

# 1. Using Pivot Tables

## In this lesson, you will learn...

1. To use pivot tables to analyze data.
2. To edit pivot tables.
3. To format pivot tables.
4. To insert pivot charts.
5. To use Slicers.

A pivot table is an interactive table that can be used to analyze, organize, and summarize large amounts of data. Pivot tables make it easy to rearrange data, quickly displaying it in different ways. Pivot tables usually have four types of fields:

1. **Page field** ( **Report Filter** ). Use the Page field to filter data by a specific field.
2. **Column field** ( **Column Labels** ). Use the Column field to display a field from the source data as column headings.
3. **Row field** ( **Row Labels** ). Use the Row field to display a field from the source data as row headings.
4. **Data field** ( **Values** ). The Data field is the field from the source data that you want to summarize or analyze.

In the following image, the pivot table shows the average price of homes in different towns based on the number of bedrooms. At the top is a Page field which can be used to show only houses with a specific number of bathrooms:

Bathrooms	(All)				
Average of Listing Price	Bedrooms				
Town		2	3	4	Grand Total
Camillus		\$107,375	\$126,536	\$125,250	\$124,443
Cicero		\$148,875	\$121,125	\$132,375	\$126,716
Dewitt		\$120,875	\$124,250	\$109,821	\$119,352
Fayetteville		\$116,875	\$123,917	\$120,036	\$120,807
Jamesville		\$132,625	\$128,250	\$119,429	\$123,034
Manlius		\$131,000	\$109,875	\$135,808	\$128,080
Grand Total		\$126,635	\$122,962	\$123,875	\$123,739

## Creating Pivot Tables

### Preparing Your Data

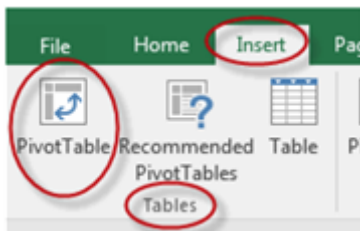
Before inserting a pivot table, make sure the data you want to analyze is in an organized table. Things to consider include:

1. **Header row.** Make sure your data includes a header row because the top row of your table will serve as the field names in your pivot table.
2. **No empty rows or columns.** If your data includes empty rows or columns, Excel will not treat all your data as one table.
3. **No subtotals.** Remove all subtotals before creating your pivot table.

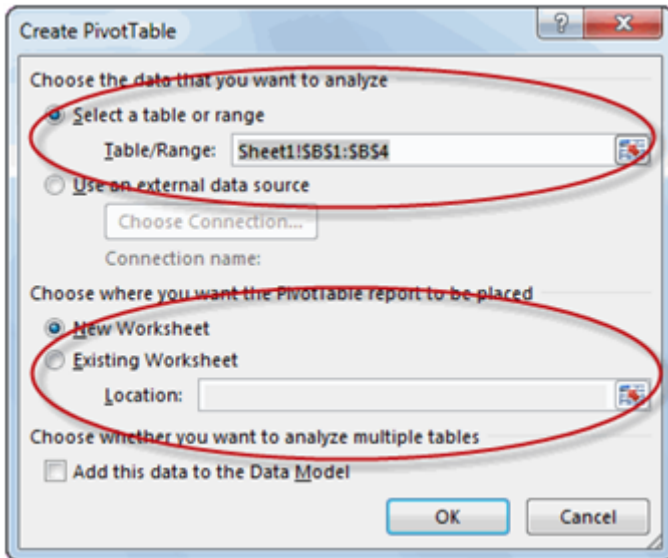
### Inserting a Pivot Table

To insert a pivot table in Microsoft Excel:

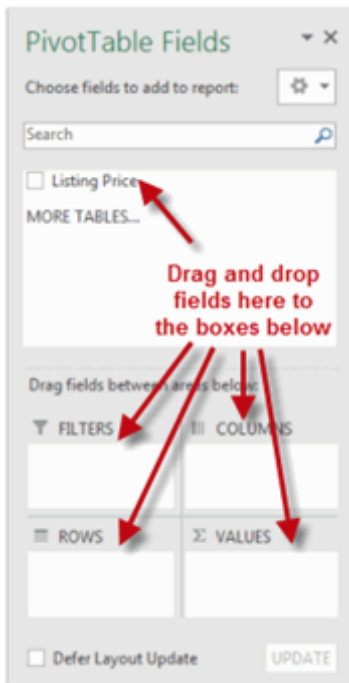
1. Select any cell in the set of data you want to analyze.
2. On the **Insert** tab, in the **Tables** group, click the **PivotTable** command (and in Excel 2007 and 2010, then select **PivotTable**):



