Data Analysis with Excel: Tables and PivotTables

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ALEXANDRIA Technical & Community COLLEGE

A member of Minnesota State

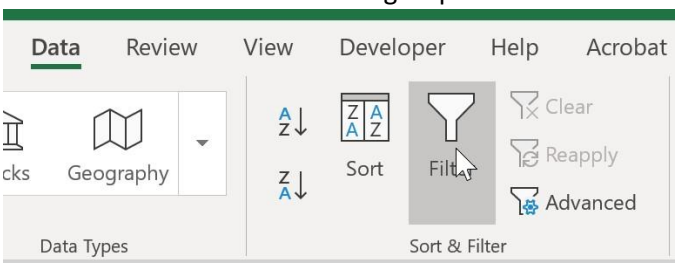
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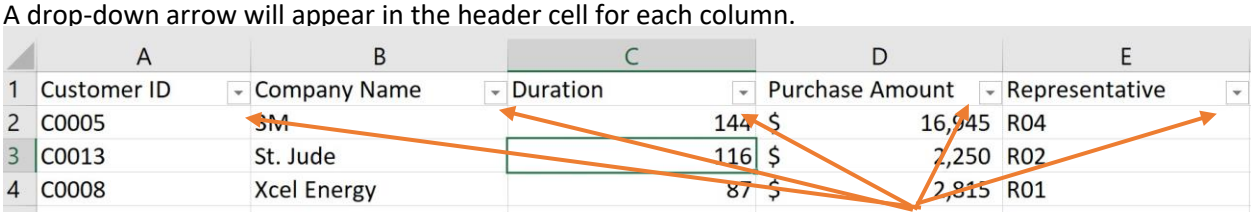
Filtering

You can filter to select records that match specific criteria. This gives a temporary view of data without physically removing anything. To isolate individuals from Florida, we would do the following:

1. Choose **Data** tab > **Sort & Filter** group > **Filter**

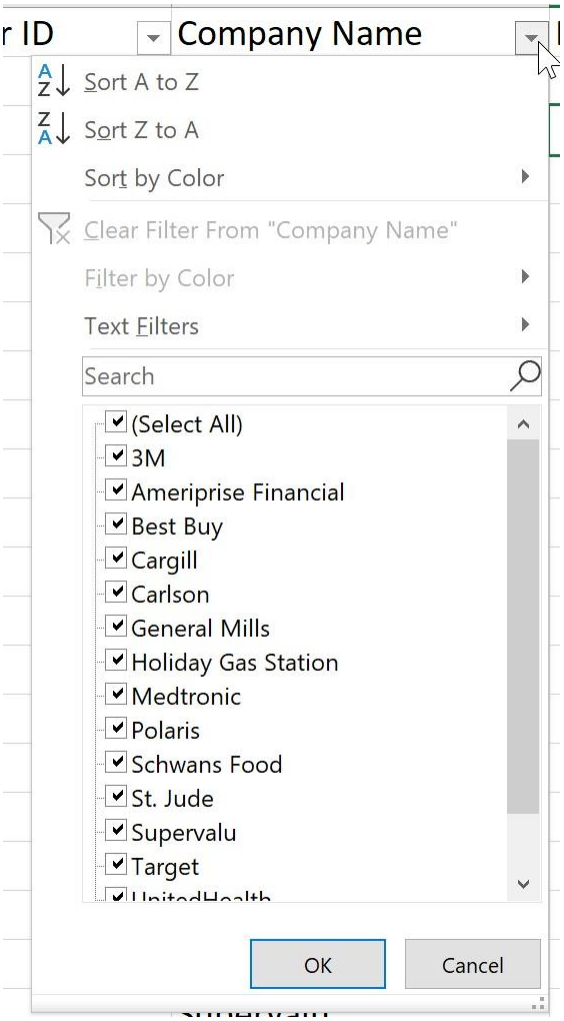


2. A drop-down arrow will appear in the header cell for each column.

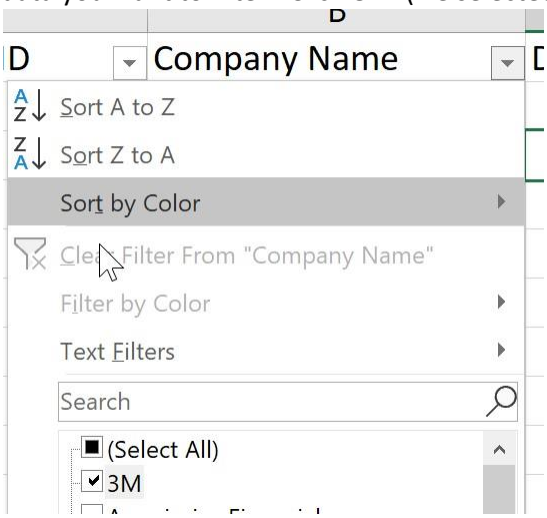


	A	B	C	D	E
1	Customer ID	Company Name	Duration	Purchase Amount	Representative
2	C0005	3M	144	$ 16,945	R04
3	C0013	St. Jude	116	$ 2,250	R02
4	C0008	Xcel Energy	87	$ 2,815	R01

3. Click the drop-down for the column you want to filter. The filter menu appears and allows you to sort and apply filters. Excel will recognize the type of data you have in the column. I.e., text, dates, or values. You will see each unique value listed once in the bottom part of the options.



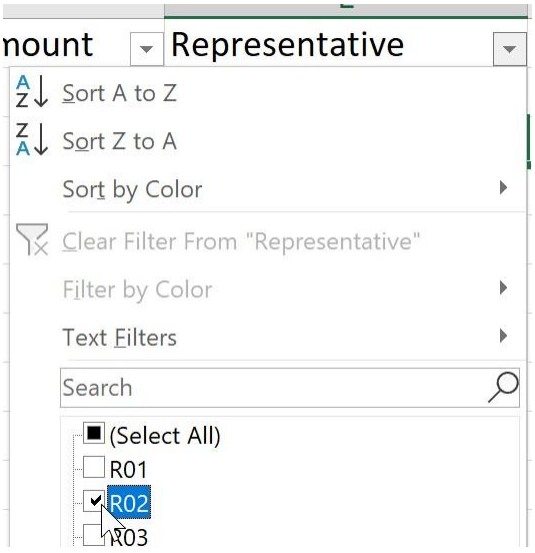
4. Uncheck the box next to Select all to quickly deselect all data. Then check the box(es) of the data you want to filter. Click OK. (we selected 3M in this example)



5. Only Company Name 3M results will be displayed.

	A	B	C
1	Customer ID	Company Name	Duration
2	C0005	3M	144
16	C0005	3M	44
39	C0005	3M	75
42	C0005	3M	25
59	C0005	3M	84
76	C0005	3M	38

6. Apply multiple filters to help narrow down your results. We will select Representative R02 from the Representative column and only see results for company name 3M and representative R02.

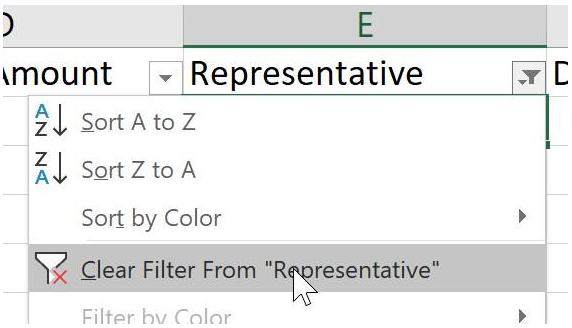


	A	B	C	D	E
1	Customer ID	Company Name	Duration	Purchase Amount	Representative
16	C0005	3M	44	$ 12,457	R02
99	C0005	3M	23	$ 5,330	R02
127	C0005	3M	102	$ 19,684	R02
167	C0005	3M	68	$ 16,502	R02
174	C0005	3M	139	$ 1,453	R02

CLEAR A FILTER

After applying a filter, you may want to remove the filter.

1. Click the drop-down for the filter you want to clear. We will clear the filter for the Representative.
2. Choose clear filter from.

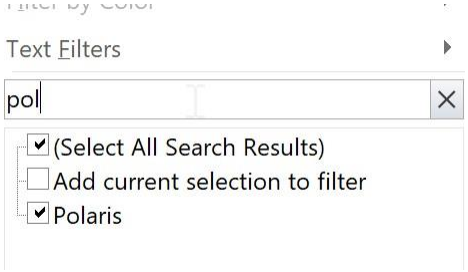


3. The hidden data will be displayed.

FILTER WITH SEARCH

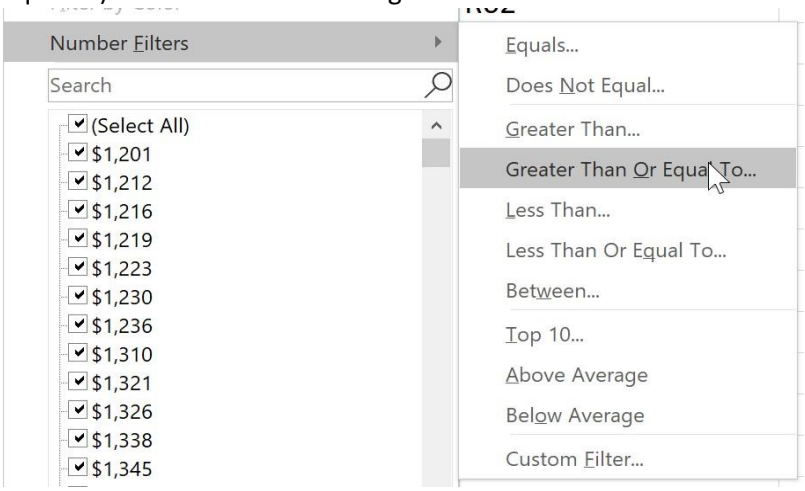
Excel allows you to search for data that contains a phrase, word, number, date, etc. Excel auto-selects the items that match your criteria.

1. Click the drop-down for the column you want to filter.
2. Click in the Search box and start typing. Excel selects all items that match your criteria. Click OK when you're done.

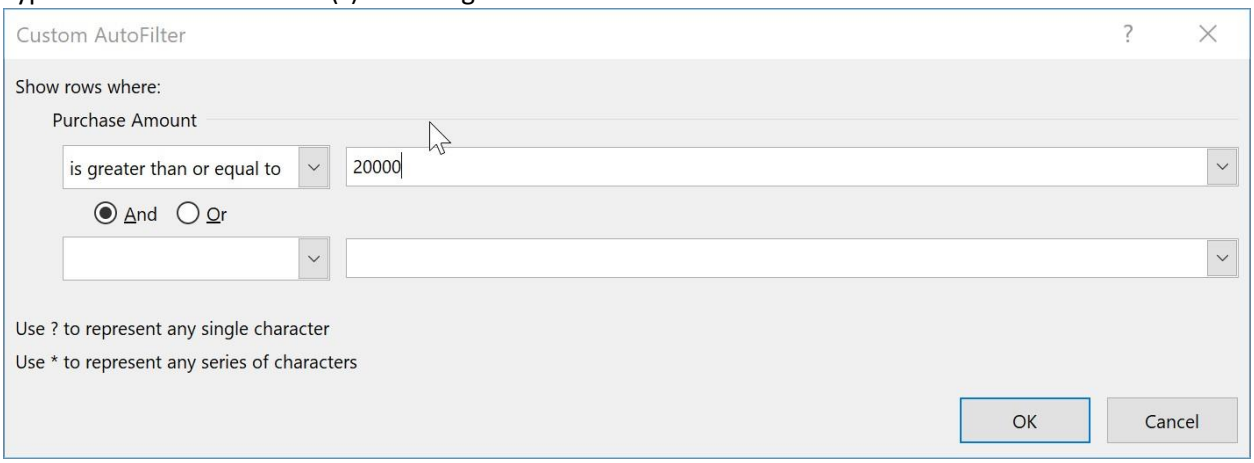


APPLY ADVANCED FILTERS

1. Click the drop-down for the column you want to filter. We filter Purchase amount numbers greater than or equal to $20,000.
2. Hover over Number Filters, then select the desired number filter (ours will be Greater than or equal to). Notice these are all logical references.



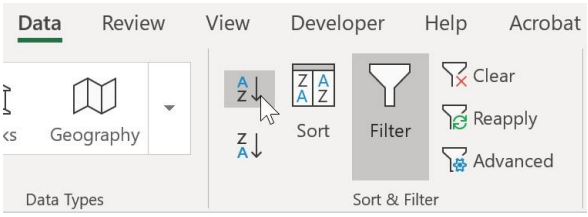
3. Type in the desired number(s) to the right of each filter. Click OK.



