

SBCUSD – IT Training Program



Excel

MS Excel II

Fill Downs, Sorting, Functions, and More



SAN BERNARDINO CITY
UNIFIED SCHOOL DISTRICT

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Recent Changes to this Document

01/17/2019 Minor Changes made

4/16/19 Page break fixes

NUMBER FORMATS

Excel is a powerful data analyzer, however, it's computational power can be limited if we fail to format the data in the sheet properly. There is a great difference between simple text, versus a number, dates, time, or currencies etcetera.

GENERAL	The default number format that Excel applies when you type a number. For the most part, numbers that are formatted with the General format are displayed just the way you type them. However, if the cell is not wide enough to show the entire number, the General format rounds the numbers with decimals. The General number format also uses scientific (exponential) notation for large numbers (12 or more digits).
NUMBER	Used for the general display of numbers. You can specify the number of decimal places that you want to use, whether you want to use a thousand separator, and how you want to display negative numbers.
CURRENCY	Used for general monetary values and displays the default currency symbol with numbers. You can specify the number of decimal places that you want to use, whether you want to use a thousand separator, and how you want to display negative numbers.
ACCOUNTING	Use when your user looks to choose multiple responses within a relatively small amount of choices (2 to 10). Simple validation parameters dealing how many selections can be made.
DATE	Displays date and time serial numbers as date values, according to the type and locale (location) that you specify. Date formats that begin with an asterisk (*) respond to changes in regional date and time settings that are specified in Control Panel. Formats without an asterisk are not affected by Control Panel settings.
TIME	Displays date and time serial numbers as time values, according to the type and locale (location) that you specify. Time formats that begin with an asterisk (*) respond to changes in regional date and time settings that are specified in Control Panel. Formats without an asterisk are not affected by Control Panel settings.
PERCENTAGE	Multiplies the cell value by 100 and displays the result with a percent (%) symbol. You can specify the number of decimal places that you want to use.
TEXT	Treats the content of a cell as text and displays the content exactly as you type it, even when you type numbers.

AUTO FILL AND FLASH FILL

SIMPLE REPEAT

1. Place your cursor in the **cell** in which you wish to repeat its value.
2. Place your mouse on the **Autofill** Handle of the cursor (+).
3. Click and Drag down over **numerous cells** and let go.

You will have quickly repeated the value in the field.

Related Video

[Auto Fill and Flash Fill](#)

FILL DOWN COMMON SERIES

1. Place your cursor in the **cell** which maintains a very common data structure.

Example: a date (7/12/2017)

2. Place your mouse on the **Autofill** Handle of the cursor.
3. Click and Drag down over **numerous cells** and let go.

You will have quickly auto filled many dates in succession.

10896	Dec	Midwest
10898	Dec	Midwest
10904	Dec	Midwest
10906	Dec	New England

FILL DOWN CUSTOM SERIES

1. Enter a value into a single **cell**, and then in the **cell below**, enter the **next successive value** in which together the two data structures represent the **pattern** you wish to repeat.

Example: 1/1/2017 and below it, 1/8/2017 (where both dates represent a Sunday)

2. **Highlight** both cells together.
3. Place your mouse on the **Autofill** Handle of the cursor.
4. Click and Drag down over **numerous cells** and let go.

FLASH FILL SERIES

1. Place your cursor in an **empty column** to the right of the data that needs to be re-structured (you may have to create this column).
2. Type the **desired structure** for the data and press enter.
3. In the **next cell down**, again type the desired data structure and press enter.
4. **Highlight** both cells together which maintain the desired data structure.

	D	E	F
	Phone		Categ
	3109855118	(310) 985-5118	Meat
	9098586622	(909) 858-6622	Soda
	7149595755		It
	2125589486		fruit

5. Place your mouse on the **Autofill** Handle of the cursor.
6. Click and Drag down over **numerous cells** and let go.
7. Click on the **Auto Fill Options** button right next to the Autofill Handle and choose **Flash Fill**.