3. In the **Create PivotTable** dialog box, verify that Excel has selected the correct range, select where you want the pivot table to show up (you will almost always want to select **New Worksheet**), and click **OK** :



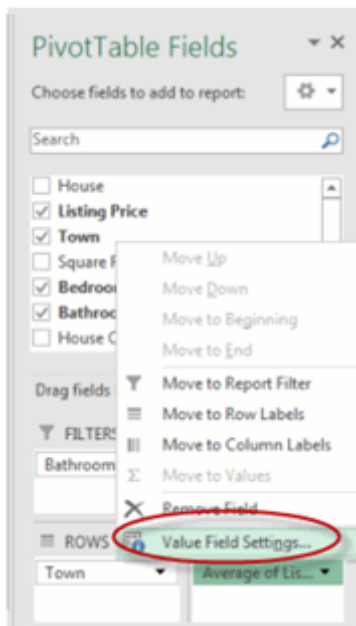
4. In the **PivotTable Field List**, which opens up on the right (left in Excel 2007/2010) of the worksheet in which your pivot table will be located, drag and drop fields from your data into the **Report Filter** (Page fields go here), **Column Labels** (Column fields go here), **Row Labels** (Row fields go here), and **Values** (Data fields go here) boxes:



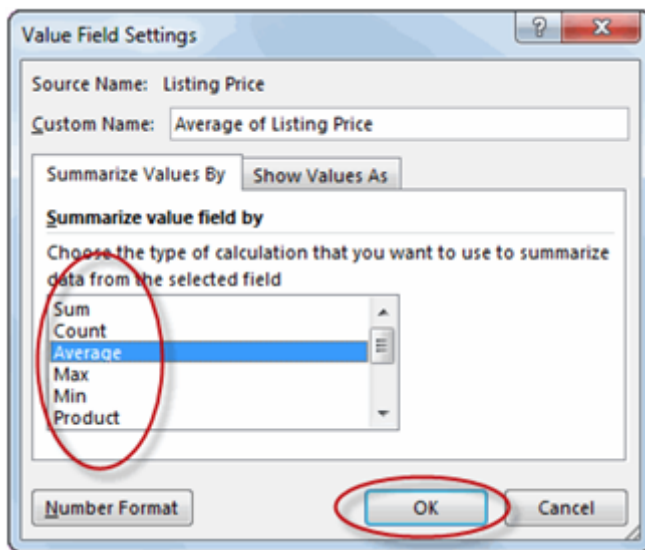
A. In the image below, fields have been dragged into the boxes as the first step in creating the report shown at the beginning of this lesson:

5. Excel assumes you want to sum the values of the Data field (the field in the **Values** box). To perform a different calculation such as *Count* or *Average*:

A. Click the field name and select **Value Field Settings** :

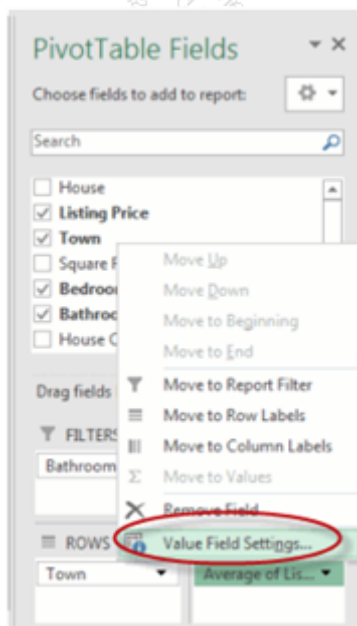


B. Select the calculation you want to perform and click **OK** :

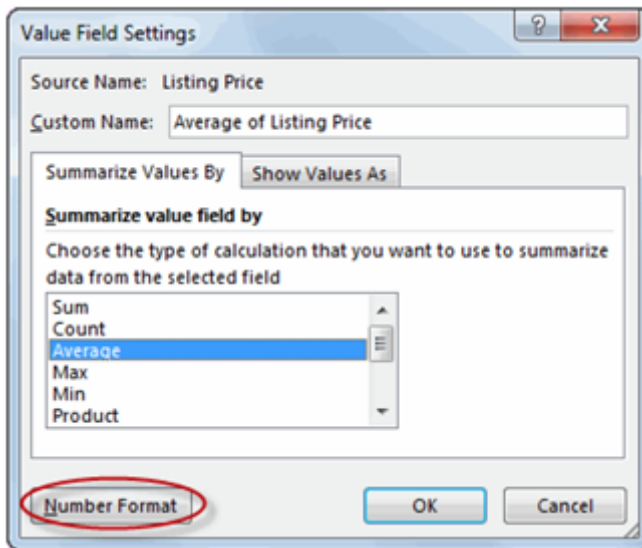


6. To change the format of the numbers in the pivot table:

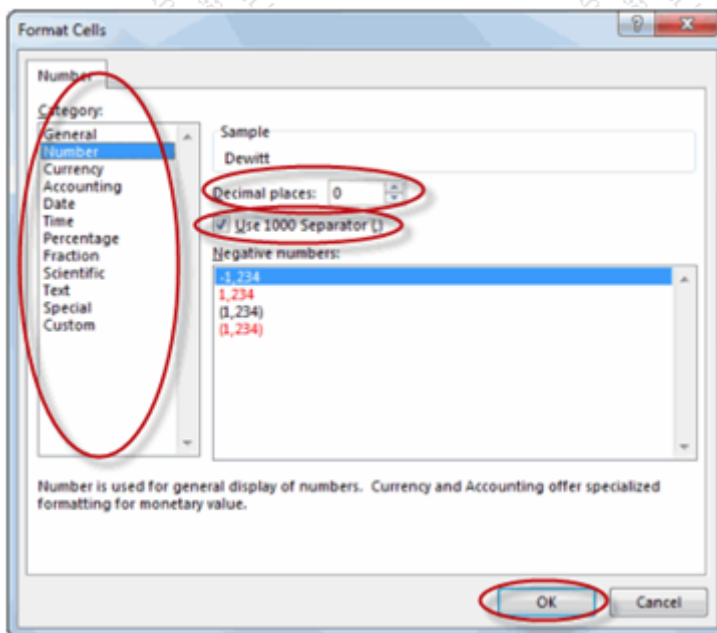
A. Click the field name and select **Value Field Settings** :



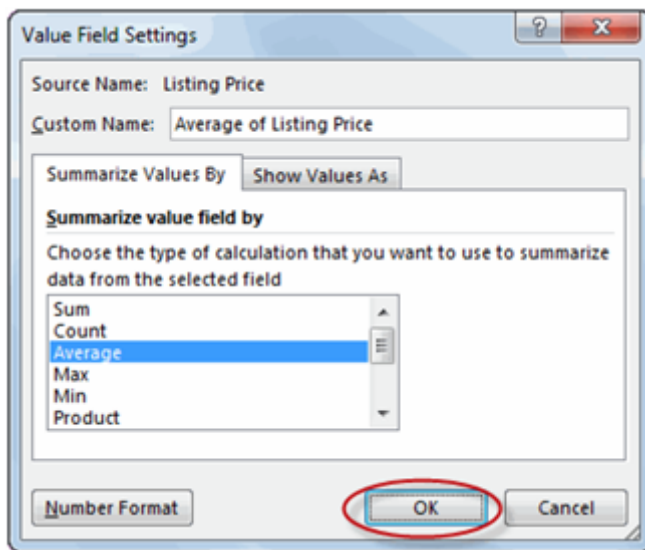
B. Click **Number Format** :



- C. In the **Format Cells** dialog box, select the number format category, the number of decimal places to show and whether or not to display a comma (if applicable), and then click **OK**:



- D. In the **Value Field Settings** dialog box, click **OK**:

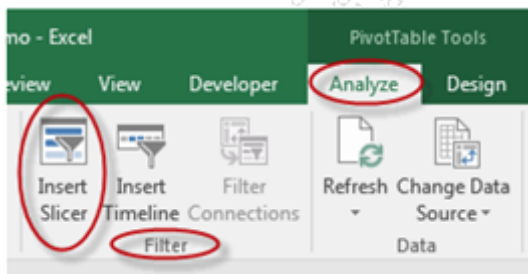


## Inserting Slicers

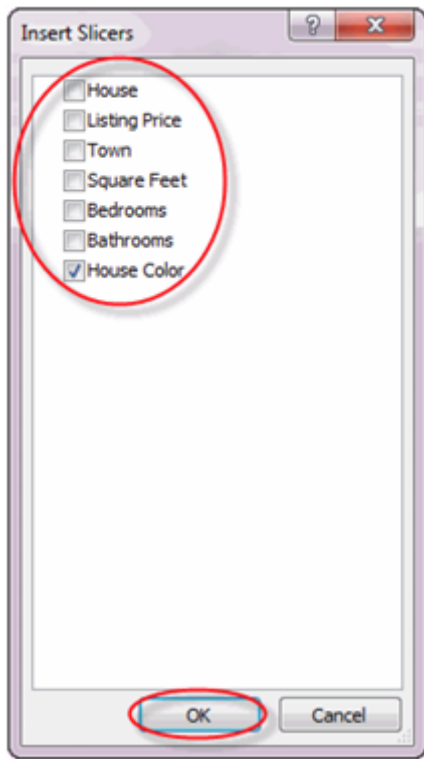
*Slicers* make it really easy to filter data in a pivot table. Adding a Slicer is similar to adding a second Page field ( **Report Filter** ), but it's even easier to use.

To add a Slicer to a pivot table:

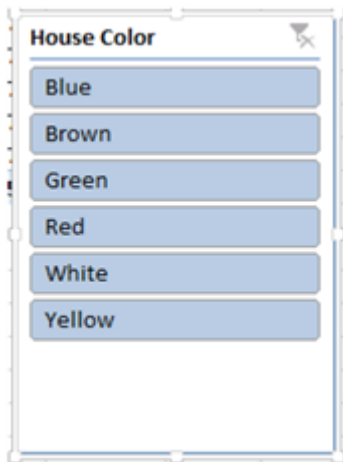
1. Select any cell in the pivot table.
2. On the **PivotTable Tools Analyze** tab ( **PivotTable Tools Options** tab in Excel 2007/2010), in the **Filter** group ( **Sort & Filter** group in Excel 2007/2010), click the **Insert Slicer** command (and then select **Insert Slicer** in Excel 2007/2010):



3. In the **Insert Slicers** dialog box, check the field or fields (Yes, you can create multiple slicers at once!) to use to "slice" your data and click **OK** :



4. To use the Slicer, simply select one of the fields in the Slicer to filter your data by that field:



## Working with Pivot Tables

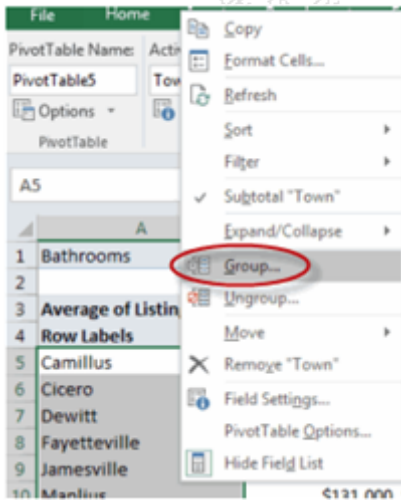
### Grouping Data

You can group data in a Pivot Table to show a subset of your data

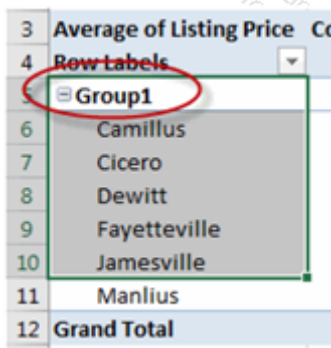
To group data:



1. In the Pivot Table, select the data you want to group.
2. Right-click and select **Group**.



3. The data appears as a new group.

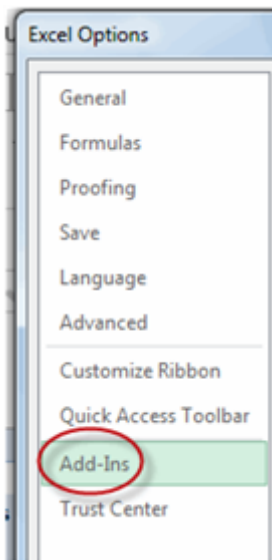


## Using PowerPivot

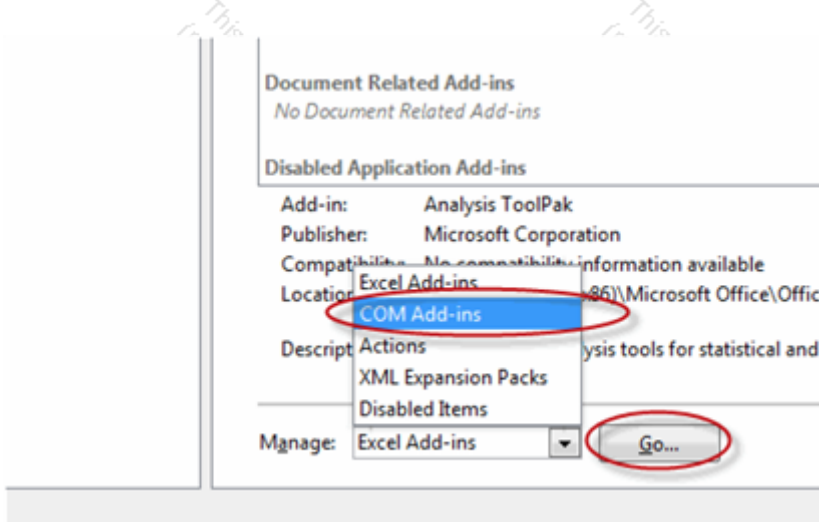
PowerPivot is an add-on that you can use in Excel 2013 to perform more powerful data analysis.

To add PowerPivot:

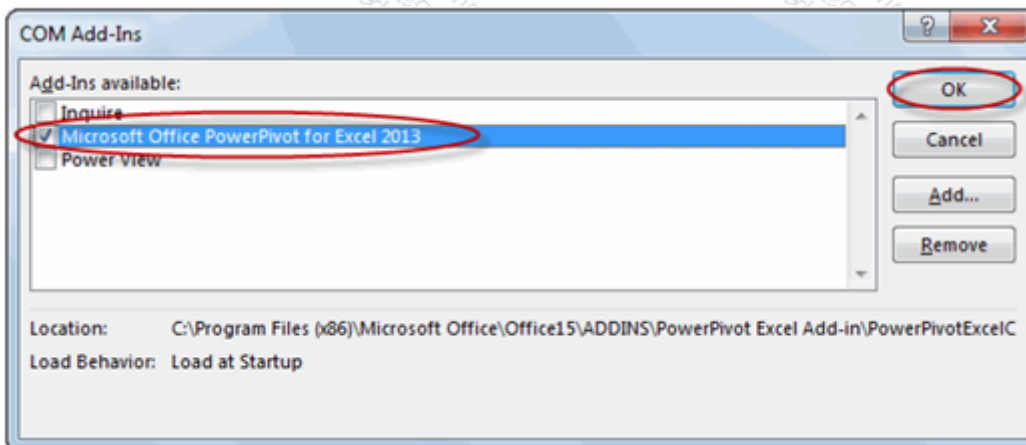
1. Select the **File** menu tab, and then select **Options**.
2. In the **Excel Options** dialog box, on the right, select **Add-Ins**.



3. From the **Manage** drop-down list, select **COM Add-ins** and then click **Go**.



4. Check the **Microsoft Office PowerPivot for Excel 2013** check box and click **OK**.



5. The **PowerPivot** tab now appears on the Ribbon.

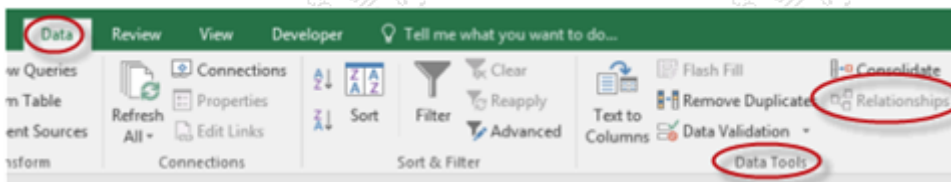
Once PowerPivot is installed, you can launch the PowerPivot window by selecting **Manage** from the **PowerPivot** tab. Here you can import and manage external data.

