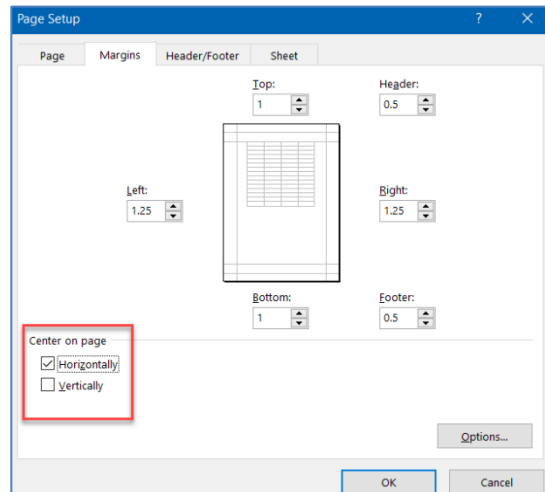
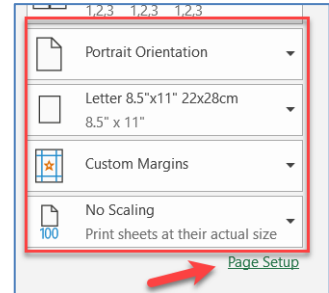
On the File tab, click Print to display your print options, which include page orientation, collation, paper size, margins, and scaling (all features found on Page Layout tab). Depending on the worksheet, either Portrait or Landscape orientation will be set. By using Landscape orientation, you can fit more data from left to right than from top to bottom. You can also change scaling settings to fit your data. At the bottom of the print options,

choose No Scaling (the default setting) and choose either Fit All Columns on One Page or Fit Sheet on One Page, depending on which is better suited for your worksheet. As you change print setup options, the preview window shows you how your worksheet will look when printed.

Exercise B-1



1. Click the **File** tab, then **Print** to see a preview of your worksheet.
2. Note at the bottom of the preview that the worksheet is currently set to print on two pages. 
3. In the lower-left corner of the **Print** screen you can the main **Page Setup options**, as well as a **link** that takes you to the **Page Setup** dialog box with all options.
4. Click **Orientation** and change to **Landscape**. Note the preview indicates it will now fit on a single page.
5. Click on the **Page Setup** hyperlink to access the dialog box.
6. On the **Margins** tab, under Center on page, **check the box** for **“Horizontally”**, then click **OK**.
7. Observe preview shows the data perfectly centered horizontally on the page.
8. From the Print screen, click the **Scaling** menu at the bottom, then select **“Custom scaling options...”** from the menu.
9. Change the **Scaling “Adjust to”** to read **120**, then click **OK**. Observe the text will now appear larger on the printed page.



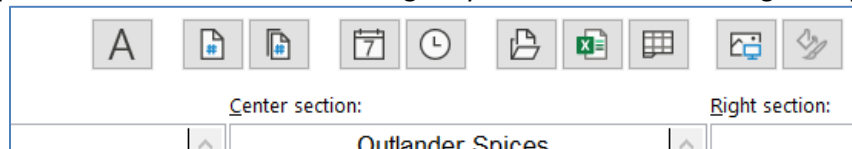
Page Setup Notes:

Margins

- A margin is the space between the edge of a page (worksheet) and its content.

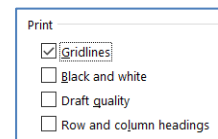
Headers and Footers

- A header and footer on each page can provide information about a worksheet, such as the current date, page number, workbook or worksheet name, company logo, or combinations of these and other options. This can be done in the Page Layout view or from the Page Setup dialog box.



Sheet Options

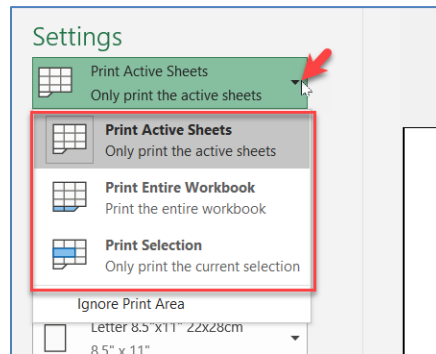
- The Sheet tab of the Page Setup dialog box (T: Page Layout, G: Page Setup I: Print Titles) is useful for multipage worksheets. You can use the Print titles section to define row or columns that should be repeated on every page of the printout. You can choose to print the gridlines around each cell, as well as the Column and Row headings. NOTE: Printing gridlines does not affect borders that were added manually.



Topic C: Printing Worksheets

Selecting Printing Options

When you are ready to print click the File tab and then click Print. or simply press Ctrl+P. On the Print page, you can select the printer you want to use (if more than one printer is available), the number of copies, what range of pages to print, Print one or two sided, and whether you want multiple copies collated. You can also choose to print the active sheet, the entire workbook, or the current selection.



Print Choice	Result
Print Active Sheets	Prints all data on the selected sheet(s).
Print Entire Workbook	Prints all worksheets that have data in the workbook, but only that portion of each worksheet that has data.
Print Selection	Prints the cell or range of cells that are currently select. If multiple non-contiguous ranges are selected, each will print on a separate page.

Printing a current selection

To print only a range of cells:

1. First, select the range you want to print.
2. Click the File tab and then click Print.
3. Under Settings, click Print Active Sheets (the default selection) and choose Print Selection.
4. Click Print.

NOTE: Printing options are worksheet specific. Print Selection is a sticky menu so if you need to print the entire worksheet you need to reselect Print Active Sheets.

Exercise C-1



1. Click the **File** tab, then **Print**.
2. Review the **Print Setting** options.
3. Close **2013 sales.xlsx**.