

Excel Essentials

Student Manual

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Module 1: Getting Started	1
Module 2: Create and Manage Worksheets and Workbooks Create Worksheets and Workbooks Navigate in Workbooks and Worksheets Modify Worksheets Format Workbooks Customize Options for Worksheets and Workbooks Configure Worksheets and Workbooks for Distribution Module Two: Review Questions	oks2
Module 3: Manage Data Cells and Ranges Insert Data in Cells and Ranges Format Cells and Ranges Summarize and Organize Data Module Three: Review Questions	43
Module 4: Create Tables Create and Manage Tables Manage Table Styles and Options. Filter and Sort a Table Module Four: Review Questions.	72 72 76 78 78
Module 5: Perform Operations with Formulas and Funct Building Formulas Perform Basic Functions Perform Conditional Functions Format and Modify Text Using Functions Module Five: Review Questions	ions88
Module 6: Use Quick Analysis, Charts and Objects Analyze Data with Quick Analysis Create Charts Format Charts Insert and Format Objects Module Six: Review Questions	117 118 123 127 135 141
Module 7: Wrapping Up Words from the Wise	142

When men yield up the privilege of thinking, the last shadow of liberty quits the horizon.

Thomas Paine

Module 1: Getting Started

Welcome to the Excel 2016 Essentials workshop. Get ready to improve your Core Data Analysis, Manipulation, and Presentation skills by learning the core skills to succeed with Microsoft Excel 2016.



Workshop Objectives

Research has consistently demonstrated that when clear goals are associated with learning, it occurs more easily and rapidly. With that in

mind, let's review our goals for today.

At the end of this workshop, participants should be able to:

- Create worksheets and workbooks
- Navigate in worksheets and workbooks
- Format worksheets and workbooks
- Change views and configurations
- Print and distribute worksheets and workbooks
- Manage data cells and ranges
- Create tables, charts and objects
- Perform operations with formulas and functions

Before the beginning of great brilliance, there must be chaos. Before a brilliant person begins something great, they must look foolish in the crowd.

Lao-Tsu

Module 2: Create and Manage Worksheets and Workbooks

Worksheets live in workbooks in Excel and create the building blocks of documenting, analyzing, manipulating, and presenting data. This module will help you get started by creating worksheets and workbooks. You'll also learn how to navigate your way around Excel worksheets and workbooks. We'll take a look at formatting both worksheets and workbooks. Then you'll learn how to customize your options and views while working within Excel. Finally, we'll take a look at distributing your worksheets and workbooks via printing or sharing.

Create Worksheets and Workbooks

Create a Workbook

A blank workbook allows you to start from scratch.

Here's how to create a blank workbook.

- 1. If the Backstage view is not showing, select the **File** tab from the Ribbon. Select **New**.
- 2. From the **New** tab, or if you have just opened Excel 2016, select **Blank Workbook**.

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Open a Comma Separated Values File

Many programs and services allow you to create or download a comma separated values (or CSV) file that contains your data. Excel can open these files.

Here's how to open a comma separated values file. This example uses the **Sample CSV.csv** file.

- 1. Select the **File** tab to open the Backstage view.
- 2. Select Open.
- 3. Select Browse.



- 4. Navigate to the location of the file you want to import.
- 5. Make sure in the Open dialog box to choose "All Files" or "Text Files" from the types drop down list.



6. Highlight the file you want to open and select **Open**.

Add a Worksheet to An Existing Workbook

Workbooks can be made up of more than one sheet, which can be useful as you get into more advanced data analysis.

Here's how to insert a new worksheet. This example uses the **quick analysis.xlsx** file.

1. Click the New Sheet plus sign at the bottom of the window.

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6 Coho Vineyard	Beverage	\$228,783	\$659,385											
7 Contoso, Ltd	Misc	\$239,219	\$287,989											
8 Contoso Pharmaceuticals	Medical	\$371,570	\$644,368											
9 Consolidated Messenger	Tech	\$579,825	\$448,399											
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Excel opens the new worksheet to the first cell, so that you can begin entering data right away.

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Navigate in Workbooks and Worksheets

Search for Data

Use Excel's search feature to find specific text or numbers in a workbook.

Here's how to search for text or numbers in a workbook. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **Home** tab on the Ribbon.
- 2. Select Find & Select.
- 3. Select Find.

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4. In the Find and Replace dialog box, enter the text or numbers you want to find.



5. To search the entire workbook, select Options and select Workbook from the Within drop down list.

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6. Select **Find Next** to find each instance individually. Select **Find All** to see a list of locations where the item is found.

Navigate to a Named Cell

Complicated workbooks may make use of Names to refer to a specific cell or cells. The Go To dialog box can help you navigate to that location or to a specific cell address.

Here's how to navigate to a named cell. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **Home** tab on the Ribbon.
- 2. Select Find & Select.
- 3. Select Go To....
- Select the named reference from the list of locations or type in a cell address such as A2 or type in the address of range of cells such as A1:D16.

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Go to:		
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Note: Your Go To dialog box may have different entries listed than those shown in the image above.

5. Select OK.

The named reference, cell address or range is highlighted.

Insert and Remove Hyperlinks

Hyperlinks provide a clickable shortcut to another location.

Here's how to insert a hyperlink. This example continues using the **quick analysis.xlsx** file.

- 1. Select the cell where you want to create a link to another location.
- 2. On the Insert tab of the Ribbon, select Link.

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3. Select Insert Link.

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- 4. A dialog box appears allowing you to link to:
 - An existing file or web address
 - Another place in the current document
 - An entirely new document
 - An e-mail address

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- 5. As needed click the appropriate Link to icons from the left side of the dialog box.
- 6. Enter the address to link to, or browse for a link destination.
- 7. Add or modify the text to serve as the link in the **Text to Display** field.
- 8. Select OK.

The text is colored and underlined to indicate a link.

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3	Adventure Works	Travel	\$123,721	\$733,396											
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554											
5	City Power & Light	Utilities	\$299,293	\$674,295											
6	Coho Vineyard	Beverage	\$228,783	\$659,385											
7	Contoso, Ltd	Misc	\$239,219	\$287,989											
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368											
9	Consolidated Messenger	Tech	\$579,825	\$448,399											
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474											
11	Fourth Coffee	Beverage	\$876,740	\$567,216											
12	Granhic Design Institute	Education	\$788 390	\$540.282											-
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Here's how to remove a hyperlink. This example continues using the **quick analysis.xlsx** file.

- 1. Right click on the hyperlink.
- 2. Select **Remove Hyperlink** from the context menu.



The text remains but the link is removed.

Hide or Unhide Columns and Rows

You can temporarily hide information in your worksheet to help you limit what is shown or printed.

Here's how to hide columns or rows. This example continues using the **quick analysis.xlsx** file.

1. Highlight the column(s) or row(s) you want to hide.

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2. Right click and select **Hide** from the context menu.



The information is hidden and a double line indicates the missing column(s) or row(s).

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Here's how to unhide columns or rows. This example continues using the **quick analysis.xlsx** file.

 Highlight the column(s) to the left and right of the hidden column you want to unhide. For example, highlight columns A and D if you want to unhide columns B and C. Or if you want to unhide some row(s), highlight the rows above or below the hidden row you want to unhide.

А	D
Company	Q2 Sales
A. Datum Corporation	\$746,907
Adventure Works	\$733,396
Blue Yonder Airlines	\$246,554
City Power & Light	\$674,295
Coho Vineyard	\$659,385
Contoso, Ltd	\$287,989
	A Company A. Datum Corporation Adventure Works Blue Yonder Airlines City Power & Light Coho Vineyard Contoso, Ltd

2. Right click and select **Unhide** from the context menu.



The column(s) or row(s) are now unhidden.

Hide or Unhide Sheets

Entire worksheets can also be hidden.

Here's how to hide a worksheet. This example continues using the quick analysis.xlsx file.

- 1. Right click on the tab you want to hide at the bottom of the Excel window.
- 2. Select **Hide** from the context menu.

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The worksheet tab is removed from the bottom of the Excel window.

4)	Sheet1	+
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Here's how to unhide a worksheet. This example continues using the **quick analysis.xlsx** file.

- 1. Right click on any tab at the bottom of the Excel window.
- 2. Select Unhide from the context menu.



3. In the **Unhide** dialog box, select the sheet you want to restore.

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4. Select OK.

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Modify Worksheets

Insert and Delete Table Rows and Columns

Edit your worksheets by inserting and deleting rows and columns.

Here's how to add a new row. This example continues using the **quick analysis.xlsx** file.

- 1. Highlight the row below where you want to insert a row by clicking to the left of the row number.
- 2. Select **Insert** from the **Home** tab on the Ribbon.
- 3. Select Insert Sheet Rows.

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The blank row is added above the selected row. It is highlighted and ready for you to add text.

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Here's how to delete a row. This example continues using the **quick analysis.xlsx** file.

1. Highlight the row you want to delete by clicking to the left of the row number.

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1	Company	Industry	Q1 Sales	Q2 Sales						
2	A. Datum Corporation	Tech	\$195,449	\$746,907						
3	Adventure Works	Travel	\$123,721	\$733,396						
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554						
5	City Power & Light	Utilities	\$299,293	\$674,295						
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7	💎 ho Vineyard	Beverage	\$228,783	\$659,385						
8	Contoso, Ltd	Misc	\$239,219	\$287,989						
9	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368						
10	Consolidated Messenger	Tech	\$579,825	\$448,399						
11	Fabrikam, Inc.	Utilities	\$639,630	\$635,474						

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

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3. Select **Delete Sheet Rows**.

The row is deleted.

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6	Coho Vineyard	Beverage	\$228,783	\$659,385						
7	Contoso, Ltd	Misc	\$239,219	\$287,989						
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368						
9	Consolidated Messenger	Tech	\$579,825	\$448,399						
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474						
11	Fourth Coffee	Beverage	\$876,740	\$567,216						

Adjust Row Height and Column Width

You can adjust row height and column width within your worksheets.

Here's how to widen a column. This example continues using the **quick analysis.xlsx** file.

1. Select the column you want to widen. When you hover the mouse over one of the dividers, the cursor changes to a cross with double arrows.

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2. Drag the border to the new width. The screen tips indicate the width of the column.

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Insert Headers and Footers

You can add headers and footers to your worksheet for printing. You can only see the headers and footers if you are in Page Layout view, or in Print Preview, or on printed pages.

Here's how to insert a header and footer. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **Insert** tab from the Ribbon.
- 2. Select Text.
- 3. Select Header & Footer.



4. The Header opens. You can insert text in the left, middle, or right sections of the header.

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5. Select **Go to Footer** from the **Header & Footer Design** tab on the Ribbon to add footer text to the left, in the middle or to the right.

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Change Worksheet Tab Color

You can color code the different worksheets in a workbook.

Here's how to change the worksheet tab color. This example continues using the **quick analysis.xlsx** file.

- 1. Right click on the tab you want to change at the bottom of the Excel window.
- 2. Select **Tab color** from the context menu.



3. Select a color from the color options.

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The tab is highlighted with the selected color.

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Rename Worksheet

The context menu also allows you to change the name of a worksheet.

Here's how to rename a worksheet. This example continues using the **quick analysis.xlsx** file.

- 1. Right click on the tab for the worksheet you want to rename.
- 2. Select **Rename** from the context menu.



The current name of the worksheet is highlighted.

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3. Enter the new name over the highlighted text and press Enter.

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Format Workbooks

Copy and Move Worksheets

You can create new worksheets by copying an existing one. Once you have multiple worksheets, you can move them to reorganize the order they appear in the workbook

Here's how to move a worksheet. This example continues using the **quick analysis.xlsx** file.

- 1. Select the worksheet tab that you want to move. The cursor has a small icon next to it to indicate you are moving a worksheet.
- 2. Drag the selected sheet to the new location in the workbook. A small black triangle shows where the worksheet will be placed.

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Here's how to copy a worksheet.

- 1. Right click on the worksheet tab that you want to copy.
- 2. Select Move or Copy.



- 3. Highlight where you want the new sheet to be added.
- 4. Check the **Create a copy** box.

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5. Select OK.

The new sheet is created in the selected location with the same name as the original sheet, but with a number appended to the name.

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Modify Page Setup

The Page Setup dialog box allows you to set up the layout and print options for a page.

Here's how to open the Page Setup dialog box. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **Page Layout** tab on the Ribbon.
- 2. Select the small square in the Page Setup group.

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The **Page Setup** dialog box opens to the **Page** tab. You can then change options as needed. For a detailed explanation of each option click the question mark in the top right of the dialog box. This will cause a web page to open in your browser that explains each option.

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Change Workbook Themes

Changing the theme instantly changes the colors, fonts and effects used in your workbook.

Here's how to change the theme. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **PAGE LAYOUT** tab from the Ribbon.
- 2. Select THEMES.
- 3. Select a new theme from the gallery. Hover your mouse over an option to see a preview of each theme before you apply it.



Customize Options for Worksheets and Workbooks

Add a Tool to the Quick Access Toolbar

The Quick Access Toolbar is at the very top left corner of the Excel window. It has the Save, Undo, and Repeat commands available by default, but you can add almost any command you need for quick access.

Here's how to add a tool to the Quick Access Toolbar. This example continues using the **quick** analysis.xlsx file.

1. Select the small arrow in the top left corner of the window.



2. Select a tool to add it to the Quick Access Toolbar, or deselect a tool to remove it from the Quick Access Toolbar.



Zoom

Zoom the view in or out on your worksheet depending on whether you need to see details close up or look at the big picture.

Here's how to zoom to a selection. This example continues using the **quick analysis.xlsx** file.

- 1. Highlight the cells to view.
- 2. Select the **VIEW** tab from the Ribbon.
- 3. Select **ZOOM TO SELECTION**.

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4. The view fills the screen with the selected cells.

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Here how to use the **ZOOM** dialog box. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **VIEW** tab from the Ribbon.
- 2. Select **ZOOM**.
- 3. Select the desired magnification.

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4. Select OK.

You can also change the magnification by moving the Zoom slider at the bottom right of the window.

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Change Workbook Views

The default view for working in Excel is the normal view, so that you can easily enter data.

Here's how to change the document view. This example continues using the **quick analysis.xlsx** file.

1. Select the **VIEW** tab from the Ribbon.

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2. Choose one of the following views:

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- Select **NORMAL** to focus on entering data.
- Select **PAGE BREAK PREVIEW** to view the where the page breaks will appear when the file is printed.
- Select **PAGE LAYOUT** to view how the will look printed or to work with the headers and footers.

Switch Windows

You can simplify working with multiple Excel files by using the Switch Windows tool.

Here's how to switch from one open workbook to another. This example uses the **Sample CSV.csv** file and continues using the **quick analysis.xlsx** file.

- 1. Select the **View** tab on the Ribbon.
- 2. Select Switch Windows.
- 3. Select the workbook you want to view from the list.

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Modify Document Properties

You can view and edit workbook properties such as Title, Author and Keywords.

Here's how to edit the document properties of an Excel workbook. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **File** tab from the Ribbon to open the Backstage View.
- 2. In the Backstage view, select the Info tab (if it isn't already showing)
- 3. In the **Properties** section on the right side of the screen, you can change the **Title**, **Tags**, and **Categories**, add an author, or click **Show All Properties** to change other properties.

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Show or Hide Formulas

You can control how you view formulas and values in your workbook.

Here's how to show or hide formulas. This example uses the SampleCost Analysis.xlsx file.

- 1. Select the **FORMULAS** tab from the Ribbon.
- 2. Select SHOW FORMULAS.

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3	Manufacturing equipment	900500				
4	Salaries	575000				
5	Maintenance	395000				
6	Office lease	295000				
7	Warehouse lease	250000				
8	Insurance	180000				
9	Benefits and pensions	130000				
10	Vehicles	125000				
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Configure Worksheets and Workbooks for Distribution

Print

The print command gets your worksheet from the computer to paper. This example uses the **quick analysis.xlsx** file.

Here's how to modify print settings and print all or part of the document.

- 1. Select the **FILE** menu from the Ribbon.
- 2. Select the **PRINT** tab from the left tabs.

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New Open	Copies: 1	Company Industry C	015ies 025ies
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Save as Adobe PDF	HP ePrint + JetAdvantage Ready	Consolidated Messenger Tech Fabrikam, Inc. Utilities Fourth Colfee Beverage Graphic Design Institute Education Management Jonan Technologi	\$579,825 \$448,399 \$639,630 \$635,474 \$567,274 \$567,216 \$788,380 \$540,282 \$788,380 \$540,282
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- 3. Select the desired printer from the **PRINTER** drop down list.
- 4. In the **SETTINGS** area click the first drop down to change which sheets / ranges will be printed.



- **PRINT ACTIVE SHEETS** prints the worksheet you are currently viewing
- **PRINT ENTIRE WORKBOOK** prints all worksheets in the workbook
- **PRINT SELECTION** prints only the cells you currently have selected

5. In the Settings area click the last drop down to change the print scaling settings.



- No Scaling Print sheets at their actual size
- Fit Sheet on One Page Shrinks the printout so that it fits on one page
- Fit All Columns on One Page Shrinks the printout so that it is one page wide
- Fit All Rows on One Page Shrinks the printout so that it is one page high
- **Custom Scaling Options** Opens the Page Setup dialog box to set custom scaling options

Set a Print Area

A print area is a designated range of cells that can be printed without printing the whole worksheet. This defined area is saved with the workbook, so that it can be reused later.