SORTING

NOTE: Make sure row 1 in your spreadsheet or the first row in the table/range you wish to sort is formatted as a header row. Sorts only work on contiguous rows in a range. Sorts will not work in a range with empty rows or empty cells in the column you're sorting.

BASIC SORTING – SINGLE COLUMN

1. Place your cursor in a column that you wish to **sort** its data.
2. In the **Home** tab, click on the **Sort & Filter** button and choose **Sort A to Z**.

NOTE: Depending on the column's data type definition (Text, Number, Date, Etc.) it will sort from smallest to largest (numbers) alphabetically for text, newest to oldest (dates).

SORT MULTIPLE COLUMNS

1. Place your cursor anywhere in a **column heading** that you wish to **sort** its data.
2. Click on the **Sort & Filter** button and choose **Custom Sort...**
3. Under **Column**, click on the **Sort by** drop-down list and choose which column you wish to sort.
4. Under **Order**, choose which order you wish to sort by.
5. Click on the **Add Level** button and in the **Sort by** drop-down and choose **another column** to sort by.
6. Under **Order**, choose which order you wish to sort by.
7. Click on **OK**.

Related Video

[Sorting and Filtering](#)

Your first column is sorted and the second column is sorted within the first sort.

SORT CUSTOM ORDER

1. Place your **cursor** anywhere in a column that you wish to sort its data.
2. Click on the **Sort & Filter** button and choose **Custom Sort...**
3. Under **Column**, click on the **Sort by** drop-down list and choose which column you wish to sort.
4. Under **Order**, choose **Custom list...**
5. In the **List entries**: build your custom list by typing one instance of each **data type** and pressing **enter** between each one (list of how you want the data sorted).
You'll end up with a custom data sort order.
6. Click on **Add**.
7. Click on **OK** and **OK** again.

FILTERING

Filtering is about showing only records that fit certain criteria.

NOTE: Make sure row 1 in your spreadsheet or the first row in the table/range you wish to sort is formatted as header row.

FILTERING BY VALUE

1. Click in a **column heading** you wish to filter.
2. Click on the **Sort & Filter** button and choose **Filter**.

B	C	D	E
EmployeeID	Month	Region	EmployeeName
40549	Jan	New England	...
40565	Jan	Midwest	...

You will see Auto Filter down arrows in your header rows.

3. Click on the **Filter** button in the column you wish to filter.
4. Remove the check mark for **Select All**.
5. Place a check mark on the **data type** you wish to filter for.
6. Click on **OK**.

MULTIPLE FILTERS

1. Create a desired **filter** on a column (see above).
2. Click on the **Filter** button for another column you wish to filter.
3. Choose the **filter** you wish to create.

Related Video

[Filtering Data](#)

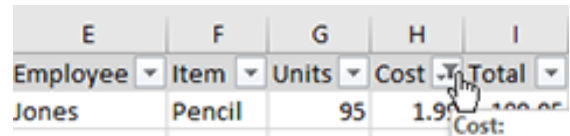
You have filtered once for data criteria in the first step, and then within this same data, added an additional filter.

CONDITIONAL FILTERING

1. Click in a **column** you wish to filter.
2. Click on the **Sort & Filter** button and choose **Filter**.

You will see Auto Filter down arrows in your header row.

3. Click on the **Filter** button for a column which



E	F	G	H	I
Employee	Item	Units	Cost	Total
Jones	Pencil	95	1.98	189.00

maintains **number values**.

4. Point to Number Filters and choose Less Than Or Equal To...
5. Enter a **value**.
6. Click on **OK**.

Note: To clear your filter, click on the filter icon on the auto filter button for the column you have a filter applied and choose Clear Filter From "column name". To remove the auto filter feature from your headings, click on the Sort & Filter button and choose Filter.

