

Microsoft Excel

Advanced Training





Share Your Experiences

Tell us about your Excel experiences



Overview

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



General

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

General Formulas Proofing User Interface options Save Show Mini Toolbar on selection ① Language Show Quick Analysis options on selection Advanced StreenTip style: Show feature descriptions in ScreenTips ▼ Quick Access Toolbar When creating new workbooks Add-ins Use this as the default fogt: Body Font ▼ Trust Center Default giew for new sheets: Normal View ▼ Include this many gheets: 1 ÷ Personalize your copy of Microsoft Office Use rname: Doe, Jane! Quick Access the extensions you want Excel to open by default: Qefault Programs Office Background: No Background ▼ Office Ineme: Colorful ▼ Start up options Choose the extensions you want Excel to open by default: I all m ef Microsoft Excel in the default program for viewing and editing spreadsheets. I all m ef Microsoft Excel in the default program for viewing and editing spreadsheets.	ixcel Options	8 X
Proofing User Interface options Save Show Mini Toolbar on selection ③ Language Show Quick Analysis options on selection Advanced Enable Live Preview ④ Customize Ribbon Ouck Access Toolbar Quick Access Toolbar When creating new workbooks Add-ins Use this as the default fogt: Body Font ▼ Default yiew for new sheets: III ▼ Default yiew for new sheets: III ▼ Include this many gheets: I ↓ Personalize your copy of Microsoft Office User name: Oce, Jane Always use these values regardless of sign in to Office. Office Background: No Background ▼ Office I Iheme: Colorful ▼ Start up options Choose the extensions you want Excel to open by default: Default Programs, If ell me if Microsoft Excel isn't the default progam for viewing and editing spreadsheets. ✓ Show the Start screen when this application starts	General Formulas	General options for working with Excel.
Save Image Set Show Mini Toolbar on selection image Show Quick Analysis options on selection Advanced Image Set Show Quick Analysis options on selection Customize Ribbon Image Set Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions in Screen Tips Image Screen Tip style: Show feature descriptions Image Screen Tips Screen Tips Screen Tips Scr	Proofing	User Interface options
	Proofing Save Language Advanced Customize Ribbon Quick Access Toolbar Add-ins Trust Center	User Interface options Show Mini Toolbar on selection ① Show Quick Analysis options on selection Enable Live Preview ③ ScreenTip style: Show feature descriptions in ScreenTips ▼ When creating new workbooks Use this as the default font: Body Font ▼ Font size: 11 ▼ Default yiew for new sheets: Normal View ▼ Include this many gheets: 1 ‡ Personalize your copy of Microsoft Office User name: Doe, Jane Always use these values regardless of sign in to Office. Office Background: No Background ▼ Office Theme: Colorful ▼ Start up options Choose the extensions you want Excel to open by default: Default Programs Yeal The if Microsoft Excel isn't the default progam for viewing and editing spreadsheets.
		OK Cancel

Formulas

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

Excel Options		? ×
General Formulas	$f_{\mathcal{X}}$ Change options related to formula calculation, perform	mance, and error handling.
Proofing	Calculation options	
Save Language Advanced Customize Ribbon	Workbook Calculation① ● Automatic ○ Automatic except for <u>d</u> ata tables ○ <u>M</u> anual ☑ Recalculate <u>w</u> orkbook before saving	Enable iterative calculation Maximum Iterations: 100 Maximum Change:
Quick Access Toolbar	Working with formulas	
Add-ins Trust Center	R1C1 reference style ✓ Formula AutoComplete ✓ ✓ Use table names in formulas ✓ ✓ Use GetPivotData functions for PivotTable references	
	Error Checking	
	✓ Enable background error checking Indicate errors using this color: A reset Ignored E	rrors
	Error checking rules	
	 Cells containing formulas that result in an error ① Inconsistent calculated column formula in tables ③ Cells containing years represented as 2 digits ③ Numbers formatted as text or preceded by an apostrophe ③ Formulas inconsistent with other formulas in the region ③ 	 Formulas which omit cells in a region ① Unlocked cells containing formulas ① Formulas referring to empty cells ① Data entered in a table is invalid ①
		OK Cancel

Proofing

• AutoCorrect options

• When correcting spelling in Microsoft Office programs

Excel Options		2 8
General	ABC Change how Excel corrects and formats your text.	
Proofing	AutoCorrect options	
Save Language Advanced Customize Ribbon Quick Access Toolbar Add-ins Trust Center	Change how Excel corrects and formats text as you type: AutoCor When correcting spelling in Microsoft Office programs Jagnore words in UPPERCASE Jagnore words that contain numbers Jagnore Internet and file addresses Flag repeated words Enforce accented uppercase in French Suggest from main dictionary only Custom Dictionaries French modes: Traditional and new spellings Spanish modes: Tuteo verb forms only Dictionary language: English (United States) V	rect Options AutoCorrect: English (United States) AutoCorrect AutoFormat As You Type Actions Math AutoCorrect Options buttons Y Show AutoCorrect Options buttons Y Correct Two INitial CApitals Exceptions Y Capitalize first letter of sentences Y Capitalize first letter of sentences Y Capitalize names of days Y Correct accidental use of cAPS LOCK key Y Replace text as you type Replace: With: (e) (f) (f) </th
		OK Cancel