Here's how to set a print area. This example continues using the quick analysis.xlsx file.

- 1. Select the cells you want included in the print area.
- 2. Select the Page Layout tab on the Ribbon.
- 3. Select **Print Area**.
- 4. Select Set Print Area.

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Save in Another File Format

The Save As command allows you to save your workbook in a different file format, as well as in a different location.

Here's how to save a workbook in another file format. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **FILE** menu from the Ribbon.
- 2. Select **SAVE AS** from the left tabs.



3. Select the format from the drop down list.

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pave	OneDrive - Personal	Excel Workbook (*.xlsx)	
Save As	mbwiedemer@yahoo.com	Excel Macro-Enabled Workbook (*.xlsm)	
	-	Excel Binary Workbook (*.xlsb)	
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	Browse	Excel Macro-Enabled Template (*.xltm)	
Export		Excel 97-2003 Template (*.xlt)	
		Text (Tab delimited) (*.txt)	
Publish		Unicode Text (*.txt)	
		XML Spreadsheet 2003 (*.xml)	
Close		Microsoft Excel 5.0/95 Workbook (*.xls)	
		CSV (Comma delimited) (*.csv)	
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		Excel 97-2003 Add-in (*.xla)	
		PDF (*,pdf)	
		XPS Document (*.xps)	
		Strict Open XML Spreadsheet (* xlsx)	

4. Select SAVE.

Repeat Columns or Rows Across Multiple Pages

A print title is a group of rows and/or columns that are repeated at the top or left side of each printed page.

Here's how to create print titles. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **Page Layout** tab on the Ribbon.
- 2. Select **Print Titles**.
- 3. Select the **Rows to Repeat at Top** field.

Page Setup		? ×
Page Margins Header, Print <u>a</u> rea:	Footer Sheet	<u>1</u>
<u>R</u> ows to repeat at top: <u>C</u> olumns to repeat at left:		<u>1</u>
Print <u>G</u> ridlines <u>B</u> lack and white Draft guality Row and column headin	Co <u>m</u> ments: (None) Cell <u>e</u> rrors as: displayed	× ×
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	Print Print Preview	<u>ı</u> <u>O</u> ptions
	ОК	Cancel

4. Point to the left of the row you want to use as a Print Title. The cursor changes to an arrow. Select the row. The reference is added to the **Rows to repeat at top field**.

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11 Fourth Coffee <	Beverage	\$876,740	\$567,216		ок с	ancel + 100%

5. Select the **Columns to repeat at left** field.

- 6. Point to the top of the column you want to use as a Print Title. The cursor changes to an arrow. Select the column. The reference is added to the **Columns to repeat at left** field.
- 7. Select OK.

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Inspect a Workbook for Hidden Properties and Personal Information

When preparing a workbook to share with others, you may want to remove certain types of information or objects.

Here's how to inspect a workbook for hidden properties and personal information. This example continues using the **quick analysis.xlsx** file.

- 1. Make sure you've saved the workbook.
- 2. Select the **FILE** menu from the Ribbon.
- 3. The INFO area should open. If not, select the INFO tab from the left tabs.
- 4. Select CHECK FOR ISSUES.



5. Select INSPECT DOCUMENT.



6. Check the boxes for the items you want to check.



7. Review the inspection results.

\sim	Comments	ł
	No items were found.	
	Document Properties and Personal Information	
	The following document information was found:	
	* Document properties	
	* Author * Pelated dates	
	* Absolute path to the workbook	1
	* Printer properties (e.g. printer path, secure print passcode, etc.)	
2	Data Model	
	No embedded data found in the Data Model.	
\sim	Content Add-ins	
-	We did not find any Content add-ins.	
2	Task Pane Add-ins	
	We did not find any Task Pane add-ins.	
\sim	PivotTables, PivotCharts, Cube Formulas, Slicers, and Timelines	
	No PivotTables, PivotCharts, cube formulas, slicers, or timelines were	
_	found.	4
D.	lote: Some changes cannot be undone.	

Inspect a Workbook for Accessibility Issues

Make your workbook optimized for users with certain types of disabilities. For example, blind readers may have your file read by a screen reader, and images explained with alternate text.

Here's how to inspect a workbook for accessibility issues. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **FILE** menu from the Ribbon.
- 2. The Info area should open. If not, select the INFO tab from the left tabs.
- 3. Select CHECK FOR ISSUES.



4. Select CHECK ACCESSIBILITY.



5. The Inspection Results are shown in a pane on the right side of the window.

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3	Adventure Works	Travel	\$123,721	\$733,396			1				Inspection Results
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554			1				Warnings
5	City Power & Light	Utilities	\$299,293	\$674,295			1				Default Sheet Names
6	Coho Vineyard	Beverage	\$228,783	\$659,385							Sheet1
7	Contoso, Ltd	Misc		\$287,989			1				
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368			1				
9	Consolidated Messenger	Tech	\$579,825	\$448,399			1				
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474							
11	Fourth Coffee	Beverage	\$876,740	\$567,216			1				
12	Graphic Design Institute	Education	\$788,390	\$540,282							
13	Humongous Insurance	Financial	\$682,545	\$577,599							
14	Litware, Inc.	Tech	\$902,264	\$206,331			1				Additional Information
15	Lucerne Publishing	Misc	\$905,906	\$443,552							Additional mormation
16	Margie's Travel	Travel	\$289,570	\$843,834							Read more about making documents
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Inspect a Workbook for Compatibility Issues

Older versions of Excel don't have all of the same functionality, so some items in your workbook may not work properly. You can check for these issues before sharing.

Here's how to inspect a workbook for compatibility issues. This example continues using the **quick analysis.xlsx** file.

- 1. Select the **FILE** menu from the Ribbon.
- 2. The Info area should open. If not, select the INFO tab from the left tabs.
- 3. Select CHECK FOR ISSUES.



4. Select CHECK COMPATIBILITY.



The results of the check are displayed.



Module Two: Review Questions

- 1. A workbook can contain many different worksheets.
 - a) True
 - b) False
- 2. You can create links to which of the following?
 - a) A web address
 - b) Another cell in the current worksheet
 - c) A named or defined range of cells
 - d) All of the above
- 3. When you hide an entire worksheet, the missing tab indicator shows as a double-line.
 - a) True
 - b) False
- 4. When inserting Sheet Rows, where does it appear?
- 5. The new width is displayed as a tool tip when resizing a column width.
 - a) True
 - b) False
- 6. In the Move or Copy dialog box, which of the following is NOT an option?
 - a) To another workbook
 - b) Before a selected worksheet
 - c) After a selected worksheet
 - d) At the end of the current worksheet
- 7. Which workbook view shows headers and footers?
 - a) Normal
 - b) Page Break Preview
 - c) Page Layout
 - d) All of the Above
- 8. Which tab includes the Show Formulas tool?
- 9. What are the print scaling options?
- 10. A workbook with more than one defined print area can be printed on one page.
 - a) True
 - b) False

Like tourists huffing and puffing to reach the peak we forget the view on the way up.

Friedrich Nietzsche

Module 3: Manage Data Cells and Ranges

Now let's get more detailed by working with the data on your worksheets. This module introduces you to the tools you need to insert, format, summarize and organize your data.

Insert Data in Cells and Ranges

Replace Data

You can save lots of time by learning to replace data properly in Excel.

Here's how to edit data using the Formula bar. This example uses the **Budget.xlsx** file.

1. Highlight the cell that needs to be updated.

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- 2. Place your cursor in the Formula bar.
- 3. Edit the cell contents.

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4. Press Enter.

Excel updates the cell with your changes and moves to the next cell.

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Cut, Copy and Paste Data

You can easily reuse information in Excel use the cut, copy and paste features.

Here's how to copy and paste a cell's contents. This example continues using the **Budget.xlsx** file.

- 1. Select the cell with the contents you want to copy. You can highlight multiple cells at once.
- 2. Select **COPY** from the **HOME** tab on the Ribbon. You can also select the cell(s) and use the keyboard shortcut: **CTRL + C**.

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Excel highlights the cell whose contents you are copying with a blinking dotted line. This will remain highlighted until you finish pasting, in case you want to paste the cell contents more than once.

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3. Select the cell where you want to copy the contents.

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4. Select **Paste** or use the keyboard shortcut: **CTRL + V**.

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5. Repeat step 4 as needed, and then press **ESC** when done.

Paste Data Using Paste Options

Excel provides a number of shortcuts to help you reuse more than just your data.

Here's how to paste using options. This example continues using the **Budget.xlsx** file.

- 1. Copy the cell(s).
- 2. Right-click in the cell where you want to paste to display the context menu.



3. When you hover over one of the Paste Options, the rest of the context menu dims.

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4. Select the option to paste.

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Fill Cells using Autofill

Autofill can help you quickly create a list.

Here's how to create a list using AutoFill. This example creates new columns in the **Budget.xlsx** file to cover the second six months.

- 1. Create a new column heading with the text "July" in cell J4.
- 2. Select that cell to make it active. Excel displays a rectangle around the cell.

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7	Power	225	225	175	175	150	150														
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9	Phone	65	75	65	65	75	75														
10	Car Payment	275	275	275	275	275	275														_
11	Gas	240	240	360	240	240	240														_
12	Insurance	180	180	180	180	180	180														_
13	Food	600	600	600	600	600	600														-
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3. Drag the lower right corner handle across the columns. Excel displays a screen tip showing what AutoFill will place in those cells.

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4. Release the mouse button at the end of the range.

Excel automatically fills in the month names.

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Insert and Delete Cells

You can use the Insert and Delete tools to shift an existing cell or range of cells.

Here's how to insert cells. This example continues uses the **Budget3.xlsx** file.

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1	Household Budget									
2	2013									
3										
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5	Home	January	February	March	April	May	June			
6	Mortgage									
7	Heat	890	890	890	890	890	890			
8	Power	250	250	175	125	80	0			
9	Other	225	225	175	175	150	150			
10	Phone									
11	Car Payment	65	75	65	65	75	75			
12	Gas	275	275	275	275	275	275			
13	Insrance	240	240	360	240	240	240			
14	Food	180	180	180	180	180	180			
15		600	600	600	600	600	600			
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1. Select the first cell of the group of cells that needs to be moved. In this example select cell **A5**.

- 2. Select Insert from the Home tab on the Ribbon.
- 3. Select Insert Cells.

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4. In the **Insert** dialog box, select the option for shifting the existing selected cells and select OK.



5. Blank cell(s) are inserted in the selected location with the selected cells shifted as indicated.

	А	В	С	D	Е	F	G	Н	
1	Household Budget								
2	2013								
3									
4								Total - First	Six Months
5		January	February	March	April	May	June		
6	Home								
7	Mortgage	890	890	890	890	890	890		
8	Heat	250	250	175	125	80	0		
9	Power	225	225	175	175	150	150		
10	Other								
11	Phone	65	75	65	65	75	75		
12	Car Payment	275	275	275	275	275	275		
13	Gas	240	240	360	240	240	240		
14	Insrance	180	180	180	180	180	180		
15	Food	600	600	600	600	600	600		
16		1370							

Here's how to delete cells. This example continues using the **Budget3.xlsx** file.

1. Select the cell(s) you want to delete. In this example select cells A4 through G4.

	А	В	С	D	E	F	G	Н	I
1	Household Budget								
2	2013								
3									
4								Total - First	Six Months
5		January	February	March	April	May	June		
6	Home								
7	Mortgage	890	890	890	890	890	890		
8	Heat	250	250	175	125	80	0		
9	Power	225	225	175	175	150	150		
10	Other								
11	Phone	65	75	65	65	75	75		
12	Car Payment	275	275	275	275	275	275		
13	Gas	240	240	360	240	240	240		
14	Insrance	180	180	180	180	180	180		
15	Food	600	600	600	600	600	600		
16		1370							

- 2. Select **Delete** from the **Home** tab on the Ribbon.
- 3. Select **Delete Cells**.

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														Total -			×	Delete She	et					

4. In the **Delete** dialog box, select the option for shifting the existing selected cells and select **OK**.



5. The selected cells are removed, and the remaining cells are shifted as indicated.

	А	В	С	D	E	F	G	Н	I
1	Household Budget								
2	2013								
3									
4		January	February	March	April	May	June	Total - First	Six Months
5	Home								
6	Mortgage	890	890	890	890	890	890		
7	Heat	250	250	175	125	80	0		
8	Power	225	225	175	175	150	150		
9	Other								
10	Phone	65	75	65	65	75	75		
11	Car Payment	275	275	275	275	275	275		
12	Gas	240	240	360	240	240	240		
13	Insrance	180	180	180	180	180	180		
14	Food	600	600	600	600	600	600		
15		1370							

Format Cells and Ranges

Merge Cells

You can merge multiple cells into one cell.

Here's how to merge cells. This example uses the **Budget4.xlsx** file.

1. Highlight the cell range that you want to merge.

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4								Total												
5		Januar	February	March	April	May	June	First Six M	conths											
6	Mortgage		890 8	90 890	890	890	890		<u>/</u>											IT
7	Heat		250 2	175	125	80	0		_											
8	Power		225 2	25 175	175	150	150													
9																				
10	Phone		65	75 65	65	75	75													
11	Car Payment		275 2	75 275	275	275	275													
12	Gas		240 2	40 360	240	240	240													
13	Insrance		180 1	.80 180	180	180	180													
14	Food		600 6	600 600	600	600	600													
15			1370																	
16																				

2. Select Merge & Center.

If more than one cell includes content, Excel displays a warning message.

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	Merging cells only keeps the upper-left value and discards other values.	
	OK Cancel	

3. Select **OK** to merge the cells.

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4 5		January	February	March	April	May	June	Total		4
6	Mortgage	890	890	890	890	890	890		•	
7	Heat	250	250	175	125	80	0			
8	Power	225	225	175	175	150	150			1
9										
10	Phone	65	75	65	65	75	75			
11	Car Payment	275	275	275	275	275	275			1
12	Gas	240	240	360	240	240	240			
13	Insrance	180	180	180	180	180	180			
14	Food	600	600	600	600	600	600			1
15		1370				-				1

Align and Indent Cell Contents

You can align or indent cell contents.

Here's how to align or indent cell contents. This example continues using the **Budget.xlsx** file.

1. Select the cell or cell range that you want to align or indent.

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5		January	February	March	April	May	June	First Six M	onths										
6	Home																		_
/	Mortgage	890	890	890	890	890	890												
8	Heat	250	250	1/5	125	80	0												_
9	Power	225	225	1/5	1/5	150	150												
10	Other					70	70												_
11	Phone	00	/5	00	200	/5	/5												
12	Car Payment	2/3	2/5	2/3	2/5	2/5	2/5												
15	las	240	240	190	240	240	240												
14	Food	600	600	600	600	600	600												
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2. Click the indent button in the Alignment group tools on the **Home** tab of the Ribbon.

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5		January	February	March	April	May	June	First Six M	onths										
6	Home																		
7	Mortgage	890	890	890	890	890	890												
8	Heat	250	250	175	125	80	0												
9	Power	225	225	175	175	150	150												_
10	Other																		
11	Phone	65	75	65	65	75	75												_
12	Car Payment	275	275	275	275	275	275												_
13	Gas	240	240	360	240	240	240												
14	Insrance	180	180	180	180	180	180												_
15	Food	600	600	600	600	600	600												
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Wrap Text Within Cells

The Wrap Text tool increases a row height so that all of the contents are displayed.

Here's how to wrap text. This example continues using the **Budget.xlsx** file.

- 1. Select the cell that you would like to wrap.
- 2. Select **WRAP TEXT** from the **HOME** tab on the Ribbon.

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4								Total - First Six Months												
5	Home	January	February	March	April	May	June													
7	Mortgage	890	890	890	890	890	890													
8	Heat	250	250	175	125	80	0													
9	Power	225	225	175	175	150	150													
10	Other																			_
11	Phone	65	75	65	65	75	75													
12	Car Payment	275	275	275	275	275	275													_
13	Gas	240	240	360	240	240	240													
14	Insrance Food	180	180	180	180	180	180													
16	1000	1370	000	000	000	000	000													
10		1370								-										
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Apply Number Formats

You can have Excel display numbers in one of many different formats, depending on the data the number represents.

Here's how to format a number as currency without decimals. This example continues using the **Budget.xlsx** file.

1. Select the cell or cell range that you want to format.

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4								Total - First Six Months													
5		January	February	March	April	May	June														
6	Home		-																		
7	Mortgage	89	0 890	890	890	890	890														
8	Rewor	25	250	175	125	150	150														
10	Other	22	223	1/3	1/5	150	150														
11	Phone	6	5 75	65	65	75	75														
12	Car Payment	27	5 275	275	275	275	275														
13	Gas	24	0 240	360	240	240	240														
14	Insrance	18	0 180	180	180	180	180														
15	Food	60	600	600	600	600	600														
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2. Select the type of number formatting you want to use from the **NUMBER** group drop down list in the **HOME** tab of the Ribbon.

