TechMentors

Helping you get the most out of technology

Excel Review and Quick Reference Guide

Student Manual

www.theTechMentors.com
info@theTechMentors.com
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Introduction

Welcome to the Excel Review and Quick Reference Guide. This course is NOT an introductory course. Instead, it is a review course. It is for the many users of Excel who are self-taught, and who wonder if there are basic Excel concepts, that they never learned, that could save them hours of work.

What this guide is not

Unlike many books on Excel, this guide does NOT provide detailed explanations. Instead, its purpose is to be a mere Quick Reference guide. This allows readers to quickly review HOW to do something without wading through explanations about the WHAT and the WHY. For example, this guide shows you how to create a PivotTable, but only provides one short sentence about what a PivotTable is and what it can do for you. If you are looking for a more details, please check out TechMentors other courses.

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Course Outline

Upon completion of this course, students will be able to:

Navigate and format worksheets

- Use over 60 keyboard shortcuts to navigate and/or manipulate an Excel workbook
- Change the font, alignment, and number format of data using the standard formatting icons
- Insert rows and columns
- Delete rows and columns
- Freeze data rows at the top of the screen
- Freeze data column at the left edge of the screen

Manipulate Excel data

- Use the AutoFill feature to quickly fill in lists of values, month names, names of the days of the week, date values, and number patterns
- Filter data to display a data subset
- Sort data by one or more columns

Prepare data for printing

- Select a specific area for printing
- Fit a printout on one horizontal and/or vertical page
- Add a page header and/or footer
- Print column headers at the top of each page

Design an Excel PivotTable

- Define what a PivotTable is and describe its use
- List the data rules that must be follow before a PivotTable can be created
- Create a PivotTable

Create advanced formulas

- List the four range operators and describe how they can be used in an Excel formula
- Use the five mathematical operators in a numeric formula
- List the five logical operators and describe how they can be used in a comparison formula
- Save time and prevent calculation errors by properly using the proper absolute, mixed, and relative reference operators in a formula
- Increase / decrease the size of the Excel formula bar
- Employ techniques for creating complex mega formulas

Use the following functions

Summary

- Sum
- Average
- Count
- Min
- Max
- Small
- Large
- Median
- Mode
- SumIf
- CountIf
- SumIfs
- CountIfs

Lookup

- VLookup
- HLookup
- Index
- Match

Logical

- If
- And
- Or
- Not
- IfError

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Keyboard Shortcuts

Selecting

One cell to the **right**	→
One cell to the **left**	←
One cell **down**	↓ or **Enter**
One cell **up**	↑ or **Shift** + **Enter**
One screen down	**Page Down**
One screen up	**Page Up**
Beginning of sheet (A1)	**Ctrl** + **Home**
End of sheet (last cell)	**Ctrl** + **End**
To the end of contiguous data	**Ctrl** + **Arrow** or **End** + **Arrow**
A cell or range of cells	**Ctrl G** or **F5** then enter address
Next sheet	**Ctrl** + **Page Down**
Previous sheet	**Ctrl** + **Page Up**
Whole **column**	**Ctrl** + **Space Bar**
Whole **row**	**Shift** + **Space Bar**
One more cell to the **right**	**Shift** + →
One more cell to the **left**	**Shift** + ←
One more cell **up**	**Shift** + ↑
One more cell **down**	**Shift** + ↓
All the contiguous data to the **right**	**Ctrl** + **Shift** + →
All the contiguous data to the **left**	**Ctrl** + **Shift** + ←
All the contiguous data **up**	**Ctrl** + **Shift** + ↑
All the contiguous data **down**	**Ctrl** + **Shift** + ↓
All cells	**Ctrl A**
All contiguous cells	**Ctrl** + *

File Functions

Open file	Ctrl + O
Save file	Ctrl + S
Close window	Ctrl + W
New file	Ctrl + N
Print file	Ctrl + P

Formatting

Format cells	Ctrl + 1
Bold	Ctrl + B
Italic	Ctrl + I
Underline	Ctrl + U

Function Keys

Help	F1
Instant Chart same sheet	Alt + F1
Edit cell formula	F2
Paste Name box	F3
Insert function	Shift + F3
Toggle absolute / relative references	F4
Go to specified cell	F5
Go to next pane	F6
Check spelling	F7
Toggle extended mode	F8
Recalculate	F9
Activate ribbon options with letters	F10
Instant Chart new sheet	F11
Save As	F12

Editing

Cut	Ctrl + X
Copy	Ctrl + C
Paste	Ctrl + V
Undo	Ctrl + Z
Redo	Ctrl Y
Insert cells, rows, or columns	Ctrl + +
Delete cells, rows, or columns	Ctrl + -
Find	Ctrl + F
Search and Replace	Ctrl + H
Erase cell contents	Delete
Finish cell formula and stay in cell	Ctrl + Enter
Cancel edit	Esc
Insert new line in cell	Alt + Enter
Insert current date	Ctrl + ;
Insert current time	Ctrl + :
Toggle display between formulas vs. values	Ctrl + `

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Formatting Options

Format Cells

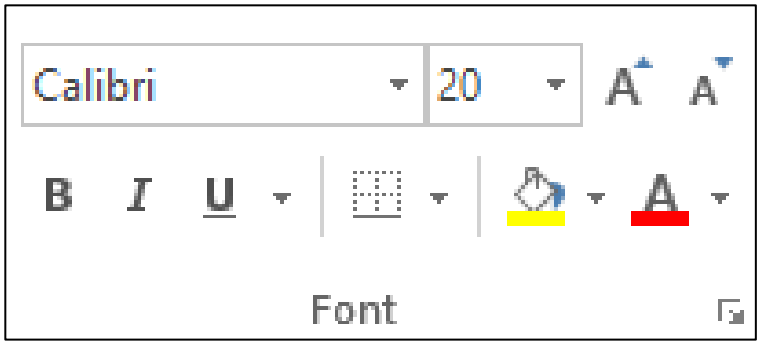

Figure 1: Home tab, Font group

Calibri	Font		Borders
20	Font Size		Background color
A	Increase Font	A	Font color
A	Decrease Font		More font settings
B	Bold		
I	Italic		
U	Underline		

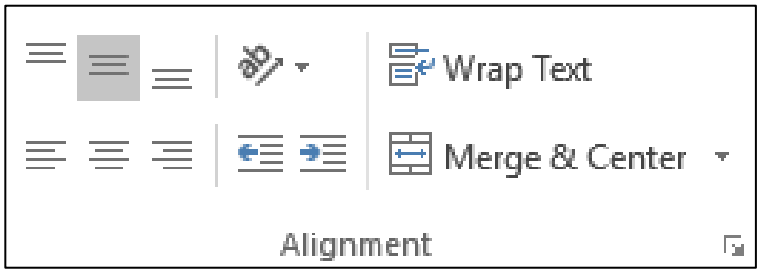

Figure 2: Home tab, Alignment group

	Align Top		Rotate Text
	Align Middle		Decrease Indent
	Align Bottom		Increase Indent
	Align Left		Wrap Text
	Align Center		Merge & Center
	Align Right		More alignment settings

Format numbers

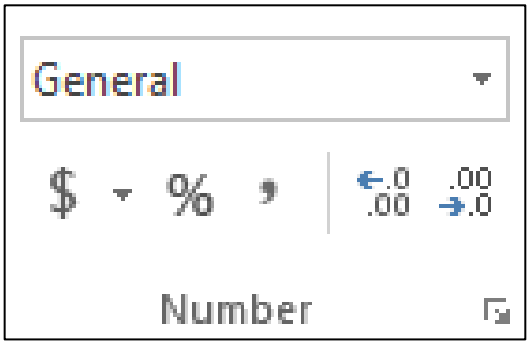

Figure 3: Home tab, Number group

Drop down options

ABC 123	General No specific format	1234.5678
12	Number	1234.57
	Currency	$1,234.57
	Accounting	$ 1,234.57
	Short Date	5/18/1903
	Long Date	Monday, May 18, 1903
	Time	2:24:00 PM
%	Percentage	12.34%
½	Fraction	3/5
10^2	Scientific	1.23E+03
ABC	Text	1234.5678

Buttons

$	Currency	$ 1,234.57
%	Percentage	12%
,	Comma	1,234.57
.0 .00	Increase decimals	
.00 .0	Decrease decimals	
	More number format options	

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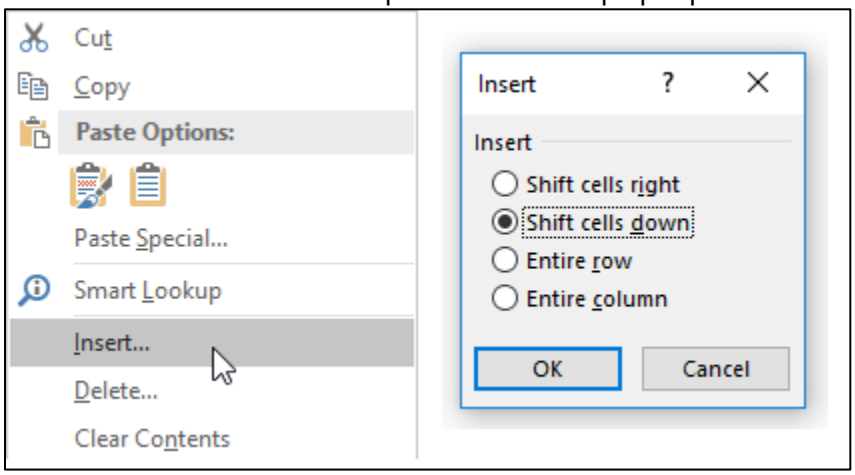
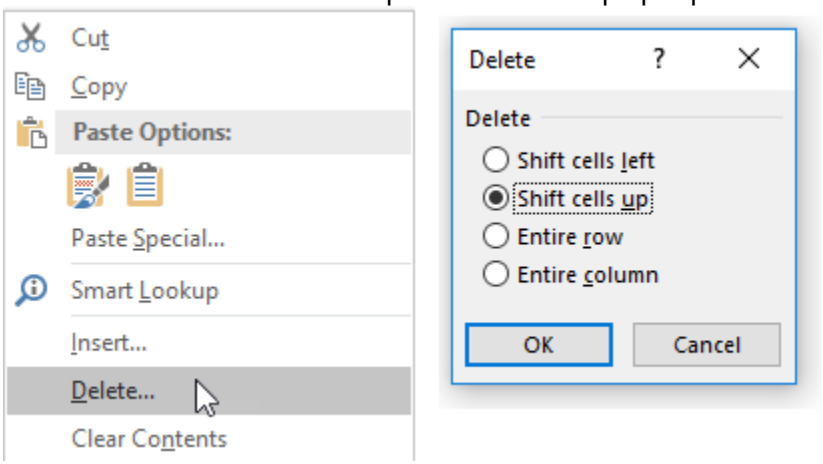
Insert Rows / Columns

Position the cursor in the desired location and **right click** and choose **Insert…** or press **Ctrl** + **+**. Then choose the desired option from the pop-up menu.



