

# Excel Tips

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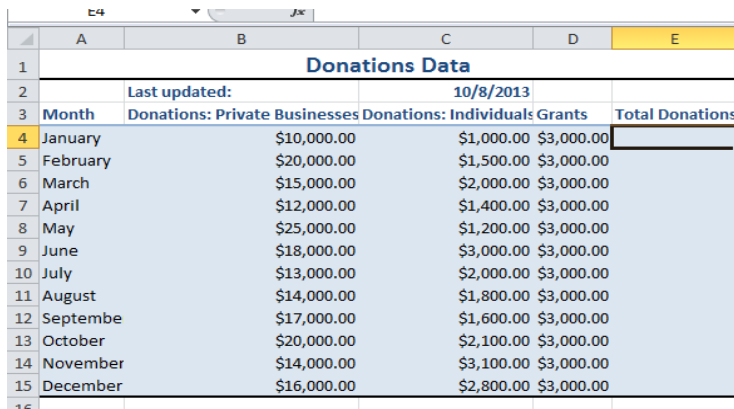
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# Cell Referencing

All data in Excel is stored in cells of worksheets. **Worksheets** are similar in concept to tables with columns and rows. A **cell** is the point where a column and row meet. When referencing data in a “cell” of a worksheet, you use a Cell Reference. A **cell reference** consists of a combination of the column letter and row number that intersect to form the cell.

In Excel, there are two main types of cell references: relative cell references and absolute cell references. **Relative cell references** identify the location of a cell by its column letter and row number combination, with no added symbols. In the screenshot below, the currently selected cell would be referenced as **E4**, which is a relative cell reference. Relative cell references are the default method of referencing cells in Excel.



	A	B	C	D	E
1	<b>Donations Data</b>				
2	Last updated:		10/8/2013		
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	
5	February	\$20,000.00	\$1,500.00	\$3,000.00	
6	March	\$15,000.00	\$2,000.00	\$3,000.00	
7	April	\$12,000.00	\$1,400.00	\$3,000.00	
8	May	\$25,000.00	\$1,200.00	\$3,000.00	
9	June	\$18,000.00	\$3,000.00	\$3,000.00	
10	July	\$13,000.00	\$2,000.00	\$3,000.00	
11	August	\$14,000.00	\$1,800.00	\$3,000.00	
12	September	\$17,000.00	\$1,600.00	\$3,000.00	
13	October	\$20,000.00	\$2,100.00	\$3,000.00	
14	November	\$14,000.00	\$3,100.00	\$3,000.00	
15	December	\$16,000.00	\$2,800.00	\$3,000.00	

**Absolute cell references** also reference cells by a combination of column letter and row number, but these references include a dollar symbol (\$) before the column letter and before the row number. In the screenshot above, the currently-selected cell would be referenced as **\$E\$4** if I wanted to use an absolute cell reference.

## Using Relative vs. Absolute Cell Referencing

Cell references are frequently used in Excel formulas and functions. When relative cell references are used in formulas or functions, if the formula/function is copied from the original cell to other cells, the relative cell references will automatically change to reflect the new location of the formula/function. When absolute cell references are used in formulas or functions, then if the formula/function is copied from the original cell to other cells, the absolute cell references will not change—they will retain the original cell reference. Note that a combination of relative and absolute references can be used in formulas and functions.

## Relative Cell Referencing Example

In this example, we have a set of data for all the donations a company has received from private donors, individual donors, and grants. We want to calculate the total donations each month and will use relative referencing to do this.

1. In this example we want to total the donations from the private businesses, individuals, and grants. To do this, we will enter the formula shown below in cell E4 to calculate the desired value. Note that the references to B4, C4, and D4 are all relative cell references.

Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
January	\$10,000.00	\$1,000.00	\$3,000.00	=B4+C4+D4
February	\$20,000.00	\$1,500.00	\$3,000.00	
March	\$15,000.00	\$2,000.00	\$3,000.00	
April	\$12,000.00	\$1,400.00	\$3,000.00	
May	\$25,000.00	\$1,200.00	\$3,000.00	
June	\$18,000.00	\$3,000.00	\$3,000.00	
July	\$13,000.00	\$2,000.00	\$3,000.00	
August	\$14,000.00	\$1,800.00	\$3,000.00	
September	\$17,000.00	\$1,600.00	\$3,000.00	
October	\$20,000.00	\$2,100.00	\$3,000.00	
November	\$14,000.00	\$3,100.00	\$3,000.00	
December	\$16,000.00	\$2,800.00	\$3,000.00	

2. Click enter and the total donations for the month of January will be calculated and displayed in cell E4. Notice that the formula we just entered can be viewed in the formula bar.

Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00
February	\$20,000.00	\$1,500.00	\$3,000.00	

3. Now we want to copy this same formula down the column so that the remaining month's totals can be similarly calculated. To do so, locate the fill handle in the lower right corner of cell E4.

Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00
February	\$20,000.00	\$1,500.00	\$3,000.00	
March	\$15,000.00	\$2,000.00	\$3,000.00	
April	\$12,000.00	\$1,400.00	\$3,000.00	
May	\$25,000.00	\$1,200.00	\$3,000.00	
June	\$18,000.00	\$3,000.00	\$3,000.00	

4. Now click and drag the fill handle over the cells you wish to copy the formulas into. Once you release your mouse, the cells you wished to “fill” will contain a copy of the formula using the relative cell references. Notice how the cell references change to reflect the current row. This is a result of using relative cell references.

E4      fx      =B4+C4+D4					
	A	B	C	D	E
1	<b>Donations Data</b>				
2		Last updated:	10/2/2013		
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00
8	May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00
9	June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00
10	July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00
11	August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00
12	September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00
13	October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00
14	November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00
15	December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00
16					

## Absolute Cell Referencing Example

**Absolute referencing** is when you do not want a cell reference to change and you want the specific value in that cell to stay fixed. Unlike in a relative reference, when you use the fill handle or copy/paste a formula that uses absolute references, the absolute cell references for that formula will not change.

For this example, we want to calculate the percent of total donations for each month and store these percentages in column F. In order to do this we will have to create a formula that divides our total monthly donations by our total donations for the year. The total donations for the year is currently stored in cell E16, which shows the total to be \$253,500.00.

	A	B	C	D	E	F
1	<b>Donations Data</b>					
2		Last updated:	11/12/2013			
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations	Percent of Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00	
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00	
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00	
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00	
8	May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00	
9	June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00	
10	July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00	
11	August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00	
12	September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00	
13	October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00	
14	November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00	
15	December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00	
16	<b>TOTALS</b>	<b>\$194,000.00</b>	<b>\$23,500.00</b>	<b>\$36,000.00</b>	<b>\$253,500.00</b>	

1. In our first month, January, we will enter a formula in F4 that divides January's total donations (stored in cell E4) by our total donations for the year (stored in cell E16). However, when we subsequently copy this formula down the column to calculate the percentages for the other months, we want the reference to the total donations for the year (in cell E16) to remain the same. Therefore an absolute cell reference is used for the total donations for the year:  $\$E\$16$ .

SUM					
=E4/\$E\$16					
	A	B	C	D	E
1	<b>Donations Data</b>				
2		Last updated:	11/12/2013		
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00
8	May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00
9	June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00
10	July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00
11	August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00
12	September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00
13	October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00
14	November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00
15	December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00
16	TOTALS	\$194,000.00	\$23,500.00	\$36,000.00	\$253,500.00

2. Again, use the fill handle to repeat the formula for the next months. (See steps 3 and 4 in previous example for how to use the fill handle.)

	A	B	C	D	E	F
1	<b>Donations Data</b>					
2		Last updated:	11/12/2013			
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations	Percent of Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00	0.055226824
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00	0.096646943
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00	0.078895464
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00	0.06469428
8	May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00	0.115187377
9	June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00	0.094674556
10	July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00	0.071005917
11	August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00	0.074161736
12	September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00	0.085207101
13	October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00	0.099013807
14	November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00	0.079289941
15	December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00	0.085996055
16	TOTALS	\$194,000.00	\$23,500.00	\$36,000.00	\$253,500.00	1

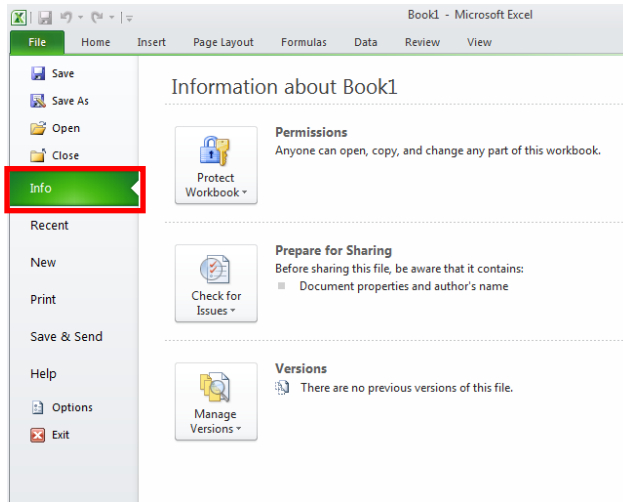
3. Notice how the reference for cell E16 has not been changed. This is a result of using an absolute reference. Also note that we clicked the "%" button on the Excel ribbon in order to format all the percentages to include the "%" sign.