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7	Mortgage	\$ 890.00	890	890	890	890	890												
8	Heat	\$ 250.00	250	175	125	80	0												
9	Power Other	\$ 225.00	225	175	175	150	150												_
11	Phone	\$ 65.00	75	65	65	75	75												
12	Car Payment	\$ 275.00	275	275	275	275	275												
13	Gas	\$ 240.00	240	360	240	240	240												
14	Insrance	\$ 180.00	180	180	180	180	180												
15	Food	\$ 600.00	600	600	600	600	600												
16		\$1,370.00																	
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Apply Cell Formats

Cell formats include the font, size, highlighting, color or borders for your cell.

Here's how to apply font face and size. This example continues using the **Budget.xlsx** file.

- 1. Select the cell you want to change.
- 2. Select the arrow next to the current font name to display the list of available fonts.
- 3. Use the scroll bar or the down arrow to scroll down the list of fonts.
- 4. Select the desired font to change the font of the cells.

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4								Total - First Six Months											
5		January	February	March	April	May	June												
6	Home		-																
7	Mortgage	\$ 890.00	890	890	890	890	890												
8	Heat	\$ 250.00	250	175	125	80	(

- 5. With the cells still selected, select the arrow next to the current font size to see a list of common font sizes.
- 6. Use the scroll bar or the down arrow key to scroll to the size you want and select it. You can also highlight the current font size and type in a new number to indicate the font size you want.

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4								Total - First Six Months													
5		Janua	February	March	April	May	June														
6	Home																				
7	Mortgage	\$ 890.00	890	890	890	890	890														
8	Heat	\$ 250.00	250	175	125	80	0														

Here's how to add borders. This example continues using the **Budget.xlsx** file.

- 1. Select the cells you want to format.
- 2. Select the borders tool.

Bo	rders	
	B <u>o</u> ttom Border	
	Top Border	
88	<u>L</u> eft Border	
	<u>R</u> ight Border	
	<u>N</u> o Border	
\blacksquare	<u>All Borders</u>	
·· <u>.</u> ··	Outside Borders	
	Thick Outside Borders	
	Bottom Double Border	
	Thick Bottom Border	
	Top an <u>d</u> Bottom Border	
	Top and Thick Bottom Border	
	Top and Double Bottom Border	
Dra	aw Borders	
	Dra <u>w</u> Border	
Ð	Draw Border <u>G</u> rid	
۲	Erase Border	
1	L <u>i</u> ne Color	F
	Line St <u>y</u> le	F
\blacksquare	More Borders	

3. Select the type of border to apply.

Excel applies the selected border.

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4								Total - First Six Months													
5		January	February	March	April	May	June														
6	Home																				
7	Mortgage	\$ 890.00	890	890	890	890	890														
8	Heat	\$ 250.00	250	175	125	80	0														

Apply Cell Styles

Cell styles are pre-built combinations of font, shading and background that can help you communicate your data.

Here's how to apply a cell style. This example continues using the **Budget.xlsx** file.

- 1. Highlight the cell or cell range where you want to apply your style.
- 2. Select the **CELL STYLES** tool from the **HOME** tab of the Ribbon to see the style gallery.

Good, Bad and N	eutral				
Normal	Bad	Good	Neutral		
Data and Model					
Calculation	Check Cell	Explanatory	Input	Linked Cell	Note
Output	Warning Text				
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Themed Cell Styl	es				
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60% - Accent1	60% - Accent2	60% - Accent3	60% - Accent4	60% - Accent5	60% - Accent6
Accent1	Accent2	Accent3	Accent4	Accent5	Accent6
Number Format					
Comma	Comma [0]	Currency	Currency [0]	Percent	
New Cell Styl	e				
Merge Styles.					

3. Select the style that you want to apply. You can see a preview before you select a style by hovering the mouse over the style.

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Apply Conditional Formatting

Conditional formatting changes the appearance of a cell based on the criteria you choose.

Here's how to apply conditional formatting. In this example, we will format all Power amounts in the **Budget.xlsx** file that are over \$200.

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

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

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- 4. Enter 200 in the left field.
- 5. Select a formatting option from the right drop down list.
- 6. Select **OK** to apply the conditional formatting.

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Format Cells using the Format Painter

Once you've styled your number and cell formatting like you want, you can use the Format Painter to apply the same settings to another set of cells.

Here's how to apply formatting by using Format Painter. This example continues using the **Budget.xlsx** file.

- 1. Select the cells that already have the formatting you want to use elsewhere.
- 2. Select the **FORMAT PAINTER** tool from the **HOME** tab on the Ribbon.



3. Select the cells you want to format. The cursor has a little paint brush icon while using the Format Painter.

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The formats are applied.

To use the Format Painter on more than one group of cells, double-click the Format Painter tool first. When you've finished applying formats, select the Format Painter tool again to stop using it.

Summarize and Organize Data

Insert Sparklines

Sometimes trends are hard to spot from the data alone.

Here's how to create Quick Analysis Sparklines. This example continues using the **Quick Analysis.xlsx** file.

- 1. Select one or more rows of data.
- 2. Select the icon that appears at the bottom right of the table.

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4	Blue Yonder Airlines	Travel	\$934,763	\$246,554														
5	City Power & Light	Utilities	\$299,293	\$674,295														
6	Coho Vineyard	Beverage	\$228,783	\$659,385														
7	Contoso, Ltd	Misc	\$239,219	\$287,989														
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368														
9	Consolidated Messenger	Tech	\$579,825	\$448,399														
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474														
11	Fourth Coffee	Beverage	\$876,740	\$567,216														
12	Graphic Design Institute	Education	\$788,390	\$540,282														
13	Humongous Insurance	Financial	\$682,545	\$577,599														
14	Litware, Inc.	Tech	\$902,264	\$206,331														
15	Lucerne Publishing	Misc	\$905,906	\$443,552														
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3. Select SPARKLINES.



4. Select the type of mini chart that you want to use.



Excel displays the Sparkline in the next open column.

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Adding Subtotals

The Subtotals feature automatically creates groups and subtotals the related data according to your specifications.

Here's how to add subtotals. This example uses the **subtotal.xlsx** file.

- 1. Select the data to subtotal. Make sure that each column of data has a label in the first row. It must also contain similar facts. Don't include any blank rows or columns.
- 2. Select the **Data** tab from the Ribbon.
- 3. Select Subtotal.

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In the *Subtotal* dialog box, select the locations for the subtotals from the **At each change in** drop down list.

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- 4. Select the function to use in the subtotal fields from the **Use Function** drop down list.
- 5. Check the boxes that correspond to your column headers for which column(s) to subtotal.
- 6. Check the boxes to indicate the other formatting options by checking or clearing the **Replace current subtotals, Page break between groups**, and **Summary below data**.

Select OK.

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Grouping Data

Grouped data helps you structure worksheets.

Here's how to create a group. This example uses the **subtotal2.xlsx** file.

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

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3. Select Group.

4. In the Group dialog box, select whether to group the selection by rows or columns.



5. Select OK.

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Ungrouping Data

Here's how to ungroup data. This example continues using the **subtotal2.xlsx** file.

- 1. Select the range of cells that is currently grouped.
- 2. Select the **Data** tab from the Ribbon.

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- 3. Select Ungroup.
- 4. In the Ungroup dialog box, select whether the data is currently grouped by rows or columns.



5. Select OK.

Outline Data

Outlining is like grouping. It provides structure to your worksheet to quickly hide or display detail and summary information.

Here's how to create an outline. This example uses the **subtotal2.xlsx** file.

- 1. Select the range of cells to include in the outline.
- 2. Select the **Data** tab from the Ribbon.

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- 3. Select the small square in the corner of the **Outline** group.
- 4. In the *Settings* dialog box, check the direction of the summary rows and columns.
- 5. Check the Automatic styles box to have Excel automatically apply styles to the outline.



6. Select Create.

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Viewing Grouped and Outlined Data

When you have added groups or created an outline, either manually or automatically, Excel includes several features to make it easy to view different parts of the data at once.

Here's how to work with grouped or outlined data. This example uses the **subtotal3.xlsx** file.

The **Show Detail** and **Hide Detail** tools allow you to quickly show or hide the detail data. You can use the tools multiple times to expand or collapse multiple levels of data.

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The + icons indicate hiding detail data. Select a + to expand. Select a – to collapse. The numbers in the top left corner indicate a level. Click on a number to show that level.


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Module Three: Review Questions

- 1. Where can you edit the contents of a cell?
 - a) The Name box
 - b) The Formula bar
 - c) The Cell itself
 - d) B and C
- 2. Which feature helps you create a series of information?
 - a) Autofill
 - b) Number format
 - c) Number styles
 - d) None of the above
- 3. You can paste a formula or its values using paste options.
 - a) True
 - b) False
- 4. Where do existing cells move when adding cells?
- 5. What are the different number formats?
- 6. Cell styles include which of the following?
 - a) Text color
 - b) Cell background/shading
 - c) Cell border
 - d) All of the above
- 7. Conditional formatting formats cells based on rules.
 - a) True
 - b) False
- 8. What is the tiny chart that resides in one cell?
 - a) Chart
 - b) Subtotal
 - c) Sparkline
 - d) Outline
- 9. Where is the group command?

- 10. If you want to create multiple levels for your data and subtotals, you should check the **Replace current subtotals** box in the **Subtotals** dialog box.
 - a) True
 - b) False

Whenever you are asked if you can do a job, tell 'em, 'Certainly I can!' Then get busy and find out how to do it.

Theodore Roosevelt

Module 4: Create Tables

Tables help you sort, filter, and summarize data. Tables data is managed independently from data in the other rows and columns on the worksheet. In this module, you'll learn to create and manage tables, apply styles and configure table style options, and work with filtering and sorting strategies.

Create and Manage Tables

Create an Excel Table from a Cell Range

Create a table to access additional tools.

Here's how to create a table from an existing cell range. This example uses the **quick analysis.xlsx** file.

- 1. Select the cells you'd like to convert to a table.
- 2. On the Home tab of the Ribbon, select Format as Table.
- 3. Select a starting Table Style. The options are organized into Custom, Light, Medium, and Dark styles.

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12	Graphic Design Institute	Education	\$788,390	\$540,282																
13	Humongous Insurance	Financial	\$682,545	\$577,599																
14	Litware, Inc.	Tech	\$902,264	\$206,331																
15	Lucerne Publishing	Misc	\$905,906	\$443,552																
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4. In the **Format As Table** dialog box, check the **My table contains headers** box if you want the first selected row to be treated as table headers.



5. Select **OK** to create the table. The data is now formatted as a table, with filtering options in the column headers.

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Add or Remove Table Rows and Columns

When working in a table, the Insert and Delete tools on the Home tab of the Ribbon include additional options specific to a table.

Here's how to add a row or column to a table. This example continues using the **quick analysis.xlsx** file.

- 1. Select a cell adjacent to where you'd like to insert the row.
- 2. Select Insert from the Home tab on the Ribbon.

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3. Select **Insert Table Rows Above** to add a row, or select either **Insert Table Columns to the Left** or **Insert Table Columns to the Right** to add a column.



Here's how to delete a row or column from a table.

- 1. Select a cell in the row you'd like to delete.
- 2. Select **Delete** from the **Home** tab on the Ribbon.

3. Select Delete Table Rows or Delete Table Columns.

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Convert a Table to a Cell Range

If you no longer need data separated as a table, you can return it to cell range.

Here's how to create a cell range from a table. This example continues using the **quick analysis.xlsx** file.

- 1. Select the table you'd like to convert to a cell range.
- 2. Select the **Table Tools Design** tab on the Ribbon.
- 3. Select **Convert to Range**.

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4. In the confirmation window, select Yes.

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1	Do you want to convert the table to a normal range	2
	Yes No	

The table is converted to a cell range, even though the cell background colors remain the same.

Manage Table Styles and Options

Apply Styles to Tables

The Table Styles gallery includes a number of pre-built border and shading options to help you style your table quickly.

Here's how to apply a table style. This example continues using the **quick analysis.xlsx** file.

- 1. Place your cursor anywhere in the table you want to style.
- 2. Select the TABLE TOOLS DESIGN tab on the Ribbon.



3. Select the style that you want to apply. You can select the arrow at the bottom of the Table Styles group to see additional options categorized as Custom, Light, Medium and Dark.

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Configure Table Style Options

The Table Style options allows you to control special formatting in your table.

Here's how to change the Table Style Options. This example continues using the **quick analysis.xlsx** file.

- 1. Place your cursor anywhere in the table you want to style.
- 2. Select the TABLE TOOLS DESIGN tab on the Ribbon.
- 3. Check the Header Row, First Column, or Last Column boxes to customize the format.
- 4. If you'd like to alternate shading, check the **Banded Rows** and/or **Banded Columns** boxes.

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Insert Total Rows

One of the advantages to formatting data as a table is the option to quickly see a total.

Here's how to add a table row. This example uses the **Tables.xlsx** file.

- 1. Place your cursor anywhere in the table you want to style.
- 2. Select the TABLE TOOLS DESIGN tab on the Ribbon.
- 3. Check the **Total Row** box to see the total.

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6	Coho Viney	/ard	Beverage	\$228,783	\$659,385															
7	Contoso, Lt	d	Misc	\$239,219	\$287,989															
8	Contoso Ph	armaceuticals	Medical	\$371,570	\$644,368															
9	Consolidate	ed Messenger	Tech	\$579,825	\$448,399															
10	Fabrikam, I	nc.	Utilities	\$639,630	\$635,474															
11	Fourth Coff	fee	Beverage	\$876,740	\$567,216															
12	Graphic De	sign Institute	Education	\$788,390	\$540,282															
13	Humongou	s Insurance	Financial	\$682,545	\$577,599															
14	Litware, Inc	D.	Tech	\$902,264	\$206,331															
15	Lucerne Pu	blishing	Misc	\$905,906	\$443,552															
10	Margie's Tr	avel	Travel	\$289,578	\$843,834															
17	Total				\$8,255,581														L	
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Filter and Sort a Table

Filter Records

When your data is formatted as a table, you can easily filter your data. A filter removes some data from your table, allowing you to focus on one or more aspects of the data.

Here's how to apply a filter. This example continues using the **Tables.xlsx** file.

1. Select the arrow next to the column header for the column including type of data you want to filter.

	А	В	С	D	E	F	G	Н	1	J	K	L	М	N	0	Р	Q	R
1	Company	Industry	ү Q1 Sales 🛛 💌	Q2 Sales 💽														
2	A. Datum Corporation	Tech	C ¢105 449	\$746,907														
3	Adventure Works	Travel	(Showing All) 721	\$733,396														
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554														
5	City Power & Light	Utilities	\$299,293	\$674,295														
6	Coho Vineyard	Beverage	\$228,783	\$659,385														
7	Contoso, Ltd	Misc	\$239,219	\$287,989														
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368														
9	Consolidated Messenger	Tech	\$579,825	\$448,399														
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474														
11	Fourth Coffee	Beverage	\$876,740	\$567,216														
12	Graphic Design Institute	Education	\$788,390	\$540,282														
13	Humongous Insurance	Financial	\$682,545	\$577,599														
14	Litware, Inc.	Tech	\$902,264	\$206,331														
15	Lucerne Publishing	Misc	\$905,906	\$443,552														
16	Margie's Travel	Travel	\$289,570	\$843,834														
17	Total			\$8,255,581														
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2. Clear the **SELECT ALL** check box to clear all boxes. Check one or more boxes from the items that are taken from your data. Select **OK** to apply the filter.

₽↓	Sort A to Z		₽↓	Sort A to Z	
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Excel only shows the rows that match the filter. The other rows are still present, but hidden.

	A	В	С	D	E	F	G	н	1	J	K	L	М	N	0	P	Q	R 🔺
1	Company	- Industry 🗐	Q1 Sales 🛛 💌	Q2 Sales 🛛 💌														
2	A. Datum Corporation	Tech	\$195,449	\$746,907														
9	Consolidated Messenger	Tech	\$579,825	\$448,399														
14	Litware, Inc.	Tech	\$902,264	\$206,331														
17	Total			\$1,401,637														
18																		
19																		
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21																		

Clear Filters

Excel displays a filter icon in the column header to indicate that you've applied a filter to that column.

Here's how to clear a filter. This example continues using the **Tables.xlsx** file.

- 1. Select the arrow next to the column header for the filtered column.
- 2. Select **Clear Filter From**. This option will have additional text customized to the specific filter you have applied.



The filter is immediately removed and the data returned to the unfiltered state (for that column).

Use a Number Filter or Text Filter

Above the specific options taken from the column of data you want to filter is a Text Filter or Number Filter option, depending on which type of data your column contains.

Here's how to apply a text filter. This example continues using the **Tables.xlsx** file.