Delete Rows / Columns

Position the cursor in the desired location and **right click** and choose **Delete…** or press **Ctrl** + **-**. Then choose the desired option from the pop-up menu.



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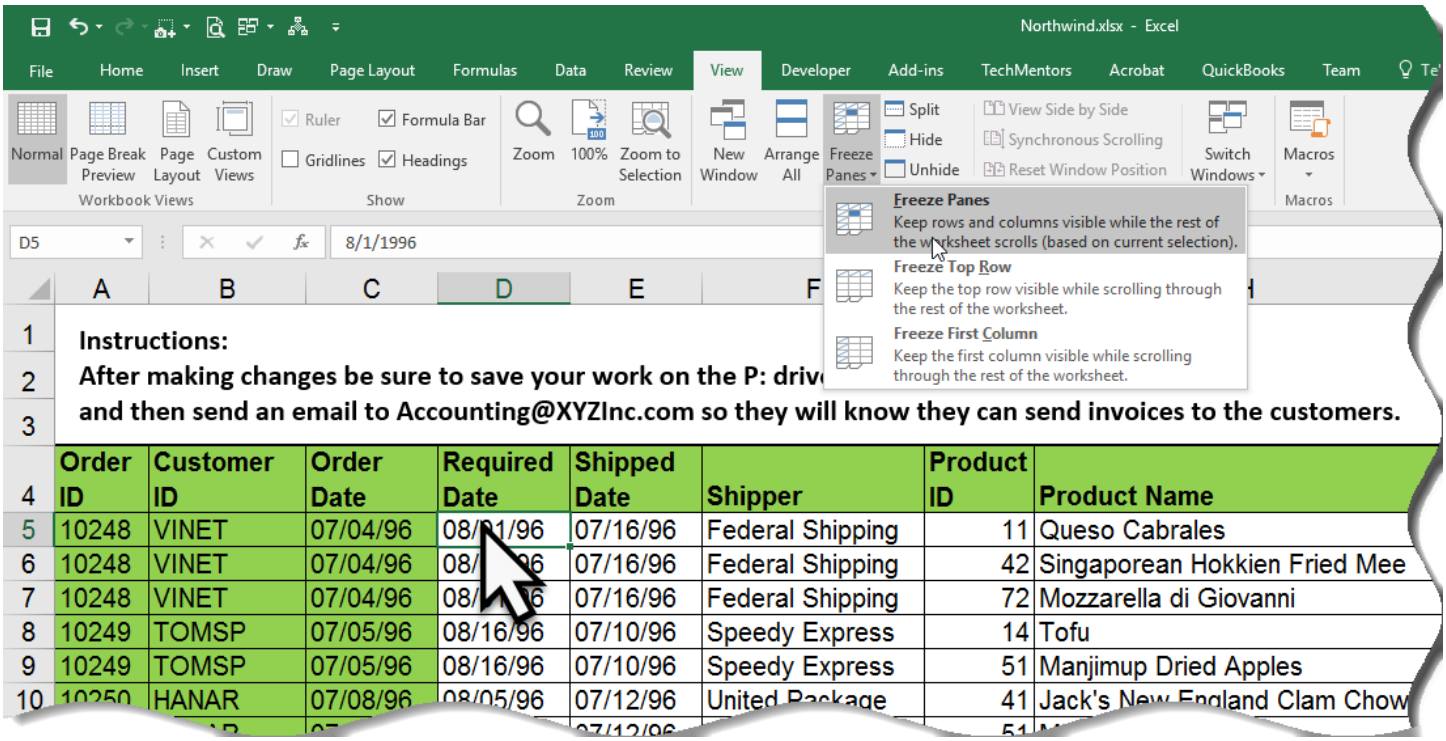
Freeze Panes

From the ribbon's **View** tab you can **Freeze Panes** to "freeze" headings (rows at the top and/or columns at the left) so they don't disappear as you scroll through the spreadsheet.

If you need to freeze both rows and columns, first position the cursor in the cell just below and to the right of the rows and columns you want frozen. For example, if you want to freeze rows 1 through 4 and columns A through C, you would position your cursor in cell D5, and then choose **View**, **Freeze Panes**, **Freeze Panes**.



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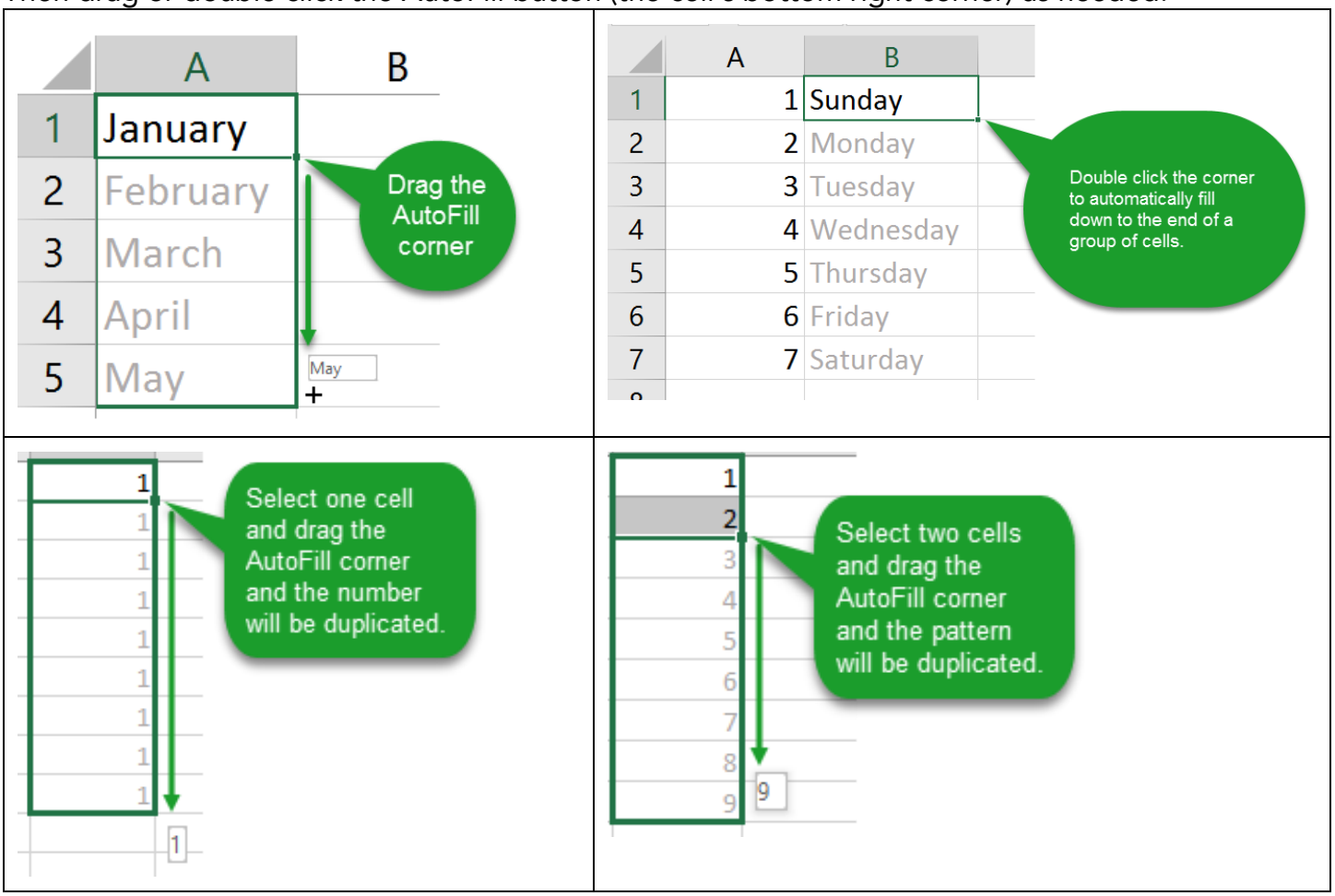
Auto Fill

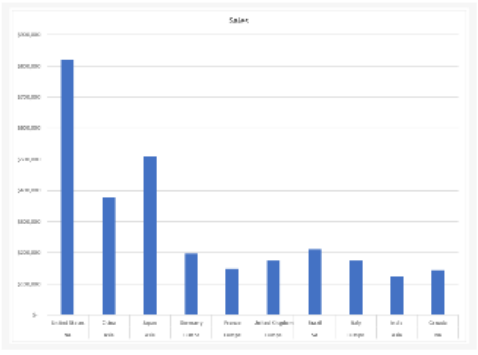
Enter a name from a series (like the name of a month), or a formula, or one or more values.
Then drag or double click the AutoFill button (the cell's bottom right corner) as needed.



Instant Charts

You can quickly create a chart by selecting your data and then pressing **Alt F1** or **F11**.
Alt F1 creates a chart on the same sheet, while F11 creates a chart on a new sheet.

	A	B	C
1	**Area**	**Country**	**Sales**
2	NA	United States	$818,669
3	Asia	China	$377,841
4	Asia	Japan	$509,495
5	Europe	Germany	$196,820
6	Europe	France	$149,325
7	Europe	United Kingdom	$174,650
8	SA	Brazil	$210,637
9	Europe	Italy	$174,360
10	Asia	India	$123,434
11	NA	Canada	$145,876



You can then change the chart from the ribbon's **Chart Design** tab, **Change Chart Type** button.

