



Microsoft Excel

Advanced Training

Share Your Experiences

Tell us about your Excel experiences



Topics Covered

- Customizing Excel
- Entering Data
- Formulas
- Doing a What-If Analysis
- PivotTables
- Charts and Graphics
- Creating Data Lists
- Automating Commands with Macros

Questions?

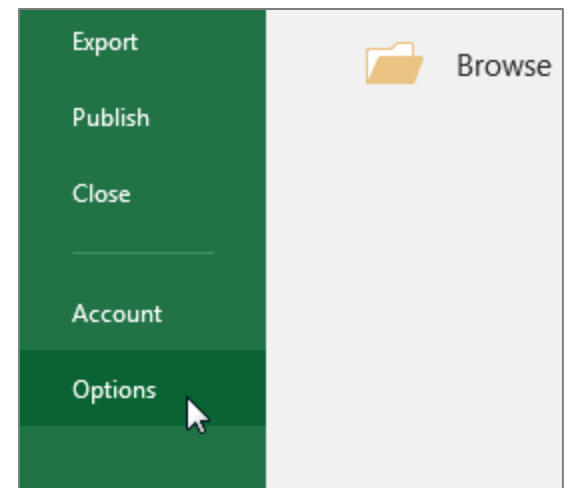
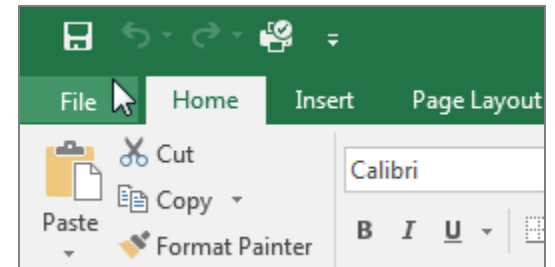


Excel Options

To get to the **Excel Options** box:

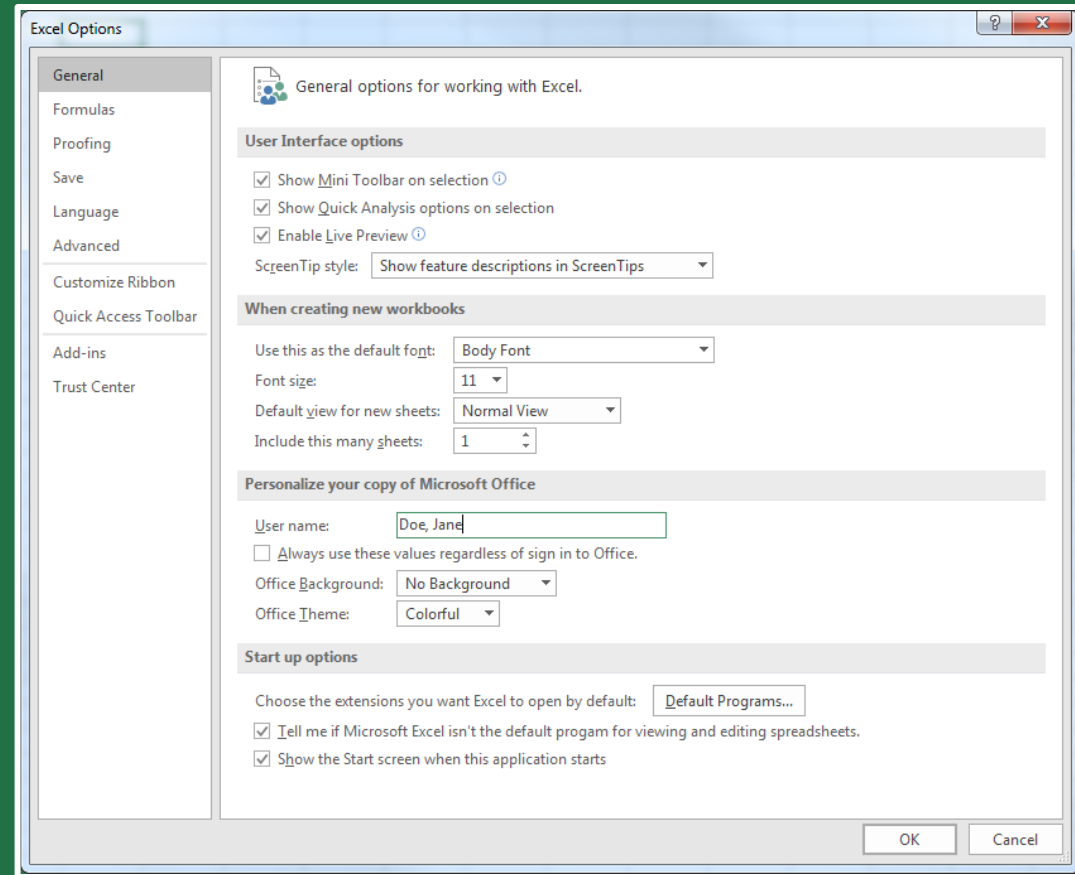
1. Select **File**.

2. Select **Options**.



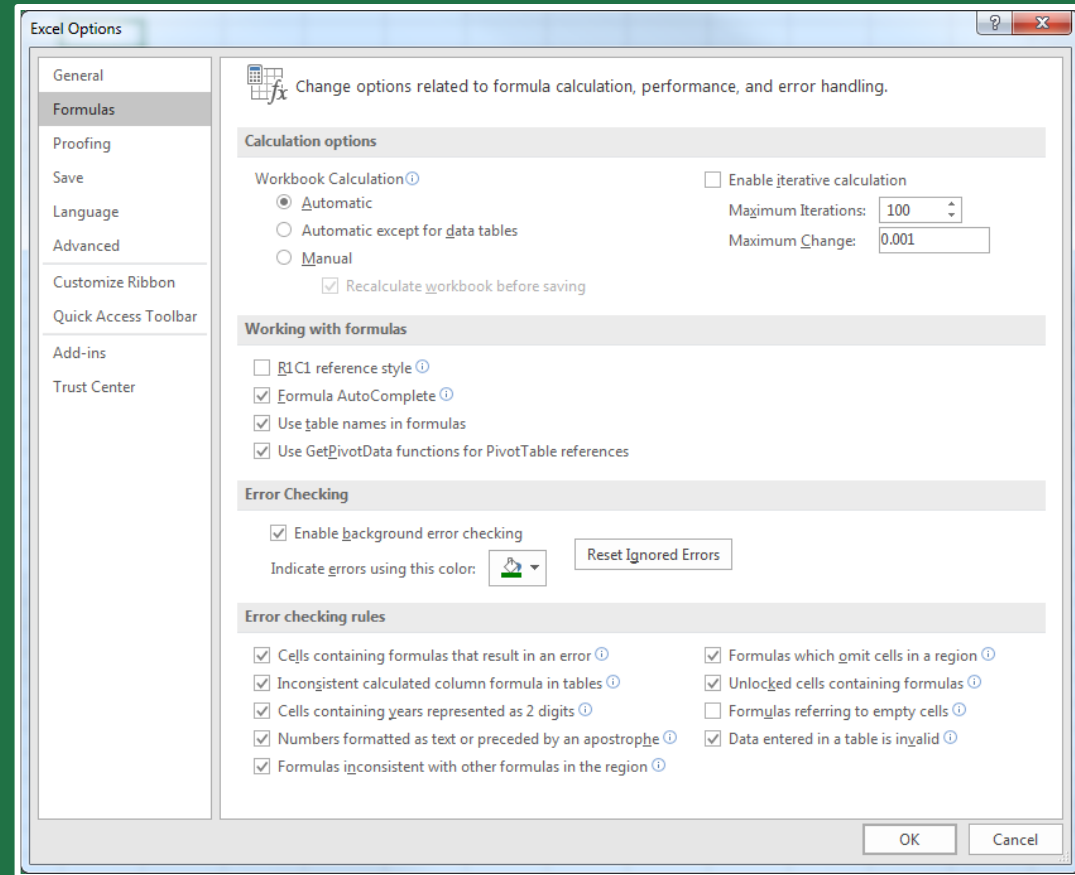
General

- User Interface options
- When creating new workbooks
- Personalize your copy of Microsoft Office
- Start up options



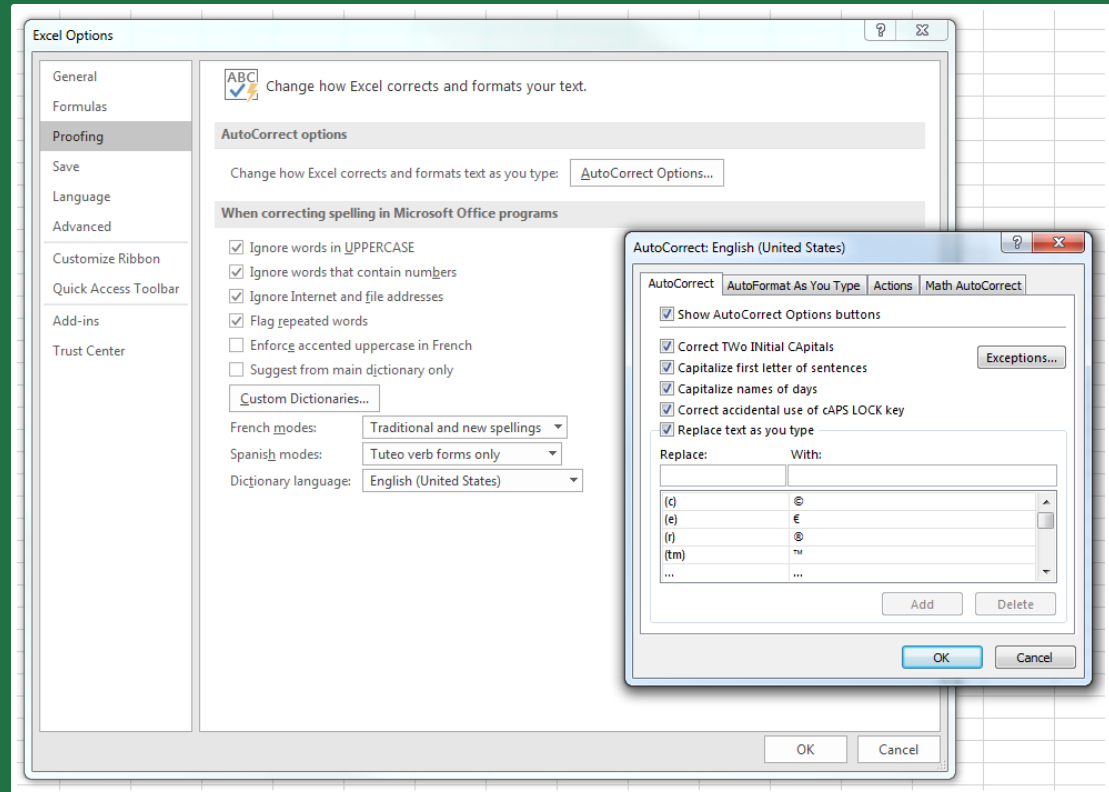
Formulas

- Calculation options
- Working with formulas
- Error Checking
- Error checking rules



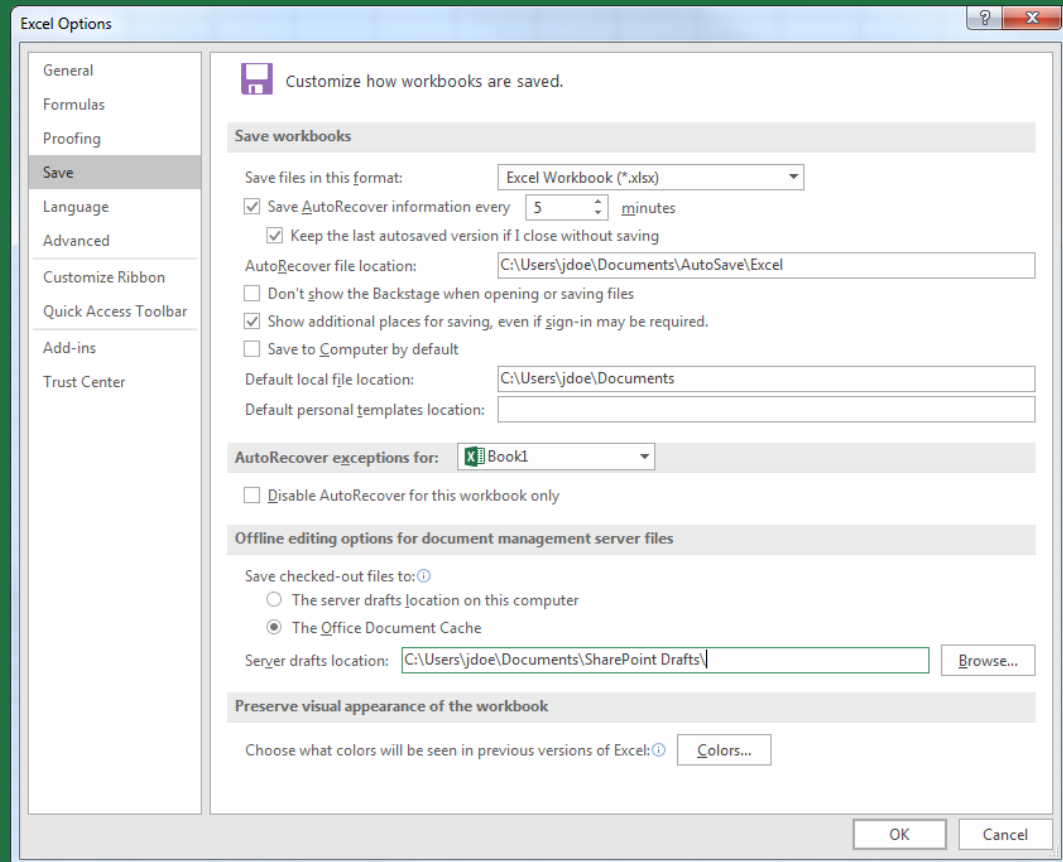
Proofing

- AutoCorrect options
- When correcting spelling in Microsoft Office programs



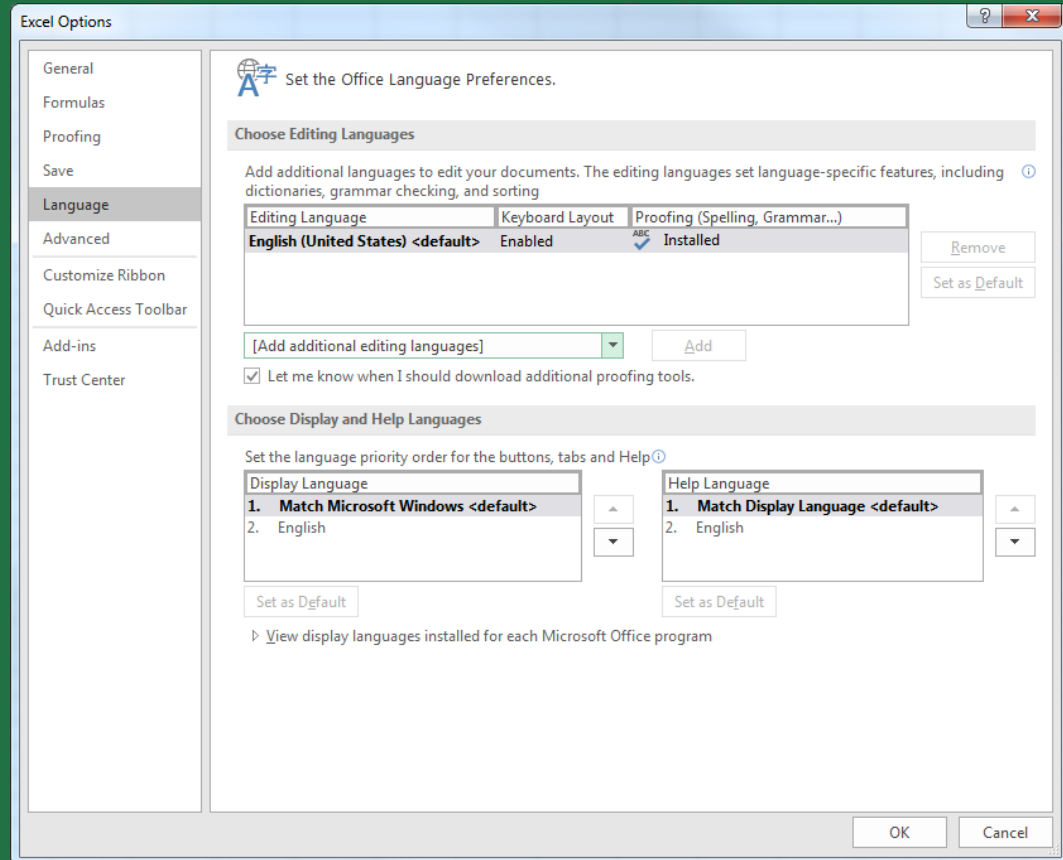
Save

- Save workbooks
- AutoRecover exceptions for
- Offline editing options for document management server files
- Preserve visual appearance of the workbook