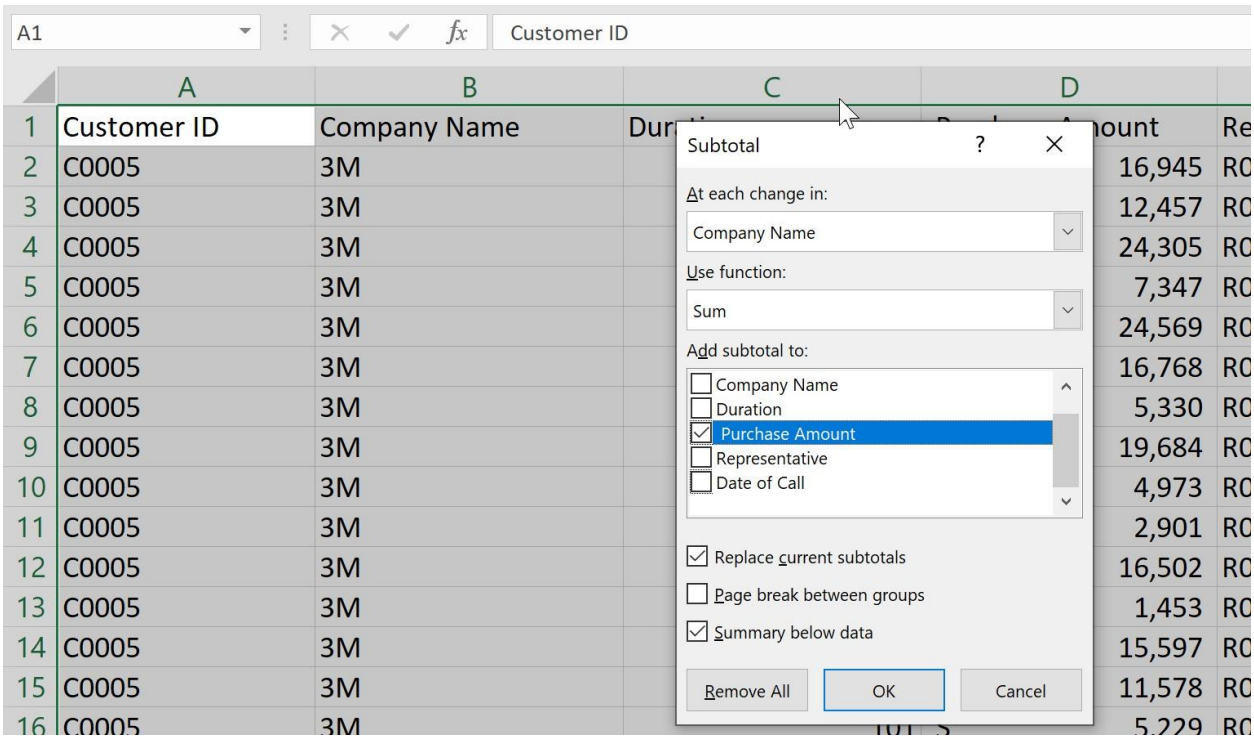
4. Only numbers that are 20,000 and greater are displayed.

SUBTOTALS

1. Sort the list on the field for which you want subtotals inserted. Data Tab >> Sort & Filter >> AZ

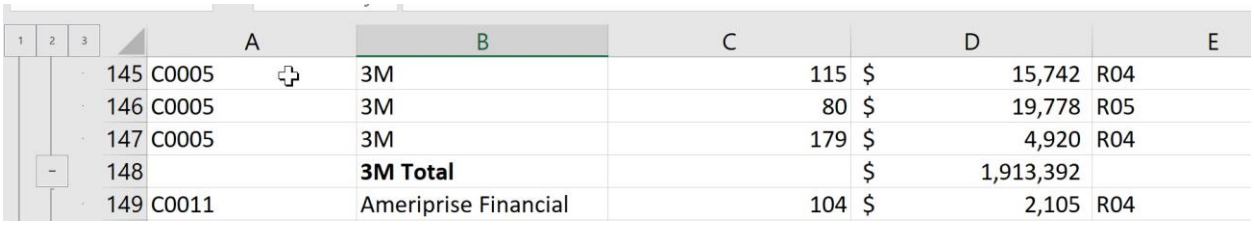


2. From the Data tab, in the Outline group, select **Subtotal.**
3. Select the field for which the subtotals are to be calculated in the **At Each Change in** dropdown.
4. Specify the types of totals you want to insert in the **Use Function** dropdown.
5. Select the check boxes for the field(s) you want to total in the **Add Subtotal To** list box.
6. Click OK.



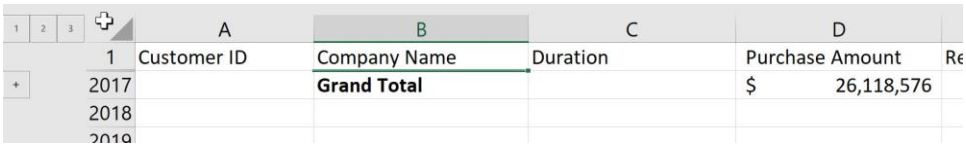
VIEW GROUPS BY LEVEL

1. The worksheet will be outlines into group and the subtotal will be listed below each group. In this example, the data is grouped by company name and the total purchase amount is being totaled.



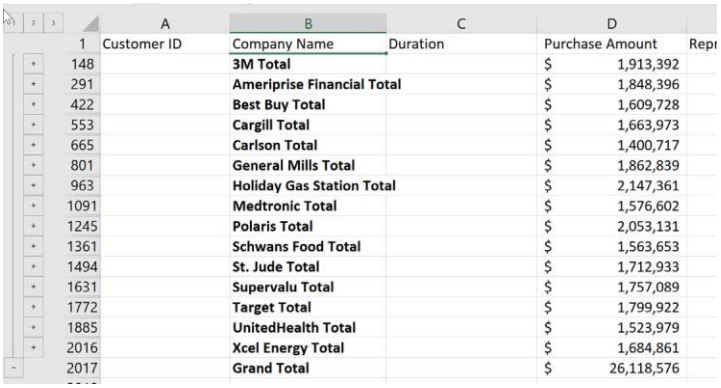
	A	B	C	D	E
145	C0005	3M	115	$ 15,742	R04
146	C0005	3M	80	$ 19,778	R05
147	C0005	3M	179	$ 4,920	R04
148		**3M Total**		$ 1,913,392	
149	C0011	Ameriprise Financial	104	$ 2,105	R04

2. Your worksheet is divided into different levels. You can switch among these levels quickly and control how much information is being displayed.
   a. Level 1: Grand Total



	A	B	C	D
1	Customer ID	Company Name	Duration	Purchase Amount
2017		**Grand Total**		$ 26,118,576
2018				

   b. Level 2: Subtotals and Grand Total

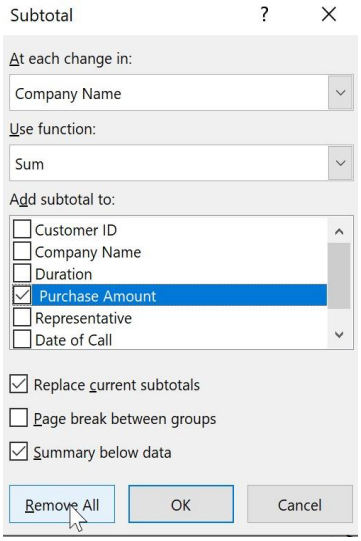


	A	B	C	D
1	Customer ID	Company Name	Duration	Purchase Amount
148		**3M Total**		$ 1,913,392
291		**Ameriprise Financial Total**		$ 1,848,396
422		**Best Buy Total**		$ 1,609,728
553		**Cargill Total**		$ 1,663,973
665		**Carlson Total**		$ 1,400,717
801		**General Mills Total**		$ 1,862,839
963		**Holiday Gas Station Total**		$ 2,147,361
1091		**Medtronic Total**		$ 1,576,602
1245		**Polaris Total**		$ 2,053,131
1361		**Schwans Food Total**		$ 1,563,653
1494		**St. Jude Total**		$ 1,712,933
1631		**Supervalu Total**		$ 1,757,089
1772		**Target Total**		$ 1,799,922
1885		**UnitedHealth Total**		$ 1,523,979
2016		**Xcel Energy Total**		$ 1,684,861
2017		**Grand Total**		$ 26,118,576

   c. Level 3: All information is displayed.

REMOVE SUBTOTALS

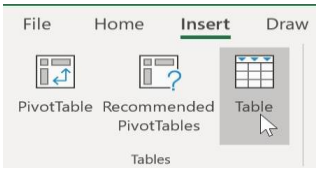
1. Data Tab >> Outline Group >> Subtotal.
2. Choose the Remove All Button.



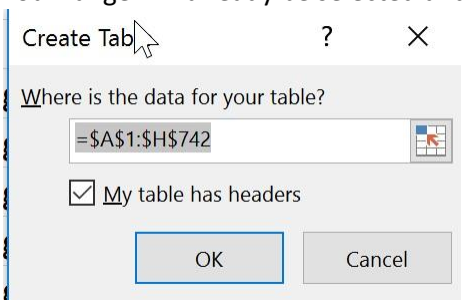
Creating a Table

There are two ways to create a table. You can either insert a table directly in the default table style or you can convert an existing range into a table. The second approach is by far the most common:

1. Insert Tab >> Table.



2. A **Create Table** dialog box will appear. Your selected range appears as an absolute cell reference. Your range will already be selected and displayed in the **Where is the data for your table?**



3. If your selected range contains data that you want to display as table headers, select the **My table has headers** check box.
4. Click the **OK** command button to create the table.
5. When you have an Excel table selected, you will have access to a **Table Tools** contextual tab with a single **Design** sub-tab.

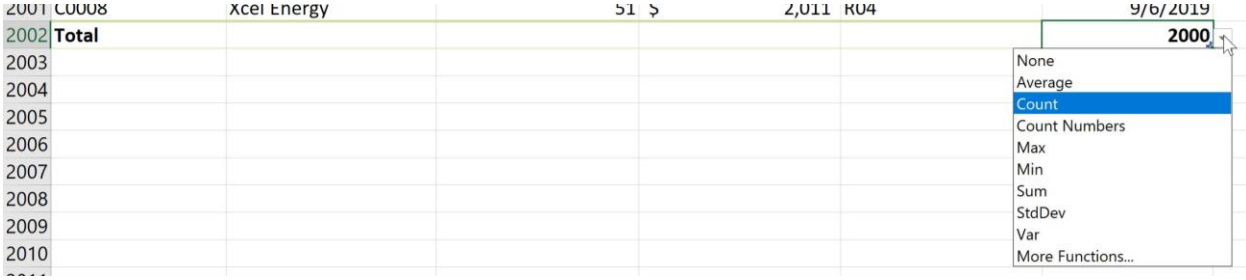
Each time you create a table, Excel creates a default table name in the Properties group (e.g., Table1, Table2, etc.). The scope of the table name is for the entire workbook.

ADD A TOTAL ROW

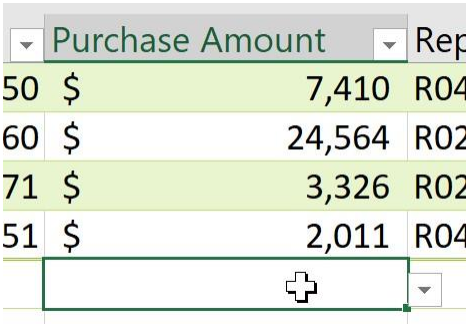
1. Click anywhere in the table.
2. On the Design Tab, within the Table Style Options group, select **Total Row** check box.

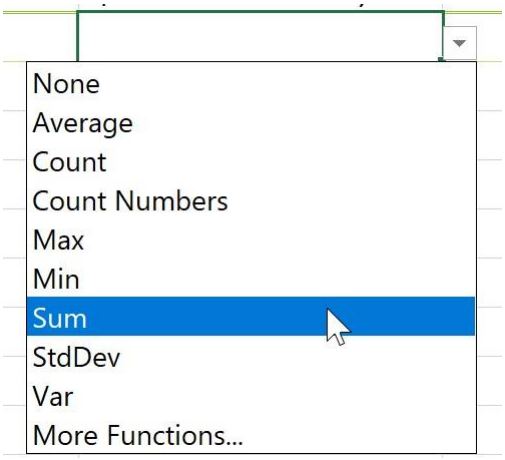


3. The total row appears as the last row in the table and displays the word **Total** in the left most cell. If you do not want any total in the right most cell, click the drop-down and select none.



4. In the total row, click the cell in the column for which you want to calculate a total, and then click the dropdown that appears.
5. In the dropdown list, select the function that you want to use to calculate the total.





