Excel Advanced

Contents

Formulas

VLOOKUP

The VLOOKUP function searches vertically (top to bottom) the leftmost column of a table until a value that matches or exceeds the one you are looking up is found.

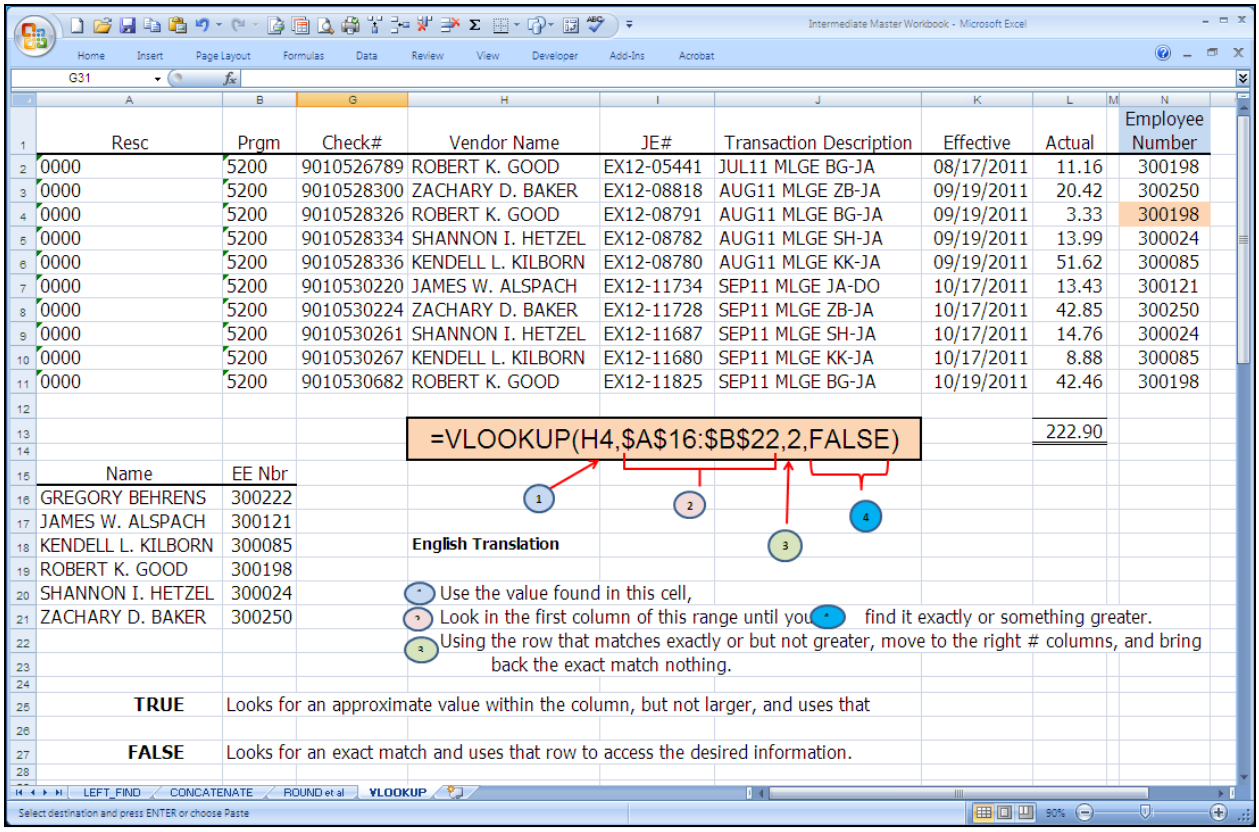
The elements being looked up must be unique and must be arranged or sorted in ascending order; that is, alphabetical order for text entries, and lowest-to-highest order for numeric entries.

The syntax is =VLOOKUP(lookup_value,table_array,col_index_num,[range_lookup]).

An example of the formula is: VLOOKUP(E2,D2:M3,2,TRUE) The English translation is using the value found in the cell E2, look in the range of D2 to M3 row by row. If you find a value that matches or exceeds the value in E2, using that row, go over 2 columns to the right, grab the value there and bring it back.

There are two range_lookup argument options; TRUE or FALSE

TRUE	
	Is the default answer, so you may leave it out of the formula
	Looks for an approximate match
	If it finds an exact match it will use it.
	If it doesn't find an exact match, it will use the last item before it got greater
	Alphabetical: Looking for Cat. If elements are Apple, Bird, Carpet, Dog; then Carpet would be returned because Dog exceeds Cat alphabetically.
	Numeric: Looking for 5.25. If elements are 3.0, 4.0, 5.0, 6.0, 7.0, then 5.0 would be used. The last number before 5.25 was exceeded.
FALSE	
	Looks for an exact match.
	If it finds an exact match it will use it.
	If it doesn't find an exact match, it will return #N/A
	Alphabetical: Looking for Cat. If elements are Apple, Bird, Carpet, Dog; then #N/A would be returned.
	Numeric: Looking for 5.25. If elements are 3.0, 4.0, 5.0, 6.0, 7.0, then #N/A would be returned because there is no exact match.



Resc	Prgm	Check#	Vendor Name	JE#	Transaction Description	Effective	Actual	Employee Number
0000	5200	9010526789	ROBERT K. GOOD	EX12-05441	JUL11 MLGE BG-JA	08/17/2011	11.16	300198
0000	5200	9010528300	ZACHARY D. BAKER	EX12-08818	AUG11 MLGE ZB-JA	09/19/2011	20.42	300250
0000	5200	9010528326	ROBERT K. GOOD	EX12-08791	AUG11 MLGE BG-JA	09/19/2011	3.33	300198
0000	5200	9010528334	SHANNON I. HETZEL	EX12-08782	AUG11 MLGE SH-JA	09/19/2011	13.99	300024
0000	5200	9010528336	KENDELL L. KILBORN	EX12-08780	AUG11 MLGE KK-JA	09/19/2011	51.62	300085
0000	5200	9010530220	JAMES W. ALSPACH	EX12-11734	SEP11 MLGE JA-DO	10/17/2011	13.43	300121
0000	5200	9010530224	ZACHARY D. BAKER	EX12-11728	SEP11 MLGE ZB-JA	10/17/2011	42.85	300250
0000	5200	9010530261	SHANNON I. HETZEL	EX12-11687	SEP11 MLGE SH-JA	10/17/2011	14.76	300024
0000	5200	9010530267	KENDELL L. KILBORN	EX12-11680	SEP11 MLGE KK-JA	10/17/2011	8.88	300085
0000	5200	9010530682	ROBERT K. GOOD	EX12-11825	SEP11 MLGE BG-JA	10/19/2011	42.46	300198

222.90

=VLOOKUP(H4,$A$16:$B$22,2,FALSE)

Name	EE Nbr
GREGORY BEHRENS	300222
JAMES W. ALSPACH	300121
KENDELL L. KILBORN	300085
ROBERT K. GOOD	300198
SHANNON I. HETZEL	300024
ZACHARY D. BAKER	300250

English Translation

1. Use the value found in this cell,
2. Look in the first column of this range until you find it exactly or something greater.
3. Using the row that matches exactly or but not greater, move to the right # columns, and bring back the exact match nothing.

TRUE	Looks for an approximate value within the column, but not larger, and uses that
FALSE	Looks for an exact match and uses that row to access the desired information.

COUNTIFS

Recall quickly the COUNT and IF commands.

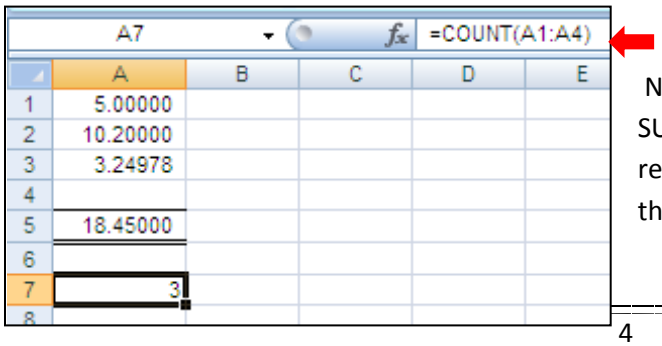
COUNT

The COUNT function counts the number of cells that contain numbers and counts numbers within the list of arguments.

The syntax is COUNT(value1, value2, …)

Continuing on with our SUM formula from above, let's not only add up the values of the range A1:A4, but let's count how many numbers are included within the range, i.e. how many cells within the range has a value in it.

The formula is =COUNT(A1:A4). The English translation is count how many cells within the range has a value in it and display the result.



Notice that the range is exactly the same as our SUM, A1:A4, which includes four rows. The value returned in cell A7 is three, because only three of the four rows have values in them.

If you are trying to count text, use the COUNTA formula which counts the non-blank cells.

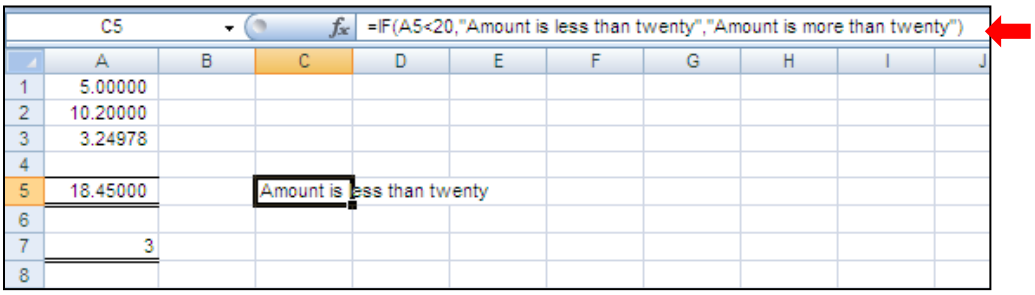
IF

The formula makes a statement/question, if the answer is true then one response is obtained. If the answer if false, then another answer is obtained.

The syntax is =IF(logical_test,value_if_true,value_if_false)

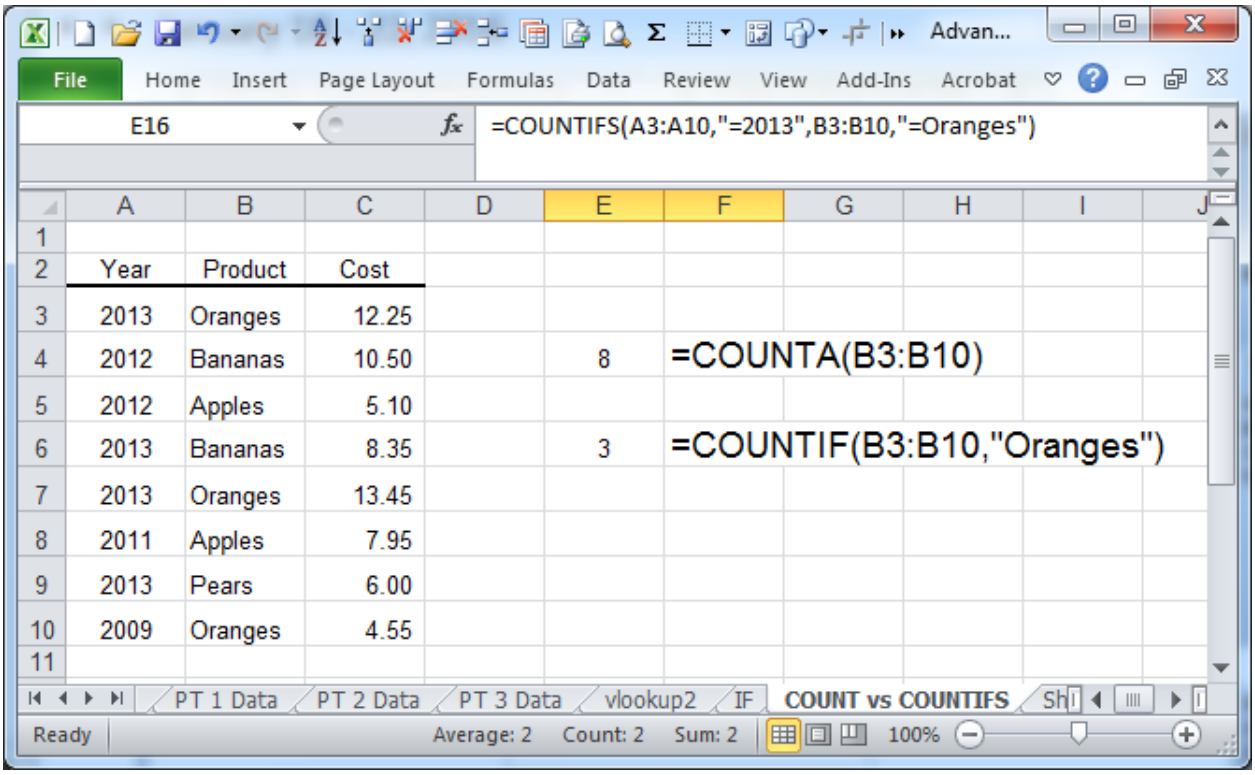
Continuing on with our SUM formula from above, let's add some verbage to emphasize whether the result is greater or less than twenty.

The formula is =if(A5<20,"Amount is less than twenty","Amount is more than twenty"). The English translation is if the value found in A5 is less than twenty THEN display the comment 'Amount is less than twenty' ELSE display the comment 'Amount is more than twenty'.



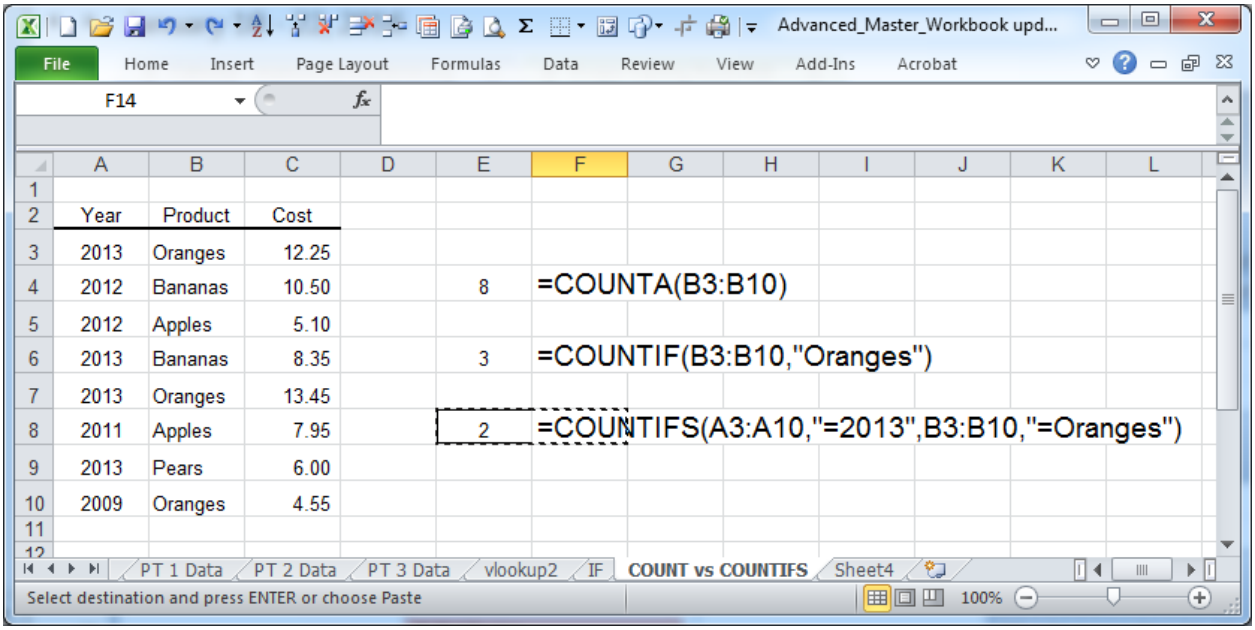
COUNTIF

The COUNT function counts the number of cells in a range, that meets single criteria.



COUNTIFS

The COUNT function counts the number of cells in a range that meets multiple criteria.



Filters

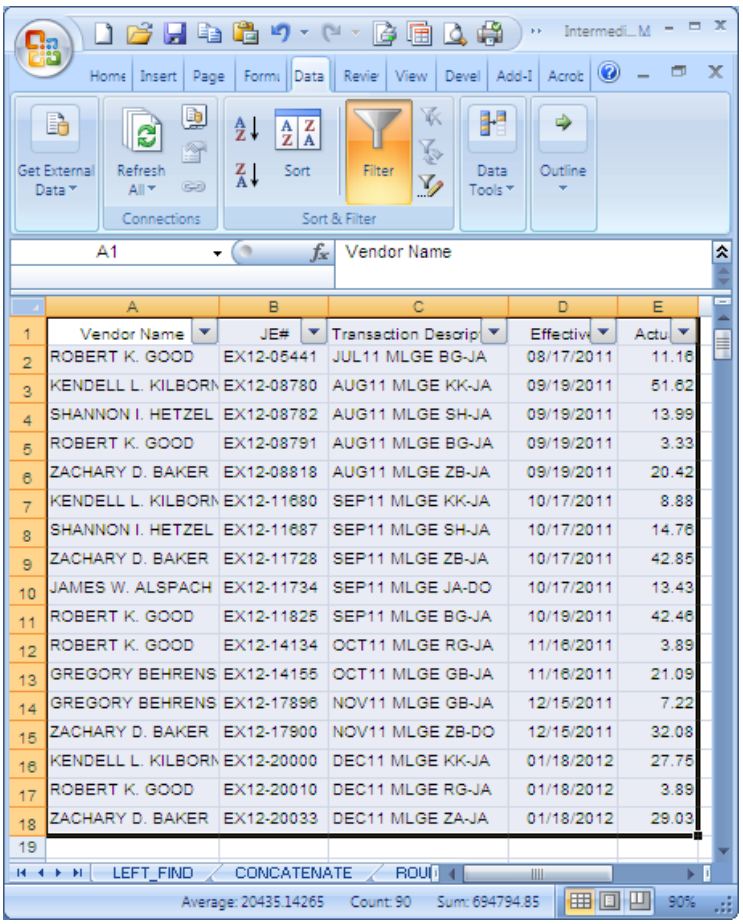
Ribbon Tour

Quick Filtering

The secret to filtering is not to have a space between your titles and your data. In fact, Excel is so smart, that you do not even have your data selected, but may if you prefer.

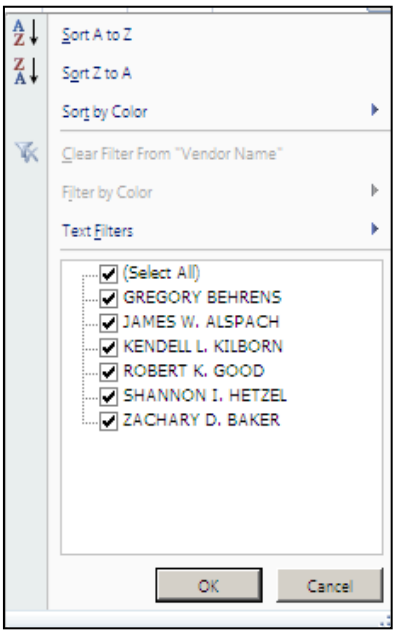
Select your data and left click on the filter icon in the Sort & Filter Group.

Notice that a chevron appears to the left of each header.