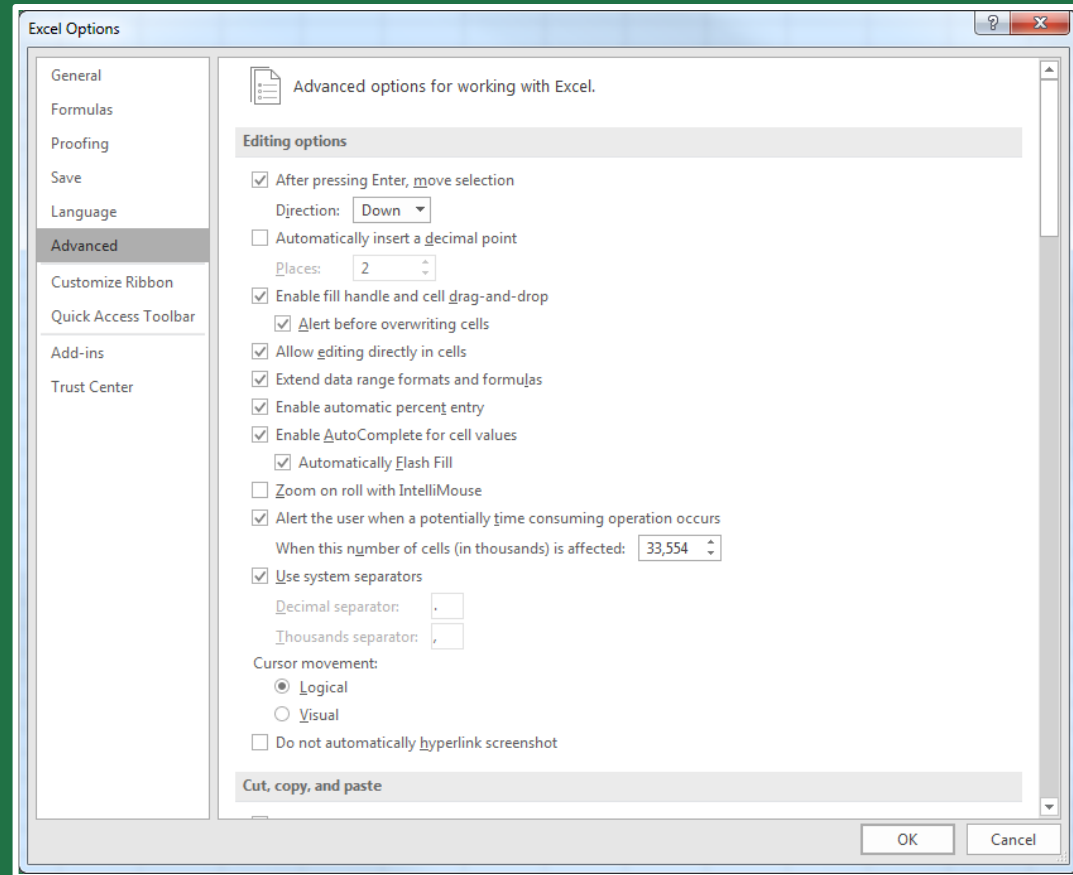
Language

- Choose Editing Languages
- Choose Display and Help Languages



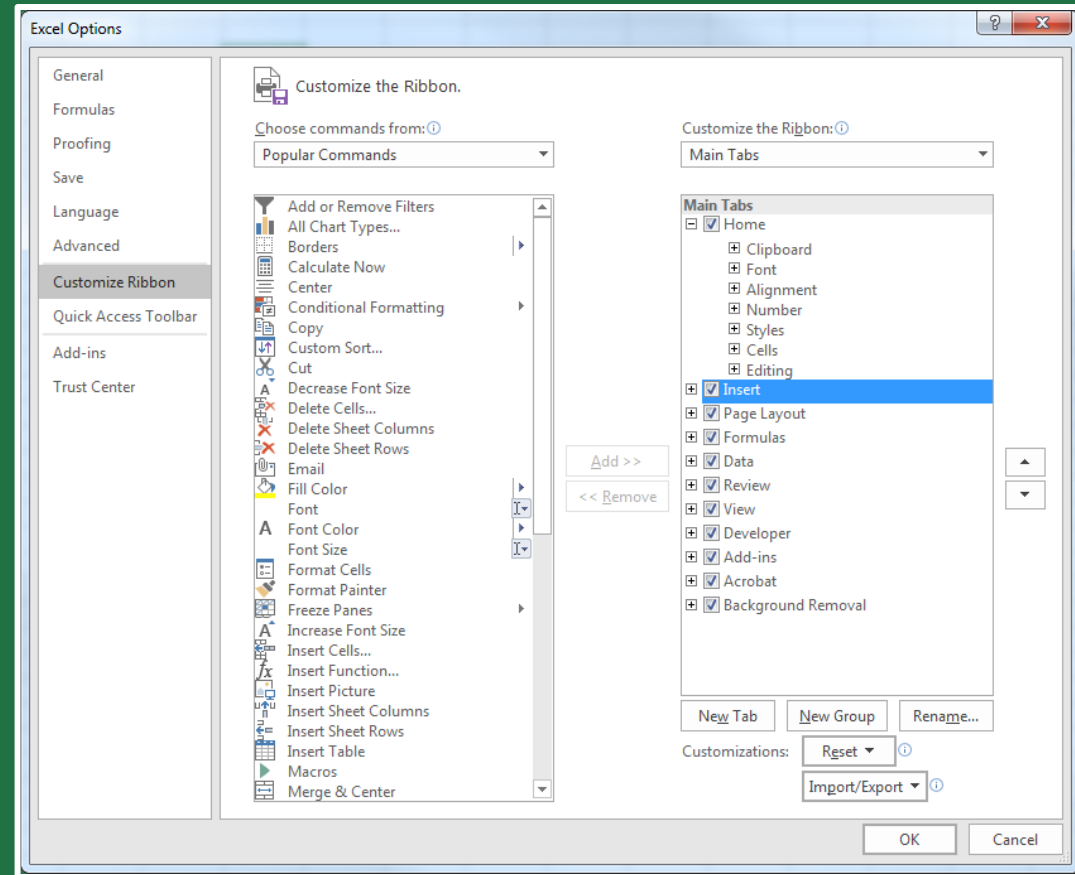
Advanced

- Editing options
- Cut, copy, and paste
- Image Size and Quality
- Print
- Chart
- Display
- Display options for this workbook
- Display options for this worksheet
- Formulas
- When calculating this workbook
- General
- Data
- Lotus compatibility
- Lotus compatibility Settings for



Customize Ribbon

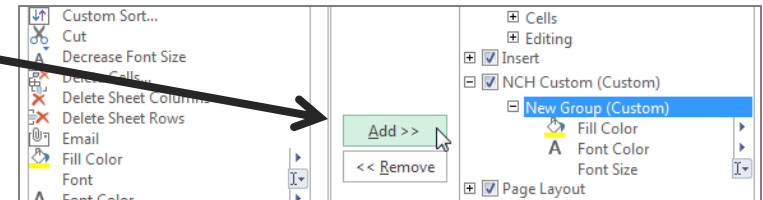
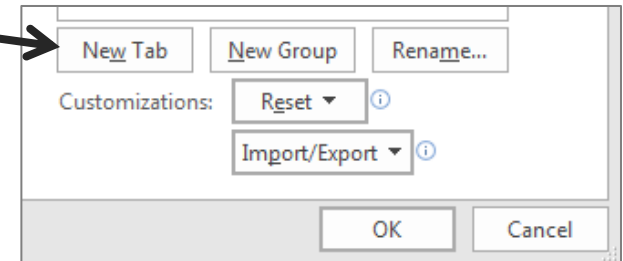
- Choose commands from
- Customize the Ribbon
- Customizations



Customize Ribbon

To create a new tab on the Ribbon:

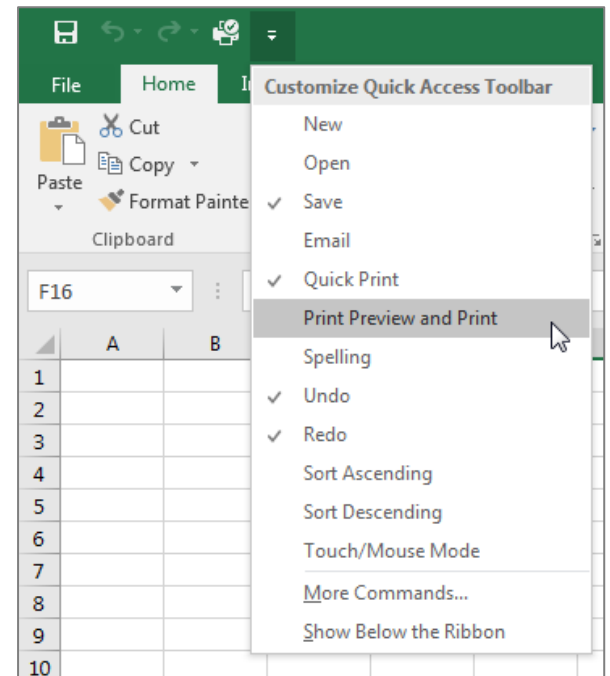
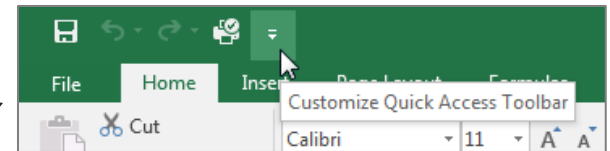
1. Click the **New Tab** button.
2. Right-click **New Tab (Custom)** and select **Rename**.
3. Enter a name for the tab and click **OK**.
4. Select **New Group (Custom)**.
5. Select commands and then click the **Add** button to group commands under the newly created tab.
6. Click the **OK** button.



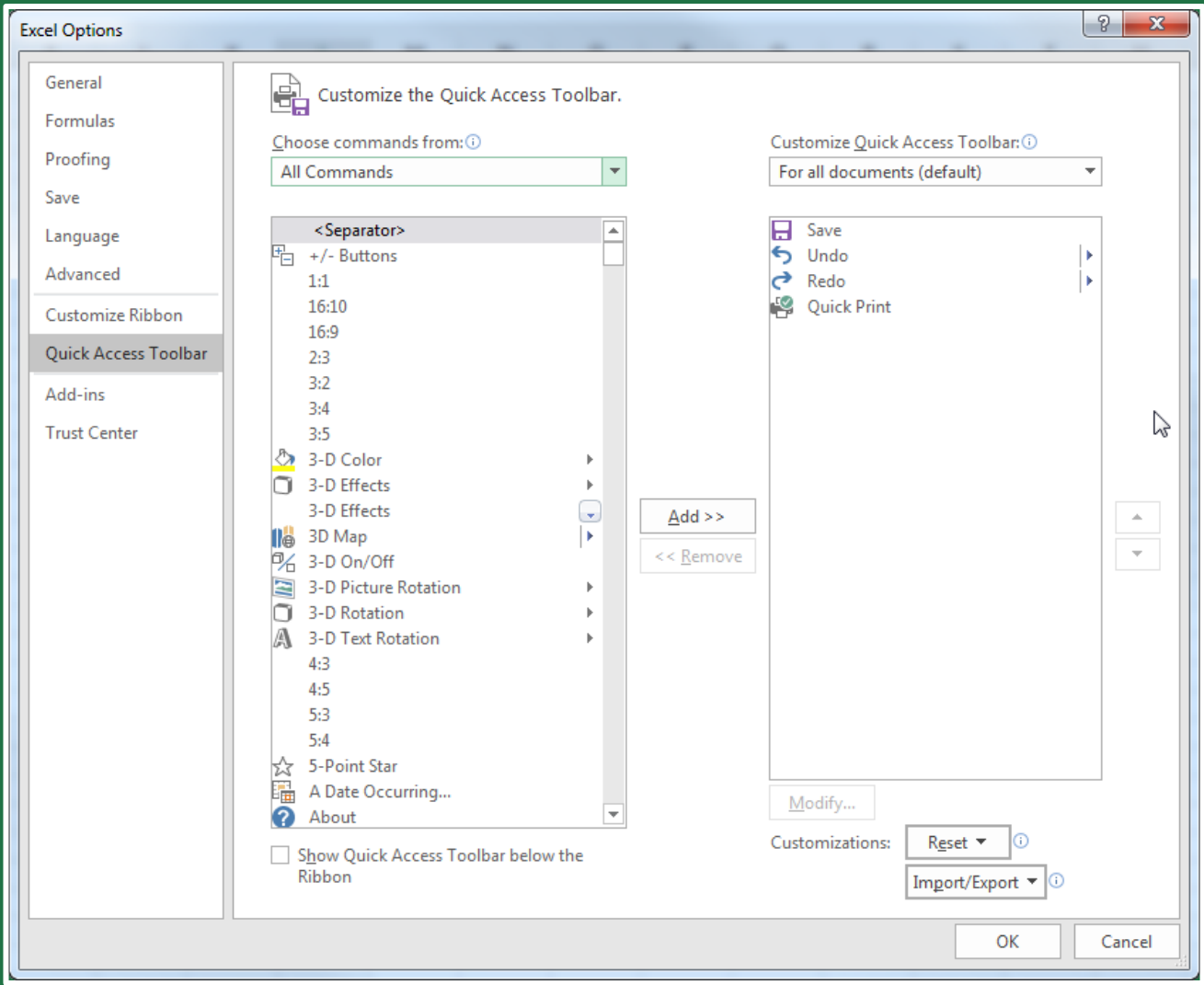
Quick Access Toolbar

To customize the Quick Access Toolbar:

1. Click the **Customize Quick Access Toolbar** button.
2. Select the command buttons you would like to appear on the Toolbar.

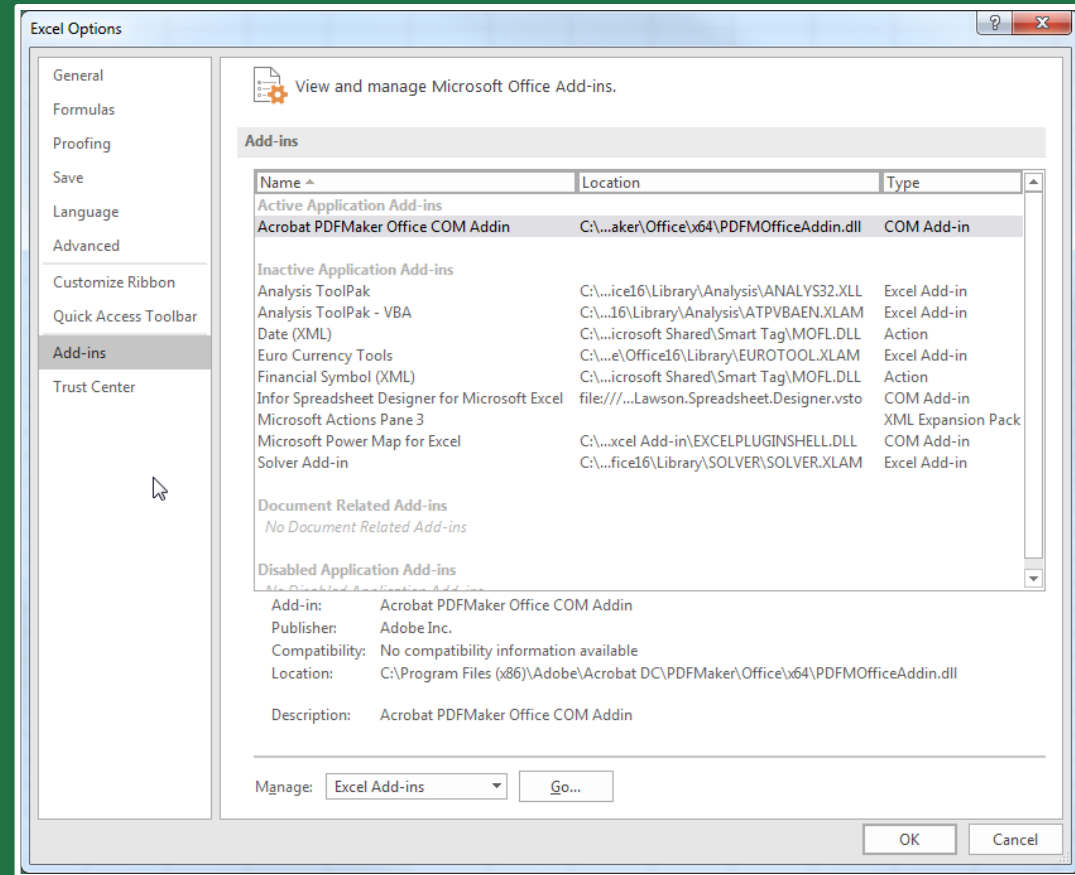


Quick Access Toolbar



Add-ins

- Add-ins provide optional Excel commands and features.
- Add-ins must be installed and activated.
- Some add-ins are built into Excel, such as Analysis ToolPak. Others are available via download from Microsoft or may be created by a third party, such as a programmer.