Results:

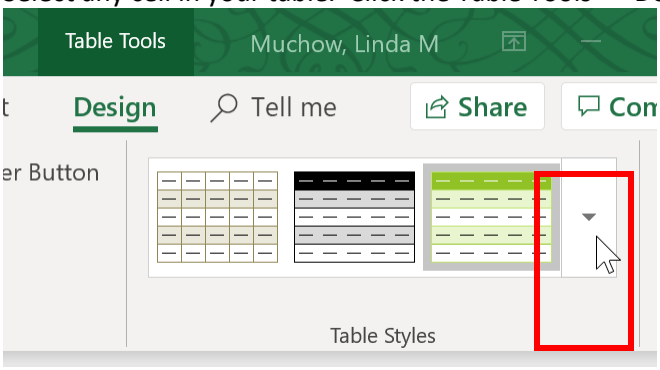
	Customer ID	Company Name	Duration		Purchase Amount	Re
1998	C0008	Xcel Energy	150	$	7,410	R0
1999	C0008	Xcel Energy	60	$	24,564	R0
2000	C0008	Xcel Energy	171	$	3,326	R0
2001	C0008	Xcel Energy	51	$	2,011	R0
2002	**Total**			**$**	**26,118,576**	

Note: Each column has this same functionality. And the total row is "connected" to the filter. When you filter for criteria, the total row will automatically update the numbers and display them only for the criteria you specify.

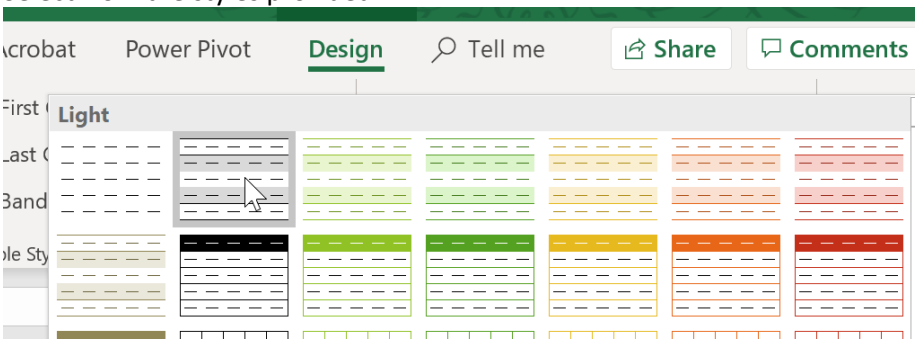
	Customer ID	Company Name	Duration		Purchase Amount	R
1998	C0008	Xcel Energy	150	$	7,410	R
1999	C0008	Xcel Energy	60	$	24,564	R
2000	C0008	Xcel Energy	171	$	3,326	R
2001	C0008	Xcel Energy	51	$	2,011	R
2002	**Total**	**2000**	**189195**		**26,118,576**	

Change a Table Style

1. Select any cell in your table. Click the Table Tools >> Design Tab. Click the Dropdown for Table Styles.

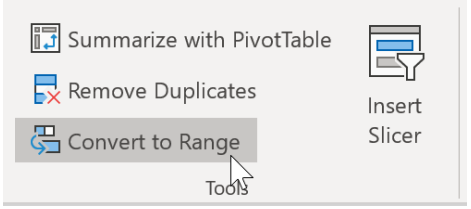


2. Select from the styles provided.

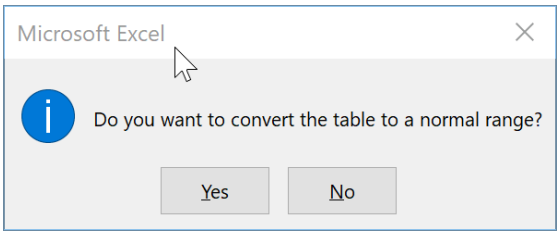


Remove a Table

1. Select any cell in your table. Click the Table Tools >> Design Tab.
2. From the Tools Group, select Convert to Range.



3. Click Yes.



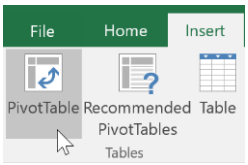
PivotTables & Pivot Charts

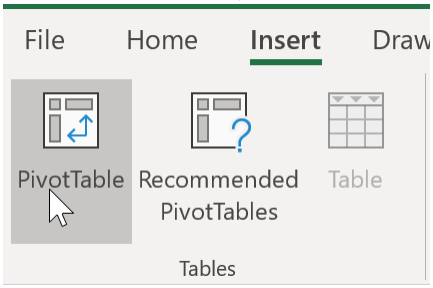
A PivotTable interactively allows for quickly summarizing large amounts of data. You can rotate its rows and columns to see different summaries of the source data, filter the data by displaying different pages, or display the details for areas of interest. Pivot Charts are associated with PivotTables and provide graphical representations of the same information.

Use a PivotTable when you want to compare related totals, especially when you have a long list of figures to summarize and you want to compare several facts about each figure. Because a PivotTable is interactive, you can change the view of the data to see more details or calculate different summaries. This gives a customized perspective on the data without having to change anything in the range of cells it is based on.

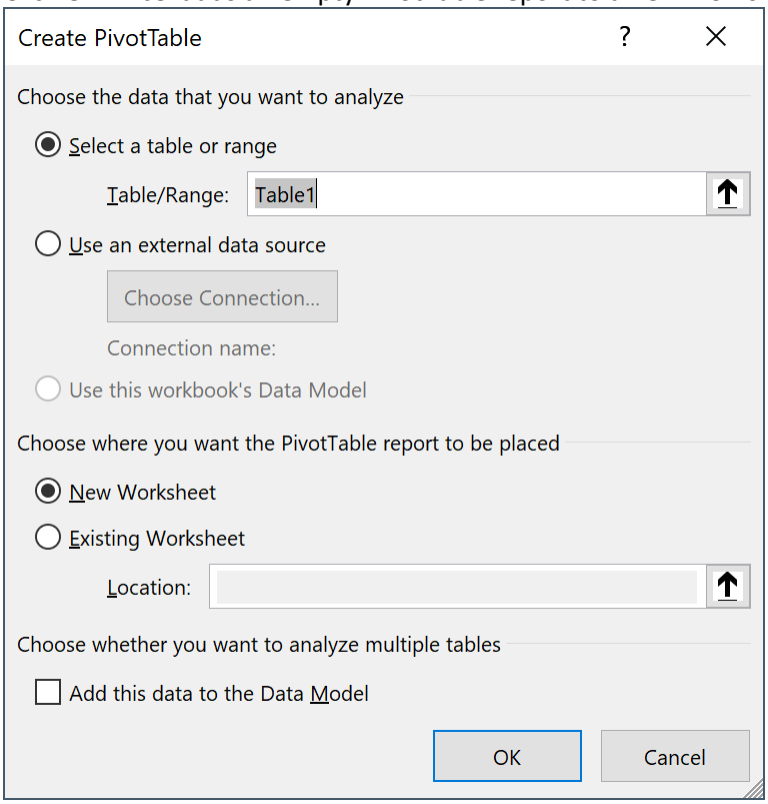
CREATING A PIVOTTABLE

1. Click a cell in the range of cells that contains the data you want to make a PivotTable out of.
2. From the Insert Tab, within the Tables group, click **PivotTable**.





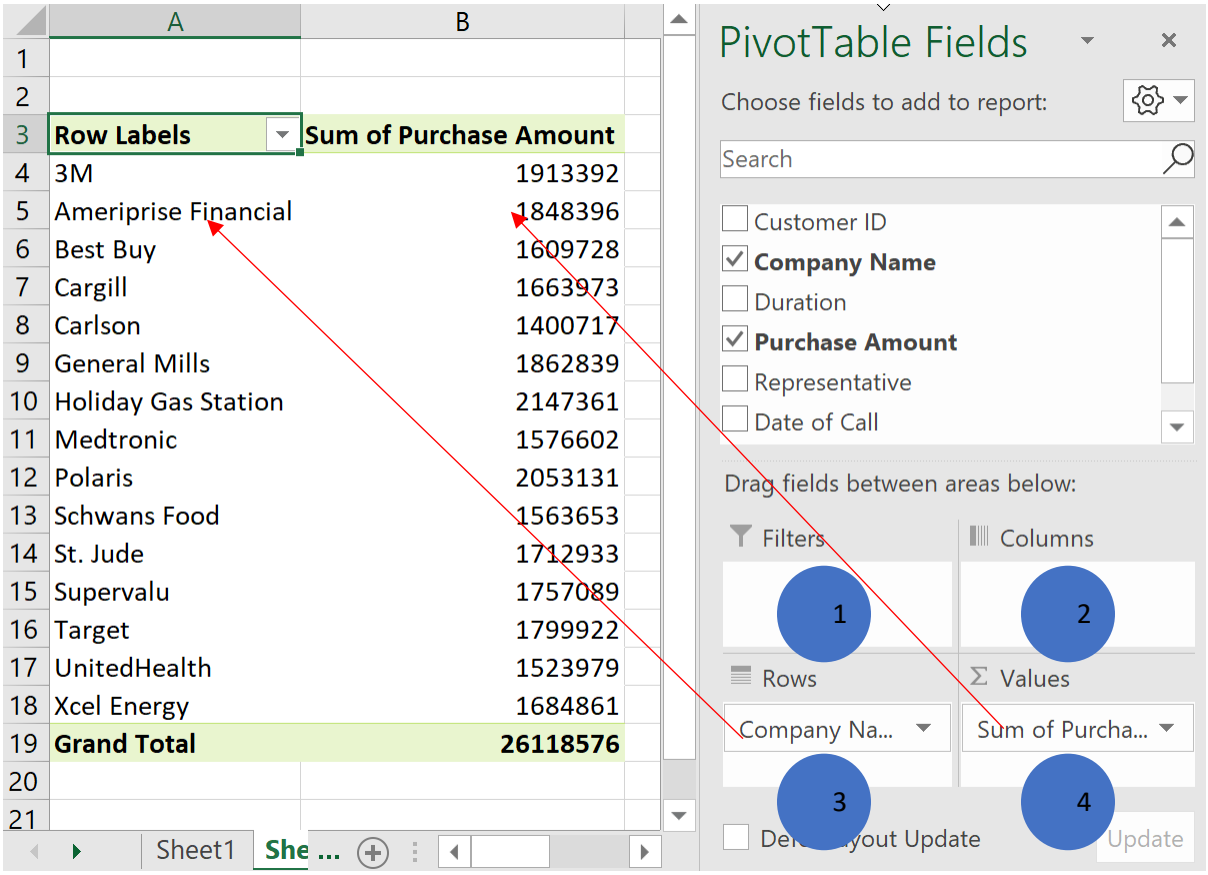
3. Click OK. Excel adds an empty PivotTable report to a new worksheet.



4. To add fields to the report, click and hold the field name in the field section, and then drag it to an area in the layout section.

Fields you put in the different layout section are as follows:

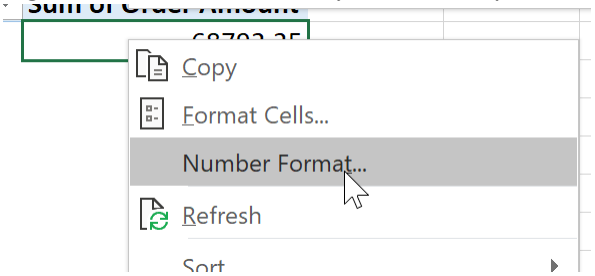
1. **Report Filters:** filters are shown at the top-level report above the PivotTable and will filter the entire table at once.
2. **Column Labels:** are shown in column layout (horizontal) at the top of the PivotTable.
3. **Row Labels:** are shown in Row layout (vertical) on the left side of the PivotTable.
4. **Values:** are shown as summarized numeric values.



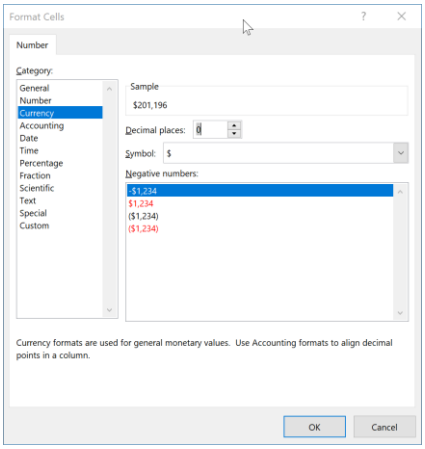
Format the Values in the PivotTable

To format the summed values entered as the data items of the pivot table with an Excel number format, follow these steps:

1. Right mouse click the value you wish to update. Select Number Format.



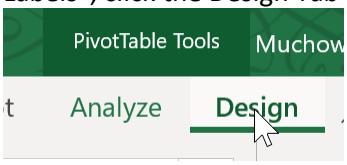
2. Make your changes in the Format Cells dialog box (currency, accounting, decimal points, etc.). Click OK. The number formats of the entire field will be updated.