F5					
=E5/\$E\$16					
	A	B	C	D	E
1	<b>Donations Data</b>				
2		Last updated:	11/12/2013		
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00
8	May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00
9	June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00
10	July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00
11	August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00
12	September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00
13	October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00
14	November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00
15	December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00
16	TOTALS	\$194,000.00	\$23,500.00	\$36,000.00	\$253,500.00

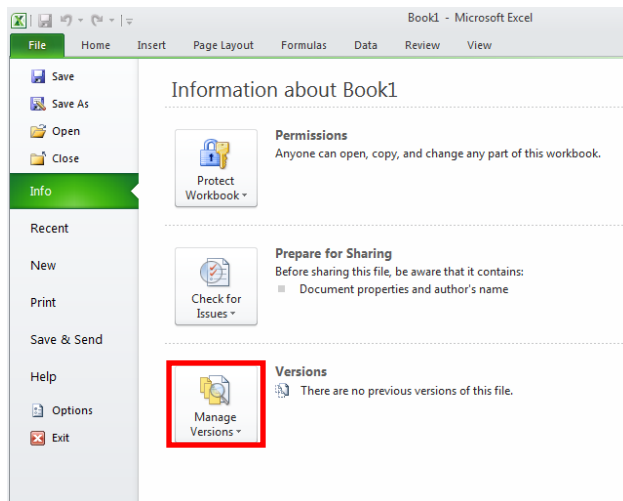
# Recovering Unsaved Workbooks

It's painful when you accidentally close a workbook without saving it, then regret it later. To avoid this scenario, remember to save your changes often. However, you can sometimes recover your work.

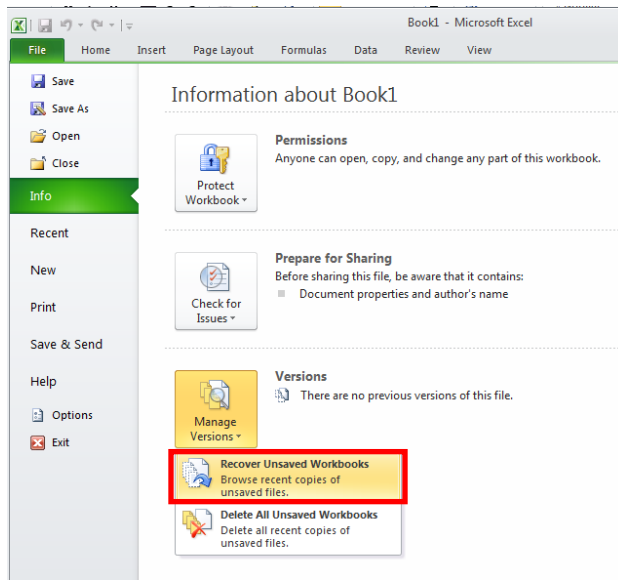
1. Click on the File button
2. Choose Info on the left side of the page.



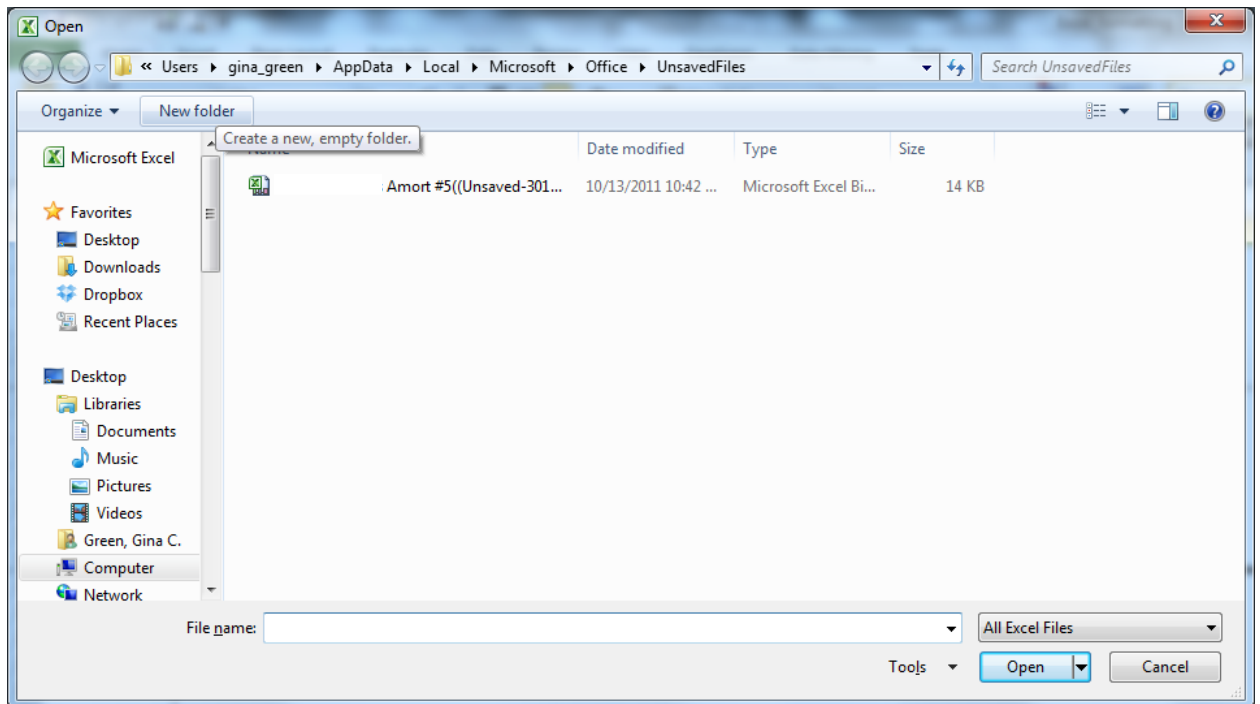
3. Click the Manage Versions button.