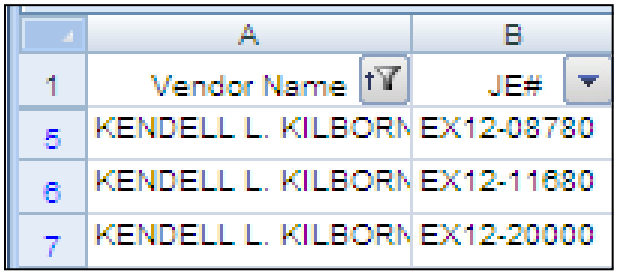
By selecting the chevron to the left of Vendor Name, a dialog box appears displaying all unique text filters found in the range as well as other common sort icons.

If you only want a particular filter, deselect the (Select All) box and check the filter you desire.

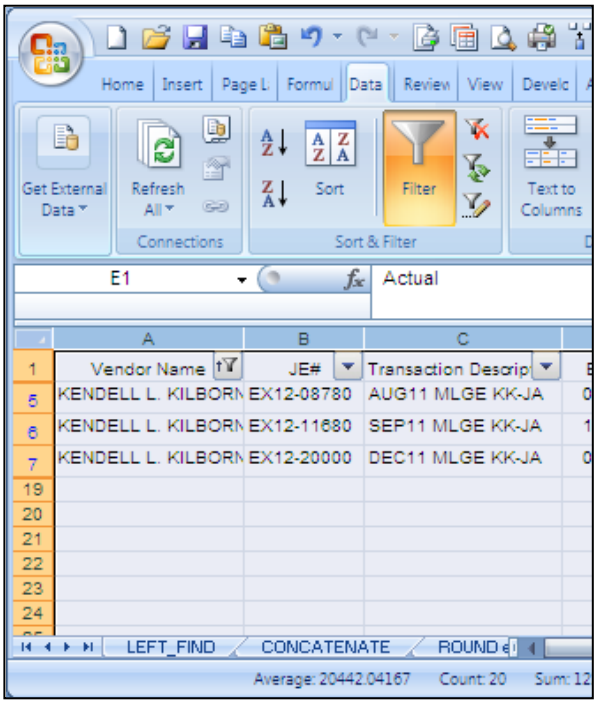


In the below screen shot, Kendell Kilborn is selected. Notice the hidden rows to the left. Those represent data lines for mileage paid to individuals other than Kendell. No data is lost, it is just currently hidden.

Also note that the icon to the left of the vendor name now displays the filter icon. This so at a glance the user may see that the data range has been filtered.



	A	B
1	Vendor Name	JE#
5	KENDELL L. KILBORN	EX12-08780
6	KENDELL L. KILBORN	EX12-11680
7	KENDELL L. KILBORN	EX12-20000



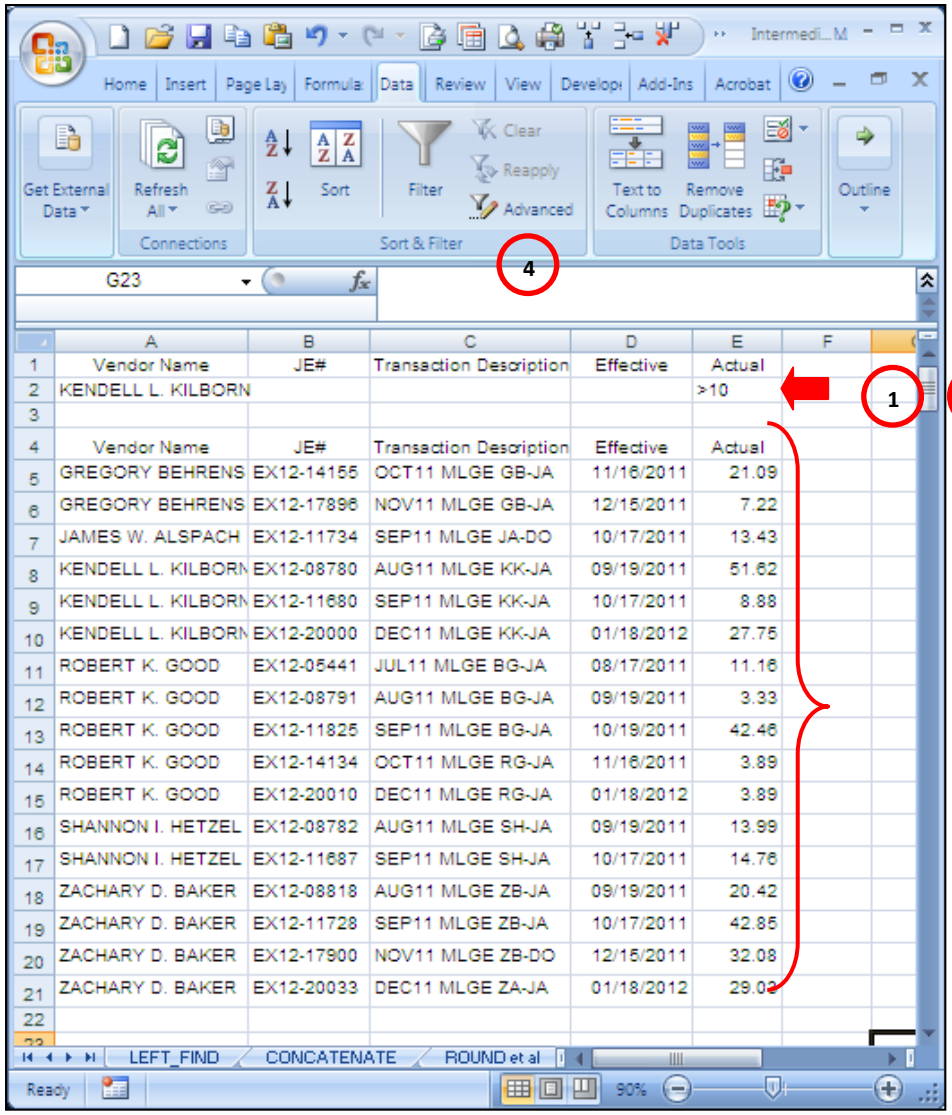
Filtering by Multiple Criteria

The filtering tool is fine when you only want one item. However the power of the advance filter tool really shines when you want to sort by multiple criteria. There are several thou shalts of advanced filtering.

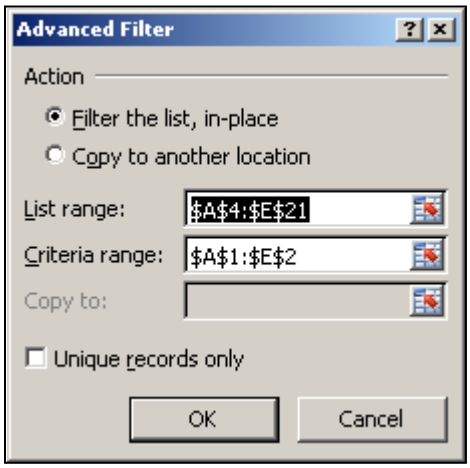
Thou Shalts of Advanced Filtering	
1	The headers in the criteria range must be exactly as they are in the list range
2	There must be at least one blank row between the criteria range and the list range

Steps For Advanced Filtering	
1	Create a criteria range by inserting a few rows and copying the header from the data range. Although not required, it is often best to have the range above your data for simplicity.
2	Type in the criteria you want to filter by.
3	Have your curser somewhere in the data range
4	Select the Advanced icon  with your left mouse button.
5	The list range most likely will be your data. If not, you will need to correct it.
6	Select your criteria range. • The range must include the headers of the criteria range • The rows with criteria • All columns in the range
7	Select OK

:



	A	B	C	D	E	F
1	Vendor Name	JE#	Transaction Description	Effective	Actual	
2	KENDELL L. KILBORN				>10	
3						
4	Vendor Name	JE#	Transaction Description	Effective	Actual	
5	GREGORY BEHRENS	EX12-14155	OCT11 MLGE GB-JA	11/16/2011	21.09	
6	GREGORY BEHRENS	EX12-17896	NOV11 MLGE GB-JA	12/15/2011	7.22	
7	JAMES W. ALSPACH	EX12-11734	SEP11 MLGE JA-DO	10/17/2011	13.43	
8	KENDELL L. KILBORN	EX12-08780	AUG11 MLGE KK-JA	09/19/2011	51.62	
9	KENDELL L. KILBORN	EX12-11680	SEP11 MLGE KK-JA	10/17/2011	8.88	
10	KENDELL L. KILBORN	EX12-20000	DEC11 MLGE KK-JA	01/18/2012	27.75	
11	ROBERT K. GOOD	EX12-05441	JUL11 MLGE BG-JA	08/17/2011	11.16	
12	ROBERT K. GOOD	EX12-08791	AUG11 MLGE BG-JA	09/19/2011	3.33	
13	ROBERT K. GOOD	EX12-11825	SEP11 MLGE BG-JA	10/19/2011	42.46	
14	ROBERT K. GOOD	EX12-14134	OCT11 MLGE RG-JA	11/16/2011	3.89	
15	ROBERT K. GOOD	EX12-20010	DEC11 MLGE RG-JA	01/18/2012	3.89	
16	SHANNON I. HETZEL	EX12-08782	AUG11 MLGE SH-JA	09/19/2011	13.99	
17	SHANNON I. HETZEL	EX12-11687	SEP11 MLGE SH-JA	10/17/2011	14.76	
18	ZACHARY D. BAKER	EX12-08818	AUG11 MLGE ZB-JA	09/19/2011	20.42	
19	ZACHARY D. BAKER	EX12-11728	SEP11 MLGE ZB-JA	10/17/2011	42.85	
20	ZACHARY D. BAKER	EX12-17900	NOV11 MLGE ZB-DO	12/15/2011	32.08	
21	ZACHARY D. BAKER	EX12-20033	DEC11 MLGE ZA-JA	01/18/2012	29.02	
22						



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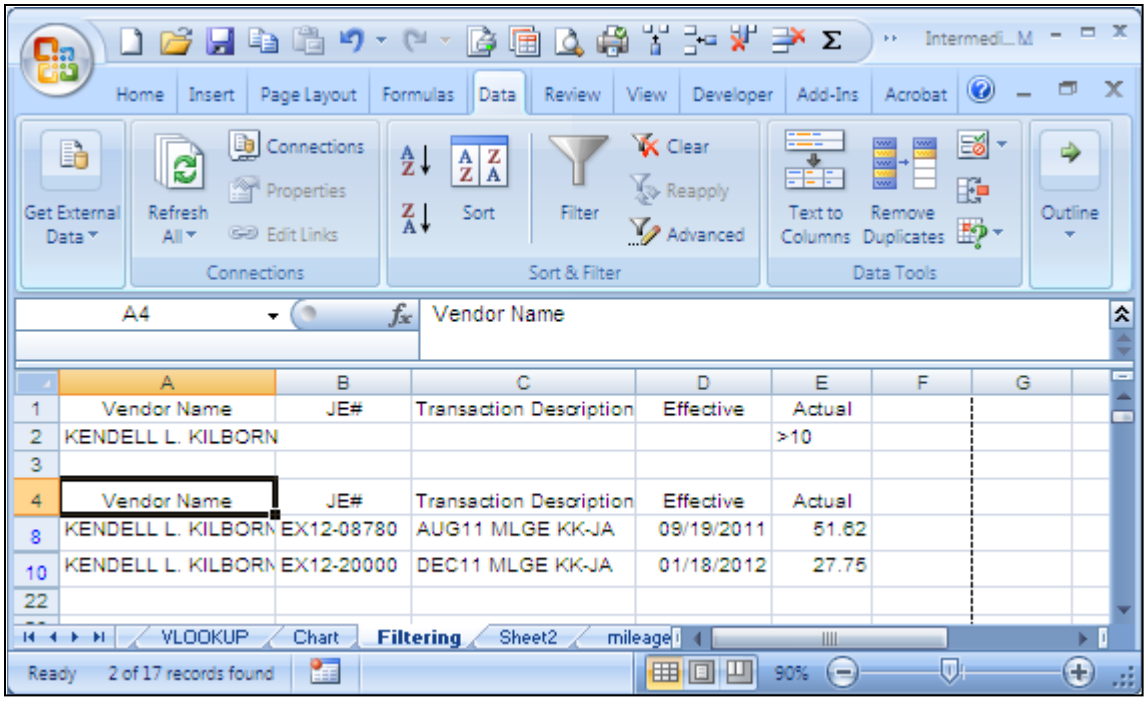
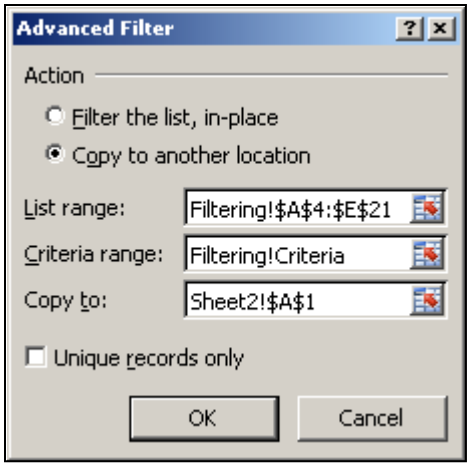
The results appear below.



Saving the Filtered Data

Now that the data has been filtered it would be great to save it so you can manipulate it further. To do so is a rather straight forward process. Basically you will go to where you want to save it, Sheet2 in our example, and go through the filtering process that we did above with just a couple of twists.

	Steps For Advanced Filtering
1	On the destination worksheet (Sheet2 for example) place the cursor in a blank cell.
2	Select the Advanced icon  with your left mouse button.
3	Under Action, select *copy to another location*
4	• In the list range, select the range finder icon.  The  appears. Navigate to the appropriate worksheet and select the data range not forgeting the headers, and click on the little icon at the bottom right. • Do the same for the criteria range. • For the copy to range, select the first cell and select OK



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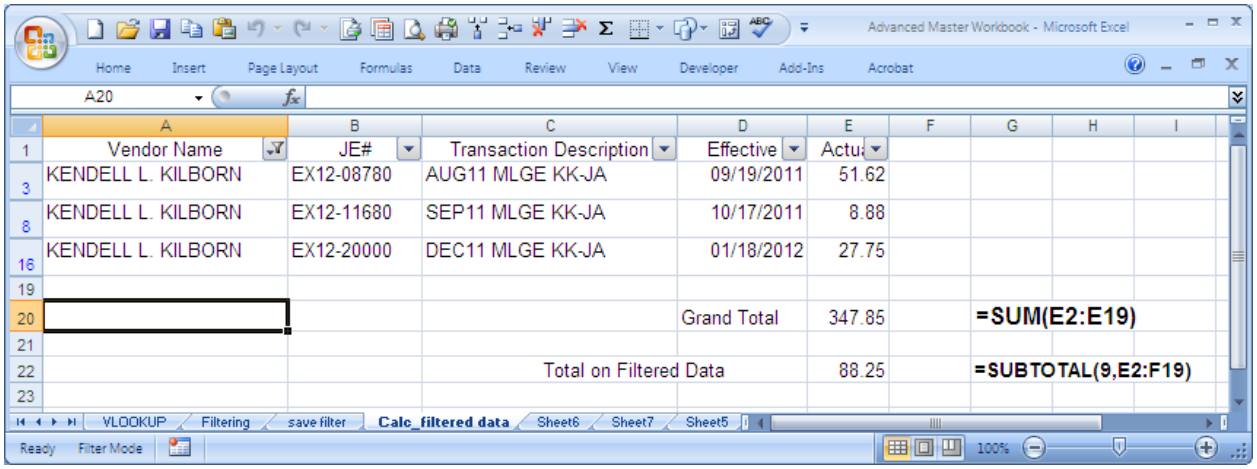
Performing Calculations on Filtered Data

Excel's traditional formulas do not work on filtered data since the function will be performed on both the hidden and visible cells. To perform functions on filtered data one must use the subtotal function.

The syntax is SUBTOTAL(function_num, range_reference1, range_reference2,….)The following functions may be performed with the subtotal. The function_num within the syntax relates to the numbered function.

Function Number	Function	Function Number	Function
1	AVERAGE	7	STDDEV
2	COUNT	8	STDDEVP
3	COUNTA	9	SUM
4	MAX	10	VAR
5	MIN	11	VARP
6	PRODUCT		



An example of the formula is: =SUBTOTAL(9,E12:F19) The English translation is using the ninth subtotal function, which is SUM, add up all of the data within the range that is selected by the filter. For comparison, included is the SUM function for the same range which brought back the total for all of the data cells, hidden or displayed.

PivotTables

Defined

The foundation of what is a PivotTable report is explained as follows:

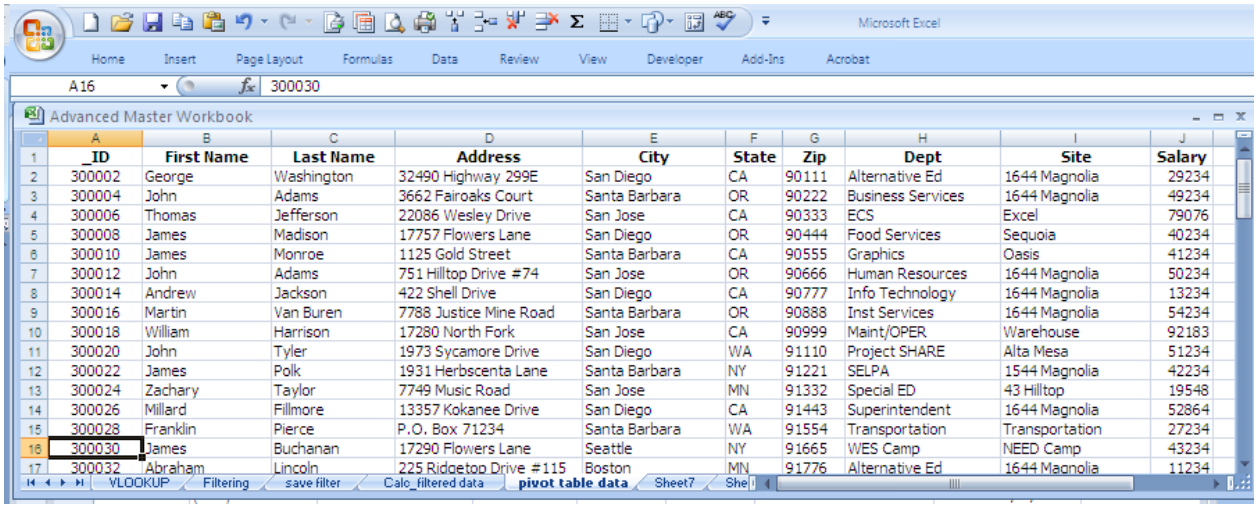
> As long as you can connect to the data, whether it be locally in the same workbook or remotely in other locations, you can built PivotTable reports that rearrange the raw data and change it into meaningful information

A pivot table is an interactive way to quickly summarize large amounts of data; to analyze numerical data in detail and to answer unanticipated questions. They are especially designed for:

- Querying large amounts of data in many user-friendly ways
- Subtotaling and aggregating numeric data, summarizing data by categories and subcategories, and creating custom calculations and formulas
- Expanding and collapsing levels of data to focus your results, and drilling down to details from the summary data.
- Moving rows to columns or columns to rows (or “pivoting”0 to see different summaries of the source data.
- Filtering, sorting, grouping, and conditionally formatting the most useful and interesting subset of data to enable you to focus on the information that you want.

