

Advanced Excel and Google Sheets for Education Professionals

Solution-Based Practice

Category	Prescription	OTC	Prep Food
Tax Rate	0%	7%	10%

Product	Category	Quantity	Price	Shipping	Total
Ambien	Prescription	14	\$39.00	\$3.00	\$588.00
Benadryl	Over the Counter	2	\$12.00	\$1.00	\$27.69
BistroMD	Prepared Food	22	\$18.00	\$4.00	\$532.40
Calamine	Over the Counter	3	\$3.00	\$0.50	
Factor	Prepared Food	20	\$12.00	\$2.00	
Lactaid	Over the Counter	3	\$11.00	\$2.00	
Lanacane	Over the Counter	2	\$7.00	\$0.50	
Neosporin	Over the Counter	1	\$6.00	\$0.50	
Nexium	Over the Counter	5	\$22.00	\$1.00	

Solution-Based Practice

2023 Attendance	
School	Overall Average
Bickleton	
Cascadia	
Deer Park	
Elma	
Ferris	
Grays Harbor	
Kittitas	
Mica Peak	
Onalaska	
Paideia	
River Ridge	
Swiftwater	
Toppenish	

Lunch Assistance Data					Per-Student Allotment
School	Qualified	Allotment	Actual	Difference	\$1,500
Mountain View Academy	1428	\$2,200,000	1099		
Phoenix Academy	1448	\$2,200,000	1251		
Kentlake High School	1564	\$2,200,000	1500		
Meridian High School	2313	\$3,400,000	1442		
Ridge High School	1820	\$2,800,000	1740		
Wood High School	2133	\$3,200,000	1313		
Meeker Middle School	1349	\$2,000,000	1303		
Regional Justice Center	1236	\$1,900,000	1299		

Solution-Based Practice

Cost Per Student FUNDING SOURCES

Matching Funds		Funding Per Student	\$ 10,000
\$ 500	15%	Local Funding	56%
\$ 1,000	25%	State Funding	18%
\$ 2,000	50%	Federal Funding	1.5%
\$ 5,000	100%		

School District	Enrollment	Cost Per Student	Local Funding	State Funding	Federal Funding	Deficit	Paid	Matching Funds	Total Funding
District 1	2300	\$13,000					\$2,500		
District 2	800	\$21,000					\$0		
District 3	1100	\$11,000					\$1,000		
District 4	1900	\$10,500					\$800		

Teacher Program Summary

Program Formal Name	Teachers Required	Teacher Count	Difference	% Staffed
Alternative Learning Experience	2,900	1,788		
Transitional Bilingual Instructional Program	3,400	2,217		
Career and Technical Education	7,200	5,792		
Special Education	9,000	8,929		
Other	28,000	27,160		
Basic Education	75,000	57,402		

Dashboard

What is a Dashboard?

A dashboard is a visual display of the most important information that fits entirely on a single computer screen.

You can create a dashboard using a Pivot Table, Pasting from Microsoft PowerPoint or with the OFFSET function and a scrollbar.

This one employs the SUMIFS, COUNTIFS, and AVERAGEIFS functions. Use SUMIFS, COUNTIFS, and AVERAGEIFS when you want to analyze the sum, count, or average based on multiple criteria.

The syntax for COUNTIFS is the criteria range and criteria repeated until all criteria are added.

```
=COUNTIFS(criteria_range1,criteria1,criteria_range2,criteria2,...)
```

The SUMIFS and AVERAGEIFS syntax adds the sum or average range up front:

```
=SUMIFS(sum_range, criteria_range1,criteria1,criteria_range2,criteria2,...)
```

```
=AVERAGEIFS(average_range, criteria_range1,criteria1,criteria_range2,criteria2,...)
```

	Test Type	Administrator
	ELA	SBAC
Subject	Total Taken	% Passing
Female		
Male		
Gender X		
Foster Care		
Nonfoster		
Homeless		
Nonhomeless		

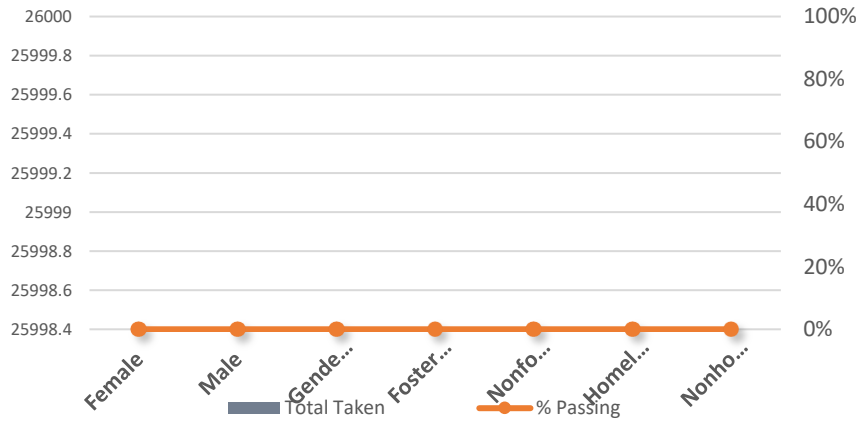
Building the Dashboard

We have gathered salary data on professional baseball players for the years 2010-2014.

On a separate sheet, we drew the dashboard and created a corresponding combo chart for you.

1. Use Data Validation to create a drop-down list of tests and administrators in cells C2 and D2
2. Use the SUMIFS function to pull the # of Students into column C
3. Use COUNTIFS to bring the students Passed into column D and divide to make it a percent

Combo Chart



Source Data

Group Type	Student Group	Subject	Administrator	# of Students	Passed
Foster	Nonfoster	ELA	AIM	18000	3,246
Foster	Nonfoster	Math	AIM	22000	6,126
Gender	Female	Math	AIM	7521	2,488
Gender	Female	ELA	AIM	12628	12,043
Gender	Male	Math	AIM	7479	3,098
Gender	Male	ELA	AIM	12372	5,395
Homeless	Nonhomeless	Math	AIM	28700	1,276
Homeless	Nonhomeless	ELA	AIM	24639	745
Foster	Foster Care	Math	SBAC	1177	6,004
Foster	Foster Care	ELA	SBAC	1073	600
Foster	Nonfoster	ELA	SBAC	18045	3,114
Foster	Nonfoster	Math	SBAC	19620	480
Gender	Female	Math	SBAC	9215	5,325
Gender	Female	ELA	SBAC	10521	6,822
Gender	Gender X	Math	SBAC	13	12
Gender	Gender X	ELA	SBAC	29	24
Gender	Male	ELA	SBAC	9816	2,091
Gender	Male	Math	SBAC	10321	1,169
Homeless	Homeless	ELA	SBAC	540	489
Homeless	Homeless	Math	SBAC	732	700
Homeless	Nonhomeless	ELA	SBAC	25304	7,961

Students
79915

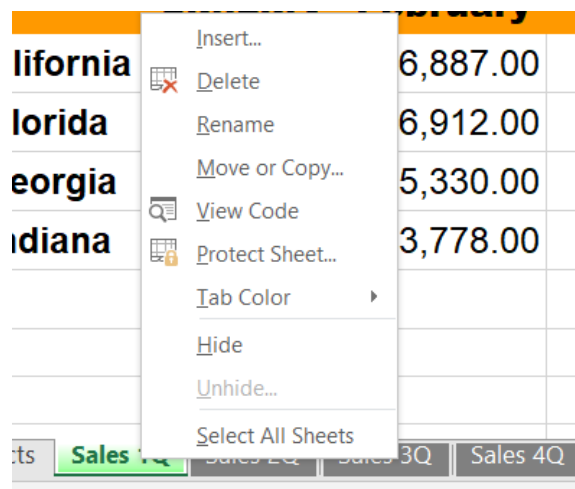
Insert, Copy, and Move Worksheets

Insert a Worksheet:

1. Click the tab of the worksheet you want to insert a worksheet after
2. Click the plus sign (+) to the right of the sheet tabs

Move or copy a worksheet:

1. Right-click the tab for the worksheet to be moved or copied
2. Select Move or Copy
3. Select the destination workbook from the To Book dropdown menu (the current workbook is selected by default)
4. Select the worksheet position in the destination workbook in the Before Sheet panel
5. Leave the Create a Copy checkbox unchecked to move the sheet or Click the Create a Copy checkbox to copy the sheet
6. Click OK



Shortcut: You can also drag a sheet to move it. To copy a sheet quickly, press and hold the CTRL key on the keyboard while clicking and dragging the sheet tab to new location

Rename a worksheet:

1. Double-click the tab for the sheet to be renamed
2. Type the new sheet name and pPress Enter

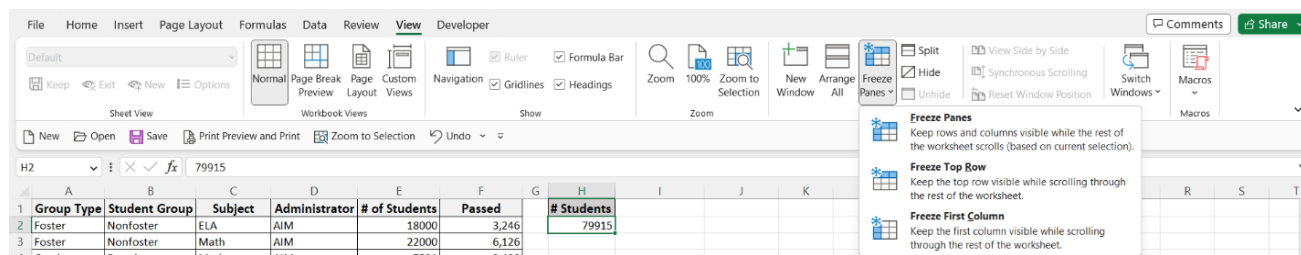
Freeze Headers When You Scroll:

To freeze panes:

1. Click in the cell beneath the row and/or to the right of the column to frozen
2. On the View tab, in the Window group, click the Freeze Panes drop-down arrow and select Freeze Panes

To unfreeze panes:

1. Click in the cell beneath the row and/or to the right of the column to frozen
2. On the View tab, in the Window group, click the Freeze Panes drop-down arrow and select Unfreeze Panes



Compose a formula:

1. Type and equal sign (=)
2. Click the first cell
3. Type an operator (+ to add, - to subtract, * to multiply, / to divide)
4. Click the next cell
5. Continue until the formula is complete, then press Enter to calculate and move the cursor down or Tab to calculate and move the cursor to the right

School	Students	Teachers	Ratio	Total
School 1	187	12		
School 2	472	28		
School 3	614	42		

Exercise:

Calculate the total cost, Price, Tax, and Shipping using cell B1 for the Tax Rate and taxing only the price.

	A	B	C
1	Tax Rate	8.25%	
2			
3	Prices	Shipping	Total
4	\$12.00	\$2.00	
5	\$15.00	\$3.00	
6	\$18.00	\$4.00	
7	\$25.00	\$5.00	

Cell Referencing

Reference cells in formulas by typing the cell reference or clicking on the cell to enter it into the formula
You can reference cells in other worksheets or workbooks just by clicking on them. Excel makes a notation in the formula that indicates where to find the cell using the following syntax:

Location	How it Appears	Example
Same worksheet as the formula	Row and Column Cell Reference	F7
Same workbook, different worksheet	Sheetname! CellReference	'Sales Total'! F7
Different workbook	[WorkbookName] SheetName! CellReference	'[Practice Files] Sales Total'! F7

Single quotes are needed if the name of the worksheet or workbook contains a space

AutoFill Formulas

Relative Reference

1. Select the cell containing the formula
2. Point to the fill handle until the pointer changes to a + symbol
3. Click and drag the fill handle over the adjacent cells that you want to fill the formula into

Excel adjusts the cell references in the formula relative to where you move it. If you fill down, the row reference adjusts, if you move across, the column reference changes. If you copy and paste a formula, both the row and column reference change relative to the distance the formula has been moved

Absolute Reference

If you do not want the reference to a cell to change when you copy it to a new location, you can lock in the reference by making it absolute. The way to do this is to put a dollar sign in front of the reference you want to lock in. If you are referring to a single cell and do not want the reference to change no matter what direction it moves, lock it in by putting a dollar sign before BOTH the column and the row reference \$C\$4

You can also lock in just the row C\$4 or just the column \$C4

You can type the dollar signs or use F4 to toggle through the 4 types of reference: \$C\$4 C\$4 \$C4 C4

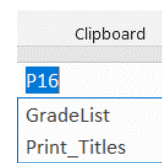
Name Cells and Ranges

1. Select the cell(s) to be included in the named range
2. Click the Name Box
3. Type a name for the range
4. Press Enter

The cell or range can still be referred to by the row and column reference, but now it can also be referred to by its name

What is the advantage of naming a cell or range?

What are some situations where naming would come in handy?