BASIC FUNCTIONS AND FORMULA DEVELOPMENT

At its heart, Excel is a giant calculator. In fact, a simple way to think about Excel is to consider each cell in a worksheet like an individual calculator. An Excel spreadsheet has millions of cells, which means you have millions of individual calculators to work with. Not only that, but you can create formulas that link different cells together (e.g. add the value in this cell to the value in that cell).

Interesting fact: up to 1,048,576 rows and 16,384 columns. Column width can be 255 characters.

FORMULA BASICS

All formulas begin with the = character. This alerts excel the entry is a formula, not a value entered.

Example to Adding: =SUM(5,5) or (5+5) The resulting cell value will be 10

Example to Subtraction: =SUM(a4-a3), Multiplication =SUM(a3*a4), Division =SUM(a3/a4)

Related Videos

[Creating Formulas](#)

[Formulas and Cell Referencing](#)

FORMULA SYNTAX

A formula can also contain any or all of the following: functions, references, operators, and constants.



Functions: The SUM Function allows you to do basic arithmetic within its parentheses.

References: D45 returns the value currently in cell D45, E45 returns the current value of cell E45, etc.

Operators: The * (asterisk) operator multiplies numbers.

Constants: Numbers or text values entered directly into a formula, such as .0825.

REFERENCING CELL RANGES IN FORMULAS

Referencing **non-contiguous** cells – A2,T66,L155,C5

Referencing a **contiguous vertical** range (range in a column) – C2:C54

Referencing a **contiguous “table”** range (rows and columns together) – C4:M276

Referencing **multiple cells and or ranges** - A2,T66,L155,C5,C4:M276

Note: Wherever your cursor is located in the sheet, the Formula Bar will show you it's true contents. This will confirm whether or not the value in the cell is a static value entered in the cell or a value that is the result of a formula otherwise hiding in the cell.

COMMON FUNCTIONS

SUM

1. Place your cursor in **cell K66** below the column of units sold (number values).

Example: a column of number values in column K which span from cells K3 to K65.

2. Type =SUM(K3:K65).

Where K3 is the beginning of the numbers to be added and K65 is the final number to be added.

3. Press **enter**.

Related Videos

[SUM and SUMIF formulas](#)

[AVERAGE Formula](#)

[COUNTIF Formula](#)

[COUNTIFS Formula](#)

AVERAGE

=AVERAGE(cellref:cellref)

Returns the average of the numbers found in the cell range defined.

MIN

=MIN(cellref:cellref)

Returns the minimum value of the numbers found in the cell range defined.

MAX

=MAX(cellref:cellref)

Returns the maximum value of the numbers found in the cell range defined.

COUNTIF, COUNTIFS

=COUNTIF(cellref:cellref,"criteria")

Returns the number of entries that comply with the defined criteria in the referenced range.

=COUNTIFS(cellref:cellref,"criteria", cellref:cellref,"criteria", cellref:cellref,"criteria")

Returns the number of entries that comply with each defined criteria in each referenced range.

FORMULAS - ABSOLUTE CELL REFERENCING

FORMULAS AND AUTOFILL

Consider the formula below which we could use to get the product of two cells holding numeric values.

1. In **L3** (Sub Total), type **=SUM(i3*K3)**.
2. **Autofill** the above formula down the column it lives in.

Nicely enough the row reference number in the formula increases by one automatically each time you fill down a row, again and again.

3. Under the **Tax column** cell **M3**, type **=sum(L3*.0800)** to get the tax amount of your subtotal.
 - a. **Fill down** to row 65.

NOTE - This feature allows us to autofill formulas that should change slightly relative to each column or row they are found in.

Related Video

[Absolute Cell Referencing](#)

FORMULAS WITH ABSOLUTE REFERENCING

Consider this formula which we could use to generate the taxable value on an item sold;
=sum(L3*.0800)

NOTE – We should rarely place numeric values in formulas. If we autofill the above formula; **=sum(L3*.0800)**, the result would be a Tax Column of possibly thousands of rows and thousands of formulas – each one containing the value of .0800. However, the tax rate may change tomorrow.