Thou Shalts in PivotTable Land	
1	Headers should be in columns, not rows
2	No blank rows between the headers and the data
3	Best to have the pivot table on a separate worksheet so it does not accidently clobber the data
4	Best to have simple data, rows and columns of data.
5	Best to format your area as a table, especially when you will be adding data to it. The table is automatically expanded when data is added to the next row. Now when you launch create a pivot table the range will be the table name, and not the cell addresses

Basic PivotTable Data



Advanced Master Workbook

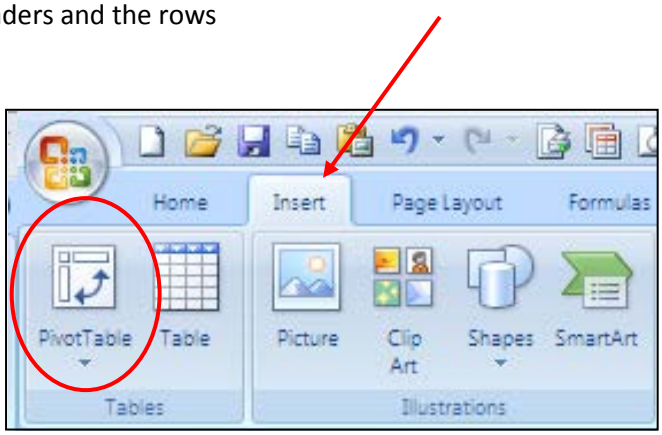
	A	B	C	D	E	F	G	H	I	J
1	_ID	First Name	Last Name	Address	City	State	Zip	Dept	Site	Salary
2	300002	George	Washington	32490 Highway 299E	San Diego	CA	90111	Alternative Ed	1644 Magnolia	29234
3	300004	John	Adams	3662 Fairoaks Court	Santa Barbara	OR	90222	Business Services	1644 Magnolia	49234
4	300006	Thomas	Jefferson	22086 Wesley Drive	San Jose	CA	90333	ECS	Excel	79076
5	300008	James	Madison	17757 Flowers Lane	San Diego	OR	90444	Food Services	Sequoia	40234
6	300010	James	Monroe	1125 Gold Street	Santa Barbara	CA	90555	Graphics	Oasis	41234
7	300012	John	Adams	751 Hilltop Drive #74	San Jose	OR	90666	Human Resources	1644 Magnolia	50234
8	300014	Andrew	Jackson	422 Shell Drive	San Diego	CA	90777	Info Technology	1644 Magnolia	13234
9	300016	Martin	Van Buren	7788 Justice Mine Road	Santa Barbara	OR	90888	Inst Services	1644 Magnolia	54234
10	300018	William	Harrison	17280 North Fork	San Jose	CA	90999	Maint/OPER	Warehouse	92183
11	300020	John	Tyler	1973 Sycamore Drive	San Diego	WA	91110	Project SHARE	Alta Mesa	51234
12	300022	James	Polk	1931 Herbscenta Lane	Santa Barbara	NY	91221	SELPA	1544 Magnolia	42234
13	300024	Zachary	Taylor	7749 Music Road	San Jose	MN	91332	Special ED	43 Hilltop	19548
14	300026	Millard	Fillmore	13357 Kokanee Drive	San Diego	CA	91443	Superintendent	1644 Magnolia	52864
15	300028	Franklin	Pierce	P.O. Box 71234	Santa Barbara	WA	91554	Transportation	Transportation	27234
16	300030	James	Buchanan	17290 Flowers Lane	Seattle	NY	91665	WES Camp	NEED Camp	43234
17	300032	Abraham	Lincoln	225 Ridgetop Drive #115	Boston	MN	91776	Alternative Ed	1644 Magnolia	11234

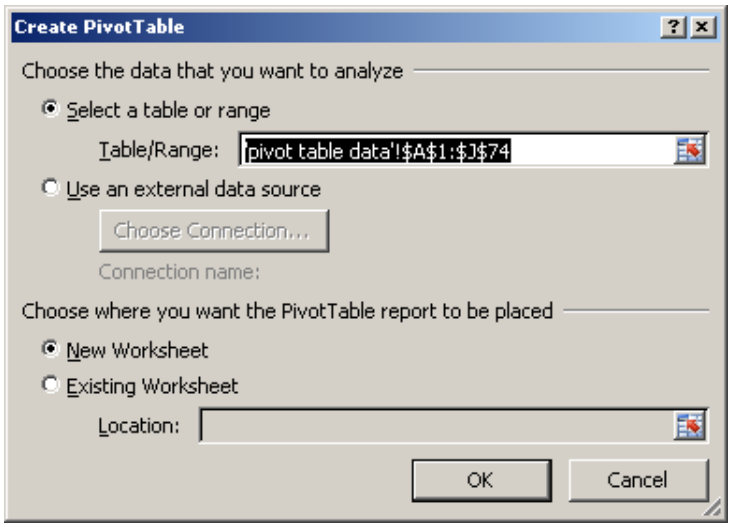
Pivot Tables work best when you have simple data in rows and columns.

- Headers are across the top in the first row
- Data consists of a single row across numerous columns
- There is not a blank row between the headers and the rows

Inserting a Pivot Table

- Select any active cell within your data table
- Navigate to the *Insert tab* and select *PivotTable*

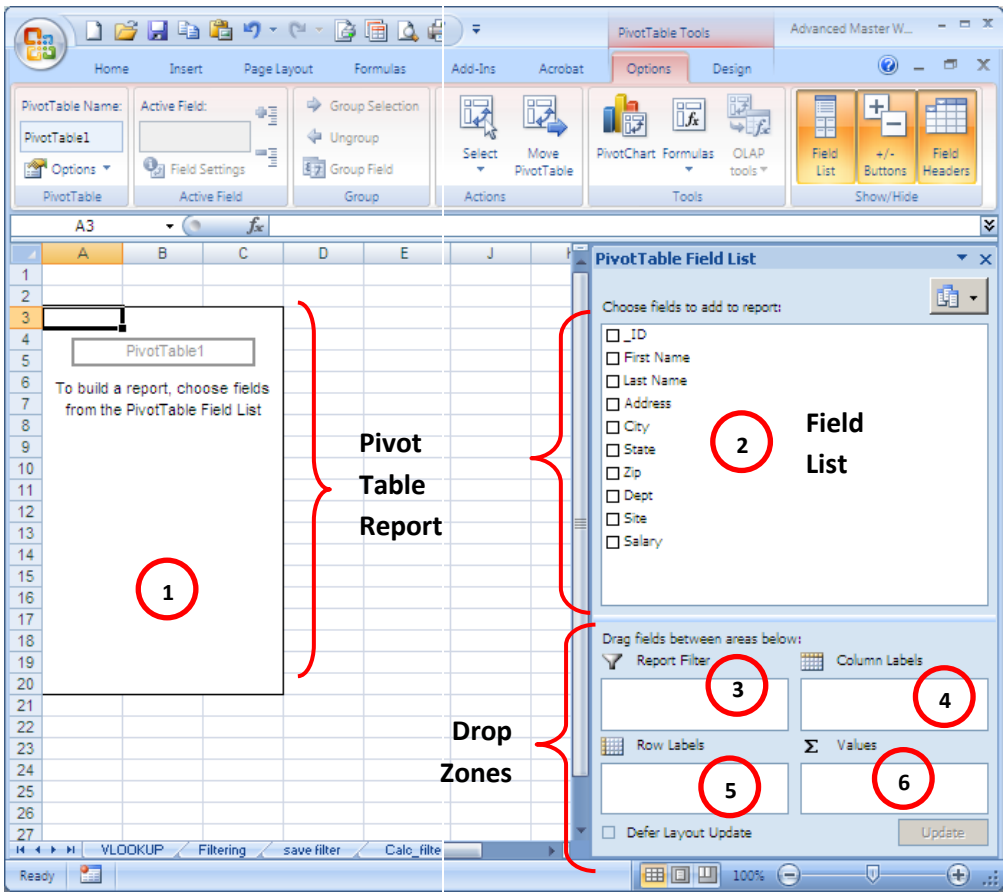




When you do so, the create PivotTable dialog box appears.

- Excel will guess the data range that you will want; correct it if it is wrong.
- The default destination for the PivotTable will be a new worksheet.
- When doing so, a new sheet will automatically be added to your workbook.
- It is good to use a new worksheet for the pivot table so that your source data doesn't accidently get clobbered.

PivotTable Geography



PivotTable Geography	
1	The pivot table will be located here. The size will adjust as it needs to automatically. • NOTE: If you move your mouse out of this area, the PivotTable Field List will disappear. To get it back, merely left click your mouse within this area again and it will appear.
2	The fields listed here are your column headers on your original data source. • These fields may be utilized in designing your PivotTable Report. • You may use a field more than once.
3	Report Filters: • Similar to a mentally page break. Allows the user to classify the data
4	Column Labels: • Often created automatically by dragging data fields to the value zone. The user may also drag data fields to this zone for grouping, etc.
5	Row Labels: • Most common label
6	Values: • Wide range of calculations may be performed on the values dragged to this zone.

Building a PivotTable Report – Part One

Adding row labels, adding column data, changing formulas in columns, changing headers & number formats

In order to best illustrate how to design pivot tables, we will begin with the goal report, depicted below, and then step through each design component.

This table will represent by department, the number of employees per department and their average salary. We will also change a column header and the number font for the salary column.

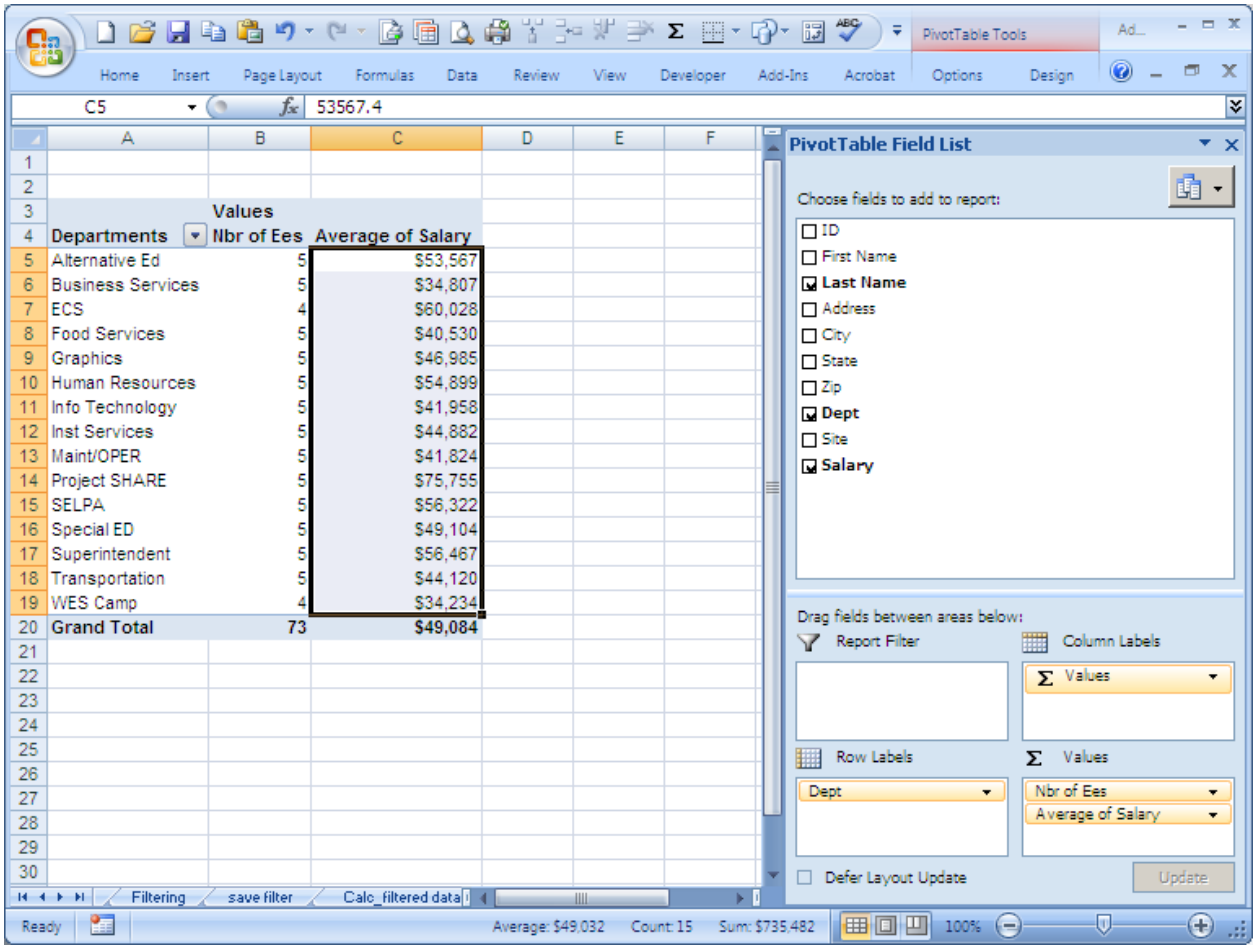
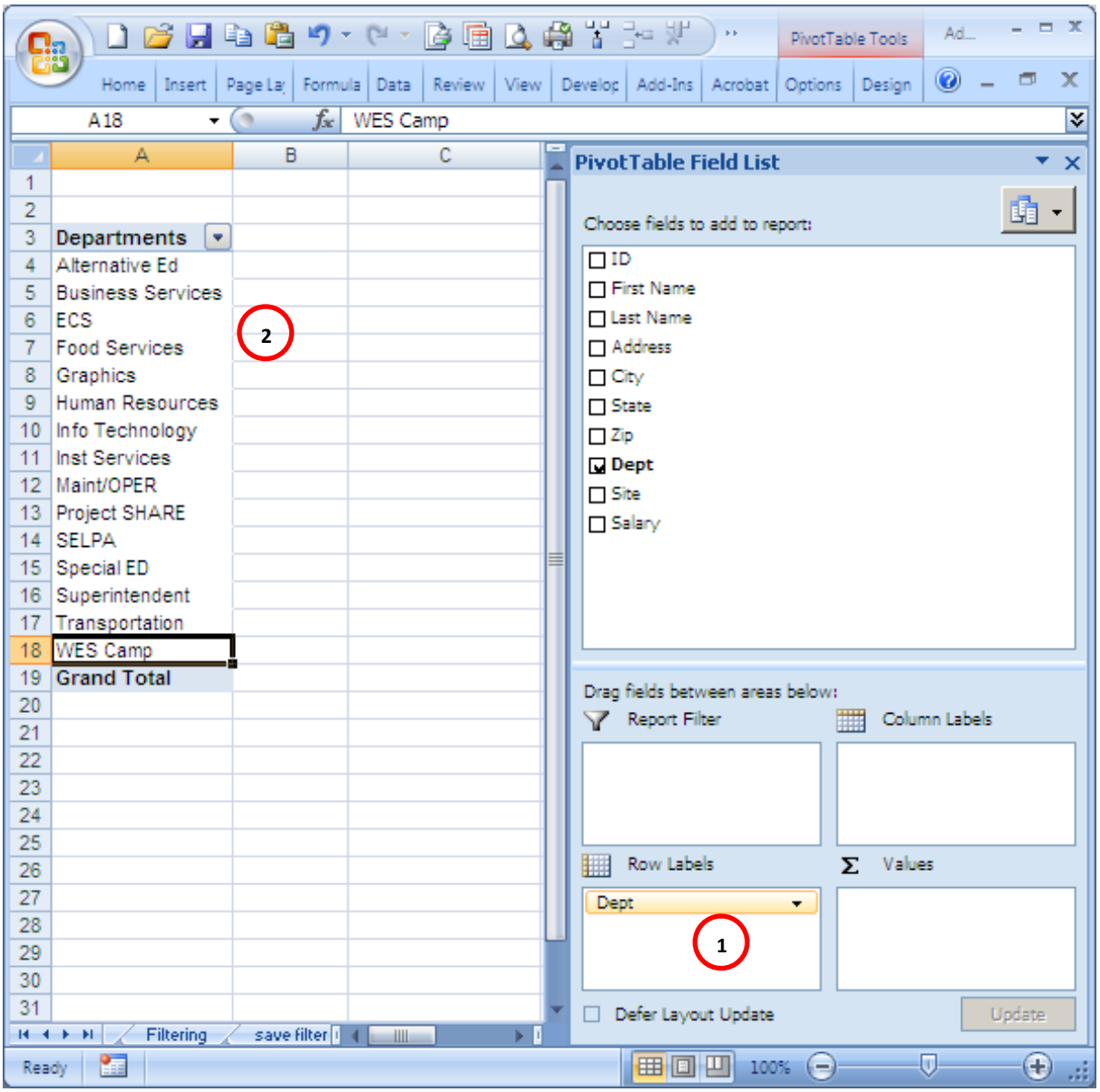
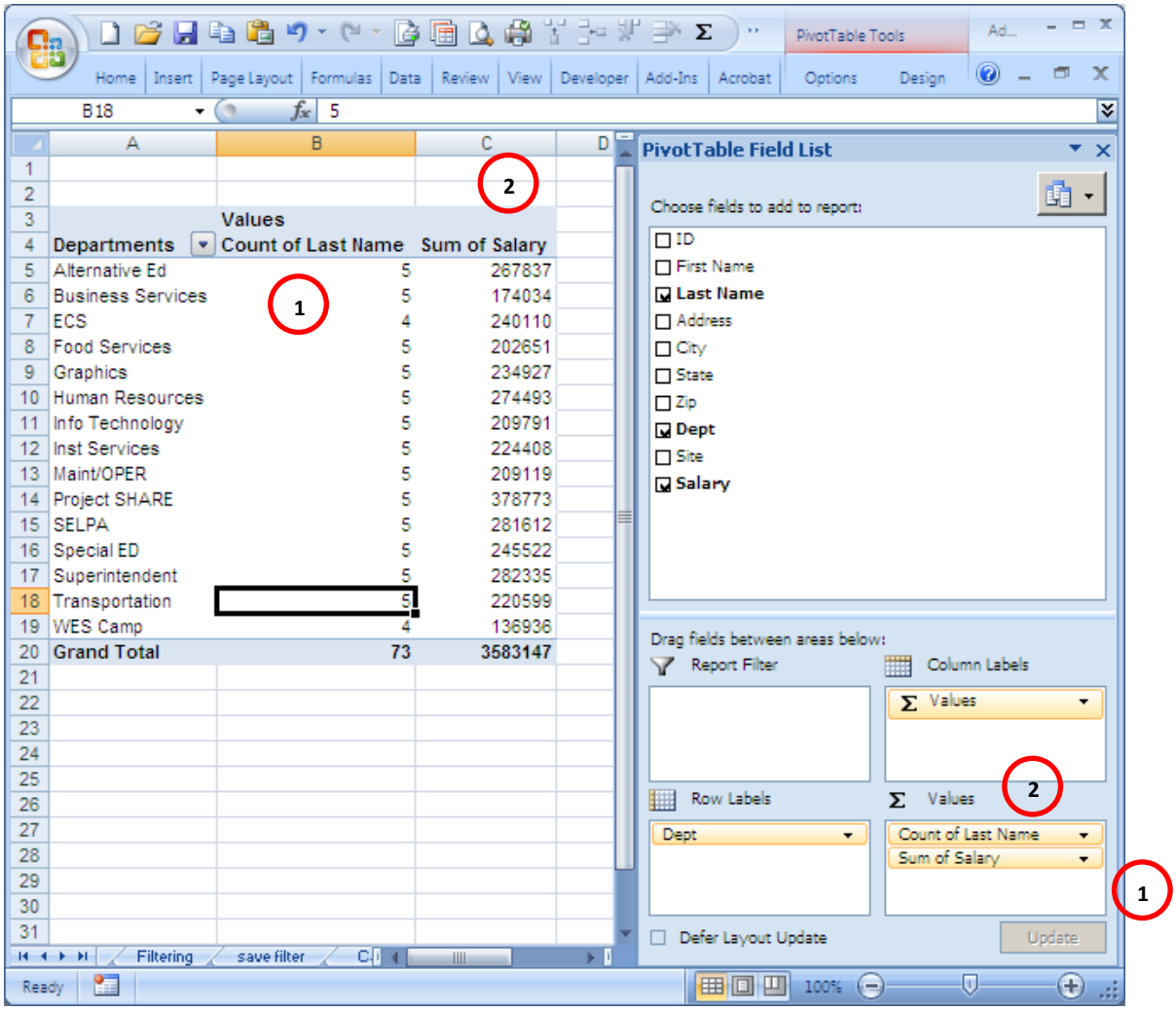