- 1. Select the arrow next to the column header for the column you want to filter. In this example click the arrow for the **Industry** column.
- 2. Select **TEXT FILTERS**.
- 3. Select the type of text filter you want to apply. In this example use Begins With...

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Re		OK	Cancel									Average: 5437	74.9667 C	ount: 64 S	ium: 1631324	9 🏢			-1	+ 100%

4. In the **Custom AutoFilter** dialog box, enter the letter(s) or text you want to use as the filter.

Custom AutoFilter				?	×
Show rows where: Industry					
begins with	✓ 11				\sim
	~				\sim
Use ? to represent any single Use * to represent any series	e character s of characters				
			OK	Ca	ncel

5. Select **OK**. The table is filtered to show matching records.

1	(A	В	С	D	E	F	G	н	1	J	K	L	М	N	0	Р	Q	R	-
1	Company	Industry 🗐	Q1 Sales 🛛 💌	Q2 Sales 🛛 💌															
2	A. Datum Corporation	Tech	\$195,449	\$746,907															
3	Adventure Works	Travel	\$123,721	\$733,396															
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554															
9	Consolidated Messenger	Tech	\$579,825	\$448,399															
14	Litware, Inc.	Tech	\$902,264	\$206,331															
16	Margie's Travel	Travel	\$289,570	\$843,834															
17	Total			\$3,225,421	(22)														
18																			

Here's how to apply a number filter. This example continues using the **Tables.xlsx** file.

- 1. Select the arrow next to the column header for the column you want to filter. In this example use the **Q1 Sales** column.
- 2. Select **NUMBER FILTERS**.
- 3. Select the type of number filter you want to apply. In this example use Greater Than...

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4. In the **Custom AutoFilter** dialog box, enter the value you want to use for the filter.

Custom AutoFilter		?	×
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	✓		\sim
Use ? to represent any sing Use * to represent any serie	jle character es of characters OK	Ca	ncel

5. Select **OK**. The table is filtered to show matching records.

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1	Company 🔤	Industry 🗊	🛛 Q1 Sales 🛛 🖓	Q2 Sales 🛛 💌															
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554															
9	Consolidated Messenger	Tech	\$579,825	\$448,399															
14	Litware, Inc.	Tech	\$902,264	\$206,331															
16	Margie's Travel	Travel	\$289,570	\$843,834															
17	Total			\$1,745,118															
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Change Sort Order

Sorting places selected data in a new order.

Here's how to create a custom sort. This example continues using the Tables.xlsx file.

- 1. Select one column header you want to use in your sort.
- 2. From the ribbon's **Home** tab select the **Sort & Filter** tool from the Ribbon.

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1	Company		✓ Industry ▼	Q1 Sales 🔄	Q2 Sales 💌								Clear	le.	
2	A. Datum Co	orporation	Tech	\$195,449	\$746,907								g Keapp	īΣ	
3	Adventure \	Norks	Travel	\$123,721	\$733,396										
4	Blue Yonde	r Airlines	Travel	\$934,763	\$246,554										
5	City Power a	& Light	Utilities	\$299,293	\$674,295										
6	Coho Viney	ard	Beverage	\$228,783	\$659,385										
7	Contoso, Lto	ł	Misc	\$239,219	\$287,989										
8	Contoso Pha	armaceuticals	Medical	\$371,570	\$644,368										
9	Consolidate	d Messenger	Tech	\$579,825	\$448,399										
10	Fabrikam, Ir	IC.	Utilities	\$639,630	\$635,474										
11	Fourth Coffe	ee 🛛	Beverage	\$876,740	\$567,216										
12	Graphic Des	ign Institute	Education	\$788,390	\$540,282										
13	Humongous	Insurance	Financial	\$682,545	\$577,599										
14	Litware, Inc.		Tech	\$902,264	\$206,331										
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3. Select Custom Sort.

Excel opens the **Sort** dialog box.

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Column		Sort On		Order			
Sort by	\sim	Values	~	A to Z			\sim
					ОК	Ca	ancel

- 4. You can choose the first column by which to sort from the **Sort By** drop down list. The options displayed match the column headers in your worksheet.
- 5. Select an option from the **Sort On** drop down list. **Values** is selected by default.

6. Select an **Order** from the drop down list.

Sort		? ×
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Column	Sort On	Order
Sort by Q1 Sales	Values	Largest to Smallest 🗸 🗸
		OK Cancel

7. Select **OK** when you have finished setting up your sort to see the results.

	A	В	С	D	E	F	G	Н	1	J	К	L		
1	Company 💌	Industry 💌	Q1 Sales 🚽	Q2 Sales 🔹 💌										
2	Blue Yonder Airlines	Travel	\$934,763	\$246,554										
3	Lucerne Publishing	Misc	\$905,906	\$443,552										
4	Litware, Inc.	Tech	\$902,264	\$206,331										
5	Fourth Coffee	Beverage	\$876,740	\$567,216										
6	Graphic Design Institute	Education	\$788,390	\$540,282										
7	Humongous Insurance	Financial	\$682,545	\$577,599										
8	Fabrikam, Inc.	Utilities	\$639,630	\$635,474										
9	Consolidated Messenger	Tech	\$579,825	\$448,399										
10	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368										
11	City Power & Light	Utilities	\$299,293	\$674,295										
12	Margie's Travel	Travel	\$289,570	\$843,834										
13	Contoso, Ltd	Misc	\$239,219	\$287,989										
14	Coho Vineyard	Beverage	\$228,783	\$659,385										
	Chart1		*****	*										-
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Sort Data by Multiple Columns

The Custom Sort dialog box allows you to sort based on more than one column for more advanced options.

Here's how to sort by multiple columns. This example continues using the Tables.xlsx file.

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

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3	Adventure Wor	rks	Travel	\$123,721	\$733,396										
4	Blue Yonder Air	rlines	Travel	\$934,763	\$246,554										
5	City Power & Li	ght	Utilities	\$299,293	\$674,295										
6	Coho Vineyard		Beverage	\$228,783	\$659,385										
7	Contoso, Ltd		Misc	\$239,219	\$287,989										
8	Contoso Pharm	aceuticals	Medical	\$371,570	\$644,368										
9	Consolidated N	lessenger	Tech	\$579,825	\$448,399										
10	Fabrikam, Inc.		Utilities	\$639,630	\$635,474										
11	Fourth Coffee		Beverage	\$876,740	\$567,216										
12	Graphic Design	Institute	Education	\$788,390	\$540,282										
13	Humongous Ins	urance	Financial	\$682,545	\$577,599										
14	Litware, Inc.		Tech	\$902,264	\$206,331										
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3. Select Custom Sort.

Excel opens the **Sort** dialog box.



- 4. You can choose the first column by which to sort from the **Sort By** drop down list. The options displayed match the column headers in your worksheet.
- 5. Select an option from the **Sort On** drop down list. **Values** is selected by default.

6. Select an **Order** from the drop down list.



7. To add another column to your sort, select **Add Level**. Repeat steps 4, 5, and 6 for the next sorting level.

Sort					?	Х
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Column		Sort On		Order		
Sort by	Q1 Sales 🗸	Values	Largest to Smallest		\sim	
Then by	Industry 🗸	Values	A to Z		\sim	
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8. As needed you can **Delete the Level**, or **Copy a Level**, or use the up and down arrows to rearrange the order of the sorting levels.

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hen by Q1 Sales 🗸			\sim	Values			\sim	Largest t	o Smallest		\sim	
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9. Select OK when you have finished setting up your sort to see the results.

	A	В	С	D	E	F	G	н	1	J	К	L	
1	Company	Industry 🚽	Q1 Sales 🚽	Q2 Sales 💌									
2	Fourth Coffee	Beverage	\$876,740	\$567,216									
3	Coho Vineyard	Beverage	\$228,783	\$659,385									
4	Graphic Design Institute	Education	\$788,390	\$540,282									
5	Humongous Insurance	Financial	\$682,545	\$577,599									
6	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368									
7	Lucerne Publishing	Misc	\$905,906	\$443,552									
8	Contoso, Ltd	Misc	\$239,219	\$287,989									
9	Litware, Inc.	Tech	\$902,264	\$206,331									
10	Consolidated Messenger	Tech	\$579,825	\$448,399									
11	A. Datum Corporation	Tech	\$195,449	\$746,907									
12	Blue Yonder Airlines	Travel	\$934,763	\$246,554									
13	Margie's Travel	Travel	\$289,570	\$843,834									
14	Adventure Works	Travel	\$123,721	\$733,396									
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Remove Duplicate Records

When working with large worksheets with lots of data, it's possible to find data that has been entered or imported in a way to create duplicates.

Here's how to check for duplicate data. This example uses the **duplicates.xlsx** file.

- 1. Place your cursor anywhere in the table with duplicates.
- 2. Select the Table Tools Design tab from the Ribbon.
- 3. Select Remove Duplicates.



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



5. Select OK.

Excel notifies you of how many duplicates are removed.



Module Four: Review Questions

- 1. You should not include the header rows in your selection when you are formatting data as a table.
 - a) True
 - b) False
- 2. Where do you find the tool to convert a table back to a cell range?
- 3. Which of the following Table Style Options allows you to alternate shading?
 - a) Header Row
 - b) Banded Rows
 - c) First Column
 - d) Last Column
- 4. You can remove the filter buttons in a table's header row.
 - a) True
 - b) False
- 5. The Clear Filter tool is on the Table Tools Design tab of the Ribbon.
 - a) True
 - b) False
- 6. How would you create a filter to hide data that is missing certain text from a table?
- 7. Which of the following is not a Number Filter option?
 - a) Does Not Equal
 - b) Begins With
 - c) Less Than
 - d) Above Average
- 8. What are the three pieces of information needed to perform a custom sort?
- 9. You can sort on more than one column.
 - a) True
 - b) False
- 10. Which tool deletes data from your table if it is not a unique value?
 - a) Remove Duplicates
 - b) Convert to Range
 - c) Delete Table Rows
 - d) None of the Above

All which is beautiful and noble is the result of reason and calculation.

Charles Baudelaire

Module 5: Perform Operations with Formulas and Functions

Excel's power lies in its ability to make calculations that help you analyze data. This module explains how to build the formulas and use the functions that can help you make your calculations. You'll learn about formulas, basic functions, conditional functions and using functions to format and modify text.

Building Formulas

Operators

To build formulas, you need to understand how Excel performs calculations. Formulas use operators and cell references.

Review the different types of operators.

The Arithmetic operators are:

+	Plus Sign – Adds values	A1+B1
-	Minus Sign – Subtracts values	A1-B1
*	Asterisk – Multiplies values	A1*B1
/	Forward slash – Divides values	A1/B1
%	Percent sign – Finds the percentage of a value	A1%
^	Caret – Exponentiation – Finds the exponential value	A1^B1

The Comparison operators are:

=	Equals sign – Equates values	A1=B1
>	Greater than sign – Indicates that one value is greater than the other	A1>B1
<	Less than sign – Indicates that one value is less than the other	A1 <b1< td=""></b1<>
>=	Greater than or equal to – Indicates that one value is greater than or equal to the other	A1>=B1
<=	Less than or equal to – Indicates that one value is less than or equal to the other	A1<=B1
<>	Not Equal – Indicates that values are not equal	A1<>B1

The one text operator is:

& Ampersand - Combines two text values into one text value	A1&B1
--	-------

The reference operators are:

1	Comma - combines multiple range references together	A1,C10 Selects cell A1 and C10 only
:	Colon - produces a reference to all of the cells between the references on either side of the colon	A1:C10 Select all the cells from A1 to C10.
	Space - produces a reference to the cells common to the references on both sides of the space	A1:C10 B3:D9 Selects all the cells from B3 to C9 because they are common to both ranges

Build a Formula

Formulas in Excel have a specific structure.

Here's how to enter a formula to calculate the Total Value. This example uses the **Inventory.xlsx** file.

- 1. Select the **Total Value** for the first product (cell D4).
- 2. Enter the = sign to begin the formula.
- 3. Use the mouse or arrow keys to point to cell **B4** to use it as the first value in the formula. Excel enters the reference as part of the formula.
- 4. Type the * sign.
- 5. Use the mouse or arrow keys to point to cell **C4** to use it as the second value in the formula. Excel enters the references as part of the formula.

AutoSave 💽 Off) 🔒 🕤 • 🔿 • 🗧						Inventory - Excel				Michele Wiedemer 🗹 — 🗌				
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Pa	ste	BI		11 - A A			Accounti \$ - % €.0 .00	ng 👻	🕞 Conditi 🐷 Format 🐷 Cell Sty	ional Format : as Table * /les *	ting v E	🖙 Insert 🛐 Delete 🏢 Format	 ∑ - Z ↓ - Z	T -) -
Clip	board 🗔		Font		Alignm	ent r	Number	G.		Styles		Cells	Editing	, ^
C4	Ļ	• :	× 🗸	<i>f</i> _x =B4	*C4									~
	А	В	С	D	E	F	G	н	1	J	К	L	М	N 🔺
1			I	nventory										
2	Part No.	# In Stoc	Unit K Price	Total Value	Reorder level	# left to reorder								
4	Q\$12578	2	6 \$248.89	=B4*C4	20									
5	DSP4543 DS45848	1	4 \$124.50 2 \$588.00		10									

6. Press ENTER or CTRL + ENTER to complete the formula.

If you press **ENTER** the cursor will move to the next row. If you press **CTRL + ENTER** the cursor will stay in the same location.

	Α	В	С	D	E	F	G	Н	1	J	K	L	М	N	-
1			li li	nventory											\square
2															
3	Part No.	# In Stock	Unit Price	Total Value	Reorder level	# left to reorder									
4	QS12578	26	\$248.89	\$ 6,471.14	20										
5	DSP4543	14	\$124.50		10										
6	DS45848	2	\$588.00		1										
7	SS12566	18	\$224.67		10										
8	SSP2777	12	\$118.00		5										
9	QS12585	5	\$555.22		5										
10	DS12566	2	\$470.99		1										
11	DS12556	8	\$430.37		5										
12	KSP4333	4	\$585.00		2										
13	QP133	12	\$255.23		10										
14	KS36678	3	\$685.75		1										
15															
16	Tax rate	10%													
17															-
	< ►	Sheet1	Sheet	t2 Sheet3	+			:	4					►	

Note that if you select the cell, the Formula bar shows the formula, while the cell contents show the calculation.

D	1	•	×	<i>f_{sc}</i> =B4*(C4	
	А	В	С	D	E	F
1						
2						
3	Part No.	# In Stock	Unit Price	Total Value	Reorder level	# left to reorder
4	QS12578	26	\$248.89	\$ 6,471.14	20	
5	DSP4543	14	\$124.50		10	
6	DS45848	2	\$588.00		1	

Edit a Formula

You can change the operators or cell references in a formula in the Formula bar.

Here's how to edit a formula. The example uses an incorrect cell reference in a formula in the **Inventory.xlsx** file.

- 1. Select the cell with the formula you want to correct to make it active.
- 2. Either click in the Formula Bar or press **F2**.

Excel highlights the cell references in the current formula.

	Α	В	С	D	E	F	G	H	- I	J	K	L	M	N	
1			h	nventory											П
2															
3	Part No.	# In Stock	Unit Price	Total Value	Reorder level	# left to reorder									
4	Q\$12578	26	\$248.89	\$ 6,471.14	20	=B4-C4									
5	DSP4543	14	\$124.50		10										
6	DS45848	2	\$588.00		1										
-7	SS12566	18	\$224.67		10										

3. Change the formula as needed.

E	4	• :	× v	<i>f</i> _x =B4-6	E4										۷
	А	В	С	D	E	F	G	н	1	J	К	L	м	N	
1			1	nventory									П		
2															
3	Part No.	# In Stock	Unit Price	Total Value	Reorder level	# left to reorder									
4	Q\$12578	26	\$248.89	\$ 6,471.14	 20	=B4-E4									
5	DSP4543	14	\$124.50		10										
6	DS45848	2	\$588.00		1										
- 7	SS12566	18	\$224.67		10										

4. Press ENTER or Ctrl + ENTER to complete the formula.

Copy a Formula

In Excel, you often repeat the same formula, changing only the cells you are referencing.

Here's how to copy and paste a formula. This example continues using the **Inventory.xlsx** file.

- 1. Select the cell with the formula you want to copy.
- 2. On the ribbon's **Home** tab click **Copy** or type **CTRL + C**.



Excel highlights the cell whose contents you are copying. This will remain highlighted until you finish pasting, in case you want to paste the cell contents more than once.

- 3. Select the cell where you want to copy the formula.
- Press ENTER or CTRL + V or right click in one of those cells and choose either Paste or Paste formula. Note: As shown below if you hover your mouse over the paste options, the rest of the context menu is dimmed.