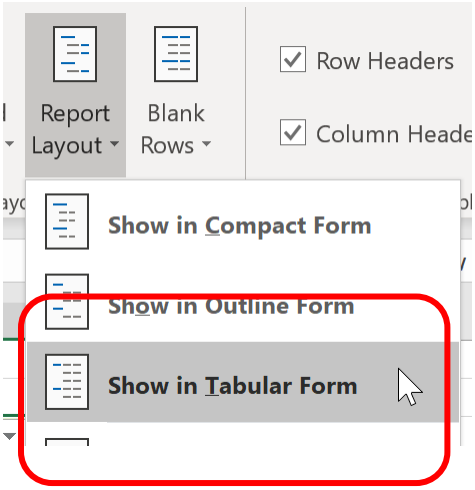
	Row Labels	Sum of Purchase Amount
3	3M	$1,913,392
4	Ameriprise Financial	$1,848,396
5	Best Buy	$1,609,728
6	Cargill	$1,663,973
7	Carlson	$1,400,717
8	General Mills	$1,862,839
9	Holiday Gas Station	$2,147,361
10	Medtronic	$1,576,602
11	Polaris	$2,053,131

Report Layout

To change the layout of the PivotTable so it displays the names of the all the fields instead of saying "Row Labels", click the Design Tab of the PivotTable Tools area on your Ribbon.



From the Layout group select Report Layout and then Show in Outline Form or Show in Tabular Form.



In our example, Row Labels has been updated to the actual field name Representative.

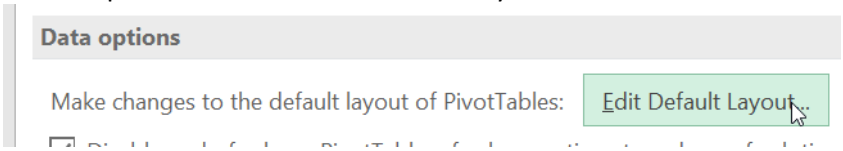
	Row Labels	Sum of Purchase Amount
3M		$1,913,392
Ameriprise Financial		$1,848,396
Best Buy		$1,609,728
Cargill		$1,663,973
Carlson		$1,400,717

	Company Name	Sum of Purchase Amount
4	3M	$1,913,392
5	Ameriprise Financial	$1,848,396
6	Best Buy	$1,609,728
7	Cargill	$1,663,973
8	Carlson	$1,400,717

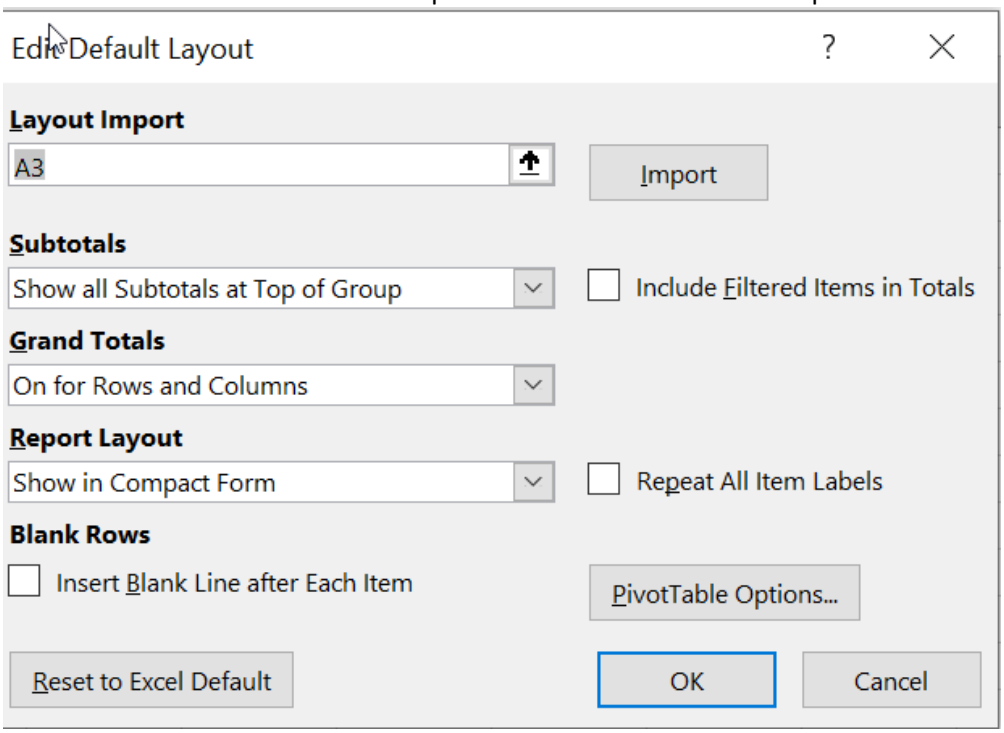
SET DEFAULT LAYOUT

If you have an existing PivotTable laid out the way you like, you can import those settings, otherwise you can edit them individually. Changing the default PivotTable settings will affect new PivotTables in any workbook. Existing PivotTables aren't impacted by changes to the default layout.

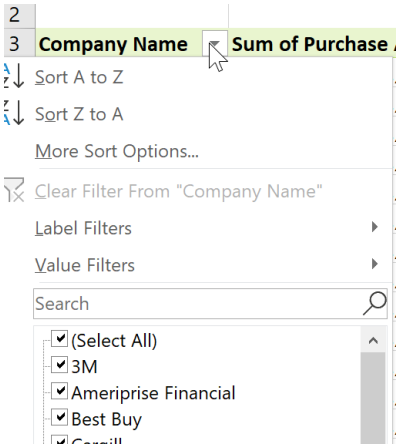
1. File >> Options >> Data >> Edit Default Layout



2. Make Edits here to set the default options for PivotTables from this point forward.



FILTERING INDIVIDUAL COLUMN AND ROW FIELDS



The filter buttons attached to the Column and Row field labels let you filter out entries for groups and, in some cases, individual entries in the data source. To filter the summary data in the columns or rows of a pivot table, follow these steps:

1. Click the Column or Row field's filter button.
2. Deselect the check box for the (Select All) option at the top of the list box in the drop-down list.
3. Click the check boxes for all the groups or individual entries whose summed values you still want displayed in the pivot table.
4. Click OK.

As with filtering a Report Filter field, Excel replaces the standard drop-down button icon for that Column or Report field with a cone-shaped filter icon, indicating that the field is currently being filtered and only some of its summary values are now displayed in the pivot table.

2		
3	**Company Name**	**Sum of Purchase Amount**
4	3M	$1,913,392
5	Holiday Gas Station	$2,147,361
6	Polaris	$2,053,131
7	**Grand Total**	**$6,113,884**
8		

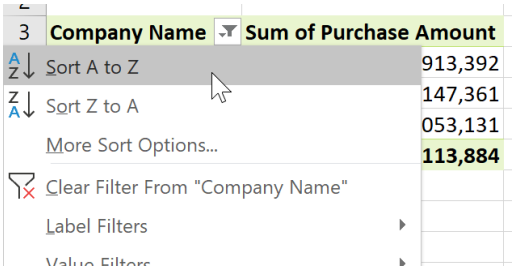
To redisplay all the values for a filtered Column or Report field, you need to click its filter button and then click (Select All) at the top of its drop-down list. Then click OK.

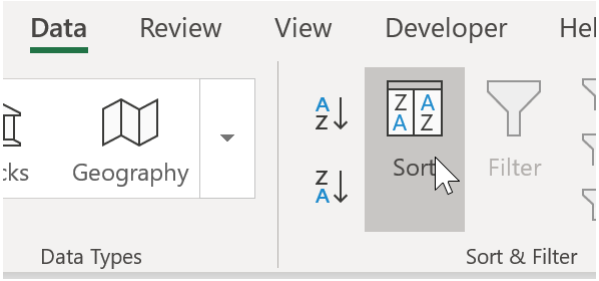
SORT A PIVOT TABLE

You can instantly reorder the summary values in a pivot table by sorting the table on one or more of its Column or Row fields. To sort a pivot table, follow these steps:

1. Click the filter button for the Column or Row field you want to sort.
2. Click either Sort A to Z or Sort Z to A at the top of the field's drop-down list.

Click the Sort A to Z option when you want the table reordered by sorting the labels in the selected field alphabetically, from the smallest to largest numeric value, or from the oldest to newest date. Click the Sort Z to A option when you want the table reordered by sorting the labels in reverse alphabetical order (Z to A), values from the highest to smallest, and dates from the newest to oldest. You can also click in any data in the PivotTable and use the Sort and Filter options on the PivotTable Tools Ribbon.





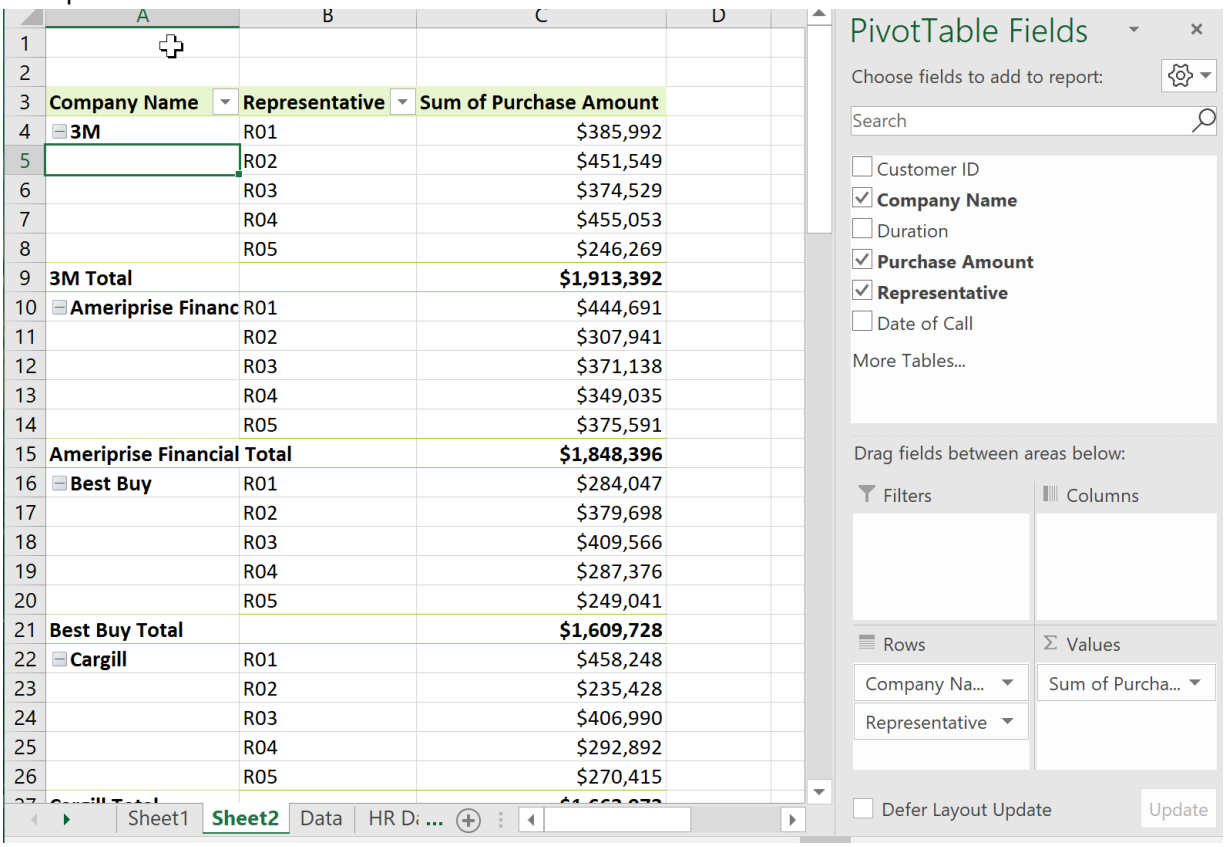
MODIFY THE PIVOTTABLE FIELDS

1. From the Field List:

a) To remove a field from the table, drag its field name out of any of the drop zones and, when the mouse pointer changes to an x, release the mouse button; or click its check box in the Choose Fields to Add to Report list to remove it its check mark.

b) To move an existing field to a new place in the table, drag its field name from its current drop zone to a new zone at the bottom of the task pane.

