Excel Intermediate

Custom Sorting and Subtotaling

Excel allows us to sort data whether it is alphabetic or numeric. Simply clicking within a column or row of data will begin the process.

- Click in the name column of our Range of Data. (Do not highlight the column)
- Click on the Data Tab in the Ribbon



- Click on A Z in the sort and filter group to see the donor names alphabetically sorted A Z
- Click on Z A in the sort and filter group to see the donor names alphabetically sorted Z A.

A column containing numbers will be sorted smallest to largest and largest to smallest when choosing A - Z and Z - A, respectively.

Custom Sorting by Level

Custom Sorting allows you to select multiple criteria to sort your data.

• Click anywhere inside your range of data

•	Click on th	ne Data Tab		\frown		
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Click on the Sort Box. This brings up the Sort dialog box allowing you to sort your data by level. Clicking on the downward arrow in the "Sort by" field will bring up the criteria to choose from.

- Choose **Region** as your first sort level.
- Click on Add Level at the top left of the dialog box and select **State**.
- Click on Add Level again and select Library.
- Click on add Level once more and select Giving Total.
- Click on ok.

Column Sort On Order Sort by Region Values A to Z Then by State Values A to Z Then by Library Values A to Z
Then by State Values A to Z
Then by Library Values A to Z

Your resulting spreadsheet should look like this:

	А	В	С	D	E	F 🔺
3	Name	Library	State	Region	Giving Total	Contact Preference
4	Streep, Meryl	Boston Public Library	MA	East	\$ 1,119	email
5	Trump, Donald	New Jersey Public Library	NJ	East	\$ 1,444	email
6	Fallon, Jimmy	Brooklyn Public Library	NY	East	\$ 1,456	email
7	Clinton, Hillary	New York Public Library	NY	East	\$ 351	email
8	Pitt, Brad	New York Public Library	NY	East	\$ 1,614	phone
9	Patterson, James	New York Public Library	NY	East	\$ 1,863	email
10	Williams, Brian	New York Public Library	NY	East	\$ 3,536	email
11	Jordan, Michael	Chicago Public Library	IL	Midwest	\$ 517	phone
12	Winfrey, Oprah	Chicago Public Library	IL	Midwest	\$ 556	phone
13	Obama, Barack	Chicago Public Library	IL	Midwest	\$ 1,504	phone

The data should be sorted first alphabetically by Region. Within each region it should be sorted alphabetically by State. Within each state it should be sorted alphabetically by Library and within each Library, The Giving Totals should be listed smallest to largest.

Subtotaling

After sorting your data you may want to add subtotals. This option is available within the Data Tab as well.

- Select any cell inside your range of data
- Click on subtotal in the Outline Group (way over to the right), to bring up the Subtotal dialog box. Clicking on the downward arrows next to each field, select:
- At each change in: **Region**
- Use the function: Sum
- Add subtotal to: Giving Total
- Check the box that says Summary below data
- Click on ok

The resulting spreadsheet should look like this:

A	В	С	D	E		F	
Streep, Meryl	Boston Public Library	MA	East	\$ 1,119	email		
Trump, Donald	New Jersey Public Library	NJ	East	\$ 1,444	email		
Fallon, Jimmy	Brooklyn Public Library	NY	East	\$ 1,456	email		
Clinton, Hillary	New York Public Library	NY	East	\$ 351	email		
Pitt, Brad	New York Public Library	NY	East	\$ 1,614	phone		
Patterson, James	New York Public Library	NY	East	\$ 1,863	email		
Williams, Brian	New York Public Library	NY	East	\$ 3,536	email		
			East Total	\$ 11,383			
Jordan, Michael	Chicago Public Library	IL	Midwest	\$ 517	phone		
Winfrey, Oprah	Chicago Public Library	IL	Midwest	\$ 556	phone		
Obama, Barack	Chicago Public Library	IL	Midwest	\$ 1,504	phone		
Ditka, Mike	Chicago Public Library	IL	Midwest	\$ 1,873	email		
Murray, Bill	Chicago Public Library	IL	Midwest	\$ 2,640	email		
Potter, Harry	Palatine Public Library	IL	Midwest	\$ 1,376	owl		
Simpson, Homer	Springfield Public Library	IL	Midwest	\$ 440	email		
Clooney, George	Lexington Public Library	KY	Midwest	\$ 1,200	phone		•

Subtotal
At each change in:
Region 💌
Use function:
Sum 💌
Add subtotal to:
Name
Library
State
Region
Giving Total
Contact Preference
Replace current subtotals
<u>P</u> age break between groups
✓ Summary below data
Remove All OK Cancel

We can add more subtotals by simply clicking on the Subtotal icon again, and changing region to state for instance. Just make sure the box next to: "Replace current subtotals" is not checked.

Creating a Table

Tables are a great way to organize your data and make it easier to sort and filter information.

Select any cell within your data set, select the Insert Ribbon, then click on" Table."

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	А	В	С	D	E	F						
1	Library Donors											
2												
3	Name	Library	State	Region	Giving Total	Contact Preference						
4	Simpson, Homer	Springfield Public Library	IL	Midwest	\$ 440	email						
5	Patterson, James	New York Public Library	NY	East	\$ 1,863	email						
6	Stone, Emma	Los Angeles Public Library	CA	West	\$ 1,552	phone						
7	Cooper, Bradley	Las Vegas Public Library	NV	Southwest	\$ 654	phone						
8	Spielberg, Steven	Los Angeles Public Library	CA	West	\$ 3,597	email						
9	Trump, Donald	New Jersey Public Library	NJ	East	\$ 1,444	email						
10	Winfrey, Oprah	Chicago Public Library	IL	Midwest	\$ 556	phone						
11	Lawrence, Jennifer	Phoenix Public Library	AZ	Southwest	\$ 2,490	email						
12	Jordan, Michael	Chicago Public Library	IL	Midwest	\$ 517	phone						
13	Streep, Meryl	Boston Public Library	MA	East	\$ 1,119	email						
14	Pitt, Brad	New York Public Library	NY	East	\$ 1,614	phone						

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3	Name	Library	State	Regi Ex	xcel will highlig	ht the data it will	be			
4	Simpson, Homer	Springfield Public Library	IL	Midw in	cluding in the t	able. If Excel has	not			
5	Patterson, James	New York Public Library	NY	East hi	st highlighted the correct data, you ca					
6	Stone, Emma	Los Angeles Public Library	CA	Wae						
7	Cooper, Bradley	Create Table	NV	Sout			ging			
8	Spielberg Steven	Where is the data for your table?	CA	Wes 0\	ver the correct	data.				
9	Trump, Donald	=\$A\$3:\$F\$36	NJ	East						
10	Winfrey, Oprah	My table has headers	IL	Midw If	If you have headers make sure the					
11	Lawrence, Jennifer		AZ	Sout	"My Table has Headers" box is					
12	Jordan, Michael	OK Cancel	IL	IVIIGW	•	eaders box is				
13	Streep, Meryl	BOSTON FUDIC LIDIALY	MA	East Ch	necked.					
14	Pitt, Brad	New York Public Library	NY	East	ψ 1,014	phone	:			
15	Perry, Katy	San Diego Public Library	CA	West	\$ 100	email				
16	Obama, Barack	Chicago Public Library	IL	Midwest	\$ 1,504	phone				
17	McGraw, Tim	Nashville Public Library	TN	South	\$ 448	phone				
18	John, Elton	San Francisco Public Library	CA	West	\$ 584	email				

You now have a new Ribbon titled "Table Tools - Design." This Ribbon allows you to change the color coding of your table. By selecting "Banded Rows" the table will color every other row a

different color for easier viewing. You can also select "Banded Columns" to do the same to your columns.

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4	Simpson, Ho	mer	Springfi	eld Pub	lic Libr	rary	IL		Midwes	st	\$	440	email		
5	Patterson, Ja	ames	New Yo	rk Pub	lic Libr	ary	NY		East		\$	1,863	email		
6	Stone, Emma	3	Los Ang	geles P	ublic Hi	ihrany	CA		West		\$	1 552	nhone		_
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9	Trump, Dona	ld	New Je	rsey Pu	ıblic L	enc	ore	ach o	r your	COII	umn	headin	gs. Se	lect	
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11	Lawrence, Je	ennifer	Phoenix	Public	Libra	Hea	nding	Υου	will se	ר אי	he o	ptions f	or sor	ting	
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14	Pitt, Brad		New Yo	rk Pub	lic Lib	∕fror	n Z-A	۱.							
15	Perry, Katy		San Die		X		CA		west		þ	100	email		
	Obama, Bara	ack	Chicago	-	/	-	IL		Midwes	st	\$	1,504	phone		
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	A	В	С	D	E	
1	Library Donors					
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A Z	Sort A to Z	Springfield Public Library	IL	Midwest	\$ 440	email
Z A	Solt 2 to A	New York Public Library	NY	East	\$ 1,863	email
	Sor <u>t</u> by Color →	Los Angeles Public Library	CA	West	\$ 1,552	phone
W	<u>C</u> lear Filter From "Name" Filter by Color ►	Las Vegas Public Library	NV	Southwest	\$ 654	phone
	Text Filters	Los Angeles Public Library	CA	West	\$ 3,597	email
	Search P	New Jersey Public Library	NJ	East	\$ 1,444	email
	(Select All)	Chicago Public Library	IL	Midwest	\$ 556	phone
	Carell, Steve	Phoenix Public Library	AZ	Southwest	\$ 2,490	email
	Clooney, George	Chicago Public Library	IL	Midwest	\$ 517	phone
	Cooper, Bradley	Boston Public Library	MA	East	\$ 1,119	email
	✓ Ditka, Mike ✓ Fallon, Jimmy	New York Public Library	NY	East	\$ 1,614	phone
		San Diego Public Library	CA	West	\$ 100	email
	Gates, Bill	Chicago Public Library	IL	Midwest	\$ 1,504	phone
	OK Cancel	Nashville Public Library	TN	South	\$ 448	phone
	,	San Francisco Public Library	CA	West	\$ 584	email
19	Spielberg, Steven	Los Angeles Public Library	CA	West	\$ 3,597	email
20	Ditka, Mike	Chicago Public Library	IL	Midwest	\$ 1,873	email