4. Choose Recover Unsaved Workbooks.



5. You'll be presented with a list of workbooks with changes that were unsaved. Choose the workbook you want to recover and click open. Then you will be able to save the workbook.



# Identifying Duplicate Values

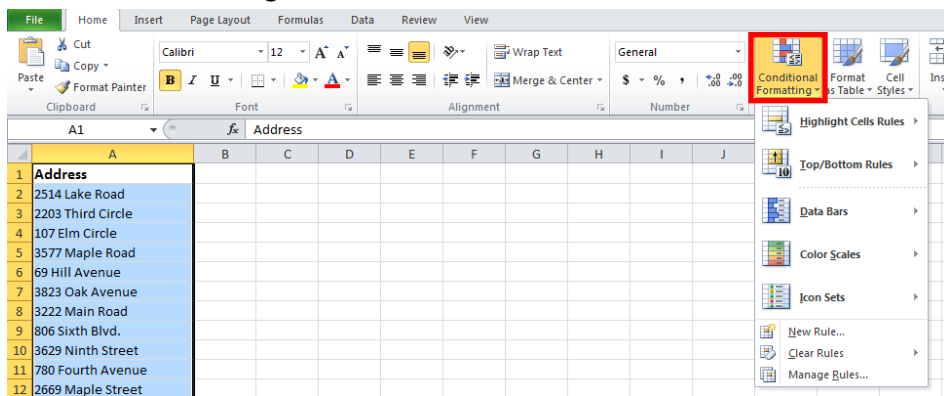
In worksheets with lots of data, you may have difficulty identifying duplicate values. Excel can search data and highlight the duplicate values in a selected range.

1. Select a range of values you want to search.

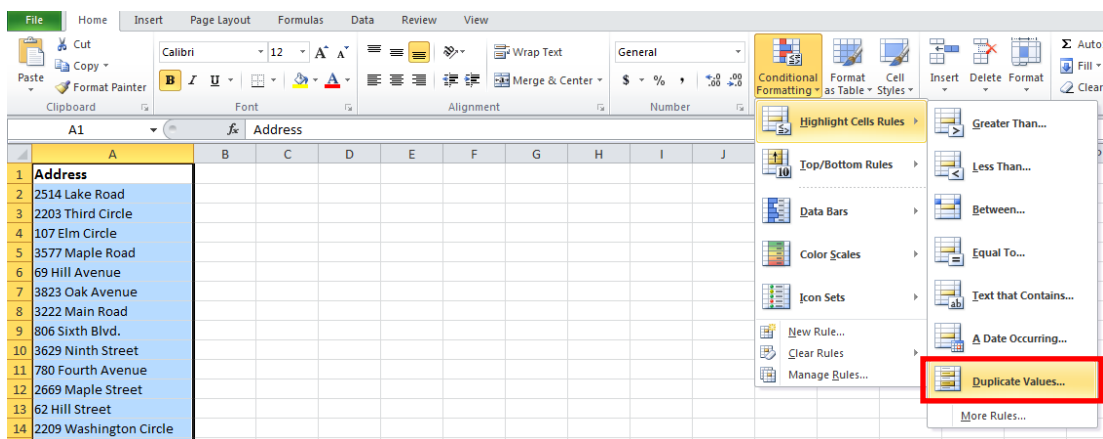


	A
1	Address
2	2514 Lake Road
3	2203 Third Circle
4	107 Elm Circle
5	3577 Maple Road
6	69 Hill Avenue
7	3823 Oak Avenue
8	3222 Main Road
9	806 Sixth Blvd.
10	3629 Ninth Street
11	780 Fourth Avenue
12	2669 Maple Street
13	62 Hill Street
14	2209 Washington Circle
15	4130 Lake Circle
16	3515 Eighth Circle

2. Go to the Home tab on the ribbon and Click Conditional formatting. This will display the Conditional formatting menu.

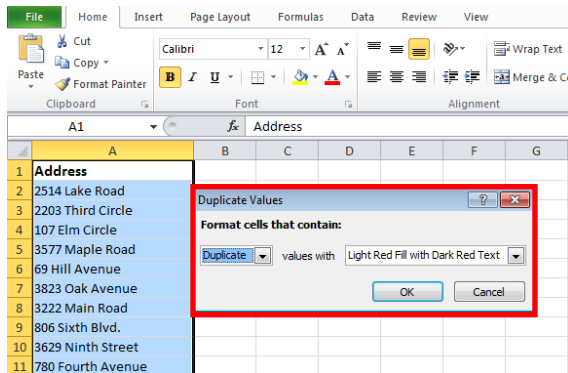


3. From the Conditional Formatting menu, select Highlight Cell Rules. Then, choose Duplicate Values.





- Choose the type of formatting you would like to apply to the duplicate cells in the Duplicate Values dialogue box. This dialogue box allows you to see a live preview, or displays what will happen to the cells as you click on the different options.