	Α	В	С		D	E	F		G	Н		J	K	L	М	N	
1			1	nvent	ory												
2																	
3	Part No.	# In Stock	Unit Price	Total	Value		# left to reorder										
4	QS12578	26	\$248.89	\$ 6	,471.14	20		5									
5	DSP4543	14	\$124.50	\$ 1	,743.00	10											
6	DS45848	2	\$588.00			1											
7	SS12566	18	\$224.67			10											
8	SSP2777	12	\$118.00			Pasta Ontions											
9	QS12585	5	\$555.22			Paste Options:	0 0	0									
10	DS12566	2	\$470.99			fr in fr	£B %										
11	DS12556	8	\$430.37			123											
12	KSP4333	4	\$585.00			Form	ulas (F)										
13	QP133	12	\$255.23			10											
14	KS36678	3	\$685.75			1											
15																	
16	Tax rate	10%															
17																	-
	E	Sheet1	Shee	t2 5	heet3	+				:	4						

If you pressed **CTRL + V** or used the mouse, then you can repeat steps 3 and 4 to paste in as many locations as desired. But, if you press **ENTER** then Excel will stop pasting.

	Α	В	С		D	E	F	G	H	1 I -	J	K	L	М	N	
1			1	nve	entory											
2																
3	Part No.	# In Stock	Unit Price	Тс	otal Value	Reorder level	# left to reorder									
4	QS12578	26	\$248.89	\$	6,471.14	20	6									
5	DSP4543	14	\$124.50	\$	1,743.00	10										
6	DS45848	2	\$588.00	\$	1,176.00	1										
7	SS12566	18	\$224.67	\$	4,044.06	10										
8	SSP2777	12	\$118.00	\$	1,416.00	5										
9	QS12585	5	\$555.22	\$	2,776.10	5										
10	DS12566	2	\$470.99	\$	941.98	1										
11	DS12556	8	\$430.37	\$	3,442.96	5										
12	KSP4333	4	\$585.00	\$	2,340.00	2										
13	QP133	12	\$255.23	\$	3,062.76	10	÷									
14	KS36678	3	\$685.75	\$	2,057.25	1										Ľ
15						Ctrl) 🗸										
16	Tax rate	10%														
17																-
	•	Sheet1	Shee	t2	Sheet3	(+)			:	4					Þ]

Here's how to copy a formula using Autofill. This example continues using the **Inventory.xlsx** file.

- 1. Select the cell with the formula you want to copy.
- 2. Drag the handle at the bottom right corner of the cell to include the cells that should also contain the formula.

F4		•	× v	ţ	°. ≪ =B4-E	54										۷
4	А	В	С		D	E	F	G	н	1	J	К	L	М	N	
1			I	nve	entory											
2																
3	Part No.	# In Stock	Unit Price		otal Value	Reorder level	# left to reorder									
4	QS12578	26	\$248.89	\$	6,471.14	20	6									
5	DSP4543	14	\$124.50	\$	1,743.00	10										
6	DS45848	2	\$588.00	\$	1,176.00	1										
7	SS12566	18	\$224.67	\$	4,044.06	10										
8	SSP2777	12	\$118.00	\$	1,416.00	5										
9	QS12585	5	\$555.22	\$	2,776.10	5										
10	DS12566	2	\$470.99	\$	941.98	1										
11	DS12556	8	\$430.37	\$	3,442.96	5										
12	KSP4333	4	\$585.00	\$	2,340.00	2										
13	QP133	12	\$255.23	\$	3,062.76	10										
14	KS36678	3	\$685.75	\$	2,057.25	1										
15								Ŧ								
16	Tax rate	10%														
17																-
	• •	Sheet1	Shee	t2	Sheet3	+				4					Þ]
Dra	g outside se	lection to ex	tend series	orf	ill; drag insid	le to clear						1			+ 90%	6

3. Release the mouse button at the end of the range.

Understand Absolute, Mixed and Relative References

When a formula is copied from one cell to another, you have four options for how the formula's cell addresses will be adjusted relative to the new vs. original location. You select the options you want by choosing whether to place a \$ in front of the row number and/or column letter.

– nothing c oth the colu	n anges mn letter and	Relat Use a the ro	ive Row, \$ in fror ow numb	Absolute It of the c er	Column olumn let	tter but not
С			А	В	С	
	-	1	10			-
1 =\$A\$1		2		=\$A1	=\$A1	
1 =\$A\$1		3		=\$A2	=\$A2	
e destinatio column let n B2 is copi " stays a "1" atter makes across to a c remains an akes it abso	e cell is, the er will not ed down to a because the \$ t absolute. ell in column "A" because ute.	Based can c chang In this cell ir Wher C, the the p	d on the hange bu ge. s exampl n row 3, t n B2 is co e column receding	destinatic ut the colu e, when E he "1" be pied acro letter rer \$ makes	on cell, the umn lette ecomes a oss to a ce nains an ' it absolut	e row number r will not ed down to a "2". ell in column "A" because te.
tive Column ne row numł	er but not the	Relat Do no and c	ive Refer ot place a lo not pla	ence a \$ in fror ace a \$ be	it of the r efore the	ow number column letter.
С			А	В	С	
		1	10			
=B\$1		2		=A1	=B1	
=B\$1	_	3		=A2	=B2	
	e – nothing chooth the column control the column control C control C contr	a - nothing changes both the column letter and a c b1 \leq A\$1 b2 \leq C $across to a cell in column remains an "A" because hakes it absolute. active Column the row number but not the \leqC active Column the row number but not the active Column active Column active Column active Colum active Colum$	e - nothing changes both the column letter andRelati Use a the ro C 1 $1 = \$A\1 $51 = \$A\1 $51 = \$A\1 $51 = \$A\1 $be destination cell is, thee column letter will noten B2 is copied down to al' stays a "1" because the $letter makes it absolute.across to a cell in columnr remains an "A" becausehakes it absolute.ative Columnthe row number but not thea Ca = B\$11 = B\$11 = B\$11 = B\$12 = 3$	e - nothing changes both the column letter andRelative Row, Use a \$ in from the row numb a C A a 1 10 a a 1 a a 1 a a 1 a <td< td=""><td>a - nothing changes both the column letter andRelative Row, Absolute Use a \$ in front of the c the row number$a$$C$$A$$B$$a$$a$$B$$1$$a$$a$$B$$a$</td><td>a - nothing changes both the column letter andRelative Row, Absolute Column Use a \$ in front of the column letter the row numberaCABCb1=\$A\$1ABCb1=\$A\$1ABCb1=\$A\$1ABCb1=\$A\$1ABCb1=\$A\$1ABCb1=\$A\$1ABCb1=\$A\$1ABCb1=\$A\$1ABCb2=\$a\$2=\$A2=\$A2b2Based on the destination cell, the can change but the column lette change.Based on the destination cell, the can change but the column lette change.b1the reaction to a 1" stays a "1" because the \$In this example, when B2 is copied cell in row 3, the "1" becomes a When B2 is copied across to a cell copied across to a cell the preceding \$ makes it absoluteb1the preceding \$ makes it absoluteCb2the reaction the the can changeIn this example, when B2 is copied cell in row 3, the "1" becomes a When B2 is copied across to a cell the preceding \$ makes it absoluteb2CIn this example, when B2 is copied cell in row 3, the "1" becomes a When B2 is copied across to a cell the preceding \$ makes it absoluteb3CIn this example, when b2 is copied cell in row 1 place a \$ before theb3IIn the second across to a cell in column the preceding \$ makes it absoluteb4BC<t< td=""></t<></td></td<>	a - nothing changes both the column letter andRelative Row, Absolute Use a \$ in front of the c the row number a C A B a a B 1 a a B a	a - nothing changes both the column letter andRelative Row, Absolute Column Use a \$ in front of the column letter the row numberaC A BCb1=\$A\$1 A BCb2=\$a\$2=\$A2=\$A2b2Based on the destination cell, the can change but the column lette change.Based on the destination cell, the can change but the column lette change.b1the reaction to a 1" stays a "1" because the \$In this example, when B2 is copied cell in row 3, the "1" becomes a When B2 is copied across to a cell copied across to a cell the preceding \$ makes it absoluteb1the preceding \$ makes it absoluteCb2the reaction the the can changeIn this example, when B2 is copied cell in row 3, the "1" becomes a When B2 is copied across to a cell the preceding \$ makes it absoluteb2CIn this example, when B2 is copied cell in row 3, the "1" becomes a When B2 is copied across to a cell the preceding \$ makes it absoluteb3CIn this example, when b2 is copied cell in row 1 place a \$ before theb3IIn the second across to a cell in column the preceding \$ makes it absoluteb4BC <t< td=""></t<>

Here's an example of how to copy a formula with an absolute reference. This example uses the **Taxes.xlsx** file.

- 1. Create a new column labeled **Taxes**.
- 2. Select in the Taxes column for the first product (cell E4).
- 3. Enter the = sign to begin the formula.
- 4. Point to cell **B16** to use it as the first value in the formula. Excel enters the reference as part of the formula.
- 5. Press **F4** on the keyboard to switch the cell reference to absolute or you can use the formula bar to manually insert dollar signs before the column and the row (i.e., \$B\$16).
- 6. Enter * and select the relative reference in the **Total Value** column.

D4	ļ	• :	× v	f;	* =\$B\$1	L6*D4									~
	Α	В	С		D	E	F	G	н	1	J	к	L	м	
1					Invent	ory									
2															
3	Part No.	# In Stock	Unit Price	Т	otal Value	Taxes	Reorder level	# left to reorder							
4	QS12578	26	\$248.89	\$	471.14	=\$B\$16*D4	20	6							
5	DSP4543	14	\$124.50	\$	1,743.00		10	4							
6	DS45848	2	\$588.00	\$	1,176.00		1	1							
7	SS12566	18	\$224.67	\$	4,044.06		10	8							
8	SSP2777	12	\$118.00	\$	1,416.00		5	7							
9	QS12585	5	\$555.22	\$	2,776.10		5	-							
10	DS12566	2	\$470.99	\$	941.98		1	1							
11	DS12556	8	\$430.37	\$	3,442.96		5	3							
12	KSP4333	4	\$585.00	\$	2,340.00		2	2							
13	QP133	12	\$255.23	\$	3,062.76		10	2							
14	KS36678	3	\$685.75	\$	2,057.25		1	2							
15		·													_
16	Tax rate	10%													_
17															
	4 - F	Sheet1	Sheet	t2	Sheet3	\oplus			-						Þ
Poi	nt									=	Ξ	─ - ─	+	+ 9	0%

7. Press ENTER or CTRL + ENTER to complete the formula.

Try copying the formula for the other products and selecting some of them to see the results.

E6		• : :	× v	f.	=\$B\$1	16*0	D6									<
	А	В	с		D		E	F	G	н	I.	J	К	L	м	
1					Invent	ory	,									
2																
3	Part No.	# In Stock	Unit Price		otal Value		Taxes	Reorder level	# left to reorder							
4	Q\$12578	26	\$248.89	\$	6,471.14	\$	647.11	20	6							
5	DSP4543	14	\$124.50	\$	1,743.00	\$	174.30	10	4							
6	DS45848	2	\$588.00	\$	1,176.00	\$	117.60	1	1							
7	SS12566	18	\$224.67	\$	4,044.06	\$	404.41	10	8							
8	SSP2777	12	\$118.00	\$	1,416.00	\$	141.60	5	7							
9	Q\$12585	5	\$555.22	\$	2,776.10	\$	277.61	5	-							
10	DS12566	2	\$470.99	\$	941.98	\$	94.20	1	1							
11	DS12556	8	\$430.37	\$	3,442.96	\$	344.30	5	3							
12	KSP4333	4	\$585.00	\$	2,340.00	\$	234.00	2	2							
13	QP133	12	\$255.23	\$	3,062.76	\$	306.28	10	2							
14	KS36678	3	\$685.75	\$	2,057.25	\$	205.73	1	2							
15																
16	Tax rate	10%														
17																-
	<	Sheet1	Sheet	t2	Sheet3		(+)			-						Þ
Rea	dy											Ξ	─ - ─		+ 90	196

Perform Basic Functions

Calculate Using Status Bar

The Status Bar at the bottom of the Excel window provides a quick way to perform some basic functions.

Here's how to find the average of selected cells. This example uses the **Budget.xlsx** file.

- 1. Highlight the cells to include in the average.
- 2. Find the Average in the Status Bar.

B7	• • • >	< ~ <i>1</i>	× 225									٣
	А	В	С	D	E	F	G	н	I.	J	К	1 🔺
1	Household Budget											
2	2013											
3												
4		January	February	March	April	May	June	Total - first	six months			
5	Mortgage	890	890	890	890	890	890					
6	Heat	250	250	175	125	80	0					
7	Power	225	225	175	175	150	150	Ŷ				
8								12				
9	Phone	65	75	65	65	75	75					
10	Car Payment	275	275	275	275	275	275					
11	Gas	240	240	360	240	240	240					
12	Insurance	180	180	180	180	180	180					
13	Food	600	600	600	600	600	600					
14												
15												_
16												
	< → Sheet1	Sheet2	Sheet3	+			: 4					•
Rea	dy			Av	erage: 183.333	3333 Count:	6 Sum: 110				+	100%

Here's how to customize the Status Bar.

- 1. Right click on the Status Bar to see a list of Functions that can be displayed.
- 2. Select the Functions to include.



This Status bar now has the selected function.

Ready	Average: 183.3333333	Count: 6	Max: 225	ium: 1100			 +	100%

Understand Formulas vs. Functions

The difference between a simple formula and a function is like the difference between a simple calculator and a programmable / scientific calculator. Excel's basic formulas perform simple arithmetic calculations while functions simply the otherwise tedious task required for some complex algorithms.

Consider the following example. Notice how the SUM function simplifies the work needed to add a sequence of 10 numbers in cells A1 through A10.

Formula =A1+A2+A3+A4+A5+A6+A7+A8+A9+A10

Function =SUM(A1:A10)

Excel has over 400 functions. These functions can be found by clicking the **Insert Function** button in the Formula bar.

AutoSave 💽 Off	ן לי לי י	Budget - Excel	Michele Wiedemer 🛛 🗈	
File Home II	nsert Page Layout Formulas Data	Review View Add	-ins ACROBAT QuickBooks	Q Tell me 너소
Paste V Clipboard I	$\begin{array}{c c} \bullet & 11 & \bullet & A^* & A^* \\ \hline \bullet & \bullet & A^* & \bullet & \bullet \\ \hline \bullet & \bullet & A^* & \bullet & \bullet \\ \hline \bullet & \bullet & A^* & \bullet & \bullet \\ \hline \hline & \bullet & \bullet & \bullet \\ \hline & \bullet & \bullet & \bullet \\ \hline & \bullet & \bullet & \bullet \\ \hline \end{array} \qquad \qquad$	General ▼ \$ • % * \$ • % *	Conditional Formatting Format as Table Cell Styles Styles Cell Sty	ert \cdot $\sum \cdot \frac{A}{2} \cdot \cdot$ lete \cdot $\bigvee \cdot \cdot \cdot$ mat \cdot $\checkmark \cdot$ Ils Editing \land
H5 •	$\times \checkmark f_x =$			*
A	B C D	E F G	H I	J K I
1 Household Budget 2 20 3	Insert Function	? ×		
4 5 Mortgage	Type a brief description of what you want to click Go	do and then <u>G</u> o	Total - first six months	
6 Heat	Or select a category: Most Recently Used	\sim	0	
7 Power	Select a function:		150	
8	SUM	<u>^</u>		
9 Phone	AVERAGE		75	
10 Car Payment	HYPERLINK		275	
11 Gas	MAX		240	
13 Food	SIN SUM(number1 number2)	· · · · · · · · · · · · · · · · · · ·	600	
14	Adds all the numbers in a range of cells.			
15				
16	-			
♦ → Shee				
Edit	Help on this function	OK Cancel		+ 100%

Notice that each function includes the name and argument syntax that you'll need to use to complete the function calculation.

Perform Basic Functions

In addition to using the **Insert Function**, you can enter basic functions including the SUM, MIN, MAX, COUNT and AVERAGE functions from the **Home** tab of the ribbon.

Here's how to use a basic function from the ribbon. This example uses the **Budget2.xlsx** file.

- 1. Select the cell to display the function results.
- 2. Select the SUM tool in the Editing Group on the **Home** tab of the Ribbon. For functions other than SUM, select the small arrow next to the tool to see the list of functions and select the function.

AutoSave Off	ਜ਼ ਙਾ ∂ਾ ਦ			quick an	alysis - Ex	cel		Michele	Wiedemer 🖅 —	
File Home I	Insert Page Layout	Formulas Data	Review	View	Add-ins	ACROBAT	QuickBooks	♀ Tell me wh	at you want to do	🖻 Share
Paste V Clipboard Tr	• 11 • A A <u>U</u> • ⊡ • <u>∆</u> • <u>A</u> Font	· = = → · · · = = = • • • • Alignment		Currency \$ - % * Numbe	▼	Conditional Formatting ▼	Format as Table * Styles * Styles	Insert • Delete • Format • Cells	Sum Average Count Numbers Max Min More Eunctions	~

3. Excel enters the function with a default selection of cell references.

	А	В	С	D	E	F	G	Н	I.	J	K	1	*
1	Household Budget												
2	2013												
3													
4		January	February	March	April	May	June	Total - first	six months				
5	Mortgage	890	890	890	890	890	890						
6	Heat	250	250	175	125	80	0						
7	Power	225	225	175	175	150	150	=AVERAGE(B7:G7)				
8								AVERAGE(umber1, [n	umber2],)			
9	Phone	65	75	65	65	75	75						
10	Car Payment	275	275	275	275	275	275						

- 4. If the cell references are not accurate, you can drag the highlighted area to include additional cells or remove cells you do not want used in the function. You can also edit the cell references in the Formula bar.
- 5. Press **CTRL Enter** to complete the function.