Figure 1: Building a PivotTable- Part One

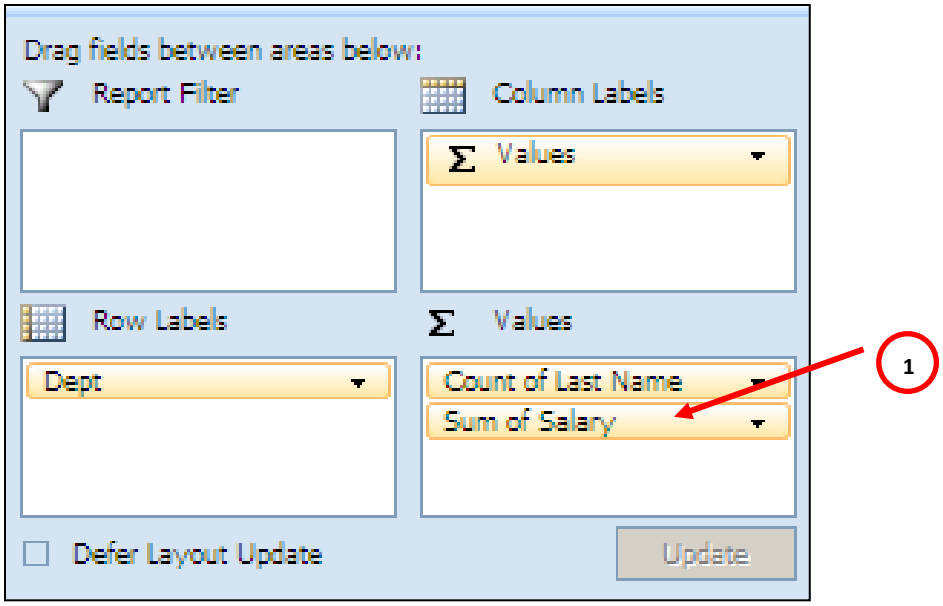


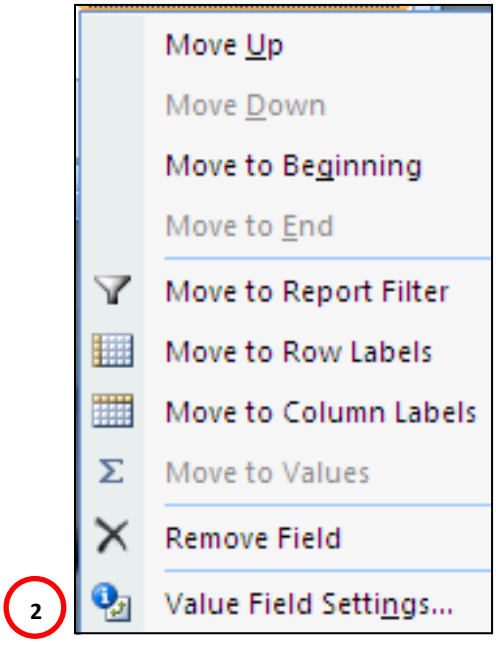
Create Row Label	
1	• Select the Dept name with your mouse, left click, and drag it to the *row label* zone.
2	• The list our SCOE departments now appear to the left.

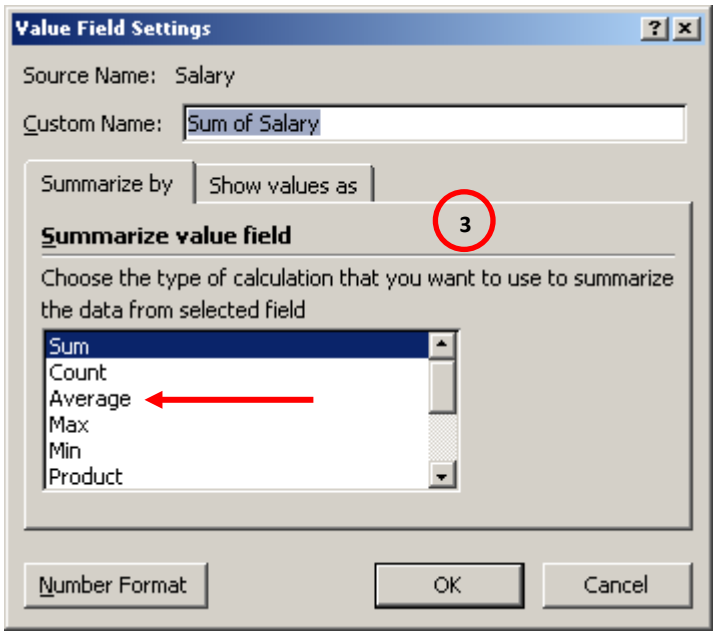


Adding a COUNT and SUM Columns	
1	• Drag down last name and salary into the *Value zone*
2	• Last Name o Every employee has a last name. So if we use last name in a value field the result displayed in the field will merely be the number of last names that we have. o Note that the formula used is count because it is a text field.
	• Salary o Excel automatically used the SUM formula. o The SUM formula needs to be changed to the AVERAGE formula

To change the formula, we will launch the value fields setting dialog box and choose a different formula.

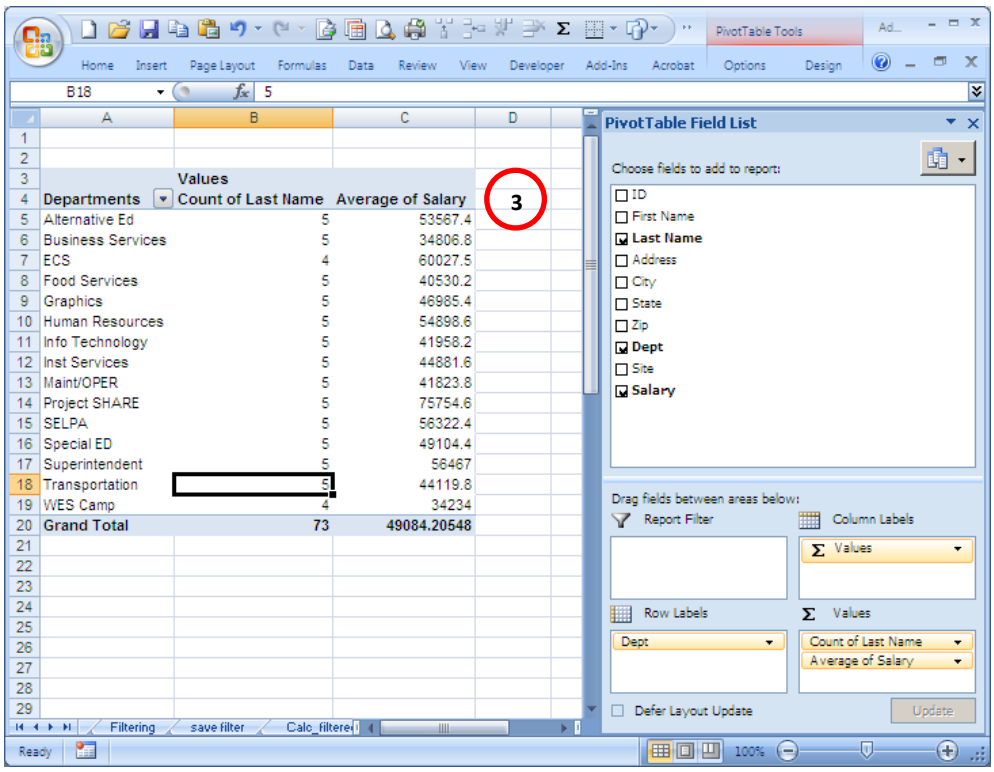




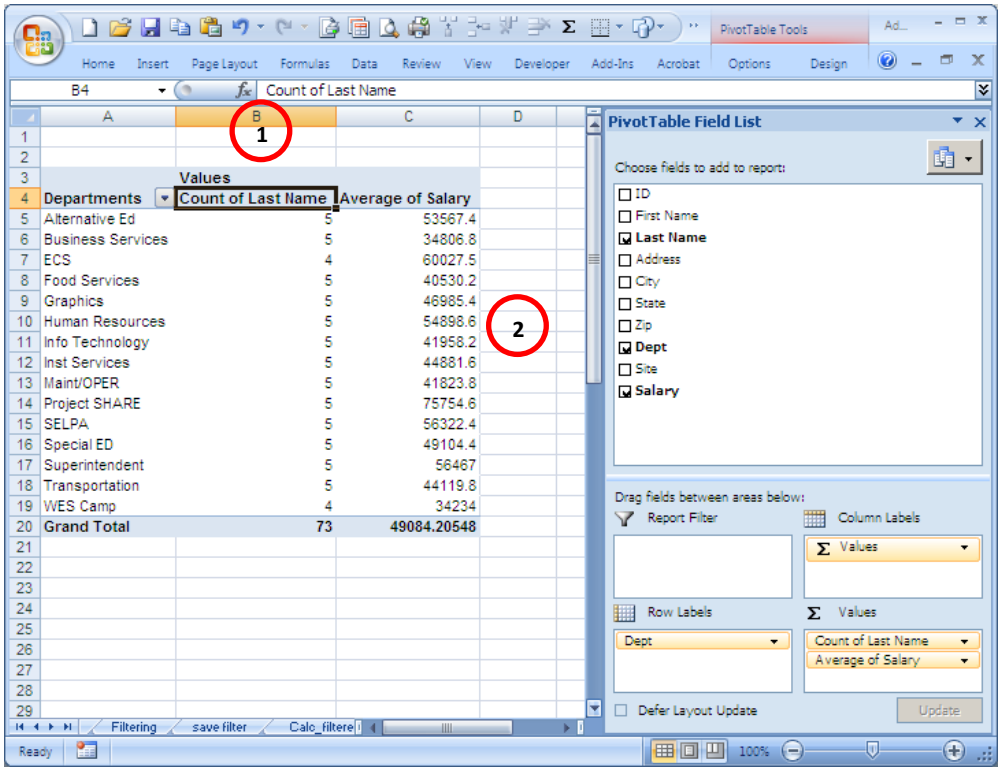


Changing a Formula	
1	Left click on the Sum of Salary field
2	The value dialog box will appear. Using a left click on your mouse, select the Value Field Settings
3	The value field settings dialog box appears. On the summarized by tab, select the average calculation from the drop down box

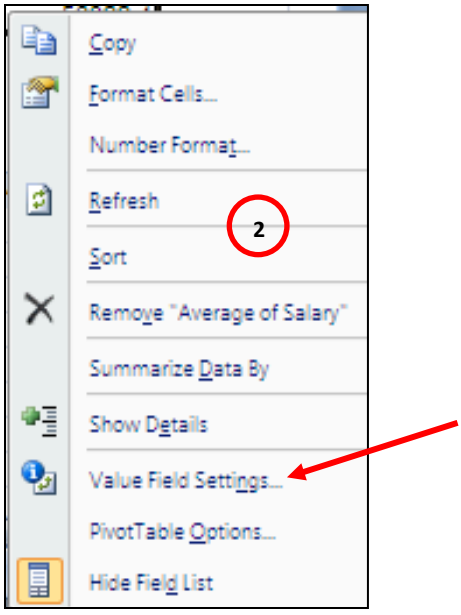
The result is represented below. (3) Notice that the header now is Average of Salary, rather than Sum of Salary.



Now we want to change the column headers and the number format.



Changing Column Headers and Number Formats	
1	Left click on the Count of Last Name column header, B4. Modify the title as you would any title in a normal spreadsheet, in other words, get typing.
2	Select any cell in the Average of Salary column. Right click on your mouse which launches an option dialog box. Left click on value field settings option which launches the value field setting dialog box.
3	In the value field settings dialog box, select the number format button on the bottom left corner.
4	Within the format cells dialog box, select your desired format



- Place your mouse anywhere within the Average of Salary column data.
- Right click your mouse which will display the option box.
- Select the value field settings option.

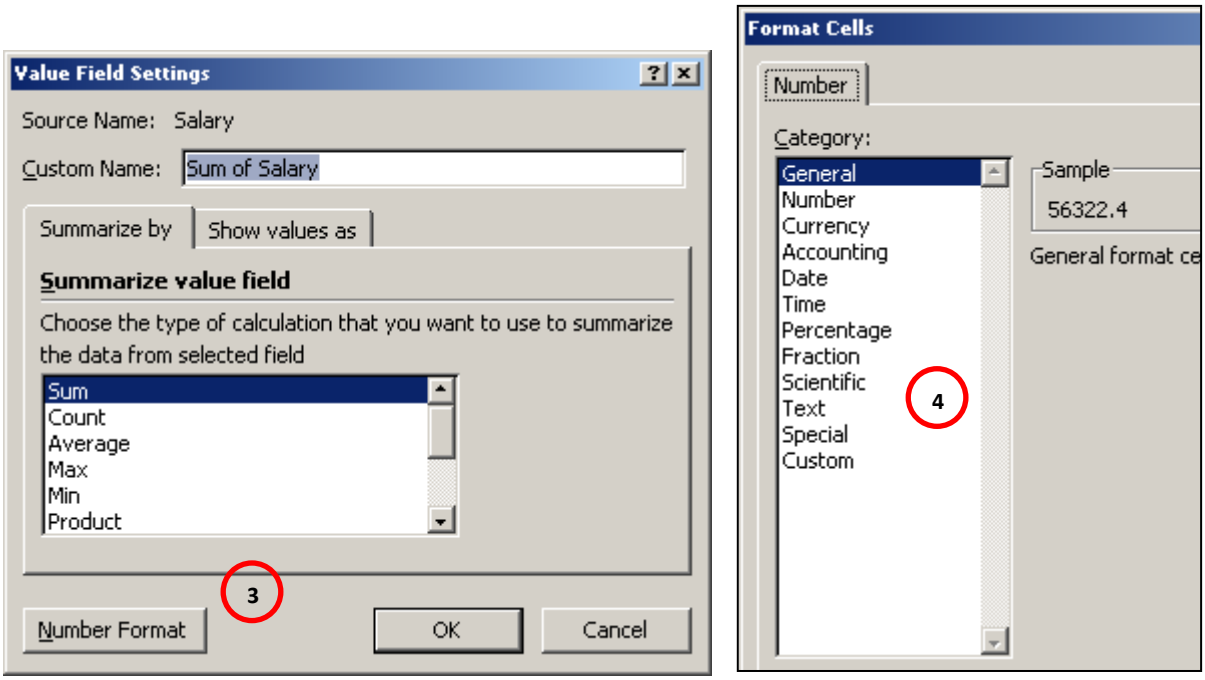
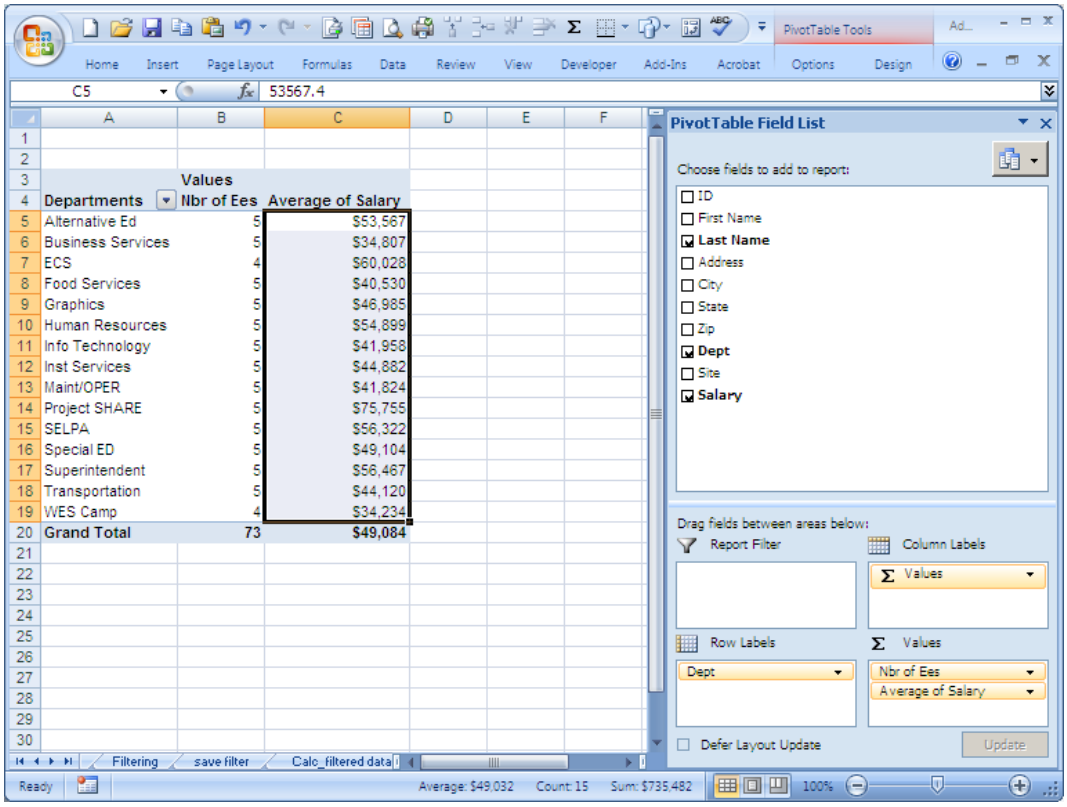


Figure 2: Value Field Settings Dialog Box

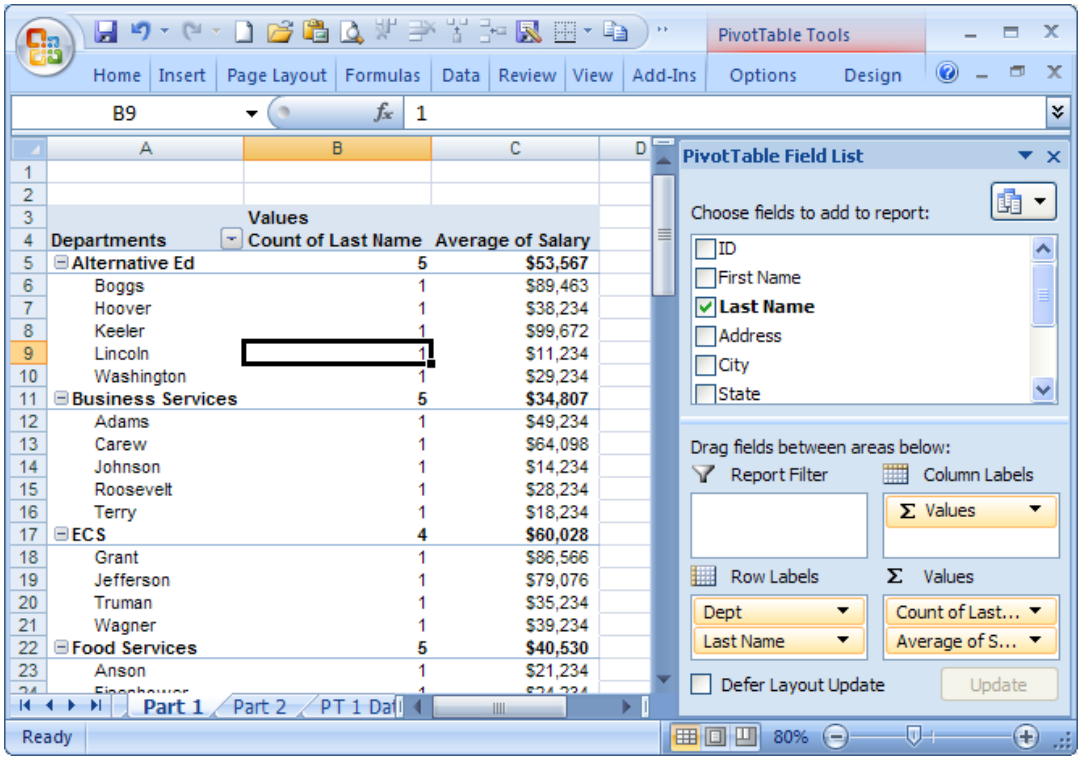
We now have the final results below.