## Managing Relationships

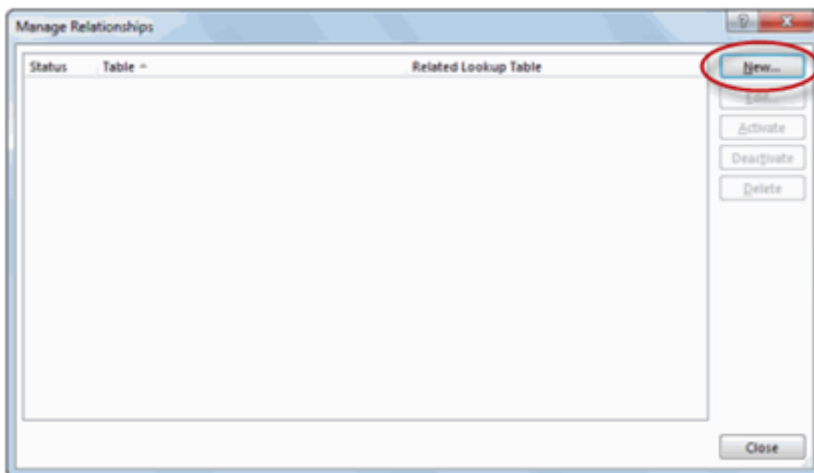
A feature that was new with Excel 2013 is the **Relationships** option on the **Data** tab, in the **Data Tools** group.

To manage relationships in Pivot Tables, you must have at least two tables in your worksheet. Then, to create a relationship:

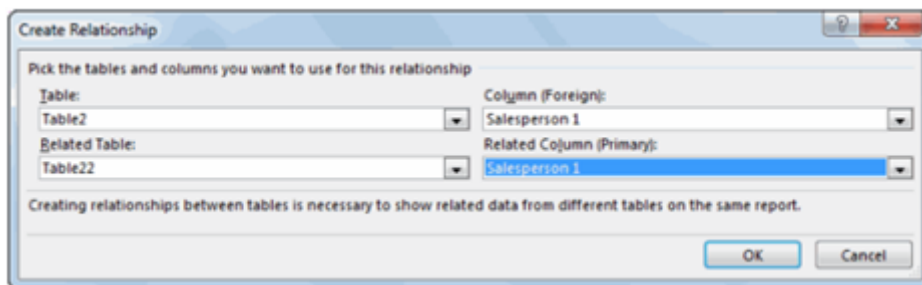
1. From the **Data** tab, select **Relationships**.



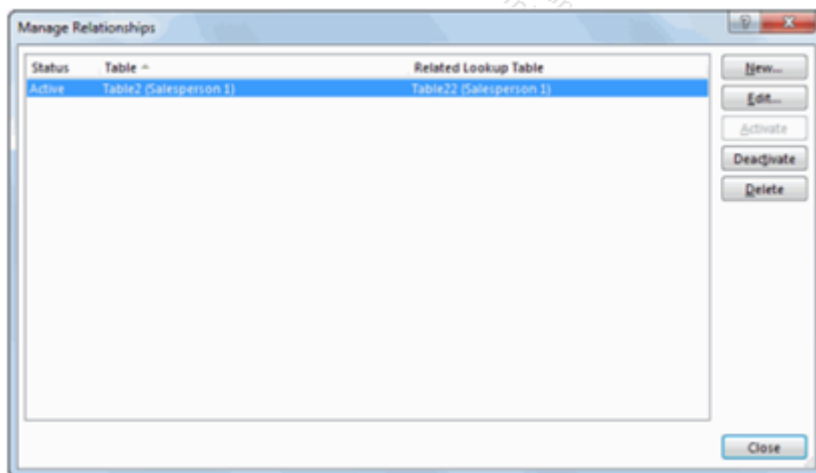
2. In the **Manage Relationships** dialog box, select **New**.