Save

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

Excel Options	? ×	
General Formulas	Customize how workbooks are saved.	
Proofing Save workbooks		
Save	Save files in this <u>format:</u> Excel Workbook (*.xlsx)	
Language	Save AutoRecover information every 5 ‡ minutes	
Advanced	\checkmark Keep the last autosaved version if I close without saving	
Customize Ribbon	Auto <u>R</u> ecover file location: C:\Users\jdoe\Documents\AutoSave\Excel	
Quick Access Toolbar	 Don't show the Backstage when opening or saving files Show additional places for saving, even if sign-in may be required. 	
Add-ins	Save to <u>C</u> omputer by default	
Trust Center	Default local file location: C:\Users\jdoe\Documents	
	Default personal templates location:	
	AutoRecover exceptions for:	
	Disable AutoRecover for this workbook only	
	Offline editing options for document management server files	
	Save checked-out files to:	
	O The server drafts location on this computer	
	The Office Document Cache	
	Server drafts location: C:\Users\jdoe\Documents\SharePoint Drafts\ <u>B</u> rowse	
	Preserve visual appearance of the workbook	
	Choose what colors will be seen in previous versions of Excel: ①	
	OK Cancel	

Language

- Choose Editing Languages
- Choose Display and Help Languages

ixcel Options	8 ×
General	Set the Office Language Preferences.
Formulas	Channe F. Malan Language
Proofing	Choose Editing Languages
Save	Add additional languages to edit your documents. The editing languages set language-specific features, including ()
Language	Editing Language Keyboard Layout Proofing (Spelling, Grammar)
Advanced	English (United States) <default> Enabled V Installed Remove</default>
Customize Ribbon	
Quick Access Toolbar	
Add-ins	[Add additional editing languages]
Trust Center	✓ Let me know when I should download additional proofing tools.
	Set as Default Set as Default View display languages installed for each Microsoft Office program Set as Default View display languages installed for each Microsoft Office program
J [OK Cancel

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

Excel Options		? ×
General Formulas	Advanced options for working with Excel.	
Proofing	Editing options	
Proofing Save Language Advanced Customize Ribbon Quick Access Toolbar Add-ins Trust Center	Editing options After pressing Enter, move selection Direction: Down • Automatically insert a glecimal point Places: 2 \$ Enable fill handle and cell drag-and-drop Alert before overwriting cells Allow gditing directly in cells Extend data range formats and formulas Extend data range formats and formulas Extend data range formats and formulas Enable AutoComplete for cell values Automatically Elash Fill Zoom on roll with IntelliMouse Alert the user when a potentially time consuming operation occurs When this number of cells (in thousands) is affected: 33,554 \$ Use system separator: Inousands separator: Cursor movement: (a) Logical Visual	
	Do not automatically <u>hyperlink screenshot</u>	
	Cut, copy, and paste	•
	ОК	Cancel

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).
- 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:

- Click the Customize Quick Access –
 Toolbar button.
- Select the command buttons you would like to appear on the Toolbar.





Quick Access Toolbar

Excel Options		2 ×
General Formulas	Customize the Quick Access Toolbar.	
Proofing	All Commands For all documents (default)	•
Save Language Advanced Customize Ribbon Quick Access Toolbar Add-ins Trust Center	Separator> 1:1 16:10 16:9 2:3 3:2 3:4 3:5 3-D Color 3-D Effects 3-D Effects 3-D Effects 3-D Ficture Rotation 3-D Picture Rotation 3-D Picture Rotation 4:3 4:5 5:3 5:4 5-Point Star About	▲ ▲ ↓ ↓
	Show Quick Access Toolbar below the Ribbon Customizations: Reset • (i)	0
	OK	Cancel

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.