Excel Functions

A function is a pre-written formula. There are over 300 functions in Excel, and you can access them in the Formulas tab or by clicking Fx to the left of the Formula Bar

The most popular functions in Excel are SUM, AVERAGE, MAX, and MIN. You can access these on the Home tab by clicking the symbol for the Greek letter Sigma Σ

To sum, average, find the highest number, or find the lowest number in a range:

1. Click the cell where you want the answer to appear (it doesn't have to be at the bottom or right of the range)
2. Click the Sum button (or one of the other functions from the drop-down arrow to the right of the Sum button)
3. Highlight the range you want to sum (Excel guesses for you, so make sure the selection is correct)
4. Press Enter

Company	First	Last	Title	QTR 1	QTR 2	QTR 3	QTR 4	Total
Grays Harbor Academy	Sam	Sneed	Engineer	\$3,200.00	\$4,391.00	\$4,549.00	\$4,707.00	\$16,847.00
Mary M. Knight School	Ana	Mendez	Manager	\$3,452.00	\$5,674.00	\$7,698.00	\$9,722.00	\$26,546.00
Weatherwax High School	Lee	Park	VP Sales	\$5,467.00	\$3,245.00	\$4,532.00	\$5,819.00	\$19,063.00
Adna Middle/High School	Ahmed	Hariri	Exec. Director	\$4,568.00	\$3,444.00	\$2,198.00	\$2,756.00	\$12,966.00
Centralia High School	Jack	Rauch	Sales Rep	\$9,830.00	\$4,829.00	\$3,202.00	\$2,003.00	\$19,864.00
Futurus High School	Lin	Tang	HR Director	\$1,256.00	\$2,356.00	\$4,555.00	\$5,603.00	\$13,770.00
Lake Quinault School	Maria	Galitch	Buyer	\$2,343.00	\$6,432.00	\$2,523.00	\$3,059.00	\$14,357.00
Elma High School	Ken	Yamano	Commander	\$7,897.00	\$3,245.00	\$5,093.00	\$1,469.00	\$17,704.00
			Total Revenue:					
			Average Revenue:					
			Largest Amount:					
			Smallest Amount:					

Calculate Dates

Excel sees dates as numbers of days since January 1, 1900. Excel sees times as fractions of dates. This means you can easily calculate numbers of days between dates and number of hours or minutes between times

	Fixed	Dynamic
Current Date	CTRL + ;	=TODAY()
Current Time	CTRL + :	=NOW()

greater than	less than	does not equal
greater than or equal to		is blank

The IF Function

=IF (Logical Test, Value if True, Value if False)

The IF function is the function that allows many other functions to work correctly. How many times do you have everything set, then you realize there is a caveat or exception?

	A	B	C	D	E	F
1	Advertising Accounts Receivable					
2	Current Date:		Term:			
3	Customer Name	Invoice Date	Amount	Invoice Due Date	Age	# of Days Overdue
4	Village Reader	10/29/19	\$ 577.82			
5	RAW Enterprises	02/17/19	\$ 264.76			
6	Advertising Concepts	08/01/19	\$ 810.21			
7	NYNEX Ltd.	04/05/19	\$ 334.00			
8	Poetential Unlimited	08/03/19	\$ 86.50			
9	Young Upstart	06/23/19	\$ 2,595.00			
10	Mass Appeal, Inc.	01/10/20	\$ 95.15			

Let's say I ask the class, "If you have never used Excel before, raise your hand. Those who have used Excel, use the distance between your finger and thumb to indicate the level of knowledge you feel you have." That is an IF function where the Logical Test = Have Never Used Excel before, the Value if True = Raise Your Hand, and the Value if False = Use the distance between your finger and thumb to indicate your level of knowledge.

Function Arguments ? X

IF

Logical_test = logical

Value_if_true = any

Value_if_false = any

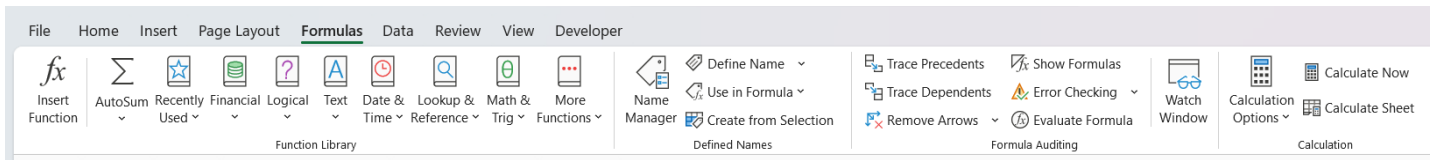
=

Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.

Logical_test is any value or expression that can be evaluated to TRUE or FALSE.

Formula result =

[Help on this function](#) OK Cancel



Other Functions

Search functions by category in the Formulas tab or use the search box in the Insert Function dialog box, found by clicking **Fx** to the left of the formula bar.

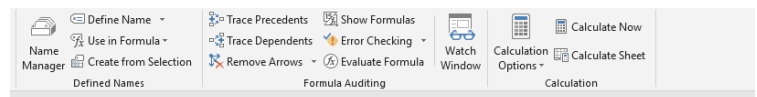
You can compose a function inside the Insert Function dialog box. This is handy because Excel explains all the arguments in the formula and also inserts the proper punctuation for you

Formula Auditing

The Formula Auditing Tools on the Formulas tab can help you gain clarity on what is going on with the formulas in your spreadsheet.

Trace Precedents Shows the cells used in calculating the value of a cell. Note: Click the Trace Precedents button more than once to see all cells used.

Trace Dependents Shows all the formulas in which a specific cell is used. Use Remove Arrows to stop showing Precedence or Dependence Arrows.



C	D	E
Tax Rate	8.25%	
Prices	Shipping	Total
\$12.00	\$2.00	\$14.99
\$15.00	\$3.00	\$19.24
\$18.00	\$4.00	\$23.49
\$25.00	\$5.00	\$32.06

VLOOKUP Function

The VLOOKUP function searches for a value in the leftmost column of a table and returns a value in the same row from a specified column in the table.

=VLOOKUP (WHAT, WHERE, WHICH)

What = What are you looking up based on?

Where = Where are you looking it up? (Highlight [and name] the table)

Which = Which column number (in your table) do you want to return data from?

An optional fourth argument allows you to input, "FALSE: if an exact match is required.

	A	B	C	D	E	F
1						
2	Commission Rate	10%				
3						
4	Salesperson	Sales	Quota	Commission	Bonus	Total Pay
5	Jim Bruce	\$6,598.00	\$3,000.00			
6	Mark Sanders	\$6,059.00	\$4,000.00			
7	Carmen Foster	\$4,895.00	\$5,000.00			
8						
9						
10	Bonus Table					
11	Quota Level	Bonus				
12	\$2,000.00	\$25.00				
13	\$3,000.00	\$50.00				
14	\$4,000.00	\$75.00				
15	\$5,000.00	\$100.00				
16	\$6,000.00	\$125.00				

The IFERROR Function

When running a formula may result in an error message, you can designate what you want to replace the error message (usually a 0 or "" for blank).

=IFERROR([the formula],value if error) =IFERROR(VLOOKUP(B2,\$F\$1:\$J\$9,3),"")

The XLOOKUP Function

The XLOOKUP function searches a range or an array, and then returns the item corresponding to the first match it finds. If no match exists, then XLOOKUP can return the closest (approximate) match.

=XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])

Arguments

1. lookup_value = Cell reference that contains what you are looking up based on (If omitted, XLOOKUP returns blank cells it finds in lookup_array)
2. lookup_array = The range to search (use absolute reference)
3. return_array = The range to return a value from
4. [if_not_found] (Optional) - Where a valid match is not found, returns the text you supply. By default, #N/A is returned
5. [match_mode] (Optional) - Specify the match type:
 - 0 - Exact match. If none found, return #N/A. This is the default.
 - 1 - Exact match. If none found, return the next smaller item.
 - 1 - Exact match. If none found, return the next larger item.
 - 2 - A wildcard match where *, ?, and ~ have special meaning.
6. [search_mode] (Optional) Specify the search mode to use:
 - 1 - Perform a search starting at the first item. This is the default.
 - 1 - Perform a reverse search starting at the last item.
 - 2 - Perform a binary search that relies on lookup_array being sorted in ascending order. If not sorted, invalid results will be returned.
 - 2 - Perform a binary search that relies on lookup_array being sorted in descending order. If not sorted, invalid results will be returned.

	A	B	C	D	E	F	G
1		Country	Abr	Prefix		What is the dial code?	
2		China	CN	+86		Brazil	+55
3		India	IN	+91			
4		United States	US	+1			
5		Indonesia	ID	+62			
6		Brazil	BR	+55			
7		Pakistan	PK	+92			
8		Nigeria	NG	+234			
9		Bangladesh	BD	+880			
10		Russia	RU	+7			
11		Mexico	MX	+52			

Newest Functions

- XLOOKUP: A powerful lookup function that can perform both exact and approximate matches, search data in either direction, and return multiple values at once.
- IFS: A function that allows you to test multiple conditions in a single formula and return a result based on the first condition that is met.
- SWITCH: Also allows you to test multiple conditions and return a result based on the first match.
- MAXIFS and MINIFS: Functions that allow you to find the maximum or minimum value in a range based on one or more criteria.
- CONCAT: Allows you to combine text from multiple cells into a single cell.
- TEXTJOIN: Similar to CONCAT, but allows you to specify a separator character between the combined text.

Newest Array Functions

- FILTER: Allows you to filter a range of data based on one or more conditions. It returns a new range that contains only the rows that meet the specified criteria. www.trumpexcel.com/filter-function
- SORT: Allows you to sort data in a range based on one or more columns. You can sort in ascending or descending order, and you can specify the sorting order for multiple columns.
- UNIQUE: Returns a new array that contains only unique values from a given range. This can be useful for removing duplicates from your data.
- SEQUENCE: Generates a series of sequential numbers in a column or row. The function can be used to create arrays of values that can be used in other functions.
- SORTBY: Allows you to sort data based on the values in another range. This can be useful when you want to sort data based on a set of criteria, such as sorting a list of names based on the corresponding values in another column.
- RANDARRAY: Generates an array of random numbers. You can specify the size of the array and the range of values to include.

20+ Office Shortcuts

OFFICE Shortcuts for ALL Programs					
Alt +	Tab	Switch Windows		WORD Shortcuts	
Ctrl +	X	Cut	Ctrl + Shift +	>	Increase Font size
Ctrl +	C	Copy	Ctrl + Shift +	<	Decrease Font size
Ctrl +	V	Paste	Ctrl + Shift +	*	Select all items in current list
Ctrl +	P	Print	Ctrl + Shift +	1/2/3/	Apply Heading Style 1/2/3/...
Ctrl +	Z	Undo	Ctrl +	Q	Remove All Paragraph Formatting
Ctrl +	Y	Redo/Repeat F4	Ctrl + Alt +	Space	Read Aloud
Ctrl +	A	Select All	Ctrl + Alt +	5	Apply strikethrough format
Ctrl +	S	Save	Ctrl + Shift +	W	Underline Words, not the spaces between
F12		Save As...	Ctrl + Shift +	D	Double Underline
Ctrl +	B	Bold			
Ctrl +	I	Italic		POWERPOINT Shortcuts	
Ctrl +	U	Underline	Ctrl +	M	Insert New blank slide
Ctrl +	O	Open	Ctrl +	D	Duplicate slide
Ctrl +	K	Insert Hyperlink	Ctrl +	Tab	Move to next slide
Ctrl +	F/H	Find/Replace	Ctrl + Shift +	Tab	Move to previous slide
Ctrl +	W	Close current doc	Ctrl + Shift +	T	Apply the last animation to the selection
Ctrl + Shift +	F	Change font	Ctrl + Shift +	C	Copy the format of a selected object
F7		Spell Check	Ctrl + Shift +	V	Paste the format of a selected object
Ctrl +	N	Create a New Document	F5		Start Presentation
EXCEL Shortcuts			Ctrl +	F5	Start Presentation from current slide
Ctrl +	;	Insert current date			
Ctrl +	:	Insert current time		OUTLOOK Shortcuts	
Ctrl +	"	ditto cell data from above	Ctrl +	1	Go To Mail
Ctrl + Shift +	{	Unhide any hidden rows	Ctrl +	2	Go to Calendar
Ctrl + Shift +	}	Unhide any hidden columns	Ctrl +	3	Go to Contacts
Alt +	=	Autosum	Ctrl +	R	Reply to the selected email
Ctrl + Shift +	!	Number format with 2 decimal places	Ctrl + Shift +	R	Reply ALL to the selected email
Ctrl + Shift +	\$	Currency format with \$	Ctrl + Shift +	Q	Mark all messages read
Alt +	Enter	Start a new line in the same cell	Ctrl +	F	Forward selected email
Ctrl +	↔↕	Navigate to last non-blank cell	Ctrl + Shift +	A	Create a new appointment
Ctrl +	Home	Go to cell A1	Ctrl + Shift +	K	Flag a message for follow-up
Ctrl +	End	Go to last non-blank /cell	Ctrl + Shift +	N	Create new email message
Ctrl +	D	Fill Down	Ctrl + Shift +	V	Move a message to a different folder
Ctrl +	R	Fill Right			
Ctrl +	1	Open Format Cells dialog Box			

Moving Around

Left/Right Arrow: Move the insertion point (cursor) one character to the left or right

Ctrl+Left/Right Arrow: Move one word to the left or right

Up/Down Arrow: Move up or down one line

Ctrl+Up/Down Arrow: Move up or down one paragraph

End: Move to the end of the current line

Ctrl+End: Move to the end of the document

Home: Move to the beginning of the current line

Ctrl+Home: Move to the beginning of the document

Page Up/Page Down: Move up or down one screen

Ctrl+Page Up/Page Down: Move to the previous or next browse object (after performing a search)

Alt+Ctrl+Page Up/Page Down: Move to the top or bottom of the current window

Selecting

Shift+Left/Right Arrow: Extend your current selection by one character to the left or right

Ctrl+Shift+Left/Right Arrow: Extend your current selection by one word to the left or right

Shift+Up/Down Arrow: Extend selection up or down one line

Ctrl+Shift+Up/Down Arrow: Extend selection to the beginning or end of the paragraph

Shift+End: Extend selection to the end of the line

Shift+Home: Extend selection to the beginning of the line

Ctrl+Shift+Home/End: Extend selection to the beginning or end of the document

Shift+Page Down/Page Up: Extend selection down or up one screen

Ctrl+Shift+F8: Selects a column - you can use the left and right arrow keys to extend the selection to other columns.