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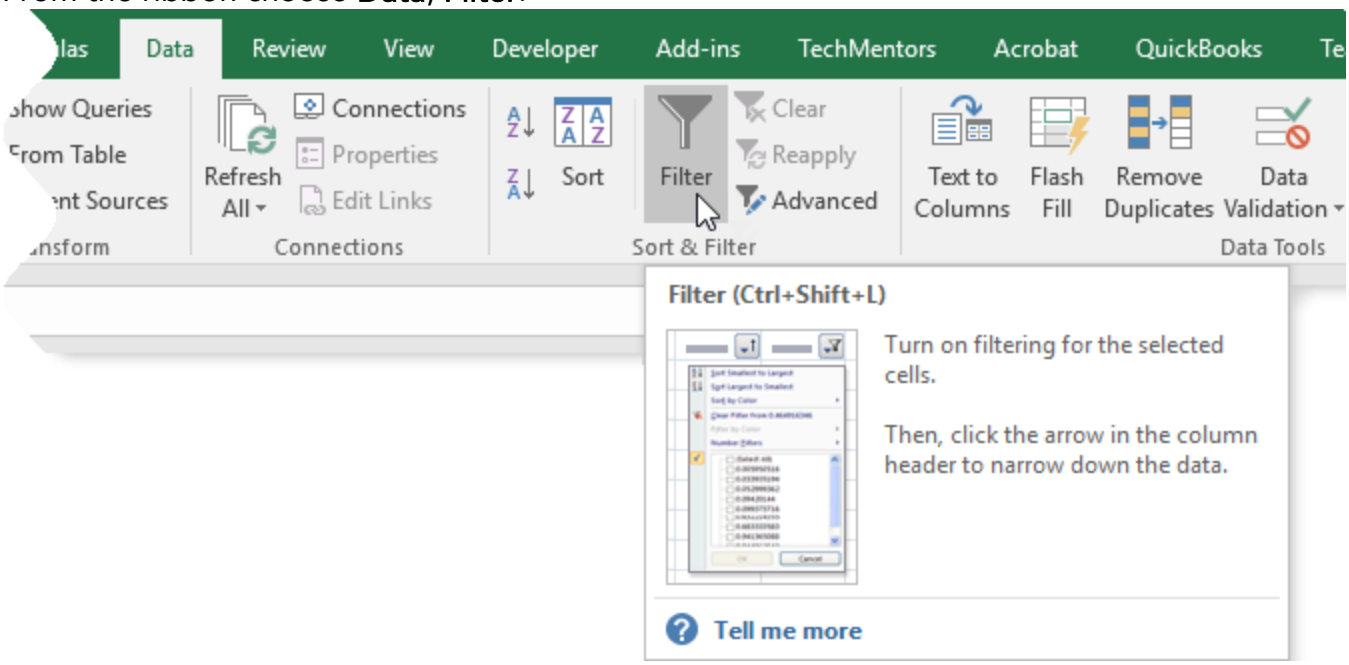
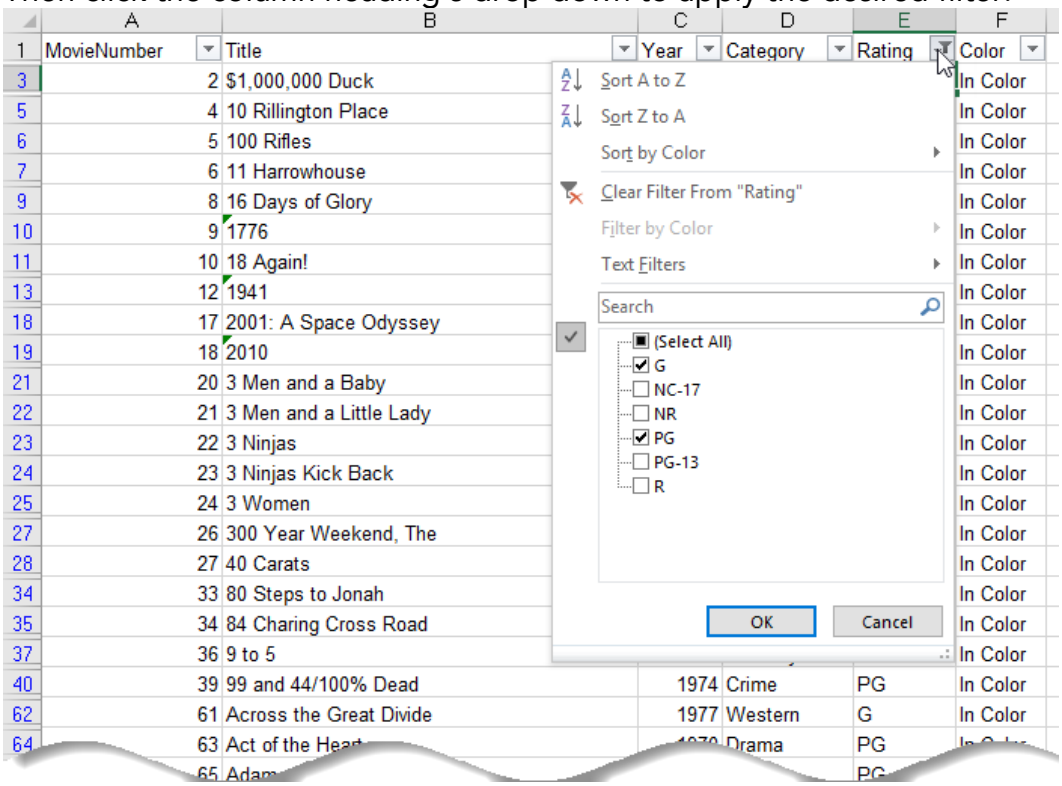
Filter data

From the ribbon choose **Data**, **Filter**.



Then click the column heading's drop down to apply the desired filter.



MovieNumber	Title	Year	Category	Rating	Color
2	$1,000,000 Duck				In Color
4	10 Rillington Place				In Color
5	100 Rifles				In Color
6	11 Harrowhouse				In Color
8	16 Days of Glory				In Color
9	1776				In Color
10	18 Again!				In Color
12	1941				In Color
17	2001: A Space Odyssey				In Color
18	2010				In Color
20	3 Men and a Baby				In Color
21	3 Men and a Little Lady				In Color
22	3 Ninjas				In Color
23	3 Ninjas Kick Back				In Color
24	3 Women				In Color
26	300 Year Weekend, The				In Color
27	40 Carats				In Color
33	80 Steps to Jonah				In Color
34	84 Charing Cross Road				In Color
36	9 to 5				In Color
39	99 and 44/100% Dead	1974	Crime	PG	In Color
61	Across the Great Divide	1977	Western	G	In Color
63	Act of the Heart		Drama	PG	

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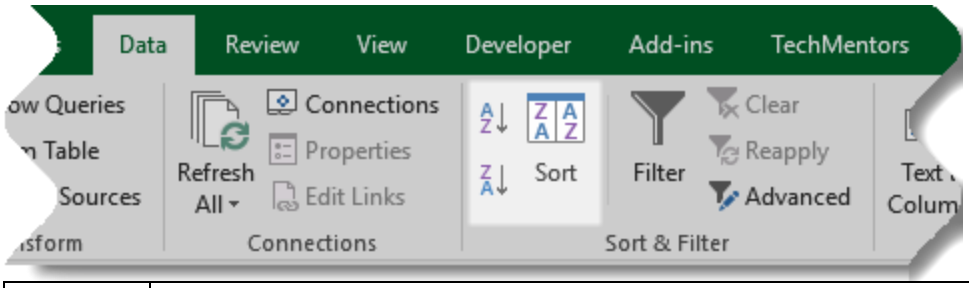
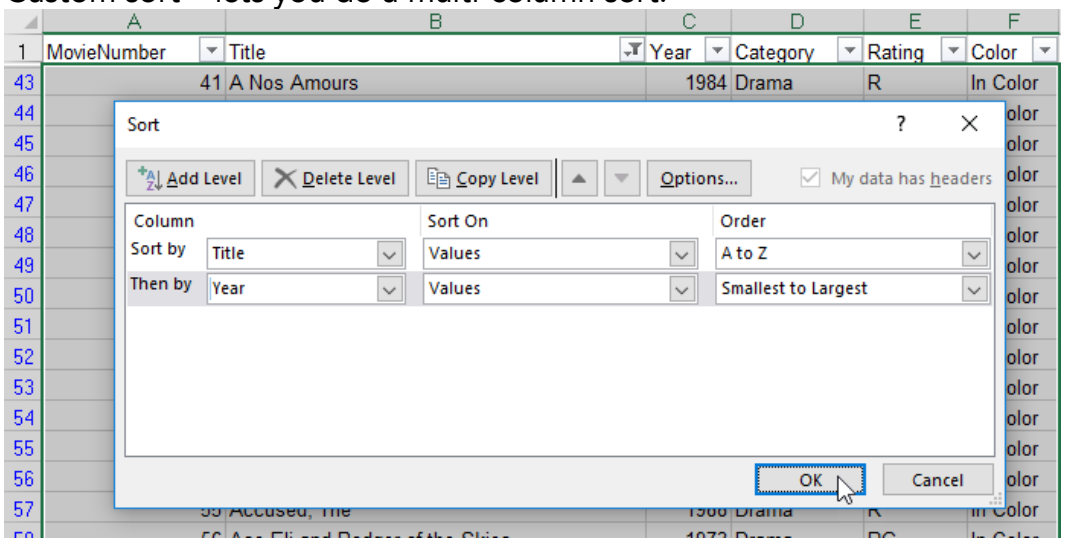
Sort data

To sort your data, click on one cell, that has data, in the column you want sorted. Then from the ribbon **Data** tab click one of the three sort buttons.



	Sort lowest to highest
	Sort highest to lowest
	Custom sort – lets you do a multi-column sort. 

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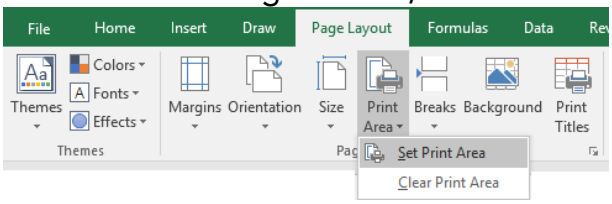
Printing

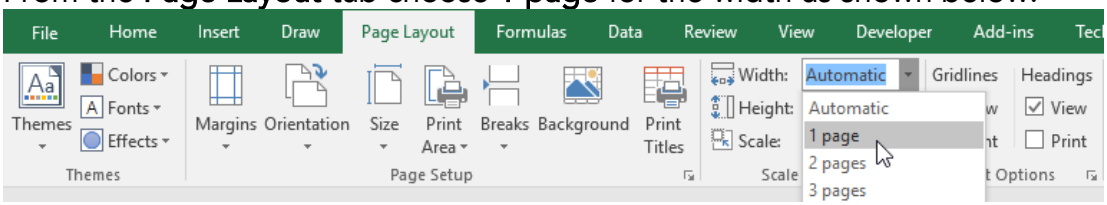
Select a print area

Select desired range of cells, then from the **Page Layout** tab choose **Set Print Area** as shown below.



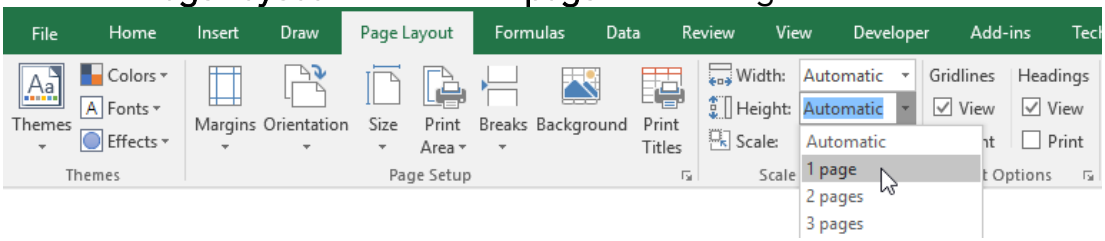
Fit print to one page wide

From the **Page Layout** tab choose **1 page** for the width as shown below.