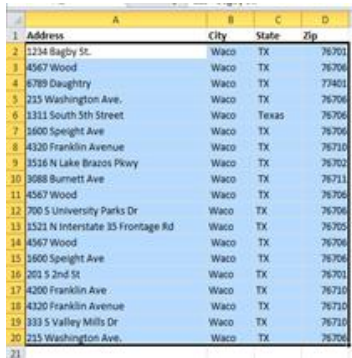
- Click OK on the Duplicate Values dialogue box. All the duplicate values are now formatted differently than other values.

	A	B
2260	2762 Fourth Street	
2261	3715 Cedar Avenue	
2262	2919 Elm Circle	
2263	519 Fourth Circle	
2264	3227 Ninth Road	
2265	1540 Seventh Circle	
2266	4608 Fourth Road	
2267	2316 Pine Avenue	
2268	3814 Fifth Street	
2269	3432 First Circle	
2270	3020 Fifth Avenue	
2271	454 Elm Blvd.	
2272	3600 Fourth Road	
2273	2532 Oak Circle	
2274	2650 Maple Avenue	
2275	1903 Hill Circle	
2276	3427 Maple Blvd.	
2277	2191 Pine Avenue	
2278	295 View Blvd.	
2279	4083 Third Street	
2280	3783 Seventh Blvd.	
2281	2738 Washington Circle	
2282	1894 Fifth Blvd.	
2283	2488 Main Blvd.	
2284	674 Seventh Road	
2285	2656 View Road	
2286	2980 Fifth Street	
2287	1979 Elm Blvd.	

# Removing Duplicate Values

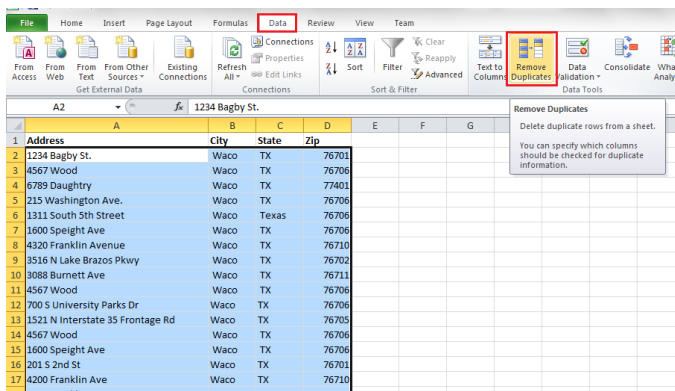
If you are using your Excel spreadsheet to organize data, you may want to identify duplicate values and remove values that have already been repeated so your information will be as accurate as possible.

1. Select the range of cells that you want to check for duplicates. You can do this by clicking on the letter or number corresponding to the column or row.

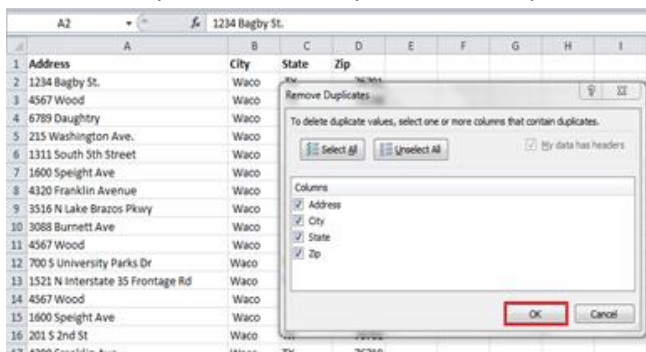


	A	B	C	D
1	Address	City	State	Zip
2	1234 Bagby St.	Waco	TX	76701
3	4567 Wood	Waco	TX	76706
4	6789 Daughtry	Waco	TX	77401
5	215 Washington Ave.	Waco	TX	76706
6	1311 South 5th Street	Waco	Texas	76706
7	1600 Speight Ave	Waco	TX	76706
8	4120 Franklin Avenue	Waco	TX	76710
9	3516 N Lake Brazos Pkwy	Waco	TX	76702
10	3088 Burnett Ave	Waco	TX	76711
11	4567 Wood	Waco	TX	76706
12	700 S University Parks Dr	Waco	TX	76706
13	1521 N Interstate 35 Frontage Rd	Waco	TX	76705
14	4567 Wood	Waco	TX	76706
15	1600 Speight Ave	Waco	TX	76706
16	201 S 2nd St	Waco	TX	76701
17	4200 Franklin Ave	Waco	TX	76710
18	4120 Franklin Avenue	Waco	TX	76710
19	333 S Valley Mills Dr	Waco	TX	76710
20	215 Washington Ave.	Waco	TX	76706