Add-ins

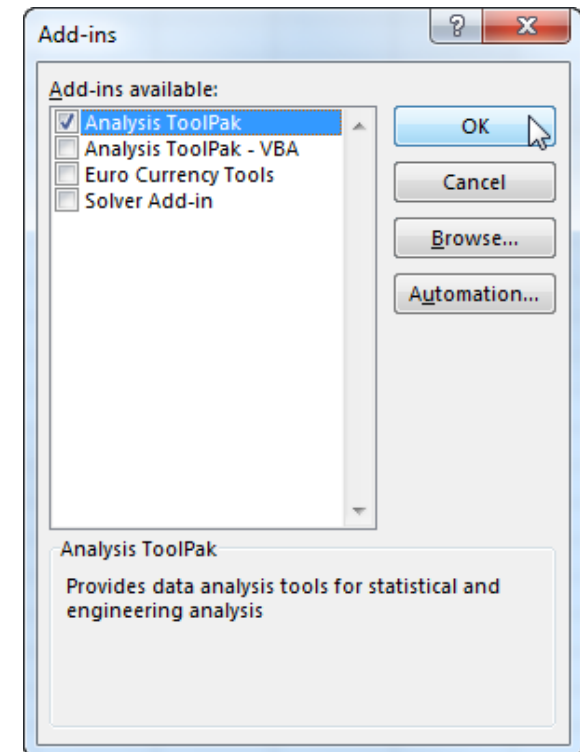
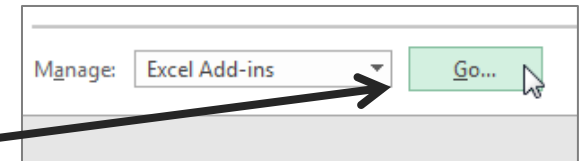
Add-ins can be categorized into three different types:

- **Excel add-ins:** Some Excel add-ins, such as Solver and the Analysis ToolPak, may be available after you install Excel or Microsoft Office. You only need to activate these add-ins to use them.
- **Downloadable add-ins:** Additional add-ins for Excel can be downloaded and installed from Office.com.
- **Custom add-ins:** Developers and solution providers may design custom Component Object Model (COM) add-ins, automation add-ins, VBA add-ins, and XLL add-ins. These must be installed for you to use them.

Add-ins

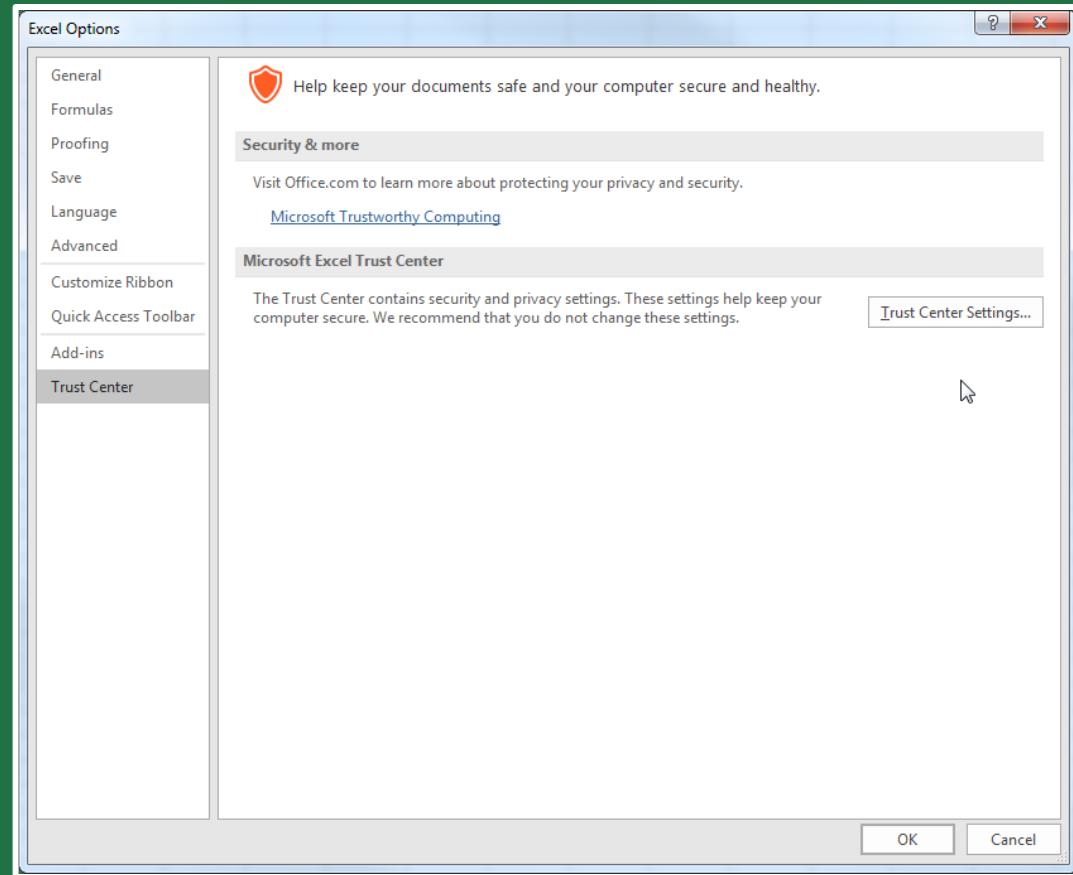
To activate an add-in:

1. Click the **Go** button.
2. Select the add-in you wish to activate.
3. Click the **OK** button.



Trust Center

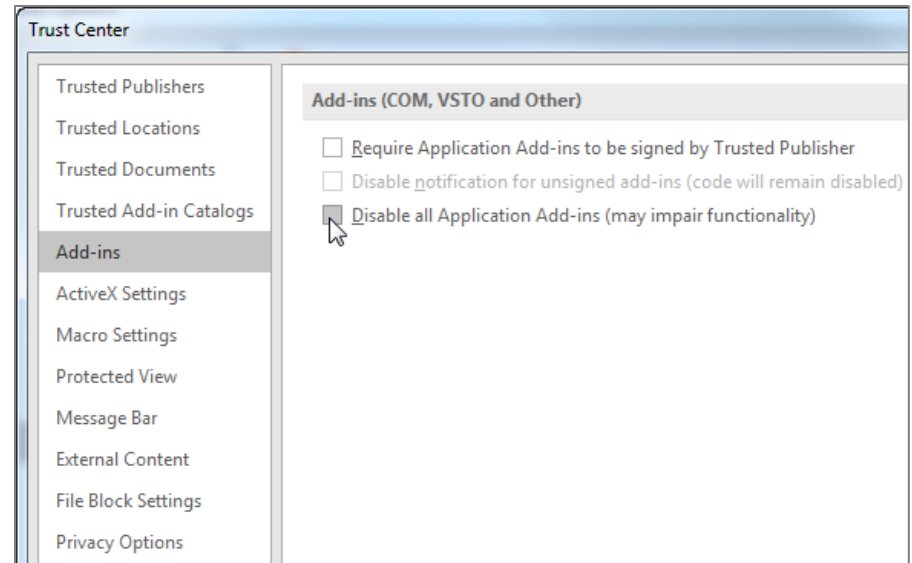
- Security & more
- Microsoft Excel Trust Center



Trust Center

To activate an add-in:

1. Click the **Trust Center Settings** button.
2. Select one of the tabs on the left side of the Trust Center box.
3. Modify the settings (for example, you could select **Disable all Application Add-ins**, as shown at right).
4. Click the **OK** button.



Exercise

1. Open a blank workbook.
2. Go to the **Excel Options** dialog box.
3. Change the default **Font size** to **12**.
4. Change the **AutoRecover** save frequency to **3 minutes**.
5. Create a new tab on the **Ribbon** and add five commands to it.
6. Add three commands to the **Quick Access Toolbar**.
7. Undo all the changes made in steps 3 to 6. 😊

Questions?



AutoComplete

- AutoComplete anticipates what you are going to type based on what you entered previously.
- It applies only when entering a column of text entries.
- AutoComplete can be turned on or off by going to **File > Options > Advanced**.

1291	Cleaning wipes
1832	Sponge
1075	Broom
1076	Dustpan
1292	Cleaning wipes

AutoFill

To use AutoFill:

1. Position your cursor in the lower-right corner in the active cell (or the last cell if you have selected a block of cells).
2. Drag the AutoFill handle (+) to the last cell in which you want the content filled.



Description	Date	Qty
Mop	01/12/20	
Gloves	01/12/20	
Cleaning wipes		
Sponge		
Broom		
Dustpan		
Cleaning wipes		01/12/20

Flash Fill

Flash Fill automatically fills your data when it senses a pattern.

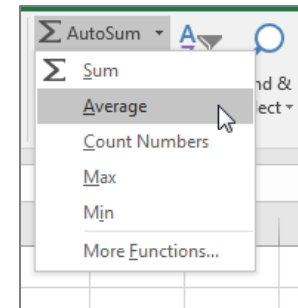
For example, you can use Flash Fill to separate first and last names from a single column, or combine first and last names from two different columns.

	A	B	C
1	Name	First	Last
2	Hector Gomez	Hector	
3	Lydia Wright	Lydia	
4	Markus Peters	Markus	
5	Yvonne Henderson	Yvonne	
6	Dhuree Khan	Dhuree	
7	Blake Middleton	Blake	
8	Parker Brown	Parker	
9	Cecilia Stevens	Cecilia	
10	Consuela Rodon	Consuela	
11			

AutoSum

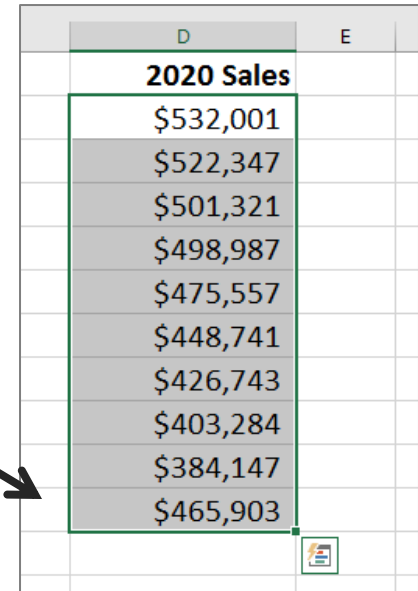
To use AutoSum:

1. Select a range of values.
2. Click the **AutoSum** button and then select a function.



The result appears in an adjacent cell.

In this example, the average (\$465,903) appears in the bottom cell.

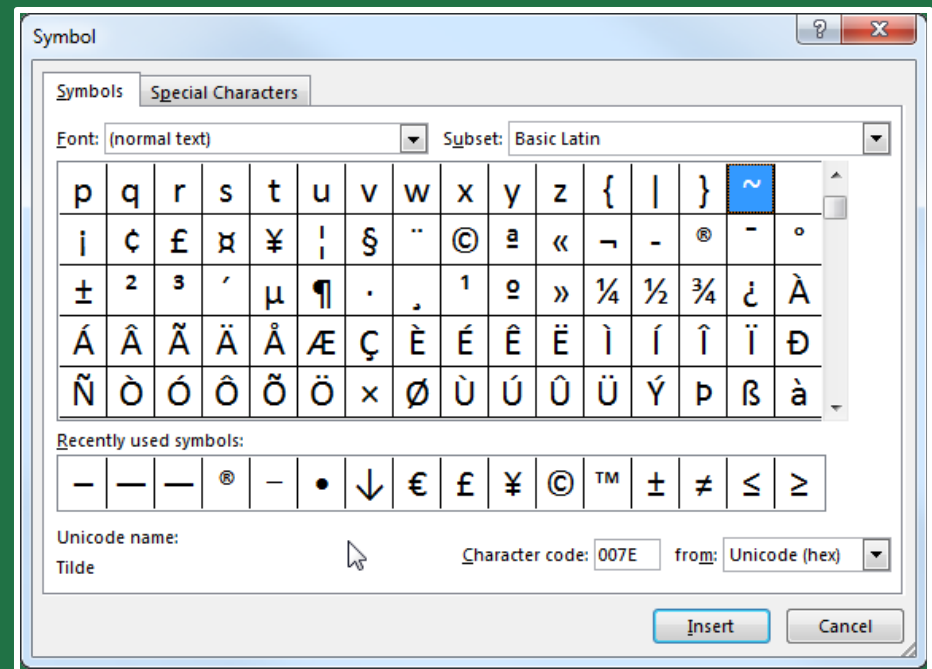
A screenshot of an Excel spreadsheet showing a column of sales data. The column is labeled '2020 Sales' in the first row. The data values are: \$532,001, \$522,347, \$501,321, \$498,987, \$475,557, \$448,741, \$426,743, \$403,284, \$384,147, and \$465,903. The last cell, containing the average value \$465,903, is highlighted with a green border. An arrow points from the text 'In this example, the average (\$465,903) appears in the bottom cell.' to this cell.

D	E
2020 Sales	
\$532,001	
\$522,347	
\$501,321	
\$498,987	
\$475,557	
\$448,741	
\$426,743	
\$403,284	
\$384,147	
\$465,903	

Inserting Symbols

To insert a symbol or special character into a cell:

1. Select the **Insert** tab.
2. Click the **Symbol** button on the far right end of the Ribbon.
3. Select a symbol or special character.
4. Click the **Insert** button.

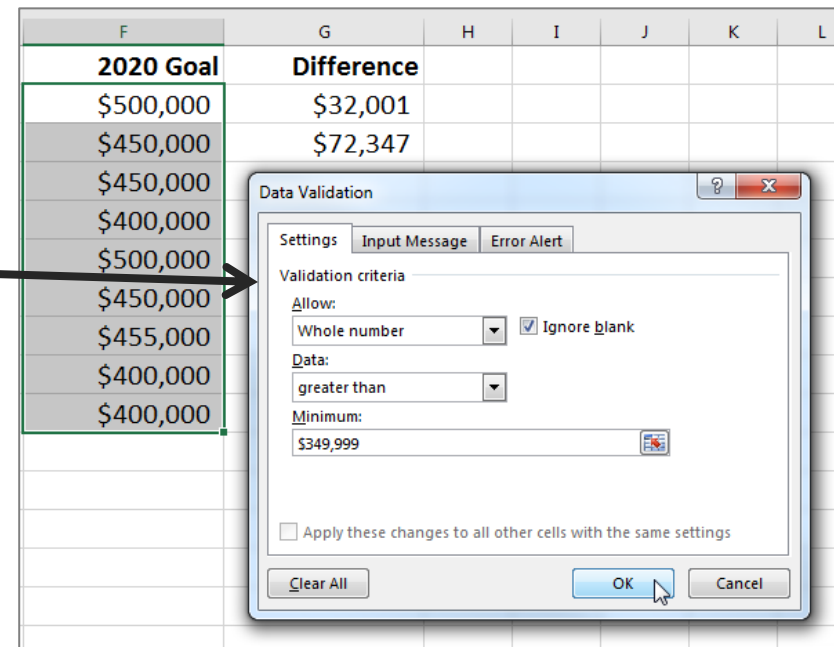


1. Select the cells in which you wish to enter the content.
2. Enter the content in the Formula bar.
3. Press **Ctrl+Enter**.