Excel Options				
General				
Formulas	mulas			
Proofing	Add-ins			
Frooting				
Save	Name 🔶	Location	Туре 🔺	
Language	Active Application Add-ins			
	Acrobat PDFMaker Office COM Addin	C:\aker\Office\x64\PDFMOfficeAddin.dll	COM Add-in	
Advanced				
Customize Ribbon	Inactive Application Add-ins			
	Analysis ToolPak	C:\ice16\Library\Analysis\ANALYS32.XLL	Excel Add-in	
Quick Access Toolbar	Analysis ToolPak - VBA	C:\10\Library\Analysis\ATPVBAEN.XLAM	Excel Add-in	
Add inc	Date (XML)	C:\Icrosoft Shared\Smart Tag\MOFL.DLL	Action	
Addrins	Euro Currency Tools	C:\e\OfficeIb\Library\EUROTOOL.XLAM	Excel Add-In	
Trust Center	Financial Symbol (XIVIL)	C:\Icrosoft Shared\Smart Tag\WOFLDLL	Action COM Add in	
	Infor Spreadsheet Designer for Microsoft Excel	file:///Lawson.Spreadsneet.Designer.vsto	COIVI Add-In VML Exercise Dask	
	Microsoft Actions Pane 3		COM Add in	
	Solver Add in	C:\XCELADD-IN\EXCELPLOGINSHELL.DLL	COIVI Add-In	
G	Document Related Add-ins No Document Related Add-ins			
	Disabled Application Add-ins		T	
	Add-in: Acrobat PDFMaker Office CO	DM Addin		
	Publisher: Adobe Inc.			
	Compatibility: No compatibility information	n available		
	Location: C:\Program Files (x86)\Adob	e\Acrobat DC\PDFMaker\Office\x64\PDFMOf	ficeAddin.dll	
Description: Acrobat PDFMaker Office COM Addin				
M <u>a</u> nage: Excel Add-ins <u>G</u> o				
			OK Cancel	

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) addins, automation add-ins, VBA add-ins, and XLL add-ins. These must be installed for you to use them.



Add-ins



Trust Center

- Security & more
- Microsoft Excel Trust Center

Excel Options		? ×
General Formulas	Help keep your documents safe and your computer secure and healthy.	
Proofing	Security & more	
Save	Visit Office.com to learn more about protecting your privacy and security.	
Language	Microsoft Trustworthy Computing	
Advanced	Microsoft Excel Trust Center	
Customize Ribbon Quick Access Toolbar	The Trust Center contains security and privacy settings. These settings help keep your computer secure. We recommend that you do not change these settings.	<u>T</u> rust Center Settings
Add-ins		
Trust Center		3
		OK Cancel

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.
- Modify the settings (for example, you could select Disable all Application Add-ins, as shown at right).

Г	rust Center				
[Trusted Publishers	Add-ins (COM, VSTO and Other)			
	Trusted Locations Trusted Documents	<u>Require Application Add-ins to be signed by Trusted Publisher</u> Disable polification for unsigned add-ins (code will remain disabled)			
	Trusted Add-in Catalogs	Disable all Application Add-ins (may impair functionality)			
	Add-ins	hà			
	ActiveX Settings				
	Macro Settings				
	Protected View				
	Message Bar				
	External Content				
	File Block Settings				
	Privacy Ontions				

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. \odot



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.

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

AutoFill

To use AutoFill:

- 1. Position your cursor in the lowerright 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
Мор	01/12/20	
Gloves	01/12/20	
Cleaning wipes		<u>/</u>
Sponge		
Broom		
Dustpan		
Cleaning wipes	\rightarrow	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.

	А	В		С
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.



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

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.

Syr	nbol															9	? <mark>x</mark>	
	Symbols Special Characters																	
	Font:	(norm	al tex	t)				•	S <u>u</u> bse	et: Ba	sic Lat	in						
	р	q	r	s	t	u	v	w	x	у	z	{		}	~		^	
	i	¢	£	×	¥	I I	§		©	₫	«	-	-	8	-	0	-	
	±	2	3	1	μ	¶	•		1	0	»	1⁄4	1/2	¾	Ś	À		
	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ϊ	Ð		
	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß	à	.	
	<u>R</u> ecen	tly use	ed sym	bols:													-	
	-	—	—	8	-	•	\checkmark	€	£	¥	C	тм	±	¥	≤	≥		
	Unicode name: Tilde <u>Character code: 007E</u> fro <u>m</u> : Unicode (hex)																	
														Inser	t		Cancel	

Data Entry Express

To quickly enter the same text, value, or formula in multiple cells:

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

f _x	Hannah Beck			
	В	с	D	
	First	Last	Supervisor	
			Hannah Beck	
				/言

Data Validation

- 1. Select the cells to which you want to apply data validation.
- 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**.

F	G	н	Ι	J	к	L			
2020 Goal	Difference								
\$500,000	\$32,001								
\$450,000	\$72,347								
\$450,000	Data Validation				? ×				
\$400,000									
\$500,000	Validation criteria	essage Err	or Alert						
\$450,000	Allow:								
\$455,000	Whole number	•	🔽 Ignore <u>I</u>	blank					
\$400,000	Data:	•							
\$400,000	Minimum:								
	\$349,999								
	Apply these chan	Apply these changes to all other cells with the same settings							
		Cancel							
	_					-			

Creating a Drop-Down List

- 1. Enter the drop-down list entries in the worksheet.
- 2. Select the cells where the list will appear.
- 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**.