	А	В		С	D		Ξ	
1	Library Donors							
2								
3	Name 🖵	_ibrary	v	State 📮	Region 🖵	Giving	Total 🖵	Contact
4	Carell, Steve	San Erancisco Public I	ibrary	CA	West	\$	538	phone
5	Clinton, Hillary	New York Public Librar	у	NY	East	\$	351	email
6	Clooney, George	Lexington Public Libr	. ·		dwest	\$	1,200	phone
7	Cooper, Bradley	Las Vegas Public Lib		ll notice a	uthwest	\$	654	phone
8	Degeneres, Ellen	Los Angeles Public L	little a	row	est	\$	2,037	phone
9	Ditka, Mike	Chicago Public Libra	indicat	ing that	dwest	\$	1,873	email
10	Fallon, Jimmy	Brooklyn Public Libra	this co	lumn has	ist	\$	1,456	email
11	Gaga, Lady	Los Angeles Public L	been s	orted.	est	\$	1,101	phone
12	Gates, Bill	Seattle Public Library			rthwest	\$	1,488	email
13	Gosling, Ryan	Los Angeles Public Lib	rary	CA	West	\$	1,176	email
14	John, Elton	San Francisco Public I	ibrary	CA	West	\$	584	email
15	Jordan, Michael	Chicago Public Library		IL	Midwest	\$	517	phone
16	Keith, Toby	Houston Public Library		ТХ	Southwest	\$	346	email
17	King, Stephen	Augusta Public Library		ME	Northeast	\$	291	email

In addition to sorting, you can use Excel 2010 to filter out data from your table in order to leave just the data you need. For instance, in this example, you can filter out all library donors except those who donated to the Chicago Public Library:

	А		В	С	D	E		
1	Library Donors							
2								
3	Name	-	Library	State 🕞	Region 🖵	Giving	Total 星	Contact
4	Simpson, Homer	₽↓	Sort A to Z	IL .	Midwest	\$	440	email
5	Patterson, James	Z A↓	S <u>o</u> rt Z to A	NY	East	\$	1,863	email
6	Stone, Emma		Sor <u>t</u> by Color	CA	West	\$	1,552	phone
7	Cooper, Bradley	K	<u>C</u> lear Filter From "Library"	NV	Southwest	\$	654	phone
8	Spielberg, Steven		Filter by Color		10/	<u>^</u> .	0.507	email
9	Trump, Donald		Text Eilters Start by clicking the drop-down Search arrow in the "Library" column.					
10	Winfrey, Oprah							
11	Lawrence, Jennifer		(Select All)					email
12	Jordan, Michael		Augusta Public Library	Uncheck "	(Select All)"	to clear	out	phone
13	Streep, Meryl		Boston Public Library	all checkm	arks.			email
14	Pitt, Brad		Chicago Public Library					phone
15	Perry, Katy		Houston Public Library	Check "Ch	icago Public	Library'	' and 📘	email
16	Obama, Barack		Lexington Public Library	click OK.	-	-		phone
17	McGraw, Tim		Los Angeles Public Library					phone
18	John, Elton		OK Cancel	CA	vvest	\$	584	email
19	Spielberg, Steven		Cancer	CA	West	\$	3,597	email
20	Ditka, Mike		Chicago Public Library	IL .	Midwest	\$	1,873	email

Only the donors for the Chicago Public Library remain – the others have been filtered out. You will notice a filter icon now appears next to the drop-down arrow by the column heading.

	А	В	С	D	E	F
1	Library Donors					
2						
3	Name 🔽	Library	🛒 State 🛛	Region 🖵	Giving Total 🖵	Contact Preference 🗸
10	Winfrey, Oprah	Chicago Public Library	<u></u>	Midwest	\$ 556	phone
12	Jordan, Michael	Chicago Public Library	IL	Midwest	\$ 517	phone
16	Obama, Barack	Chicago Public Library	IL	Midwest	\$ 1,504	phone
20	Ditka, Mike	Chicago Public Library	IL	Midwest	\$ 1,873	email
27	Murray, Bill	Chicago Public Library	IL	Midwest	\$ 2,640	email _
37						
38						
39						

You can clear a filter by selecting the column heading, then "Clear" from the Sort & Filter section of the Data ribbon; or, you can click the column heading drop-down arrow and select the option to clear the filter.

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2									
3	Name			Library	्र	state 🗖	Region 🖵	Giving Total	- Contact
10	Winfrey, Op	rah	Å↓	<u>S</u> ort A to Z		TL.	Midwest	\$ 556	b phone
12	Jordan, Mich	nael	Z A V	S <u>o</u> rt Z to A		IL	Midwest	\$ 517	phone
16	Obama, Bara	ack	_	Sor <u>t</u> by Color	•	IL	Midwest	\$ 1,504	phone
20	Ditka, Mike		×	Clear Filter From "Library"	•	IL	Midwest	\$ 1,873	8 email
27	Murray, Bill			F <u>i</u> lter by Color	• •	IL	Midwest	\$ 2,640) email
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Conditional Formatting – Top/Bottom Rules

Excel 2010 offers conditional formatting options that highlight data that meet criteria that you have set. For example, it might be helpful to have Excel highlight library donors that give more than average.

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1	Library Donors					10 10 10 Iteliis
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4	Simpson, Homer	Springfield Public Library		idwest \$	Color <u>S</u> cales →	Bottom 10 Items
5	Patterson, James	New York Public Library		ast \$		
6	Stone, Emma	Los Angeles Public Library		/est \$	Icon Sets >	Bottom 10 %
7	Cooper, Bradley	Las Vegas Public Library		outhwest \$	New Rule	
8	Spielberg, Steven	Los Angeles Public Library		/est \$	Clear Rules	Above Average
9	Trump, Donald	New Jersey Public Library		ast \$	Manage <u>R</u> ules	Below Average
10	Winfrey, Oprah	Chicago Public Library		idwest \$	556 phone	Below A <u>v</u> erage
11	Lawrence, Jennifer	Phoenix Public Library			2,490 email	More Rules
12	Jordan, Michael	Chicago Public Library	I	idwest \$	517 phone	
13	Streep, Meryl	Boston Public Library			1,119 email	
14	Pitt, Brad	New York Public Library			1,614 phone	
14				ψ		

Start by highlighting the column to which you wish to apply conditional formatting. Then, on the Home ribbon, select "Conditional Formatting," "Top/Bottom Rules," and finally, "Above Average."

	А		В	(C	D		E	
1	Library Donors								•
2									
3	Name	🖵 Library		🖵 State		Region 星	Giving	g Total 👻	Contact P
4	Simpson, Homer	Springfie	ld Public Library	IL		Midwest	\$	440	email
5	Patterson, James	New Yor	k Public Library	NY		East	\$	1,863	email
6	Stone, Emma	Above Average		?⊠		West	\$	1,552	phone
7	Cooper, Bradley	Format cells that are Af	BOVE AVERAGE:			Southwest	\$	654	phone
8	Spielberg, Stever	for the selected range with	Green Fill with Dark Green Te	ext 🗸	1	West	\$	3,597	email
9	Trump, Donald	for the selected range with	Light Red Fill with Dark Red 1	Text		East	\$	1,444	email
10	Winfrey, Oprah		Yellow Fill with Dark Yellow To Green Fill with Dark Green Te			Midwest	\$	556	phone
11	Lawrence, Jennife	er Phoenix	Calaborate Cill	_		Southwest	\$	2,490	email
12	Jordan, Michael	Chicago				Midwest	\$	517	phone
13	Streep, Meryl	Boston F	ublic Library	MA		East	\$	1,119	email
14	Pitt, Brad	New Yor	k Public Library	NY		East	\$	1,614	phone

You will then be prompted choose how Excel will highlight the cells that meet the "above average" criterion. In this case, a green fill with dark green text marks the big library donors. Note that that these changes can be easily undone using the "Clear Rules" option on the "Conditional Formatting" menu.

Conditional Formatting – Data Bars

Excel 2010 allows you to display graphical representations of numerical data. Adding colored data bars in this example makes it easy to see who is donating the most and least. Select the column you wish to format, select "Conditional Formatting," then "Data Bars," and finally the style and color of fill you want to use on your data bars.