Editing Text

Backspace: Delete one character to the left

Ctrl+Backspace: Delete one word to the left

Delete: Delete one character to the right

Ctrl+Delete: Delete one word to the right

Ctrl+F3: Cut selection to the Spike - a clipboard you can keep cutting text to. Word remembers it all.

When you paste the Spikes contents, Word pastes everything you cut, but places each item on its own line.

Ctrl+Shift+F3: Paste the Spike contents

Alt+Shift+R: Copy the header or footer used in the previous section of the document

Ctrl+Shift+C: Copies the character formatting of a selection

Ctrl+Shift+V: Pastes formatting onto selected text

Ctrl+Space: Removes all manual character formatting from a selection

Paragraph Formatting

- Ctrl+M: Increases a paragraph's indent one level each time you press it
- Ctrl+Shift+M: Reduces a paragraph's indent one level each time you press it
- Ctrl+T: Increases a hanging indent each time you press it
- Ctrl+Shift+T: Reduces a hanging indent each time you press it
- Ctrl+E: Center a paragraph
- Ctrl+L: Left-align a paragraph
- Ctrl+R: Right-align a paragraph
- Ctrl+J: Justify a paragraph
- Ctrl+1: Set single-spacing
- Ctrl+2: Set double-spacing
- Ctrl+5: Set 1.5 line Spacing
- Ctrl+0: Remove one line spacing preceding a paragraph
- Shift+Enter: Insert a line break
- Ctrl+Enter: Insert a page break
- Ctrl+Shift+Enter: Insert a column break

Selection Shortcuts

All of Office:

- Double click a word to select it
- Click in the margin to select a line
- Double click in the margin to select a paragraph
- Single click a text box to enter it, double click the border to select the box

Excel:

Use the SHIFT Key to select adjacent items:

1. Click the first cell (or row or column)
2. Press and hold the SHIFT key while selecting a second cell (or row or column)

All cells between the two places you clicked will be selected

Use the CTRL Key to select non-adjacent items:

1. Click the first cell (or row or column)
2. Press and hold the CTRL key while selecting additional cells (or rows or columns)

All clicked items will be selected

CTRL+ARROW: Jumps from the active cell to the last non-blank cell in the direction of the arrow

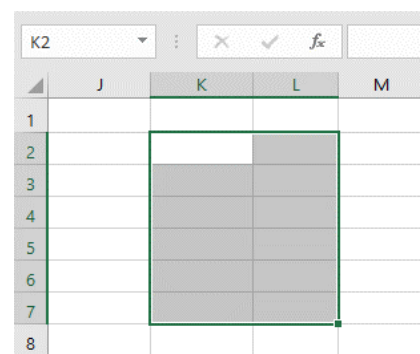
SHIFT+ARROW: Highlights one cell at a time in the direction of the arrow

CTRL+SHIFT+ARROW: Selects all cells from the active cell to the last non-blank cell the direction of the arrow

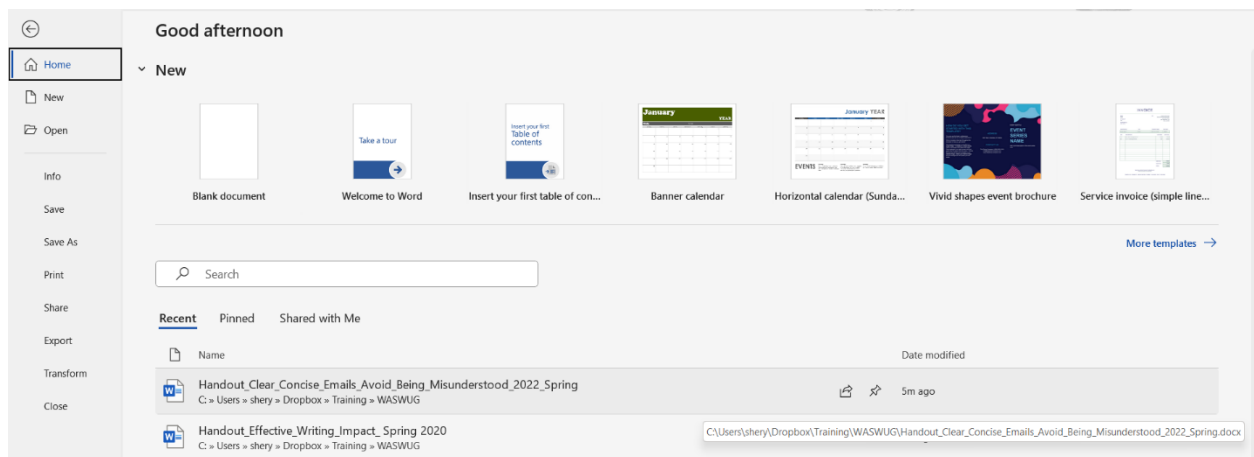
Move the contents of cells, rows, or columns by clicking and dragging the highlight that surrounds the selection

Press and hold the CTRL key and drag to copy

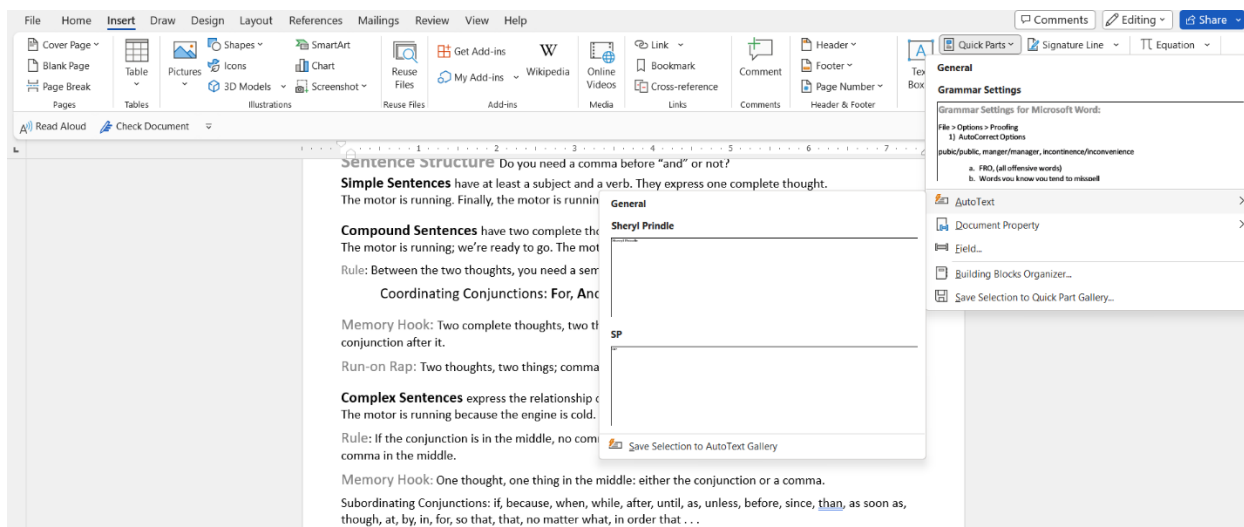
Press and hold the SHIFT key and drag rows and columns to move them



Working with Files



Quick Parts



Settings and Options

In each application, go to File > Options to explore settings you may want to change.

Grammar Settings for Microsoft Word:

File > Options > Proofing

1) AutoCorrect Options

pubic/public, manger/manager, incontinence/inconvenience

- a. FRO, (all offensive words)
- b. Words you know you tend to misspell

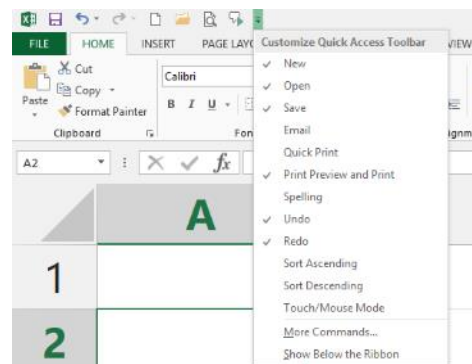
2) Show Readability Statistics – pops up after spell check finishes

3) Settings

- a. Comma Before Last List Item – Always “Oxford Comma”
- b. Spaces Between Sentences – 1
- c. Style – Passive Sentences

4) Find – ion, ent, nce, ize, ive, ble

5) When re-using documents, use “Replace” to change names and dates



Customize the Quick Access Toolbar

1. Click the Customize Quick Access Toolbar dropdown arrow
2. Take one of three actions:
 - a. Select an unchecked item to add
 - b. Select a checked item to remove
 - c. Select the More Commands option to view additional options

Customize the Ribbon

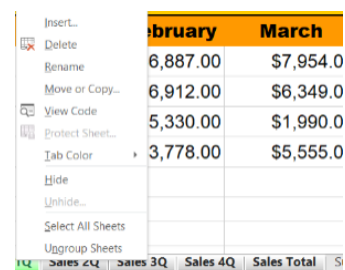
1. Click the File tab
2. Choose Options
3. In the Options dialog box, select Customize Ribbon
4. Add or remove items (like the Developer tab)

Customize the Status Bar

1. Right-click the Status Bar
2. Select an unchecked item to add or a checked item to remove

Group Sheets

- Click all sheets to be grouped in one of two ways
 - Hold the SHIFT key on the keyboard while clicking a non-adjacent sheet to select both of the clicked sheets and all sheets between them
 - Hold the CTRL key on the keyboard while clicking to add individual sheets to the selection
 - Grouped sheet tabs are highlighted, and [Group] appears in the Title Bar
- Make changes to any grouped sheet to apply those modifications to all grouped sheets
- To Ungroup sheets, right-click any grouped sheet and select Ungroup Sheets or click any ungrouped sheet



	February	March
Delete	6,887.00	\$7,954.00
Rename	6,887.00	\$7,954.00
Move or Copy...	6,912.00	\$6,349.00
View Code	5,330.00	\$1,990.00
Protect Sheet...	5,330.00	\$1,990.00
Tab Color	3,778.00	\$5,555.00
Hide		
Unhide...		
Select All Sheets		
Ungroup Sheets		

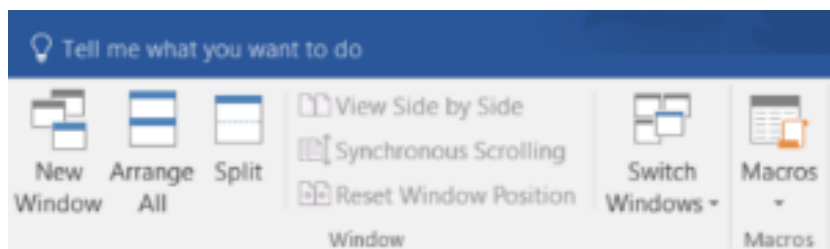
Work with Multiple or Large Worksheets and Workbooks

Split a Worksheet:

On the View tab in the Window group, click Split

Drag the split bar(s) to where you want to split the worksheet

To remove a split, double-click the split bar. You can remove both horizontal and vertical splits by clicking the Split button again



View Multiple Workbooks in the Same Window:

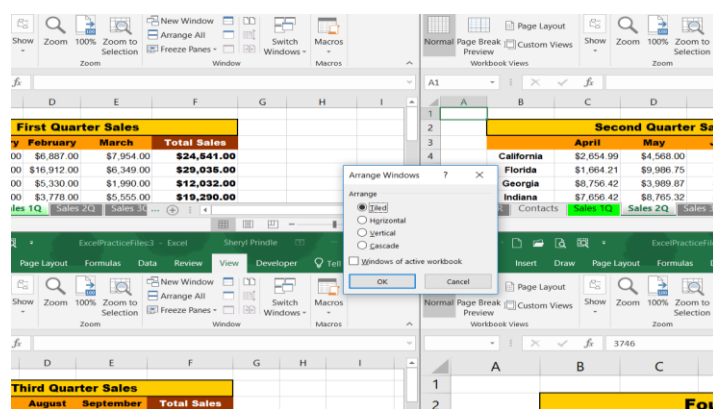
- Open the workbooks you want to view
- In the View tab, in the Window group, choose View Side-by-Side or Arrange
- View Side by Side allows you to choose from open workbooks and use synchronous scrolling. Click it again to turn it off
- Arrange automatically arranges all open workbooks and lets you choose the layout. Maximize the workbooks to turn it off

View Multiple Worksheets in the Same Window:

- Open the workbook that contains the sheets you want to view
- In the View tab, in the Window group, click New Window to open another view of the same workbook. You can click it multiple times to get multiple views
- Use View Side by Side or Arrange All to view the worksheets as explained above
- You can edit in any window and, as long as you save changes, it will update the worksheets in the workbook

View Side by Side lets you choose from open workbooks and use synchronous scrolling. Click it again to turn it off

Arrange automatically arranges all open workbooks and lets you choose the layout. Maximize the workbooks to turn it off



Macros:

Create a Macro:

1. On the View tab, in the Macros group, click the Macros dropdown arrow and select Record Macro
2. Name the macro
3. Assign a shortcut key (optional)
3. Choose where the macro should be stored (the workbook where the macro is stored must be open for the macro to run)
 - a. Personal Macro Workbook (always available when you are logged in)
 - b. New Workbook
 - c. This Workbook (travels with the workbook)
4. Click OK
5. Perform the commands you want to record
6. Go back to the Macros group on the View tab, and choose Stop Recording from the drop-down menu

Run a Macro:

1. Select the View tab
2. Click the Macros button above the drop-down arrow
3. Select the macro you want from the Macro name list
4. Click Run

Edit a Macro:

1. Go to the View tab
2. Click the Macros drop-down
3. Select View Macros
4. Select the macro you want to edit (if the Macro is stored in the Personal Macro Workbook, you will need to unhide it from the Window group of the View tab)
5. Click Edit
6. Make text edits to the code
7. Close, and Return to Microsoft Excel

Format Cells, Rows, and Columns

Resize Rows and Columns

Sometimes number formatting will make the data too wide to be displayed at the current column width. When this happens, Excel displays a series of number signs (#) instead of a truncated number. (This is done because the visible part of a truncated number might be mistaken for the complete number.) If number signs are displayed, either increase the column width or change the formatting of the number

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

*You cannot change the height or width of an individual cell without it changing the entire row or column

Drag the Right Column Border

When you point to the border between two column headings, the pointer changes to a two-headed arrow You can then drag the border to the left or right to decrease or increase the column width

	B	C	D	E	F
		First Quarter Sales			
		January	February	March	Total Sales
California		\$9,700.00	\$6,887.00	\$7,954.00	\$24,541.00
Florida		\$5,774.00	\$16,912.00	\$6,349.00	\$29,035.00
Georgia		\$4,712.00	\$5,330.00	\$1,990.00	\$12,032.00
Indiana		\$9,957.00	\$3,778.00	\$5,555.00	\$19,290.00

Double-click the Right Column Border

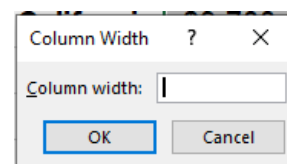
This automatically sizes the column to fit the widest data it contains

Set a Specific Numeric Column Size

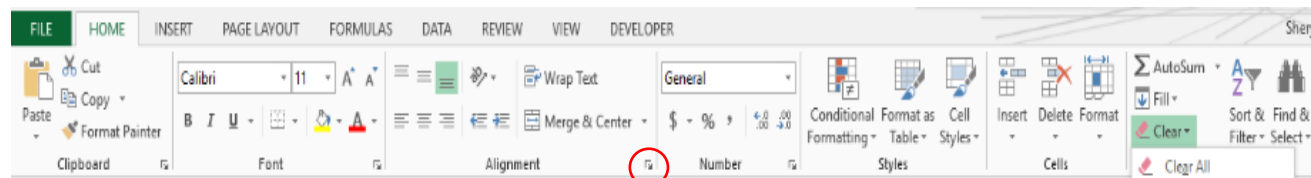
To do this, right-click a column label (or select multiple columns and then right-click) and choose Column Width. Then enter a width value and click OK The same options work for customizing row height

Setting Consistent Width of Multiple Columns

To set several contiguous columns to the same width, select the columns and then use one of the methods above to change the width. This method also works for setting row height (do this instead of alternating blank rows)



Format Cells

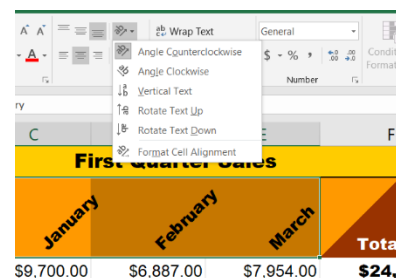


The Styles and Cells groups on the Home tab allow you to adjust multiple aspects of cell formatting. For more options, click the Dialog Box Launcher in the lower right corner of a group

Number tab in the Format Cells dialog box offers a variety of number formats, including dates, times, fractions, and scientific notation

Cell Alignment

Cells in Excel can be aligned both vertically and horizontally in the Alignment Group on the Home tab. You can also change cell Orientation and indent

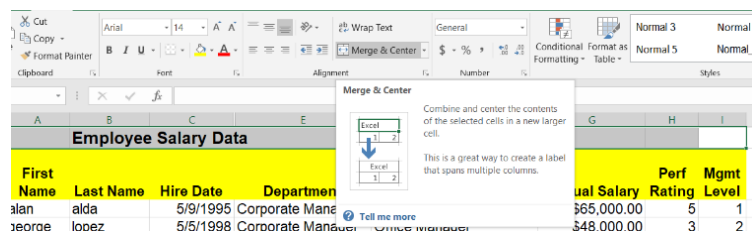


Merge Cells

The Merge & Center button centers data over a range of cells (instead of within a single column)

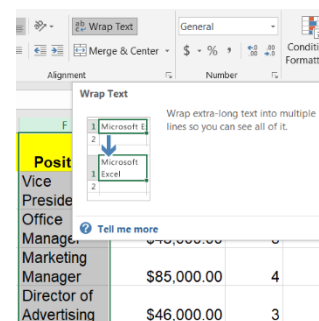
1. Select the cells you want to merge and center
2. Select the rest of the cells over which you want to center the data
3. On the Home tab in the Alignment group, click Merge & Center (You can enter data into merged cells)

To unmerge, select the merged cell and click Merge & Center again



Wrap Text

Click the cell or range of cells where you want the text wrapping to take place. On the Home tab, click Wrap Text. Adjust the row height as needed



Format Painter

Copy or paste formatting from one cell to another

1. Select the cell with the formatting to be copied
2. Click the Format Painter button in the Clipboard group on the Home tab
3. Select the cells to which the formatting should be applied

When you release the mouse, the Format Painter automatically turns off

First Quarter Sales				
	January	February	March	Total Sales
California	\$9,700.00	\$9,067.00	\$7,954.00	\$24,541.00
Florida	\$5,774.00	\$16,912.00	\$6,349.00	\$29,035.00
Georgia	\$4,712.00	\$5,330.00	\$1,990.00	\$12,032.00
Indiana	\$9,957.00	\$3,778.00	\$5,555.00	\$19,290.00

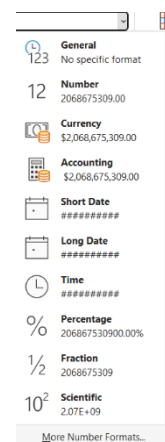
Copy or paste formatting several times:

1. Select the cells with the formatting to be copied
2. Double-click the Format Painter button in the Clipboard group of the Home tab
3. Select the cells to which the formatting should be applied
4. Repeat as many times as necessary
5. Turn off the Format Painter by pressing the ESC on the keyboard or Paste clicking the Format Painter button again

Number Formats

By default, all cells are formatted as “General,” which means Excel will guess the format needed based on the data entered. You can choose and customize number formats.

1. In the Number group on the Home tab, click the dialog box launcher or the drop-down.
3. Select the formatting style you want, or choose click More Number Formats at the bottom to get more options. Select Special for Phone Number, Social Security Number, or Zip Code style.
3. You can create any format you want using Custom.



Proofreading, Editing, and Collaboration

Comments:

1. Select the cell that you want to comment on
2. On the Review tab, click New Comment in the Comments section
3. Type your comment
7. Click away

In shared workbooks, you can also use the Track Changes feature.

1	First Name	Last Name	Hire Date	SS#	Department	Position	Annual Salary	Perf Rating	Mgmt Level
2	dennis	miller	7/29/2005	692-24-1314	Administrative Staff	IT Specialist			
3	awkwa	fina	4/3/2018	248-94-4357	Administrative Staff	Dir. Of Shipping			
4	charlese	theron	7/22/2019	731-98-4479	Administrative Staff	Media Relations			
5	john	bon jovi	8/3/2014	402-19-8324	Administrative Staff	Environmental Engineer			
6	jackie	chan	5/29/2000	368-37-0245	Corporate Manager	Advertising Management			
7	justin	beiber	6/9/2012	931-02-6545	Corporate Manager	General Sales Manager			
8	tom	banks	5/8/2005	459-20-8722	Corporate Manager	Dir. of Personnel			

Sort

You can sort data alphabetically, chronologically, or numerically

Quick Sort

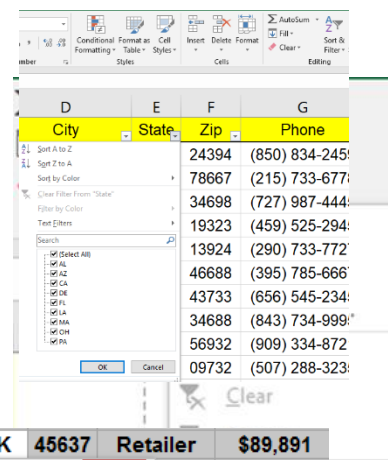
1. Click a cell in the column by which the data should be sorted
2. Click the Sort & Filter drop-down in the Editing group on the Home tab
3. Select a sort method

Or

1. Right-click any cell in the column by which the data should be sorted
2. Select Sort
3. Select a sort method

Multi-Level Sort

1. Click anywhere in the data to be sorted
2. Choose Custom Sort in the Sort & Filter drop-down in the Editing group on the Home tab



	INCO	Manager	Sharon	Tanner	555 Ocean	Anchorage	AK	45637	Retailer	\$89,891
5	Labs Plus								ailer	\$33,222
6	ViaGraphix								ailer	\$14,155
7	Compu-Techs								ailer	\$56,666
8	Disney								ailer	\$76,511
9	BMW								butor	\$23,000
10	Ford								butor	\$13,223
11	Sony								ailer	\$64,526
12	Warner Bro.								ailer	\$53,355
13	Mckinsey								ailer	\$55,442
14	Seeley								ailer	\$72,399
15	Toyota								ailer	\$43,232
16	CB Commercial								ailer	\$44,000
17	Chrysler								butor	\$23,444
18	Dow Jones								ailer	\$65,455

Sort

My data has headers

Column	Sort On	Order
Sort by	Distributor or Retailer	Values
Then by	State	Values
Then by	City	Values
Then by	Company	Values
Then by	Revenue Generated	Values

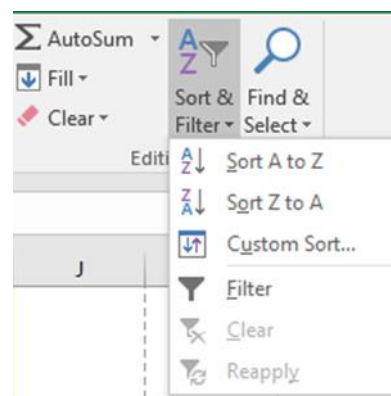
3. Choose the column and aspect you want to sort based on as well as the order
4. Repeat step 3 for multiple levels

Filter – Query and Clean up

AutoFilter:

1. Click any cell in the data
2. Click the Filter button in the Sort & Filter group on the Data tab of the Ribbon
3. Click the dropdown button at the top of the column to be filtered
4. Uncheck all but the desired range(s) from the Filters window
5. Click OK