	A	В	С	D
1	Name	First	Last	Supervisor
2	Hector Gomez			
3	Lydia Wright			
4	Markus Peters			
5	Yvonne Henderson			
6	Dhuree Khan			
7	Blake Middleton			
8	Parker Brown			
9	Cecilia Stevens			
10	Consuela Rodon			
12	Carolyn Bell			
13	Sigmund Lee			
14	Data Validation		? ×	
15				
16	Settings Input Messa	ge Error Alert		
17	Allow:			
18	List	▼ Ignore <u>b</u> lank		
19	Data:	v In-cell dropdo	wn	
20	Source:			
21	= \$A\$12:\$A\$13		<u>.</u>	
22				
23	Apply these changes	to all other cells with the sa	ame settings	
24				
25		OK	Cancel	
26				

Adding Hyperlinks

A	10 • : × ✓ f _x	Consuela Rodo	n					
	А	В		с	D		E	F
1	Name	First	Last		Supervisor	2	020 Sales	
2	Hector Gomez	Insert Hyperlink					? <mark>x</mark>	
3	Lydia Wright	Link to:	<u>T</u> ext to disp	lay: Consuela Rodor	1		ScreenTi <u>p</u>	
4	Markus Peters		Lookin	Advanced		50 🙉 🔁		
5	Yvonne Henderson	Existing File					Deelweet	
6	Dhuree Khan		C <u>u</u> rrent Folder	Excel Training	- Advanced - Outline.docx		B <u>o</u> okmark	
7	Blake Middleton	Pl <u>a</u> ce in This		Excel Training	- Advanced 05-22-19.pptx - Advanced 05-28-19 pptx			
8	P.J. Brown	Document	<u>B</u> rowsed Pages	Excel Training	- Advanced 05-30-19.pptx			
9	Cecilia Stevens	1		Excel Training	 Advanced 06-03-19.pptx Advanced 06-06-19.pptx 			
10	Consuela Rodon	Document	Re <u>c</u> ent Files	First and Last I	Names.xlsx			
11			Address	http://pcb.org/Pod	alComplete/			
12		E- <u>m</u> ail Address	Addiess	http://nen.org/Pon	arcompiete/			
13						ОК	Cancel	
14						-		
15								

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?



Formulas and Functions

Entering Formulas

To create a formula:

- 1. Select a cell.
- 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	
\rightarrow	\$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	

Formulas and Functions

Formula Bar

G	$G3 \bullet \vdots \times \checkmark f_x = E3-F3$							
	А	В	С	D	E	F	G	
1	Name	First	Last	Supervisor	2020 Sales	2020 Goal	Difference	
2	Hector Gomez				\$532,001	\$500,000	\$32,001	
з	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		

Formulas and Functions

Operators

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

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

D4	L	 . 	f≈ =A2*A3	
A		В	с	D
1	Numbers to Use		Operation	Answers
2	5		Addition (+)	7
з	2		Subtraction (-)	3
4			Multiplication (*)	10
5			Division (/)	2.5
6			Power (^)	25
7				
Order of Operations

Example A

IF	* : X	✓ <i>f</i> _x =A1+B1	*C1	
	А	В	С	
1	10	20		2
2	=A1+B1*C	1		
3				



IF	×	✓ <i>f</i> _x =(A1+B	1)*C1
	А	В	С
1	10	20	2
2	=(A1+B1)*	C1	
3			

Functions

Fi	le	Ho	ome	Inse	ert P	age Layout	Fo	ormulas	Data	Review	View	Develo	oper	♀ Tell me
1	$\frac{1}{x}$	2	Σ	*		?	Α	2	٩	θ		P	•	Define Name
Ins	ert	Auto	oSum	Recent	ly Finan	cial Logical	Text	Date &	Lookup &	Math &	More Euroctions T	Name	e 9	½ Use in Formu ☐ Create from S
Tunc				USEU		Functio	n Librar	y	Reference	OI	DD	ivianay	D	efined Names
A1			•	: >	< 🗸	f_{x}				PI				
	A	N .		В	С	D		E	F	PC	OWER			J
1											UOTIENT			
2										R.4	DIANS			
4										R/	AND			
5										R/	ANDBETWEEN	1	F	
7										R	DUND			
8										RC	DUNDDOWN			
10										RC	DUNDUP			



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.

B	\bullet : \times \checkmark f_s		=SUM(B	2:B5)
	А	В	С	D
1	Fruit	Amount		
2	Apples	50		
3	Oranges	20		
4	Bananas	60		
5	Lemons	40		
6	SUM	170		
7				



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

F	ile	Hom	2	Insert	Pag	ge Layo	out	Fo	rmulas	D	ata
J	fx	Σ		*	5		2	Α			۹
In Fun	sert ction	AutoSu •	m Re	cently Jsed ₹	Financi	al Logi	ical	Text *	Date & Time ∗	Loo Refe	kup & rence *
		Σ s	um			Fund	tion	Library	1		
B6	i	A	verag	e	45	f_{x}					
		⊆ <u>⊆</u>	ount	Numb	ers			с	D		F
1	Fruit	<u>N</u>	<u>1</u> ax			unt		-			_
2	Appl		l <u>i</u> n			50					
3	Orar	lges [№]	lore <u>F</u>	unctio	ns	20					
4	Bana	anas				60					
5	Lem	ons				40					
6	SUⅣ	1									
7											

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**.
- Go to Formulas > AutoSum > Average.