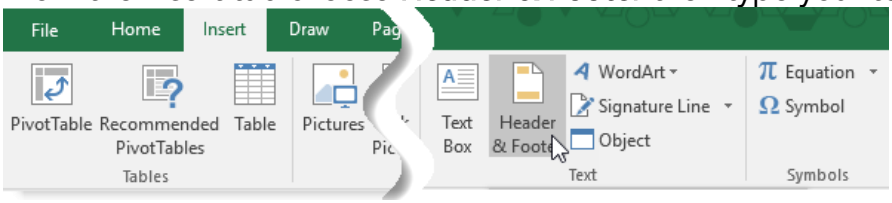
Fit print to one page tall

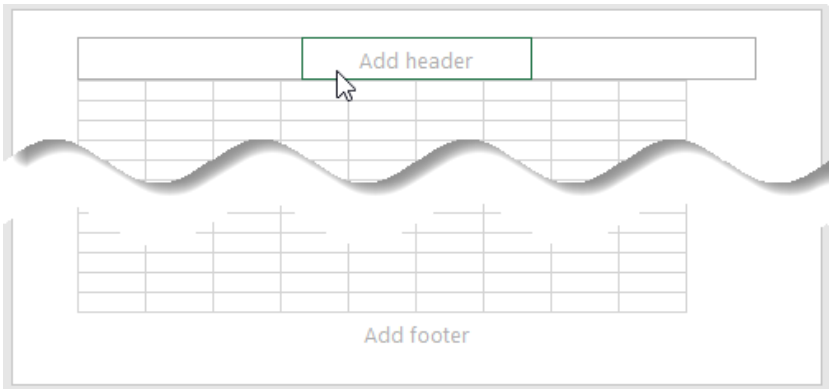
From the **Page Layout** tab choose **1 page** for the height as shown below.



Add header / footer

From the Insert tab choose **Header & Footer** then type your text in the desired location.





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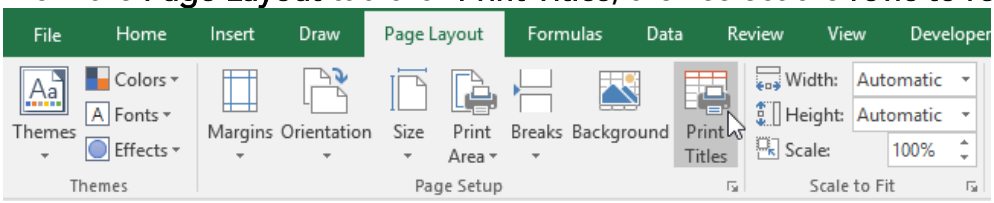
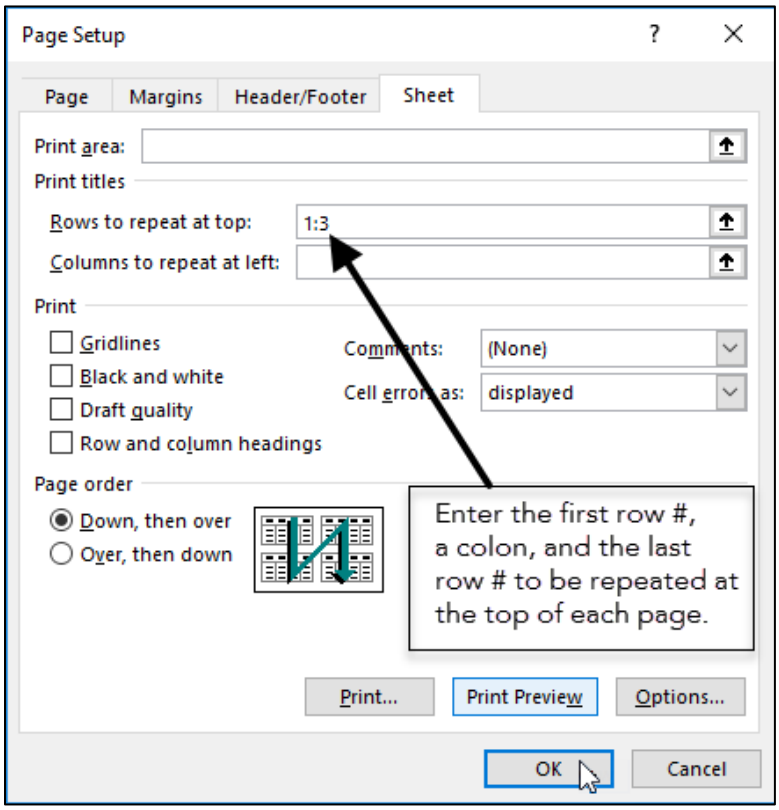
Print rows at top of each page

From the **Page Layout** tab click **Print Titles**, then select the **rows to repeat at top** and click **OK**.





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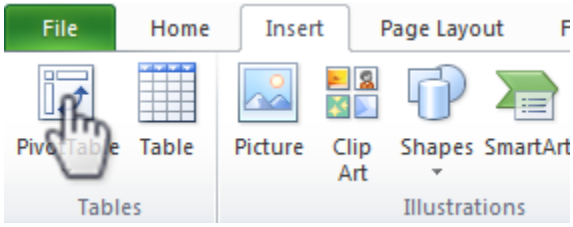
PivotTables

PivotTables allow you to arrange and summarize complex data in an easy to read report that is easy to manipulate. To create a simple PivotTable follow these steps:

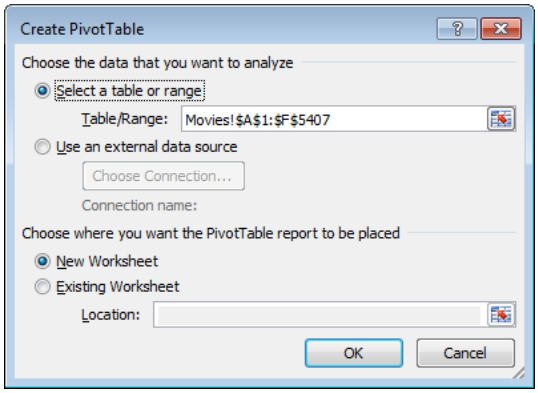
1. Start Excel and create or open your file.
2. Make sure your data can support a PivotTable by using the check list below:
   - ☐ Each column of data has a column heading
   - ☐ Each column heading is unique
   - ☐ Each column heading is in the same row
   - ☐ The column headings do not span multiple rows
   - ☐ No merged cells exist
   - ☐ All the data is contiguous
   - ☐ The data in each column follows a consistent format
3. Position the cursor in one cell, and only one cell of the data.

	A	B	C	D	E	F
1	MovieNumber	Title	Year	Category	Rating	Color
2	1	$(Dollars)	1972	Crime	R	TRUE
3	2	$1,000,000 Duck	1971	Comedy	G	TRUE
4	3	10	1979	Comedy	R	TRUE
5	4	10 Rillington Place	1970	Crime	PG	TRUE
6	5	100 Rifles	1969	Western	PG	TRUE
7	6	11 Harrowhouse	1974	Crime	PG	TRUE
8	7	1492: Conquest of Paradise	1992	Drama	PG-13	TRUE
9	8	16 Days of Glory	1986	Documentary	G	TRUE
10	9	1776	1972	Historical	G	TRUE
11	10	18 Again!	1988	Comedy	PG	TRUE
12	11	1900	1977	Drama	NC-17	TRUE

4. From the ribbon choose **Insert**, **PivotTable**.



5. In the resulting dialog box make sure the **table/range** is referring to the correct table or range and that the destination is a **New Worksheet**, then click **OK**.



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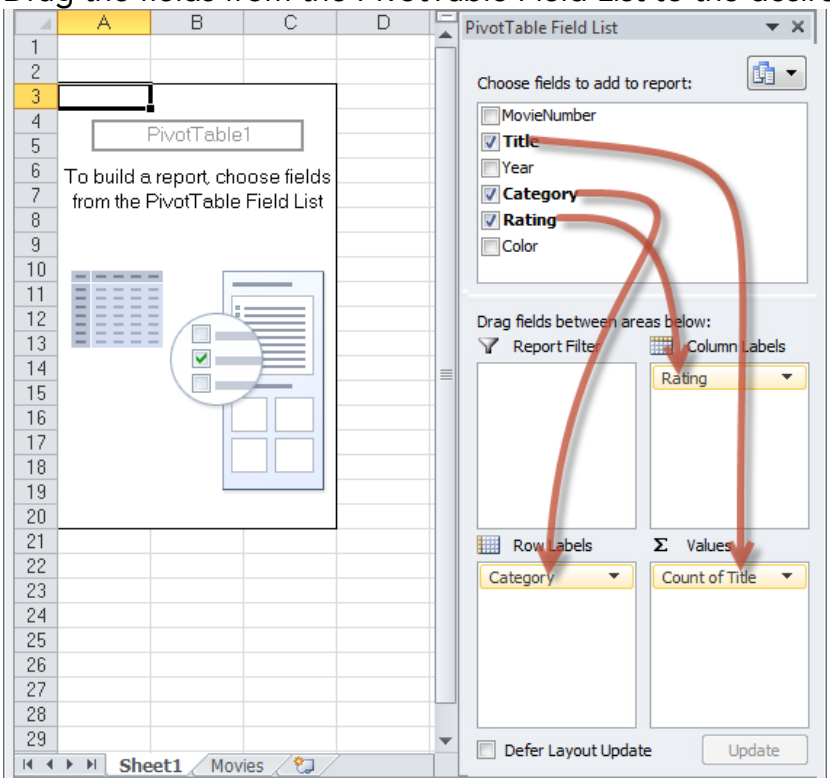
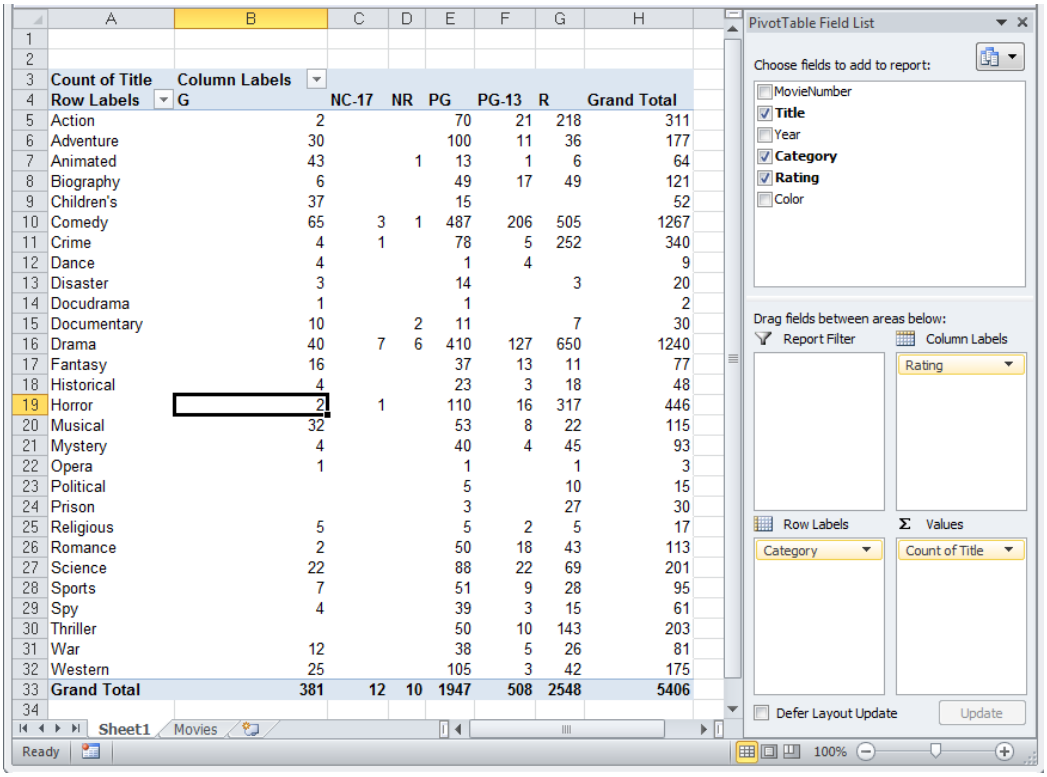
6. Drag the fields from the PivotTable Field List to the desired location as shown below.