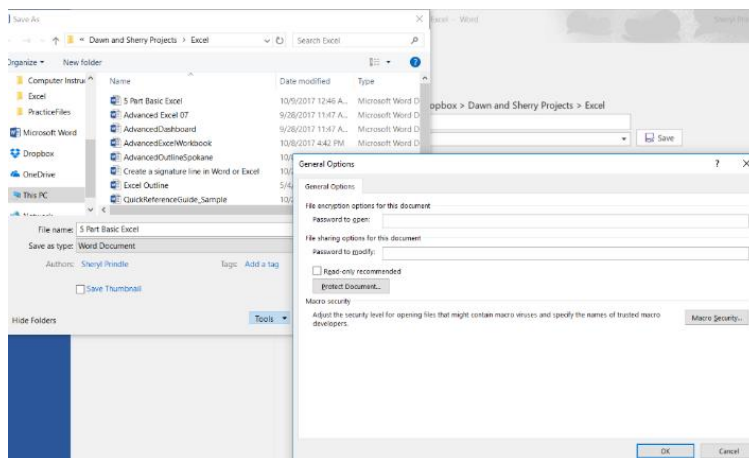
You can also use Text Filters and Number Filters to select data to sort



Securing Data

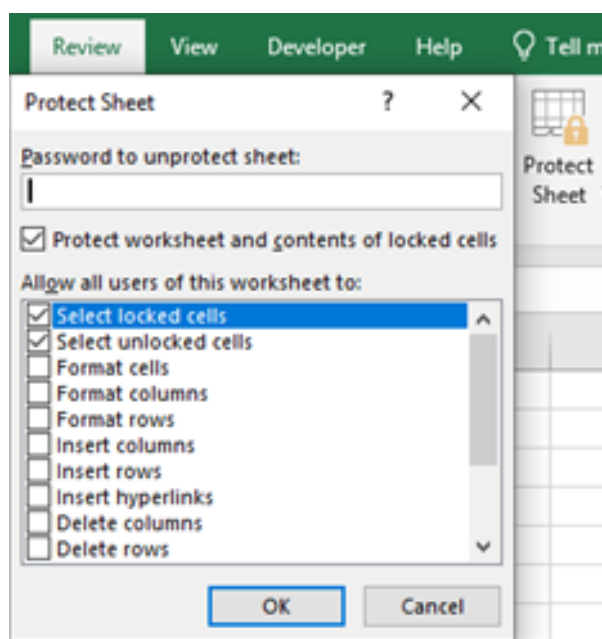
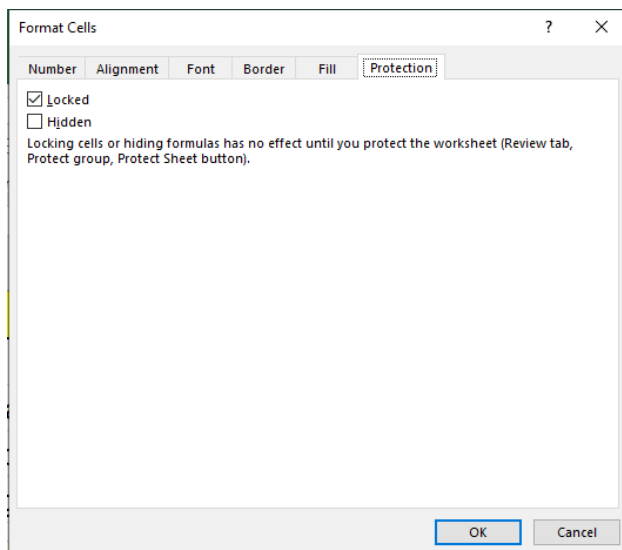
File Protection:

1. Click File
2. Click Save As
3. Click Excel Workbook
4. Click the Tools dropdown arrow
5. Select General Options
6. Enter a Password to open and/ or edit the workbook
7. Click OK



Cell Protection:

1. Right-click the cells to remain editable
 2. Select Format Cells
 3. Click the Protection tab
 4. Uncheck the Locked box
 5. Click OK
 6. Click the Review tab
 7. Click Protect Sheet
 8. Create and confirm a Password
 9. Click OK
- Lock all cells by performing only steps 6 through 9



Print – Total Control of How It Shows Up on Paper

Set a Print Area

- 1 Select the range to be printed
- 2 On the Page Layout tab, in the Page Setup group, click Print Area and choose Set Print Area
- 3 Click the File tab and click Print to preview and verify that only the print area will be printed

Print Scaling and Orientation

On the File tab, click Print to display your print options, which include page orientation, collation, paper size, margins, and scaling. You can also change these settings from the Page Layout tab

On the Page Layout tab, in the Scale to Fit group, you can fit spreadsheets to the desired width and number of pages. You can also adjust the percent of scaling

Margins – On the Page Layout tab, in the Page Setup group, adjust margins to Normal, Wide, Narrow, or Custom

Print Headings – If your data headings appear on only the first page, the data on the other pages will be hard to interpret. You can set *Print Titles* to specify which text should print as headings on all pages:

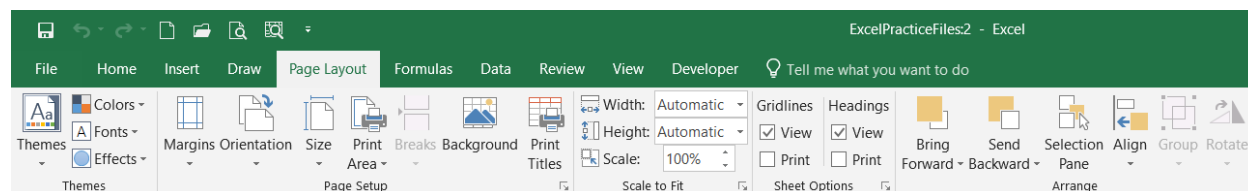
1. Click the Page Layout tab
2. In the Page Setup group, click Print Titles. The Page Setup dialog box opens with the Sheet tab active
3. Under Print titles, enter the range containing the titles that you want to print on each page. You can select the rows to repeat at the top of all pages, columns to repeat on the left side of all pages, or both
4. Click OK

Add Headers and Footers

1. Click the Insert tab
2. In the Text group, click Header & Footer. Page Layout view is activated, with the Header & Footer Tools Design tab displayed. An empty header box appears in the top center of the first page
3. Add text and any other elements you want to include, or you can add items from the Header & Footer Elements group or use preset headers and footers

When you finish with the header or don't want one, click Go to Footer in the Navigation group, and follow the above steps to insert a footer.

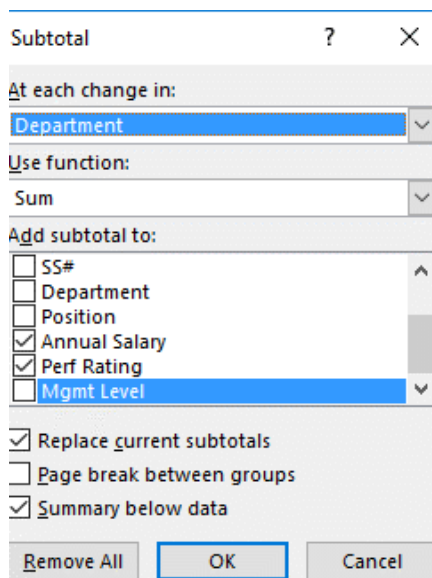
Edit or delete headers and footers manually by clicking into the header and footer area



Subtotals

Excel can automatically calculate subtotals at every change of data in a key column

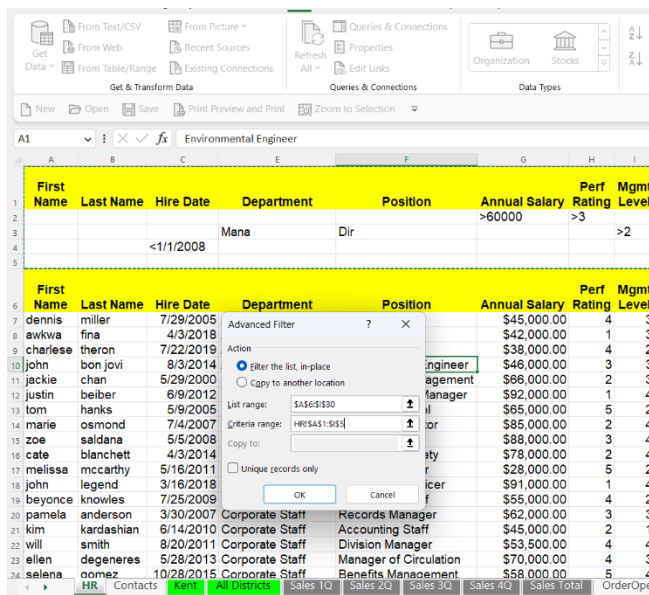
1. Sort a list by a key column
2. On the Data tab, in the Outline group, click Subtotal
3. Use dropdown arrows to configure desired settings
4. Click OK



Advanced Filter

The Filter can only perform “And” Queries. If you want to filter by multiple criteria (“Or”), use the Advanced Filter

1. Copy the header with some blank rows above the data
2. Input the filtering criteria in the rows
3. Same Row = AND; Different Row = OR
4. In the Data Tab in the Sort & Filter Group, choose Advanced
5. Select the list range to fill in the first blank and the criterial range for the second
6. Click OK
7. Clear in the same area will remove the filters



Sum of Hours worked	Column Labels	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Grand Total
Backline		18	18	19	26	26	7	18	132
Goodman, Sean		5	4	7	5	0	0	6	27
Haun, Charlie		0	8	0	8	8	7	7	38
Kearns, Brianne		6	0	8	8	9	0	5	36
Lingenfelter, Vic		7	6	4	5	9	0	0	31
Cashier		21	21	25	20	10	7	5	109
Becker, Morgan		4	4	5	4	4	0	0	21
Daniels, Flip		3	5	7	5	0	0	5	25
Denten, Chad		8	4	5	6	0	7	0	30
Gehrke, Donald		6	8	8	5	6	0	0	33
Supervisor		20	20	19	10	17	16	10	112
Olson, Cale		10	10	9	0	9	10	10	58
Pearson, Brian		10	10	10	10	8	6	0	54
Grand Total		59	59	63	56	53	30	33	353

Pivot Tables

You can take your spreadsheet apart column by column and put it back together in any configuration you want. Pivot Tables allow you to analyze and recombine data into reports and charts.

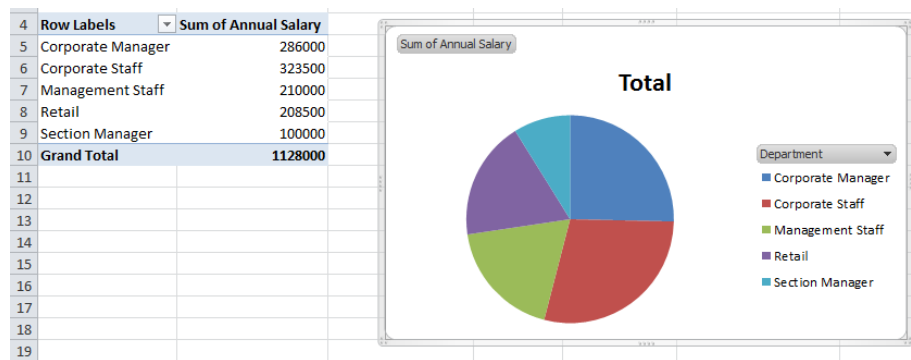
1. Select one cell within the data
 2. Click Insert > Pivot Table > OK
 3. Check or drag items in the *Field List* to the *Row*, *Filter*, *Column*, or *Values* areas
- Right click *Values* column headers to change the operation
 Right click row and column headers to see Group options
 Explore the *Pivot Table Tools Analyze* and *Design* ribbons for options such as:
 Create Pivot Chart

Hide Field List
 Insert Slicer
 Insert Timeline
 Adjust Layout

To create a

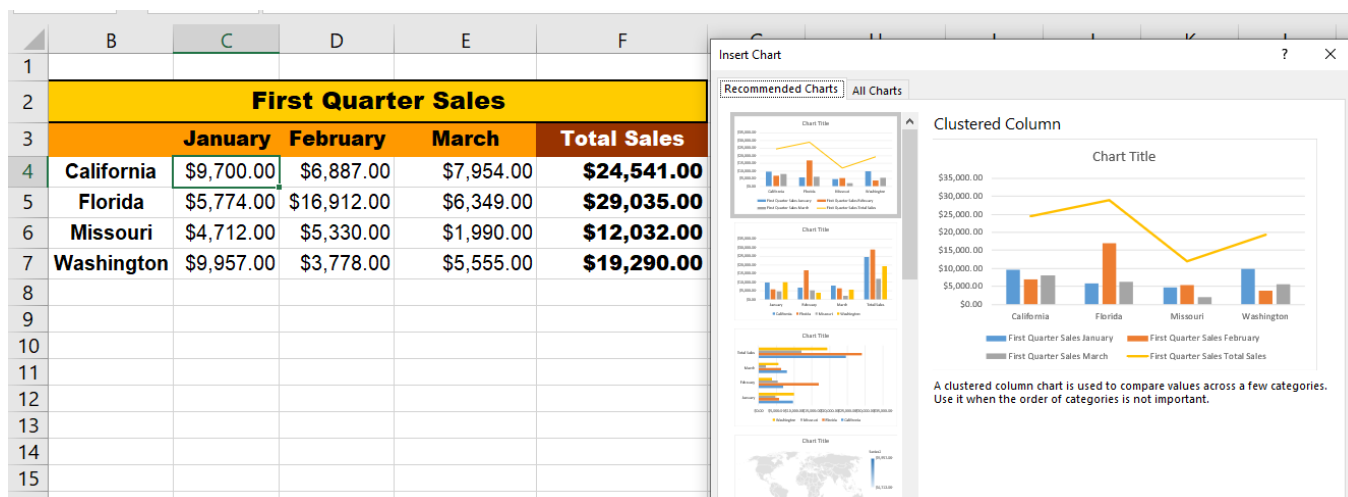
PivotChart:

1. Click anywhere in the **PivotTable** data
2. On the **Analyze** tab, in the **Tools** group, click **PivotChart**
3. Select chart type and subtype. In this example, a **Pie Chart** is selected
4. Click **OK**



Create a Chart

1. Select the data you want to chart
 2. Press the F11 key to create an instant multicolored column chart in a new sheet. Otherwise from the Insert Tab in the Charts group, choose the chart type
 3. Right click or use the contextual ribbon to make changes
- The chart pictured here is a combo chart with 2 axes.