[illegible]

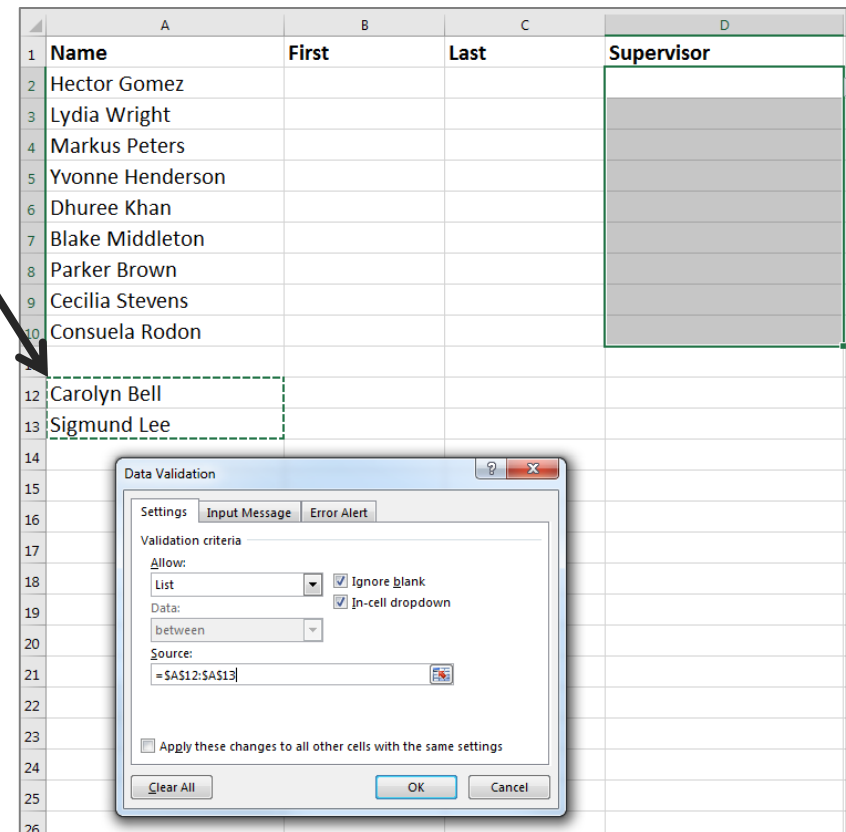
Data Validation

1. Select the cells to which you want to apply data validation.
2. Go to **Data > Data Validation > Data Validation**.
3. Configure the **Settings**.
4. Enter an **Input Message** (optional).
5. Enter an **Error Alert** (optional).
6. Click **OK**.



Creating a Drop-Down List

1. Enter the drop-down list entries in the worksheet.
2. Select the cells where the list will appear.
3. Go to **Data > Data Validation > Data Validation**.
4. For **Allow**, select List.
5. For **Source**, select the cells containing the list entries.
6. Enter an **Input Message** and **Error Alert** (optional).
7. Click **OK**.



Adding Hyperlinks

A10

Consuela Rodon

	A	B	C	D	E	F
1	Name	First	Last	Supervisor	2020 Sales	
2	Hector Gomez					
3	Lydia Wright					
4	Markus Peters					
5	Yvonne Henderson					
6	Dhuree Khan					
7	Blake Middleton					
8	P.J. Brown					
9	Cecilia Stevens					
10	Consuela Rodon					
11						
12						
13						
14						
15						

Insert Hyperlink

Link to:

Text to display: Consuela Rodon

ScreenTip...

Existing File or Web Page

Look in: Advanced

Current Folder

Browsed Pages

Recent Files

Address: http://nch.org/PortalComplete/

Place in This Document

Create New Document

E-mail Address

Bookmark...

OK

Cancel

Exercise

1. Create a blank workbook.
2. In row **1**, enter these bold column headings: **Name**, **First**, **Last**, **Department**, and **FY Budget**.
3. Modify the width of the columns to ensure the content will fit.
4. Align right column **E**.
5. Enter five full **Names** in column **A**, then use **Flash Fill** to enter the **First** and **Last** names in columns **B** and **C**.
6. Use the **Formula bar** to quickly enter **Human Resources** for cells **D2** to **D6**.
7. Enter five different \$10,000+ dollar amounts in cells **E2** to **E6**.
8. Use **AutoSum** to calculate the sum of the five dollar amounts.
9. Save the file to your computer's Desktop. Give it the filename **Entering Data**.

Questions?



Entering Formulas

To create a formula:

1. Select a cell.
2. Type the equal sign =.
Note: Formulas in Excel always begin with the equal sign.
3. Select a cell or type its address in the selected cell.
4. Enter an operator. For example, – for subtraction.
5. Select the next cell or type its address in the selected cell.
6. Press **Enter**. The result of the calculation appears in the cell with the formula.



E	F	G
2020 Sales	2020 Goal	Difference
\$532,001	\$500,000	\$32,001
\$522,347	\$450,000	=E3
\$501,321	\$450,000	
\$498,987	\$400,000	
\$475,557	\$500,000	
\$448,741	\$450,000	
\$426,743	\$400,000	
\$403,284	\$400,000	
\$384,147	\$400,000	



E	F	G
2020 Sales	2020 Goal	Difference
\$532,001	\$500,000	\$32,001
\$522,347	\$450,000	\$72,347
\$501,321	\$450,000	
\$498,987	\$400,000	
\$475,557	\$500,000	
\$448,741	\$450,000	
\$426,743	\$400,000	
\$403,284	\$400,000	
\$384,147	\$400,000	

Formula Bar

G3

=E3-F3

	A	B	C	D	E	F	G
1	Name	First	Last	Supervisor	2020 Sales	2020 Goal	Difference
2	Hector Gomez				\$532,001	\$500,000	\$32,001
3	Lydia Wright				\$522,347	\$450,000	\$72,347
4	Markus Peters				\$501,321	\$450,000	
5	Yvonne Henderson				\$498,987	\$400,000	
6	Dhuree Khan				\$475,557	\$500,000	
7	Blake Middleton				\$448,741	\$450,000	
8	P.J. Brown				\$426,743	\$400,000	
9	Cecilia Stevens				\$403,284	\$400,000	
10	Consuela Rodon				\$384,147	\$400,000	

Operators

You use operators, or symbols, in formulas to perform mathematical calculations:

- Addition: +
- Subtraction: -
- Multiplication: *
- Division: /
- Power: ^

Numbers to Use		Operation		Answers
1	5		Addition (+)	7
2	2		Subtraction (-)	3
3			Multiplication (*)	10
4			Division (/)	2.5
5			Power (^)	25
6				
7				

Order of Operations

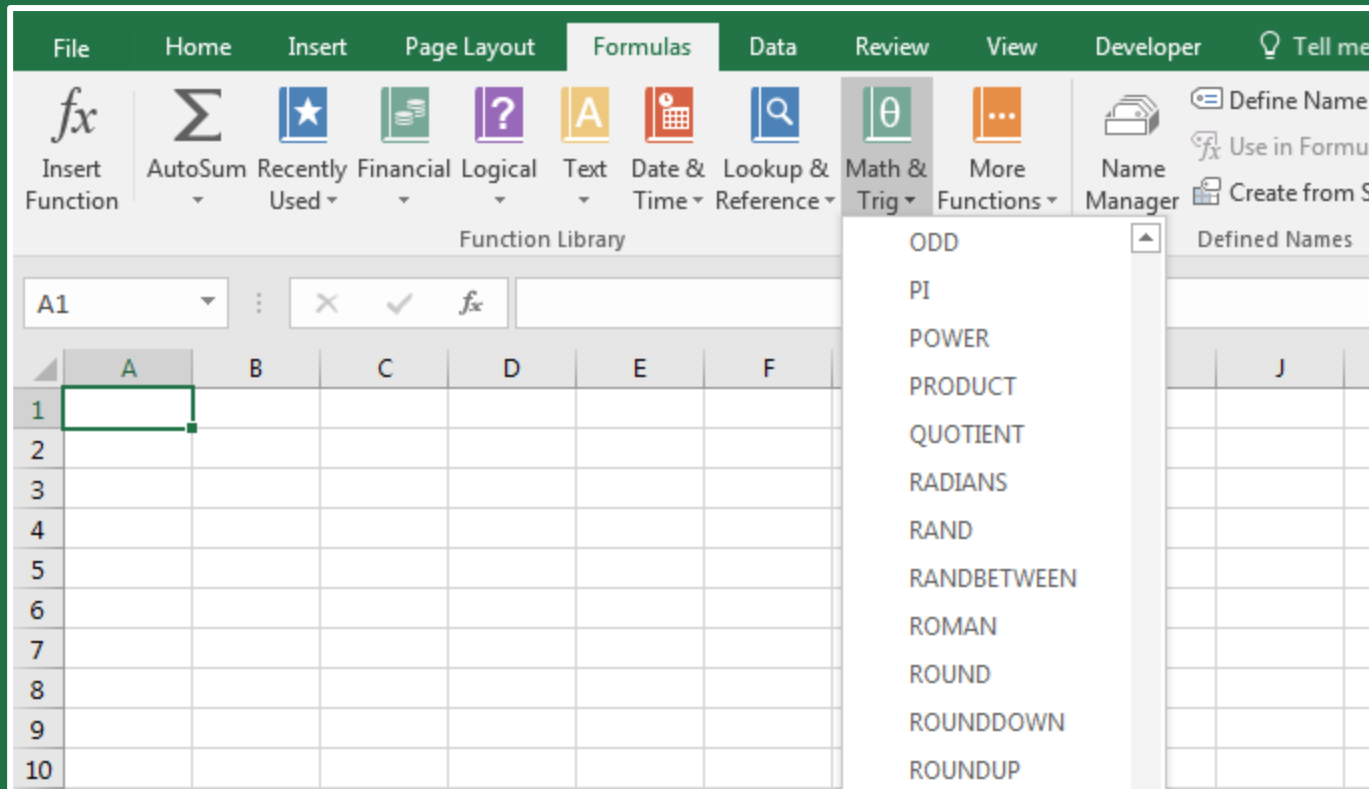
Example A

IF ✕ ✓ <i>f_x</i> =A1+B1*C1			
	A	B	C
1	10	20	2
2	=A1+B1*C1		
3			

Example B

IF ✕ ✓ <i>f_x</i> =(A1+B1)*C1			
	A	B	C
1	10	20	2
2	=(A1+B1)*C1		
3			

Functions



SUM

Under the Amount column for **Fruit** (cell **B6**):

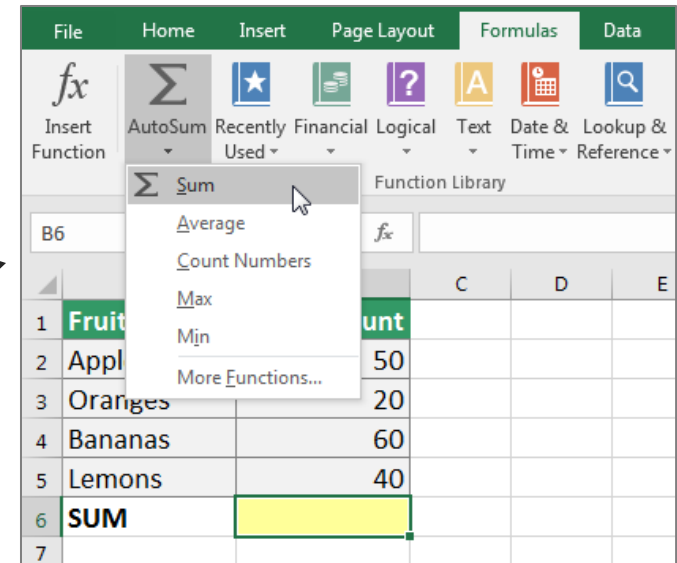
- Enter **=SUM(B2:B5)** or
- Type **=SUM(** and then select that range and press **Enter**.

This sums the values in cells B3, B4, B5, and B6, which is 170.

B6				
	A	B	C	D
1	Fruit	Amount		
2	Apples	50		
3	Oranges	20		
4	Bananas	60		
5	Lemons	40		
6	SUM	170		
7				

SUM

1. Select cell B6 in the Amount column.
2. Go to **Formulas > AutoSum > SUM**. Excel then automatically enters the formula for you.
3. Press **Enter**.

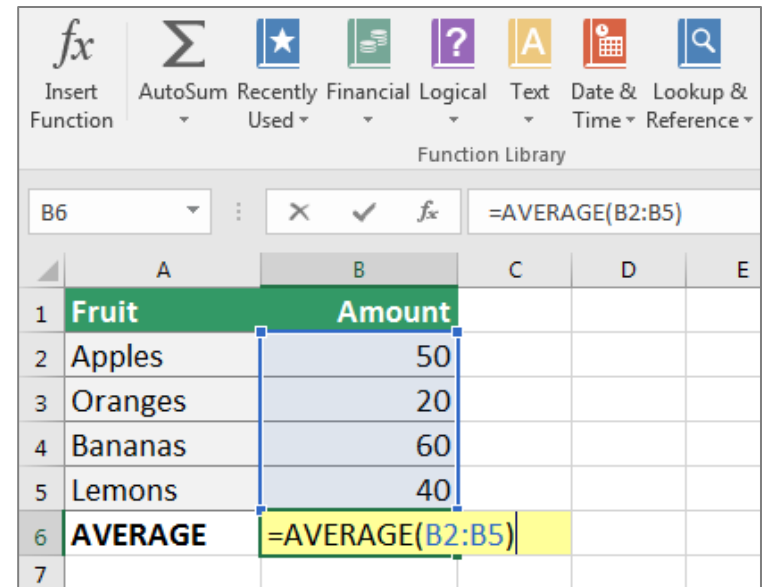


AVERAGE

The **AVERAGE** function returns the average of the arguments selected.

Arguments may be numbers, ranges, or cell references that contain numbers.

1. Select cell **B6**.
2. Go to **Formulas > AutoSum > Average**.
3. Press **Enter**.



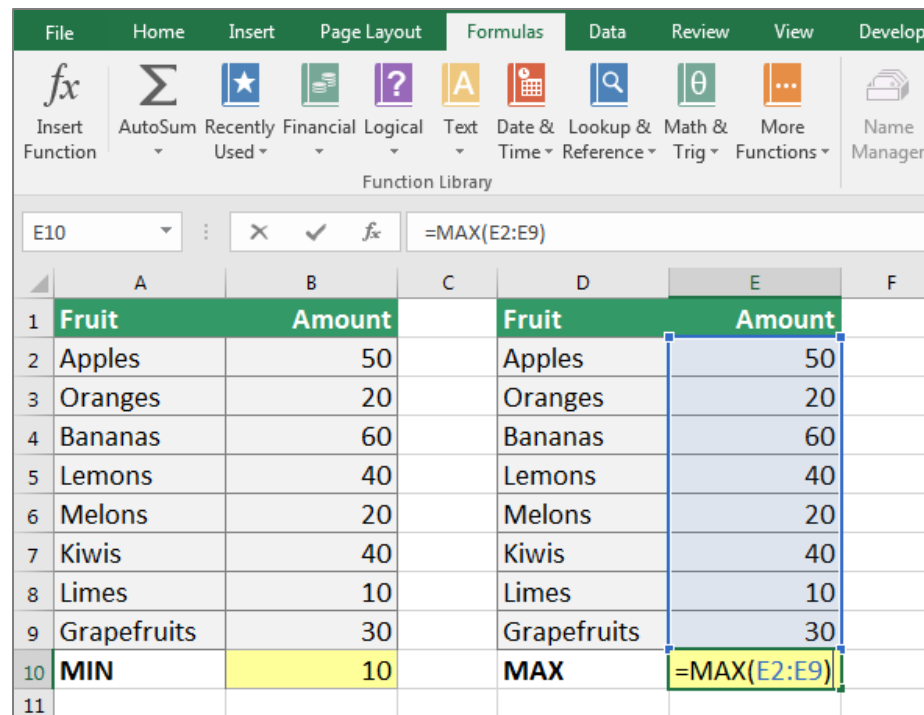
The screenshot shows the Excel 'Formulas' ribbon with the 'AutoSum' dropdown menu open, and the 'Average' option selected. The formula bar displays '=AVERAGE(B2:B5)'. Below, a table with columns A and B is visible. Column A lists fruits, and column B lists their corresponding amounts. The range B2:B5 is highlighted, and the formula is entered in cell B6.

	A	B	C	D	E
1	Fruit	Amount			
2	Apples	50			
3	Oranges	20			
4	Bananas	60			
5	Lemons	40			
6	AVERAGE	=AVERAGE(B2:B5)			
7					

MIN and MAX

Use the **MIN** function to get the smallest number in a range of cells.

Use the **MAX** function to get the largest number in a range of cells.