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7	Cooper, Bradley	Las Vegas Public Library		Southwest		<u>N</u> ev	v Rule		
8	Spielberg, Steven	Los Angeles Public Library		West	\$		ar Rules 🕨 🕨		
9	Trump, Donald	New Jersey Public Library		East	\$	📑 Ma	nage <u>R</u> ules		
-	Winfrey, Oprah	Chicago Public Library		Midwest	\$	556	phone	More F	Rules
11	Lawrence, Jennifer	Phoenix Public Library	AZ	Southwest		2,490	email		
12	Jordan, Michael	Chicago Public Library	IL	Midwest	\$	517	phone		
13	Streep, Meryl	Boston Public Library	MA	East	\$	1,119	email		
14	Pitt, Brad	New York Public Library	NY	East	\$	1,614	phone		
15	Perry, Katy	San Diego Public Library	CA	West	\$	100	email		
16	Obama, Barack	Chicago Public Library	IL	Midwest	\$	1,504	phone		
17	McGraw, Tim	Nashville Public Library	TN	South	\$	448	phone		
18	John, Elton	San Francisco Public Library		West	\$	584	email		
19	Spielberg, Steven	Los Angeles Public Library		West		3,597			
20	Ditka, Mike	Chicago Public Library		Midwest		1,873	email		
21		Sacramento Public Library		West	\$	695	phone		
22	Gosling, Ryan	Los Angeles Public Library		West		1,176			
23	Keith, Toby	Houston Public Library		Southwest	-	346	email		
24	Williams, Brian	New York Public Library		East		3,536			
25	Gaga, Lady	Los Angeles Public Library		West		1,101	phone		
26	Potter, Harry	Palatine Public Library		Midwest		1,376	owl		
27	Murray, Bill	Chicago Public Library		Midwest		2,640	email		
28	Fallon, Jimmy	Brooklyn Public Library		East		1,456	email		
29	Degeneres, Ellen	Los Angeles Public Library		West		2,037	phone		
30	Carell, Steve	San Francisco Public Library		West	\$	538	phone		
31	King, Stephen	Augusta Public Library	ME	Northeast	\$	291	email		

Conditional Formatting - Highlight Cells Rules

Another helpful feature of Conditional Formatting is the option to search for duplicate values. If you wanted to search through the list of donors to make sure you haven't accidentally listed somebody twice, you can select the "Name" column, then "Conditional Formatting," "Highlight Cell Rules," and finally "Duplicate Values."

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	А	В	С	D	E	10 <u>T</u> op/Bottom Rules →	Less Than
3	Name 🔽	Library 🚽	State 🕞	Region 🖵	Giving T		Less Than
4	Simpson, Homer	Springfield Public Library	IL	Midwest	\$	Data Bars →	Between
5	Patterson, James	New York Public Library	NY	East	\$		
6	Stone, Emma	Los Angeles Public Library	CA	West	\$	Color Scales	Equal To
7	Cooper, Bradley	Las Vegas Public Library	NV	Southwest	\$		
8	Spielberg, Steven	Los Angeles Public Library	CA	West	\$	Icon Sets	ab Text that Contains
9	Trump, Donald	New Jersey Public Library	NJ	East	\$	Mew Rule	
10	Winfrey, Oprah	Chicago Public Library	IL	Midwest	\$	B Clear Rules ►	A Date Occurring
11	Lawrence, Jennifer	Phoenix Public Library	AZ	Southwest	\$	Manage <u>R</u> ules	Duplicate Values
12	Jordan, Michael	Chicago Public Library	IL	Midwest	\$	517 phone	
13	Streep, Meryl	Boston Public Library	MA	East	\$	1,119 email	More Rules
14	Pitt, Brad	New York Public Library	NY	East	\$	1,614 phone	

You can then select how you want Excel to mark the duplicates.

	А	В	С	D	E	F
1	Library Donors					
2						
3	Name 🗸	Library 🔽	State 🕞	Region 🖃	Giving Total 星	Contact Pre
4	Simpson, Homer	Springfield Public Library	IL	Midwest	\$ 440	email
5	Patterson, James	New York Public Library	NY	East	\$ 1,863	email
6	Stone, Emma	Los Duplicate Values		? 🗙	\$ 1,552	phone
7	Cooper, Bradley	Las		west	\$ 654	phone
8	Spielberg, Steven	Los			+ -1	email
9	Trump, Donald	New Duplicate values with Light Red	Fill with Dark Red T	ext 🔽	\$ 1,444	email
10	Winfrey, Oprah	Chic	ок Са	ancel	\$ 556	phone
11	Lawrence, Jennifer	Pho		west	\$ 2,490	email
12	Jordan, Michael	Chicago Public Library	IL	Midwest	\$ 517	phone
13	Streep, Meryl	Boston Public Library	MA	East	\$ 1,119	email
14	Pitt, Brad	New York Public Library	NY	East	\$ 1,614	phone
15	Perry, Katy	San Diego Public Library	CA	West	\$ 100	email
16	Obama, Barack	Chicago Public Library	IL	Midwest	\$ 1,504	phone
17	McGraw, Tim	Nashville Public Library	TN	South	\$ 448	phone
18	John, Elton	San Francisco Public Library	CA	West	\$ 584	email
19	Spielberg, Steven	Los Angeles Public Library	CA	West	\$ 3,597	email
20	Ditka, Mike	Chicago Public Library	IL	Midwest	\$ 1,873	email

You can manually remove duplicates or use Excel's automated feature for removing duplicates. To use Excel's automated Remove Duplicates feature, make sure your table is selected, then click the "Design" contextual ribbon, "Remove Duplicates," and "Unselect All." **Selecting "Unselect All" is important so that Excel does not remove duplicates from any column other than the one you select** – in this case, the "Name" column. Click OK.

	19 • (11 • <u>(2</u> , ∰ ∓	Formulas Data Parian Mi	uccus uccus	Excel Intermediat	e - Sample Spreadsh	eets - Microsoft Excel
	Name: Summarize with PivotTable	Export Refresh	Header Row	-		Table Styles
	A4 👻 🧑 🏂 Simpso	on, Homer				
	A	В	С	D	Е	F
1	Library Donors					
2						
3	Name 🗸	Library	🖵 State 🖵	Region 🖵	Giving Total	Contact Preference 🗸
4	Simpson, Homer	Springfield Public Library	IL	Midwest		email
5	Patterson, James	New York Public Library	NY	East	\$ 1,863	email
6	Stone, Emma	Los Ar Remove Duplicates			2 4 1,552	phone
7	Cooper, Bradley	Las Ve To delete duplicate values, select	t one or more columns	that contain duplicate	es. 654	phone
8	Spielberg, Steven	Los Ar	ect All	🗹 My data hi	as headers 3,597	email
9	Trump, Donald	New Je			1,444	email
10	Winfrey, Oprah	Chicag edunno			<u>^</u> 556	phone
11	Lawrence, Jennifer				2,490	email
12	Jordan, Michael				517	phone
13	Streep, Meryl	Bostor Region			1,119	email
14	Pitt, Brad	New Y			1,614	
15	Perry, Katy	San Di			100	email
16	Obama, Barack	Chicag		ОК	Cancel 1,504	phone
17 18	McGraw, Tim	Nashville Public Library		South	\$ 448 \$ 584	phone email
10	John, Elton Spielberg, Steven	San Francisco Public Libra Los Angeles Public Library	•	West West	\$ 504 \$ 3.597	
20	Ditka, Mike	Chicago Public Library		Midwest	\$ 3,597 \$ 1.873	email
20	1	Sacramento Public Library	CA	West	\$ 695	phone
21	Soundizenegger, Amold	Suchamento Fusile Library	0/1		÷ 000	phone

The duplicate donor has been removed.

3	Name 🚽	Library	State	Region 🖵	Giving	Total 星	Contact Preference 🗸
4	Simpson, Homer	Springfield Public Library	IL	Midwest	\$	440	email
5	Patterson, James	New York Public Library	NY	East	\$	1,863	email
6	Stone, Emma	Los Angeles Public Library	CA	West	\$	1,552	phone
7	Cooper, Bradley	Las Vegas Public Library	NV	Southwest	\$	654	phone
8	Spielberg, Steven	Los Angeles Public Library	CA	West	\$	3,597	email
9	Trump, Donald	New Jersey Public Library	NJ	East	\$	1,444	email
10	Winfrey, Oprah	Chicago Microsoft Excel				556	phone
11	Lawrence, Jennifer	Phoenix I				2,490	email
12	Jordan, Michael	Chicago 1 duplicate values f	ound and removed	; 32 unique values ren	nain.	517	phone
13	Streep, Meryl	Boston P	ОК			1,119	email
14	Pitt, Brad	New York				1,614	phone
15	Perry, Katy	San Diego Public Library	CA	West	\$	100	email
16	Obama, Barack	Chicago Public Library	IL	Midwest	\$	1,504	phone
17	McGraw, Tim	Nashville Public Library	TN	South	\$	448	phone

Adding a Total Row

You can easily add a Total row to your table by checking the "Total Row" option on the Table Tools-Design contextual ribbon.

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File Home Insert Page Layout	Formulas Data Review View	w Design					
Table Name: Image: Summarize with PivotTable Table1 Image: Summarize with PivotTable Image: Resize Table Image: Summarize with PivotTable	Export Refresh	Total Row Danueu Rows	First Column Last Column Banded Columns				
Properties Tools	External Table Data	Table Style O	ptions			Table Styl	25
Name	- Library		- Region	Givin	n Total 🗔	Contact P	eference
30 Carell, Steve	San Francisco Public Lib		West	\$	-	phone	choronice [
31 King, Stephen	Augusta Public Library	ME	Northea	ast \$	291	email	
32 Tatum, Channing	Atlanta Public Library	GA	South	\$	420	phone	
33 Clooney, George	Lexington Public Library	KY	Midwes	st \$	1,200	phone	
34 Gates, Bill	Seattle Public Library	WA	Northwe	est \$	1,488	email	
35 Clinton, Hillary	New York Public Library	NY	East	\$	351	email	
36 Woods, Tiger	Miami Public Library	FL	South	\$	86	email	
37 Total						v	3
38			No				
39				erage unt			
40				unt Number:	3		
41			Ma				
42			Mir				
12			Su	m			

Once the Total row is in place, click in the cell where you want a total to appear and a dropdown arrow will appear. Select whether you want Excel to calculate a sum, an average, minimum, maximum, etc.