In the following illustration, the cell with the function is active, so that you can see the function syntax in the Formula Bar and the result in the cell.

н	7 🔹 : 🔿	< 🗸 f	* =AVER	AGE(B7:G7)								,	~
	Α	В	С	D	E	F	G	Н	1	J	к	1	4
1	Household Budget												
2	2013												
3													
4		January	February	March	April	May	June	Total - first	six months				
5	Mortgage	890	890	890	890	890	890						
6	Heat	250	250	175	125	80	0						
7	Power	225	225	175	175	150	150	183.33333					
8													
9	Phone	65	75	65	65	75	75						
10	Car Payment	275	275	275	275	275	275						

AutoComplete a Function

AutoComplete is an Excel feature that helps you save time.

Here's how to use the AutoComplete feature. This example continues using the **Budget2.xlsx** file.

1. Begin typing the **SUM** function. As soon as you type the equals sign and the letter S, Excel displays a possible list of matching functions.

	A	В	С	D	E	F	G	Н	I
1	Household Budget								
2	2013								
3									
4		January	February	March	April	May	June	Total - first	six months
5	Mortgage	890	890	890	890	890	890		
6	Heat	250	250	175	125	80	0		
\$7	Power	225	225	175	175	150	150	=s	
8								🕭 SEARCH	^
9	Phone	65	75	65	65	75	75	€ SEC	
10	Car Payment	275	275	275	275	275	275	(fr) SECH	
11	Gas	240	240	360	240	240	240	CE SECONE	
12	Insurance	180	180	180	180	180	180	G SHEET	0111
13	Food	600	600	600	600	600	600	E SHEETS	
14								🕭 SIGN	
15								🕭 SIN	
16								SINH	
	< → Sheet1	Sheet2	Sheet3	+	1		: 4	SKEW	~

- 2. To select the SUM Function from the list, double-click on the SUM function.
- 3. Excel enters the function, but you must still enter the arguments.

	А	В	С	D	E	F	G	Н	1	J	К	L	
1	Household Budget												
2	2013												
3													
4		January	February	March	April	May	June	Total - first	six months	;			
5	Mortgage	890	890	890	890	890	890						
6	Heat	250	250	175	125	80	0						
7	Power	225	225	175	175	150	150	=SUM(
8								SUM(num	ber1, [numb	er2],)			
9	Phone	65	75	65	65	75	75						
10	Car Payment	275	275	275	275	275	275	÷					

4. You can simply click on multiple cells, or click and drag to select a cell range. You can also type in the cell references.

B	7 👻 : 🔿	× 🗸 f	sum(B7:G7									~
	А	В	с	D	E	F	G	Н	1	J	К	L	
1	Household Budget												
2	2013												
3													
4		January	February	March	April	May	June	Total - first	six months				
5	Mortgage	890	890	890	890	890	890						
6	Heat	250	250	175	125	80	0						
7	Power	225	225	175	175	150	150	=SUM(B7:G	7				
8							ç	SUM(num	ber1, [numb	er2],)			
9	Phone	65	75	65	65	75	75						
10	Car Payment	275	275	275	275	275	275						

5. In the Formula Bar, enter the final parenthesis mark to end the function.

				I									_
H	7 7 7	< 🗸 j	s =SUM(B7:G7)									×
	А	В	с	D	E	F	G	Н	1	J	к	L	
1	Household Budget												Π
2	2013												
3													
4		January	February	March	April	May	June	Total - first s	ix months				
5	Mortgage	890	890	890	890	890	890						
6	Heat	250	250	175	125	80	0						
7	Power	225	225	175	175	150	150	=SUM(B7:G7	7)				
8													
9	Phone	65	75	65	65	75	75						
10	Car Payment	275	275	275	275	275	275						
11	Gas	240	240	360	240	240	240						
12	Insurance	180	180	180	180	180	180						
13	Food	600	600	600	600	600	600						
14													
15													
16													Ŧ
	< → Sheet1	Sheet2	Sheet3	+			: •	· · · · · · · · · · · · · · · · · · ·				Þ]
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6. Press CTRL + ENTER to enter the function in the cell.

Create Functions using Formulas Tab

The **Formulas** tab on the Ribbon can help you create functions.

Here's how to insert a function from the Formulas tab. This example continues using the **Budget2.xlsx** file.

- 1. Select the cell to display the function results.
- 2. Select the **Formulas** tab on the Ribbon.
- 3. Select the **Function Library** tool categorizing the type of function you want to use and select the function from the list.

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1	Hous		COUNT	link			с	D	E	F	G	Н	I	J	К		L
2			MAX SIN		-											_	
4			SUMIF		1		February	March	April	May	June	Total - first s	ix months				
5	Mort		PMT		:	890	890	890	890	890	890						
6	Heat		STDEV		1	250	250	175	5 125	80	0						
7 8	Pow	f_X	Insert <u>F</u>	unction		225	225	175	5 175	150	150	1100					
9	Phor	ie				65	75	65	65	75	75	70					
10	Car F	aym	ent			275	275	275	275	275	275						
11	Gas					240	240	360	240	240	240						

4. In the **Function Arguments** dialog box, place your cursor in the first argument and then select one cell or a range of cells to use for that argument. You can hold down the **CTRL** key to select multiple cells that are not next to each other.

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	A		В	C	D	E	F	6	н	1	J	ĸ	L	M	IN	-Ĥ
1	Household Bi	udget					Function	Arguments							? X	
2		2013					-									
3			lanuary	February	March	April A	AVERAG	1								
5	Mortgage		890	890	890	890		Number1	B11,C11,D11	1,E11	1	-				
6	Heat		250	250	175	125		Number2			1	= numbe	r			
7	Power		225	225	175	175										
8																
9	Phone		65	75	65	65										
10	Car Payment		275	275	275	275	1					= 270				- 11
11	Gas		240	240	360	240	Returns th	ne average (arith	metic mean) o	of its argum	ents, which	can be numb	ers or names,	arrays, or i	eferences	
12	Insurance		180	180	180	180	that conta	ain numbers.								
13	Food		600	600	600	600			Number1:	number1,	number2, a	re 1 to 255 ni	umeric argume	ents for wi	hich you wa	nt
14										the average	je.					- 1
15																- 1
16							Formula r	esult = 270								
	4 - F	Sheet1	Sheet2	Sheet3	(+)		Help on t	his function					0	К	Cancel	
Edi											1				+ 100	76

- 5. Continue selecting arguments in the dialog box and selecting or entering the relevant cells to build the function.
- 6. Select **OK** to complete and enter the function.

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	А	В	С	D	E	F	G	Н	1	J	K	L	М	N	
1	Household Budget														
2	20:	13													_
3															_
4		January	February	March	April	May	June	Total - first s	ix months						_
5	Mortgage	890	890	890	890	890	890								-
6	Heat	250	250	175	125	80	0								-
7	Power	225	225	175	175	150	150	1100							-
8	Dharas		75			76	75	70							-
9	Phone	05	/5	275	20	/5	/5	70							-
10	Car Payment	2/5	2/5	2/5	2/5	2/5	2/5	70							-
12	locuranco	190	190	190	190	190	190	270							-
12	Food	600	600	600	600	600	600								-Ш
14	1000	000	000	000	000	000	000								-
14															-
16															
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Perform Conditional Functions

Perform the IF Function

The IF function makes a logical comparison and provides one of two different results.

Here's how to create an IF function. This example uses the IF statements.xlsx file.

- 1. Place your cursor in the cell that should display the results of the IF function. In this example place your cursor in cell **C2**.
- 2. Select the Formulas tab.
- 3. Select the arrow next to the **Logical** tool.
- 4. Select IF.



5. In the **Logical_test** field of the **Function Arguments** dialog box, enter the test. In this example, we'll evaluate whether the **Actual** column amount is more than the **Budget** column amount. You would select **B2**, enter the > symbol, and select **A2**.

A	2	· ·	× 🗸 j	=IF(B2>A2)											*
		А	В	С	D	Е	F	G	н	1	J	к	L	М	
1		Budget	Actual	Status	Amount Over										
2	\$	300.00	\$ 325.00	=IF(B2>A2)											
3	\$	170.00	\$ 168.00		Ī	Fun	ction Argum	nents						?	×
4	\$	290.00	\$ 295.00												
5	\$	250.00	\$ 400.00												
6							Lo	gical_test	B2>A2		Î	= TRUE			
7							Vali	ue_if_true			Î	= any			
8							Valu	ue_if_false			1	= any			
9						_						-			
10						Chee	ks whether	a condition i	is met, and re	eturns one va	alue if TRUE, a	and another	value if FALS	ε.	
11						_		Lo	gical test is	any value or	r expression t	hat can be e	valuated to	TRUE or FAL	SE.
12						_									
13						_									
14						Form	ula result =								
15							in testine							_	_
16						Help	on this fun	ction					OK	Can	el 👻
	4	⇒ She	eet1 🕂				-	-							Þ
Poi	nt										III (-		100%
6. In the Value_if_true field, enter the result to display if the logical test is true. In this example, we'll have Excel enter the text "Over Budget." Since we want Excel to enter text, it will be enclosed in quotation marks.

Function Arguments					?	\times
IF						
Logical_test	B2>A2	Î	=	TRUE		
Value_if_true	"Over Budget"	Î	=	"Over Budget"		
Value_if_false		1	=	any		
hecks whether a condition: Va	i is met, and returns one lue_if_false is the value is returned.	value if TRUE, that is returne	and ed if	"Over Budget" d another value if FALSE f Logical_test is FALSE. If	omitted,	FALSE
ormula result = Over Bud	get					

7. In the **Value_if_false** field, enter the result to display if the logical test is not true. In this example, we'll leave the cell blank, which is indicated by entering open and close quotation marks.

Function Arguments					?	×
IF						
Logical_test	B2>A2	Ť	=	TRUE		
Value_if_true	"Over Budget"	Ť	=	"Over Budget"		
Value_if_false		Ť	=			
Checks whether a condition	is met, and returns one ue_if_false is the value is returned.	value if TRUE, that is return	= , an ed i	"Over Budget" d another value if FALSE. f Logical_test is FALSE. If o	omitted	, FALSE
Formula result = Over Bud <u>Help on this function</u>	get			ОК	Ca	ncel

8. Select OK.

Now try copying the cell to the rest of the column to see the differing results. Note that you can doubleclick the bottom right corner of the cell with the formula to AutoFill the column.

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	ile	Home	Insert	Page La	ayout Formulas	Data	Review	View	Add-	ins A	CROBAT	QuickBooks	∑ Tell i	me what yo	ou want to	do	ıch s	hare
j In: Fun	fx sert ction	AutoSum Recently Financial	v Used v v	2 Logical A Text + 2 Date & 1 Function Lib	r الع Lookup الع Math & Fime ج الع More Fu	& Reference * Trig * nctions *	Name Manag	œ De ℜ Us er ि Cre Define	fine Name e in Form eate from ed Names	e ▼ ula → Selection	╬¤ Trace ¤ಚ Trace 隊 Remo	Precedents Dependents ve Arrows Form	Show For Error Che Evaluate I ula Auditing	mulas cking ᠂ Formula	Watch Window	Calculation Options • Calculatio	n III	~
C2		· ;	×	√ f ₃	=IF(B2>A2,"	Over Budget"	,"")											~
		А		В	с	D		E	F	G	н	I.	J	к	L	м		
1		Budget	A	ctual	Status	Amount Ov	/er											
2	\$	300.00	\$	325.00	Over Budget													
3	\$	170.00	\$	168.00														
4	\$	290.00	\$	295.00	Over Budget													
5	\$	250.00	\$	400.00	Over Budget													
6																		

Here's another IF function example that calculate the Amount Over in the **IF statement.xlsx** file.

- 1. Place your cursor in the cell that should display the results of the IF function. In this example, select cell **D2**.
- 2. Select the **Formulas** tab.
- 3. Select the arrow next to the **Logical** tool.
- 4. Select IF.
- 5. In the **Logical_test** field of the **Function Arguments** dialog box, enter the test. In this example select **B2**, enter the > symbol, and select **A2**.
- 6. In the Value_if_true field, enter the calculation for the result to display if the logical test is true. In this example, enter B2-A2.

Function Arguments					?	×
IF						
Logical_test	B2>A2	<u>1</u>	=	TRUE		
Value_if_true	B2-A2	1	=	25		
Value_if_false		Î	=	any		
			=	25		
Checks whether a condition	is met, and returns	one value if TRUE,	an	d another value if FALSE		
Va	Ilue_if_true is the va returne	alue that is returne d. You can nest up	ed if to	f Logical_test is TRUE. If seven IF functions.	omitt	ed, TRUE i
Formula result = 25						
Help on this function				ОК		Cancel

- 7. In the **Value_if_false** field, enter the result to display if the logical test is not true. In this example, we'll leave the cell blank again by entering open and close quotation marks.
- 8. Select OK.

D2	2	· ·	K 🗸 fs	=IF(B2>A2,B	2-A2,"")	
		А	В	С	D	E
1		Budget	Actual	Status	Amount Over	
2	\$	300.00	\$ 325.00	Over Budget	25	
3	\$	170.00	\$ 168.00			
4	\$	290.00	\$ 295.00	Over Budget		
5	\$	250.00	\$ 400.00	Over Budget		
6						

Perform the SUMIF Function

The SUMIF function adds values in a range of cells IF they meet your criteria. This example continues using the **IF statements.xlsx** file.

Here's how to create a SUMIF function.

D	7	•	\times	√ f _x =	SUMIF(D2:D5,">1	0")		
		А		В	с		D	E
1		Budget		Actual	Status	Amo	ount Over	
2	\$	300.00	\$	325.00	Over Budget	\$	25.00	
3	\$	170.00	\$	168.00				
4	\$	290.00	\$	295.00	Over Budget	\$	5.00	
5	\$	250.00	\$	400.00	Over Budget	\$	150.00	
6								
					Sum of Overages over			
7					Ş10	Ş	175.00	

- 1. Place your cursor in the cell that should display the results of the SUMIF function. In this example place your cursor in cell **D7**.
- 2. Select the **Formulas** tab.
- 3. Select Insert Function.
- 4. In the Insert Function dialog box, enter SUMIF and select Go.

Insert Function	?	×
Search for a function:		
SUMIF		<u>G</u> 0
Or select a <u>c</u> ategory: Most Recently Used		NS
Select a functio <u>n</u> :		
SUMIF		^
AVERAGE DOLLARDE		
SUM HYPERLINK		
SUMIF(range,criteria,sum_range) Adds the cells specified by a given condition or criteria.		•
Help on this function OK	(Cancel

- 5. Double-click the SUMIF option in the list or select **OK**.
- 6. In the **Function Arguments** dialog box, place your cursor in the **Range** field and select the cells to evaluate. In this example, we'll use **D2:D5**.

7. In the **Criteria** field, enter the criteria to compare the range against. In this example, we'll use greater than 10. We'll leave the **Sum_range** field blank in this example to sum the same range.

Function Arguments		?	\times
SUMIF			
Range	D2:D5		
Criteria	>10 🛨 =		
Sum range	★ = reference		
Adds the cells specified by a	aiven condition or criteria.		
Adds the cells specified by a	given condition or criteria. Criteria is the condition or criteria in the form of a number, exp	pression,	or
Adds the cells specified by a	= given condition or criteria. Criteria is the condition or criteria in the form of a number, exp that defines which cells will be added.	pression,	or te
Adds the cells specified by a	given condition or criteria. Criteria is the condition or criteria in the form of a number, exp that defines which cells will be added.	pression,	or te

8. Select OK.

Perform the AVERAGEIF Function

The AVERAGEIF function provides the average (arithmetic mean) of values in a range of cells IF they meet your criteria.

Here's how to create an AVERAGEIF function. This example continues using the **IF** statements.xlsx file.

D7	7	-	$\times \checkmark f_x$	=,	AVERAGEIF(D2:D	5,">10'	')	
		А	В		с		D	E
1		Budget	Actual		Status	Amo	ount Over	
2	\$	300.00	\$ 325	.00	Over Budget	\$	25.00	
3	\$	170.00	\$ 168.	.00				
4	\$	290.00	\$ 295	.00	Over Budget	\$	5.00	
5	\$	250.00	\$ 400.	.00	Over Budget	\$	150.00	
6								
7					Average of Overages over	¢	87.50	
8					910	Ş	67.30	

- 1. Place your cursor in the cell that should display the results of the AVERAGEIF function.
- 2. Select the **Formulas** tab.
- 3. Select Insert Function.
- 4. In the Insert Function dialog box, enter AVERAGEIF and select Go.
- 5. Double-click the AVERAGEIF option in the list or select **OK**.
- 6. In the **Function Arguments** dialog box, place your cursor in the **Range** field and select the cells to evaluate. In this example, we'll use D2:D5.