You now have a PivotTable.



Count of Title	Column Labels						
Row Labels	G	NC-17	NR	PG	PG-13	R	Grand Total
Action	2			70	21	218	311
Adventure	30			100	11	36	177
Animated	43		1	13	1	6	64
Biography	6			49	17	49	121
Children's	37			15			52
Comedy	65	3	1	487	206	505	1267
Crime	4	1		78	5	252	340
Dance	4			1	4		9
Disaster	3			14		3	20
Docudrama	1			1			2
Documentary	10		2	11		7	30
Drama	40	7	6	410	127	650	1240
Fantasy	16			37	13	11	77
Historical	4			23	3	18	48
Horror	2	1		110	16	317	446
Musical	32			53	8	22	115
Mystery	4			40	4	45	93
Opera	1			1		1	3
Political				5		10	15
Prison				3		27	30
Religious	5			5	2	5	17
Romance	2			50	18	43	113
Science	22			88	22	69	201
Sports	7			51	9	28	95
Spy	4			39	3	15	61
Thriller				50	10	143	203
War	12			38	5	26	81
Western	25			105	3	42	175
Grand Total	381	12	10	1947	508	2548	5406

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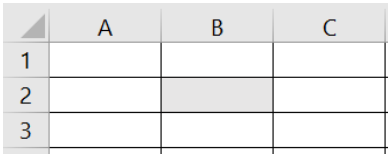
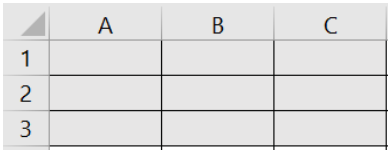
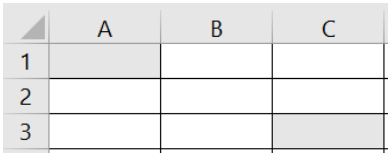
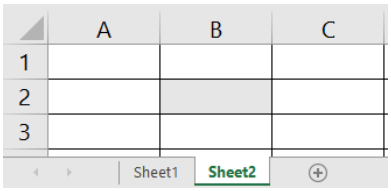
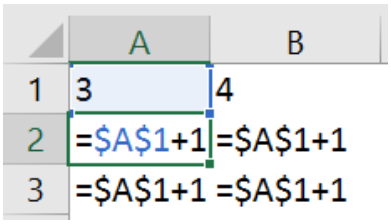
Range Operators

Cell address with no operator	Refers to cell address	B2	
:	Refers to all cells between first and last reference	A1:C3	
,	Refers to first and last reference	A1,C3	
!	Refers to address on the specified sheet	Sheet2!B2	
$	Designates that a column or row reference is absolute and therefore cannot change when copied.	=$A$1 + 1	

Formula Operators

Every formula must begin with an equal, plus, or minus sign. If parentheses ( ) are used, expressions inside the parentheses are processed before expressions outside the parentheses.

+	Add	= 20 + 2	22
-	Subtract	= 20 – 2	18
*	Multiply	= 20 * 2	40
/	Divide	= 20 / 2	10
^	Exponent	= 20 ^ 2	400
&	Concatenate	= 20 & 2	202

=	Equals	= 20 = 10	FALSE
>	Greater than	= 20 > 10	TRUE
>=	Greater than or equal to	= 20 >= 10	TRUE
<	Less than	= 20 < 10	FALSE
<=	Less than or equal to	= 20 <= 10	FALSE

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Order of Operations

Excel follows the standard PEMDAS order of operations. This means expressions are performed in the following order:

1	P	Parenthesis	( )
2	E	Exponents	^
3	MD	Multiplication and Division	* /
4	AS	Addition and Subtraction	+ -

Formulas vs. Functions

Formulas and functions are not the same thing. A simple formula is an equation that involves use of operators like + - * / and &. A function is a predefined programmed calculation that has a name, a set of parentheses, and usually has one or more parameters. Complex formulas often combine one or more simple formulas and/or one or more functions.

Sample Formulas

Addition	= A1 + B1	= A1 + 3
Subtraction	= A1 – B1	= A1 – 3
Multiply	= A1 * B1	= A1 * 3
Divide	= A1 / B1	= A1 / 3
Concatenation	= A1 & B1	= “John ” & “Adams”

Sample Functions

Sum	=Sum(A1:A10)	Totals values in A1 through A10.
Average	=Average(A1:A10)	Calculates the average of the values in A1 through A10.
Count	=Count(A1:A10)	Counts the cells with numeric data in A1 through A10.
CountA	=CountA(A1:A10)	Counts the cells with alpha or numeric data in A1 through A10.

Sample Complex Formula

= “Your half of the total is “ & (SUM(A1:A10) / 2) & “.”

Expand the formula bar

When you have a long formula you might want an expanded formula bar so you can see the whole thing. Just click the expand button shown below. After that you can drag the border with the mouse to make it even bigger.

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Absolute, Mixed, and Relative References

When a formula is copied from one cell to another, you have four options for how the formula's cell addresses will be adjusted relative to the new vs. original location. You select the options you want by choosing whether or not to place a $ in front of the row number and/or column letter.

Absolute Reference – nothing changes

Use a $ in front of both the column letter and row number

	A	B	C
1	10		
2		=$A$1	=$A$1
3		=$A$1	=$A$1

No matter where the destination cell is, the row number and the column letter will not change.

In this example, when B2 is copied down to a cell in row 3, the "1" stays a "1" because the $ in front of the row letter makes it absolute.

When B2 is copied across to a cell in column C, the column letter remains an "A" because the proceeding $ makes it absolute.

Relative Row, Absolute Column

Use a $ in front of the column letter but not the row number

	A	B	C
1	10		
2		=$A1	=$A1
3		=$A2	=$A2

Based on the destination cell, the row number can change but the column letter will not change.

In this example, when B2 is copied down to a cell in row 3, the "1" becomes a "2".

When B2 is copied across to a cell in column C, the column letter remains an "A" because the preceding $ makes it absolute.

Absolute Row, Relative Column

Use a $ in front of the row number but not the column letter.

	A	B	C
1	10		
2		=A$1	=B$1
3		=A$1	=B$1

Based on the destination cell, the row number will not change but the column letter can change.

In this example, when B2 is copied down to a cell in row 3, the "1" remains a "1" because the $ in front of the row letter makes it absolute.

When B2 is copied across to a cell in column C, the column letter changes to a "B".

Relative Reference

Do not place a $ in front of the row number and do not place a $ before the column letter.

	A	B	C
1	10		
2		=A1	=B1
3		=A2	=B2

Based on the destination cell, both the row number and the column letter can change.

In this example, when B2 is copied down to a cell in row 3, the "1" becomes a "2".

When B2 is copied across to a cell in column C, the column letter changes to a "B".

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Summary Functions

Sum

Description	Adds all the numbers you specify		
Syntax	SUM(Number1, [Number2]…)		
Arguments	Number1	Required	The first number, cell, or range to be added
	Number2	Optional	The next number, cell, or range to be added
	NumberN	Optional	You can have up 255 number arguments
Example			

	A	B	C
1		January	
2	United States	$ 866,826	
3	China	$ 583,501	
4	Japan	$ 445,808	
5	Germany	$ 338,968	
6			
7	Sum	$ 2,235,103	=SUM(B2:B5)

Average

Description	Returns the average value of a group of numbers		
Syntax	Average(Number1, [Number2]…)		
Arguments	Number1	Required	The first number, cell, or range to be averaged
	Number2	Optional	The next number, cell, or range to be averaged
	NumberN	Optional	You can have up 255 number arguments
Example			

	A	B	C
1		January	
2	United States	$ 866,826	
3	China	$ 583,501	
4	Japan	$ 445,808	
5	Germany	$ 338,968	
6			
7	AVERAGE	$ 558,776	=AVERAGE(B2:B5)

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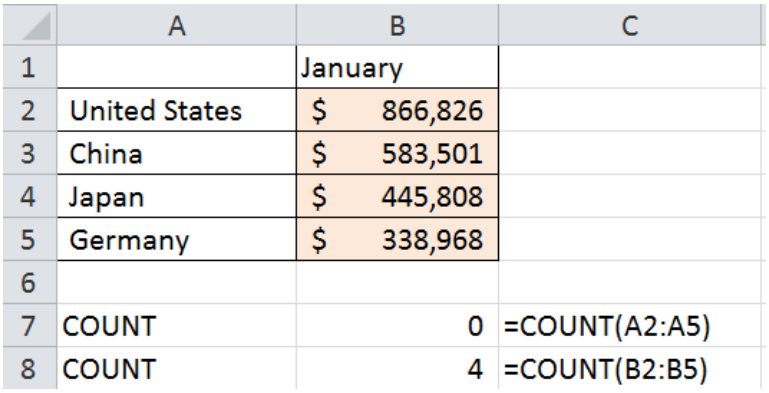
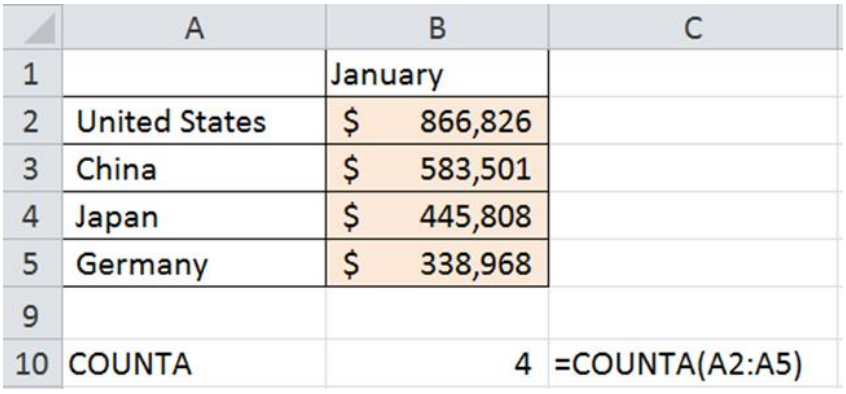
Count