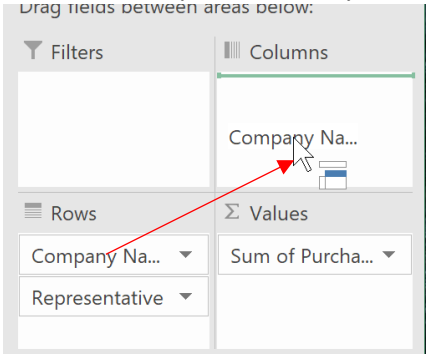
c) To add a field to the table, drag its field name from the Choose Fields to Add to Report list and drop the field in the desired drop zone— note that if you want to add a field to the pivot table as an additional Row Labels field, you can also do this by simply selecting the field's check box in the Choose Fields to Add to Report list.



Company Name	Representative	Sum of Purchase Amount
3M	R01	$385,992
	R02	$451,549
	R03	$374,529
	R04	$455,053
	R05	$246,269
3M Total		$1,913,392
Ameriprise Financ	R01	$444,691
	R02	$307,941
	R03	$371,138
	R04	$349,035
	R05	$375,591
Ameriprise Financial Total		$1,848,396
Best Buy	R01	$284,047
	R02	$379,698
	R03	$409,566
	R04	$287,376
	R05	$249,041
Best Buy Total		$1,609,728
Cargill	R01	$458,248
	R02	$235,428
	R03	$406,990
	R04	$292,892
	R05	$270,415

PIVOTING THE TABLE'S FIELDS

As the name *pivot* implies, the fun of pivot tables is being able to restructure the table simply by rotating the Column and Row fields. In the PivotTable Field List pane, simply drag a label from the Row Labels drop zone to the Column Labels drop zone and vice versa so that the two field names are swapped. Voilà — Excel rearranges the data in the pivot table at your request.



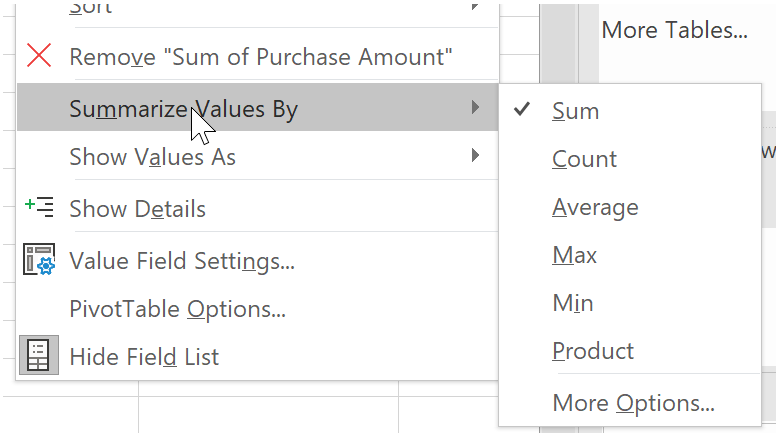
Sum of Purchase Amount	Company Name	
Representative	3M	Ameriprise Financial
R01	$385,992	$444,691
R02	$451,549	$307,941
R03	$374,529	$371,138
R04	$455,053	$349,035
R05	$246,269	$375,591
Grand Total	$1,913,392	$1,848,396

MODIFY THE SUMMARY FUNCTION

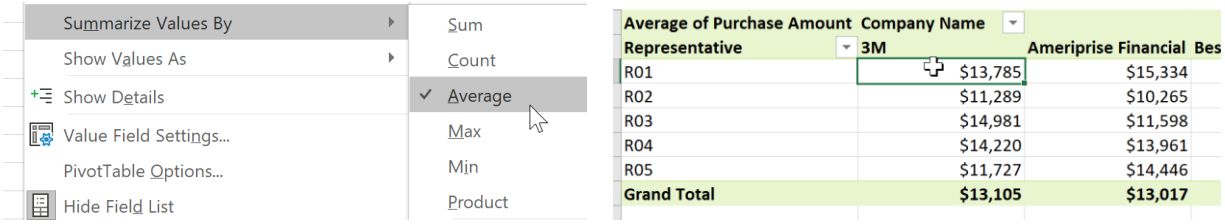
By default, uses the SUM function to create subtotals and grand totals for the numeric field(s) that you include in a pivot table. Some pivot tables, however, require the use of another summary function, such as AVERAGE or COUNT.

To change the summary function that Excel uses in a pivot table, follow these steps:

1. Right-mouse click the field. Select a new summary function in the Value Field Settings dialog box.



2. Change the field's summary function to any of the following functions by selecting it in the Summarize Value Field By list box:
   - **Count** to show the number of records for a particular category (note that Count is the default setting for any text fields that you use in a pivot table).
   - **Average** to calculate the average (that is, the arithmetic mean) for the values in the field for the current category and page filter.
   - **Max** to display the highest numeric value in that field for the current category and page filter.
   - **Min** to display the lowest numeric value in that field for the current category and page filter.
   - **Product** to multiply all the numeric values in that field for the current category and page filter (all non-numeric entries are ignored).
   - **Count Numbers** to display the number of numeric values in that field for the current category and page filter (all non-numeric entries are ignored).
   - **StdDev** to display the standard deviation for the sample in that field for the current category and page filter.
   - **StdDevp** to display the standard deviation for the population in that field for the current category and page filter.
   - **Var** to display the variance for the sample in that field for the current category and page filter.
   - **Varp** to display the variance for the population in that field for the current category and page filter.
3. Click OK. Excel applies the new function to the data present in the body of the pivot table.

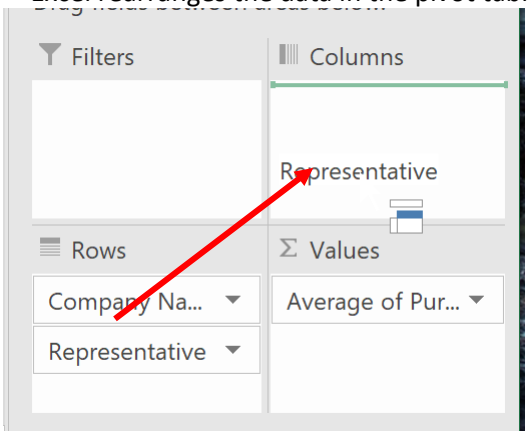


To Add Columns

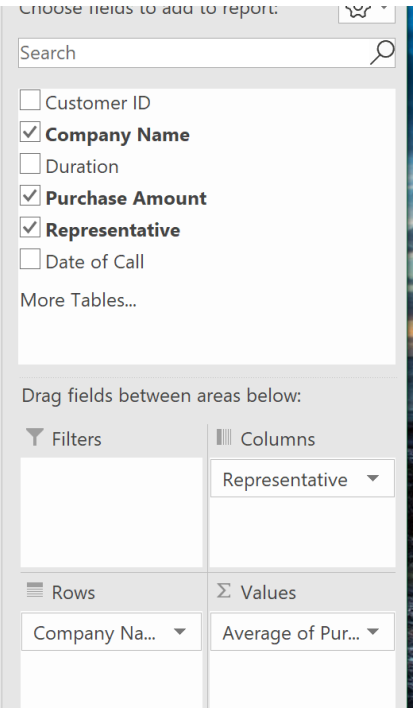
So far, our PivotTable has only shown **one column** of data at a time. To show **multiple columns**, you'll need to add a field to the **Columns** area.

1. Drag a field from the **Rows List (or the Field List)** into the **Columns** area. In our example, we'll use the **Years** field.
2. The PivotTable will include multiple columns. In our example, there is now a column for each Year.

— Excel rearranges the data in the pivot table at your request.



Average of Purchase Amount	Representative		
Company Name	R01	R02	R03
3M	$13,785	$11,289	$1
Ameriprise Financial	$15,334	$10,265	$1
Best Buy	$12,911	$11,168	$1
Cargill	$13,093	$12,391	$1
Carlson	$12,809	$11,500	$1
General Mills	$14,555	$13,987	$1
Holiday Gas Station	$13,596	$12,997	$1
Medtronic	$10,567	$13,274	$1
Polaris	$15,072	$13,400	$1
Schwans Food	$14,412	$11,528	$1
St. Jude	$10,500	$12,971	$1
Supervalu	$14,039	$10,781	$1
Target	$15,255	$11,211	$1
UnitedHealth	$14,010	$14,030	$1
Xcel Energy	$14,866	$10,915	$1
Grand Total	**$13,646**	**$12,091**	**$1**



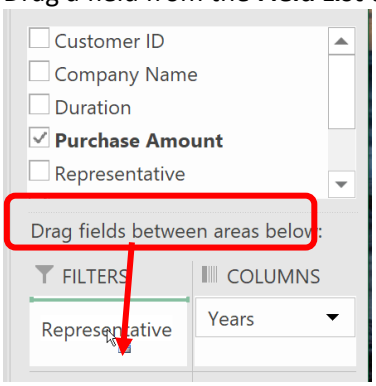
REPORT FILTERS

Sometimes you may want focus on just a certain section of your data. **Filters** can be used to **narrow down** the data in your PivotTable, allowing you to view only the information you need.

To add a filter:

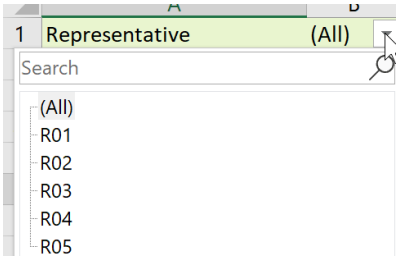
In our example, we'll filter out certain salespeople to determine how they affect the total sales.

1. Drag a field from the **Field List** to the **Filters** area. In this example, we'll use the **Representative** field.



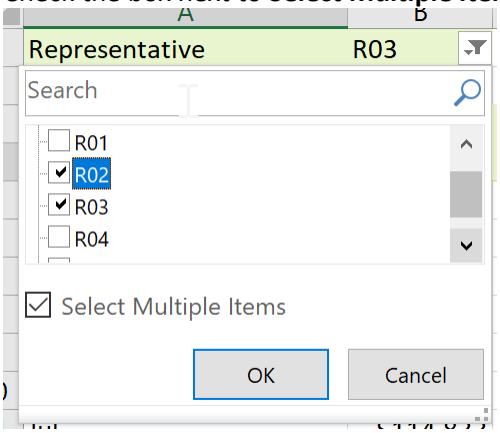
	A	B
1	Representative	(All)
2		
3	**Company Name**	**Average of Purchase Amount**
4	3M	$13,105
5	Ameriprise Financial	$13,017
6	Best Buy	$12,383
7	Cargill	$12,800
8	Carlson	$12.619

2. The **filter** will appear above the PivotTable. Click the **drop-down arrow**. Select an Item from the list. Click OK. In this example we will select Representative R03. This filters the table to only show records for that specific representative.