30	Ellen Degeneres	Los Angeles Public Library	CA	West	4	4 3	2,037.28	phone	
31	Steve Carell	San Francisco Public Library	CA	West	2	2 \$	538.60	phone	
32	Stephen King	Augusta Public Library	ME	Northeast	1	1 \$	5 291.84	email	
33	Stephenie Meyer	Forks Public Library	WA	Northwest	4	4 \$	420.00	phone	
34	George Clooney	San Francisco Public Library	CA	West	3	3 \$	5 1,200.80	phone	
35	Bill Gates	Medina Public Library	WA	Northwest	2	2 \$	5 1,488.80	email	
36	Hillary Clinton	New York Public Library	NY	East	1	1 \$	351.00	email	
37	Tim Burton	San Francisco Public Library	CA	West	5	5 \$	613.20	phone	
38	Tiger Woods	Sacramento Public Library	FL	South	3	3 \$	6 86.50	email	
39	Total					1	5 1,181.94	35	-
40								None	
40 41								None Average Count	
								Average Count Count Numbers	
41								Average Count	
41 42								Average Count Count Numbers Max Min Sum	
41 42 43								Average Count Count Numbers Max Min	
41 42 43 44								Average Count Count Numbers Max Min Sum StdDev	
41 42 43 44 45								Average Count Numbers Max Min Sum StdDev Var	

If Excel assigns a total to a column that doesn't require a total, click the cell with the total and select "None" from the drop-down menu. This will delete the unnecessary total.

Pivot Tables

Once you have created a table in Excel 2010, it is easy to convert your table to a Pivot Table. The "Pivot Tables" feature is a flexible tool that allows you to easily analyze your data in different ways.

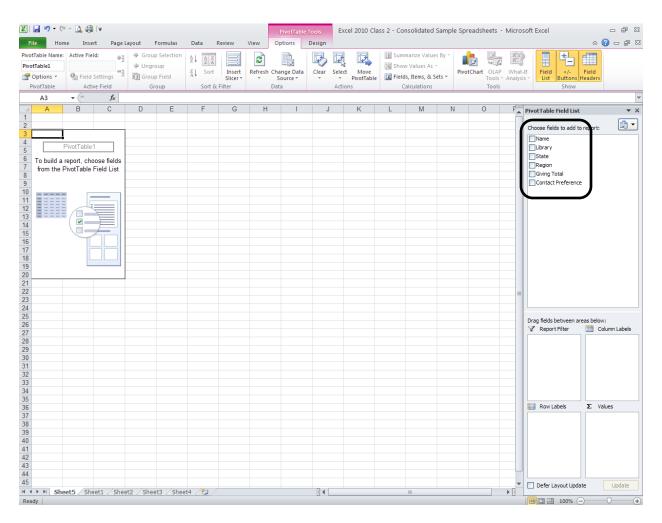
To convert your table to a Pivot Table, select the Insert ribbon, then click the "Pivot Table" button.

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PivotTa	able Fable Picture Clip Sha	apes SmartArt Screenshot	Column Line	De 📑 I		her Line Colum	mn Win/Loss	Slicer H	yperlink Text Box
1		ustrations		Charts	• • Cha	G Spark	dines	Filter	Links
Insert	PivotTable	Name							
Sum	marize data using a PivotTable.		В		С	D	E		
	tTables make it easy to arrange summarize complicated data								
	drill down on details.								
P	ress F1 for more help.	Library			State 📮	Region 🖵	Giving	Total 🖵	Contact P
4	Simpson, Homer	Springfie	ld Public Lib		IL	Midwest	\$	440	email
5	Patterson, James		k Public Lib	-	NY	East	\$	1,863	email
6	Stone, Emma	Los Ang	eles Public L	ibrary	CA	West	\$	1,552	phone
7	Cooper, Bradley	Las Veg	as Public Lik	orary	NV	Southwest	\$	654	phone
8	Spielberg, Steven	Los Ang	eles Public L	ibrary	CA	West	\$	3,597	email
9	Trump, Donald	New Jer	sey Public L	ibrary	NJ	East	\$	1,444	email
10	Winfrey, Oprah	Chicago	Public Libra	ry	IL	Midwest	\$	556	phone
11	Lawrence, Jennifer	Phoenix	Public Librai	ry	AZ	Southwest	\$	2,490	email
12	Jordan, Michael	Chicago	Public Libra	ry	IL	Midwest	\$	517	phone
13	Streep, Meryl	Boston F	Public Library	y	MA	East	\$	1,119	email

Make sure Excel has selected the correct data, choose "New Worksheet" or "Existing Worksheet," depending on where you want the new pivot table to go, then select OK.

	А	В	С	D	E	F
1	Library Donors					
2						
3	Name	🖵 Library	State	🖵 Region 🖵	Giving Total 星	Contact Preferen
4	Simpson, Homer	Springfield Public Library	IL	Midwest	\$ 440	email
5	Patterson, James	Create PivotTable	? 🗙	East	\$ 1,863	email
6	Stone, Emma	Choose the data that you want to analyze		West	\$ 1,552	phone
7	Cooper, Bradley	Select a table or range		Southwest	\$ 654	phone
8	Spielberg, Steven	Table/Range: Table1 Use an external data source		West	\$ 3,597	email
9	Trump, Donald	Choose Connection		East	\$ 1,444	email
10	Winfrey, Oprah	Connection name:		Midwest	\$ 556	phone
11	Lawrence, Jennifer	Choose where you want the PivotTable report to be placed		Southwest	\$ 2,490	email
12	Jordan, Michael	<u>N</u> ew Worksheet Existing Worksheet		Midwest	\$ 517	phone
13	Streep, Meryl	Location:		East	\$ 1,119	email
14	Pitt, Brad	ОК	Cancel	East	\$ 1,614	phone
15	Perry, Katy			West	\$ 100	email
16	Obama, Barack	Chicago Public Library	IL	Midwest	\$ 1,504	phone
17	McGraw, Tim	Nashville Public Library	TN	South	\$ 448	phone

You're newly created Pivot Table should look something like this, with a list of fields taken from the original table.



You can choose which data you would like your Pivot Table to focus on by checking the data fields from the list. Excel will then try to guess if the field belongs as a filter, column label, row label, or value. Or, if you prefer, you can drag the field name to the area of your choice.

In this example, "Region" and "Giving Total" have been selected so that Excel will create a Pivot Table showing how donations in the different regions compare.

	А	В	С	D	E	F	G	▲ PivotTable Field List ▼ X
1								Choose fields to add to eport:
2								Name Library
3	Row Labels 🕞	Sum of Giving Total						State
4	East	11383						Giving Total
5	Midwest	10106						Contact Preference
6	Northeast	291						
7	Northwest	1488						
8	South	954						
9	Southwest	3490						
10	West	14977						
11	Grand Total	42689						
12								
13								
14								Drag fields between areas below: Report Filter Column Labels
15								
16								
17								
18								
19								Row Labels Σ Values
20								Region Sum of Giving
21								
22								
23								
24								
	M Sheet5 / Sheet1 / Shee	et2 / Sheet3 / Sheet4 / 🞾 /					▶ []	Defer Layout Update Update

You can easily add fields to your Pivot Table by checking another field from the list. In this example, the "State" field has been added by checking it in the list.

	A	В	С	D	E	F	G	PivotTable Field List 🔻 🗙
1								Choose fields to add to report:
2								Name Library
3	Row Labels 🕞	Sum of Giving Total						✓ State
4	■East	11383						Region Giving Total
5	MA	1119						
6	NJ	1444						
7	NY	8820						
8	■Midwest	10106						
9	IL	8906						
10	KY	1200						
11	■ Northeast	291						
12	ME	291						
13	■ Northwest	1488						

Changing Value Field Settings

If you would like the Pivot Table to show average donations instead of summing the donations, you can click on "Sum of Giving Totals" under the "Value" area, then select" Value Field Settings."

1200 291			Drag fields be		Move Up Move Down
291 1488			V Report		Move to Beginning Move to End Move to Report Filter
1488 954		_		Σ	Move to Row Labels Move to Column Labels Move to Values
86			Row La	×	Remove Field Value Field Settings Sum of Giving
420 448			State		
3490					
2490					

You can then change the" Value" setting to "Average."

1700		
954	Value Field Settings	Drag fields between areas below: Report Filter Column Labels
86	Source Name: Giving Total	
420	Custom Name: Average of Giving Total	
448	Summarize Values By Show Values As	
3490	Summarize value field by	
2490	Choose the type of calculation that you want to use to summarize data from the selected field	
654	Count	Row Labels Σ Values
346	Average	Region State
14977	Product	
14977		
42689	Mumber Format OK Cancel	
		Defer Layout Update Update
2		

Before clicking OK, you may wish to change the "Number Format" to "Currency" so that numeric values will appear as dollar amounts.

After selecting "Number Format", select "Currency" and make sure the "Decimal Places" are set to 2. Click OK on both menus.