The screenshot shows the Microsoft Excel interface with the 'Formulas' tab selected. The formula bar displays '=MAX(E2:E9)'. Below the formula bar, there are two tables side-by-side. The first table (columns A and B) uses the MIN function to find the smallest value in the 'Amount' column. The second table (columns D and E) uses the MAX function to find the largest value in the 'Amount' column.

	A	B	C	D	E	F
1	Fruit	Amount		Fruit	Amount	
2	Apples	50		Apples	50	
3	Oranges	20		Oranges	20	
4	Bananas	60		Bananas	60	
5	Lemons	40		Lemons	40	
6	Melons	20		Melons	20	
7	Kiwis	40		Kiwis	40	
8	Limes	10		Limes	10	
9	Grapefruits	30		Grapefruits	30	
10	MIN	10		MAX	=MAX(E2:E9)	
11						

Date

- The **TODAY** function gives you today's date. These are live functions, so if you open your workbook tomorrow, it will have tomorrow's date. Enter **=TODAY()** in cell **B2**.
- To subtract dates, enter your next birthday in MM/DD/YY format in cell **B3** and Excel will tell you how many days away it is by using **=B3-B2** in cell **B4**.
- If, for example, you want to know what date a bill is due, you can add days to a date to get the answer. In cell **B6**, enter a random number of days. In cell **B7**, enter **=B2+B6** to calculate the due date from today.

ATANH ✕ ✓ f_x =TODAY()	
	A
1	Date Functions
2	Today's date: =TODAY()
3	Your birthday:
4	Days until your birthday: 0

C12 ✕ ✓ f_x	
	A
1	Date Functions
2	Today's date: 06/21/19
3	Your birthday: 02/03/20
4	Days until your birthday: 227

	A
1	Date Functions
2	Today's date: 06/21/19
3	Your birthday: 02/03/20
4	Days until your birthday: 227
5	
6	Grace period days: 5
7	Bill due on: 06/26/19

Time

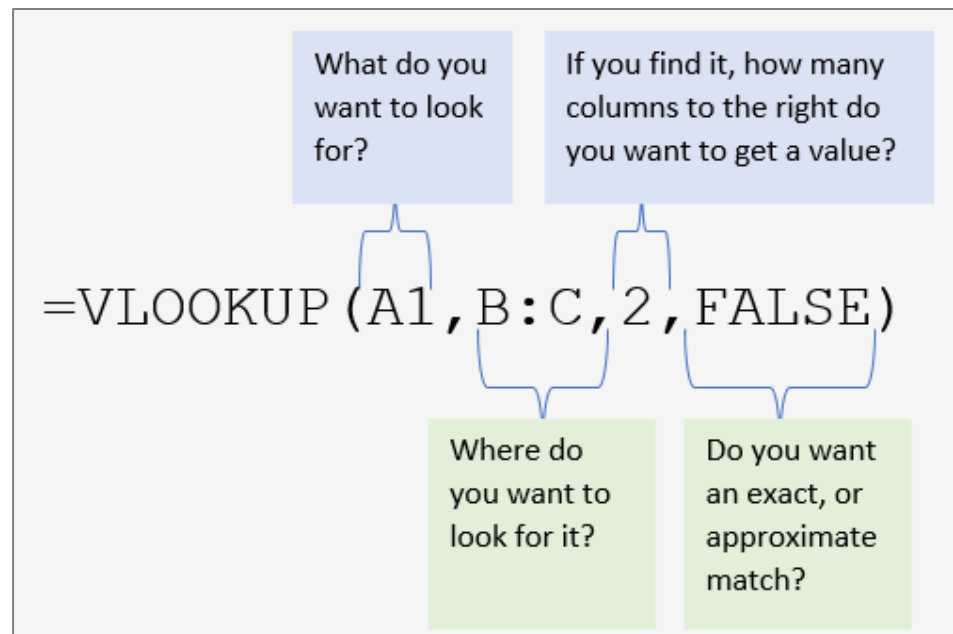
- In cell **B2**, enter **=NOW()**. This gives you the current time, and it will automatically update. If you need to change the time format, go to **Ctrl+1 > Number tab > Time** and then select the format you want.
- You can add up hours between times. To do this, in cell **B10**, we've entered **=((B9-B6)-(B8-B7))*24**, which calculates start and end times, then subtracts the time taken for lunch. The ***24** at the end of the formula converts the fractional portion of the day that Excel sees into hours. The cell needs to be formatted as a Number. To do this, go to **Ctrl+1 > Number tab > Number** and select **2 Decimal places**.

ATANH × ✓ fx =NOW()		
	A	B
1	Time Functions	
2	Current Time:	=NOW()

	A	B
1	Time Functions	
2	Current Time:	11:20:53 AM
3		
4		
5	Daily Hours Worked	
6	Time In:	7:30 AM
7	Lunch Out:	12:00 PM
8	Lunch In:	1:00 PM
9	Time Out:	5:15 PM
10	Total Hours:	8.75

VLOOKUP

One of the most frequently used Excel functions, VLOOKUP looks up a value in a column on the left, then returns information in another column to the right if it finds a match.



VLOOKUP

1. Select the cell in which the result will appear.
2. Enter **=VLOOKUP(**
3. Select the value to look up.
4. Enter **,** and select where to look for the value.
5. Enter **,** and the column number in the range that contains the return value.
6. Enter **, FALSE)**

IF				X ✓ fx				=VLOOKUP(A3,E3:F5,2,FALSE)			
	A	B	C								
1	Travel Expenses										
2	Delivery	Miles	Cost								
3	=VLOOKUP(A3,E3:F5,2,FALSE)										
4	Libertyville		\$0								
5	Orland Park		\$0								
6	Orland Park		\$0								
7	Wheaton		\$0								
8	Orland Park		\$0								
9	Wheaton		\$0								
10	Wheaton		\$0								
11	Orland Park		\$0								
12	Libertyville		\$0								

VLOOKUP

In a formula, the dollar symbol — \$ — creates an absolute reference.

B3								=VLOOKUP(A3,\$E\$3:\$F\$5,2,FALSE)
	A	B	C	D	E	F		
1	Travel Expenses							
2	Delivery	Miles	Cost		Location	Miles		
3	Wheaton	20	\$60		Libertyville	15		
4	Libertyville	15	\$45		Orland Park	32		
5	Orland Park	32	\$96		Wheaton	20		
6	Orland Park	32	\$96					
7	Wheaton	20	\$60					
8	Orland Park	32	\$96					
9	Wheaton	20	\$60					
10	Wheaton	20	\$60					
11	Orland Park	32	\$96					
12	Libertyville	15	\$45					
13								
14								

IF Statements

In cell B2 enter **=IF(A2="Apple",TRUE,FALSE)**. The correct answer is **TRUE**.

Copy B2 to B3. The answer here should be **FALSE** because an orange is not an apple.

B3					
	A	B	C	D	
1	IF Statements				
2	Apple	TRUE			
3	Orange	FALSE			
4					

SUMIF

SUMIF lets you sum in one range based on a specific criteria you look for in another range, like how many Apples you have.

Select cell **B16** and enter
=SUMIF(A2:A13,A16,B2:B13)

B16						=SUMIF(A2:A13,A16,B2:B13)
	A	B	C	D	E	F
1	Fruit	Amount		Fruit	Type	Amount
2	Apples	50		Apples	Fuji	50
3	Oranges	20		Oranges	Florida	20
4	Bananas	60		Bananas	Cavendish	60
5	Lemons	40		Lemons	Rough	40
6	Apples	50		Apples	Honeycrisp	50
7	Oranges	20		Oranges	Navel	20
8	Bananas	60		Bananas	Lady Finger	60
9	Lemons	40		Lemons	Eureka	40
10	Apples	50		Apples	Honeycrisp	50
11	Oranges	20		Oranges	Florida	20
12	Bananas	60		Bananas	Cavendish	60
13	Lemons	40		Lemons	Eureka	40
14						
15	Fruit	SUMIF		Fruit	Type	SUMIFS
16	Apples	150		Oranges	Florida	
17						

SUMIFS

SUMIFS is the same as **SUMIF**, but it allows you to use multiple criteria. So in this example, you can look for Fruit and Type instead of just by Fruit.

Select cell **F16** and enter
=SUMIFS(F2:F13,D2:D13,D16,E2:E13,E16)

F16						=SUMIFS(F2:F13,D2:D13,D16,E2:E13,E16)
	A	B	C	D	E	F
1	Fruit	Amount		Fruit	Type	Amount
2	Apples	50		Apples	Fuji	50
3	Oranges	20		Oranges	Florida	20
4	Bananas	60		Bananas	Cavendish	60
5	Lemons	40		Lemons	Rough	40
6	Apples	50		Apples	Honeycrisp	50
7	Oranges	20		Oranges	Navel	20
8	Bananas	60		Bananas	Lady Finger	60
9	Lemons	40		Lemons	Eureka	40
10	Apples	50		Apples	Honeycrisp	50
11	Oranges	20		Oranges	Florida	20
12	Bananas	60		Bananas	Cavendish	60
13	Lemons	40		Lemons	Eureka	40
14						
15	Fruit	SUMIF		Fruit	Type	SUMIFS
16	Apples	150		Oranges	Florida	40
17						

COUNTIF

Select cell B16 and enter **=COUNTIF(A2:A13,A16)**

B16							=COUNTIF(A2:A13,A16)
	A	B	C	D	E	F	
1	Fruit	Amount		Fruit	Type	Amount	
2	Apples	50		Apples	Fuji	50	
3	Oranges	20		Oranges	Florida	20	
4	Bananas	60		Bananas	Cavendish	60	
5	Lemons	40		Lemons	Rough	40	
6	Apples	50		Apples	Honeycrisp	50	
7	Oranges	20		Oranges	Navel	20	
8	Bananas	60		Bananas	Lady Finger	60	
9	Lemons	40		Lemons	Eureka	40	
10	Apples	50		Apples	Honeycrisp	50	
11	Oranges	20		Oranges	Florida	20	
12	Bananas	60		Bananas	Cavendish	60	
13	Lemons	40		Lemons	Eureka	40	
14							
15	Fruit	COUNTIF		Fruit	Type	COUNTIFS	
16	Apples	3		Oranges	Florida		
17							

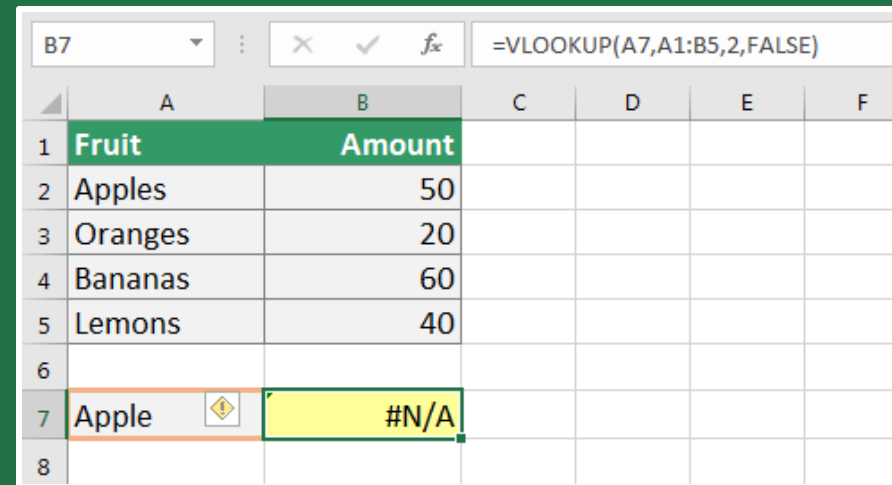
COUNTIFS

Select cell F16 and enter **=COUNTIFS(D2:D13,D16,E2:E13,E16)**

F16						=COUNTIFS(D2:D13,D16,E2:E13,E16)
	A	B	C	D	E	F
1	Fruit	Amount		Fruit	Type	Amount
2	Apples	50		Apples	Fuji	50
3	Oranges	20		Oranges	Florida	20
4	Bananas	60		Bananas	Cavendish	60
5	Lemons	40		Lemons	Rough	40
6	Apples	50		Apples	Honeycrisp	50
7	Oranges	20		Oranges	Navel	20
8	Bananas	60		Bananas	Lady Finger	60
9	Lemons	40		Lemons	Eureka	40
10	Apples	50		Apples	Honeycrisp	50
11	Oranges	20		Oranges	Florida	20
12	Bananas	60		Bananas	Cavendish	60
13	Lemons	40		Lemons	Eureka	40
14						
15	Fruit	COUNTIF		Fruit	Type	COUNTIFS
16	Apples	3		Oranges	Florida	2
17						

Formula Errors

- **#N/A** No value found
- **#DIV/0!** Formula calls for division by a 0
- **#NULL!** Likely inserted a space instead of a comma
- **#NUM!** A problem with a number in the formula
- **#REF!** An invalid cell reference
- **#VALUE!** Wrong type of argument or operator in a function, or a math operation that refers to cells containing text



The screenshot shows an Excel spreadsheet with a table of fruit and their amounts. A formula is entered in cell B7, which is highlighted in yellow and contains the error #N/A. The formula bar at the top shows the formula: =VLOOKUP(A7,A1:B5,2,FALSE). The table has columns A (Fruit) and B (Amount). The data rows are 1 to 5, and row 6 is empty. Row 7 contains the text 'Apple' in column A and the error #N/A in column B. Row 8 is empty.

	A	B	C	D	E	F
1	Fruit	Amount				
2	Apples	50				
3	Oranges	20				
4	Bananas	60				
5	Lemons	40				
6						
7	Apple	#N/A				
8						

Formula Errors

1. Select the cell containing the error.
2. Select the **Formulas** tab.
3. Click the **Error Checking** button.
4. Click the **Help on this error** button.

The screenshot shows an Excel spreadsheet with the following data:

Fruit	Amount
Apples	50
Oranges	20
Bananas	60
Lemons	40
Apple	#N/A

The formula bar shows the formula: `=VLOOKUP(A7,A1:B5,2,FALSE)`.

The **Error Checking** dialog box is open, displaying the error in cell B7: `=VLOOKUP(A7,A1:B5,2,FALSE)`. The error message is: "Value Not Available Error. A value is not available to the formula or function." The dialog box includes buttons for "Help on this error", "Show Calculation Steps...", "Ignore Error", "Edit in Formula Bar", "Options...", "Previous", and "Next".

The **Excel 2016 Help** window is also open, showing the article "How to correct a #N/A error". The article explains that the #N/A error generally indicates that a formula can't find what it's been asked to look for. The top solution provided is: "The most common cause of the #N/A error is with VLOOKUP, HLOOKUP, LOOKUP, or MATCH functions if a formula can't find a referenced value. For example, your lookup value doesn't exist in the source data."

File Home Insert Page Layout Formulas Data Review View Developer Tell me what you want to do...

Insert Function AutoSum Recently Used Financial Logical Text Date & Time Lookup & Reference Math & Trig More Functions

Function Library

Name Manager Define Name Use in Formula Create from Selection Defined Names

Trace Precedents Trace Dependents Remove Arrows Show Formulas Error Checking Evaluate Formula Formula Auditing

B7 X ✓ fx =VLOOKUP(A7,A1:B5,2,FALSE)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Fruit	Amount												
2	Apples	50												
3	Oranges	20												
4	Bananas	60												
5	Lemons	40												
6														
7	Apple	#N/A												
8														
9														
10														
11														
12														
13														
14														
15														

Evaluate Formula

Reference: Sheet1!\$B\$7

Evaluation: = VLOOKUP("Apple",A1:B5,2,FALSE)

To show the result of the underlined expression, click Evaluate. The most recent result appears italicized.

Evaluate Step In Step Out Close

Exercise

Using math and time formulas, along with the VLOOKUP and SUMIF functions, create the worksheet below.

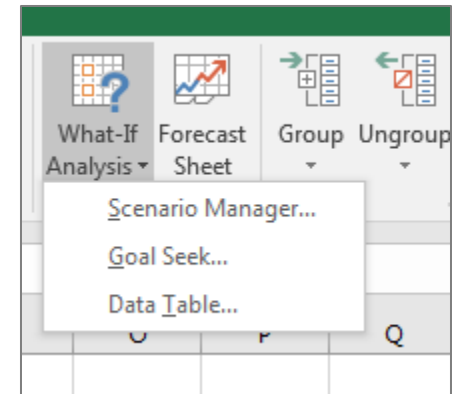
	A	B	C	D	E	F
1	Monthly Delivery Expenses				Distance to Each Location	
2	Delivery	Miles	Cost		Location	Miles
3	Evanston	17	\$85		Crystal Lake	24
4	Mokena	47	\$235		Evanston	17
5	Naperville	31	\$155		Mokena	47
6	Crystal Lake	24	\$120		Naperville	31
7	Naperville	31	\$155			
8	Crystal Lake	24	\$120			
9	Evanston	17	\$85			
10	Evanston	17	\$85			
11	Crystal Lake	24	\$120			
12	Naperville	31	\$155			
13						
14	Totals					
15	Location	Miles	Cost			
16	Crystal Lake	72	\$360			
17	Evanston	51	\$255			
18	Mokena	47	\$235			
19	Naperville	93	\$465		Current Time	3:41 PM
20						

Questions?