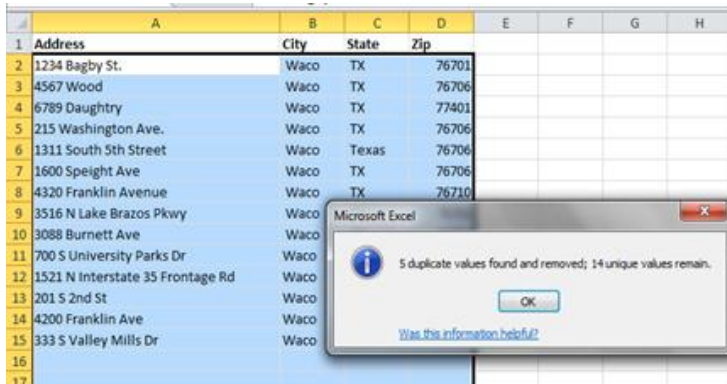
2. Go to the Data tab on the ribbon and click Remove Duplicates.



3. Make sure that the columns containing potential duplicates are selected in the Remove Duplicates screen; If so press OK. If not, you have the option to unselect rows or columns.



4. A message pops up telling you how many duplicates, if any, were removed and how many unique values remain.



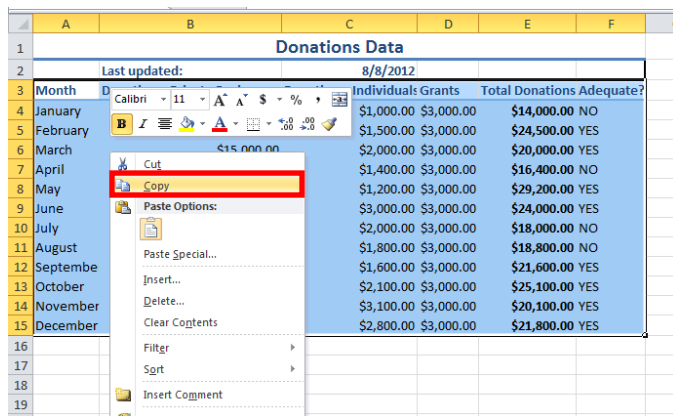
# Switching Rows and Columns

Sometimes, you finish a worksheet and realize you want to re-organize the data. Excel allows you to switch rows and columns easily.

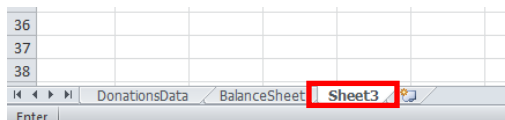
1. Select the range of cells that you want to switch the arrangement of rows and columns.

Donations Data						
2	Last updated:		8/8/2012			
3	Month	Donations: Private Businesses	Donations: Individuals	Grants	Total Donations	Adequate?
4	January	\$10,000.00	\$1,000.00	\$3,000.00	\$14,000.00	NO
5	February	\$20,000.00	\$1,500.00	\$3,000.00	\$24,500.00	YES
6	March	\$15,000.00	\$2,000.00	\$3,000.00	\$20,000.00	YES
7	April	\$12,000.00	\$1,400.00	\$3,000.00	\$16,400.00	NO
8	May	\$25,000.00	\$1,200.00	\$3,000.00	\$29,200.00	YES
9	June	\$18,000.00	\$3,000.00	\$3,000.00	\$24,000.00	YES
10	July	\$13,000.00	\$2,000.00	\$3,000.00	\$18,000.00	NO
11	August	\$14,000.00	\$1,800.00	\$3,000.00	\$18,800.00	NO
12	September	\$17,000.00	\$1,600.00	\$3,000.00	\$21,600.00	YES
13	October	\$20,000.00	\$2,100.00	\$3,000.00	\$25,100.00	YES
14	November	\$14,000.00	\$3,100.00	\$3,000.00	\$20,100.00	YES
15	December	\$16,000.00	\$2,800.00	\$3,000.00	\$21,800.00	YES

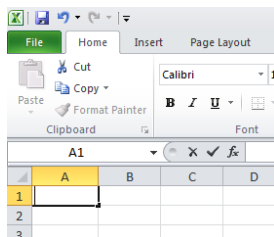
2. From the Edit menu, select Copy.