Giving Total 11383		☐ Library ✓ State ✓ Region
1119	Format Cells	Giving Total
1444	Number	
8820	Category:	
10106	Sum of Giving Total	
8906	Accounting Date	
1200	Time Symbol: \$	
291	Scientific -\$1,234.10	
291	Special (\$1,234.10) Custom (\$1,234.10)	=
1488		
1488		
954		Drag fields between area
86	Currency formats are used for general monetary values. Use Accounting formats to align decimal	
420	points in a column.	
448		
3490	OK Cancel	
2490	Sum	
654	Count	Region
346	Max Min	State
14977	Product	
14977		
42689	Mumber Format OK Cancel	

Row Labels Ave	rage of Giving Total		Library State
⊟ East	\$1,626.14		Region Giving Total
MA	\$1,119.00		Contact Preference
NJ	\$1,444.00		
NY	\$1,764.00		

You will notice that donations are now displayed as averages and in currency format.

∋ S outhwest	\$1,163.33	
AZ	\$2,490.00	
NV	\$654.00	Row Labels Σ Values
ТХ	\$346.00	Region Average of Gi State
⊜West	\$1,497.70	
CA	\$1,497.70	
Grand Total	\$1,293.61	

Pivot Tables - Slicers

Excel 2010 allows you to use the Slicer tool to filter your data. On the Pivot Table Tools contextual ribbon, select "Insert Slicer." In this example, we will check "Library" and click OK.

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File	-	e Layout Formulas	Data Review	View Op	tions De	ign				_	
		Group Selection	A Z A Z A						ze Values By *		
PivotTal		4 Ungroup	Z↓ Sort Ins	ert Refresh Cha	nge Data C	ear Select	Move	强 Show Va		PivotChart OLAP	What-If Field
Opt Diver		Group Field	Sort & Filter		ource *		PivotTable		ems, & Sets ▼		Analysis - List Bu
		Group Average of Giving To		Data	1	Action	5	Calcu	lations	Tools	
	A	Average of Giving To	B		С	D		Е	F	G	PivotTable Fie
1			D							0	-
					Insert S	icers		? 🔀			Choose fields t
2					Na	ne					Library
3	Row Labels	Average of	Giving T	otal	✓Lib						✓ State
4	⊟ East		\$1,62	6.14	Re						Region Giving To
5	MA		\$1,11	9.00	Giv	ing Total					Contact Pre
6	NJ		\$1,44		Co	ntact Preferen	ce				
7	NY		\$1,76								
8	⊟Midwest		\$1,26								
9			\$1,27								
10	KY		\$1,20								
11	■Northeast			1.00							
12	ME		•	1.00							
13	■Northwest		\$1,48								
14	WA		\$1,48								
15	⊟ South			8.00		01					Drag fields bet
16	FL		\$8	6.00		OK		ancel			I Report Pl

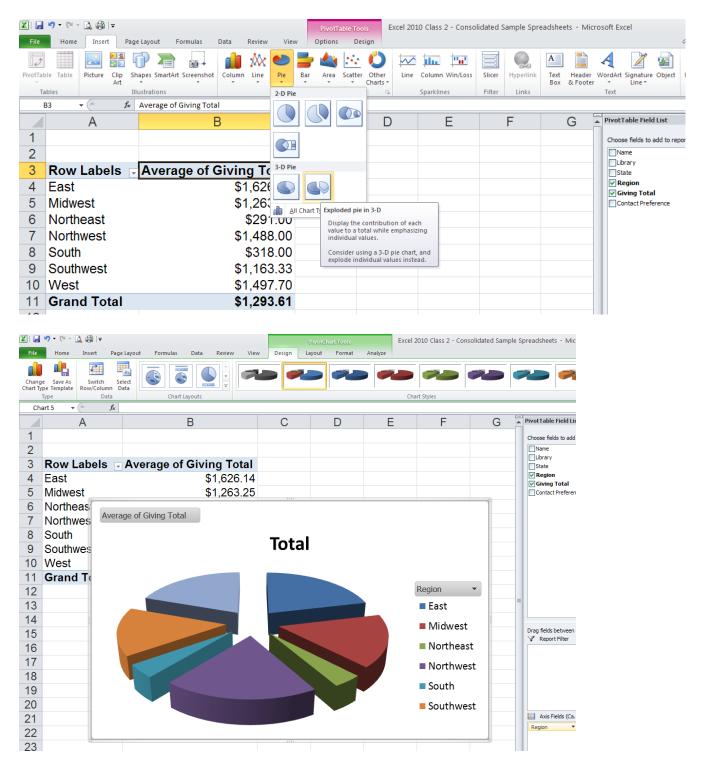
Holding the Ctrl button allows you to make multiple selections. In this case, the California libraries have been selected in the Slicer tool. Notice that the Pivot Table now only shows average donations to libraries in the Western region that are located in the state of California.

	А	В	С		D	E		F
1			Ĩ		333	7		1
2				Libr	ary		¥	
3	Row Labels 🕞	Average of Giving Total		Ne	w York Pub	lic Libr	~	
4	⊜ West	\$1,497.70						
5	CA	\$1,497.70		Pa	latine Public	c Library		
6	Grand Total	\$1,497.70		Dh	oenix Public	Library		
7						Library		
8				Sa	cramento F	ublic L		
9				6.2	n Diego Pu	blic Lib	í	
10				Ja	n Diego Fu			
11				Sa	n Francisco	o Publi		
12				60	ottle Dublie	Librony		
13				3e	attle Public	Library		
14				Sp	ringfield Pu	blic Lib	~	
15				· ·	-			
16								

You can easily clear the filter by selecting the button in the upper right of the Slicer box.

Pivot Tables – Charts

Like other tables, Excel 2010 can easily convert a Pivot Table to a chart to display information in a more visually interesting way. Simply click on the Insert ribbon, then select the kind of chart you want.



Sparklines

Sparklines are a new feature in Excel 2010 that allow you to create a mini chart within a single cell in order to show a visual representation of data trends.

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Pivot	Table Table	Picture	Clip Art	Shapes	SmartArt	Screenshot	Column	Line	Pie	Bar	Area	Scatter	Other Charts	-	Line	lolumn	Win/Loss	Slicer	
	Tables			Illustrat	tions				(Charts					_	sparklin	es	Filter	
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	A			В	1	C)		D			E			Insert cell.	a line cł	nart withir	a single	
1	Library D	onors																	-
2																			_
3	Name				2012		2013			2014	ŀ	2	2015	Spa	rklir	les			į.
4	Homer Si	mpson		\$2	223.00	9	\$378.00		\$	440.00)	\$ 63	1.00						ļ
5	James Pa	atterson		\$1,8	863.00	\$1	,204.00		\$	998.00)	\$74	0.00						
6	Emma Sto	one		\$1 ,	552.00	\$1	,894.00		\$2,	132.00)	\$1,01	2.00						
7	Bradley C	cooper		\$6	654.00	\$	\$865.00		\$	986.00)	\$1,01	4.00						
8	Steven Sp	bielberg	,	\$3,	597.00	\$3	,174.00		\$2,	875.00)	\$2,45	6.00						
9	Donald Tr	ump		\$9	956.00	\$	\$714.00		\$	678.00)	\$51	5. <mark>0</mark> 0						
10	Oprah Wi	infrey		\$1 ,4	444.00	\$1	,749.00		\$2,	240.00)	\$2,99	8.00						
11	Jennifer L	awren	ce	\$2 ,4	490.00	\$1	,978.00		\$1,	621.00)	\$1,34	5.00						

Select the cell where you want your first Sparkline to appear, then select the Insert ribbon, then "Line" under the "Sparklines" menu.

	Α	В	С	D	E	F
1	Library Donors					
2						
3	Name	2012	2013	2014	2015	Sparklines
4	Homer Simpson	<mark>\$223.00</mark>	\$378.00	\$440.00	\$ 631.00	
5	James Patterson	\$1,863.00	\$1,204.00	\$998.00	\$740.00	
6	Emma Stone	\$1,552.00	Create Sparklin		? 🛛 00	
7	Bradley Cooper	\$654.00	Choose the data the Data Range: B4	at you want h:E4	.00	
8	Steven Spielberg	\$3,597.00	Choose where you	want the sparklines to be p	laced00	
9	Donald Trump	\$956.00	Location Range:	\$F\$4	.00	
10	Oprah Winfrey	\$1,444.00		ОК	Cancel .00	
11	Jennifer Lawrence	\$2,490.00	\$1,978.00	\$1,621.00	\$1,345.00	

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Fil	e Home Insert	Page Layout Fo	rmulas Data I	Review View	Design							
Edi	Edit Line Column Win/Loss Negative Points Markers											
Spark	line Type	2	ihow			Style						
	F4 🔻 💿	f_{x}										
	А	В	С	D	E	F						
1	Library Donors											
2												
3	Name	2012	2013	2014	2015	Sparklines						
4	Homer Simpson	\$223.00	\$ 378.00	\$440.00	\$631.00							
5	James Patterson	\$1,863.00	\$1,204.00	\$998.00	\$740.00							
6	Emma Stone	\$1,552.00	\$1,894.00	\$2,132.00	\$1,012.00							

 Then, highlight the data range, make sure the Sparkline location range is correct, then click OK.

 Image: Image:

A Sparkline chart appears showing a visual representation of that row's data. You can then AutoFill the rest of the rows.