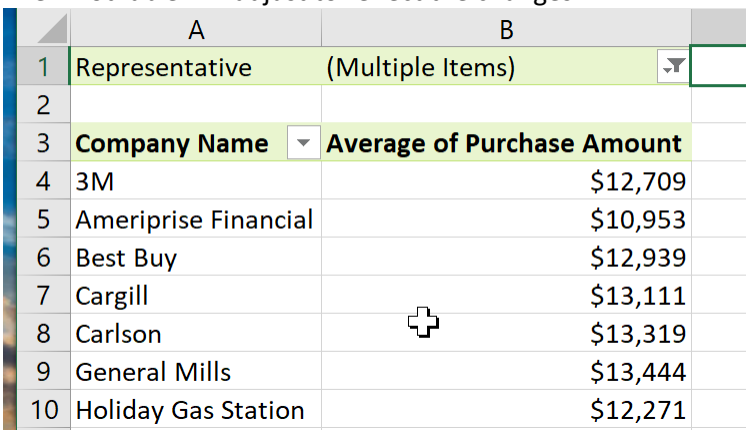


	A	B
1	Representative	R03
2		
3	**Company Name**	**Average of Purchase Amount**
4	3M	$14,981
5	Ameriprise Financial	$11,598
6	Best Buy	$15,169
7	Cargill	$13,566
8	Carlson	$14,337
9	General Mills	$12,806
10	Holiday Gas Station	$11,238

3. Check the box next to **Select Multiple Items** if you wish to select more than one item from the list.



4. The PivotTable will adjust to reflect the changes.

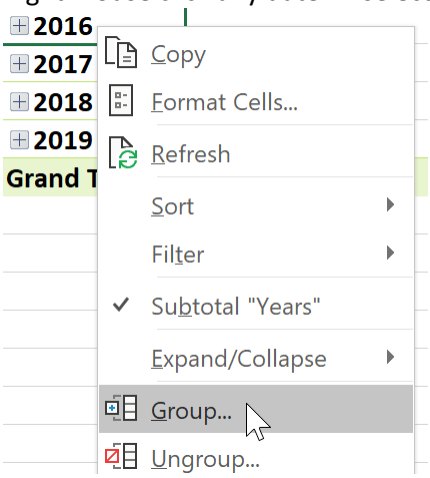


	A	B
1	Representative	(Multiple Items)
2		
3	**Company Name**	**Average of Purchase Amount**
4	3M	$12,709
5	Ameriprise Financial	$10,953
6	Best Buy	$12,939
7	Cargill	$13,111
8	Carlson	$13,319
9	General Mills	$13,444
10	Holiday Gas Station	$12,271

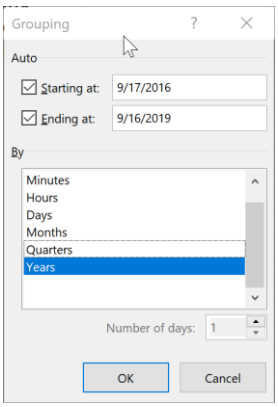
GROUP DATES

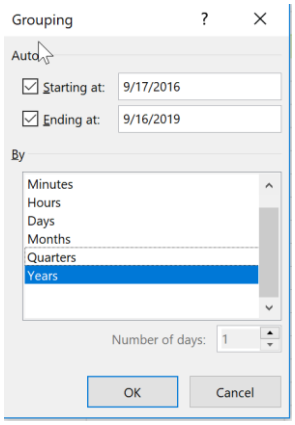
In Excel 2016 and later, dates are grouped automatically. To customize the grouping to fit your needs:

1. Right mouse click any date >> select Group



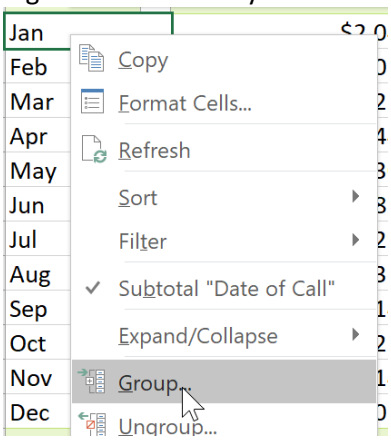
2. Months, Quarters and Years are automatically selected. We will group only by years. Deselect Quarters, and Months. Click OK.

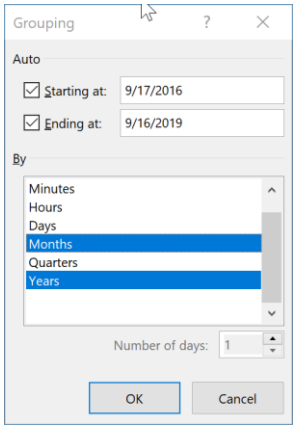




Date of Call	Sum of Purchase Amount
2016	$2,288,252
2017	$9,170,523
2018	$8,637,848
2019	$6,021,953
Grand Total	**$26,118,576**

3. Group by Year and then month.
Right mouse click any month. Select Group. >> Select Years. Click OK.





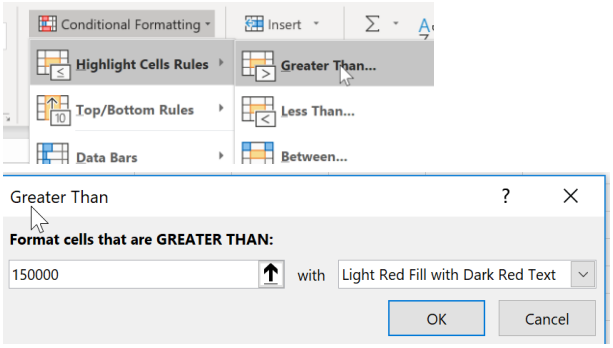
Results:

Years	Date of Call	Sum of Purchase Amount
2016	Sep	324548
	Oct	686569
	Nov	516178
	Dec	760957
2016 Total		**2288252**
2017	Jan	658020
	Feb	554862
	Mar	595965
	Apr	866834
	May	834635
	Jun	778494

CONDITIONAL FORMATTING

Excel's conditional formatting lets you change the appearance of a cell based on its value or another cell's value. You specify certain conditions, and when those conditions are met, Excel applies the formatting that you choose. You might use conditional formatting to locate dates that meet a certain criterion (such as falling on a Saturday or Sunday), to call out the highest or lowest values in a range, or to indicate values that fall under, over, or between specified amounts.

1. Select the cells to which you want to apply conditional formatting. In some cases, you will select a single column or row of data in a table rather than an entire table.
2. On the Home tab, in the Styles group, click the Conditional Formatting button. A menu appears with several different options for specifying the criteria.
3. Point to Highlight Cell Rules and then select the type of criterion you want to use. Criteria options include Greater Than, Less Than, Between, Equal To, Text That Contains, A Date Occurring, and Duplicate Values. A window open where you can specify the values.



4. Enter the values you want reference in the text box (if necessary). Click the drop-down arrow next to the format options and select the desired formatting. In the above example everything this is greater than 150000 will be a light red fill.

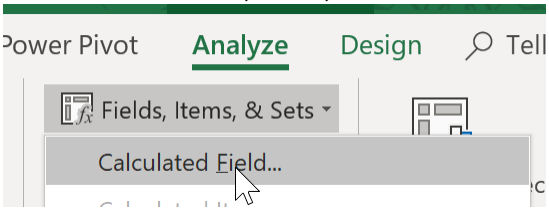
Date of Call	Company Name	Sum of Purchase Amount
2016	3M	$153,234
	Ameriprise Financial	$117,528
	Best Buy	$145,405
	Cargill	$90,991
	Carlson	$87,062
	General Mills	$202,267
	Holiday Gas Station	$177,032
	Medtronic	$101,499
	Polaris	$198,799
	Schwans Food	$188,750
	St. Jude	$207,341
	Supervalu	$156,154
	Target	$102,963
	UnitedHealth	$207,773
	Xcel Energy	$151,454

5. Click OK.
6. To clear the formatting, click Conditional Formatting (Home Tab, Styles group). Select Clear Rules >> Clear Rules from Entire Sheet.

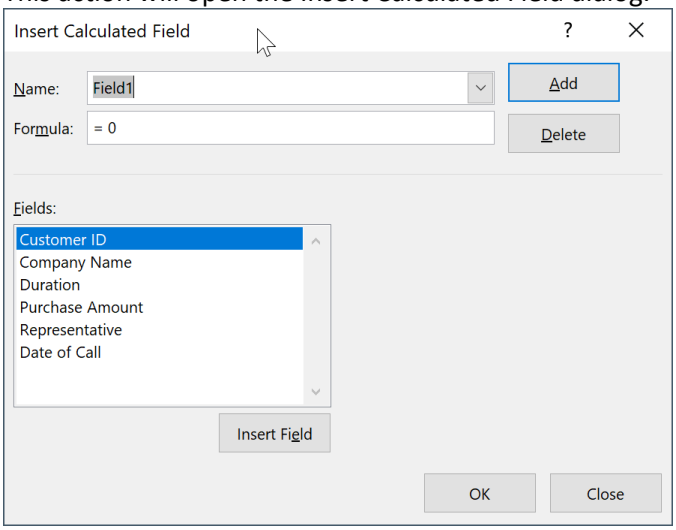
CALCULATED FIELD

You can add calculated fields to PivotTables that perform calculations on the data in the table. For example, in the sample worksheet, you could create a calculated field that will calculate a bonus for each employee that is 3% of the profit total.

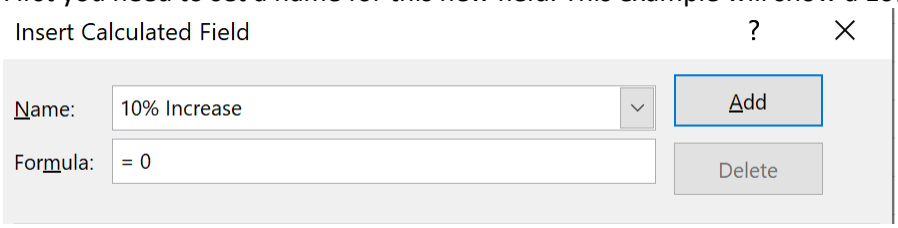
1. To start, click to select any cell in the PivotTable. Next, click PivotTable Tools – Analyze >> Calculations>>Fields, Items, & Sets >> Calculated Field:



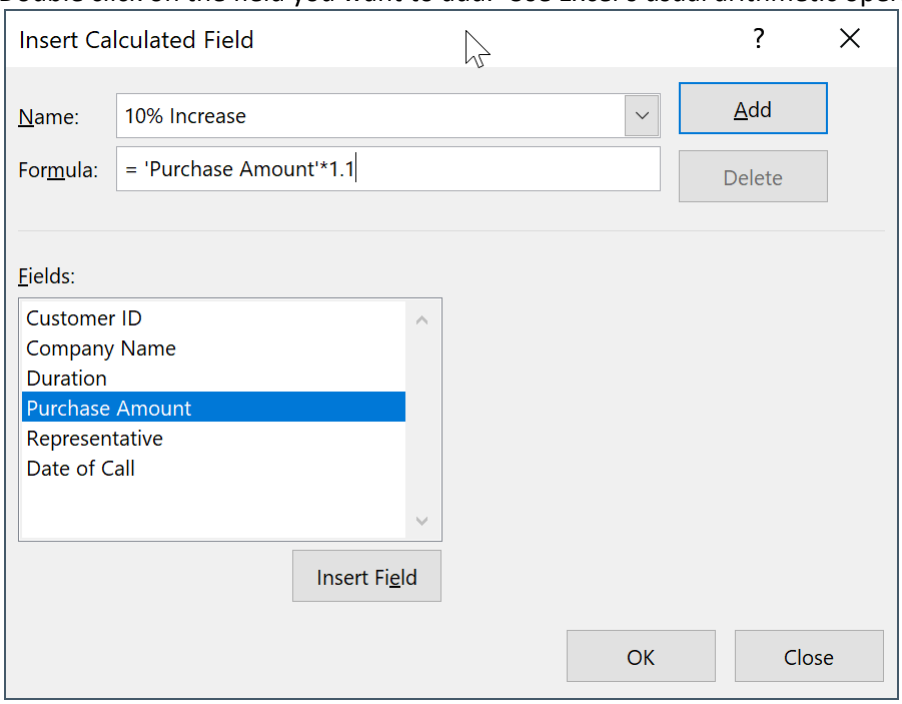
2. This action will open the Insert Calculated Field dialog:



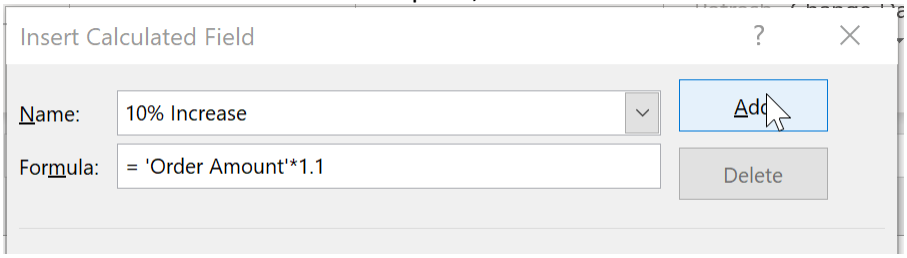
3. First you need to set a name for this new field. This example will show a 10% increase in order amounts.



4. Next, you need to enter the formula for this new field. Delete the Zero (0) in the Formula text box. Then Double click on the field you want to add. Use Excel's usual arithmetic operators.



5. With the calculated field now complete, click Add to save it:



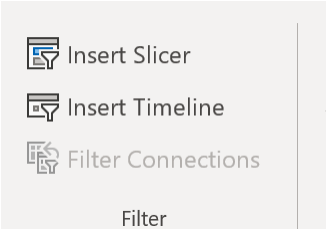
6. Click OK to close the dialog: The new calculated field will now automatically appear in the PivotTable:

Date of Call	Company Name	Sum of Purchase Amount	Sum of 10% Increase
2016	3M	$153,234	$ 168,557
	Ameriprise Financial	$117,528	$ 129,281
	Best Buy	$145,405	$ 159,946
	Cargill	$90,991	$ 100,090
	Carlson	$87,062	$ 95,768
	General Mills	$202,267	$ 222,494

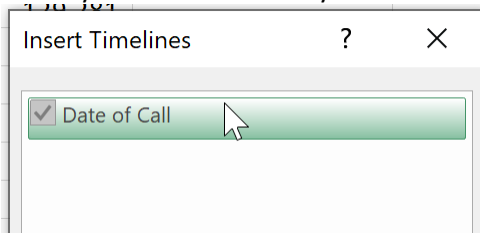
TIMELINES IN PIVOTTABLES

You can now insert a Timeline in a PivotTable if you have date fields to work with!