Pro Tips

Style and Format Your PivotCharts

Styling PivotCharts is similar to working with standard charts with a few twists.

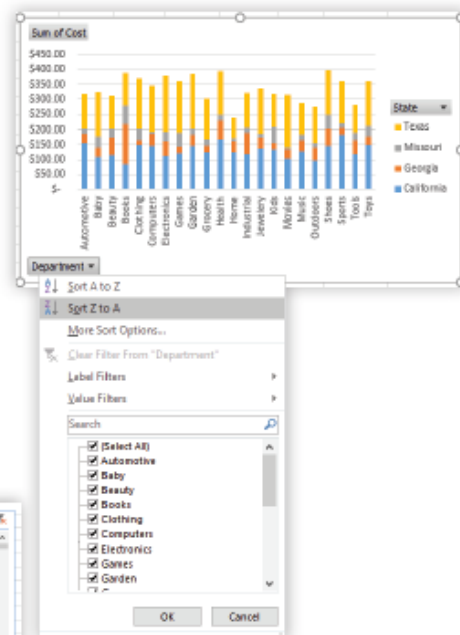
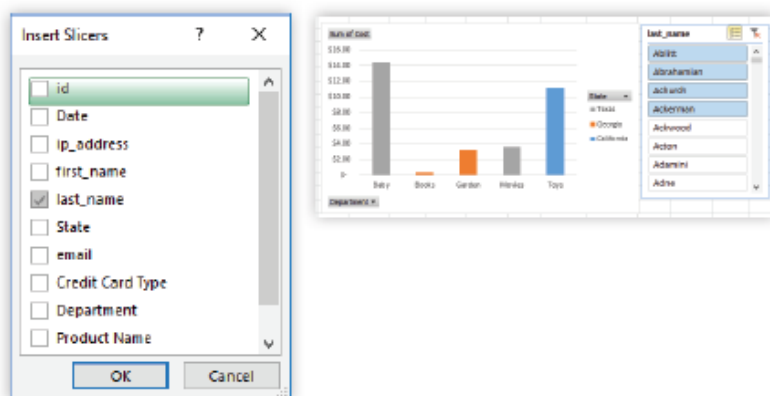
Filter and Sort Pivot Charts on the Fly

Click the X or Y Axis dropdown button to access sorting and filtering options, right from the chart object.

Add a Slicer

Slicers add additional ways to filter your chart results beyond the Axis data. To add a slicer to your chart, click Insert Slicer button on the PivotTable Tools Analyze tab.

Choose the fields on which you wish to apply filters and click OK.



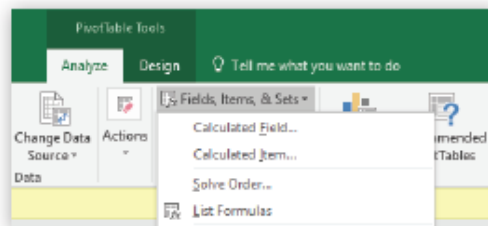
Refreshing Data

Pivot Tables are linked to the source data but must be refreshed manually. You can go to the Analyze ribbon, click the Options box, and choose to have your Pivot Table automatically refresh every time you open the workbook. In the same Options box, you can choose to replace blank spaces with the character of your choice.

Create a separate sheet for each entry in a field

1. Place the desired field in the Report Filter area
2. On the Analyze ribbon, choose the drop-down arrow next to Options in the PivotTable group
3. Click Show Report Filter Pages
4. Choose the field you want to use
5. Click OK

Once your data is organized within a PivotTable, you will likely wish to run further analysis upon the summarized information. Calculated Fields and Calculated Items allow you to use this aggregated data as a formula source.



About Calculated Items

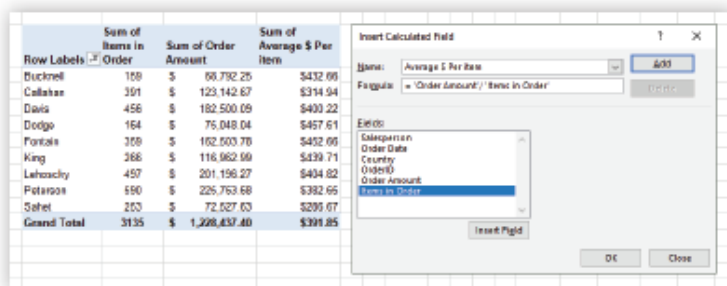
- Calculated items become an additional item in a pivot field.
- It can calculate sums among *other items in the same field* only.
- Calculated items will not appear in the PivotTable Field List.

About Calculated Fields

- Calculated fields perform calculations on *other fields in the pivot table*.
- Calculations are performed on the total or summarized amounts.
- Sum is the only function available for a calculated field.
- Calculated fields will appear in the PivotTable Field List.

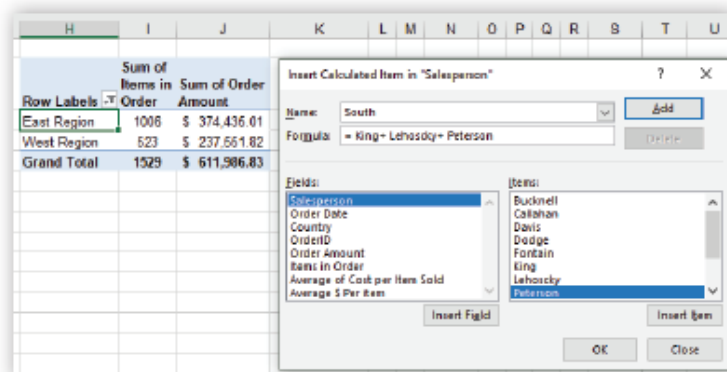
Create a Calculated Field

1. Go to the PivotTable Tools Analyze tab.
2. Click the Fields, Items, & Sets button.
3. Select Calculated Field.
4. Type a descriptive name for your new field in the Name textbox.
5. Type your formula using the Fields selection box to insert the fields that will be used in the calculation.
6. Click OK.



Create a Calculated Item

1. Go to the PivotTable Tools Analyze tab.
2. Select the field to which you wish to add a new item, then click Fields, items, & Sets.
3. Select Calculated Item.
4. Type a name for the new item in the Name textbox.
5. Select the fields and items that will be used in your calculated item's formula by clicking Insert Field or Insert Items.
6. Click OK.

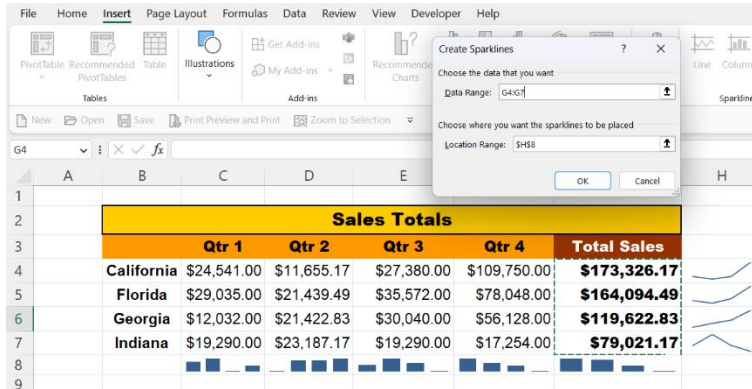


Sparklines

Sparklines are word-sized charts you can add into specific cells in this way:

1. Select the data range you want the small chart to be based on
2. In the Insert tab in the Sparklines group, select the Line, Column, or Win/Loss style
3. In Location Range, indicate the cell where you want the Sparkline to appear

To remove a Sparkline, right-click the cell, and in the Sparklines arrow, choose Clear



Make a Separate Sheet for All Values in a Field

1. Drag the desired field to the Report Filter area
2. On the Analyze Tab, click Options drop-down arrow in the PivotTable group
3. Select Show Report Filter Pages
4. Select the Field you want to use

1	Hourly Shift Summary - Week 24					
2	Employee Name	Job	Day	Scheduled	Hours worked	
3	Becker, Morgan	Cashier	Sunday	4	4	
4	Daniels, Flip	Cashier	Sunday	3	3	
5	Denten, Chad	Cashier	Sunday	8	8	
6	Gehrke, Donald	Cashier	Sunday	7	6	
7	Goodman, Sean	Backline	Sunday	6	5	
8	Haun, Charlie	Backline	Sunday	0	0	
9	Kearns, Brienne	Backline	Sunday	6	6	
10	Lingenfelter, Vic	Backline	Sunday	7	7	
11	Olson, Cale	Supervisor	Sunday	8	10	
12	Pearson, Brian	Supervisor	Sunday	10	10	
13	Becker, Morgan	Cashier	Monday	4	4	
14	Daniels, Flip	Cashier	Monday	5	5	
15	Denten, Chad	Cashier	Monday	4	4	
16	Gehrke, Donald	Cashier	Monday	8	8	
17	Goodman, Sean	Backline	Monday	4	4	
18	Haun, Charlie	Backline	Monday	8	8	
19	Kearns, Brienne	Backline	Monday	0	0	
20	Lingenfelter, Vic	Backline	Monday	6	6	
21	Olson, Cale	Supervisor	Monday	10	10	
22	Pearson, Brian	Supervisor	Monday	10	10	
23	Becker, Morgan	Cashier	Tuesday	5	5	
24	Daniels, Flip	Cashier	Tuesday	7	7	
25	Denten, Chad	Cashier	Tuesday	5	5	
26	Gehrke, Donald	Cashier	Tuesday	8	8	
27	Goodman, Sean	Backline	Tuesday	7	7	
28	Haun, Charlie	Backline	Tuesday	0	0	
29	Kearns, Brienne	Backline	Tuesday	8	8	
30	Lingenfelter, Vic	Backline	Tuesday	4	4	
31	Olson, Cale	Supervisor	Tuesday	9	9	

Conditional formatting

- 1 Select the cell or range containing the values to which you want to apply conditional formatting
- 2 In the Styles group, click Conditional Formatting
- 3 Do one of the following:

Choose a condition and rule from the menu

Choose New Rule. Then specify a condition and format in the New Formatting Rule dialog box

Alternate Row Shading Formula: =MOD(ROW(),2)=0

State	Population	Student Pop.	SAT Participation Rate	Mean Verbal Score	Mean Math Score
Alabama	4447100	177884	9%	559	554
Alaska	626932	12539	51%		
Arizona	5130632	102613	34%		
Arkansas	2001 2673400	53468	6%		
California	2001 33871648	1016149	51%		
Colorado	2001 4301261	172050	31%		
Connecticut	2001 3405565	102167	82%		
D.C.	2001 783600	23508	56%		
Delaware	2001 572059	17162	67%		

In this example we're formatting the cells in columns B through H with a green fill and bold text, but only when the state name is equal to the value in cell \$C\$2

Note that the row label is relative (no "\$"), which allows us to apply this formatting to other rows without losing functionality

Edit Formatting Rule

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format

Edit the Rule Description:

Format values where this formula is true:

= \$B6:\$H6=\$C\$2

Preview: AaBbCcYyZz

OK Cancel

Consolidate

1. Select the cell where you want the summary to start
2. Click Consolidate in the Data Tools Group of the Data Tab
3. Choose the operation you want to perform
4. Highlight the first range, click Add
5. Repeat step 4 until all ranges are added
6. Check boxes for headers and linking, then click OK

	A	B	C	D
1	Product ID	January	February	March
2	ALP-701	1,990	1,947	2,140
3	ALP-703	2,115	2,357	2,200
4	ALP-704	2,157	1,784	1,812
5	ALP-709	2,088	1,986	1,976

Consolidate

Function: Sum

Reference: Store2Q11\$1:\$1048576

All references: Store1Q11\$A\$1:\$D\$11

Use labels in: Top row Left column Create links to source data

OK Close

Consolidate

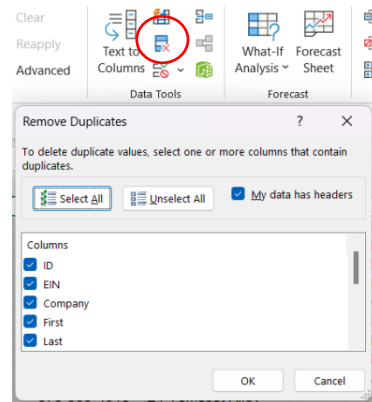
Summarize data from separate ranges, consolidating the results in a single output range.