1. Place the **tax rate** of .0825 in cell T10.
2. Now **rewrite** the above formula without referencing the tax rate value, reference the cell which holds the tax rate value.

Example: **=SUM(L3*T10)**

(T10 being the cell you chose to hold your tax value)

Now if the tax rate changes you don't have thousands of formulas to change – only the value in cell T10.

3. Autofill this formula down the **Tax Column**.

You'll notice a problem. The reference to T10 changes as you fill down to T11, T12, T13 and so on. But your tax rate figure is sitting absolutely in cell T10.

4. **Change** the above formula to; **=SUM(L3*\$T\$10)**.

The dollar sign (\$) will lock the row reference in the formula at 10. Now when you fill down the row the reference of T10 will not increase by 1 with each row when filling down.

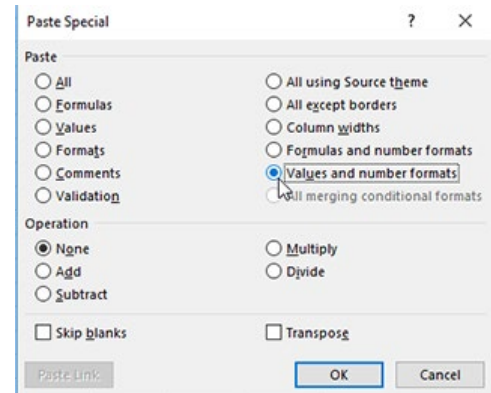
NOTE – Ultimately since the tax value will forever stay in cell T10, you'll actually want to lock both the column and row reference like this; **=SUM(L3*\$T\$10)**.

PASTE SPECIAL

When looking at data in a excel sheet or cell you may simply see a value alone. However, that cell may contain a value, visual formats, as well as a formula. With paste special you can choose which one of these attributes you paste.

PASTING INDIVIDUAL ATTRIBUTES

1. **Highlight** a range of cells which maintain values, visual formats (borders and shading, font, etc.), as well as a formula.
2. Right-click on the highlighted range and choose **Copy**.
3. Right-click in the cell where you wish to **paste**.
4. Point to Paste Special and choose Paste Special.
5. In the Paste Special window, **choose** from one of these:



FORMATS

Your resulting paste job has only pasted the **visual** formats.

VALUES

Your resulting paste job pastes only the **values** in the cells.

FORMULAS

Your resulting paste job paste job has only pasted the **formulas**.

VALUES AND NUMBER FORMATS

Your resulting paste job pastes the **values** and keeps the **number** formatting.

TRANSDPOSE RANGE

Pastes the copied range, but **switches** what was **rows** to **columns** and vice versa.

COLUMN WIDTHS

1. **Highlight** a column which maintains a width you'd like to apply to other columns.
2. Right-click on the highlighted range and choose **Copy**.
3. Highlight the column you wish to replicate the column width to, right-click in the column, point to **Paste Special** and choose **Paste Special**.
4. In the Paste Special window, choose **Column widths**.
5. Click on **OK**.

Your resulting paste job has replicated the column width.

SUPPORT FOR MICROSOFT EXCEL

You may contact the following office for assistance with Microsoft Excel:

Training – Training Specialists

techtraining@sbcusd.com

(909) 386-2550

OR

Check out the [Microsoft Excel Self Help Video Library](#)