Description	Counts the number of cells that have a numeric value		
Syntax	Count(Value1, [Value2]…)		
Arguments	Value1	Required	The first number, cell, or range to be counted
	Value2	Optional	The next number, cell, or range to be counted
	ValueN	Optional	You can have up 255 number arguments
Example			

	A	B	C
1		January	
2	United States	$ 866,826	
3	China	$ 583,501	
4	Japan	$ 445,808	
5	Germany	$ 338,968	
6			
7	COUNT	0	=COUNT(A2:A5)
8	COUNT	4	=COUNT(B2:B5)

CountA

Description	Counts the number of cells that have a non-blank value		
Syntax	CountA(Value1, [Value2]…)		
Arguments	Value1	Required	The first number, cell, or range to be counted
	Value2	Optional	The next number, cell, or range to be counted
	ValueN	Optional	You can have up 255 number arguments
Example			

	A	B	C
1		January	
2	United States	$ 866,826	
3	China	$ 583,501	
4	Japan	$ 445,808	
5	Germany	$ 338,968	
9			
10	COUNTA	4	=COUNTA(A2:A5)

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Min

Description	Calculates the smallest of a group of values		
Syntax	MIN(Number1, [Number2]…)		
Arguments	Number1	Required	The first number, cell, or range of cells
	Number2	Optional	The next number, cell, or range of cells
	NumberN	Optional	You can have up 255 number arguments

Example

	A	B	C	D	E	F	G
1	1		41.00	=SUM(A1:A7)		10.00	=MAX(A1:A7)
2	2		7.00	=COUNT(A1:A7)		8.00	=LARGE(A1:A7,2)
3	5		5.86	=AVERAGE(A1:A7)		1.00	=MIN(A1:A7)
4	7		7.00	=MEDIAN(A1:A7)		2.00	=SMALL(A1:A7,2)
5	8		8.00	=MODE(A1:A7)			
6	8						
7	10						

Max

Description	Calculates the largest value of a group of values		
Syntax	MAX(Number1, [Number2]…)		
Arguments	Number1	Required	The first number, cell, or range of cells
	Number2	Optional	The next number, cell, or range of cells
	NumberN	Optional	You can have up 255 number arguments

Example

	A	B	C	D	E	F	G
1	1		41.00	=SUM(A1:A7)		10.00	=MAX(A1:A7)
2	2		7.00	=COUNT(A1:A7)		8.00	=LARGE(A1:A7,2)
3	5		5.86	=AVERAGE(A1:A7)		1.00	=MIN(A1:A7)
4	7		7.00	=MEDIAN(A1:A7)		2.00	=SMALL(A1:A7,2)
5	8		8.00	=MODE(A1:A7)			
6	8						
7	10						

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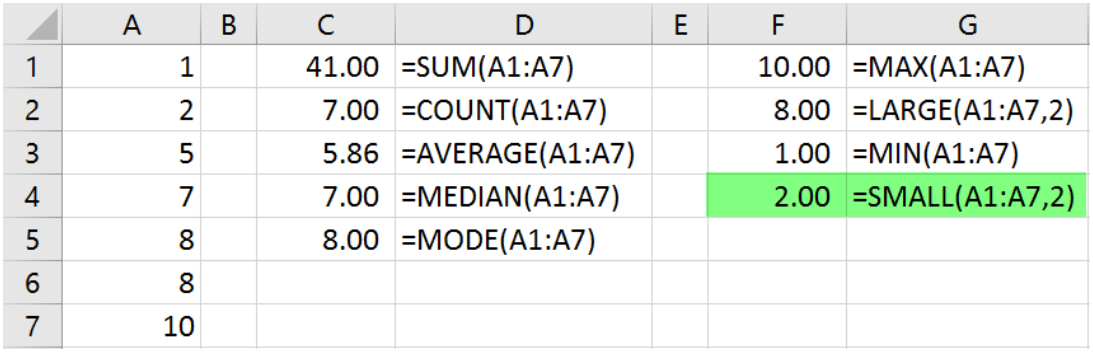
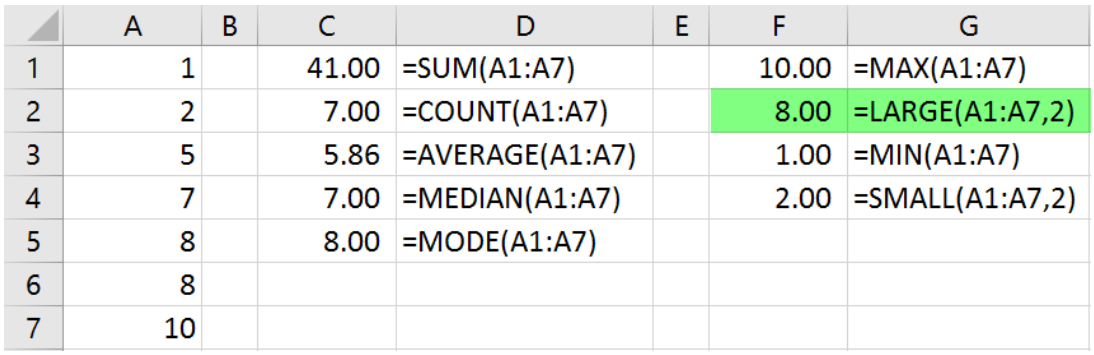
Small

Description	Calculates the Kth smallest value of a group of values		
Syntax	SMALL(Array, K)		
Arguments	Array	Required	The numbers or cells that have the data
	K	Required	The position within the array. If K is 2 the function returns the 2nd smallest value.
Example			

	A	B	C	D	E	F	G
1	1		41.00	=SUM(A1:A7)		10.00	=MAX(A1:A7)
2	2		7.00	=COUNT(A1:A7)		8.00	=LARGE(A1:A7,2)
3	5		5.86	=AVERAGE(A1:A7)		1.00	=MIN(A1:A7)
4	7		7.00	=MEDIAN(A1:A7)		2.00	=SMALL(A1:A7,2)
5	8		8.00	=MODE(A1:A7)			
6	8						
7	10						

Large

Description	Calculates the Kth biggest value of a group of values		
Syntax	LARGE(Array, K)		
Arguments	Array	Required	The numbers or cells that have the data
	K	Required	The position within the array. If K is 2 the function returns the 2nd biggest value.
Example			

	A	B	C	D	E	F	G
1	1		41.00	=SUM(A1:A7)		10.00	=MAX(A1:A7)
2	2		7.00	=COUNT(A1:A7)		8.00	=LARGE(A1:A7,2)
3	5		5.86	=AVERAGE(A1:A7)		1.00	=MIN(A1:A7)
4	7		7.00	=MEDIAN(A1:A7)		2.00	=SMALL(A1:A7,2)
5	8		8.00	=MODE(A1:A7)			
6	8						
7	10						

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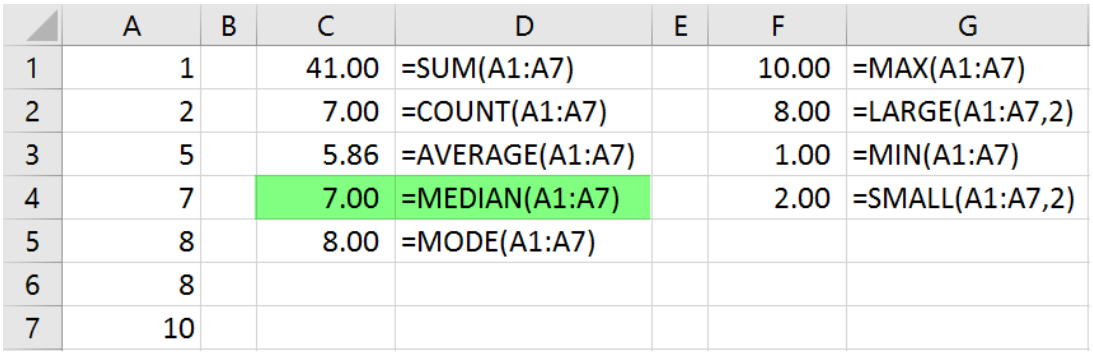
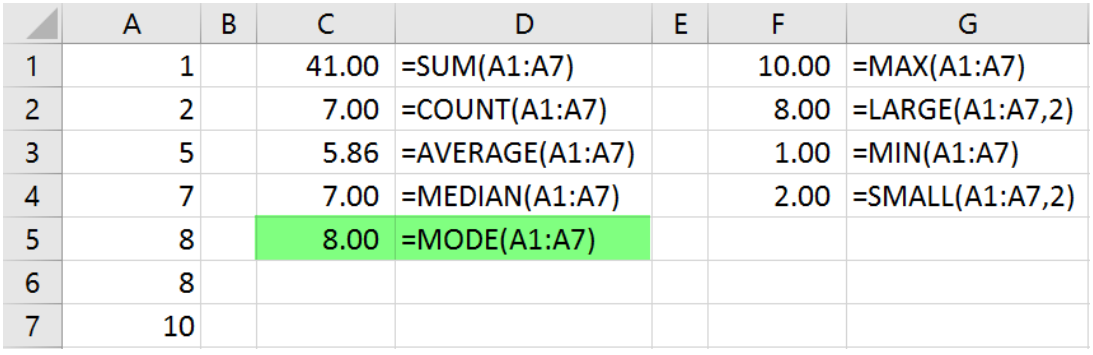
Median

Description	Calculates the number that is in the middle of a set of numbers		
Syntax	MEDIAN(Number1, [Number2]…)		
Arguments	Number1	Required	The first number, cell, or range of cells
	Number2	Optional	The next number, cell, or range of cells
	NumberN	Optional	You can have up 255 number arguments
Example			

Mode

Description	Calculates the number that occurs most frequently in a set of numbers		
Syntax	MODE(Number1, [Number2]…)		
Arguments	Number1	Required	The first number, cell, or range of cells
	Number2	Optional	The next number, cell, or range of cells
	NumberN	Optional	You can have up 255 number arguments
Example			

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SumIf

Description	Sums the number of cells in a range that match a given criteria		
Syntax	SUMIF(Range, Criteria, [Sum_range])		
Arguments	Range	Required	The set of cells to test
	Criteria	Required	The condition the cells must match in order to be added
	Sum_range	Optional	The cells that are to be added. If left blank the cells in the range parameter are used.