Doing a What-If Analysis

- **Scenario Manager**
- **Data Tables**
- **Goal Seek**

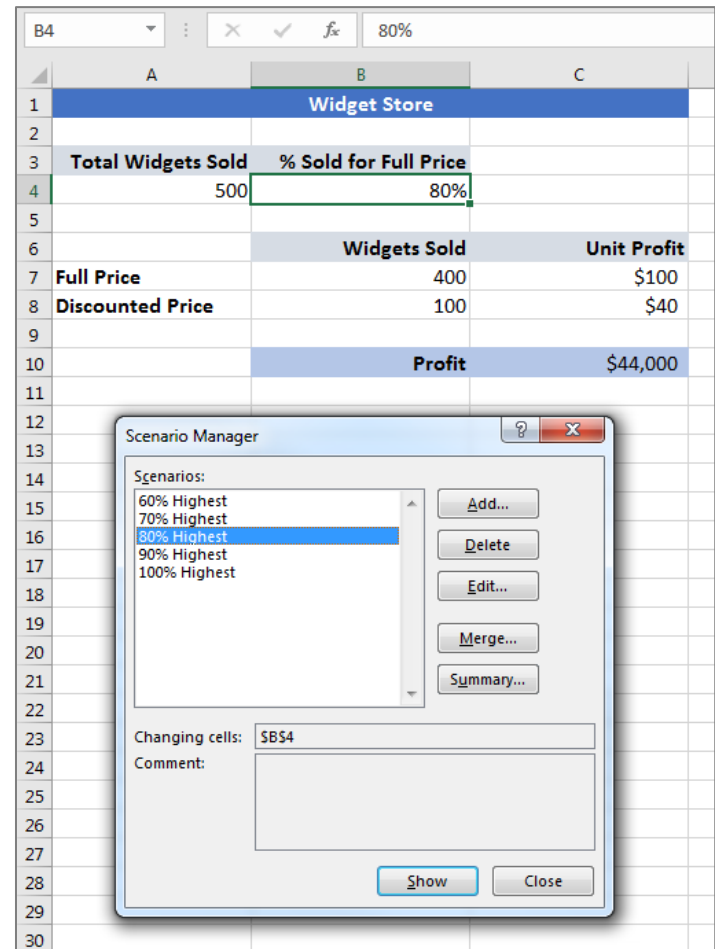


Scenario Manager and **Data Tables** take sets of input values and determine possible results.

Goal Seek takes a result and determines possible input values that produce that result.

Scenario Manager

1. Select the cell in which to enter the scenarios.
2. Under the **Data** tab, go to **What-If Analysis > Scenario Manager**.
3. Click **Add**.
4. Enter a **Scenario Name**, then click **OK**.
5. In the **Scenario Values** window, enter a value for the changing cell, then click **OK**.
6. Repeat steps 2 to 5 for each scenario you wish to add.
7. Click **Show**.



Scenario Manager

To view a Scenario Summary, go to **What-If Analysis > Scenario Manager > Summary > OK**.

Scenario Summary						
	Current Values:	60% Highest	70% Highest	80% Highest	90% Highest	100% Highest
Changing Cells:						
\$B\$4	80%	60%	70%	80%	90%	100%
Result Cells:						
\$C\$10	\$44,000	\$38,000	\$41,000	\$44,000	\$47,000	\$50,000
Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.						

What-If Analysis

Data Table

1. Enter **=C10** in cell **B12**.
2. Select cells **A12** to **B17**.
3. Under the **Data** tab, click **What-If Analysis**.
4. Select **Data Table**.
5. Click in the **Column input cell** field, then select cell **C4** – the % Sold for Full Price.
6. Click **OK**.

	A	B	C
1	Widget Store		
2			
3	Total Widgets Sold	% Sold for Full Price	
4	500	80%	
5			
6		Widgets Sold	Unit Profit
7	Full Price	400	\$100
8	Discounted Price	100	\$40
9			
10		Profit	\$44,000
11			
12		\$44,000	
13	60%	\$38,000	
14	70%	\$41,000	
15	80%	\$44,000	
16	90%	\$47,000	
17	100%	\$50,000	
18			

What-If Analysis

Goal Seek

1. Select cell **C10**.
2. Under the **Data** tab, go to **What-If Analysis > Goal Seek**.
3. Enter **45,000** in the **To value** field.
4. Click in the **By changing cell** field, then select cell **B4**.
5. Click **OK**.

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C
1	Widget Store		
2			
3	Total Widgets Sold	% Sold for Full Price	
4	500	70%	
5			
6		Widgets Sold	Unit Profit
7	Full Price	350	\$100
8	Discounted Price	150	\$40
9			
10		Profit	\$41,000
11			
12			
13			
14			
15			
16			
17			
18			
19			

The 'Goal Seek' dialog box is open, showing the following settings:

- Set cell: C10
- To value: \$45,000
- By changing cell: \$B\$4

The formula bar at the top shows the formula for cell B4: $= (B7 * C7) + (B8 * C8)$.

Exercise

Create the worksheet shown below on the left. You will need to reformat cells B1 and B3, and you will need to enter a formula in cell B4.

Then create the Scenario Summary shown on the right.

B4		=PMT(B3/12,B2,B1)
	A	B
1	Loan Amount	\$25,000
2	Term in Months	36
3	Interest Rate	3.90%
4	Payment	(\$736.99)
5		

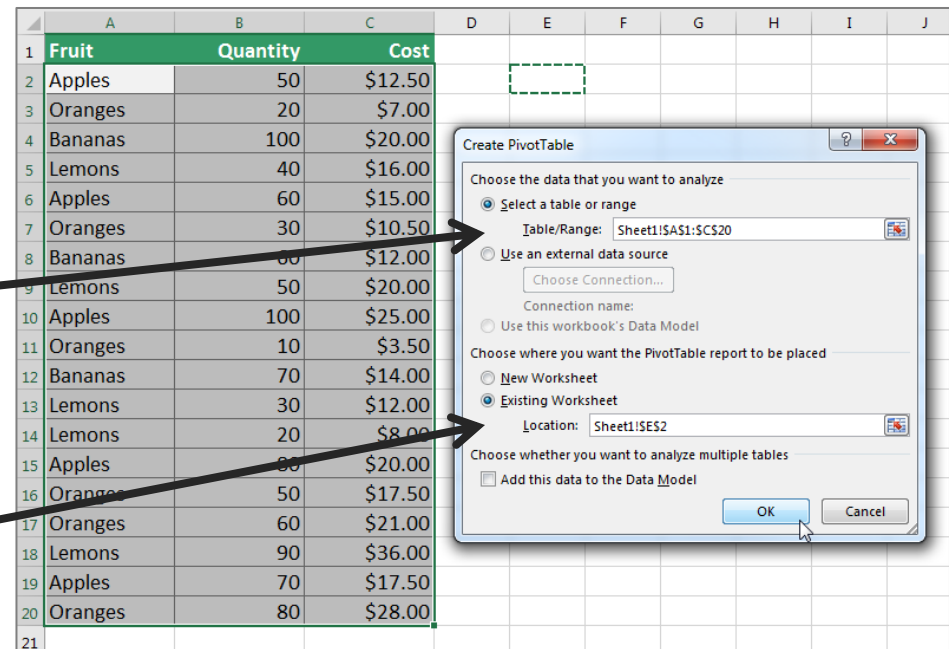
Scenario Summary				
Current Values:		48	60	72
Changing Cells:				
\$B\$2	36	48	60	72
Result Cells:				
\$B\$4	(\$736.99)	(\$563.36)	(\$459.29)	(\$389.99)
Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.				

Questions?



Creating a PivotTable

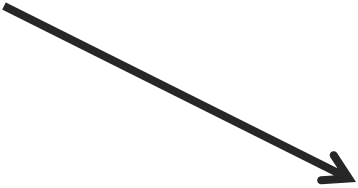
1. Select the cells with which you want to create the PivotTable.
2. Under the **Insert** tab, click **PivotTable**.
3. Select **Select a table or range**. Verify the Table/Range.
4. Select **New Worksheet** to place the PivotTable in a new worksheet or select **Existing Worksheet**, then select the location you want the PivotTable to appear.
5. Click **OK**.



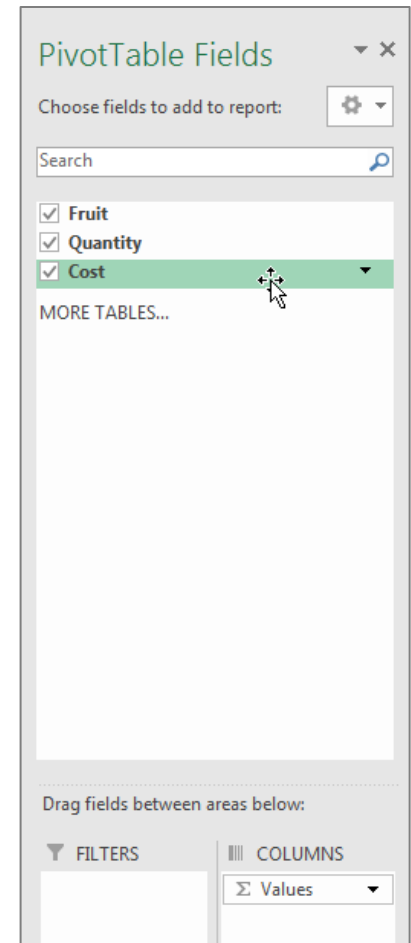
Using the Field List

The Field List appears when you click any cell in the PivotTable.

By making changes in the Field List, you can adjust what data appears in the PivotTable.



Row Labels	Sum of Quantity	Sum of Cost
Apples	360	\$90.00
Bananas	230	\$46.00
Lemons	230	\$92.00
Oranges	250	\$87.50
Grand Total	1070	\$315.50



PivotTable Fields

Choose fields to add to report: [Settings]

Search [Search Icon]

- ☒ Fruit
- ☒ Quantity
- ☒ Cost

MORE TABLES...

Drag fields between areas below:

FILTERS

COLUMNS

Σ Values

Filtering Data

To filter data in a PivotTable:

1. Select a cell in the PivotTable.
2. Under the **Analyze** tab, click **Insert Slicer**.
3. Select the fields for which you want to create slicers.
4. Click **OK**.

Note: You also can filter data by clicking the down arrow in the PivotTable.

The screenshot illustrates two methods for filtering data in a PivotTable. The top part shows a PivotTable with 'Fruit' as the row label and 'Quantity' and 'Cost' as values. An arrow points from the 'Insert Slicer' dialog box to the 'Quantity' field in the PivotTable. The bottom part shows the 'Filter by Row Labels' task pane with 'Apples' selected, and an arrow points from the 'Note' text to the down arrow in the PivotTable's row label column.

Row Labels	Sum of Quantity	Sum of Cost
Apples	360	\$90.00
Bananas	230	\$46.00
Lemons	230	\$92.00
Oranges	250	\$87.50
Grand Total	1070	\$315.50

Insert Slicers dialog box:

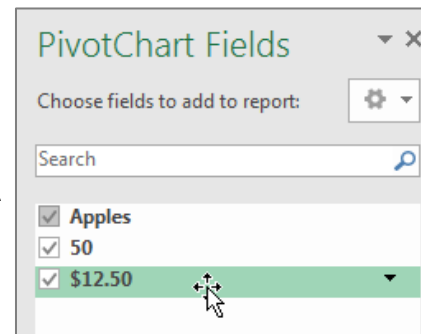
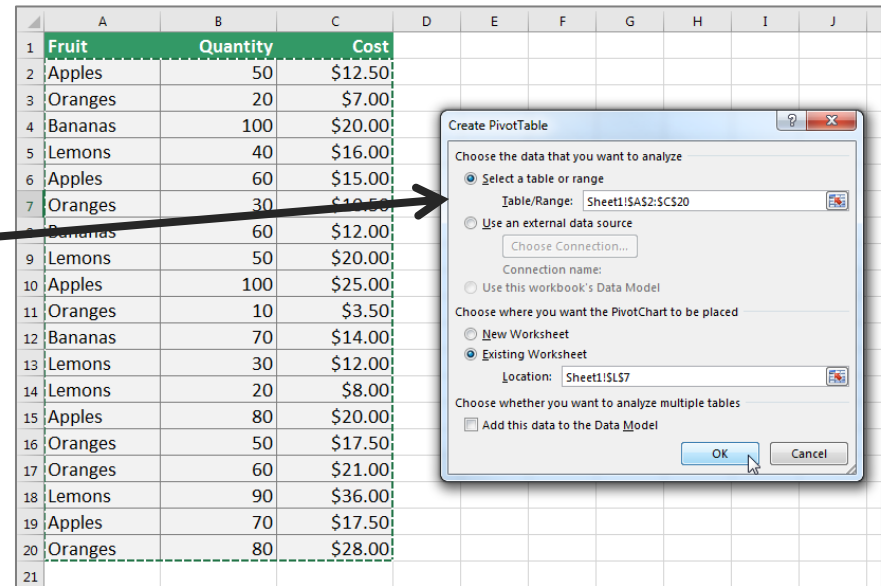
- ☒ Fruit
- ☒ Quantity
- ☐ Cost

Filter by Row Labels task pane:

- Sort A to Z
- Sort Z to A
- More Sort Options...
- Clear Filter From "Fruit"
- Label Filters
- Value Filters
- Search
- ☒ (Select All)
- ☒ Apples
- ☒ Bananas
- ☒ Lemons
- ☒ Oranges

Creating a PivotChart

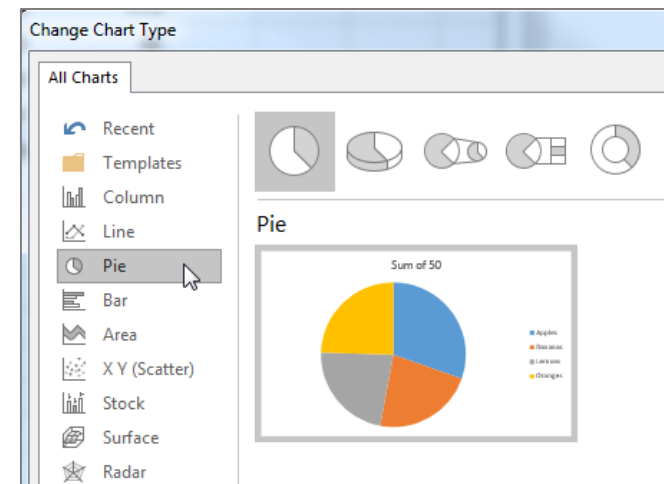
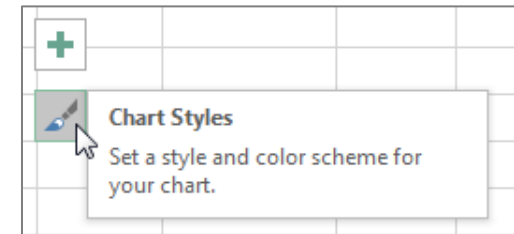
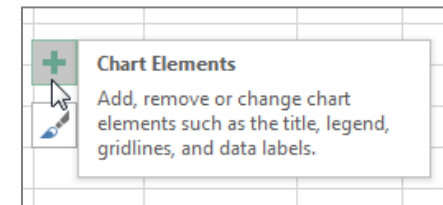
1. Under the **Insert** tab, go to **PivotChart > PivotChart**.
2. Click the **Table/Range** field, then select the cells with the data you want to include in the PivotChart.
3. Click **OK**.
4. In the **PivotChart Fields** section, select the fields to add to the PivotChart.