Building a PivotTable Report – Part Two

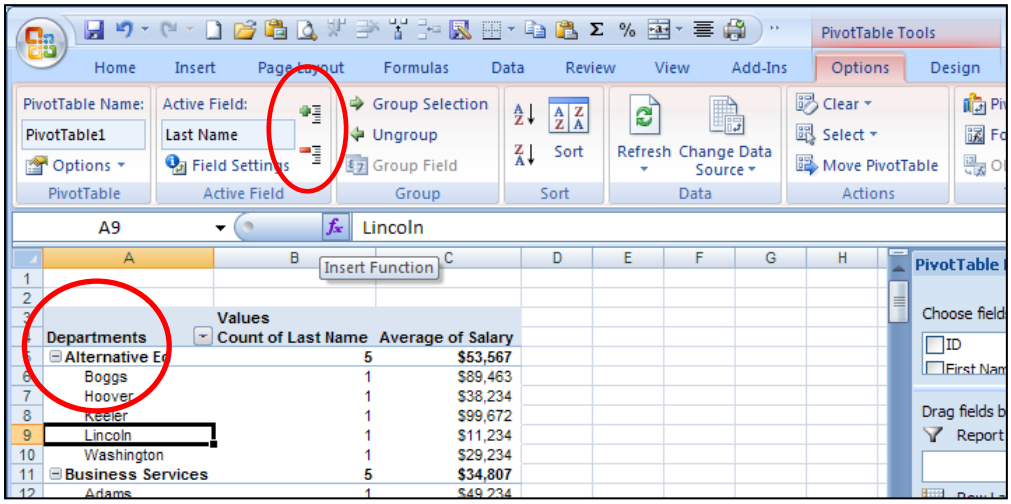
Adding multiple row labels, collapsing and expanding, drill down to data, sorting, & refreshing

We can expand the detail provided in the pivot table if we would like. Using the table grouped by departments if the last name is dragged to the row label zone then each department will have the last name of the employees listed.



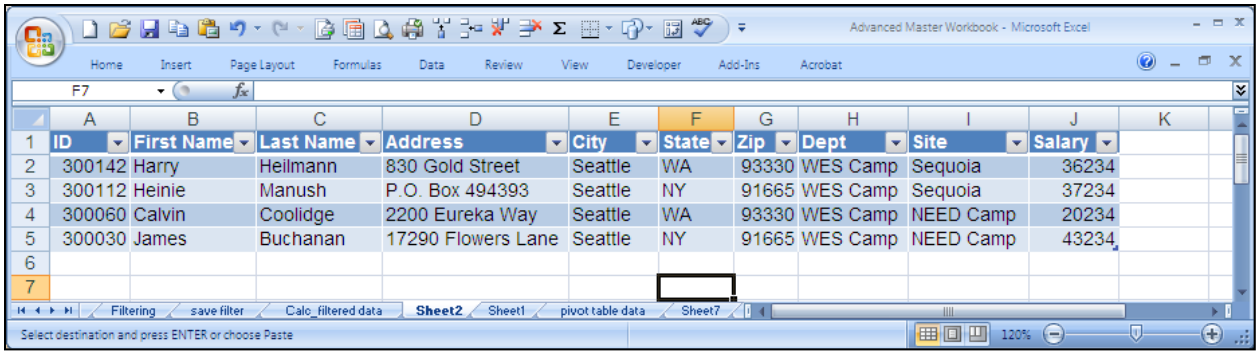
	A	B	C	D
3		Values		
4	Departments	Count of Last Name	Average of Salary	
5	Alternative Ed	5	$53,567	
6	Boggs	1	$89,463	
7	Hoover	1	$38,234	
8	Keeler	1	$99,672	
9	Lincoln	1	$11,234	
10	Washington	1	$29,234	
11	Business Services	5	$34,807	
12	Adams	1	$49,234	
13	Carew	1	$64,098	
14	Johnson	1	$14,234	
15	Roosevelt	1	$28,234	
16	Terry	1	$18,234	
17	ECS	4	$60,028	
18	Grant	1	$86,566	
19	Jefferson	1	$79,076	
20	Truman	1	$35,234	
21	Wagner	1	$39,234	
22	Food Services	5	$40,530	
23	Anson	1	$21,234	

The results can either be collapsed or expanded by either selecting the collapsed or expanded icon located on the PivotTable Tools\options tab and within the active fields group. Using the + or – icon located to the left of each row label will have the same result.



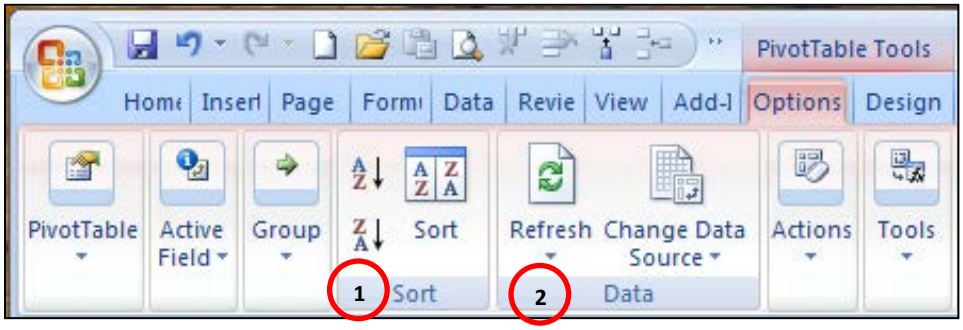
	A	B	C	D	E	F	G	H
3		Values						
4	Departments	Count of Last Name	Average of Salary					
5	Alternative Ed	5	$53,567					
6	Boggs	1	$89,463					
7	Hoover	1	$38,234					
8	Keeler	1	$99,672					
9	Lincoln	1	$11,234					
10	Washington	1	$29,234					
11	Business Services	5	$34,807					
12	Adams	1	$49,234					

If we want to obtain detail information on our items we can by double left clicking on any calculated field. For example, if we double click on cell B19, the number of employees in the WES Camp department, the following appears on a separate tab.



	A	B	C	D	E	F	G	H	I	J	K
1	ID	First Name	Last Name	Address	City	State	Zip	Dept	Site	Salary	
2	300142	Harry	Heilmann	830 Gold Street	Seattle	WA	93330	WES Camp	Sequoia	36234	
3	300112	Heinie	Manush	P.O. Box 494393	Seattle	NY	91665	WES Camp	Sequoia	37234	
4	300060	Calvin	Coolidge	2200 Eureka Way	Seattle	WA	93330	WES Camp	NEED Camp	20234	
5	300030	James	Buchanan	17290 Flowers Lane	Seattle	NY	91665	WES Camp	NEED Camp	43234	
6											
7											

Two very useful icons on the PivotTable Tools tab are sort and refresh.



PivotTable Tools Option Tab	
1	Sort works exactly the same as the sort on the Data tab. However, if you want to sort the results created in the PivotTable, you must use the icon located on this tab.
2	If you update your source data, it is imperative to refresh your pivot table results, actually each pivot table created using the same source data.

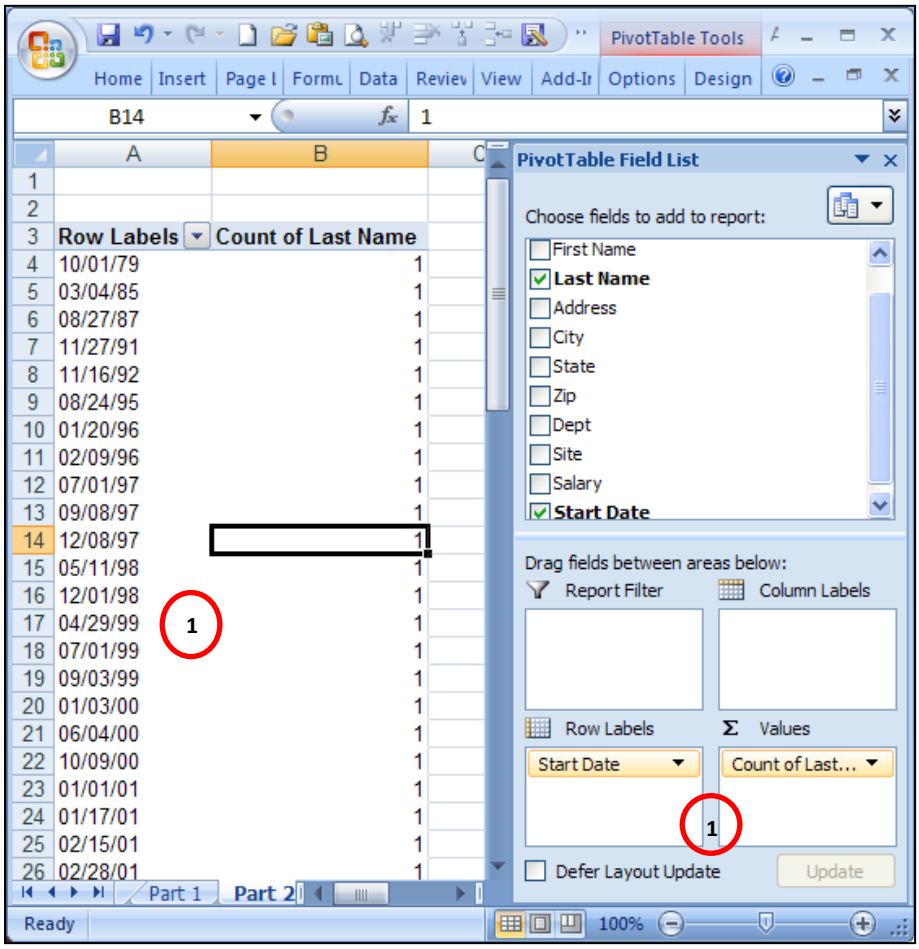
Building a PivotTable Report – Part Three

Grouping by dates, grouping by ranges, show items with no detail, show values in empty cells, grouping across columns

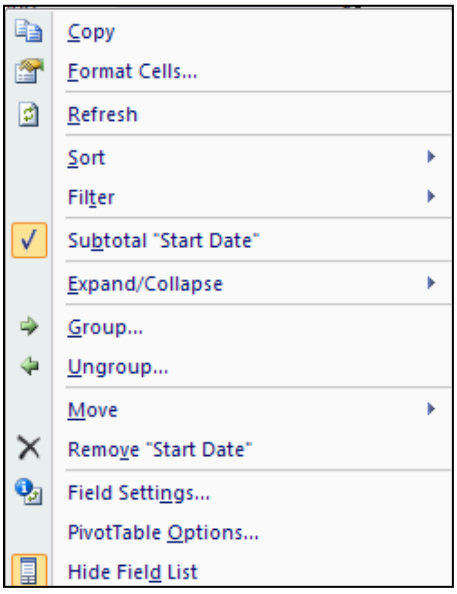
The next illustration will focus on grouping, using both a default group as well as a self-defined group.

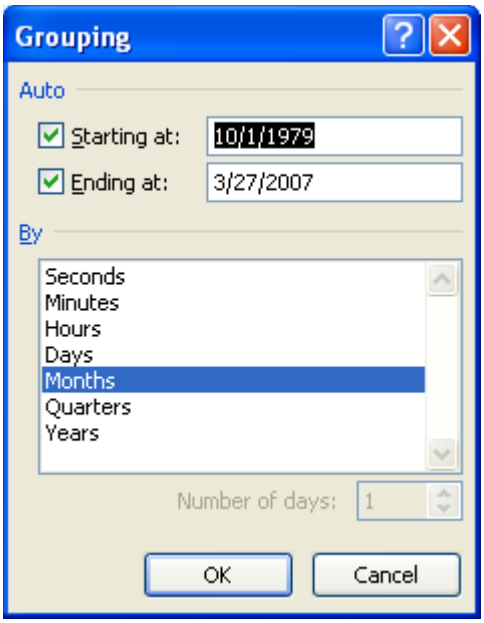
Pivoting on dates, we will use a default group how to design pivot tables, we will begin with the goal report, depicted below, and then step through each design component. At the conclusion of Building a PivotTable Report, all steps will be summarized.

This table will represent by dates, the number of employees per department and their average salary. We will also change a column header and the number font for the salary column.



- Create the basic structure by dragging the start dates to the row labels zone and the last name to the values zone.
- Select any cell with the data area (row labels) and right click on your mouse.
- The dialog box at the right appears
- Notice the group & ungroup options.





- The grouping dialog box appears as displayed to the left.
- Excel defaulted to Months.
- The following screen shots show the pivot table results for when we choose:
  - Months
  - Quarters
  - Years
  - Years & Quarters

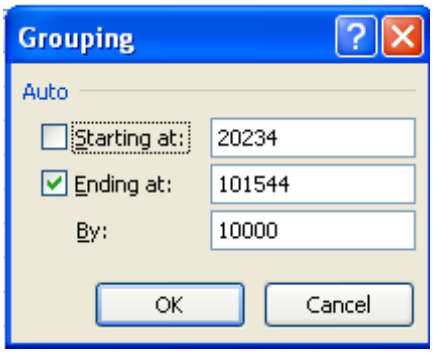
3	Row Labels	Count of Last Name
4	Jan	5
5	Feb	4
6	Mar	7
7	Apr	2
8	May	1
9	Jun	5
10	Jul	10
11	Aug	7
12	Sep	7
13	Oct	9
14	Nov	8
15	Dec	8
16	Grand Total	73

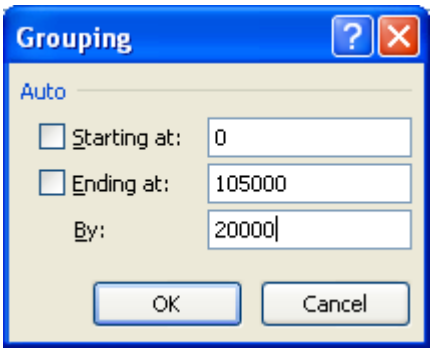
3	Row Labels	Count of Last Name
4	Qtr1	16
5	Qtr2	8
6	Qtr3	24
7	Qtr4	25
8	Grand Total	73

3	Row Labels	Count of Last Name
4	1979	1
5	1985	1
6	1987	1
7	1991	1
8	1992	1
9	1995	1
10	1996	2
11	1997	3
12	1998	2
13	1999	3
14	2000	3
15	2001	12
16	2002	5
17	2003	5
18	2004	4
19	2005	14
20	2006	12
21	2007	2
22	Grand Total	73

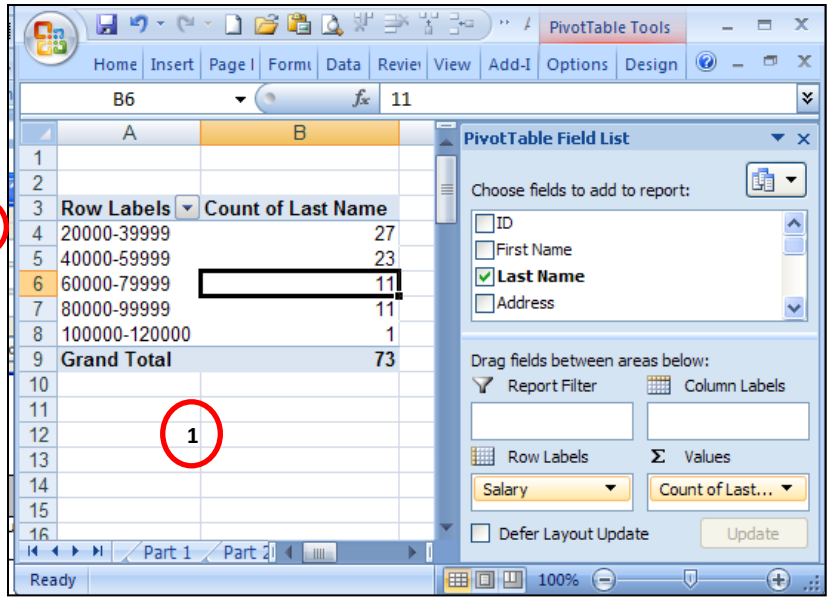
3	Row Labels	Count of Last Name
4	1979	
5	Qtr4	1
6	1985	
7	Qtr1	1
8	1987	
9	Qtr3	1
10	1991	
11	Qtr4	1
12	1992	
13	Qtr4	1
14	1995	
15	Qtr3	1
16	1996	
17	Qtr1	2
18	1997	

Tables can also be grouped by ranges. In our previous examples our pivot tables have broken down by department, the number of employees per department and their average salary. If we wanted to pivot our data by salary ranges we could with the end result appearing as below.





1



2

1

- Drag the salary to the row labels zone and the last name to the values zone.

2 Notice that no one makes less than $20,000 so that the range 0-19999 does not appear.

- To force all ranges appear, we turn on the option to show items with no detail.

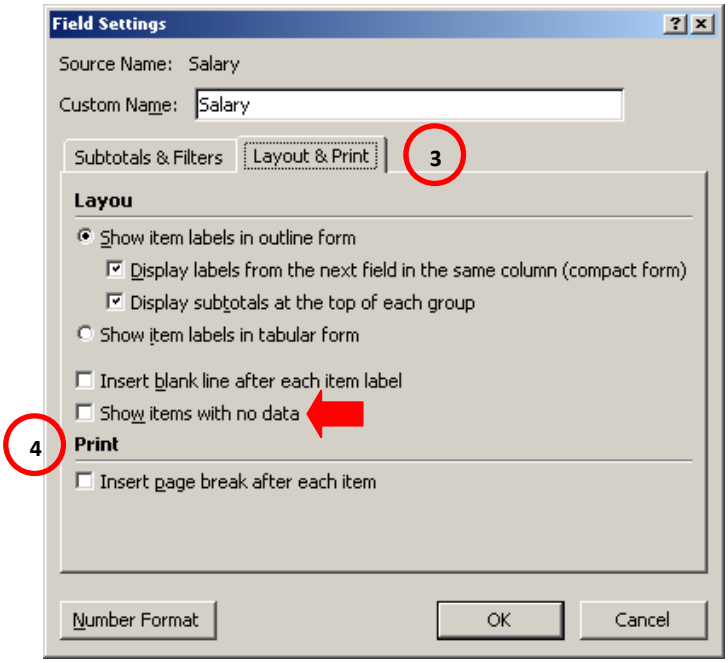
- To do so:
  - select any cell within the row labels
  - right click your mouse

3

  - Select Field Settings

4

  - Select the Layout & Print tab
  - Check the Show items with no data box.