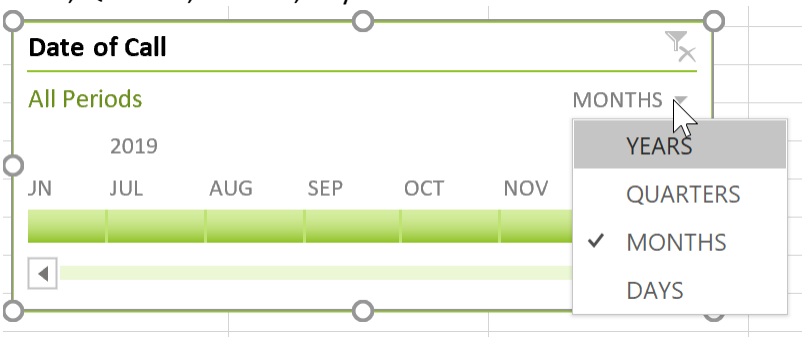
1. Analyze Tab >> Filter Group >> Insert Timeline.



2. Select your field. Note: only date and time fields will appear.

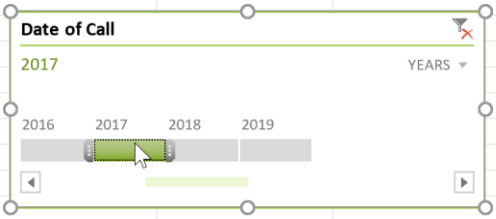


3. Adjust how you want to filter your data by click in the dropdown in the upper right corner. Pick From Years, Quarters, Months, Days.



4. Select from the timeline by clicking and dragging.

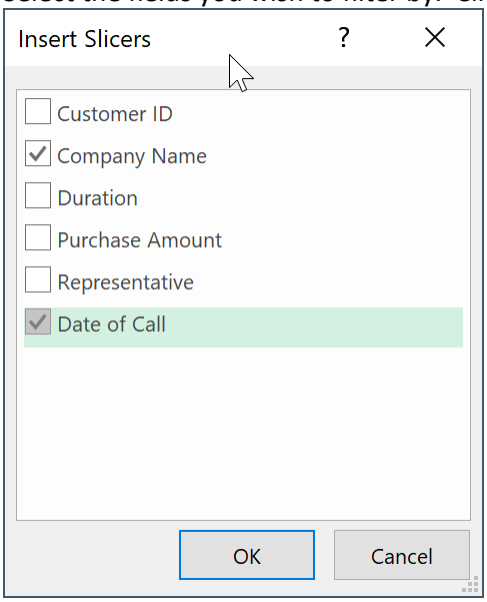
Date of Call	Company Name	Sum of Purchase Amount	Sum of 10% Increase
2017	3M	$775,018	$ 852,520
	Ameriprise Financial	$673,955	$ 741,351
	Best Buy	$588,046	$ 646,851
	Cargill	$615,521	$ 677,073
	Carlson	$486,715	$ 535,387
	General Mills	$681,240	$ 749,364
	Holiday Gas Station	$764,650	$ 841,115
	Medtronic	$667,322	$ 734,054
	Polaris	$685,560	$ 754,116
	Schwans Food	$526,756	$ 579,432
	St. Jude	$698,725	$ 768,598
	Supervalu	$606,714	$ 667,385
	Target	$507,367	$ 558,104
	UnitedHealth	$375,577	$ 413,135
	Xcel Energy	$517,357	$ 569,093
2017 Total		**$9,170,523**	**$ 10,087,575**
Grand Total		**$9,170,523**	**$ 10,087,575**



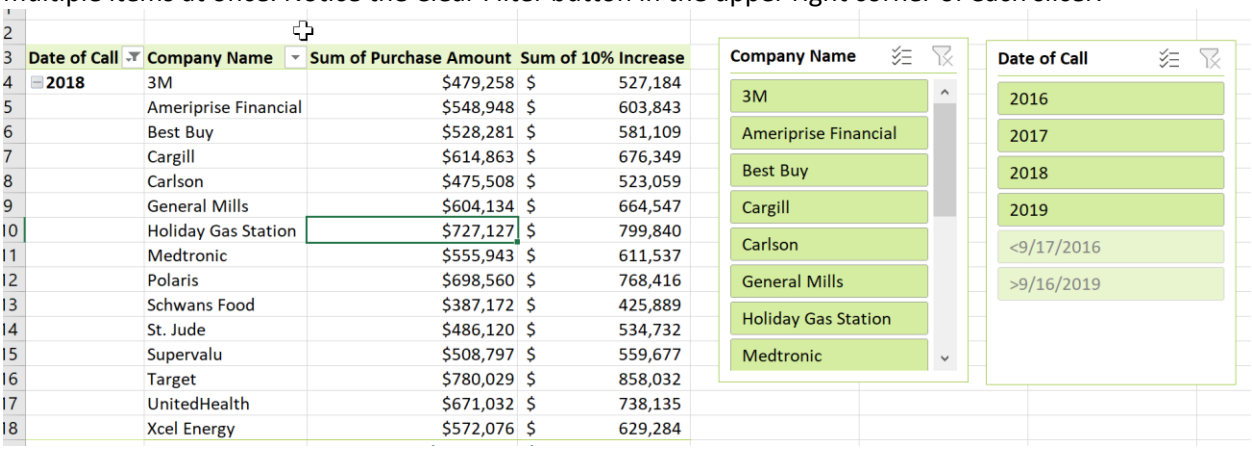
SLICERS IN PIVOTTABLES

Slicers allow you to quickly filter PivotTables and Charts.

1. Select Analyze >> Filter Group >> Insert Slicer.
2. Select the fields you wish to filter by. Click OK.

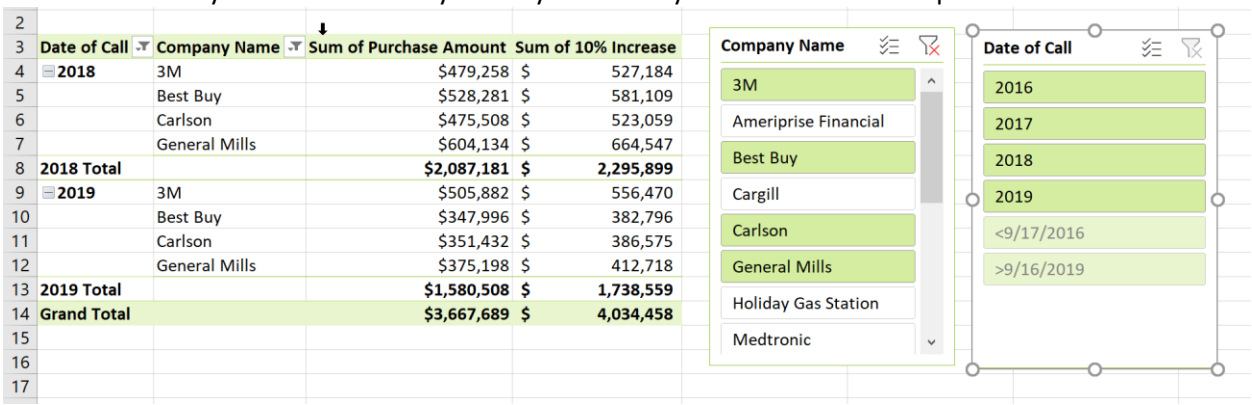


3. The slicers will be added. Simply select the items you wish to see. Hold down the ctrl key to select multiple items at once. Notice the Clear Filter button in the upper right corner of each slicer.



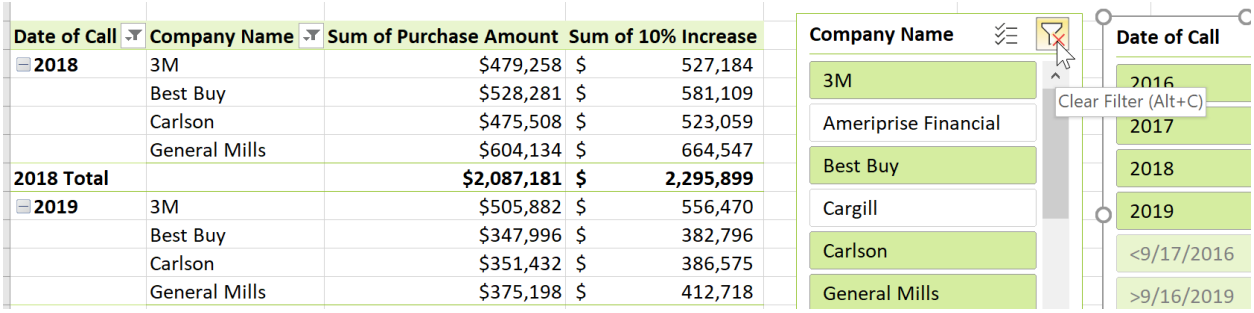
Date of Call	Company Name	Sum of Purchase Amount	Sum of 10% Increase
2018	3M	$479,258	$ 527,184
	Ameriprise Financial	$548,948	$ 603,843
	Best Buy	$528,281	$ 581,109
	Cargill	$614,863	$ 676,349
	Carlson	$475,508	$ 523,059
	General Mills	$604,134	$ 664,547
	Holiday Gas Station	$727,127	$ 799,840
	Medtronic	$555,943	$ 611,537
	Polaris	$698,560	$ 768,416
	Schwans Food	$387,172	$ 425,889
	St. Jude	$486,120	$ 534,732
	Supervalu	$508,797	$ 559,677
	Target	$780,029	$ 858,032
	UnitedHealth	$671,032	$ 738,135
	Xcel Energy	$572,076	$ 629,284

4. Click on the data you want to filter by. Hold your Ctrl key down to select multiple items.



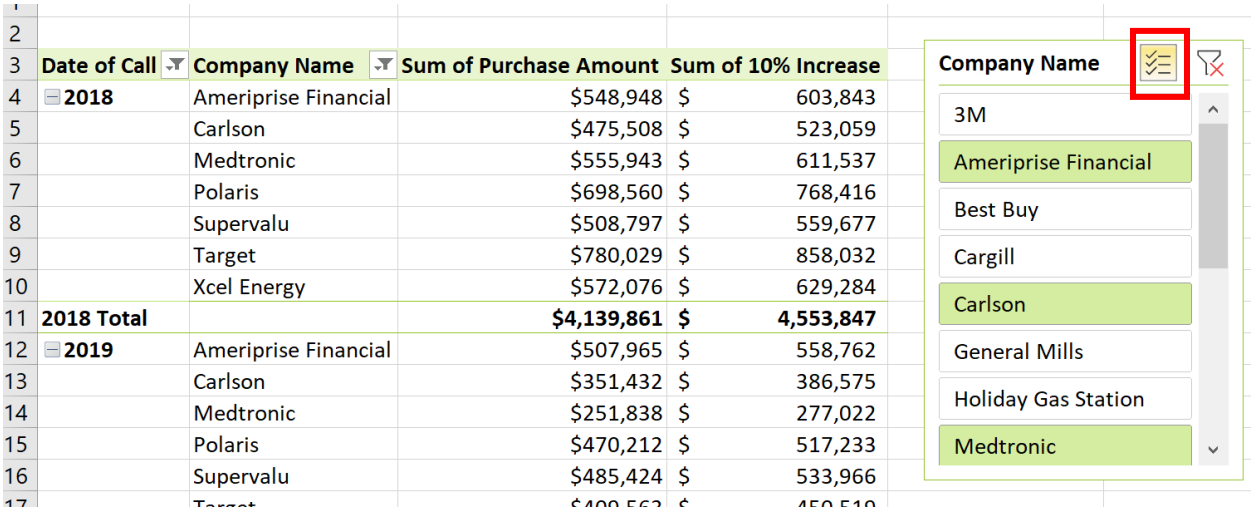
Date of Call	Company Name	Sum of Purchase Amount	Sum of 10% Increase
2018	3M	$479,258	$ 527,184
	Best Buy	$528,281	$ 581,109
	Carlson	$475,508	$ 523,059
	General Mills	$604,134	$ 664,547
2018 Total		$2,087,181	$ 2,295,899
2019	3M	$505,882	$ 556,470
	Best Buy	$347,996	$ 382,796
	Carlson	$351,432	$ 386,575
	General Mills	$375,198	$ 412,718
2019 Total		$1,580,508	$ 1,738,559
Grand Total		$3,667,689	$ 4,034,458