Fun	iction + L	Ised • •		Time • Refe	rence *
		Fu	nction Library		
B6	j ⊤ :	$\times \checkmark f_x$	=AVER/	AGE(B2:B5)	
	А	В	С	D	E
1	Fruit	Amoun			
2	Apples	50)		
з	Oranges	20)		
4	Bananas	60)		
5	Lemons	40)		
6	AVERAGE	=AVERAGE(B	2:B5)		
7					

†x

3. Press Enter.

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.

F	ile	Home	Insert	Page Lay	out Fo	rmulas	Data	Review	View	Develop
	fx	Σ	\star	5	A	6	Q	θ		
In Fur	sert iction	AutoSum F	lecently F Used =	inancial Logi	ical Text	Date & Time •	Lookup & Reference *	Math & Trig •	More Functions •	Name Manager
				Fun	ction Library	/				_
E1	.0	•	×	$\checkmark f_x$	=MAX(E2:E9)				
		А		в	С		D		E	F
1	Frui	t		Amount		Fruit	t	_	Amount	
2	Арр	les		50		Appl	es	Ī	50	
з	Orai	nges		20		Orar	nges		20	
4	Bana	anas		60		Bana	anas		60	
5	Lem	ons		40		Lem	ons		40	
6	Mel	ons		20		Melo	ons		20	
7	Kiwi	s		40		Kiwi	S		40	
8	Lime	es		10		Lime	S		10	
9	Gra	pefruits		30		Grap	oefruits		30	
10	MIN	I		10		MA)	(=MA	X(E2:E9)	
11										



- 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.

A	TANH \checkmark : X \checkmark $f_{\rm x}$	=TODAY()
	А	В
1	Date Function	ons
2	Today's date:	=TODAY()
3	Your birthday:	
4	Days until your birthday:	0

C1	2 \checkmark : $\times \checkmark f_x$	
	А	В
1	Date Function	ons
2	Today's date:	06/21/19
3	Your birthday:	02/03/20
4	Days until your birthday:	227

А	В
Date Function	ons
Today's date:	06/21/19
Your birthday:	02/03/20
Days until your birthday:	227
Grace period days:	5
Bill due on:	06/26/19
	A Date Function Today's date: Your birthday: Days until your birthday: Grace period days: Bill due on:

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.



	А	В		
1	Time Fund	ctions		
2	Current Time:	11:20:53 AM		
з				
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

=VLOOKUP(A3,E3:F5,2,FALSE)

- 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.
- А С Travel Expenses 1 2 Delivery Miles Cost =VLOOKUP(A3,E3:F5,2,FALSE) 3 \$60 Libertyville **\$0 Orland Park** \$0 5 Orland Park \$0 6 \$0 Wheaton 7 **Orland Park** \$0 8 \$0 Wheaton 9 \$0 Wheaton 10 **\$0** 11 Orland Park \$0 12 Libertyville

 f_{x}

IF

-

 \times

6. Enter , FALSE)



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

B	• • · ×	✓ f _x =VLOOK	JP(A3,\$E\$3:\$F\$5,2,FALS	E)		
	А	В	С	D	E	F
1		Travel Expenses				
2	Delivery	Miles	Cost		Location	Miles
з	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	3	$\times \checkmark f_x$	=IF(A3=	"Apple",TRUE,FALSE)
	А	В	С	D
1	IF State	ements		
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)

B	l6 🔻 :	$\times \checkmark f_x$	=SUMIF	SUMIF(A2:A13,A16,B2:B13)					
	А	В	С	D	E	F			
1	Fruit	Amount		Fruit	Туре	Amount			
2	Apples	50		Apples	Fuji	50			
з	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	Туре	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)

F1	.6 🔻 :	$\times \checkmark f_x$	=SUMIF	S(F2:F13,D2:D13,D)16,E2:E13,E16)	
	А	В	С	D	E	F
1	Fruit	Amount		Fruit	Туре	Amount
2	Apples	50		Apples	Fuji	50
з	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	Туре	SUMIFS
16	Apples	150		Oranges	Florida	40
17						



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

B1	l6 🔻 :	$\times \checkmark f_x$	=COUN	TIF(A2:A13,A16)		
	А	В	С	D	E	F
1	Fruit	Amount		Fruit	Туре	Amount
2	Apples	50		Apples	Fuji	50
з	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	Туре	COUNTIFS
16	Apples 3			Oranges	Florida	
17						

COUNTIFS

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

F1	.6 🔻 :	$\times \checkmark f_x$	=COUN	TIFS(D2:D13,D16,E	E2:E13,E16)	
	А	В	С	D	E	F
1	Fruit	Amount		Fruit	Туре	Amount
2	Apples	50		Apples	Fuji	50
з	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	Туре	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

B	7 🔫 :	$\times \checkmark f_x$	=VLOOKUP(A7,A1:B5,2,FALSE)			
	А	В	С	D	E	F
1	Fruit	Amount				
2	Apples	50				
з	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.