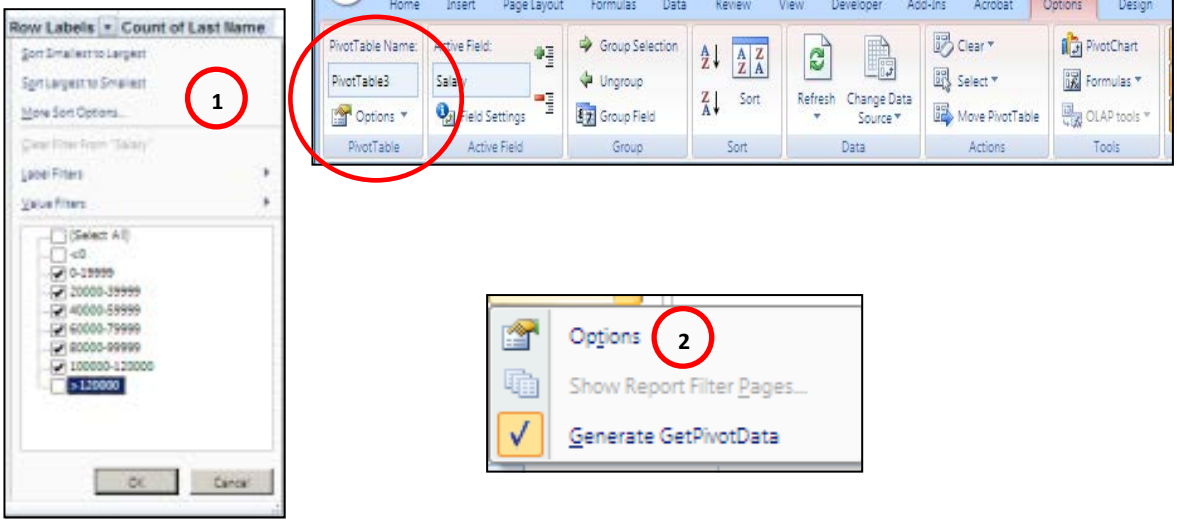
	Row Labels	Count of Last Name
4	<0	
5	0-19999	
6	20000-39999	27
7	40000-59999	23
8	60000-79999	11
9	80000-99999	11
10	100000-120000	1
11	>120000	
12	Grand Total	73

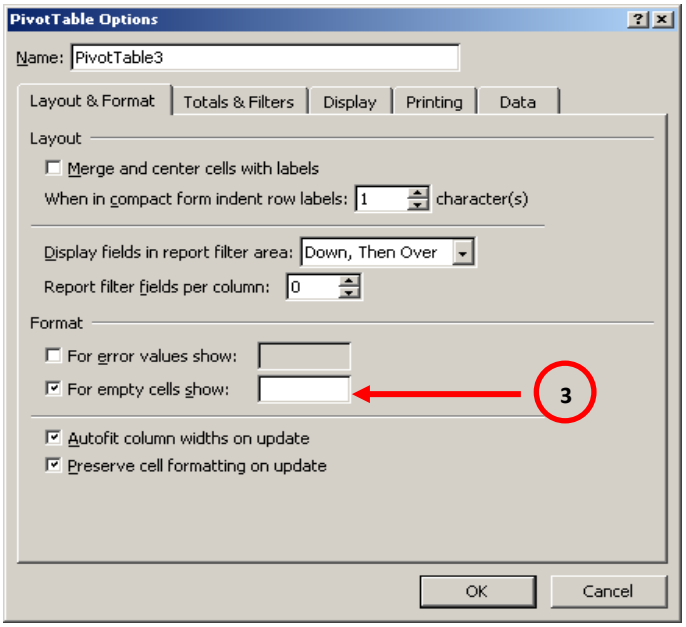
Let's clean up the data a bit by removing the <0 and >0 lines, as well as having the value zero (0) appear for ranges with no values.

1. • By choosing the chevron to the right of Row Labels, deselect the <0 and >120000 range.

2. • To display zeros, navigate to PivotTable Tools\options tab and select Options from the PivotTable Group and select options which launches the options dialog box.

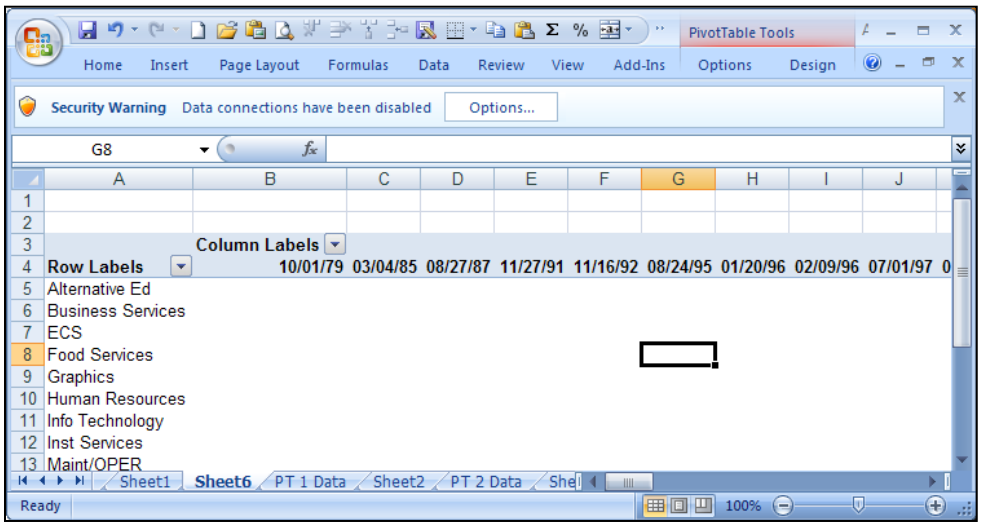
3. • Within the Layout & Format tab, insert a zero in the box for the For Empty cells show: option.



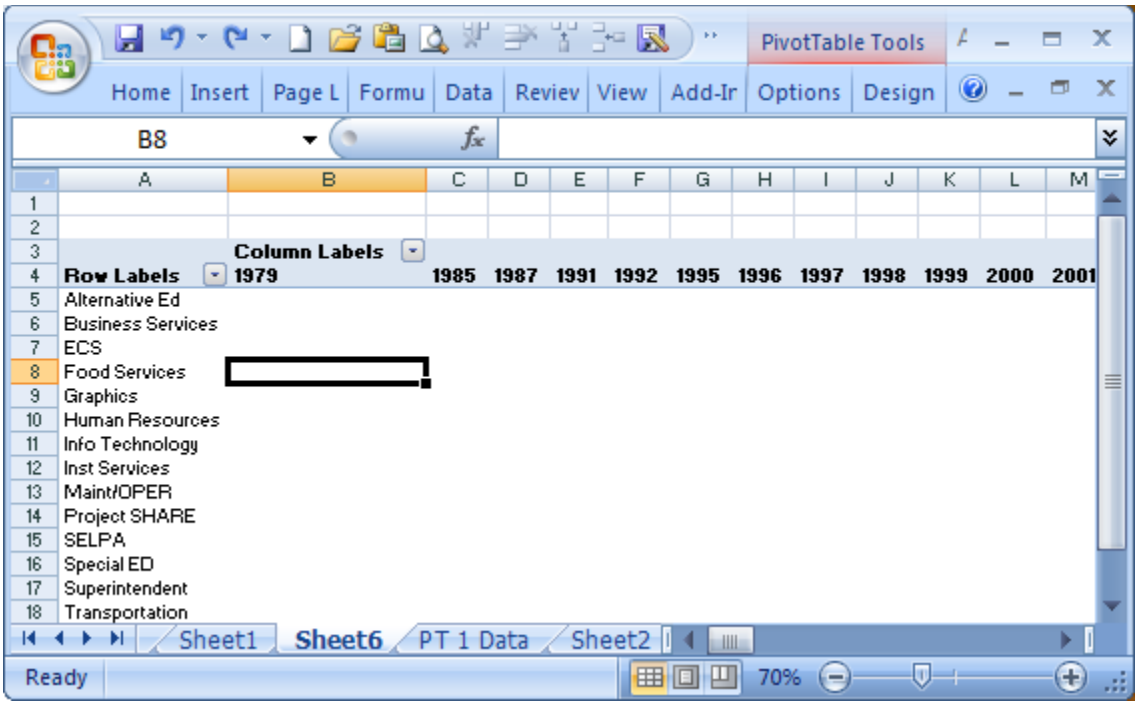


So far the only grouping we have done has been by the rows. Groups can be done by columns as well. In all of our first tables, we group on the starting date by grouping, or combining, the individual dates by month.

Build a pivot table with the departments as the row labels and drop the start dates into the column labels. The table appears as follows:



To group by the years, navigate your mouse to any date in the pivot table. Right click you mouse so that the dialog box appears, select group, and select years. Finish by selecting OK. The pivot table appears as below.

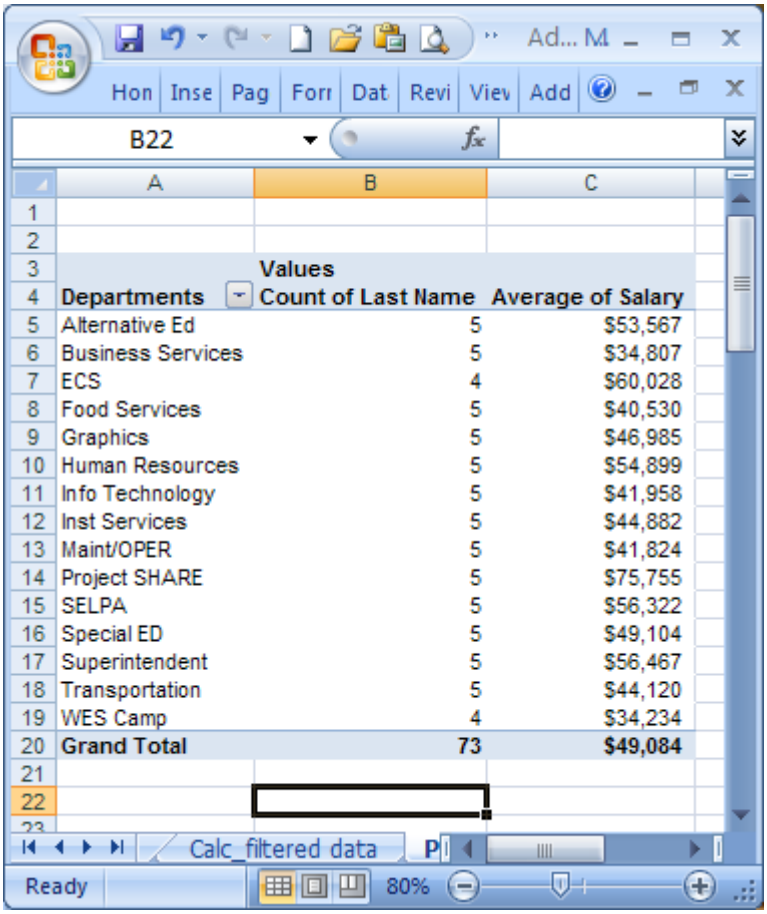


The final grouping we will review is by group by categories that are not part of the original table. Returning to the pivot table where we are pivoting be departments, counting the number of employees by department, and calculating the average salary, you will recall it appears as below.

Building a PivotTable Report – Part Four

User defined groups, adding/removing subtotals

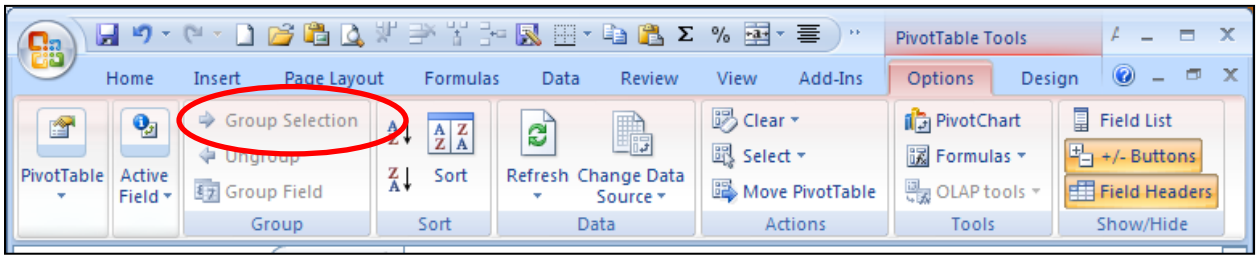
The user may define groups for data that is not included in the original source data.

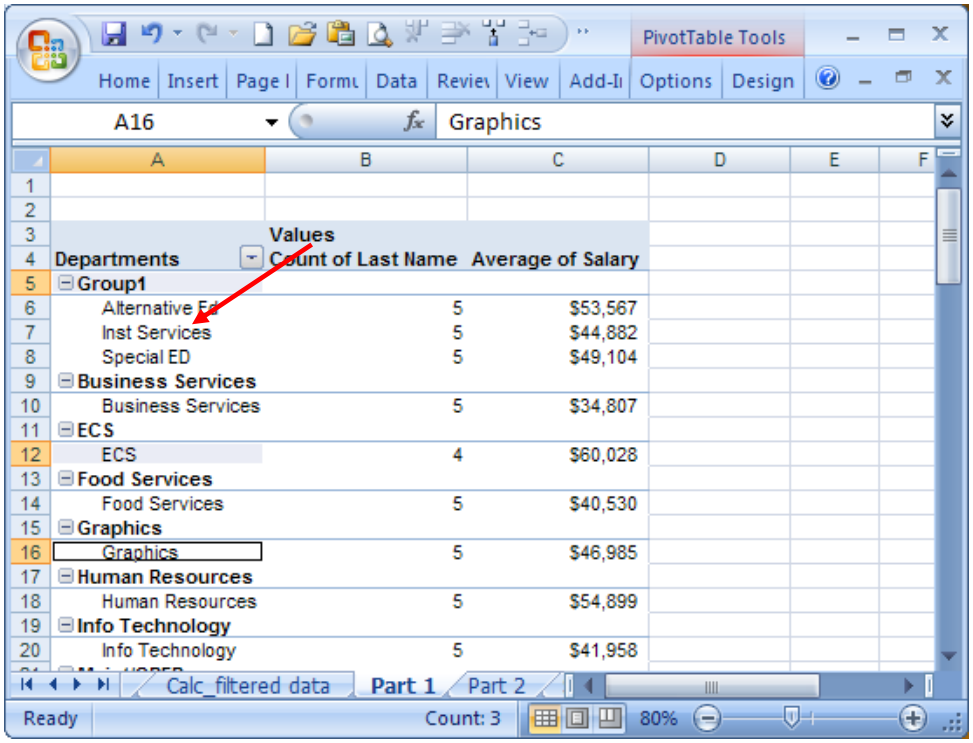


	A	B	C
1			
2			
3		Values	
4	Departments	Count of Last Name	Average of Salary
5	Alternative Ed	5	$53,567
6	Business Services	5	$34,807
7	ECS	4	$60,028
8	Food Services	5	$40,530
9	Graphics	5	$46,985
10	Human Resources	5	$54,899
11	Info Technology	5	$41,958
12	Inst Services	5	$44,882
13	Maint/OPER	5	$41,824
14	Project SHARE	5	$75,755
15	SELPA	5	$56,322
16	Special ED	5	$49,104
17	Superintendent	5	$56,467
18	Transportation	5	$44,120
19	WES Camp	4	$34,234
20	**Grand Total**	**73**	**$49,084**
21			
22			

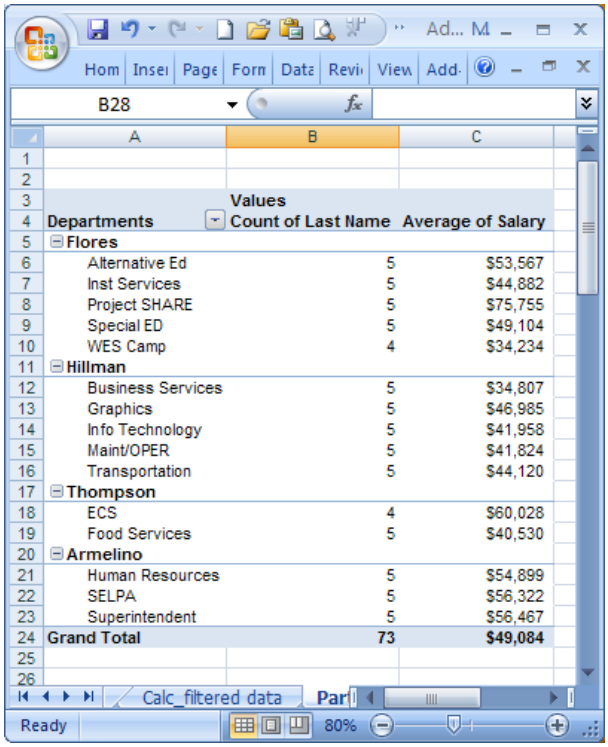
In order to group each department by its cabinet member, we will take the following steps.

- Select those departments under the first cabinet member by CTRL +left click:
  - Alternative Ed, Inst Services, Special Ed
- Choose group selection on the PivotTable Tools\Options tab and select group selection.
- Notice that Group 1 now appears at the top of the pivot table.
- Left click on the Group 1 header and type Flores.





Continue with the group selections until it is completed by cabinet member and appears as below.

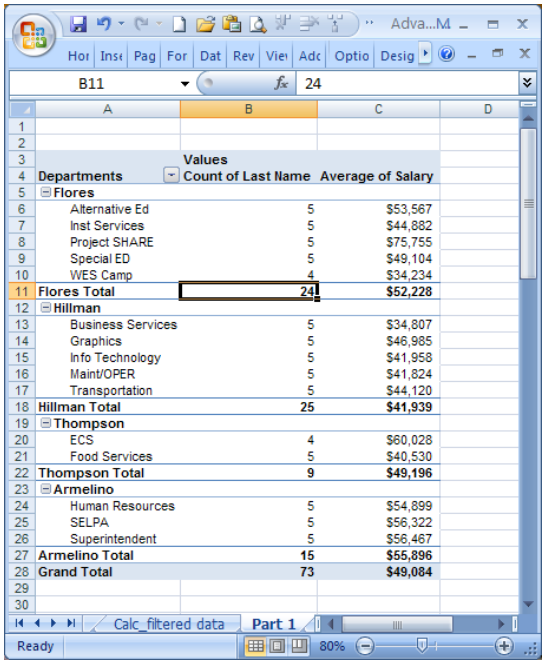


The departments are grouped by cabinet members.

To add subtotals by cabinet members:

- Navigate to the PivotTable Tools\Design Tab.
- Select subtotals within the layout group.
- Select from one of the three options:
  - Do not show subtotals
  - Show all subtotals at the bottom of the group
  - Show all subtotals at the top of the group.

Selecting the option to display the subtotals at the bottom of the group looks like this.