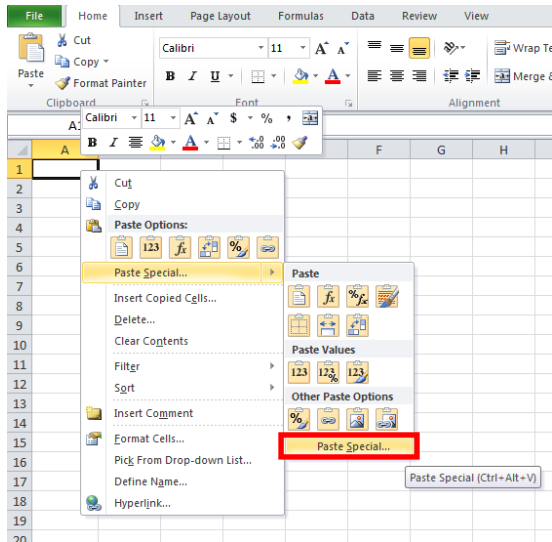
3. At the bottom of the page, click the tab for the worksheet you want the range to appear in.



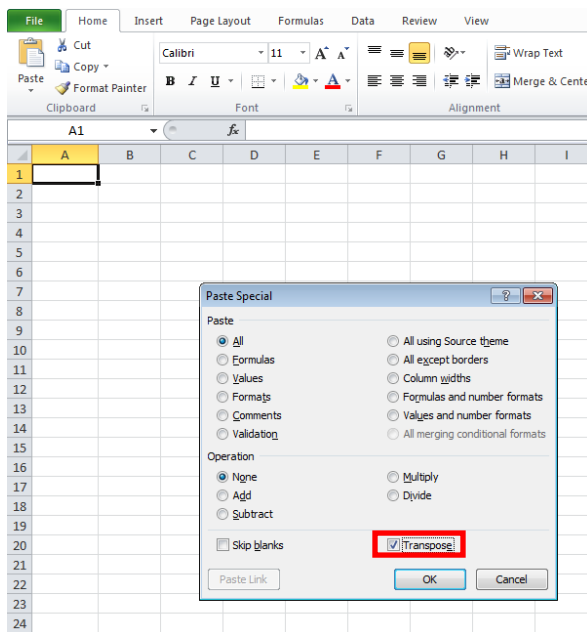
4. On the worksheet, click the cell that you want the values to start in.



- From the Edit menu, select Paste Special. The Paste Special dialogue box should appear.



- Click the checkbox for Transpose in the Paste Special dialogue box.



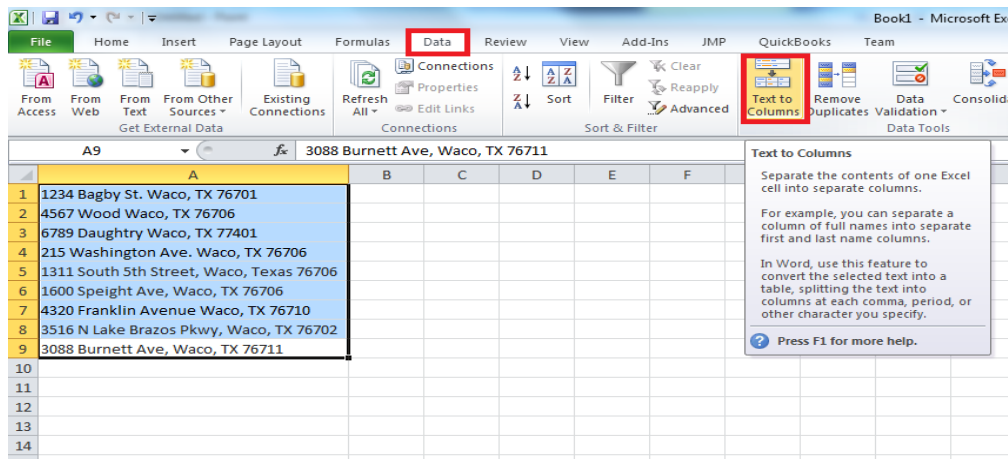
- Click OK. The data formerly presented down columns is now presented across rows and vice versa.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Month	January	February	March	April	May	June	July	August	September	October	November	December
2	Donations: Private Businesses	\$10,000.00	\$20,000.00	\$15,000.00	\$12,000.00	\$25,000.00	\$18,000.00	\$13,000.00	\$14,000.00	\$17,000.00	\$20,000.00	\$14,000.00	\$16,000.00
3	Donations: Individuals	\$1,000.00	\$1,500.00	\$2,000.00	\$1,400.00	\$1,200.00	\$3,000.00	\$2,000.00	\$1,800.00	\$1,600.00	\$2,100.00	\$3,100.00	\$2,800.00
4	Grants	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00	\$3,000.00
5	Total Donations	\$14,000.00	\$24,500.00	\$20,000.00	\$16,400.00	\$29,200.00	\$24,000.00	\$18,000.00	\$18,800.00	\$21,600.00	\$25,100.00	\$20,100.00	\$21,800.00
6	Adequate?	NO	YES	YES	NO	YES	YES	NO	NO	YES	YES	YES	YES