PRACTICE FORMULAS

Excel File = Example Spreadsheet.xlsm, ask techtraining@sbcusd.com for this file to practice the following:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	First Name	Middle	Last Name	Phone	Purchase Date	Product	Item	Cost	Price	Markup	Units Sold	Sub Total	Tax	Total	Status	Stock				
2	Edward	Ann	Norris	2135896114	1/26/2018	Vegetables	Corn	0.44	2.33	PRICE - COST / COST	26	PRICE * UNITS SOLD	SUBTOTAL * .0825	SUBTOTAL + TAX	Handling	87				
3	Charles	Alan	Neal	9156988211	1/13/2018	Meat	Beef	8	15		21				Handling	22				
4	Eriberto	Ann	Ramirez	9513236955	8/21/2018	Fruit	Oranges	101.22	122.87		55				Transit	32				
5	Raymond	Ann	Rocha	2135896114	6/5/2018	Vegetables	Corn	0.68	2.33		35				Delivered	69				
6	Angel	Ann	Pelayo	2135896114	2/16/2018	Vegetables	Corn	0.78	2.33		71				Handling	11				
7	Donovan	B	Silas	7149595755	5/2/2018	Meat	Chicken	4.65	7.89		55				Transit	99				
8	Sheik	Alan	Sahadat	9156988211	5/8/2018	Meat	Beef	9.99	12.66		65				Handling	18				
9	Mario	Ann	Sanders	2135896114	3/31/2018	Vegetables	Corn	0.33	2.33		65				Delivered	87				tr
10	Lester	A	Moten	2125894986	11/13/2018	Fruit	Apples	14.85	19.88		5				Delivered	263				t10
11	Brian	Thomas	Lozano	2125893365	4/6/2018	Vegetables	Peas	41.57	55.72		32				Delivered	49				
12	Ignacio	P	Toscano	7143239636	9/18/2018	Soda	Coke	1011.87	1204.22		21				Delivered	122				
13	Alejandro	Ann	Munoz	9098586622	1/25/2018	Soda	Coke	9.08	23.88		65				Delivered	223				
14	Peter	Thomas	Kroll	2125893365	9/11/2018	Vegetables	Peas	39.56	55.72		54				Returned	19				
15	Richard	Lynn	McDowell	3105458999	8/7/2018	Fruit	Apples	4.98	6.11		11				Delivered	41				
16	Doug	Alan	Wheeler	9156988211	7/24/2018	Meat	Beef	7.25	12.66		54				Transit	51				
17	Vigen	Ann	Nikol	9098586622	3/25/2018	Soda	Coke	15.33	23.88		18				Transit	56				
18	Gregory	Ben	Torres	8189596232	9/25/2018	Vegetables	Peas	8.54	11.34		6				Returned	9				
19	Jose	Ann	Pelicula	9513236955	2/13/2018	Fruit	Apples	98.99	122.87		23				Transit	82				
20	Gary	Carry	Rivera	7148589654	3/16/2018	Fruit	Apples	26.78	33.56		78				Delivered	44				
21	Richard	Carry	Duncan	7148589654	10/30/2018	Fruit	Bananas	28.55	33.56		54				Delivered	223				
22	Jonathan	B	Garcia	7149595755	10/9/2018	Meat	Chicken	5.88	7.89		11				Returned	52				
23	Leopoldo	P	Parra	7143239636	8/14/2018	Soda	Coke	985.33	1204.22		41				Handling	85				
24	Harrison	P	Ward	7143239636	10/23/2018	Soda	Coke	1012.55	1204.22		14				Handling	18				
25	Curtis	Ryan	Jackson	3109855118	3/19/2018	Meat	Beef	38.44	49.99		11				Handling	111				
26	David	Ann	Manzano	2135896114	4/26/2018	Vegetables	Corn	0.56	2.33		54				Returned	112				
27	Moses	Carry	Lopez	7148589654	2/19/2018	Fruit	Bananas	6.11	33.56		6				Transit	27				
28	Sergio	P	Delgadillo	7143239636	1/27/2018	Soda	Coke	755.11	1204.22		65				Delivered	65				

TOTAL UNITS SOLD

At cell location K66, total all the numbers above.

=SUM(K2:K65)

SUB TOTAL

At cell location L3, generate a sub total for the price for all units sold

=SUM(I3*K3)

COMPUTE TAX

At cell location M3, generate the tax amount

=SUM(L3*T\$10) T10 holds your tax rate, the \$ allows fill down to work without changing 10

TOTAL

At cell location N3, generate the total

=SUM(L3,M3)

MARKUP

At cell location J3, determine markup percentage

=SUM(I3-H3)/H3