X	🚽 🌒 र 🕅 र 🖄 🗐 🔻			Spa	rkline Tools Excel	Intermediate - Sample Spreadsheets -
Fil	e Home Insert	Page Layout For	mulas Data I	Review View	Design	
Edi	it Line Column Win/L	Low Point	First Point Last Point	\sim	$\sim \sim \sim$	
Spark		Sł fx	10W			Style
	F4 ▼ (*)	B	С	D	E	F
1	Library Donors	D	0	U	L	
2	-					
3	Name	2012	2013	2014	2015	Sparklines .
4	Homer Simpson	\$223.00	\$378.00	\$440.00	\$631.00	
5	James Patterson	\$1,863.00	\$1,204.00	\$998.00	\$740.00	
6	Emma Stone	\$1,552.00	\$1,894.00	\$2,132.00	\$1,012.00	
7	Bradley Cooper	\$654.00	\$865.00	\$986.00	\$1,014.00	
8	Steven Spielberg	\$3,597.00	\$3,174.00	\$2,875.00	\$2,456.00	
9	Donald Trump	\$956.00	\$714.00	\$678.00	\$515.00	
10	Oprah Winfrey	\$1,444.00	\$1,749.00	\$2,240.00	\$2,998.00	
11	Jennifer Lawrence	\$2,490.00	\$1,978.00	\$1,621.00	\$1,345.00	
12	Michael Jordan	\$517.00	\$994.00	\$1,023.00	\$1,256.00	
13	Brad Pitt	\$1,119.00	\$3,583.00	\$2,997.00	\$989.00	
14	Meryl Streep	\$1,614.00	\$1,087.00	\$1,879.00	\$2,042.00	
15	Katy Perry	\$100.00	\$207.00	\$368.00	\$401.00	
16	Barack Obama	\$1,504.00	\$1,718.00	\$1,865.00	\$1,987.00	

You can easily change the look of your Sparklines or convert your line graphs to bar graphs using the menu options on the Sparkline Tools Design contextual ribbon.

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		В	С	D	E	F
1	Library Donors					
2	News	2012	2012	2014	2015	0
3	Name	2012	2013	2014	2015	Sparklines
4	Homer Simpson	\$223.00	\$378.00	\$440.00	\$631.00	
5	James Patterson	\$1,863.00	\$1,204.00	\$998.00	\$740.00	
6	Emma Stone	\$1,552.00	\$1,894.00	\$2,132.00	\$1,012.00	
7	Bradley Cooper	\$654.00	\$865.00	\$986.00	\$1,014.00	
8	Steven Spielberg	\$3,597.00	\$3,174.00	\$2,875.00	\$2,456.00	
9	Donald Trump	\$956.00	\$714.00	\$678.00	\$515.00	
10	Oprah Winfrey	\$1,444.00	\$1,749.00	\$2,240.00	\$2,998.00	
11	Jennifer Lawrence	\$2,490.00	\$1,978.00	\$1,621.00	\$1,345.00	
12	Michael Jordan	\$517.00	\$994.00	\$1,023.00	\$1,256.00	
13	Brad Pitt	\$1,1 <mark>1</mark> 9.00	\$3,583.00	\$2,997.00	\$989.00	
14	Meryl Streep	\$1,614.00	\$1,087.00	\$1,879.00	\$2,042.00	
15	Katy Perry	\$100.00	\$207.00	\$368.00	\$401.00	
16	Barack Obama	\$1,504.00	\$1,718.00	\$1,865.00	\$1,987.00	

Logical Functions

Excel offers functions that compare data using logical operators such < (less than), > (greater than), = (equal to), etc. In the example below, the logical function "IF" allows Excel to compare donors' 2014 donations amounts to their 2012 amounts and then indicate if that donor should receive a thank you letter for increasing their donation or a phone call requesting additional funding.

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	IF 👻 🔍 🗸 🗸	<i>f</i> _x =						
	А	В	С	D	E	F	G	
1	Library Donors							
2	Name	2012	2013	2014	2015	Sparklines	Thank You Letter	or Phone Call?
4	Homer Simpson	\$223.00	\$378.00	\$440.00	\$631.00		=	
5	James Patterson	\$1,863.00	Insert Function			?⊠	•	
6	Emma Stone	\$1,552.00	Search for a function Type a brief desc	n: ription of what you want t	to do and then click			
7	Bradley Cooper	\$654.00	Or select a catego	ory: Logical	~			
8	Steven Spielberg	\$3,597.00	Select a function:	_			•	
9	Donald Trump	\$956.00	FALSE IF IFERROR]			·	
10	Oprah Winfrey	\$1,444.00	NOT OR TRUE					
11	Jennifer Lawrence	\$2,490.00	IF(logical_test, Checks whether a	value_if_true,value_if condition is met, and retu		and another	·	
12	Michael Jordan	\$517.00	value if FALSE.					
13	Brad Pitt	\$1,119.00	Help on this function	1	ОК	Cancel		
14	Meryl Streep	\$1,614.00	\$1,087.00	\$1,879.00	\$2,042.00			

Select the Formulas ribbon, then "Insert Function." Select the category "Logical" and then select the "IF" function. Click OK.

<mark>∫</mark> ∗ =IF(E	E4>B4,"T	hank You Lett	er","Phone	e Call")			
В		С		D	E	F	G
	2012	2	013	2014	2015	Sparklines	Thank You Letter or Phone Call?
\$2	223.00	\$37	8.00	\$440.00	\$631.00	== ==	ık You Letter","Phone Call")
\$1.8	00	¢1 00	4.00	¢000.00	\$740.00		
	Functio	n Arguments				? 🛛	
\$1,]	
\$6		Logical_test			E TRUE		
		Value_if_true	"Thank You L		💽 = "Thank You		
\$3,		Value_if_false	"Phone Call"		E "Phone Call"		
\$	Checks w	hether a condition	n is met, and r	returns one value if 1	= "Thank You RUE, and another valu		
· · ·		¥.	alue_if_false		s returned if Logical_tes	st is FALSE. If omitted, FALSE	
\$1,4				is returned.			
\$2,4	E a mara da a	result = Thank Y					
			ou Letter		_		
\$	Help on t	his function			L	OK Cancel	
\$1,1	119.00	\$3,58	3.00	\$2,997.00	\$ 989.00		

In the "Logical_test" field, click on the cell with the 2014 donation amount, enter the > (greater than) operator, click on the cell with the 2012 donation amount.

In the "Value_if_true" field, enter in quotations "Thank You Letter".

In the "Value_if-false" field, enter in quotations "Phone Call"

Observe in the formula bar at the top how Excel constructs the function.

Click OK.

Excel then uses the logical function to determine that the first donor has given more in 2014 than in 2012 and indicates that this donor needs to receive a thank you letter.

	G4 v (Jr IF(E4>B4, "Thank You Letter", "Phone Call")										
	А	В	С	D	E	F	G				
1	Library Donors										
2											
3	Name	2012	2013	2014	2015	Sparklines	Thank You Letter or Phone Call?				
4	Homer Simpson	\$223.00	\$378.00	\$440.00	\$631.00		Thank You Letter				
5	James Patterson	\$1,863.00	\$1,204.00	\$998.00	\$740.00	— —					
6	Emma Stone	\$1,552.00	\$1,894.00	\$2,132.00	\$1,012.00						
7	Bradley Cooper	\$654.00	\$865.00	\$986.00	\$1,014.00						

Simply AutoFill the rest of the column and Excel applies the logical function to each donor.

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	G4 🔹 🤄	<i>f</i> _x =IF(E4>B4,"Th	ank You Letter","Ph	one Call")					
	A	В	С	D	E		F	G	
1	Library Donors								
2									
3	Name	2012	2013	2014	2015	Sparkline	es	Thank You Letter o	or Phone Call?
4	Homer Simpson	\$223.00	\$378.00	\$440.00	\$631.00			Thank You Letter	
5	James Patterson	\$1,863.00	\$1,204.00	\$998.00	\$740.00		=	Phone Call	
6	Emma Stone	\$1,552.00	\$1,894.00	\$2,132.00	\$1,012.00			Phone Call	
7	Bradley Cooper	\$654.00	\$865.00	\$986.00	\$1,014.00			Thank You Letter	
8	Steven Spielberg	\$3,597.00	\$3,174.00	\$2,875.00	\$2,456.00			Phone Call	
9	Donald Trump	\$956.00	\$714.00	\$678.00	\$515.00			Phone Call	
10	Oprah Winfrey	\$1,444.00	\$1,749.00	\$2,240.00	\$2,998.00			Thank You Letter	
11	Jennifer Lawrence	\$2,490.00	\$1,978.00	\$1,621.00	\$1,345.00			Phone Call	
12	Michael Jordan	\$517.00	\$994.00	\$1,023.00	\$1,256.00			Thank You Letter	
13	Brad Pitt	\$1,119.00	\$3,583.00	\$2,997.00	\$989.00			Phone Call	
14	Meryl Streep	\$1,614.00	\$1,087.00	\$1,879.00	\$2,042.00	_		Thank You Letter	
15	Katy Perry	\$100.00	\$207.00	\$368.00	\$401.00			Thank You Letter	
<mark>16</mark> 17	Barack Obama	\$1,504.00	\$1,718.00	\$1,865.00	\$1,987.00			Thank You Letter	
0									1

Payment Function

Excel provides a simple way to calculate monthly loan payments using the Payment Function. First, enter into a simple spreadsheet the price, interest rate, number of payments, and a blank monthly payment line, like the example below.