Example

	A	B	C
1	**Area**	**Country**	**Sales**
2	NA	United States	$818,669
3	Asia	China	$377,841
4	Asia	Japan	$509,495
5	Europe	Germany	$196,820
6	Europe	France	$149,325
7	Europe	United Kingdom	$174,650
8	SA	Brazil	$174,650
9	Europe	Italy	$174,360
10	Asia	India	$123,434
11	NA	Canada	$145,876

$964,545 =SUMIF(A2:A11,"NA",C2:C11)

CountIf

Description	Counts the number of cells in a range that match a given criteria		
Syntax	COUNTIF(Range, Criteria)		
Arguments	Range	Required	The set of cells to count
	Criteria	Required	The condition the cells must match in order to be counted

Example

	A	B	C
1	**Area**	**Country**	**Sales**
2	NA	United States	$818,669
3	Asia	China	$377,841
4	Asia	Japan	$509,495
5	Europe	Germany	$196,820
6	Europe	France	$149,325
7	Europe	United Kingdom	$174,650
8	SA	Brazil	$174,650
9	Europe	Italy	$174,360
10	Asia	India	$123,434
11	NA	Canada	$145,876

2 =COUNTIF(A2:A11,"NA")

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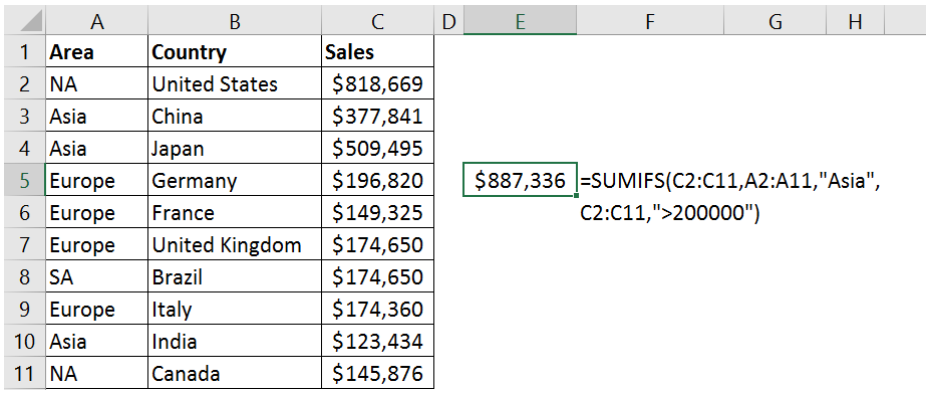
SumIfs

Description	Sums the number of cells in a range that match all the given criteria		
Syntax	SUMIFS(Criteria_range1, Criteria1, [Criteria_range2],[Criteria2]…)		
Arguments	Sum_range	Required	The cells that are to be added
	Criteria_range1	Required	The first set of cells to be evaluated
	Criteria	Required	The criteria the first set must match
	Criteria_range2	Optional	The second set of cells to be evaluated
	Criteria2	Optional	The criteria the first set must match
Notes	The criteria can be literal text or cell references. Literal criteria should be placed inside quotes. Operators like =, >, < can be used as part of the criteria Use ? and * as wildcards to represent one or multiple characters.		
Example			

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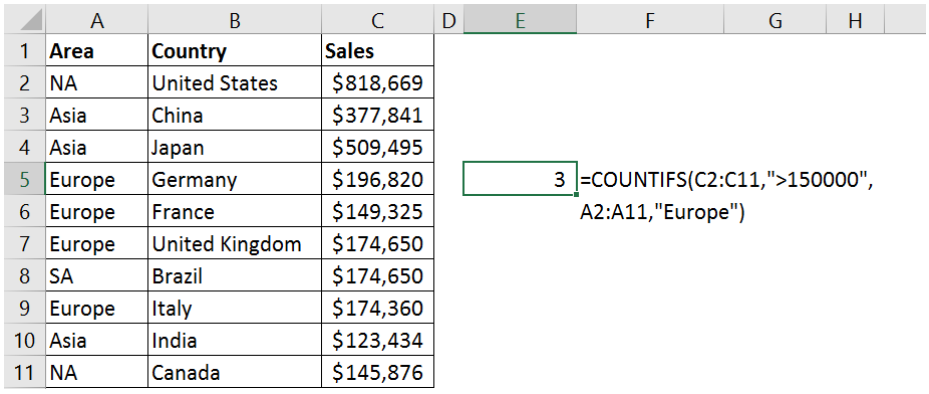
CountIfs

Description	Counts the number of records in a range that match all the given criteria		
Syntax	COUNTIFS(Criteria_range1, Criteria1, [Criteria_range2],[Criteria2]…)		
Arguments	Criteria_range1	Required	The first set of cells to be evaluated
	Criteria	Required	The criteria the first set must match
	Criteria_range2	Optional	The second set of cells to be evaluated
	Criteria2	Optional	The criteria the first set must match
Notes	The criteria can be literal text or cell references. Literal criteria should be placed inside quotes. Operators like =, >, < can be used as part of the criteria Use ? and * as wildcards to represent one or multiple characters.		
Example			

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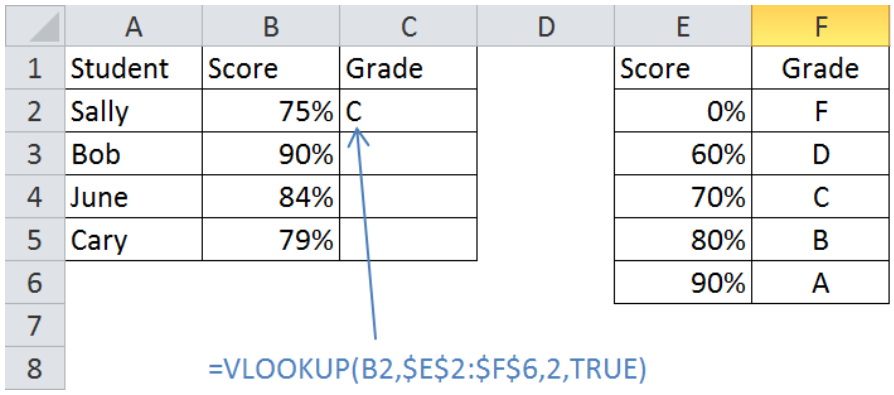
Lookup functions

VLookup

Description	Looks for a value in the first column of a table and then returns the value from the specified column of that same row		
Syntax	VLOOKUP(Lookup_value, Table_array, Col_index_num, [Range_lookup])		
Arguments	Lookup_value	Required	The value to find
	Table_array	Required	The table or range of cells where the value can be found
	Col_index_num	Required	The column number in the table from which the value is to be returned
	Range_lookup	Optional	Leave blank or enter TRUE to find the closest match, enter FALSE to find only an exact match
Notes	If the Range_lookup is blank or TRUE then the data must be sorted in **ascending** order.		
Example			

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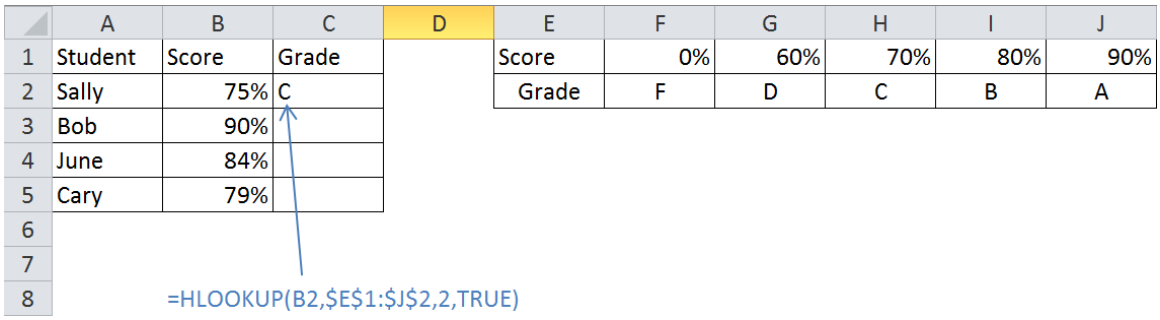
HLookup

Description	Looks for a value in the first row of a table and then returns the value from the specified row of that same column		
Syntax	HLOOKUP(Lookup_value, Table_array, Row_index_num, [Range_lookup])		
Arguments	Lookup_value	Required	The value to find
	Table_array	Required	The table or range of cells where the value can be found
	Row_index_num	Required	The row number in the table from which the value is to be returned
	Range_lookup	Optional	Leave blank or enter TRUE to find the closest match, enter FALSE to find only an exact match
Notes	If the Range_lookup is blank or TRUE then the data must be sorted horizontally in **ascending** order.		
Example			

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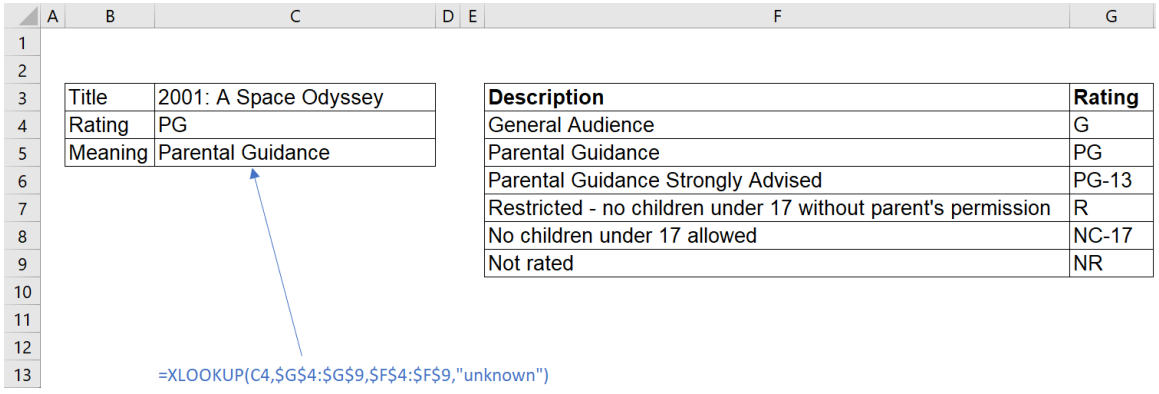
XLookup

Description	Looks for a value in a column and then returns the value from the same row of a corresponding column		
Syntax	XLOOKUP(Lookup_value, Lookup_array, Return_array, [If_not_found], [Match_mode], [Search_mode])		
Arguments	Lookup_value	Required	The value to find
	Lookup_array	Required	The column or range of cells where the value can be found
	Return_array	Required	The column or range of cells where the desired value can be found
	If_not_found	Optional	Value to display if the Lookup_value is not found
	Match_mode	Optional	0 or blank for exact match -1 for exact match or next smaller item 1 for exact match or next larger item 2 for wildcard character match
	Search_mode	Optional	1 or blank for search of first-to-last -1 for search of last-to-first 2 for binary search (sorted in ascending order) -2 for binary search (sorted in descending order)

Example



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Logical functions

If

Description	Evaluates a logical expression. If the expression is true one value is returned, if not another value is returned.		
Syntax	IF(Logical_test, [Value_if_true], [Value_if_false])		
Arguments	Logical_ test	Required	The expression that is either TRUE or FALSE
	Value_if_true	Optional	The value you want returned if the logical expression is TRUE
	Value_if_false	Optional	The value you want returned if the logical expression is FALSE

Example

	A	B	C	D	E
1	**Area**	**Country**	**Sales**	**Over 200K**	
2	NA	United States	$ 818,669	Yes	=IF(C2>200000,"Yes","No")
3	Asia	China	$ 377,841	Yes	
4	Asia	Japan	$ 509,495	Yes	
5	Europe	Germany	$ 196,820	No	

And

Description	Determines if all the arguments are TRUE		
Syntax	AND(Logical1, [Logical2])		
Arguments	Logical1	Required	Expression that results in either TRUE or FALSE
	Logical2	Optional	Expression that results in either TRUE or FALSE
	LogicalN	Optional	Expression that results in either TRUE or FALSE You can have up 255 logical expressions.