7. In the **Criteria** field, enter the criteria to compare the range against. In this example, we'll use greater than 10. We'll leave the **Average_range** field blank in this example to average the same range.

Function Arguments		?	×
AVERAGEIF			
Range	D2:D5		
Criteria	>10 🛨 =		
Average_range	▲ = reference		
Finds average(arithmetic mea	n) for the cells specified by a given condition or criteria. Criteria is the condition or criteria in the form of a number, that defines which cells will be used to find the aver	expression age.	, or text
Formula result =			
Help on this function	ОК	Ca	ncel

8. Select OK.

Perform the COUNTIF Function

The COUNTIF function counts the number of cells within a given range if they meet your criteria.

Here's how to create a COUNTIF function. This example continues using the **IF statements.xlsx** file.

D7	7	- :	×	√ f _x =	COUNTIF(D2:D5,"	'>10'')		
		А		В	С		D	E
1		Budget		Actual	Status	Amo	ount Over	
2	\$	300.00	\$	325.00	Over Budget	\$	25.00	
3	\$	170.00	\$	168.00				
4	\$	290.00	\$	295.00	Over Budget	\$	5.00	
5	\$	250.00	\$	400.00	Over Budget	\$	150.00	
6								
7					Number of Overages over \$10		2	
8								-

- 1. Place your cursor in the cell that should display the results of the COUNTIF function.
- 2. Select the **Formulas** tab.
- 3. Select Insert Function.
- 4. In the Insert Function dialog box, enter COUNTIF and select Go.
- 5. Double-click the COUNTIF option in the list or select **OK**.
- 6. In the **Function Arguments** dialog box, place your cursor in the **Range** field and select the cells to evaluate. In this example, we'll use D2:D5.

7. In the **Criteria** field, enter the criteria to compare the range against. In this example, we'll use greater than 10.

Function Argument	s								?	\times
COUNTIF										
	Range	D2:D5			Ť	= {25;**;5;	150}			
	Criteria	>10			Ť	=				
						=				
Counts the number o	of cells with	nin a ran Criteria	ge that meet is the condit which cells w	the given co ion in the for vill be counte	nditic rm of ed.	= on. a number,	expression,	or tex	t that o	lefines
Counts the number of	of cells with	nin a ran C riteria	ge that meet is the condit which cells v	the given con ion in the for vill be counte	nditic rm of ed.	= on. a number,	expression,	or tex	t that o	lefines

8. Select **OK**. Note that in this example, the field has had a different number format applied, since the currency format would be confusing applied to a count.

Format and Modify Text Using Functions

Format Text Using UPPER, LOWER, and PROPER Functions

The UPPER, LOWER and PROPER functions copy text in selected cells and return that text with the specified case.

Here's how to use the UPPER function. This example uses the case examples.xlsx file.

- 1. Place your cursor in the cell that should display the results of the function.
- 2. Select the Formulas tab from the Ribbon.
- 3. Select the arrow next to **Text**.



4. Select **UPPER** from the bottom of the list.



5. In the **Function Arguments** dialog box, place your cursor in the Text field and select the cell that includes the text you want to display as all caps.

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fx Insert Function	E AutoSur Recently Financia	m ▼ [/Used ~ [I ~ [F	 ? Logical ▼ ▲ Text ▼ ● Date & Time unction Library 	Lookup &	Reference * ig * tions *	Name Manage	œ Defi ℜ Use er ि Crea Define	ine Name 👻 in Formula 🗸 ate from Select d Names	計 で F F F	race Precedents race Dependents emove Arrows	 Show For ✓● Error Che ✓● Evaluate I ✓● Evaluate I 	mulas cking – Formula	Watch Window	Calculation Options ~ Calculatio	n ^
A1	Ψ.	×	√ fx	=UPPER(A1)											~
1 buc 2 A W 3 this 4 5 6 7 7 8 9 9 10	A hanan /ORD is a TITLE	B PER(A1)	C	D 5 Function Arg UPPER Converts a ter Formula resu Help on this 1	xt string to a	F Text A1 all uppercas Te ANAN	G e letters. ext is the	H text you want o	■ = onverted to	J K "buchanan" "BUCHANAN" uppercase, a refe	rence or a text	M × string.	N	0	
12 13 14 15 16 Point	⊳ S	heet1	÷							4					↓ 100%

6. Select OK.

Format Text Using the CONCAT Function

The concatenate function combines the text strings from two or more cells into one text string.

Here's how to use the CONCAT function. This example uses the **text formulas.xlsx** file.

- 1. Place your cursor in the cell that should display the results of the function.
- 2. Select the **Formulas** tab from the Ribbon.
- 3. Select the arrow next to **Text**.
- 4. Select CONCAT.
- 5. In the **Function Arguments** dialog box, place your cursor in the Text1 field and select the cell with the text that should appear first in the joined text string.

6. In the additional **Text** fields, select additional cells with the text that should appear in the joined text string in the order they should appear. You can also indicate actual characters or text instead of a text string. In this example, we'll add a comma and a space in between the contents of the two cells. Any items that are not a cell reference are placed in quotation marks.

Function Arg	uments				?	Х
CONCAT						
	Text1	B2	🛨 = "Buchanan"			
	Text2		<u>↑</u> = ", "			
	Text3	A2	1 = "Todd"			
	Text4		± = text			
Concatenates	a list or ra	ige of text strings. Text3: text1,text2 text string	= "Buchanan, To , are 1 to 254 text strings or r	dd" anges to be join	ed to a	single
Formula resul <u>Help on this f</u>	t = Bucha Junction	nan, Todd		ОК	Car	ncel

7. Select OK.

C2	2 -	: × ~	∫x =CONCAT(B2	2,", ",A2)	
	А	В	С	D	E
1	First Name	Last Name			
2	Todd	Buchanan	Buchanan, Todd		
З	Joyce	Suyama			
4	Nina	Peacock			
5	Joseph	Leverling			
6	Brian	Dodsworth			
7	Leo	Davolio			
8					

Format Text Using LEFT, RIGHT and MID Functions

As opposed to joining text, The RIGHT, LEFT and MID functions allow you to grab a specified number of characters from a specified cell.

Here's how to use the LEFT function. This example uses the Inventory.xlsx file.

- 1. Place your cursor in the cell that should display the results of the function.
- 2. Select the **Formulas** tab from the Ribbon.
- 3. Select the arrow next to **Text**.
- 4. Select LEFT.
- 5. In the **Function Arguments** dialog box, place your cursor in the **Text** field and select the cell to evaluate.
- 6. In the **Num_chars** field, enter the number of characters to return.

Function Arguments		?	×
LEFT Text Num_chars	A4 1 = "Q\$12578" 2 1 = 2		
Returns the specified num	= "QS" ber of characters from the start of a text string. Num_chars specifies how many characters you want LEFT to ext	tract; 1 if (omitted.

7. Select OK.

			Function Li	orary			Dermed Names		
G	4	• : ×	√	د LEFT(A4,2)				
	А	В	С	D	E	F	G	н	
1			In	ventory					
2									
3	Part No.	# In Stock	Unit Price	Total Value	Reorder level	# left to reorder			
4	QS12578	26	\$ 248.89		20		QS		
5	DSP4543	14	\$124.50		10				
6	DS45848	2	\$588.00		1				
7	SS12566	18	\$224.67		10				
8	SSP2777	12	\$118.00		5				
9	QS12585	5	\$555.22		5				
10	DS12566	2	\$470.99		1				
11	DS12556	8	\$430.37		5				
12	KSP4333	4	\$585.00		2				
13	QP133	12	\$255.23		10				
14	KS36678	3	\$685.75		1				
15									

Here's how to create MID function. This example continues using the **Inventory.xlsx** file.

- 1. Place your cursor in the cell that should display the results of the function.
- 2. Select the **Formulas** tab from the Ribbon.
- 3. Select the arrow next to **Text**.
- 4. Select MID.
- 5. In the **Function Arguments** dialog box, place your cursor in the **Text** field and select the cell to evaluate.
- 6. In the **Start_num** field, enter the number of characters from the left to start extracting the characters.
- 7. In the **Num_chars** field, enter the number of characters to extract.

Function Arguments		? ×	
MID			
Text	A4 主 =	'Q\$12578"	
Start_num	3 主 = :	3	
Num_chars	2 主 =	2	
Returns the characters	rom the middle of a text string, given a sta Num_chars specifies how many charae	tting position and length. tters to return from Text.	
Formula result = 12			
Help on this function		OK Cancel	

8. Select OK.

_					-			
G4	4		J.	· =MID(A4,3,2)			
	А	В	С	D	E	F	G	н
1			In	ventory				
2								
	Dart No.	# In Stock	Unit	Total	Poordor loval	# left to		
3	Part NO.	# III SLOCK	Price	Value	Reorder level	reorder		
4	QS12578	26	\$ 248.89		20		12	
5	DSP4543	14	\$124.50		10			
6	DS45848	2	\$588.00		1			
7	SS12566	18	\$224.67		10			
8	SSP2777	12	\$118.00		5			
9	QS12585	5	\$555.22		5			
10	DS12566	2	\$470.99		1			
11	DS12556	8	\$430.37		5			
12	KSP4333	4	\$585.00		2			

Module Five: Review Questions

- 1. Cell references are highlighted when you double-click on a cell with a formula.
 - a) True
 - b) False
- 2. Which type of reference includes dollar signs?
 - a) Absolute
 - b) Relative
- 3. Name three simple calculations you can see on the Status bar when you highlight more than one cell.
- 4. A formula uses a NAME with arguments.
 - a) True
 - b) False
- 5. What surrounds the arguments in a function?
 - a) Quotation marks
 - b) Spaces
 - c) Commas
 - d) Parenthesis
- 6. Name three functions that appear on the Home tab of the Ribbon.
- 7. Explain the shortcut for entering functions.
- 8. Which of the following is NOT a category on the Function Library group of the Formulas tab?
 - a) Names
 - b) Date & Time
 - c) Text
 - d) Logical
- 9. Which of the following is not an argument for the IF function?
 - 1. Logical_test
 - 2. Value_if_true
 - 3. Value_if_false
 - 4. Range
- 10. You can include text that does not appear in any cells as part of a CONCAT function.
 - a) True
 - b) False

The wisest mind has something yet to learn.

George Santayana

Module 6: Use Quick Analysis, Charts and Objects

Quick Analysis includes a number of formatting, charts, and totals shortcuts to help you visualize your data. Recommended Charts are another way of quickly visualizing your information. This module looks at these shortcuts, as well as creating and formatting your own charts and using and formatting other types of objects.

Analyze Data with Quick Analysis

Format with Quick Analysis

The Quick Analysis tool that shows when you have a range of rows and columns selected includes some quick conditional formatting options.

Here's how to apply Quick Analysis formatting. This example uses the **quick analysis.xlsx** file.

- 1. Select the data to format in the sample worksheet.
- 2. Select the icon that appears at the bottom right of the table.

	А	В	С	D		E	F	G	Н	1	J	
1	Company	Industry	Q1 Sales	Q2 Sales								
2	A. Datum Corporation	Tech	\$195,449	\$746,907								
3	Adventure Works	Travel	\$123,721	\$733,396								
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554								
5	City Power & Light	Utilities	\$299,293	\$674,295								
6	Coho Vineyard	Beverage	\$228,783	\$659,385								
7	Contoso, Ltd	Misc	\$239,219	\$287,989								
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368								
9	Consolidated Messenger	Tech	\$579,825	\$448,399								
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474								
11	Fourth Coffee	Beverage	\$876,740	\$567,216								
12	Graphic Design Institute	Education	\$788,390	\$540,282								
13	Humongous Insurance	Financial	\$682,545	\$577,599								
14	Litware, Inc.	Tech	\$902,264	\$206,331								
15	Lucerne Publishing	Misc	\$905,906	\$443,552								
16	Margie's Travel	Travel	\$289,570	\$843,834								
17					[2]	Quic	k Analysis (((trl+0)				
18					23	Uset	the Quick An	alvsis tool to				
19						quic	kly and easily	/ analyze yo	ur data			
20						with	some of Exc	el's most us	eful			
21	Cheat1 (Ð		1		tools and f	i, such as chi formulas.	arts, color-co	oaing,			-
	Sheeti	Ð				and	ormalus.					

3. Select the formatting type that you want to use.

	A	В	С	D	E	F	G	Н	- I	J	4	-
1	Company	Industry	Q1 Sales	Q2 Sales								
2	A. Datum Corporation	Tech	\$195,449	\$746,907								
З	Adventure Works	Travel	\$123,721	\$733,396								
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554								
5	City Power & Light	Utilities	\$299,293	\$674,295								
6	Coho Vineyard	Beverage	\$228,783	\$659,385								
7	Contoso, Ltd	Misc	\$239,219	\$287,989								
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368								
9	Consolidated Messenger	Tech	\$579,825	\$448,399								
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474								
11	Fourth Coffee	Beverage	\$876,740	\$567,216								
12	Graphic Design Institute	Education	\$788,390	\$540,282								
13	Humongous Insurance	Financial	\$682,545	\$577,599								
14	Litware, Inc.	Tech	\$902,264	\$206,331								
15	Lucerne Publishing	Misc	\$905,906	\$443,552								
16	Margie's Travel	Travel	\$289,570	\$843,834								
17					<u>/</u>							
18												
19			Formatting	Charts Totals	Tables	Sparklig	165					
20			Connecting		100103	Sharkin						
21												
22						ab						
23			Data Bars Co	lor Icon Set	Greater	Text	Clear					
24												7
	< → Sheet1 (·	÷	Conditional Form	atting uses rules t	o hiabliabt i	nterecting	data				Þ	

4. For the **GREATER THAN** option (and some other types of options), enter the cell or value that contains the value to which you want to compare the others. Also select the formatting you want to use from the drop down list.

Greater Than	? ×
Format cells that are GREATER THAN:	
\$529,242 1 1 with	Light Red Fill with Dark Red Text 💟
	OK Cancel

For the Text That Contains option (and some other types of options), enter the cell or text that contains the text to which you want to compare the others. Also select the formatting you want to use from the drop down list.

Text That Contains			?	×
Format cells that contain the text:				
Tech	1 with	Light Red Fill with D	ark Red Te	ext 🗸
		ОК	Car	ncel

To remove any formatting you have applied, select CLEAR.

Create Charts with Quick Analysis

Quick Analysis can also help you create recommended charts to help you visualize the information.

Here's how to create Quick Analysis charts. This example continues using the **quick analysis.xlsx** file.

- 1. Select the data to include in the chart.
- 2. Select the icon that appears at the bottom right of the table.
- 3. Select CHARTS.
- 4. Select the chart type that you want to use. In this example we picked the Stacked chart.



The chart is inserted into your worksheet.



Calculate Totals with Quick Analysis

Calculate totals in a variety of ways with the Quick Analysis tool.

Here's how to create Quick Analysis totals. This example continues using the **quick analysis.xlsx** file.

- 1. Select the data to total in the sample worksheet.
- 2. Select the icon that appears at the bottom right of the table.
- 3. Select **TOTALS**.

	А	В	С	D	E	F	G	Н	- I	J		
1	Company	Industry	Q1 Sales	Q2 Sales								
2	A. Datum Corporation	Tech	\$195,449	\$746,907								
3	Adventure Works	Travel	\$123,721	\$733,396								
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554								
5	City Power & Light	Utilities	\$299,293	\$674,295								
6	Coho Vineyard	Beverage	\$228,783	\$659,385								
7	Contoso, Ltd	Misc	\$239,219	\$287,989								
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368								
9	Consolidated Messenger	Tech	\$579,825	\$448,399								
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474								
11	Fourth Coffee	Beverage	\$876,740	\$567,216								
12	Graphic Design Institute	Education	\$788,390	\$540,282								
13	Humongous Insurance	Financial	\$682,545	\$577,599								
14	Litware, Inc.	Tech	\$902,264	\$206,331								
15	Lucerne Publishing	Misc	\$905,906	\$443,552								
16	Margie's Travel	Travel	\$289,570	\$843,834								
17					<u>/</u>							
18												
19			Formatting	Charts Totals	Tables	Snarklines						
20			ronnatting		Tables	opurknines						
21												
22					- %		ΞΣ					
23			Sum	Average Count	% Total	Running	Sum	r				
24				-		2						Ŧ
	Sheet1	Ð	Formulas automa	tically calculate tot	als for you.						Þ	

Note the right and left arrow to scroll through additional options.



4. Select the formula that you want to use.

The type of total you selected is inserted into your worksheet.