For example, if you have a worksheet of expense figures for each of your regional offices, you might use a consolidation to roll up these figures into a corporate expense worksheet.

Clean Up Data

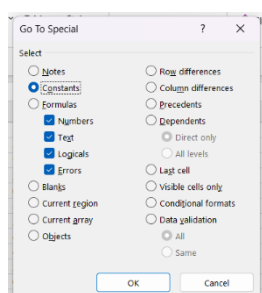
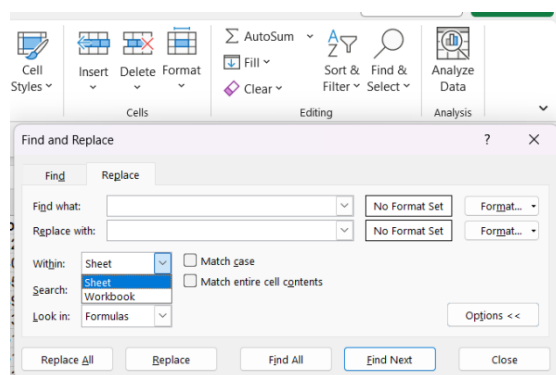
Remove Duplicates

1. On the Data tab, in the Data Tools group, click Remove Duplicates
2. Select the column(s) you want to remove duplicates based on
3. Duplicates are removed without your being able to choose individually



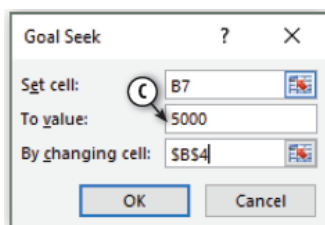
Find or Replace

1. Select the appropriate range or a single cell to search the entire worksheet
2. On the Home tab, in the Editing group, click Find or Replace
3. Fill in the necessary blanks
4. Choose Worksheet, Workbook, or other options



Go-To Special

On the Home tab in the Editing Group, Go-To Special allows you to select various types of items in the worksheet



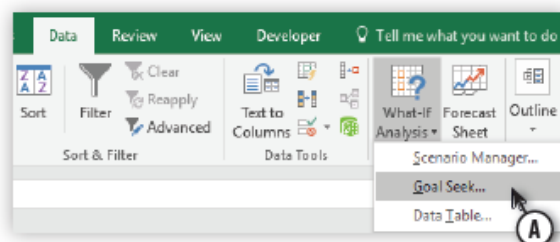
What-If Analysis

Goal Seek

Goal Seek allows you to change the value of various cells to see how the results change. It can help you figure out what numbers need to change in order to get the end result you want.

1. Click the cell you want to change. This is typically the end result which contains a formula.
2. On the Data tab click What-If Analysis.
3. Click Goal Seek. [A]
4. **Set Cell:** The cell selected will be the set cell. [B]
5. **To Value:** Set the end value you would like to see in that cell. [C]
6. **By Changing Cell:** Select the cell you would like to automatically change to reach your goal. [D]
7. The new value will appear in the dialog box.
 - a. To make the changes to the spreadsheet, click **OK**.
 - b. To keep the original value, click **Cancel**.

	A	B
1		
2	Starting Investment	\$ 350.00
3	Annual Interest Rate	6%
4	Monthly Investment	\$ 100.00
5	Months	12
6		
7	Future Value	\$1,605.14
8		



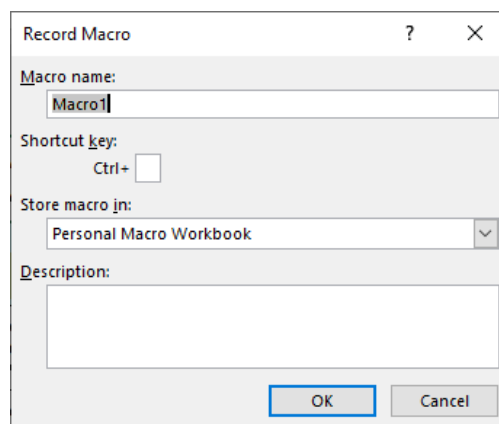
Macros

A macro is a recording of keystrokes and mouse clicks that can be played back.

Any set of tasks performed exactly the same way every time is a good candidate for a macro

Create a Macro:

1. On the View tab, in the Macros group, click the Macros dropdown arrow and select Record Macro
2. Name the macro
3. Assign a shortcut key (optional)
3. Choose where the macro should be stored (the workbook where the macro is stored must be open for the macro to run)
 - a. Personal Macro Workbook (always available when you are logged in)
 - b. New Workbook
 - c. This Workbook (travels with the workbook)
4. Provide description (optional)
5. Click OK
6. Perform the commands you want to record
7. Go back to the Macros group on the View tab, and choose Stop Recording from the drop-down menu



Run a Macro:

1. Select the View tab
2. Click the Macros button above the drop-down arrow
3. Select the macro you want from the Macro name list
4. Click Run

Edit a Macro:

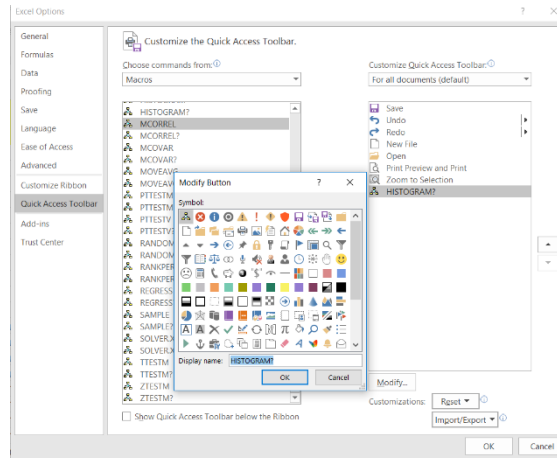
1. Go to the View tab
2. Click the Macros drop-down
3. Select View Macros
4. Select the macro you want to edit (if the Macro is stored in the Personal Macro Workbook, you will need to unhide it from the Window group of the View tab)
5. Click Edit
6. Make text edits to the code
7. Close, and Return to Microsoft Excel

Step Through the Code – The Step Into feature allows you to watch the macro perform a line of code at a time so you can “see” which line is causing you trouble.

1. Open the VBA editor and click in the macro you wish to review. Make sure to also have your Excel window open and visible.
2. Select Debug > Step Into or F8 to initiate.
3. A yellow highlight will indicate which line Excel is executing. Continue hitting F8 until the program is complete.

Add Macros to the QAT:

1. Click the Office button
2. Click the Excel Options button
3. In the Customize panel, select Macros from the Choose command from dropdown menu
4. In the Customize Quick Access Toolbar, select For all documents
5. In the left pane, select the macro to be added to the QAT
6. Click the Add button
7. Click the Modify button beneath the right pane
8. Type a name for the shortcut in the Display name field
9. Select an image for the shortcut in the Symbol pane
10. Click OK
11. Click OK in the Excel Options window.
12. Review the QAT to see the macro's shortcut with the selected icon button

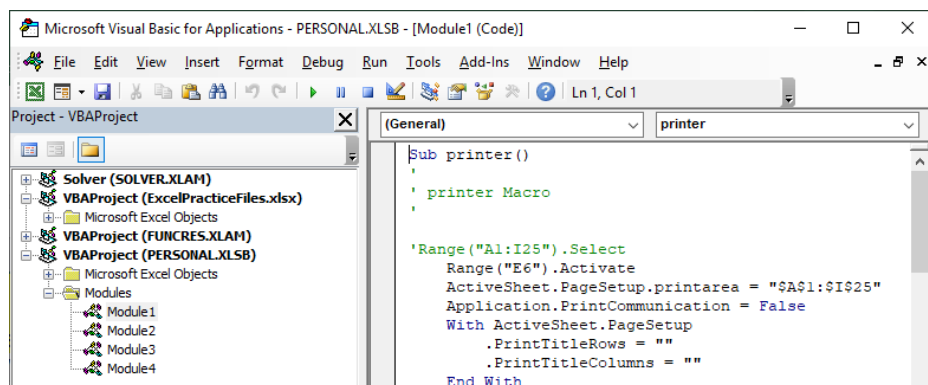
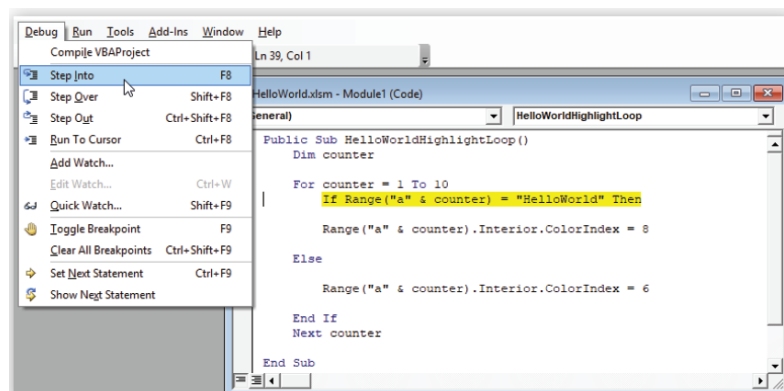


Add Macro Buttons to a Worksheet:

1. On the Developer Tab in the Controls group, click the Insert drop-down arrow, and choose Button
2. Drag the button on the Developer Tab to the place you want it on the worksheet, and size it
4. Select a macro to assign to the button (this option pops up when you release the mouse button)
5. Click OK
6. Rename the button

Write or Edit in the VBA Editor

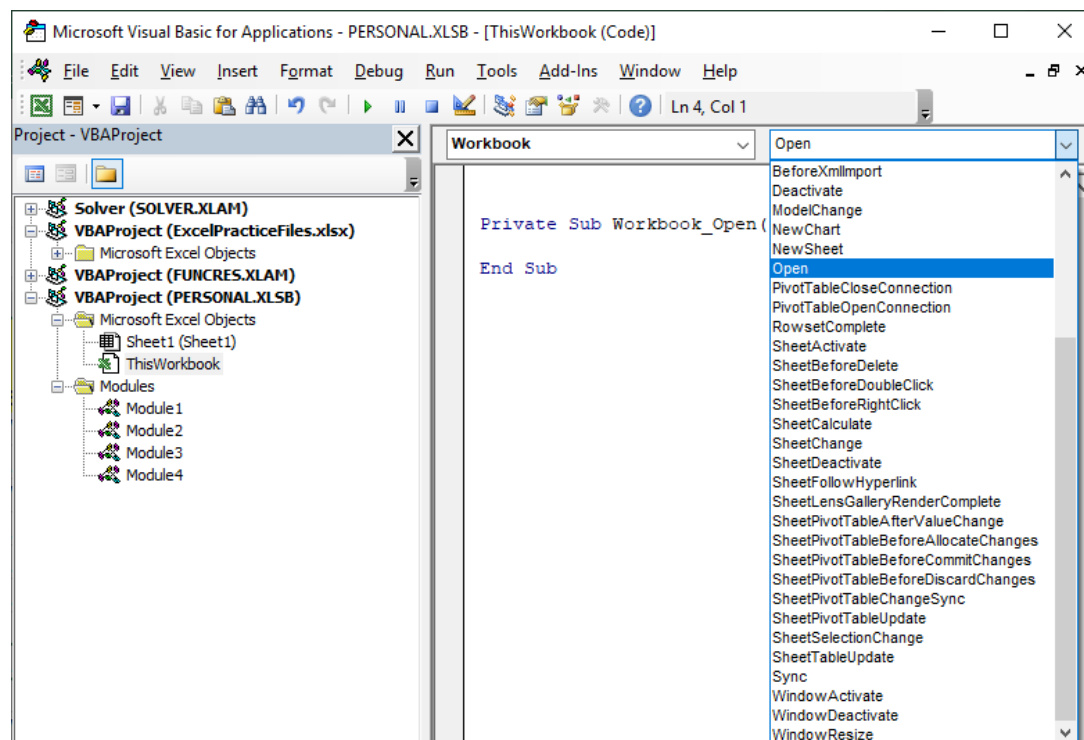
1. Press ALT + F11 to open the VBA editor
2. Select the project in the Project Window that you want (Most macros are stored in modules).
3. Place your cursor in the code module between the Sub and End Sub declarations
4. Type in the macro procedures



Trigger a Macro from an Event

You may want a macro to run based on some action you have taken. You might want a message box to appear when a user opens a worksheet with information about what is included. Or, you may want to run a macro that sorts your data into your preferred format each time the workbook is saved.