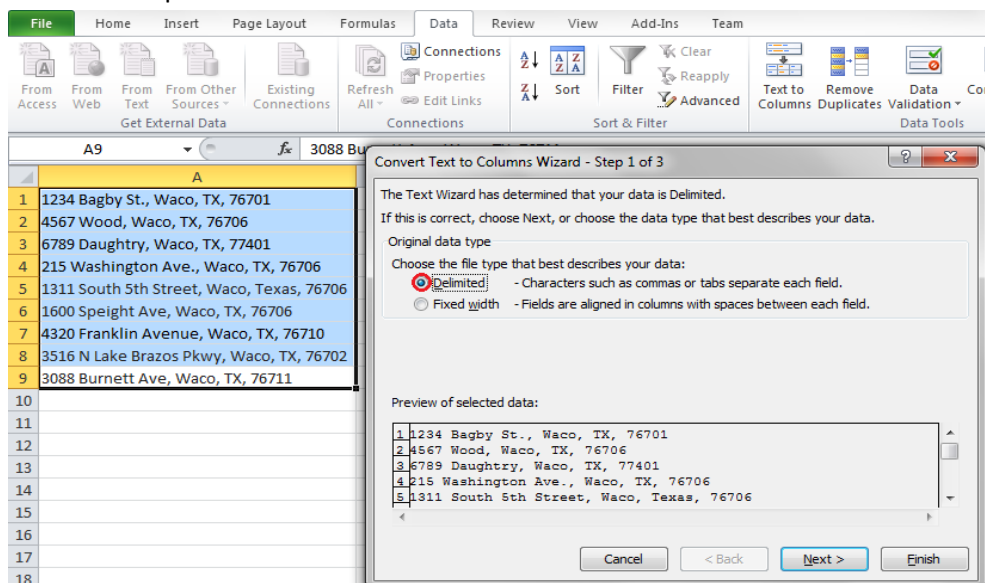
# Separating Columns

If you want to separate content that is currently in a single cell, (i.e. address, city, state, zip), you will want to use the Convert Text to Column feature so that each characteristic will have its own cell. All of the data that you want to be separated into different columns should either be separated by tabs, semicolons, commas, or spaces.

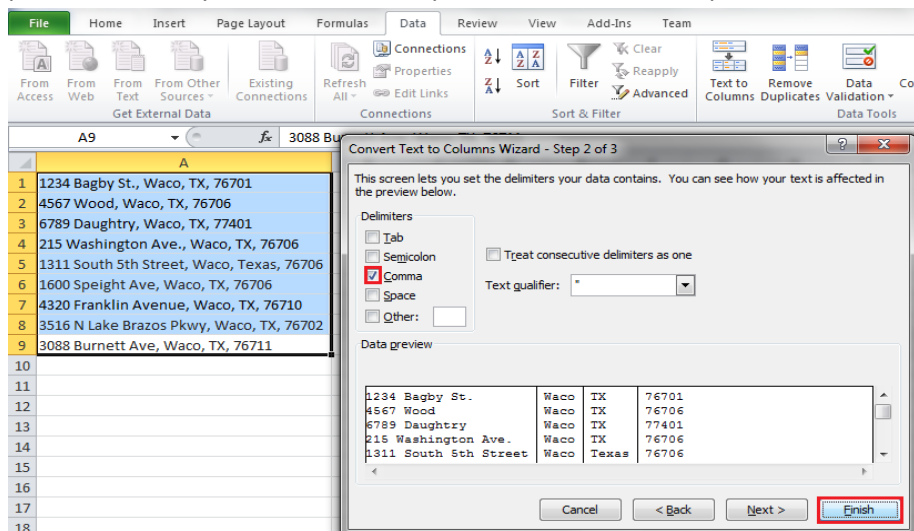
1. Assume you have a column of addresses that include the street address, town, state, and zip code. You want to put each address component in separate columns on an Excel worksheet. Highlight all of your data, then go to the Data ribbon and click the Texts to Column in the Data Tools group.



2. On the first Convert Text to Columns Wizard screen, the Delimited file type should be selected. Click Next to proceed.



3. In this example, the address, city, state, and zip code are separated by commas. Deselect the Tab delimiter and click the Comma delimiter. At the bottom of the Wizard screen, you can see a preview of how your data will be separated. Click Finish to proceed.



4. All of your information will now be separated into individual cells.

	A	B	C	D	E
1	1234 Bagby St.	Waco	TX	76701	
2	4567 Wood	Waco	TX	76706	
3	6789 Daughtry	Waco	TX	77401	
4	215 Washington Ave.	Waco	TX	76706	
5	1311 South 5th Street	Waco	Texas	76706	
6	1600 Speight Ave	Waco	TX	76706	
7	4320 Franklin Avenue	Waco	TX	76710	
8	3516 N Lake Brazos Pkwy	Waco	TX	76702	
9	3088 Burnett Ave	Waco	TX	76711	
10					
11					