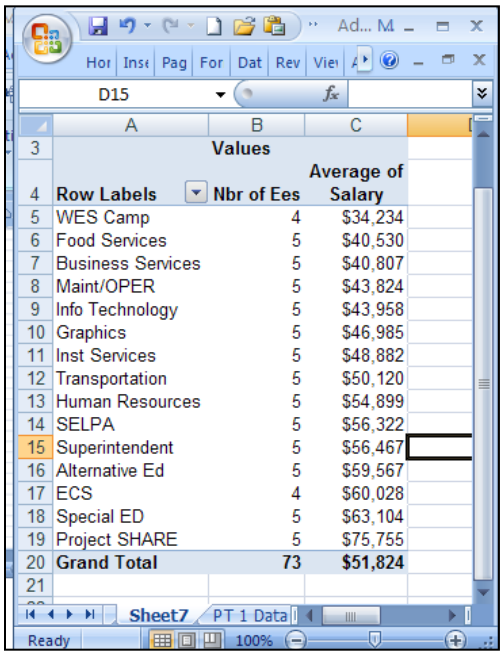


Departments	Values Count of Last Name	Average of Salary
Flores		
Alternative Ed	5	$53,567
Inst Services	5	$44,882
Project SHARE	5	$75,755
Special ED	5	$49,104
WES Camp	4	$34,234
Flores Total	**24**	**$52,228**
Hillman		
Business Services	5	$34,807
Graphics	5	$46,985
Info Technology	5	$41,958
Maint/OPER	5	$41,824
Transportation	5	$44,120
Hillman Total	**25**	**$41,939**
Thompson		
ECS	4	$60,028
Food Services	5	$40,530
Thompson Total	**9**	**$49,196**
Armelino		
Human Resources	5	$54,899
SELPA	5	$56,322
Superintendent	5	$56,467
Armelino Total	**15**	**$55,896**
Grand Total	**73**	**$49,084**

Building a PivotTable Report – Part Five

Using formulas on pivoted data

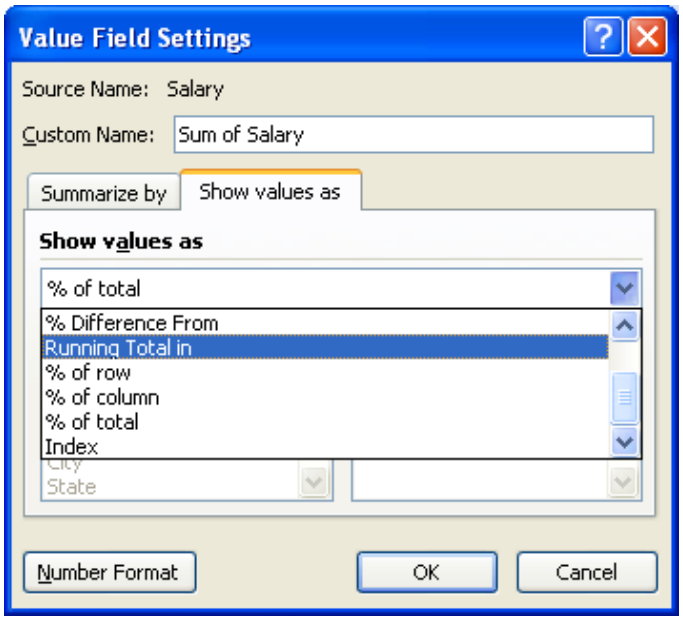
Information displayed in a pivot table may be enhanced by adding additional computations by using formulas and functions.

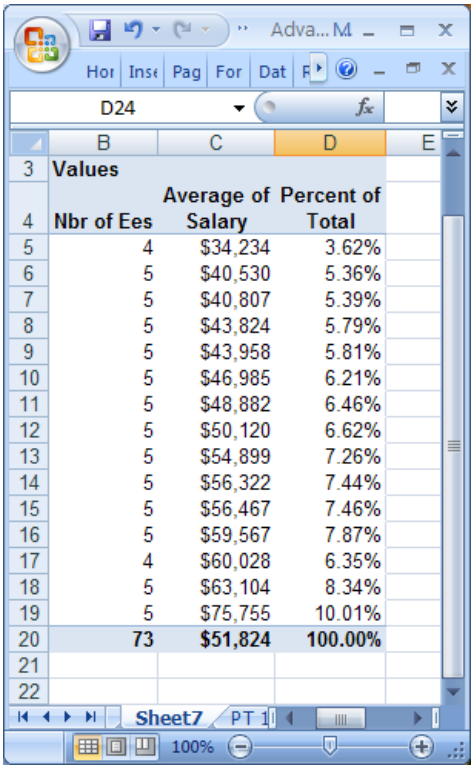


Row Labels	Values Nbr of Ees	Average of Salary
WES Camp	4	$34,234
Food Services	5	$40,530
Business Services	5	$40,807
Maint/OPER	5	$43,824
Info Technology	5	$43,958
Graphics	5	$46,985
Inst Services	5	$48,882
Transportation	5	$50,120
Human Resources	5	$54,899
SELPA	5	$56,322
Superintendent	5	$56,467
Alternative Ed	5	$59,567
ECS	4	$60,028
Special ED	5	$63,104
Project SHARE	5	$75,755
Grand Total	**73**	**$51,824**

Starting with our basic average salary by department pivot table, we will:

- Drag salary again down to the *formulas zone*
- Navigate to a cell with the column and right click the mouse to launch the dialog box
- Select *value fields settings* to launch the dialog box.

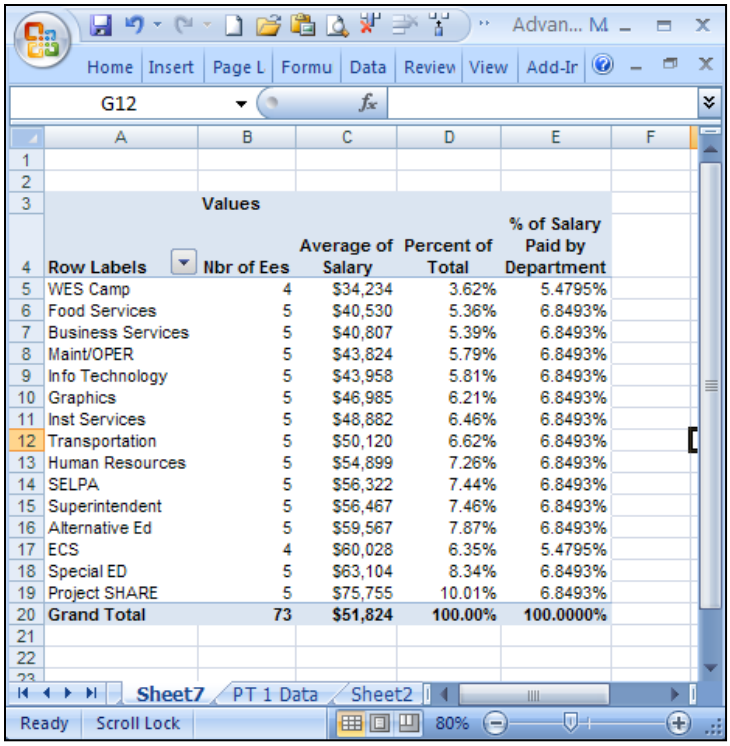




- Navigate to the Show values as tab.
- Instead of showing the values as normal, select the down arrow to display the various options.
- In this example we want to show the values as a percent of column total.

You may also make calculations on the pivot table results themselves. For instance, to calculate the percent of salaries paid by the various departments:

- Drag the salaries once again to the *formulas zone.*
- Navigate to a cell with the column and right click the mouse to launch the dialog box
- Select value fields settings to launch the dialog box. On the summarize tab, select count.
- Within the value fields settings dialog box now select the *show vales as* tab.
- Launch the dropdown box and select Percent of grand total.



Values				
Row Labels	Nbr of Ees	Average of Salary	Percent of Total	% of Salary Paid by Department
WES Camp	4	$34,234	3.62%	5.4795%
Food Services	5	$40,530	5.36%	6.8493%
Business Services	5	$40,807	5.39%	6.8493%
Maint/OPER	5	$43,824	5.79%	6.8493%
Info Technology	5	$43,958	5.81%	6.8493%
Graphics	5	$46,985	6.21%	6.8493%
Inst Services	5	$48,882	6.46%	6.8493%
Transportation	5	$50,120	6.62%	6.8493%
Human Resources	5	$54,899	7.26%	6.8493%
SELPA	5	$56,322	7.44%	6.8493%
Superintendent	5	$56,467	7.46%	6.8493%
Alternative Ed	5	$59,567	7.87%	6.8493%
ECS	4	$60,028	6.35%	5.4795%
Special ED	5	$63,104	8.34%	6.8493%
Project SHARE	5	$75,755	10.01%	6.8493%
Grand Total	**73**	**$51,824**	**100.00%**	**100.0000%**

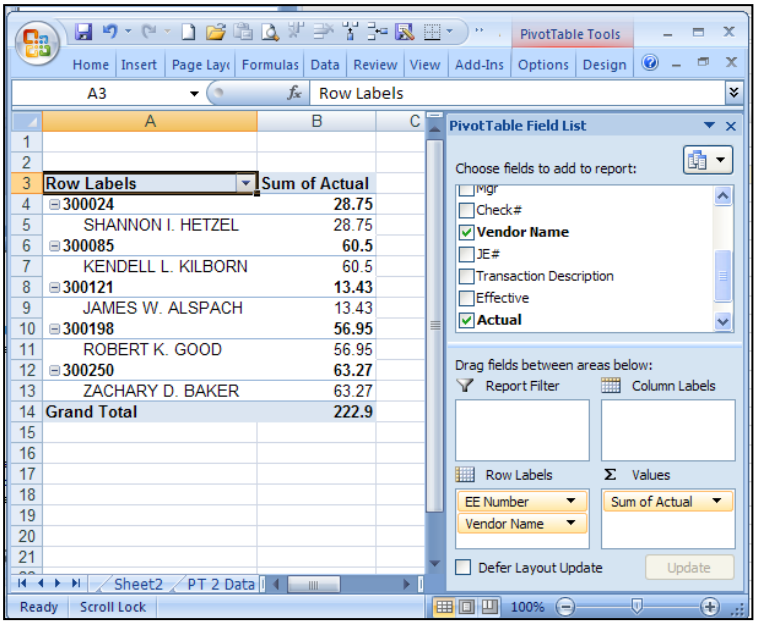
The resulting pivot table appears to the right.

At first glance, it may appear that the calculation is incorrect because the majority of the results in the % of Salary Paid by Department is 6.8493%.

It is correct. The reason the percent is the same for so many departments is due to the fact that so many departments have five employees.

Building a PivotTable Report – Part Six

Displaying multiple row labels in columns, or tabular form.



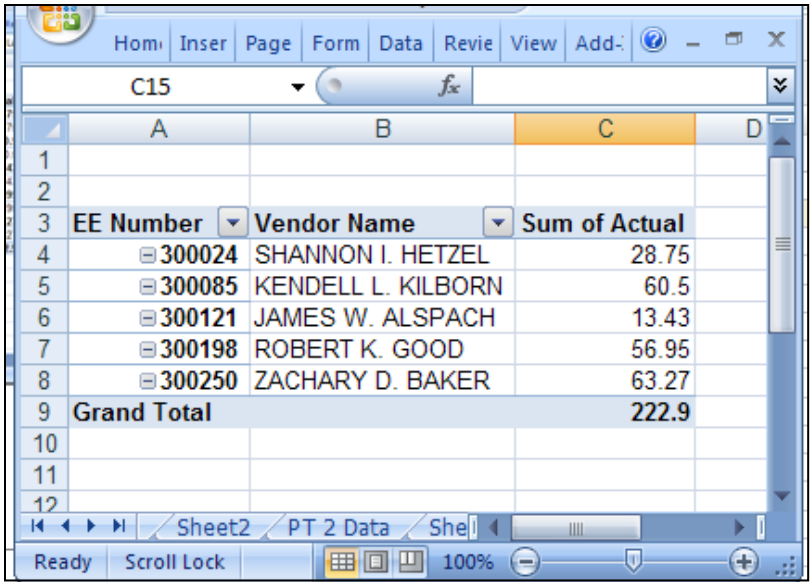
Row Labels	Sum of Actual
300024	28.75
SHANNON I. HETZEL	28.75
300085	60.5
KENDELL L. KILBORN	60.5
300121	13.43
JAMES W. ALSPACH	13.43
300198	56.95
ROBERT K. GOOD	56.95
300250	63.27
ZACHARY D. BAKER	63.27
Grand Total	**222.9**

As with any other zone, multiple data fields may be added to the row label zone. However, depending on your settings, the label plus one indents within the table.

To the right is an export from Escape of mileage paid to the IT staff. It is organized by Employee number, name, and the total of the amount paid each employee.

Notice the name is displayed on a separate line below the EE ID and indented.

So that the table is cleaner, and half the size, the names may be displayed on the same line.



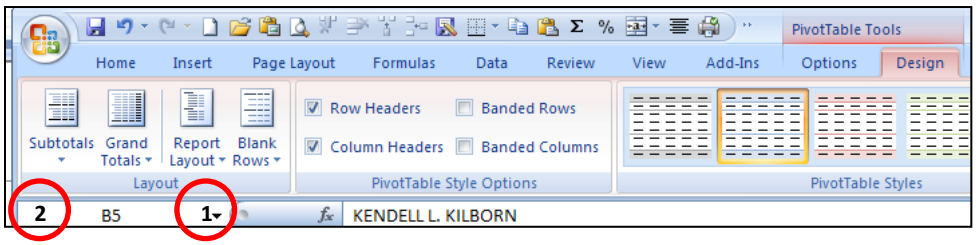
	A	B	C	D
1				
2				
3	EE Number	Vendor Name	Sum of Actual	
4	300024	SHANNON I. HETZEL	28.75	
5	300085	KENDELL L. KILBORN	60.5	
6	300121	JAMES W. ALSPACH	13.43	
7	300198	ROBERT K. GOOD	56.95	
8	300250	ZACHARY D. BAKER	63.27	
9	Grand Total		222.9	
10				
11				
12				

This is a much cleaner presentation of the data.

The steps performed were:

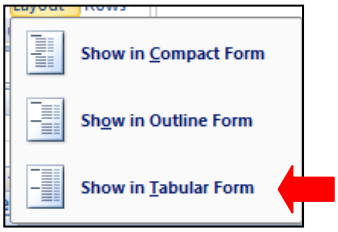
- Display the labels in tabular form, and
- eliminate the subtotals by employee

To display the labels in tabular form navigate to PivotTable Tools\design tab. Within the layout group select report layout. 1



Three display options are available.

By selecting show in tabular form the ID and the employee name will appear on the same row.



	A	B	C
1			
2			
3	EE Number	Vendor Name	Sum of Actual
4	300024	SHANNON I. HETZEL	28.75
5	300024 Total		28.75
6	300085	KENDELL L. KILBORN	60.5
7	300085 Total		60.5
8	300121	JAMES W. ALSPACH	13.43
9	300121 Total		13.43
10	300198	ROBERT K. GOOD	56.95
11	300198 Total		56.95
12	300250	ZACHARY D. BAKER	63.27
13	300250 Total		63.27
14	Grand Total		222.9

Although the table is better, it still is too busy due to the subtotals.

To eliminate the subtotals, we will return to the PivotTable Tools\design tab. This time within the layout group we will select subtotals, and choose the option not to show subtotals. 2

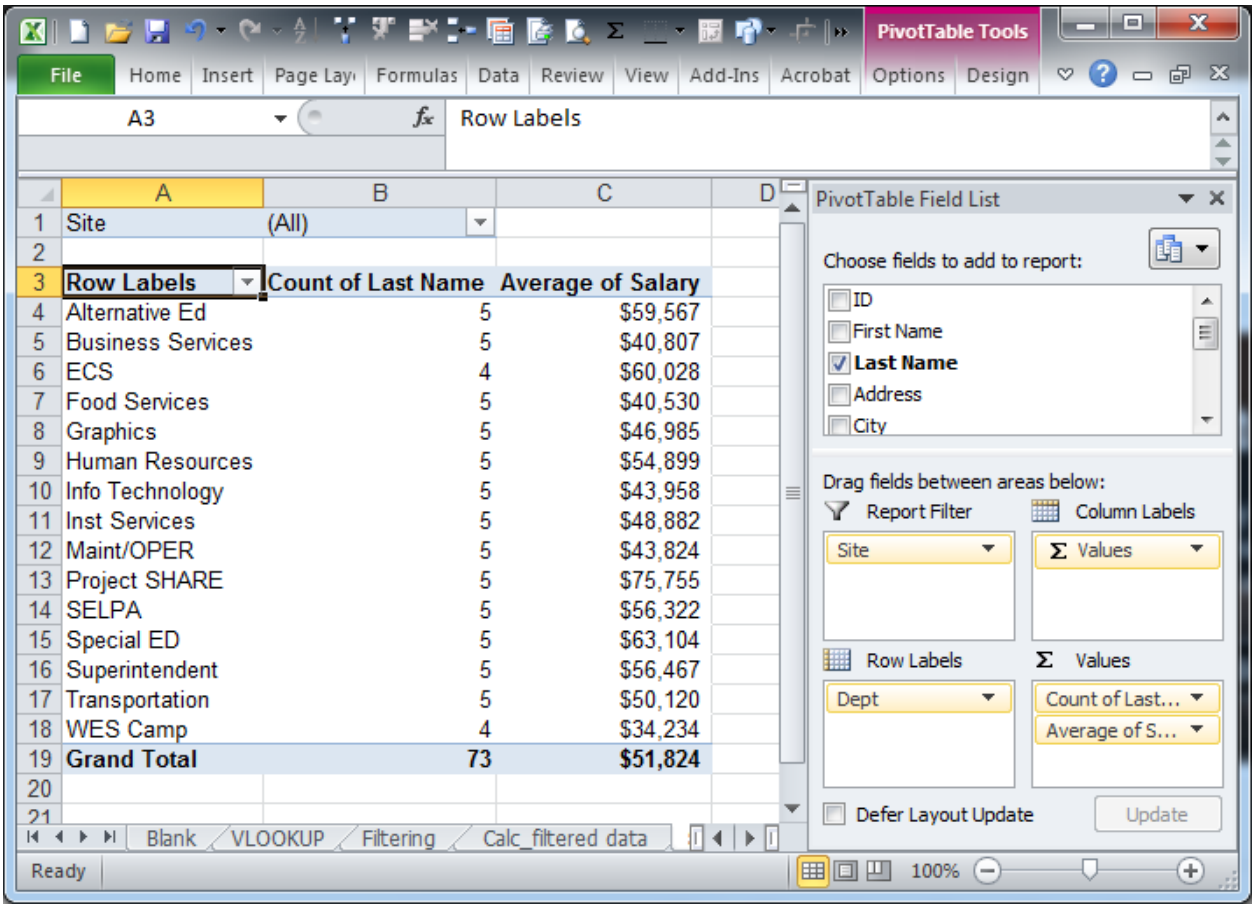
EE Number	Vendor Name	Sum of Actual
300024	SHANNON I. HETZEL	28.75
300085	KENDELL L. KILBORN	60.5
300121	JAMES W. ALSPACH	13.43
300198	ROBERT K. GOOD	56.95
300250	ZACHARY D. BAKER	63.27
Grand Total		222.9

The resulting report is easy to read.