Modifying a PivotChart

Here are a few of the ways you can change the appearance of a PivotChart:

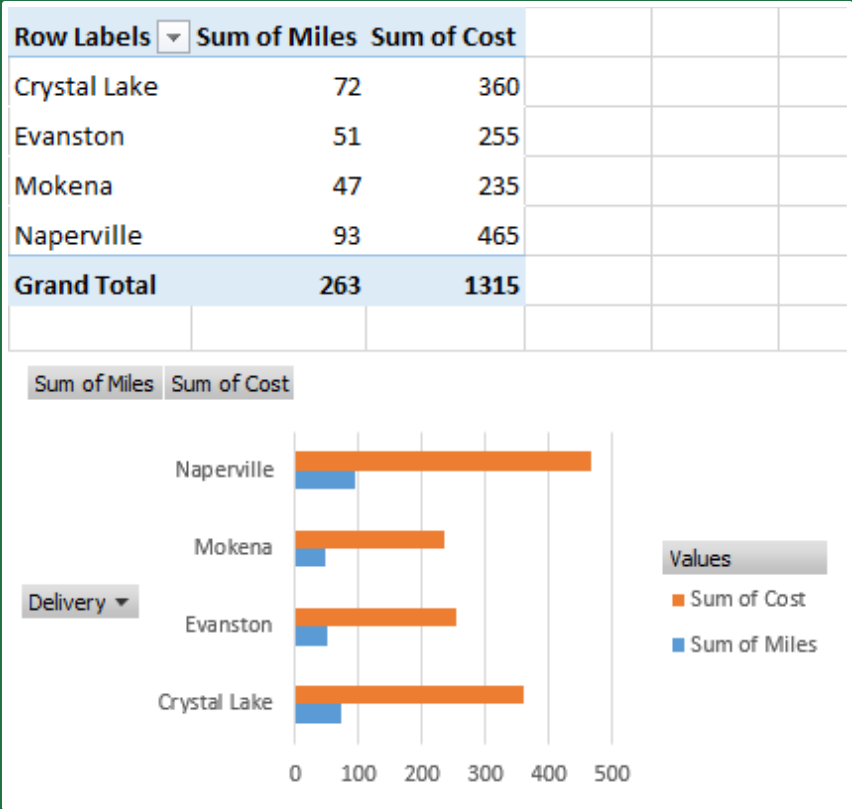
- Click the PivotChart, then click the **Chart Elements** button.
- Click the PivotChart, then click the **Chart Styles** button.
- Right-click the PivotChart, then select **Change Chart Type**.



Exercise

Using the worksheet you created for the Formulas and Functions exercise (below left), create the PivotTable and PivotChart shown below right.

	A	B	C
1	Monthly Delivery Expenses		
2	Delivery	Miles	Cost
3	Evanston	17	\$85
4	Mokena	47	\$235
5	Naperville	31	\$155
6	Crystal Lake	24	\$120
7	Naperville	31	\$155
8	Crystal Lake	24	\$120
9	Evanston	17	\$85
10	Evanston	17	\$85
11	Crystal Lake	24	\$120
12	Naperville	31	\$155

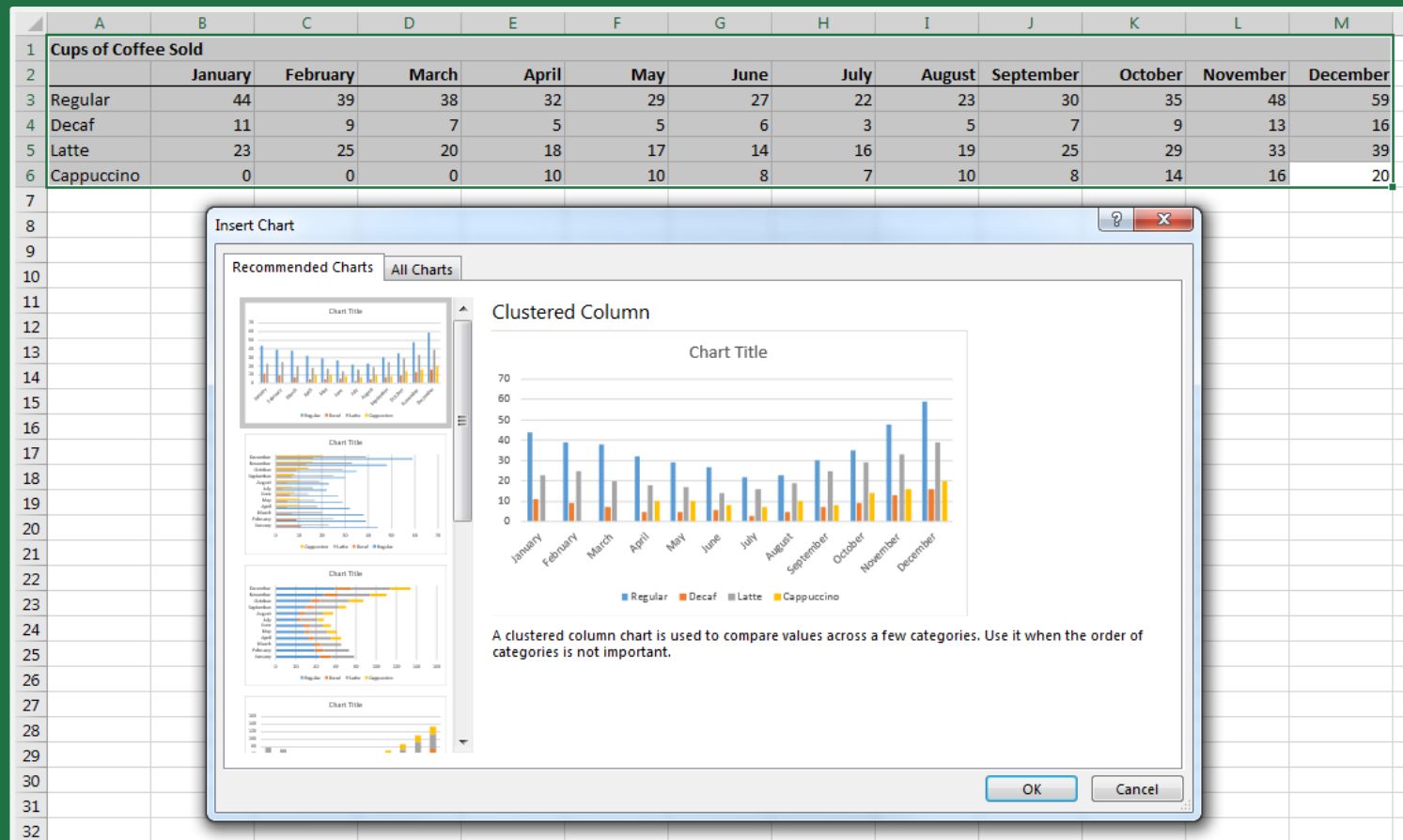


Questions?



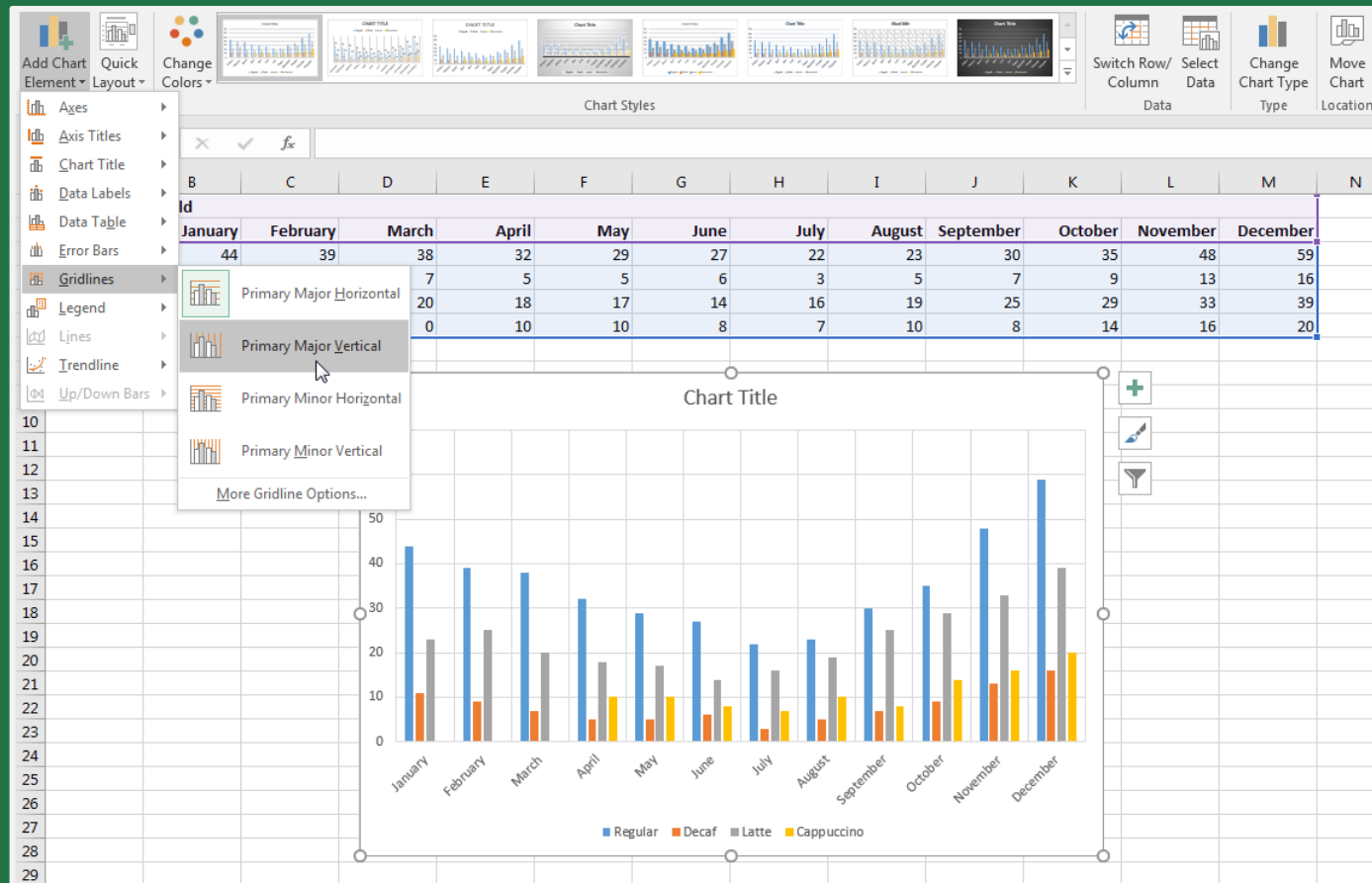
Creating a Chart

To create a chart, select the data to include in the chart, then go to **Insert > Recommended Charts**. Next, select a chart type and click **OK**.



Adding a Chart Element

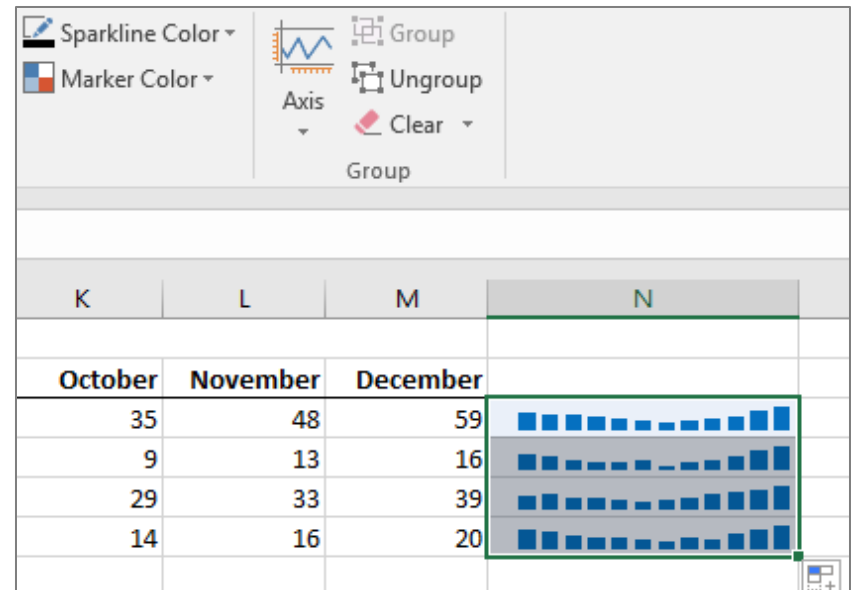
You can add or modify an element to your chart by going to **Design > Add Chart Element** and then selecting an element.



Sparklines

To add sparklines to a worksheet:

1. Select a blank cell at the end of a row of data.
2. Under the Insert tab, select a sparkline type: **Line**, **Column**, or **Win/Loss**.
3. Select the cells in the row, then click **OK**.
4. Click and drag the handle in the sparkline cell for each row of data.



Inserting an Image

To add an image to a worksheet:

- Go to **Insert > Pictures**, then select the image and click **Insert**.

or

- Copy the image (select it another application and press **Ctrl+C**), then paste it (**Ctrl+V**) in your worksheet.

	A	B	C
1	Cups of Coffee Sold		
2		January	February
3	Regular	44	39
4	Decaf	11	9
5	Latte	23	25
6	Cappuccino	0	0
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			



Inserting a Text Box

To add a text box to a worksheet:

1. Under the **Insert** tab, click **Text Box**.
2. Use your cursor to position and size the text box.
3. Enter text in the box.
4. Modify the look of the text box using the tools under the **Format** and **Home** tabs.

	A	B	C	D
1	Cups of Coffee Sold			
2		January	February	March
3	Regular	44	39	38
4	Decaf	11	9	7
5	Latte	23	25	20
6	Cappuccino	0	0	0
7				
8				
9				
10				
11				
12				

Note: The cappuccino machine was broken from January until early April.

Pop-Up Messages

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Cups of Coffee Sold												
2		January	February	March	April	May	June	July	August	September	October	November	December
3	Regular	44	39	38	32	29	27	22	23	30	35	48	59
4	Decaf	11	9	7	5	5	6	3	5	7	9	13	16
5	Latte	23	25	20	18	17	14	16	19	25	29	33	39
6	Cappuccino	0	0	0	10	10	8	7	10	8	14	16	20
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													

Data Validation

Settings Input Message Error Alert

☒ Show input message when cell is selected

When cell is selected, show this input message:

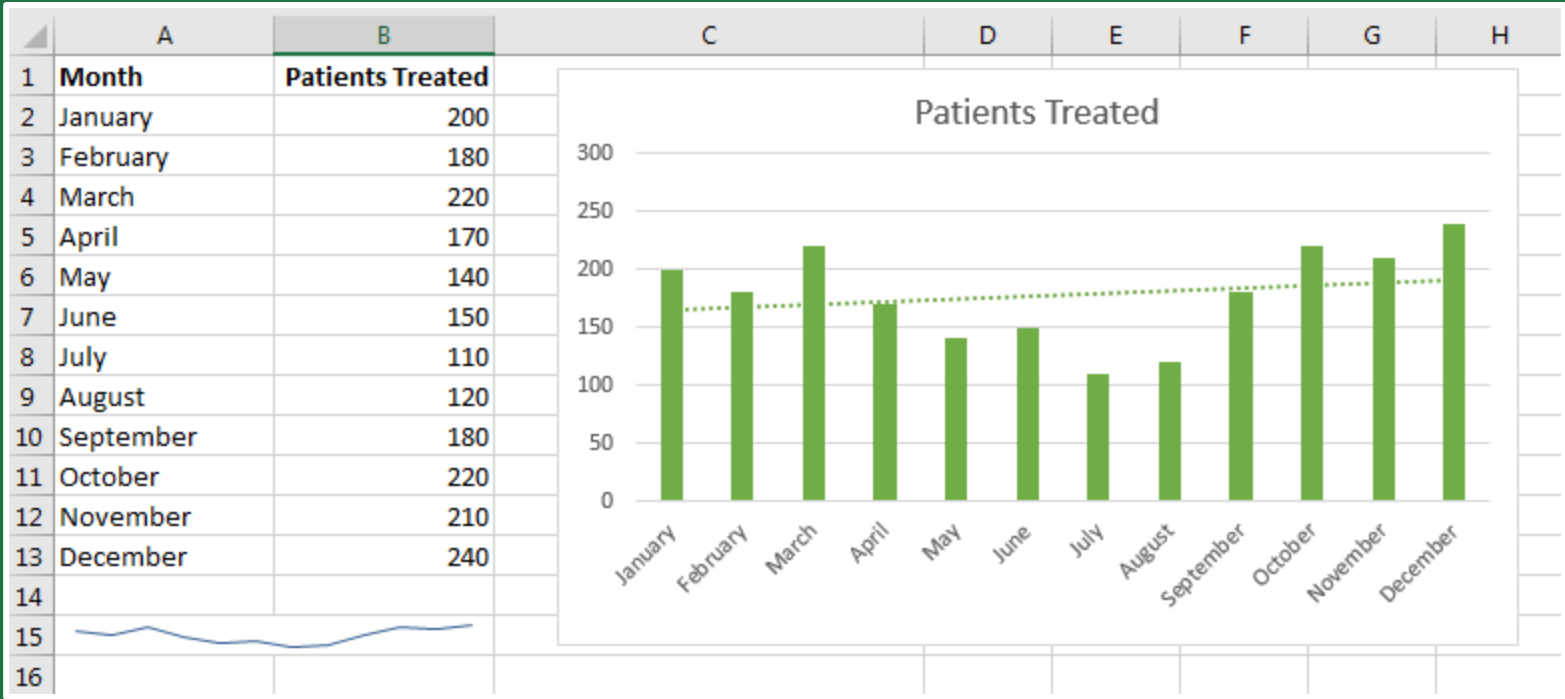
Title:
NOTE

Input message:
The cappuccino machine was broken from January until early April.