5. Click the clear button on the Slicer to clear the filter.



Date of Call	Company Name	Sum of Purchase Amount	Sum of 10% Increase
2018	3M	$479,258	$ 527,184
	Best Buy	$528,281	$ 581,109
	Carlson	$475,508	$ 523,059
	General Mills	$604,134	$ 664,547
2018 Total		$2,087,181	$ 2,295,899
2019	3M	$505,882	$ 556,470
	Best Buy	$347,996	$ 382,796
	Carlson	$351,432	$ 386,575
	General Mills	$375,198	$ 412,718

6. You can select Multi Select to remove several items at once.

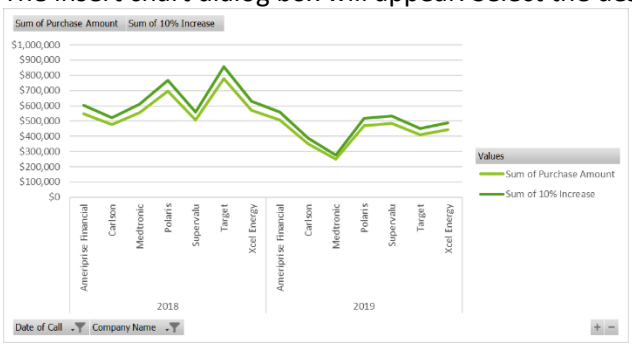


Date of Call	Company Name	Sum of Purchase Amount	Sum of 10% Increase
2018	Ameriprise Financial	$548,948	$ 603,843
	Carlson	$475,508	$ 523,059
	Medtronic	$555,943	$ 611,537
	Polaris	$698,560	$ 768,416
	Supervalu	$508,797	$ 559,677
	Target	$780,029	$ 858,032
	Xcel Energy	$572,076	$ 629,284
2018 Total		$4,139,861	$ 4,553,847
2019	Ameriprise Financial	$507,965	$ 558,762
	Carlson	$351,432	$ 386,575
	Medtronic	$251,838	$ 277,022
	Polaris	$470,212	$ 517,233
	Supervalu	$485,424	$ 533,966

CREATE A PIVOTCHART

Pivot Charts are like regular charts, except that they display data from a **PivotTable**. Just like regular charts, you'll be able to select a **chart type**, **layout**, and **style** that will best represent the data.

1. Select any cell in your PivotTable
2. From the PivotTable Tools Analyze Tab select PivotChart from Tools group. You can also use the Insert Tab >> Charts >> PivotChart
3. The insert chart dialog box will appear. Select the desired chart type and layout, then click OK.

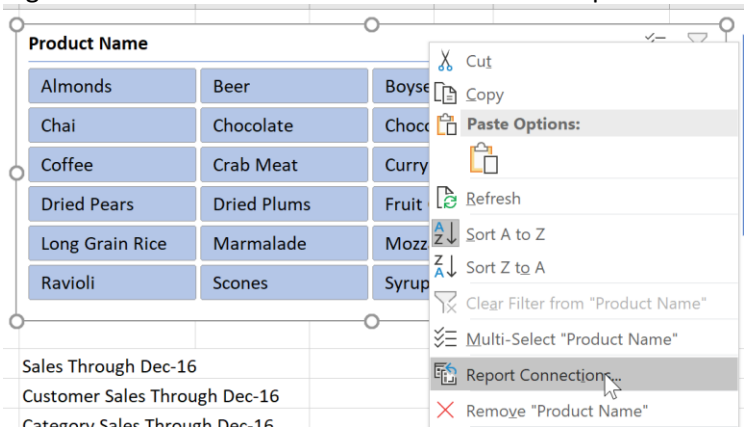


NOTE: you can expand and collapse items on the chart by using the Plus/Minus button in the lower right corner of the chart.

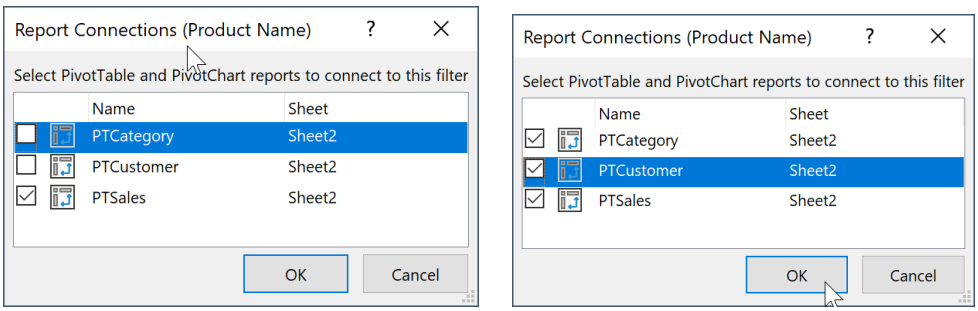
CONNECT SLICERS AND TIMELINES TO MANY PIVOTTABLES

If you have several pivot tables and charts in one worksheet you might want to use slicers and timelines to filter all your data at once. The process is very simple. Insert all your Pivot Tables and charts first. Then insert your slicers and timelines. Then connect each slicer and timeline to each of your pivot tables using the following process.

1. Right mouse click the slicer or timeline. Select Report Connections….



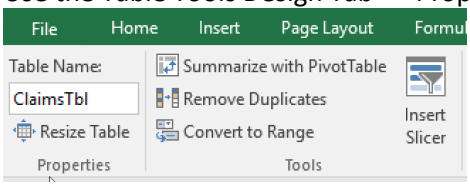
2. Each Pivot Table will be listed. Check the box next to each one you want the slicer / timeline to connect to. Click OK.



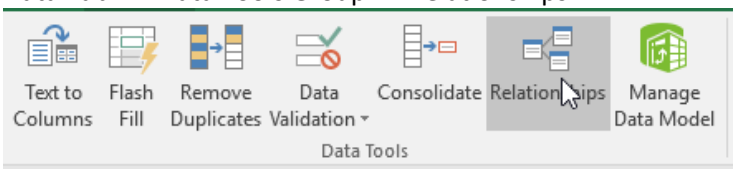
Your slicers and timelines will filter all Pivot Tables and charts at the same time.

DATA MODEL

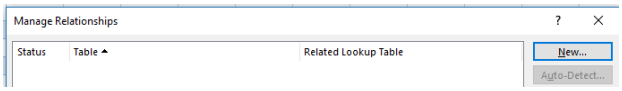
1. Convert data to tables first. You must convert the range into a table for the Data Model feature to work.
    a. Insert Tab >> Table
    b. Use the Table Tools Design Tab >> Properties Group >> and name the table



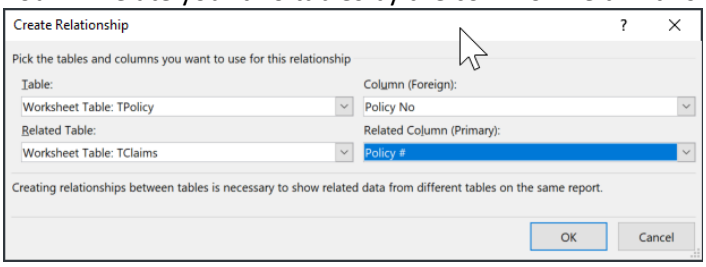
2. Create the Relationship
    a. Data Tab >> Data Tools Group >> Relationships



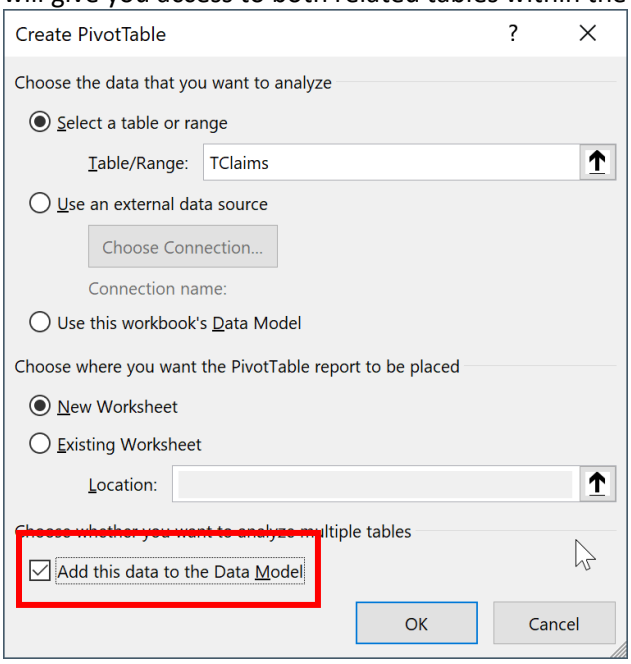
    b. Click New.



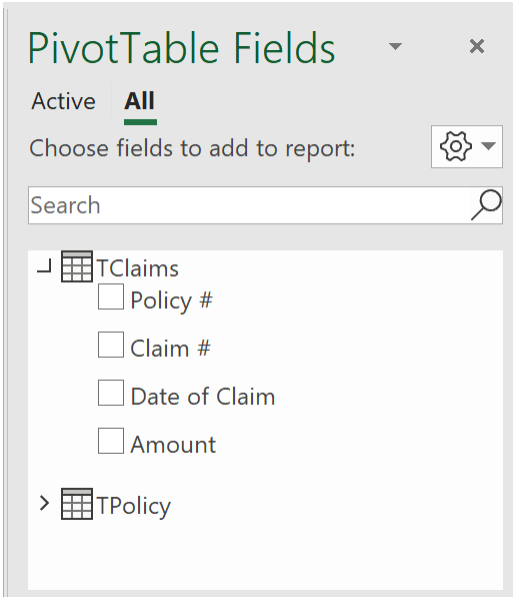
    c. You will relate your two tables by the common field in this window.



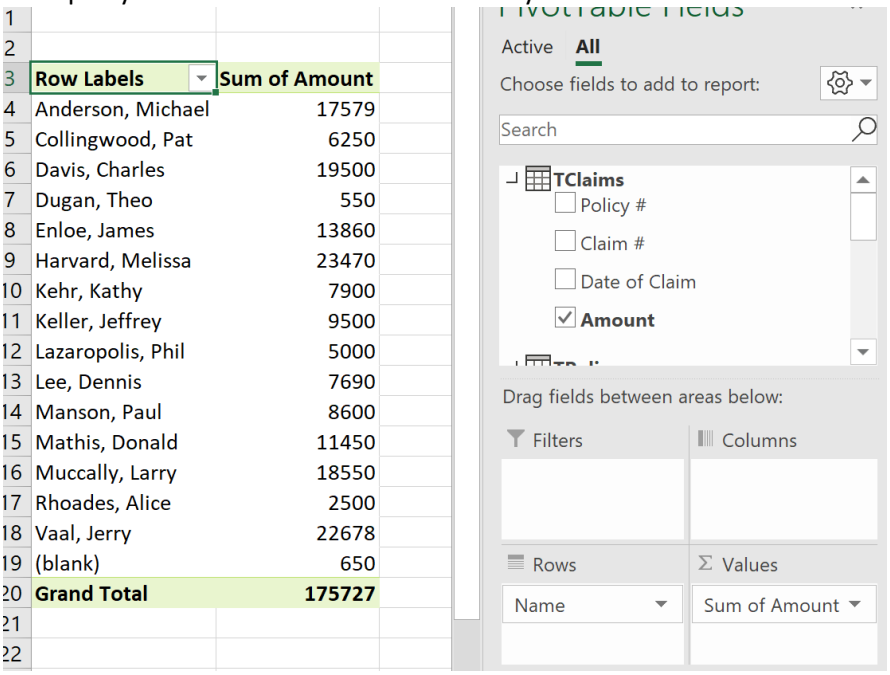
3. Create a PivotTable
    a. Insert Tab >> PivotTable
    b. In the Create PivotTable window click the check box for Add this data to the Data Model. This will give you access to both related tables within the PivotTable! Click OK.



4. In the PivotTable Fields panel, choose All instead of Active. You will now be able to add fields from both tables.



5. Example: you can add names from the Policy table and amounts from the Claims Table.



Row Labels	Sum of Amount
Anderson, Michael	17579
Collingwood, Pat	6250
Davis, Charles	19500
Dugan, Theo	550
Enloe, James	13860
Harvard, Melissa	23470
Kehr, Kathy	7900
Keller, Jeffrey	9500
Lazaropolis, Phil	5000
Lee, Dennis	7690
Manson, Paul	8600
Mathis, Donald	11450
Muccally, Larry	18550
Rhoades, Alice	2500
Vaal, Jerry	22678
(blank)	650
Grand Total	**175727**

Drill down feature will allow you to drill into either of the tables.