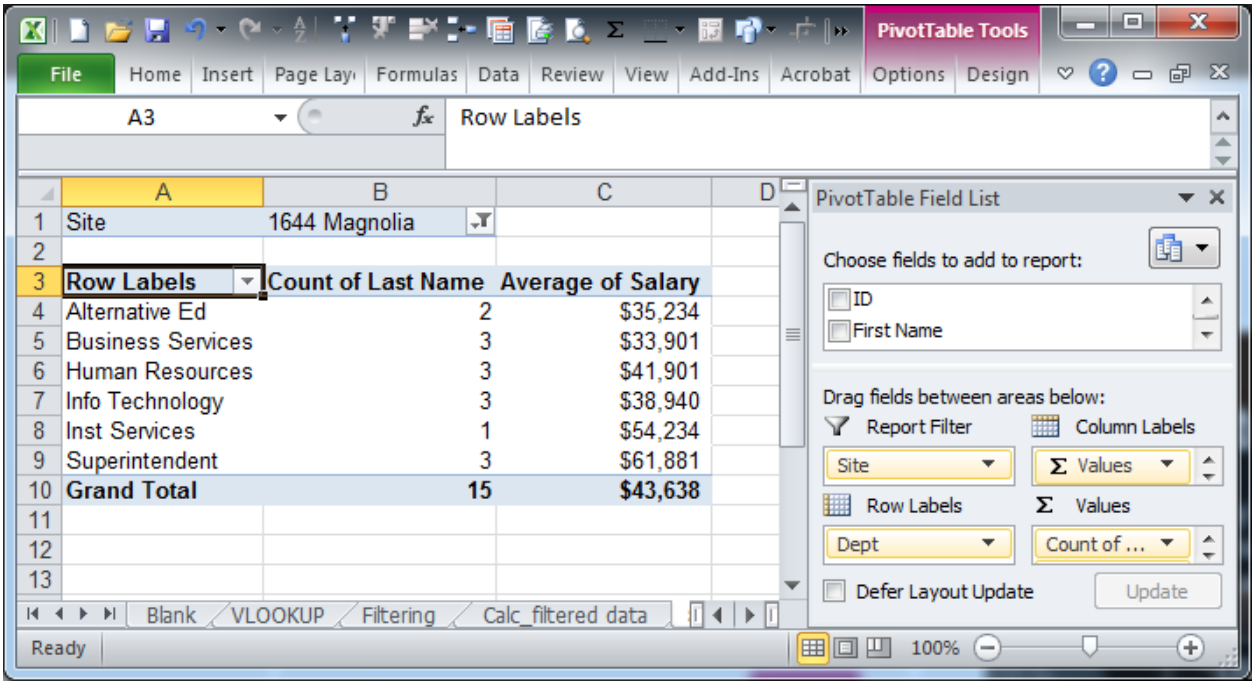
Other Cool Things to do with a Pivot Table – Part Seven

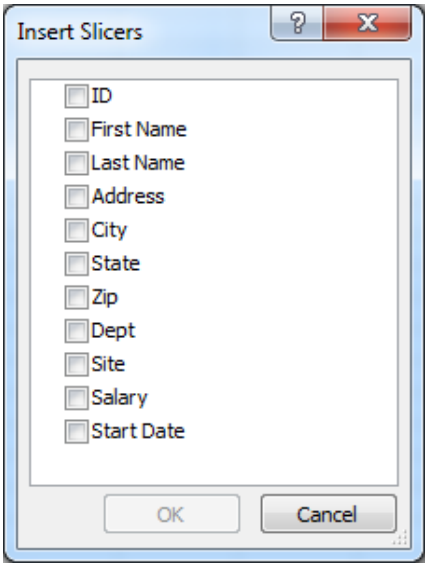
Report Filters

After dragging the site into the report filter drop zone, notice the filter that appeared on row 1 which includes the Site (label of field dragged into the filter zone) and the dropdown box in column B which will display all of the sites when the chevron is selected.



By selecting just 1644 Magnolia as the site, only the selected information will be displayed for those individuals whose site is 1644 Magnolia.



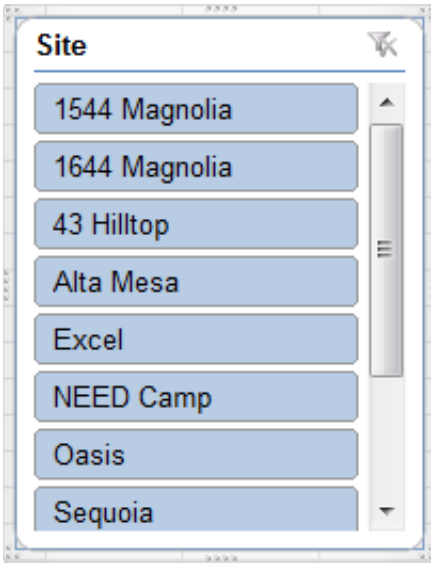


Report Slicers

Report filters are not too exciting; slicers on the other hand are super cool. By navigating to PivotTable Tools\Sort & Filter group and select **insert slicer.**

After selecting Site to filter by, a pop up appears with the list of all sites. One or many individual sites may be chosen to filter by. Holding down the shift or Ctrl keys work when selecting multiple items to filter by.

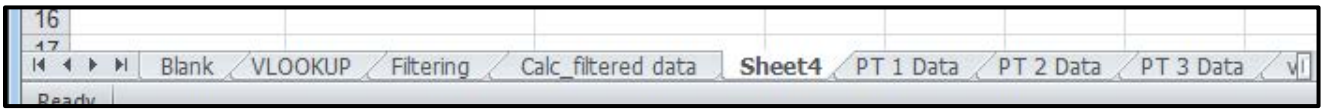
To remove the slicer, merely select the slicer pane and press the delete key.



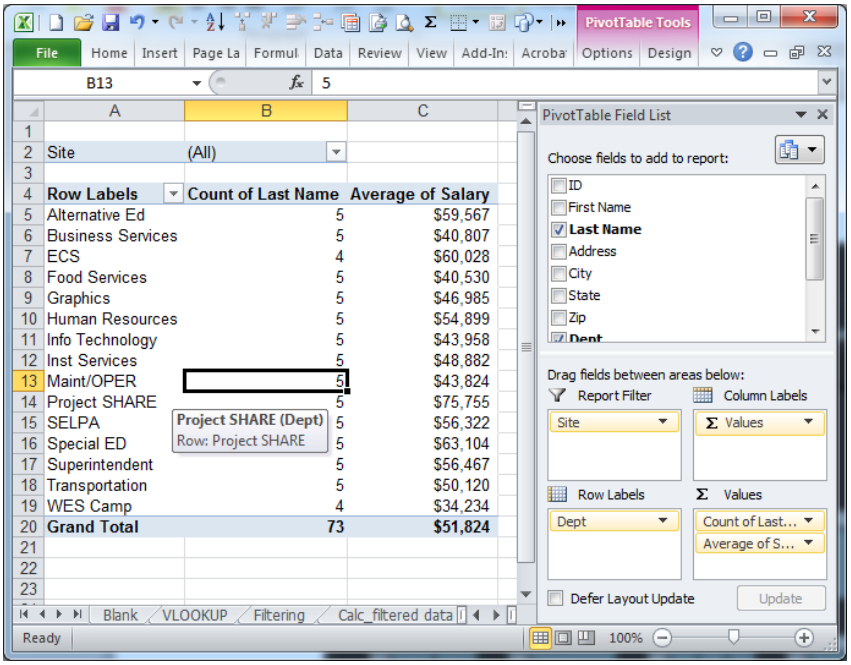
Expanding Filter Results to Individual Tabs

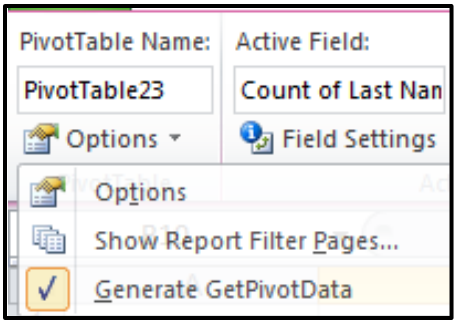
Returning to the report filters, there is one feature that gives the cool slicers a run for its money. Simply put, a single criteria element results may be shown on individual pages, or worksheet tabs.

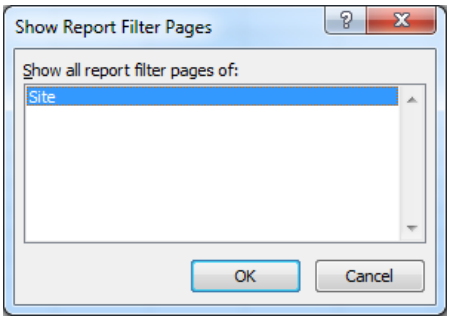
Note the tabs below.



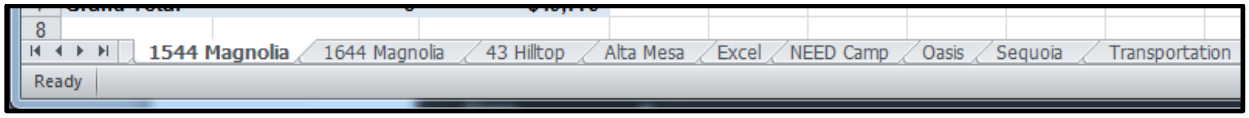
Utilizing the site report filter that we have before; select PivotTable tools\Options within the PivotTable group. Then select the chevron to the left of Options and select **show report filter pages**.





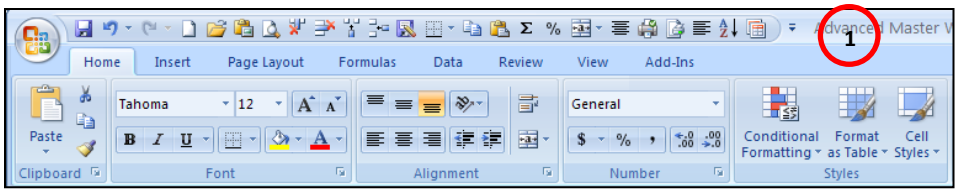


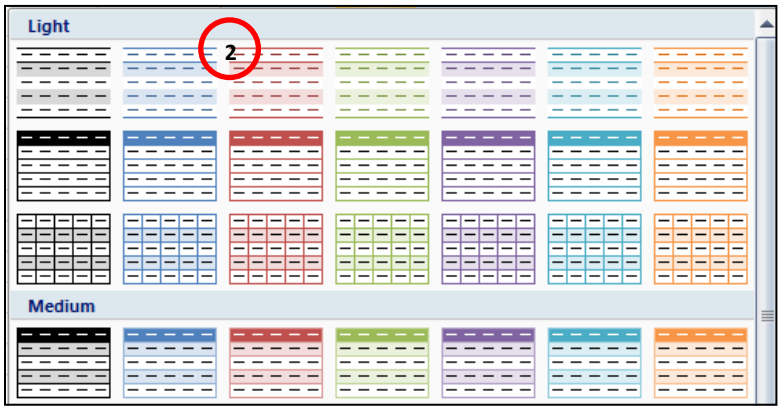
Only one filter can be utilized when filtering to pages. The **show report filters pages** pop-up will appear from which you can only select one. Once **OK** is selected, Excel will do some quick magic. The tabs below is after the page filter has been applied.



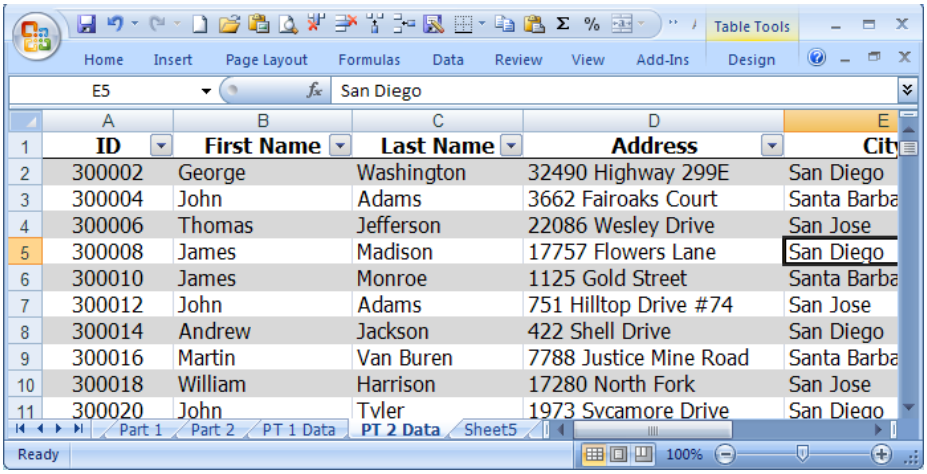
Formatting as a Table - Part Eight

It is often best to format the source data area as a table, especially if it is data that has the potential of being appended. By formatting the data as a table, as additional rows are added at the bottom of the table, without any spaces, the data area automatically expands.





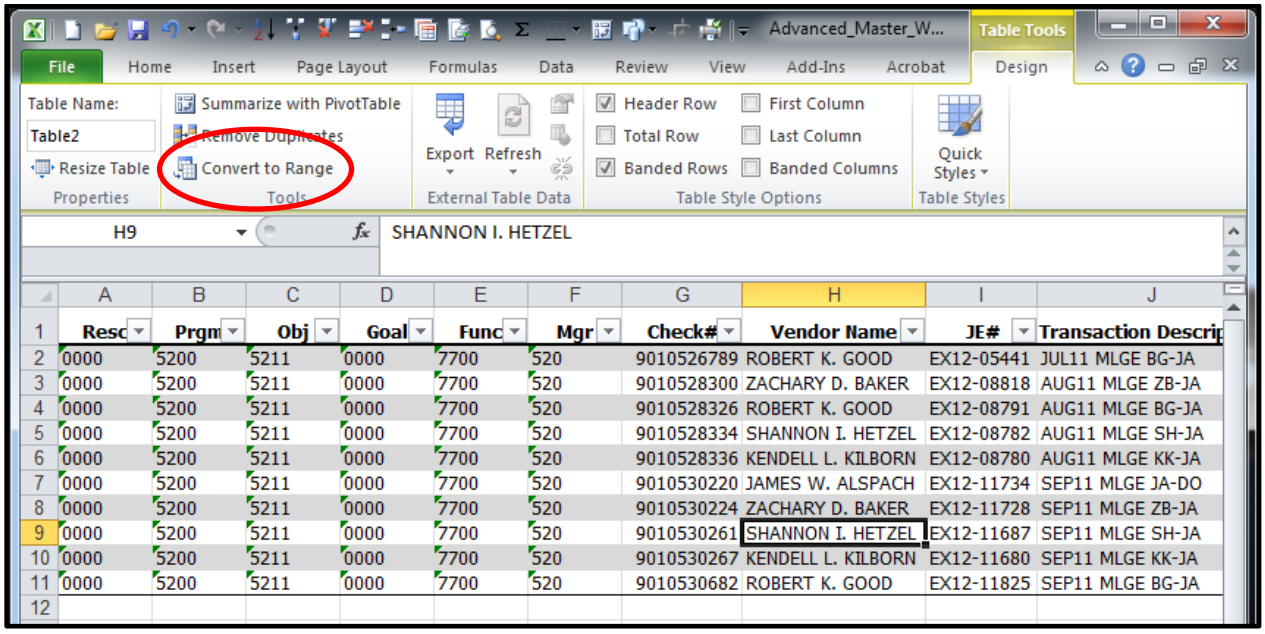
3



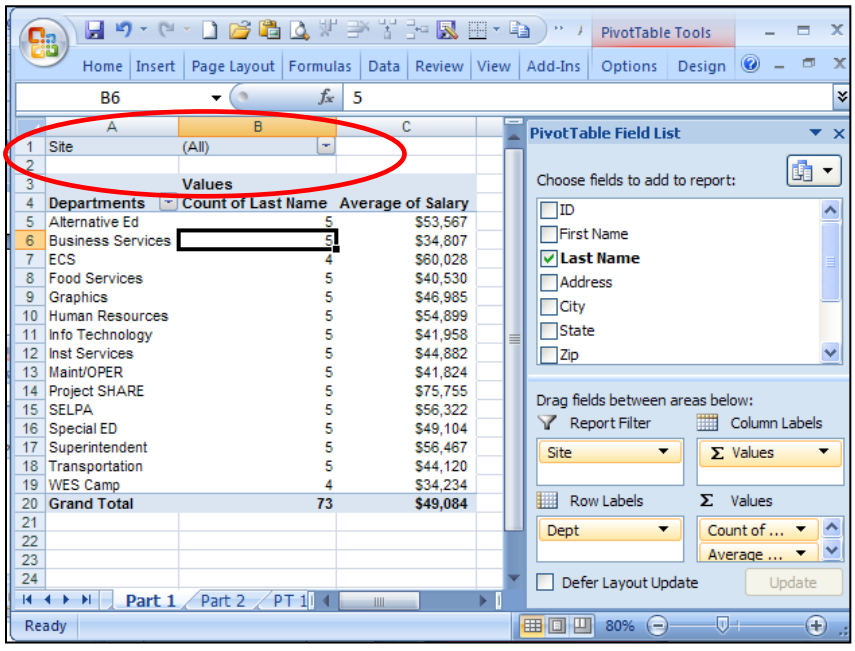
4

Formatting Data as a Table	
1	Select a cell within your data area. From the Home tab, select format as a table from the styles group.
2	Select the format I want. Choose light in this example.
3	Excel guesses the data area. Modify if necessary. Select OK
4	This is an example of the light table format.

If the table format is no longer desired you may turn off the 'table formatting' by navigating to \table tools\ tools and select the convert to range option.



	A	B	C	D	E	F	G	H	I	J
1	Resc	Prgm	Obj	Goal	Func	Mgr	Check#	Vendor Name	JE#	Transaction Descrip
2	0000	5200	5211	0000	7700	520	9010526789	ROBERT K. GOOD	EX12-05441	JUL11 MLGE BG-JA
3	0000	5200	5211	0000	7700	520	9010528300	ZACHARY D. BAKER	EX12-08818	AUG11 MLGE ZB-JA
4	0000	5200	5211	0000	7700	520	9010528326	ROBERT K. GOOD	EX12-08791	AUG11 MLGE BG-JA
5	0000	5200	5211	0000	7700	520	9010528334	SHANNON I. HETZEL	EX12-08782	AUG11 MLGE SH-JA
6	0000	5200	5211	0000	7700	520	9010528336	KENDELL L. KILBORN	EX12-08780	AUG11 MLGE KK-JA
7	0000	5200	5211	0000	7700	520	9010530220	JAMES W. ALSPACH	EX12-11734	SEP11 MLGE JA-DO
8	0000	5200	5211	0000	7700	520	9010530224	ZACHARY D. BAKER	EX12-11728	SEP11 MLGE ZB-JA
9	0000	5200	5211	0000	7700	520	9010530261	SHANNON I. HETZEL	EX12-11687	SEP11 MLGE SH-JA
10	0000	5200	5211	0000	7700	520	9010530267	KENDELL L. KILBORN	EX12-11680	SEP11 MLGE KK-JA
11	0000	5200	5211	0000	7700	520	9010530682	ROBERT K. GOOD	EX12-11825	SEP11 MLGE BG-JA
12										



- Report filters is similar to a page break.
- By dragging Site to Report Filter, the filter appears above the pivot table.
- Note the site filter, in cell B1, displays All; and the grand total count is 73.
- By selecting the chevron, a drop down appears, select 1644 Magnolia.
- The second picture displays only those employees at 1644 Magnolia and now display 15 employees.

1	Site	1644 Magnolia	
2			
3		Values	
4	**Departments**	**Count of Last Name**	**Average of Salary**
5	Alternative Ed	2	$20,234
6	Business Services	3	$30,567
7	Human Resources	3	$41,901
8	Info Technology	3	$35,607
9	Inst Services	1	$54,234
10	Superintendent	3	$61,881
11	**Grand Total**	**15**	**$40,305**