1. Record or plan your Macro.
2. Open VBA Editor.
3. Double-click the module that will store the macro in the Project Window. Event Procedures are not stored in Code Modules like the macros seen so far. Instead, they will be stored in one of two places:
 - a. Worksheet module – Macros will run when events happen in or to a specific worksheet.
 - b. ThisWorkbook – Macros will run when events happen in or to the workbook.
4. Change the (General) dropdown menu to Worksheet or Workbook. [A]
5. Choose the action that will trigger the macro in the worksheet. [B] Excel will create open and close Sub statements. [C] Note that Excel creates a Private Sub procedure for this type of macro. This simply means that the macro will not be seen in Excel's Macro dialog box – it can only be run when the event, or trigger, is detected (or from the VBA editor).
6. Type or copy/paste your macro between the Sub statements as usual. [D]
7. Save and test.



Add a message box to an existing macro. Syntax: **MsgBox** ([TEXT],

[BUTTONS], [TITLE])

Message boxes are 'pop up' messages that grab the user's attention and require a response before they continue.

```
Sub Msg_exe()
```

```
MsgBox "This is a message!", vbExclamation, "This is the Title"
```

```
End Sub
```

Create a Custom Function

If Excel does not have exactly the function you need, you can create your own using VBA. Review the Macros section for details about opening and editing VBA code.

Create a Function Procedure

1. Press ALT+F11 to open the VBA editor
2. Select Insert > Module to insert a new Code Module
3. Select Insert > Procedure
4. Type a name for your function in the Name textbox
5. Select Function radio button in the Type pane
6. Click OK
7. Function and End Function declarations will be added to your code window.

Define the Function's Arguments - Type a short variable name for each argument the function will use to perform its calculations between the parenthesis that follow the function name.

Enter a Formula – Enter the formula that the function will perform using the variables defined in the arguments.

Custom Views – Print, Format, and Filter Settings

1. Click the View Tab
2. In the Workbook Views group, click Custom Views
3. Click Add
4. Give the view a name
5. Access the view from the same location

Subtotals

Excel can automatically calculate subtotals at every change of data in a key column

1. Sort a list by a key column
2. On the Data tab, in the Outline group, click Subtotal
3. Use dropdown arrows to configure desired settings
4. Click OK

Create Forms

Put labels in one row and blanks above or below

Use bottom border to demark blanks

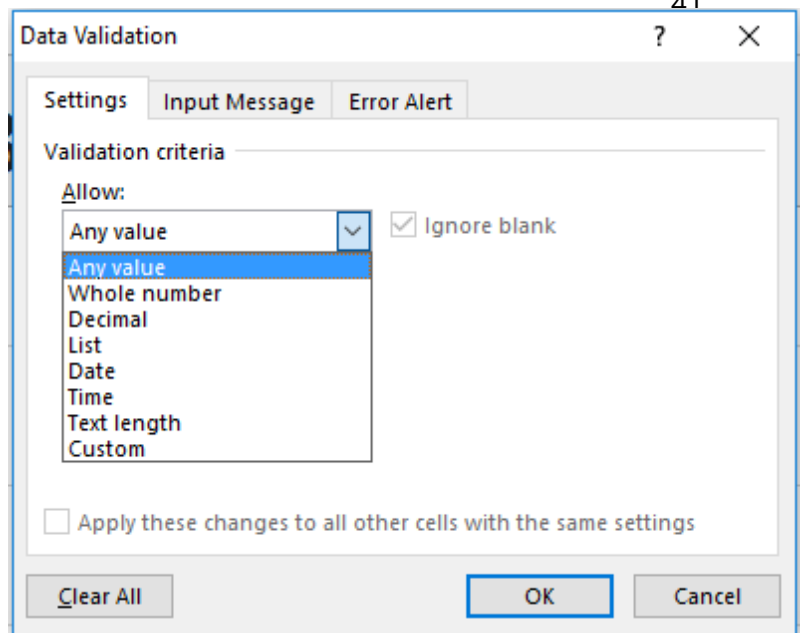
Control form blank size by merging cells

Hide ruler, headers, and gridlines

Data Validation

To ensure the proper type of data is being entered, Excel can validate it upon entry

1. Highlight the cells where data validation will be applied
2. On the Data tab, in the Data Tools group, click Data Validation
3. Select the validation criteria
4. Provide any additional parameters
5. Create optional Input and/or Error Messages
6. Click OK



Advanced Data Validation

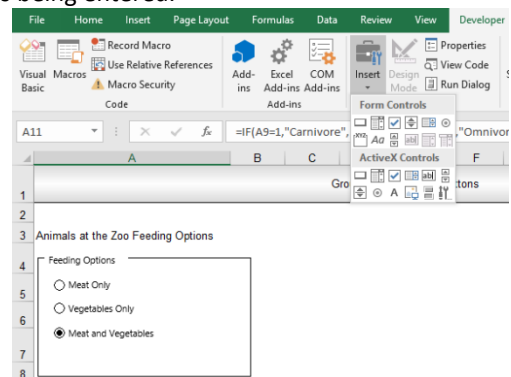
One of the best ways to avoid errors in a database is to ensure that the data entered is accurate and consistent. Data Validation allows you to specify and enforce the format of data when it is being entered.

Custom Criteria

Use a formula to determine validation criteria

1. Select the cell or cells
2. Click Data Validation button in the Data Tools group on the Data tab
3. Choose Custom [B] from the Allow: dropdown options
4. Enter the formula that describes your validation rule

This example counts the number of entries in a cell range and alerts the user if more than 3 suggestions have been entered.



Form Controls

Form controls can be very useful for adding form-like functionality to a workbook, without having to use VBA.

Form controls make use of linked cells and the value in the linked cell is updated in some way, based on the actions taken with the form control at hand. Using formulas in combination with form controls, one can further extend the form control functionality and form-like appearance of the worksheet at hand.

To change a control's properties to link it to a background database sheet:

1. Right-Click on the control and select Format Control.
2. Modify control options as needed.
3. To link the control to a background database sheet, input the destination cell address into the Cell Link.

Format as Table

On the Home ribbon, Format as Table automates alternate row shading, freeze panes, the filter, and adding a total row. Tab from the last data cell to add rows

1. Click any cell in the data to be converted
2. On the Home tab, in the Styles group, click Format As Table
3. Select a formatting option
4. Click OK to confirm the data range
5. Review your completed table

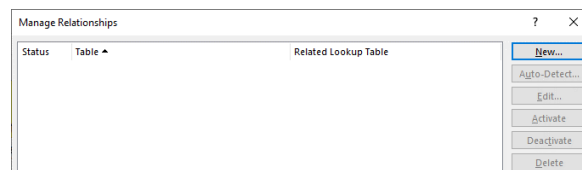
The screenshot shows the Excel ribbon with the 'DESIGN' tab selected under 'TABLE TOOLS'. The 'Table Style Options' group has 'Header Row', 'Total Row', and 'Banded Rows' checked. The 'Table Styles' gallery shows various color schemes. Below the ribbon, a table is displayed with columns: First Name, Last Name, Department, Job Title, Salary, Perf Rating, Mgt Level, Training Hours, and LMS. The table includes a 'Total' row at the bottom.

	First Name	Last Name	Department	Job Title	Salary	Perf Rating	Mgt Level	Training Hours	LMS
19	James	Parker	Sales	Product Management	\$ 48,000.00	2	4	56	TCR
20	Harold	Robbins	Section Manager	Circulation Manager	\$ 38,500.00	5	3	24	TCR
21	Susan	Sarandon	Section Manager	Dir. of Shipping	\$ 55,000.00	1	3	48	TCR
22	Laurent	Yves Saint	Section Manager	Dir. of Training	\$ 45,000.00	2	3	36	Start7
23	Total				\$ 1,140,500.00	1.400680107	1.228571429	547	21

Excel Data Models

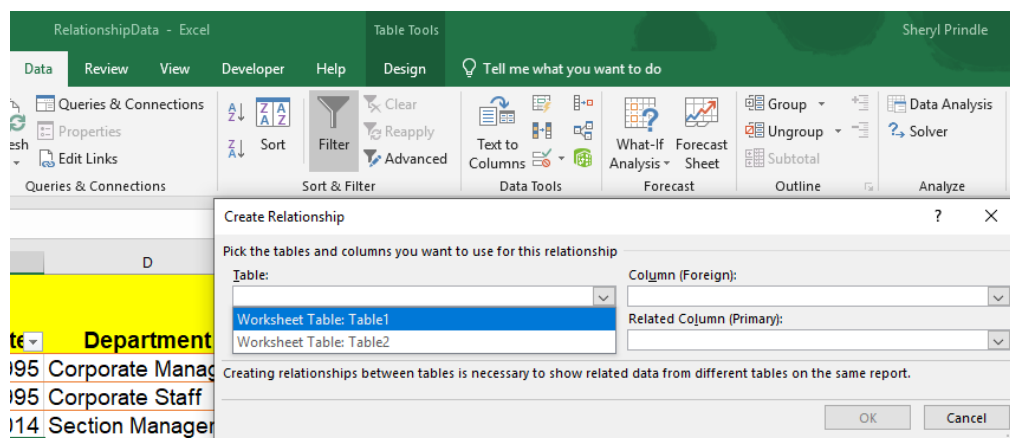
Prepare Your Data

- Convert all data into tables with a Header Row.
- Give each table a unique, useful name (this is not required, but very helpful).
- Identify related data – Relationships are connections between two tables based on a single column in both that share a similar data. Plan which columns will become related in this way. It will also be very helpful to know which field you will want to summarize, later, in a PivotTable.

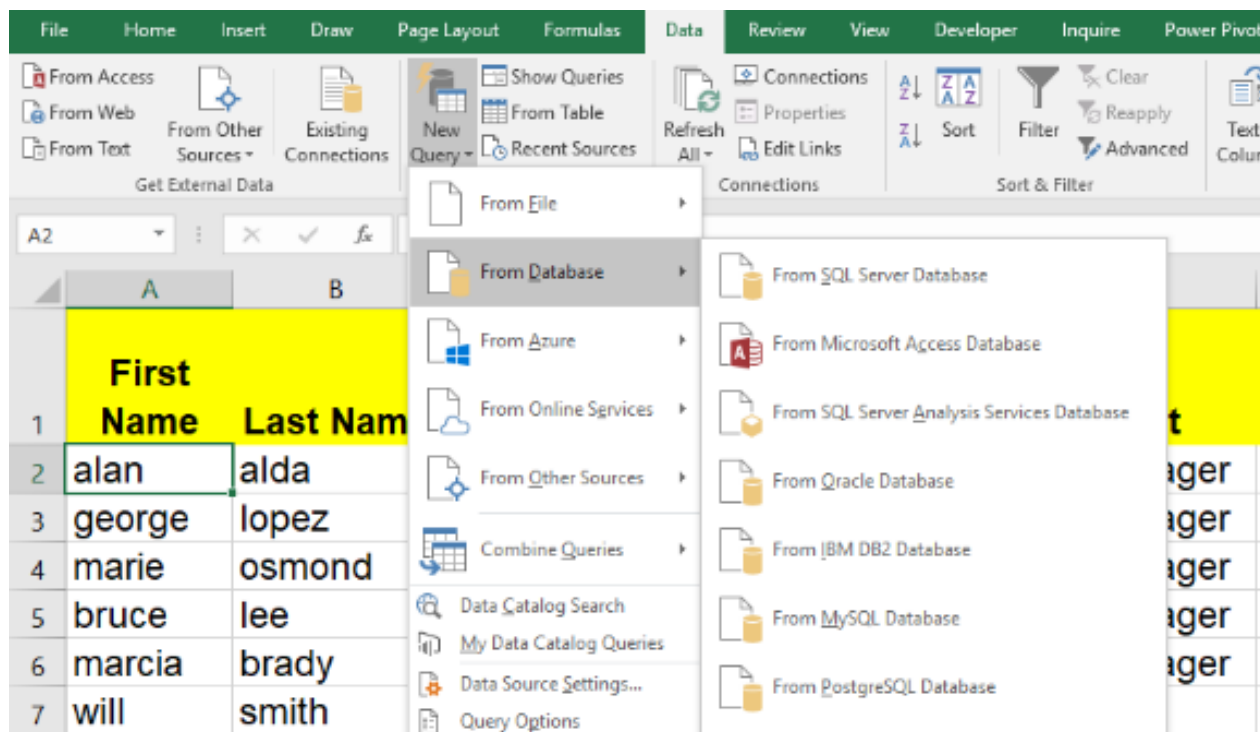


Create Relationships

1. Click Data > Relationships to open the Manage Relationships dialog
2. Click New to open the Create Relationship dialog
3. In the left pulldown menus, you will select two tables that have the same information
4. In the right pulldown menu, you will specify which columns are the same in those tables. *then click OK*



You can pull the data from your model into a Pivot Table
Power Query



Setting Up a Web Query

1. On the File tab, in the Get External Data group, select From Web
2. In the Address field [B], type the Web address for the page that contains the information to be pulled into Excel
3. Click the arrow next to the table(s) to be added to a spreadsheet
4. Click the Import button
5. Select the location for the data and click OK

Hyperlinks