File	Home Insert Page Lay	out Formulas Data Review	View						
fx Inser Functi	t AutoSum Recently Financial Log on	ical Text Date & Lookup & Math Time * Reference * & Trig *	More Functions *	Name Manager	Define Name 🔻 PUse in Formula Create from Sel Defined Names	- ⊂ ₹‡Tra	ce Dependents 📢 nove Arrows 👻 🙆	Show Formulas Frror Checking 👻 Evaluate Formula Ila Auditing	Wate Wind
	PMT ▼ (× ✓ ƒ _* =								
	A	В		С	D	E	F	G	ŀ
1	Payment Function			Insert	Function			2	1
2					for a function:				4
3	Car Price	\$23	,000	paym				Go	1
4	Interest Rate		4.9%						
5	Number of Payments		60		ect a <u>c</u> ategory: Re	ecommended		*	
6				Select a	functio <u>n</u> :			~	
7	Monthly Payment	=		PPMT FV	-				
8				XNPV					
9				IPMT CUMI				~	
10					rate,nper,pv,fv,t		n constant paymen	ts and a constant	
11					st rate.		r constant paymon		
12									
13				Help op	this function		ОК	Cancel	1
14									J
15									

Select the cell where you want the monthly payment calculation to go, select the Formulas ribbon, and then the "Insert Function" option on the far left. An" Insert Function" dialog box will appear. Search for the "Payment" function (abbreviated PMT) and click OK.

The "Function Argument"s box will appear. Click on the "Rate" field, then select the cell with the interest rate amount.

	PMT ▼ (X ✓ f x = PMT(B4)										
	А	В	С	D	E	F	G				
1	Payment Function										
2			Function	n Arguments							
3	Car Price	\$23,000	PMT		ta la d						
4	Interest Rate	4.9%		Ra Np	te B4		🔣 = 0.049				
5	Number of Payments	60			Pv		🔣 = numb				
6					Fv		🔣 = numb	ber			
7	Monthly Payment	=PMT(B4)		Ту	ре		💽 = numb)er			
8			Calculates	; the payment for a	loan based on con	stant payments an	= nd a constant intere	est rate.			

In order to have Excel calculate the interest rate on a per-month basis, add a "/12" next to the cell address.

PMT ▼ (X ✓ f x =PI	MT(B4/12)							
А	В	С		D	E	F	G	ŀ
Payment Function								
		Fu	nction	Arguments				
Car Price	\$23,000	D	1T	Da	te B4/12		(10) = 0.004	083333
Interest Rate	4.9%	6		Np			💽 = 0.004	
Number of Payments	60	D		-	Pv		🔣 = numl	
					Fv		💽 = numl	ber
Monthly Payment	=PMT(B4/12)			Ту	ре		📧 = numl	ber
		Calo	ulates	the payment for a	loan based on con	stant payments an	= d a constant intere	est rate.

For the "Nper" (number of payments) field, select the cell with the number of payments and for the "Pv" (present value) field, select the cell with the item's price. Lastly, click OK.

F	PMT ▼ (* X ✓ <u>fx</u> =PN	ЛТ(B4/12,B5,B3)									
	А	В		С	D		E	F	G	Н	I
1	Payment Function										
2				Function	n Arguments						? 🛛
3	Car Price	\$23,000)	PMT							
4	Interest Rate	4.9%	6			ote B			5 = 0.004	083333	
5	Number of Payments	60)			Pv B			1 = 00)	
6						Fv			💽 = numl	ber	
7	Monthly Payment	=PMT(B4/12,B5,B3)	7		Ту	/pe			🔝 = numl	ber	
8	-			Calculates	the payment for a	loan h	ased on con	stant navments an	= -432.9		
9				Calcalacos	and paymone for a	noarro				it a series of future	payments is
10							wort	h now.			
11				E a una da un	esult = (\$432.99)						
12											Const
13				Help on th	is function					ОК	Cancel

Excel will then display the monthly payment amount.

		*								
	B7 ▼ (<i>f</i> _x =PMT(B4/12,B5,B3)									
	А	В	(
1	Payment Function									
2										
3	Car Price	\$23,000								
4	Interest Rate	4.9%								
5	Number of Payments	60								
6										
7	Monthly Payment	(\$432.99)								
8										
9										

Once Excel completes the Payment Function, you can change the price, interest rate, and number of payment values to see how it impacts the monthly payment amount.

	B7 ▼ (<i>f_x</i> =PN	/IT(B4/12,B5,B3)	
	А	В	(
1	Payment Function		
2			
3	Car Price	\$19,000	
4	Interest Rate	4.2%	
5	Number of Payments	72	
6			
7	Monthly Payment	(\$298.99)	
8			
0			

VLOOKUP

The VLOOKUP function in Excel is a useful tool when you need to perform calculations that reference a table with a range of values. This feature is frequently used when cross referencing incomes with income tax ranges or, as in the example below, cross referencing sales revenues with commission ranges.

X	9	· (°' -	🔔 🖨 -	Ŧ				Exce	el 2010 Cla	ass 2 ·	- Consolidated Samp	le Spre
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		utoSum		Financial Lo	gical Text		te & Lookup &		More	1	Name anager 🕮 Create from	Selectio
Fun	iction	Ŧ	Used *	*	• •		me * Reference	r & Irig ∗	Functions	* Ma		
				Fu	nction Libra	iry					Defined Names	
	C1	11	(😑 X 🗸 🕽	še =							
			A				В		С		D	E
1												
2	Reve	enue is	Greater	than or E	qual to	B	ut Less Than	Then	Commiss	sion		
3	\$				-	\$	10,000.00			3%		
4	\$				10,001.00	\$	25,000.00			4%		
5	\$				25,001.00		100,000.00			5%		
6	\$				0,001.00	\$	500,000.00			6%		
7	\$			5	0,001.00					7%		
8												
9						_		_				
	Salesp						/enue		ission Rat	te	Commission Paid	
	Brad Pi					\$	1,000,000.00	=				
	Meryl S					\$	8,000.00					
	Bradley					\$ \$	26,000.00					
14	Jennifer	Lawren	ice			\$	150,000.00					
15												
17												
18		Insert	Functio	n					<mark>?区</mark> -			
19		<u>S</u> earch	for a funct	ion:								
20		Vlool	(UD									
21		L 100	ναρ									
22		Or se	lect a cate	gory: Recom	mended		~	ĺ				
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29 30									~			
31		YLOC	KUP(look	cup value.ta	able arrav	.col	_ index_num,rar	ae look	(QU)			
32			-				ble, and then retu					
33		same	row from a	a column you :			t, the table must					
34		ascer	iding order	•								
35												
36												
37		Help on	this functi	ion			ОК	Car	ncel			
38												
39												

Select the cell of the first commission rate, select the Formulas ribbon and then "Insert Function." In the search field, type "VLOOKUP" and select it from the search results. Click OK.

	VLO	okup - (° ×	✓ <u>f</u> ∗ =VLOO	OKUP	0	I	
	1	A			В	С	D
1							
2	Rev	enue is Greater than	or Equal to	Bu	t Less Than	Then Commission	
3	\$		-	\$	10,000.00	3%	
4	\$		10,001.00	\$	25,000.00		
5	\$		25,001.00	\$	100,000.00	5%	
6	\$		100,001.00	\$	500,000.00	6%	
7	\$		500,001.00			7%	
8							
9							
10	Salesp	person		_	enue	Commission Rate	Commission Paid
11	Brad P			\$		=VLOOKUP()	
12	Meryl S			\$	8,000.00		
13		/ Cooper		\$	26,000.00		
14	Jennife	r Lawrence		\$	150,000.00		
15							
16							
17		Function Arguments					? 🗙
18		Tunction Argumenta					
19		VLOOKUP					
20		Lookup_value	B11		I	= any	
21							
22 23		Table_array				= number	
23		Col_index_num			E	= number	
25		Range_lookup			1	= logical	
26		L					
27		Looka fox a value in the L-G	most column of a	h a b l a	and then we way	=	m a column
28		specify. By default, the tab				a value in the same row fro	in a column you
29					-		
30		Lo			alue to be found i 1 reference, or a	in the first column of the tab text string	le, and can be a
31			V.	aiue, a	norerence, or a	coxe sering.	
32							
33		Formula result =					
34							
35		Help on this function				ОК	Cancel
36							
37							

In the "Lookup_value" field, select the cell with revenue amount.

In the "Table_array" field, highlight the data in the revenue/commission table, excluding the column headings.

2	Revenue is Greater than or Equal to	But Less Than	Then Commission	
3	\$ -	\$ 10,000.00	3%) /
4	\$ 10,001.00	\$ 25,000.00	4%	}
5	\$ 25,001.00	\$ 100,000.00	5%	
6	\$ 100,001.00	\$ 500,000.00	6%	
7	\$ 500,001.00		7%	
8				
9				
10	Salesperson	Revenue	Commission Rate	Commission Paid
11	Brad Pitt	\$ 1,000,000.00	KUP(B11,A3:C7)	
12	Meryl Streep	\$ 8,000.00		
13	Bradley Cooper	\$ 26,000.00		
14	Jennifer Lawrence	\$ 150,000.00		
15				
16				
17	Function Arguments			
18	-VLOOKUP			
19		ित्तः		
20	Lookup_value B11	=	1000000	
21	Table_array A3:C7	=	{0,10000,0.03;10001,2500	0,0.04;2
22	Col_index_num	=	number	
23				
24	Range_lookup	i =	logical	
25		=		

Important: The "Table_array" range must then be converted to absolute values by entering a \$ before each column letter and each row number.