Example

I15

	A	B	C	D	E
1	**Area**	**Country**	**Sales**	**Asia and Over 200K**	
2	NA	United States	$ 818,669	FALSE	=AND(A2="Asia",C2>200000)
3	Asia	China	$ 377,841	TRUE	
4	Asia	Japan	$ 509,495	TRUE	
5	Europe	Germany	$ 196,820	FALSE	

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Or

Description	Determines if any of the arguments are TRUE		
Syntax	OR(Logical1, [Logical2])		
Arguments	Logical1	Required	Expression that results in either TRUE or FALSE
	Logical2	Optional	Expression that results in either TRUE or FALSE
	LogicalN	Optional	Expression that results in either TRUE or FALSE You can have up 255 logical expressions.

Example

	A	B	C	D	E
1	**Area**	**Country**	**Sales**	**Asia OR Over 200K**	
2	NA	United States	$ 818,669	TRUE	=OR(A2="Asia",C2>200000)
3	Asia	China	$ 377,841	TRUE	
4	Asia	Japan	$ 509,495	TRUE	
5	Europe	Germany	$ 196,820	FALSE	
6	Europe	France	$ 149,325	FALSE	
7	Europe	United Kingdom	$ 174,650	FALSE	
8	SA	Brazil	$ 210,637	TRUE	
9	Europe	Italy	$ 174,360	FALSE	
10	Asia	India	$ 123,434	TRUE	
11	NA	Canada	$ 145,876	FALSE	

Not

Description	Changes FALSE to TRUE and TRUE to FALSE		
Syntax	NOT(Logical)		
Arguments	Logical	Required	Expression that results in either TRUE or FALSE

Example

	A	B	C	D	E
1	**Area**	**Country**	**Sales**	**Not Asia**	
2	NA	United States	$ 818,669	TRUE	=NOT(A2="Asia")
3	Asia	China	$ 377,841	FALSE	
4	Asia	Japan	$ 509,495	FALSE	
5	Europe	Germany	$ 196,820	TRUE	

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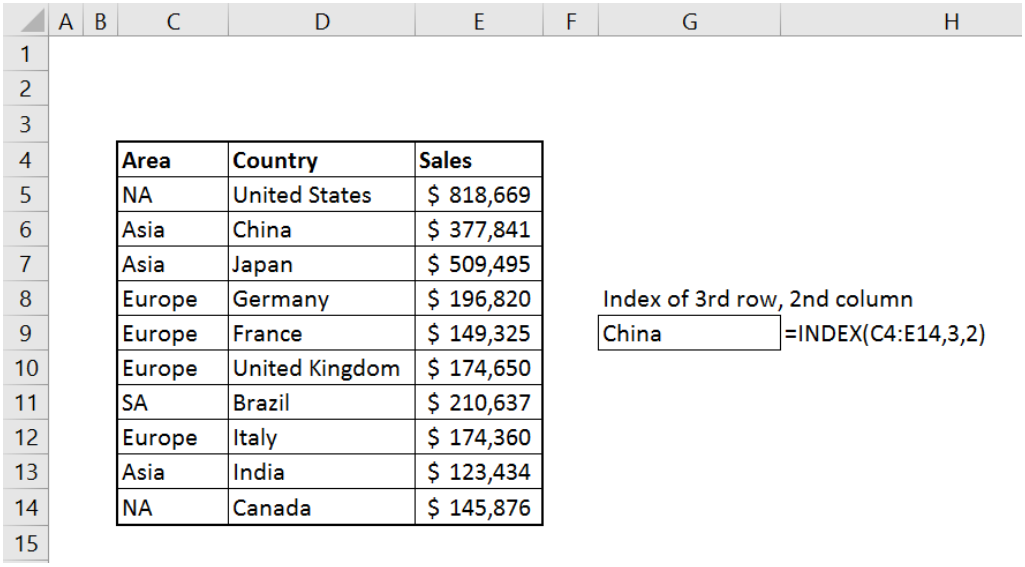
Advanced functions

Index

Description	Determines the value from a table or range of cells that is at the intersection of the specified row number and column number.		
Syntax	INDEX(Array, Row_num, [Column_num])		
Arguments	Array	Required	The table or range of cells
	Row_num	Required	Specifies the desired row number, relative to the range of cells.
	Column_num	Optional	Specifies the desired column number, relative to the range of cells.
Example			

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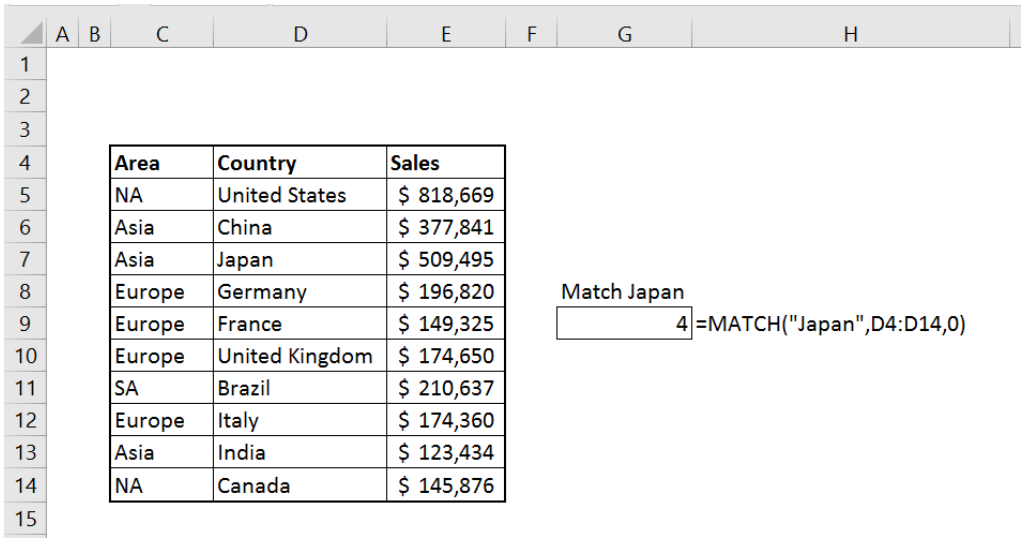
Match

Description	Calculates the position of a value in a range of cells		
Syntax	MATCH(Lookup_value, Lookup_array, [match_type])		
Arguments	Lookup_value	Required	The value you want to find
	Lookup_array	Required	The range of cells that will contain the lookup_value
	Match_type	Optional	Leave blank or enter 1 to find the closest value without going over. The data must be sorted in **ascending** order. Enter 0 to find an exact match. Enter -1 to find the closest value without going under. The data must be in **descending** order.

Example



Area	Country	Sales
NA	United States	$ 818,669
Asia	China	$ 377,841
Asia	Japan	$ 509,495
Europe	Germany	$ 196,820
Europe	France	$ 149,325
Europe	United Kingdom	$ 174,650
SA	Brazil	$ 210,637
Europe	Italy	$ 174,360
Asia	India	$ 123,434
NA	Canada	$ 145,876

Match Japan
4 =MATCH("Japan",D4:D14,0)

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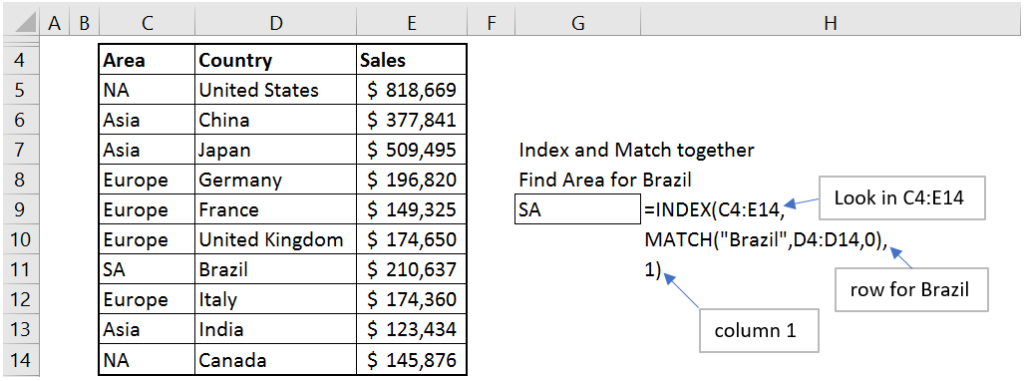
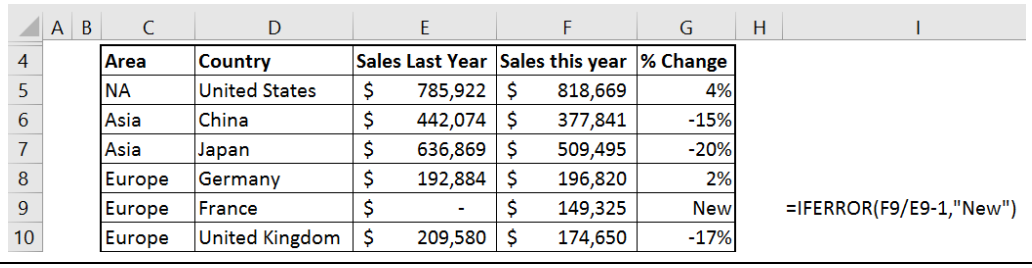
Complex formula using Index and Match

Description	You can use Index and Match to find data in one column based on the location of a value in another column.
Syntax	INDEX(Array, MATCH(Lookup_value, Lookup_array, [match_type]), Column_num)
Example	

IfError

Description	If a value results in an error, displays an alternate value instead.		
Syntax	IFERROR(Value, Value_if_error)		
Arguments	Value	Required	The value you want to display, unless it results in an error.
	Value_if_error	Required	The alternate value to use instead.
Example			

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