	A	В	С	D	E	F	G	н	L	J		٨
1	Company	Industry	Q1 Sales	Q2 Sales	Sum							
2	A. Datum Corporation	Tech	\$195,449	\$746,907	942356							
з	Adventure Works	Travel	\$123,721	\$733,396	857117							
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554	1181317							
5	City Power & Light	Utilities	\$299,293	\$674,295	973588							
6	Coho Vineyard	Beverage	\$228,783	\$659,385	888168							
7	Contoso, Ltd	Misc	\$239,219	\$287,989	527208							
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368	1015938							
9	Consolidated Messenger	Tech	\$579,825	\$448,399	1028224							
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474	1275104							
11	Fourth Coffee	Beverage	\$876,740	\$567,216	1443956							
12	Graphic Design Institute	Education	\$788,390	\$540,282	1328672							
13	Humongous Insurance	Financial	\$682,545	\$577,599	1260144							
14	Litware, Inc.	Tech	\$902,264	\$206,331	1108595							
15	Lucerne Publishing	Misc	\$905,906	\$443,552	1349458							
16	Margie's Travel	Travel	\$289,570	\$843,834	1133404							
17					<u>(</u>							
18												
19			Formatting	Charte Totak	Tables	Sparkling	-					
20			rormatting	Charts Iotae	<u>I</u> ables	<u>a</u> parkiine	5					
21												
22				5	#	96	2					
23			Running	Num Avera	ae Count	% Total	Running	P				
24				43								Ŧ
	< → Sheet1 (÷	Formulas automa	itically calculate to	stals for you.						Þ	

Create Charts

Use Recommended Charts

Excel can evaluate selected data and make recommendations on charts that would best showcase that information.

Here's how to insert a recommended chart. This example continues using the **quick analysis.xlsx** file.

- 1. Select the data that you want to use in your chart.
- 2. Select the **INSERT** tab from the Ribbon.
- 3. Select **RECOMMENDED CHARTS**.



In the *Insert Chart* dialog box, the Recommended Charts tab shows several charts that Excel recommended for the type of data you have selected. As you select each option on the left side of the dialog box, the right side shows a preview.



4. When you find a chart that you want to use, select it in the list and select **OK**.

Excel displays the chart on the same worksheet. It also displays two new context-sensitive tabs: the **Chart Tools Design** tab and the **Chart Tools Format** tab.

AutoSave 💽 Of) E .				recom	mended cl	narts - Excel			Char		Michele Wie	demer	Æ	-		×
File Home	Insert	Page Layout	Formulas	Data	Review	View	Add-ins	ACROBAT	QuickBooks	Design	Format	♀ Tell m	ne what y	ou want f	to do	Ľ	Share 3
Add Chart Quick Element - Layout	Change Colors •	ALE HO ALE HO	HEAREN F.F.F. (200 v/d) Hearing Hearin			Out The	State State		Start Start Start Start Start			Switch Row Column	/ Select Data	Char Chart	nge Type	Move Chart	
Chart Layouts						Chart Sty	les					Dat	a	Тур	e I	Location	~
AutoSave Of	▣⊟€	• @ • =			recom	mended cl	narts - Excel			Char	t Tools	Michele Wie	demer	Æ	-		×
AutoSave (o File Home	🖹 🖬 🗲	o ∓	Formulas	Data	recomi Review	mended cl View	narts - Excel Add-ins	ACROBAT	QuickBooks	Char Design	t Tools Format	Michele Wie Q Tell m	edemer ne what ye	죠 ou want t	— to do	C	× Share
AutoSave Co File Home Chart Area Format Selectio Reset to Match	n Style	Page Layout	Formulas ge e v	Data Abc	recomm Review	mended cl View Sha Chai Cai Sha	Add-ins Add-ins pe Fill + pe Outline + pe Effects +	ACROBAT	QuickBooks	Char Design	Format Bring Format Send Ba	Michele Wie Q Tell m orward ~ ackward ~ on Pane 2	edemer ne what ye 큹 Align ~ 린 Group 과 Rotate	ou want t	— to do 3" 5"		× ≩ Share

Create a New Chart

You can also insert any type of chart using selected data.

Here's how to insert a chart. This example continues using the **quick analysis.xlsx** file.

- 1. Select the cells, including the labels to include in the chart.
- 2. From the ribbon's Insert tab select the type of chart you would like to use.



Excel displays the chart.

Add Additional Data Series

If you later add new data to your worksheet, you can include it in your chart.

Here's how to include additional data in a chart. This example continues using the **quick analysis 2.xlsx** file.

- 1. Select the chart.
- 2. When you hover your mouse over the bottom right corner of the highlighted source, your cursor changes to a diagonal with arrows.

	A	В	С	D	E	F	G	Н	1	J	K	L	М	N	0	-
1	Company	Industry	Q1 Sales	Q2 Sales	Q3 Sales			~								
2	A. Datum Corporation	Tech	\$195,449	\$746,907	\$ 621,219			<u>ү</u>				T. 1				
З	Adventure Works	Travel	\$123,721	\$733,396	\$ 607,929						Chart	Litle				
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554	\$ 355,179				Margie's Tra	vel						
5	City Power & Light	Utilities	\$299,293	\$674,295	\$ 251,962				- Litware I	nc			_	-		
6	Coho Vineyard	Beverage	\$228,783	\$659,385	\$ 580,453								_			
7	Contoso, Ltd	Misc	\$239,219	\$287,989	\$ 287,714			Graphic	Design Instit	ute						
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368	\$ 419,728				Fabrikam, I	nc.			_			
9	Consolidated Messenger	Tech	\$579,825	\$448,399	\$ 434,008			Contoso F	harmaceutic	als			-		9	
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474	\$ 512,745				Coho Vineya	ard						
11	Fourth Coffee	Beverage	\$876,740	\$567,216	\$ 620,646			Blue	Yonder Airli	nes internet						
12	Graphic Design Institute	Education	\$788,390	\$540,282	\$ 627,910			A Dat	um Cornorat							
13	Humongous Insurance	Financial	\$682,545	\$577,599	\$ 716,073			A. Dat	unicorporat	¢0	C 400,000	¢000.000	¢1 200 0	0 61.00		۲
14	Litware, Inc.	Tech	\$902,264	\$206,331	\$ 679,940					50	\$400,000	\$800,000	\$1,200,00	10 \$1,60	0,000	
15	Lucerne Publishing	Misc	\$905,906	\$443,552	\$ 290,953						Q1 Sales	Q2 Sales				
16	Margie's Travel	Travel	\$289,570	\$843,834	\$ 671,833			Ó			0				d.	Ŧ
	Sheet1 (+		C	ソ			: •				1				

3. Drag the "handles" around the highlighted area to include the additional data.

	A	В	С	D		E	F	G	Н	I.	J	K	L	М	N	0	
1	Company	Industry	Q1 Sales	Q2 Sales	Q3 Sa	ales			~			-					
2	A. Datum Corporation	Tech	\$195,449	\$746,907	\$	621,219			<u>ү</u>							(1
3	Adventure Works	Travel	\$123,721	\$733,396	\$	607,929						Chart	litle				
4	Blue Yonder Airlines	Travel	\$934,763	\$246,554	\$	355,179				Margie's Tra	vel						
5	City Power & Light	Utilities	\$299,293	\$674,295	\$	251,962				litware I	nc		_	_			
6	Coho Vineyard	Beverage	\$228,783	\$659,385	\$	580,453			0	De l'estimate, i		_					
7	Contoso, Ltd	Misc	\$239,219	\$287,989	\$	287,714			Graphic	Design Institi	ле				_		
8	Contoso Pharmaceuticals	Medical	\$371,570	\$644,368	\$	419,728				Fabrikam, I	nc.						
9	Consolidated Messenger	Tech	\$579,825	\$448,399	\$	434,008			Contoso P	Phar maceutic	als					0	
10	Fabrikam, Inc.	Utilities	\$639,630	\$635,474	\$	512,745				Coho Vineya	ard						
11	Fourth Coffee	Beverage	\$876,740	\$567,216	\$	620,646			Blue	Yonder Airlir	nes 📃						
12	Graphic Design Institute	Education	\$788,390	\$540,282	\$	627,910			A Dat	um Cornorati	00	-		·			
13	Humongous Insurance	Financial	\$682,545	\$577,599	\$	716,073			A. Dat	un corporati	co c		000 000 61 5		000 60 500		
14	Litware, Inc.	Tech	\$902,264	\$206,331	\$	679,940					50 5	500,000 \$1,	000,000 \$1,5	00,000 \$2,00	0,000 \$2,500,	000	
15	Lucerne Publishing	Misc	\$905,906	\$443,552	\$	290,953					Q1 9	Sales 📕 Q2 S	Sales ≣Q3S	ales			
16	Margie's Travel	Travel	\$289,570	\$843,834	\$	671,833			ò			0					1
	 → Sheet1 (÷							E 4				1			Þ	

The chart is automatically updated with the new data series.

Switch Between Rows and Columns in Source Data

Excel determines how to plot your selected data into your selected chart based on the number of worksheet rows and columns. The larger number goes on the horizontal axis of the chart.

Here's how to switch rows and columns for a chart. This example uses the **switch data.xlsx** file.

- 1. Select the chart.
- 2. Select the Chart Tools Design tab from the Ribbon.
- 3. Select Switch Row/Column.



Excel immediately updates the chart.



Format Charts

Resize Charts

Charts have "handles" around the edges when you select it. These handles help you resize the chart.

Here's how to resize a chart. This example continues using the **switch data.xlsx** file.

- 1. Select the chart you want to resize.
- 2. Click one of the handles. The cursor changes to a line with arrows pointing in the direction of resizing.



3. Drag the handle and release the mouse when the chart is the desired size.

Add and Modify Chart Elements

A standard chart includes many different elements which can be included or removed and formatted.

Here's how to add a chart element. This example continues using the **switch data.xlsx** file.

- 1. Click on the chart and then select the + sign on the right side of your chart.
- 2. Check the box of the element you want to add, or clear the box for the element you want to remove.
- 3. If the element includes a small arrow to the right of the option, click the arrow to apply additional options.



Here's how to access the additional formatting options for one or more elements. This example continues using the **switch data.xlsx** file.

1. Select **MORE OPTIONS** from the Chart Elements detail list.



2. The **Format** pane opens for the selected element. Note that this formatting pane looks different, depending on which element you selected.



You can also add chart elements by selecting the **Chart Tools Design** tab on the Ribbon and using the **Add Chart Element** tool. The tool includes the same elements with options for each element. Hover the mouse over an option to see a preview of that chart element.

AutoSav	ve 💽 Off		o•∂- =			recom	mended o	:harts - Excel			Chart	Tools	Michele Wied	emer	b –		×
File	Home	Insert	Page Layout	Formulas	Data	Review	View	Add-ins	ACROBAT	QuickBooks	Design	Format	♀ Tell me	e what yo	ou want to do		🕈 Share
Add Chart Element •	Quick Layout •	Change Colors •	Arrest Arrest	LATENCE about the second secon	Oraci 2014 Oraci 4000 Oraci 4000		Carl Tab	And the second s	Fight Bio Harding H	Starting and a start of the sta			Switch Row/ Column	Select Data	Change Chart Type	Move Chart	
Chart La	ayouts						Chart St	yles					Data		Type	Location	^



Apply Chart Styles and Layouts

The **Chart Tools Design** tab on the Ribbon includes a gallery of **Styles**, **Layouts** and **Colors** to quickly change how your chart appears.

Here's how to select a new chart style. This example continues using the switch data.xlsx file.

- 1. Select the chart you want to format.
- 2. Select the Chart Tools Design tab on the Ribbon.
- 3. Select the desired chart style to apply it.



Here's how to select a new chart layout. This example continues using the switch data.xlsx file.

- 1. Select the chart you want to format.
- 2. Select the **Chart Tools Design** tab on the Ribbon.
- 3. Select Quick Layout.
- 4. Select the new layout.



Here's how to change the chart colors. This example continues using the **switch data.xlsx** file.

- 1. Select the chart you want to format.
- 2. Select the **Chart Tools Design** tab on the Ribbon.
- 3. Select Change Colors.
- 4. Select the new color scheme.



Move Charts to a Chart Sheet

You can move your chart to a separate worksheet in the workbook called a Chart Sheet.

Here's how to move the chart to a new worksheet in the workbook. This example continues using the **switch data.xlsx** file.

- 1. Select the chart.
- 2. Select the Chart Tools Design tab.
- 3. Select the **Move Chart** tool.

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Excel displays the **Move Chart** dialog box.

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- 4. Select New Sheet.
- 5. Give the new worksheet a new name, if desired.
- 6. Select OK.

Excel creates a new worksheet in the workbook (notice the tabs at the bottom). The chart has also been resized to fill the window.



Add Data to Chart on a Chart Sheet

The process for adding a new data series to a chart on a chart sheet is different than we previously covered.

Here's how to include additional data in a chart. This example uses the **add data.xlsx** file.

- 1. With the chart sheet active, select the **Chart Tools Design** tab from the Ribbon.
- 2. Select the **Select Data** tool.



- 3. Place your cursor in the **Chart data range** field of the **Select Data Source** dialog box.
- 4. Switch to the worksheet that has the source data by clicking its tab at the bottom of the window.

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- 5. Select the cell range that you want to include in the chart. It will be outlined with a dotted green line. The **Chart data range** contents will include the sheet in the absolute cell reference.
- 6. Select OK.

7. The additional data is added to the chart.



Insert and Format Objects

Insert Shapes

You can enhance your worksheets with shapes.

Here's how to insert shapes. This example uses a blank file.

- 1. Select the **INSERT** tab from the Ribbon.
- 2. Select Illustrations.
- 3. Select SHAPES.

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- 4. Select the shape you want to use.
- 5. Hold down the mouse button from the location in the worksheet where you want to place the top left of the shape. Drag down and to the right until the shape is the desired size.

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Insert Text Boxes

Text boxes give you the freedom to enter text anywhere on the worksheet. You simply draw the text box wherever you want it and enter the desired text.

Here's how to insert a text box. This example continues using the blank file from the previous exercise.

- 1. Place your cursor where you want the text box to appear in the presentation.
- 2. Select the **INSERT** tab from the Ribbon.
- 3. Select the **Text** group.



4. Select **TEXT BOX**.



- 5. Hold down the mouse button from the location in the worksheet where you want to place the top left of the shape. Drag down and to the right until the shape is the desired size.
- 6. Enter your text.



Format Shapes and Text Boxes

Shapes, including text boxes, can be formatted with fill, outline, and effects.

Here's how to format a shape. This example continues using the blank file from the previous exercise.

- 1. Select the shape.
- 2. Select the DRAWING TOOLS FORMAT tab on the Ribbon.
- 3. Select SHAPE FILL to select a color, picture, gradient or texture to use inside the shape.



4. Select **SHAPE OUTLINE** to select a color, weight, line style, and in some cases, arrows to use for the shape outline.



5. Select **SHAPE EFFECTS** to apply additional affects to the shape.

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Insert Pictures

You can insert any picture file from your computer or other media drive.

Here's how to insert a picture. This example continues using the blank file from the previous exercise.

- 1. Place your cursor in the cell where you want the picture located. The picture will not increase the cell size, but will serve as an anchor for where the picture is located on the worksheet.
- 2. Select the **Insert** tab from the Ribbon.
- 3. Select Illustrations.

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4. Select Pictures.

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5. Navigate to the location of the file and highlight the file you want to insert.

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6. Select Insert.


Module Six: Review Questions

- 1. What are at least three of the five tabs of the Quick Analysis icon?
- 2. The contents of the Recommended Charts options change, depending on what type of data you have selected.
 - a) True
 - b) False
- 3. You must insert a chart before you can see what it will look like with your data.
 - a) True
 - b) False
- 4. Which tool allows you to select a new range of data for an existing chart?
 - a) Add Chart Element
 - b) Quick Layout
 - c) Select Data
 - d) None of the above
- 5. Which of the following allows you to resize a chart?
 - a) "Handles" around the edges and corner
 - b) The + to the right of the chart
 - c) The paintbrush icon to the right of the chart
 - d) None of the above
- 6. Can you name nine chart elements?
- 7. You can change how the horizontal and vertical axis in a chart display data.
 - a) True
 - b) False
- 8. Chart styles include which of the following?
 - a) Colors
 - b) Layouts
 - c) Legends
 - d) None of the above
- 9. What options are available for moving a chart?
- 10. Shapes, text boxes and images are NOT located within a single cell on a worksheet.
 - a) True
 - b) False

Learning is the beginning of wealth.

Jim Rohn

Module 7: Wrapping Up

Although this workshop is coming to a close, we hope that your journey to improve your Excel 2016 skills is just beginning. Please take a moment to review and update your action plan. This will be a key tool to guide your progress in the days, weeks, months, and years to come. We wish you the best of luck on the rest of your travels.

Words from the Wise

We'd like to leave you with a few thoughts to accompany you on your Excel 2016 learning journey.

- Plan out your worksheets to make the most efficient use of time and to prepare for how you will use data in charts or tables
- Remember that workbooks can contain multiple worksheets of related information.
- Take advantage of Excel's many shortcuts for working with data, like copying and pasting either values or formulas.
- Use outlines and subtotals to gain insight into your data.
- Put your data into tables to simplify filtering data.
- Remember that Excel will walk you through the necessary arguments when using Functions.
- You can present your data with style using quick analysis, charts, shapes and text boxes.