B	7 👻 :	$\times \checkmark f_x$	=VLOOKUP(A7,A1:B5,2,FALSE)							
	А	В	C D E F G H I	J						
1	Fruit	Amount	Error Checking	22						
2	Apples	50	Error in cell B7							
3	Oranges	20	=VLOOKUP(A7,A1:B5,2,FALSE)							
4	Bananas	60	Value Not Available Error Show <u>Calculation Steps</u>							
5	Lemons	40	A value is not available to the formula or function.							
6			Edit in <u>F</u> ormula Bar							
7	Apple	#N/A								
8				vext						
9										
10			- U X							
11			Evcol 2016 Holp							
12										
13			e le Search P							
14										
15										
10			How to correct a #N/A error							
18			The #N/A error generally indicates that a formula							
19			can't find what it's been asked to look for.							
20										
21			Top solution							
22										
23			The most common cause of the #N/A error is with							
24			VLOOKUP, HLOOKUP, LOOKUP, or MATCH functions							
25			if a formula can't find a referenced value. For example, your lookup value doesn't exist in the							
26			source data.							

Formula Errors

F	ile Home	Insert Page Layo	out Form	nulas	Data Rev	view Vie	ew Deve	eloper 🤇	🖓 Tell me w	/hat you war	nt to do			
j In: Fun	fx sert AutoSum Re ction - U	cently Financial Logi	cal Text [Date & Loo Time ▼ Refe	okup & Mat erence + Trig	Ð h & Mor g ▼ Functic	re Nar ons • Mana	e Def M ne ager Cre Define	ine Name in Formula ate from Sel d Names	ection	□ Trace Prece Trace Depe Remove Ar	edents 🧏 ndents 🌗 rows 👻 🔊 Formula	Show Formu Error Checki Evaluate For Auditing	ılas ng ▼ mula
B7	· ·	\times \checkmark f_x	=VLOOK	UP(A7,A1	:B5,2,FALSE	E)								
	А	В	С	D	E	F	G	н	I	J	К	L	м	N
1	Fruit	Amount												
2	Apples	50		Evalua	ate Formula						2	×		
з	Oranges	20		Refe	ence:		Evaluation:							
4	Bananas	60		Shee	t1!\$B\$7	=		Apple",A1:B5	,2,FALSE)					
5	Lemons	40												
6														
7	Apple	#N/A												
8														
9				_								-		
10				To	show the resu pears italicize	ult of the un d.	derlined exp	ression, click	cEvaluate. T	he most rece	ent result			
11														
12							<u>E</u> valu	ate	Step In	Step Out	Close	e		
13					_	_		_			-			
14														
15														

Exercise

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

	Α	В	С	D	E	F	
1	Mon	thly Delivery Expe	nses		Distance to Each Location		
2	Delivery	Miles	Cost		Location	Miles	
з	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.

	?		7	→[+		
Wh	at-If	Fore	cast	Grou	рl	Jngroup
Anal	ysis 🕶	Sh	eet	Ŧ		Ŧ
	<u>S</u> cer	nario	Mana	iger		
	<u>G</u> oa	l See	k			
	Data	<u>T</u> ab	le			
	0			۲		Q

Scenario Manager

- 1. Select the cell in which to enter the scenarios.
- 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**.

B4	Ļ	• : ×	√ f _×	80%		
		Α		В	С	
1			Widg	et Store		
2						
3	Total	Widgets Sold	% Sold f	or Full Price		
4		500		80%		
5						
6			N	/idgets Sold	U	nit Profit
7	Full Pri	ce		400		\$100
8	Discour	nted Price		100		Ş40
9						A
10				Profit		Ş44,000
11						
12	ſ	Scenario Manage	r		<u>ନ୍ଥ</u>	Ŋ
14		Scenarios:				
15		60% Highest		A .	Add	
16		70% Highest 80% Highest				
17		90% Highest			Delete	
18		100% Highest			Edit	
19						
20					lerge	
21				Su	mmary	
22		L				
23		Changing cells:	SBS4			
24		Comment:				
25						
26						
27						
28				<u>S</u> how	Close	
29	l					
30						

Scenario Manager

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

	1				r						-
	2					•	•	•			
1 2		Α	В	С	D	E	F	G	Н	I	J
	1										
	2		Scenario S	umm	ary						
+	3				Current Values:	60% Highest	70% Highest	80% Highest	90% Highest	100% Highest	
-	5		Changing C	ells:							
Ŀ	6		\$	B\$4	80%	60%	70%	80%	90%	100%	
-	7		Result Cells	5:							
[·]	8		\$	C\$10	\$44,000	\$38,000	\$41,000	\$44,000	\$47,000	\$50,000	
9 Notes: Current Values column represents values of changing cells at											
	10		time Scena	rio Su	mmary Report v	was created. Ch	anging cells fo	r each			
	11		scenario ar	e high	lighted in gray.						
	12				_						

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**.
- Click in the Column input cell field, then select cell C4 – the % Sold for Full Price.
- 6. Click **OK**.