Function Arguments			
VLOOKUP			
Lookup_value	B11 💽	=	10000
Table_array	\$A\$3:\$C\$7	=	{0,10
Col_index_num		=	numt
Range_lookup		=	logica
<u></u>		=	

In the" Col_index_num" field, enter the relative column number of the Commission data. This table has three columns and the Commission data is in the third column, so enter 3.

	VLOOKUP → → × ✓ f → =VLOOKUP(B11,\$A\$3:\$C\$7,3)										
		A				В	С		D		
1											
2	F	Revenue is Greater th	an or Equal t	to	B	ut Less Than	Then Commiss	sion			
3	\$			-	\$	10,000.00)	3%			
4	\$		10,00 ⁻		\$	25,000.00		4%			
5	\$		25,00		\$	100,000.00		5%			
6	\$		100,00		\$	500,000.00		6%			
7	\$		500,00	1.00				7%)		
8											
9	_										
10		lesperson				venue	Commission Ra		Commission	n Paid	
11	-	d Pitt			\$		11,\$A\$3:\$C\$7,3)		4		
		ryl Streep			\$	8,000.00					
13		dley Cooper			\$	26,000.00					
14	Jen	nifer Lawrence			\$	150,000.00					
15	_										
16		Function Arguments							? 🗙		
17		r unction Arguments									
18	-	VLOOKUP									
19	-	Lookup_value	B11			=	1000000				
20	-	. –									
21		Table_array	\$A\$3:\$C\$7			=	{0,10000,0.03;1000	1,2500	0,0.04;2500		
22 23		Col_index_num	3			=	3				
24		Range_lookup				= 🔝	logical				
25		L					0.07				
26		Looks for a value in the lef	tmost column of	a tabk				from a	colump you		
27		specify. By default, the tab	ble must be sorte	a tabii ed in a	n asi	cending order.	value in the same rowr	noma	colamin you		
28						-	e 1.1.1				
29		Col					e_array from which the t column of values in th				
30				Shoald	100	recarnea, me nr.			c is coldinin 1.		
31											
32		Formula result = 0.07									
33								_			
34		Help on this function					ОК		Cancel		
35											
36											

Excel then cross references the salesperson's revenue with the revenue/commission table and determines the appropriate commission rate.

	C11 ▼											
	А	В	С	D								
1												
2	Revenue is Greater than or Equal to	But Less Than	Then Commission									
3	\$-	\$ 10,000.00	3%									
4	\$ 10,001.00	\$ 25,000.00	4%									
5	\$ 25,001.00	\$ 100,000.00	5%									
6	\$ 100,001.00	\$ 500,000.00	6%									
7	\$ 500,001.00		7%									
8												
9												
10	Salesperson	Revenue	Commission Rate	Commission Paid								
11	Brad Pitt	\$ 1,000,000.00	7%									
12	Meryl Streep	\$ 8,000.00										
13	Bradley Cooper	\$ 26,000.00										
14	Jennifer Lawrence	\$ 150,000.00										
15												
16												

Use AutoFill to determine the commission rates of the other salespersons.

	А		В	С	D
1					
2	Revenue is Greater than or Equal to	В	ut Less Than	Then Commission	
3	\$ -	\$	10,000.00	3%	
4	\$ 10,001.00	\$	25,000.00	4%	
5	\$ 25,001.00	\$	100,000.00	5%	
6	\$ 100,001.00	\$	500,000.00	6%	
7	\$ 500,001.00			7%	
8					
9					
10	Salesperson	Re	venue	Commission Rate	Commission Paid
11	Brad Pitt	\$	1,000,000.00	7%	
12	Meryl Streep	\$	8,000.00	3%	
13	Bradley Cooper	\$	26,000.00	5%	
14	Jennifer Lawrence	\$	150,000.00	6%	
15					
16					

Calculating the commission paid to each sales person is a simple multiplication formula, multiplying the Revenue cell with the Commission Rate cell.

1					
2	Revenue is Greater than or Equal to	В	ut Less Than	Then Commission	
3	\$ -	\$	10,000.00	3%	
4	\$ 10,001.00	\$	25,000.00	4%	
5	\$ 25,001.00	\$	100,000.00	5%	
6	\$ 100,001.00	\$	500,000.00	6%	
7	\$ 500,001.00			7%	
8					
9					
10	Salesperson	Re	venue	Commission Rate	Commission Paid
11	Brad Pitt	\$	1,000,000.00	7%	=B11*C11
12	Meryl Streep	\$	8,000.00	3%	
13	Bradley Cooper	\$	26,000.00	5%	
14	Jennifer Lawrence	\$	150,000.00	6%	
15					

1					
2	Revenue is Greater than or Equal to	В	ut Less Than	Then Commission	
3	\$ -	\$	10,000.00	3%	
4	\$ 10,001.00	\$	25,000.00	4%	
5	\$ 25,001.00	\$	100,000.00	5%	
6	\$ 100,001.00	\$	500,000.00	6%	
7	\$ 500,001.00			7%	
8					
9					
10	Salesperson	Re	venue	Commission Rate	Commission Paid
11	Brad Pitt	\$	1,000,000.00	7%	\$ 70,000.00
12	Meryl Streep	\$	8,000.00	3%	
13	Bradley Cooper	\$	26,000.00	5%	
14	Jennifer Lawrence	\$	150,000.00	6%	
15					

AutoFill the remaining commissions.

1							
2	Revenue is Greater than or Equal to	В	ut Less Than	Then Commission			
3	\$	\$	10,000.00	3%			
4	\$ 10,001.00	\$	25,000.00	4%			
5	\$ 25,001.00	\$	100,000.00	5%			
6	\$ 100,001.00	\$	500,000.00	6%			
7	\$ 500,001.00			7%			
8							
9							
10	Salesperson	Rev	/enue	Commission Rate	Cor	mmission Paid	
11	Brad Pitt	\$	1,000,000.00	7%	\$	70,000.00	
12	Meryl Streep	\$	8,000.00	3%	\$	240.00	
13	Bradley Cooper	\$	26,000.00	5%	\$	1,300.00	
14	Jennifer Lawrence	\$	150,000.00	6%	\$	9,000.00	
15							
16						Ľ	

External Cell Reference

It might be necessary to reference a cell from another worksheet within the workbook. An example would be collecting quarterly totals into an annual report on a separate worksheet. Say the quarterly budget totals are one worksheet and we want to add them together on a separate worksheet.

	A	В	С	D	E	F	G	Н			
1	External Cell	Reference									
2											
3	Smith	Fami	ly Bud	get 1	st Qu	arter 2	014				
4				-							
					Cell						
5		Income	Mortgage	Utilities		Groceries					
6	1/1/14	\$7,000	\$2,000	\$500	\$125	\$700					
7	2/1/14	\$7,000	\$2,000	\$500	\$125						
8	3/1/14	\$7,000	\$2,000	\$500	\$125	\$700					
	Quarterly										
9	Total	\$21,000	\$6,000	\$1,500	\$375	\$2,100					
10		יריי				,					
11											
12	Smith	Fami	ly Bud	get 2	nd Q	uarter 2	2014				
13											
10					Cell						
14		Income	Mortgage	Utilities		Groceries					
15	4/1/14	\$7,000	\$2,000	\$500	\$125	\$700					
16	5/1/14	\$7,000	\$2,000	\$500	\$125	\$700					
17	6/1/14	\$7,000	\$2,000	\$500	\$125	\$700					
	Quarterly		φ2,000	\$000		\$700		Add the qu	arterly t	otals for all	
18	Total	\$21,000	\$6,000	\$1,500	\$375	\$2,100) 1	four quarte	ers (3 rd a	nd 4th quar	rters
10								-	-	play the res	
								in these ce	•	play the rea	Janes
								in these te	115		
	А	В	С	D	E	F	G	Н			
1	External Cell	Reference	e								
2											
3	Smith	Fami	ilv Buc	daet /	Annua	al					
	•			.90.7							
4					0						
	Maar			1 14:1:4:	Cell						
5	Year		Mortgage		s Phone	Groceries	5				
6	2014	\lor	_ ↓	V	V	\vee					
7											
8											
9											

The formula looks like this:

	cipoono o	1 VIII	1.8	~~ <u>~</u>	gimen	14	MCI 13				
	PMT 🔻	• (• 🗙 🗸 f _* =	UM('quarterly tota	ls'!B9,'quarterl	ly totals'!B18,'qı	uarterly totals'!B27,	quarterly totals	'!B36)			
	A	В	С	D	E	F	G	Н	I	J	
1	External Ce	II Reference									
2											
3	Smith Family Budget Annual										
4											
					Cell						
5	Year	Income	Mortgage	Utilities	Phone	Groceries					
6	2014	=SUM('qu	arterly totals'!	B9,'quarte	erly totals'!E	318, 'quarterly	totals'!B27	quarterly t	otals'!B36)		
7		SUM(number	number5],)								
8											
9											

Note that the source worksheet name has single quotes. This is because the worksheet name contains a space.

	Α	В	С	D	E	F	G
1	External Cell Reference						
2							
3	Smith Family Budget Annual						
4							
					Cell		
5	Year	Income	Mortgage	Utilities	Phone	Groceries	
6	2014	\$84,000	\$24,000	\$6,000	\$1,500	\$8,400	
7							
8							
8 9							
_							
9							
9 10							