Clear All OK Cancel

Exercise

Create the table, chart, sparkline, and trendline shown below.
Feel free to include different data in the **Patients Treated** column.

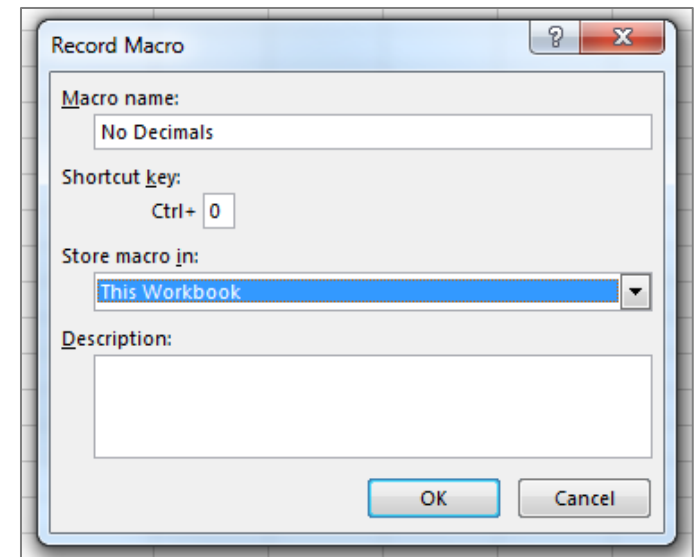


Questions?



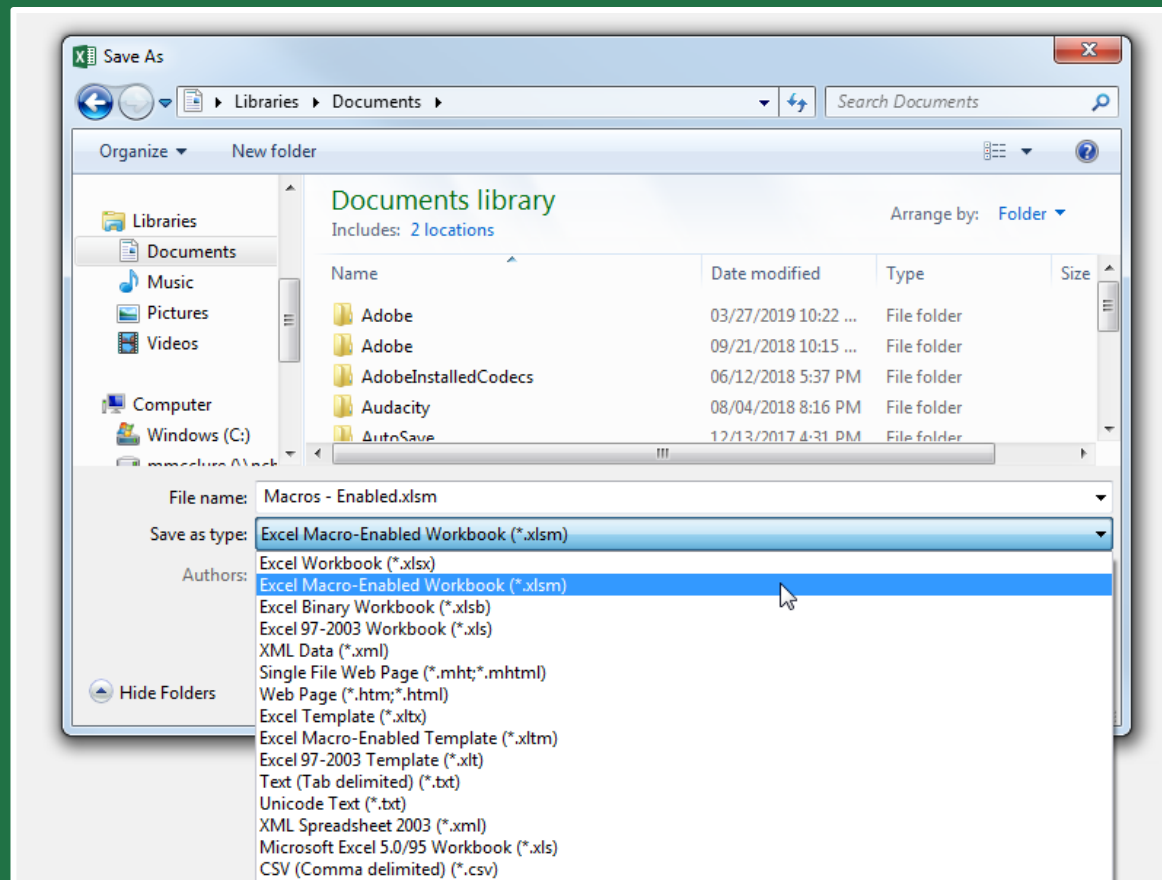
Recording a Macro

1. Under the **Developer** tab, click **Record Macro**.
2. Enter a **Macro name** (it must begin with a letter or underscore and cannot include a space).
3. Enter a **Shortcut key** (optional).
4. Select whether to store the macro in **This Workbook** (available only in this workbook) or in your **Personal Macro Workbook** (available in all workbooks).
5. Enter a **Description** (optional).
6. Click **OK**.
7. Perform the actions to record.
8. Click **Stop Recording**.



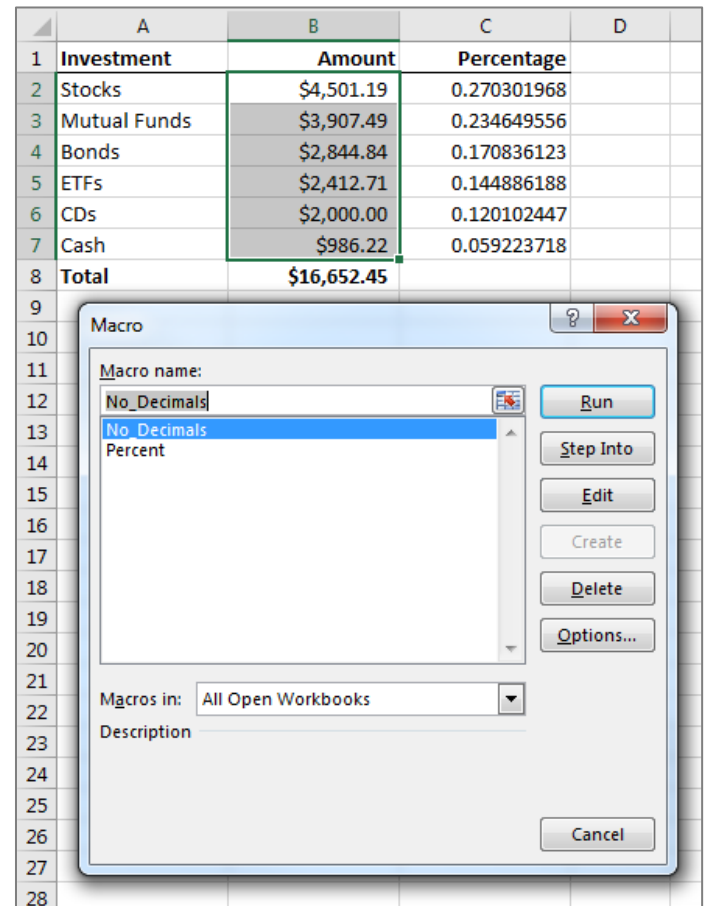
Saving a Macro-Enabled File

When saving an Excel file that contains a macro, you need to select **Excel Macro-Enabled Workbook (*.xlsm)** as the file type.



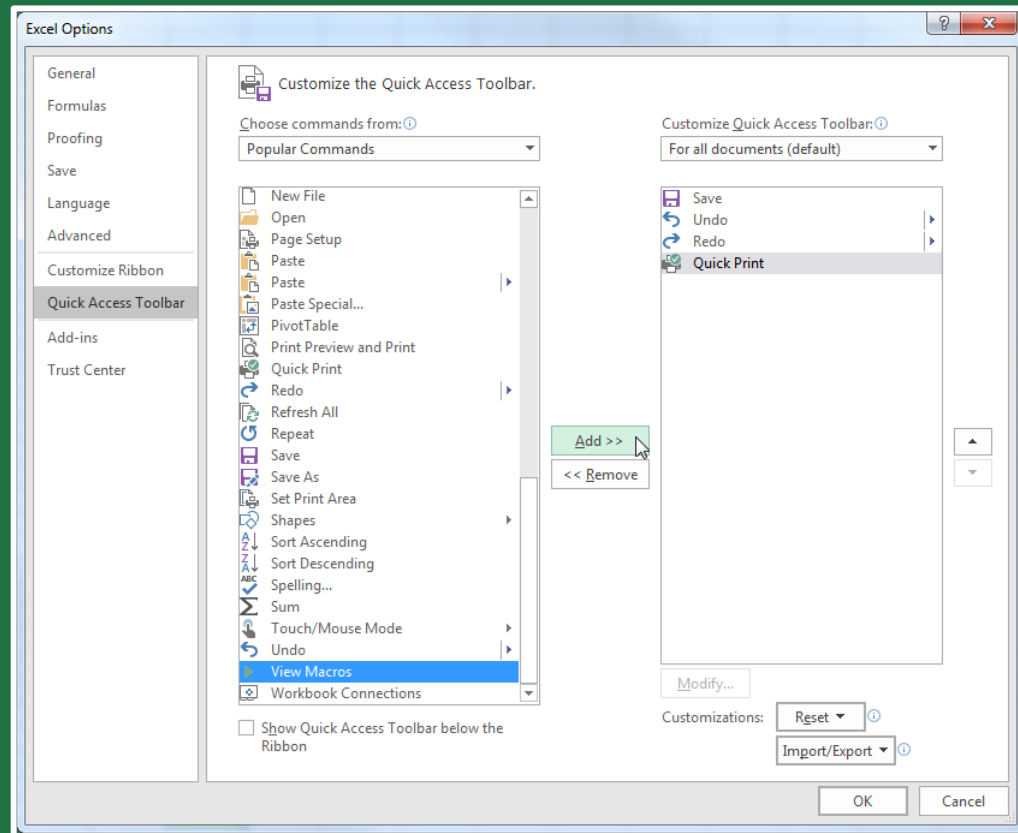
Running a Macro

1. Select the cells to which you want to apply the macro.
2. Under the **Developer** tab, click **Macros**.
3. Select the macro.
4. Click the **Run** button.



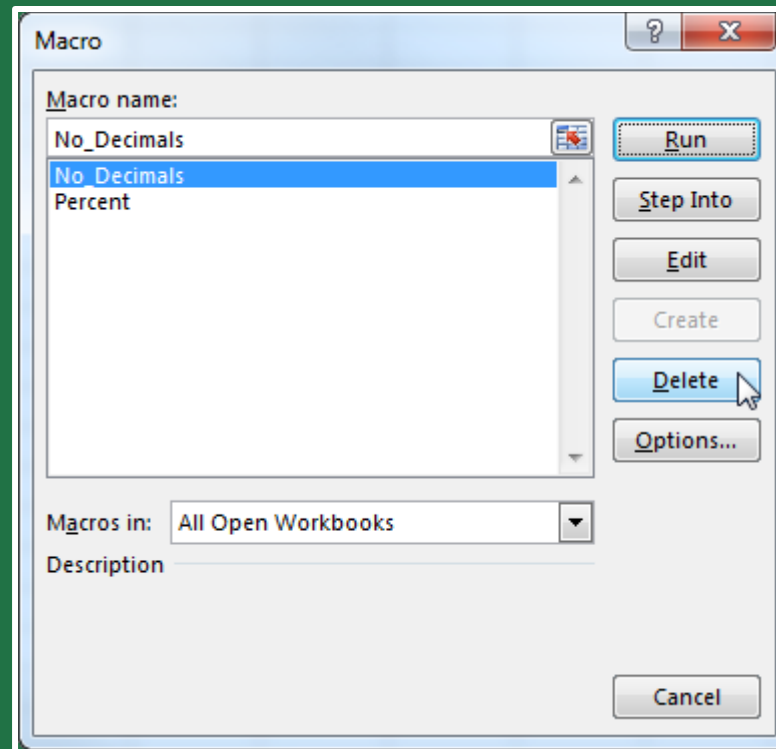
Quick Access Toolbar

To make macros easier to access, click the **Customize Quick Access Toolbar** button, select **More Commands**, select **View Macros** under **Popular Commands**, click **Add**, and click **OK**.



Deleting a Macro

To delete a macro, go to **Developer > Macros**, then select the select the macro and click the **Delete** button.



Exercise

1. Open the **Entering Data** file you saved to your desktop.
2. Select a cell containing a value and create a single macro that changes the cell's **Font**, **Font Size**, **Font Color**, and **Fill Color**.
3. Apply the newly created macro to all the cells containing values.
4. Delete the macro.

Questions?



Final Exercise

You have been asked to organize a catered dinner for **50 colleagues** at NCH.

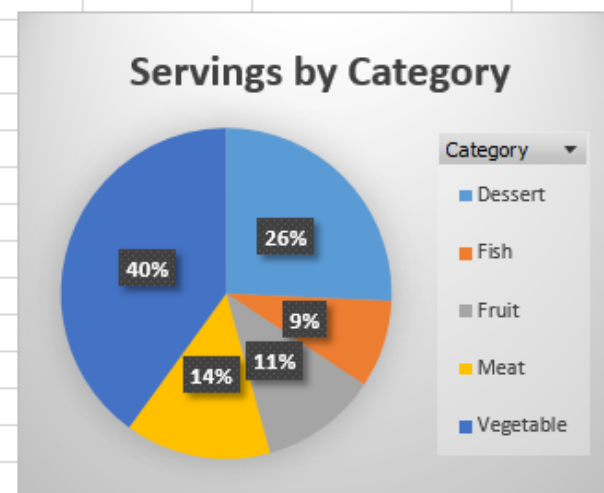
Your budget for the dinner is **\$2,500**.

Using what you have learned in this training, create the worksheet shown on the next slide.

Final Exercise

- Choose your own information for **Food Item**, **Servings**, and **Cost Per Serving**.
- Copy the logo from NCH's website and link the logo to **www.nch.org**.
- Include a pop-up message in cell **D16** (noting the \$2,500 budget) and cell **D17** (noting the 50 attendees).

	A	B	C	D	E	F	G	H	I
1	Food Item	Category	Servings	Cost Per Serving	Item Total				
2	Tilapia	Fish	15	\$15.00	\$225.00		Category	Total Servings	
3	Pork tenderloin	Meat	25	\$12.00	\$300.00		Dessert	90	
4	Strawberries	Fruit	40	\$3.00	\$120.00		Fish	30	
5	Zucchini	Vegetable	30	\$4.00	\$120.00		Fruit	40	
6	Sorbet	Dessert	30	\$5.00	\$150.00		Meat	50	
7	Filet mignon	Meat	25	\$25.00	\$625.00		Vegetable	140	
8	Carrots	Vegetable	40	\$4.00	\$160.00				
9	Red peppers	Vegetable	30	\$4.00	\$120.00				
10	Chocolate brownies	Dessert	40	\$5.00	\$200.00				
11	Key lime pie	Dessert	20	\$5.00	\$100.00				
12	Salmon	Fish	15	\$15.00	\$225.00				
13	Red potatoes	Vegetable	40	\$4.00	\$160.00				
14									
15				Grand Total	\$2,505.00				
16				Under/Over Budget	(\$5.00)				
17				Cost Per Attendee	\$50.10				
18									
19				Event Date	06/12/2020				
20				Today's Date	07/15/2019				
21				Days Till Event	333				
22									



Questions?



Thank You!