	А	В	С
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			

Goal Seek

- 1. Select cell **C10**.
- 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**.

B4	• • E ×	✓ <i>f</i> _x =(B7*C7)+(B8*C8)
	А	В	С
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		Goal Seek	8 ×
13		Set cell:	(10
14		To valuer	\$45,000
15		Du chan sinn selle	545,000
16		by changing cell:	5B54
17		ОК	Cancel
18			
19			

Exercise

Create the worksheet show 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	\bullet : \times \checkmark $f_{\rm x}$	=PMT(B3/12,B2,B1)
	А	В
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.
- 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.

	А	В	С	D	E	F	G	н	I	J	
1	Fruit	Quantity	Cost								
2	Apples	50	\$12.50								
з	Oranges	20	\$7.00								
4	Bananas	100	\$20.00	Create	PivotTable				8	x	
5	Lemons	40	\$16.00	Choo	se the data th	at you want	to analyze				
6	Apples	60	\$15.00		elect a table	or range	to unarjet				
7	Oranges	30	\$10.50		<u>T</u> able/Ran	ge: Sheet1	!\$A\$1:\$C\$20			1	
8	Bananas		\$12.00	0	O Use an external data source						
9	Lemons	50	\$20.00		Choose Connection						
10	Apples	100	\$25.00	0.	Connection name:						
11	Oranges	10	\$3.50	Choo	se where you	want the Pi	votTable repo	rt to be plac	ed	_	
12	Bananas	70	\$14.00	<u>1</u> ()	ew Workshe	et					
13	Lemons	30	\$12.00	<u> </u>	xisting Work	sheet					
14	Lemons	20	\$8.00		Location:	Sheet1!\$E	52				
15	Apples	80	\$20.00	Choo	se whether yo	ou want to a	nalyze multip	le tables			
16	Orangee	50	\$17.50		add this data	to the Data	Model			_	
17	Oranges	60	\$21.00					ОК	Cance		
18	Lemons	90	\$36.00			_	_	4			
19	Apples	70	\$17.50								
20	Oranges	80	\$28.00								
21											

5. Click **OK**.

Using the Field List

The Field List appears when you click any cell in the PivotTable.				PivotTable Fields ▼× Choose fields to add to report: ↓ Search ✓ Fruit ✓ Quantity
By making changes in the Field List, you can adjust what data appears in the PivotTable.				Cost MORE TABLES
	Row Labels 💌	Sum of Quantity	Sum of Cost	
	Apples	360	\$90.00	
	Bananas	230	\$46.00	
	Lemons	230	\$92.00	Drag fields between areas below:
	Oranges	250	\$87.50	T FILTERS
	Grand Total	1070	\$315.50	∑ Values

Filtering Data



Creating a PivotChart

- 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**.
- In the PivotChart Fields section, select the fields to add to the PivotChart.

1	А	В	С	D	E	F	G	Н	I	J
1	Fruit	Quantity	Cost							
2	Apples	50	\$12.50							
3	Oranges	20	\$7.00		_					
4	Bananas	100	\$20.00		Create PivotT	able			6	X
5	Lemons	40	\$16.00		Choose the o	lata that yo	u want to an	alyze		
6	Apples	60	\$15.00		Select a	table or ran	ge			
7	Oranges	30	¢10,50	\rightarrow	Table/Range: Sheet1!\$A\$2:\$C\$20					
•	Semenas	60	\$12.00		O Use an e	external dat	a source			
9	Lemons	50	\$20.00		Ch	oose Conne	ction			
10	Apples	100	\$25.00		Connection name: Use this workbook's Data Model Choose where you want the PivotChart to be placed					
11	Oranges	10	\$3.50							
12	Bananas	70	\$14.00		© <u>N</u> ew Wo	orksheet				
13	Lemons	30	\$12.00		Existing	Worksheet				
14	Lemons	20	\$8.00		Loca	tion: She	et1!SLS7			
15	Apples	80	\$20.00		Choose when	ner you wa data to the	nt to analyze Data Model	multiple table	25	
16	Oranges	50	\$17.50		Add this	, data to th	Bata <u>M</u> odel	04		Capical
17	Oranges	60	\$21.00			_		UK	- <u></u>	
18	Lemons	90	\$36.00		-	_	_	_	-	_
19	Apples	70	\$17.50							
20	Oranges	80	\$28.00							
21										



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.

	А	В	С						
1	Monthly Delivery Expenses								
2	Delivery Miles Cost								
з	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						

Row Labels 💌 S	um of Miles S	um of Cost		
Crystal Lake	72	360		
Evanston	51	255		
Mokena	47	235		
Naperville	93	465		
Grand Total	263	1315		
Sum of Miles Sum	of Cost			
Nap	erville			
M	okena			Values
Delivery 🔻 Eva	anston			Sum of Cost
Crysta	al Lake			
	0 100	200 300	400 500	

Questions?



Charts and Graphics

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.

Add Elem	Chart Quick	Cha Colo	inge		OMETTERS			133	Our 100		tradildi tradildi					Swit	ch Row/ Select	Change Chart Type	Move Chart
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27									Rei Rei	gular 📕	Decaf II	Latte	Cappuc	cino					
29					0						0					0			
	1				1						1								

Sparklines

To add sparklines to a worksheet:

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

Sparkline (Color • Nor • Axis	. 『卍』 Group ↓ 『나』 Ungroup 《 Clear → Group		
к	L	м	Ν	
October	November	December		
35	48	59		
9	13	16		
29	33	39		
14	16	20		

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.

	А	В	С					
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.
- Modify the look of the text box using the tools under the Format and Home tabs.

	А	В		С	D					
1	Cups of Coffee Sold									
2		Januar	y	February	м	arch				
3	Regular	4	4	39		38				
4	Decaf	1	1	9		7				
5	Latte	2	3	25		20				
6	Cappuccino		0	0		0				
7										
8		Not	e: Th	e cappucci	no					
9		mad	machine was broken from January until early April.							
10		Jan								
11										
12										

Pop-Up Messages

	A	В	С	D	E	F	G	Н	Ι	J	K	L	М
1	Cups of Coffe	e Sold											
2		January	February	March	April	Мау	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				Data Validatio	on		l	y x					
9				C	Teres - + 1.4	F							
10				Settings	Input Message	Error Alert							
11				Show in	put message wi	nen cell is select	ed						
12				When cell i	s selected, show	this input mes	age:						
13				<u>T</u> itle:									
14				NOTE									
15				Input mes	sage:								
16				The capp	uccino machine	was broken fro	m January until e	early 🔺					
17				April.									
18													
19								-					
20													
21					ר ר								
22				<u>C</u> lear All			ок 🔓	Cancel					
23													
24													
25													

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).
- 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**.

Record Macro	8 ×
Macro name:	
No Decimals	
Shortcut <u>k</u> ey: Ctrl+ 0	
Store macro <u>i</u> n: This Workbook	_
Description:	
	OK Cancel

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.

	А	В	С	D
1	Investment	Amount	Percentage	
2	Stocks	\$4,501.19	0.270301968	
3	Mutual Funds	\$3,907.49	0.234649556	
4	Bonds	\$2,844.84	0.170836123	
5	ETFs	\$2,412.71	0.144886188	
6	CDs	\$2,000.00	0.120102447	
7	Cash	\$986.22	0.059223718	
8	Total	\$16,652.45		
9	Macro			? ×
10				
11	Macro name:			
12	No_Decimals			Kun
13	Percent		<u></u>	tep Into
15				Edit
16				Eun
17				Create
18				Delete
19				
20			-	ptions
21		0		
22	Macros in: All	Open Workbooks	•	
23	Description			
24				
25			_	
26				Cancel
27				
28				

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.

Macro	? X
Macro name:	
No_Decimals	Run
No_Decimals Percent	<u>S</u> tep Into
	Edit
	Create
	Delete
	Options
Macros in: All Open Workbooks	
Description	
	Cancel

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	в	C	D	E	F	G	н	1	
1	Food Item	Category	Servings	Cost Per Serving	Item Total					
2	Tilapia	Fish	15	\$15.00	\$225.00		Category	Total Serving	s	
3	Pork tenderloin	Meat	25	\$12.00	\$300.00		Dessert	9	0	
4	Strawberries	Fruit	40	\$3.00	\$120.00		Fish	3	0	
5	Zucchini	Vegetable	30	\$4.00	\$120.00		Fruit	4	0	
6	Sorbet	Dessert	30	\$5.00	\$150.00		Meat	5	0	
7	Filet mignon	Meat	25	\$25.00	\$625.00		Vegetable	14	D	
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		Servings by Cate		sory	
11	Key lime pie	Dessert	20	\$5.00	\$100.00					
12	Salmon	Fish	15	\$15.00	\$225.00			Categ	ory 💌	
13	Red potatoes	Vegetable	40	\$4.00	\$160.00			🔳 De	essert	
14								26%		
15				Grand Total	\$2,505.00		40%	Fis	sh	
16				Under/Over Budget	(\$5.00)			Fr	uit	
17				Cost Per Attendee	\$50.10			9%		
18		,					14%	11% M	eat	
19	mak	Northwest		Event Date	06/12/2020			Ve	oetable	
20		Community		Today's Date	07/15/2019				.Becapic	
21		Healthcare		Days Till Event	333					
22										

Questions?



Thank You!