3. In the **Create Relationship** dialog box, enter the tables and columns you want to be related, and click **OK**.



4. The information now appears in the **Manage Relationships** dialog box.

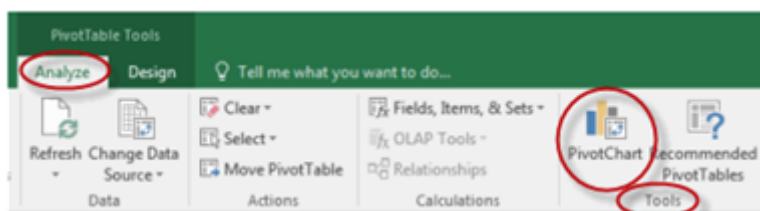


## Inserting Pivot Charts

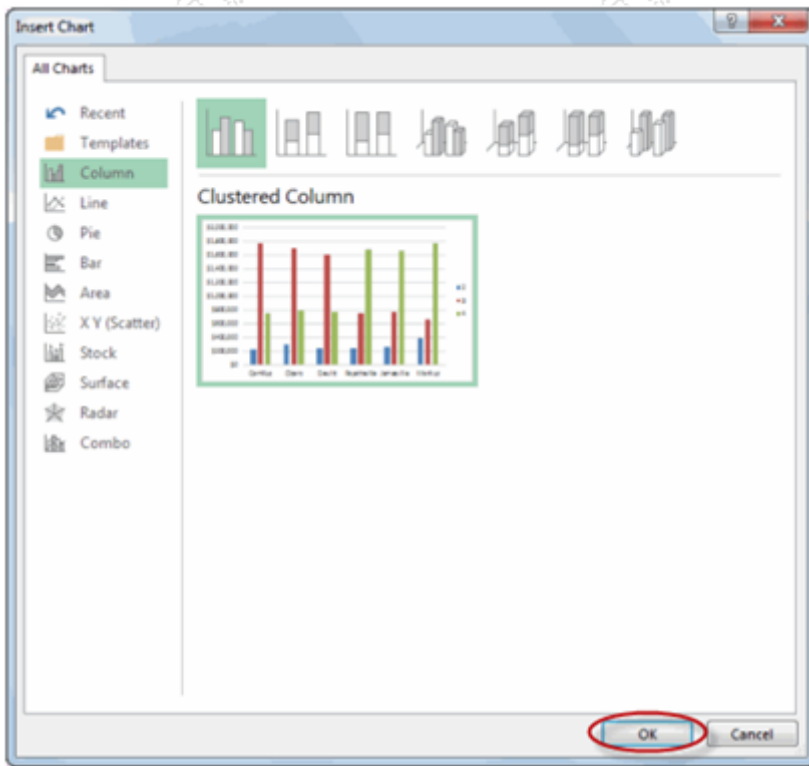
Pivot charts are simply charts that use the data in your pivot table. Pivot charts make it easy to visualize your data.

To insert a pivot chart:

1. Select any cell in the pivot table.
2. On the **PivotTable Tools Analyze** tab ( **PivotTable Tools Options** tab in Excel 2007/2010), in the **Tools** group, click the **PivotChart** command:



3. In the **Insert Chart** dialog box, select the type of chart to insert and click **OK** :

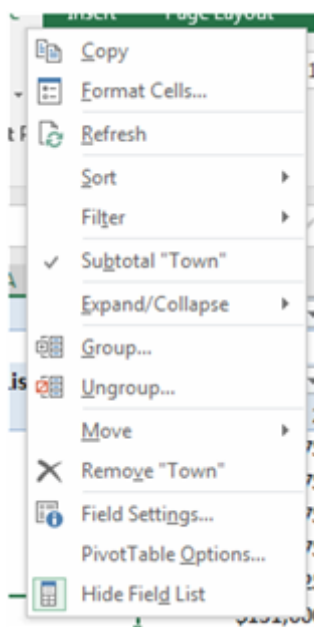


Watch and follow along as your instructor demonstrates some of the functionality of pivot charts using the [PivotTable Demo.xlsx](#) file in your [Excel2016.3/Demos](#) folder. Note that as changes are made to pivot charts, the pivot table on which the chart is based is automatically updated.

## More Pivot Table Functionality

Pivot tables are one of the most powerful and useful tools in Excel. Watch and follow along as your instructor demonstrates additional pivot table functionality, including:

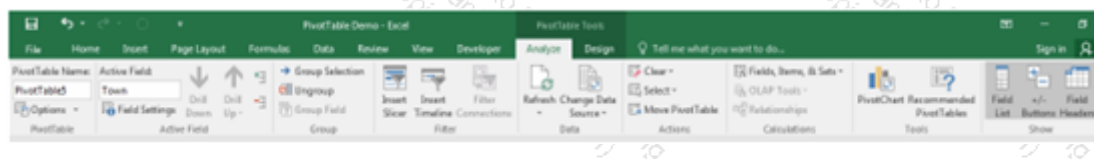
1. How to **Sort** , **Filter** , **Move** , **Remove** , and format fields by right-clicking on them:



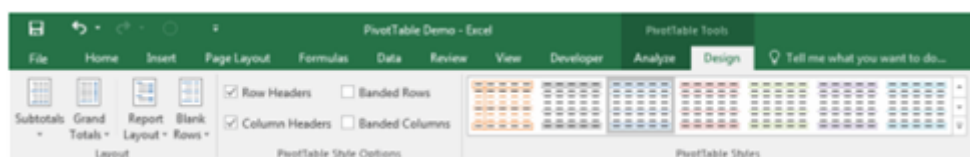
2. How to change or update the data source.
3. How to **Refresh** the pivot table.
4. How to filter the data in the pivot table using the filter drop-down arrows:

1	Bathrooms	(All)			
2					
3	Sum of Listing Price	Column Labels			
4	Row Labels	2	3	4	Grand Total
5	Camillus	\$214,750	\$1,771,500	\$751,500	\$2,737,750
6	Cicero	\$297,750	\$1,695,750	\$794,250	\$2,787,750
7	Dewitt	\$241,750	\$1,615,250	\$768,750	\$2,625,750
8	Fayetteville	\$233,750	\$743,500	\$1,680,500	\$2,657,750
9	Jamesville	\$265,250	\$769,500	\$1,672,000	\$2,706,750
10	Manlius	\$393,000	\$659,250	\$1,765,500	\$2,817,750
11	Grand Total	\$1,646,250	\$7,254,750	\$7,432,500	\$16,333,500

5. Some of things you can do from the **PivotTable Tools Analyze** tab:



6. Some of things you can do from the **PivotTable Tools Design** tab:



## Exercise 1 Working with Pivot Tables

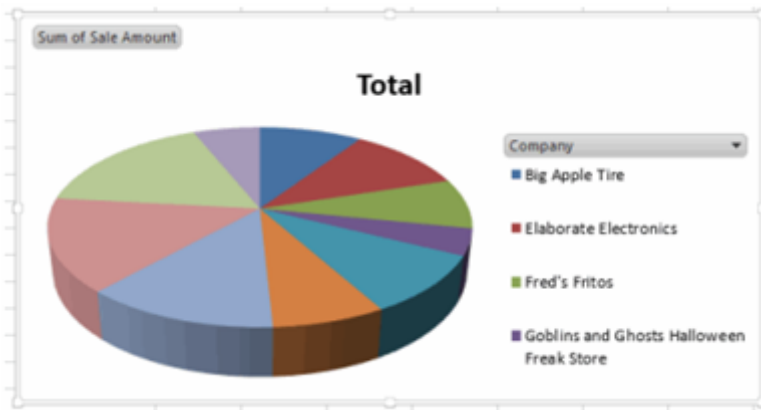
### 15 to 25 minutes

In this exercise, you will practice using pivot tables, pivot charts, and Slicers.

1. Open PivotTables.xlsx from your Excel2016.3/Exercises folder.
2. Insert a pivot table in a new worksheet showing total *sales* by *company*. Format the numbers as *Currency* and show *zero* decimal places. The pivot table should look like the following image:

Row Labels	Sum of Sale Amount
Big Apple Tire	\$34,295
Elaborate Electronics	\$39,328
Fred's Fritos	\$29,635
Goblins and Ghosts Halloween Freak Store	\$15,710
Happy Harold's Hardware	\$34,649
Just Another Silly Name, Inc.	\$26,756
Mowing, Mulching and More	\$45,862
Pleasant Perfumes Corporation	\$55,198
Purple Frog Potato Chips	\$62,950
Stunning Stan's Barber Shop	\$22,365
<b>Grand Total</b>	<b>\$366,748</b>

3. Insert a pivot chart that looks like the chart below:



4. Insert a pivot table in a new worksheet showing total *sales* in each *calendar year* by *industry*. Format the numbers as *Currency* and show *zero* decimal places. The pivot table should look like the following image:

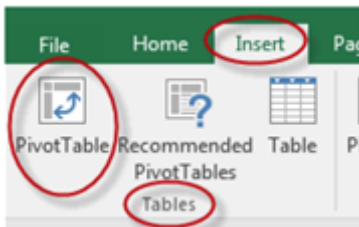


Sum of Sale Amount Column Labels					
Row Labels	2008	2009	2010	2011	Grand Total
Beauty	\$16,567	\$7,634	\$573		\$24,774
Electronics				\$9,355	\$9,355
Service		\$989	\$2,456		\$3,445
Snack Foods		\$4,687			\$4,687
<b>Grand Total</b>	<b>\$16,567</b>	<b>\$13,310</b>	<b>\$3,029</b>	<b>\$9,355</b>	<b>\$42,261</b>

5. Insert Slicers to analyze sales by *salesperson* and *product* in addition to *industry*.

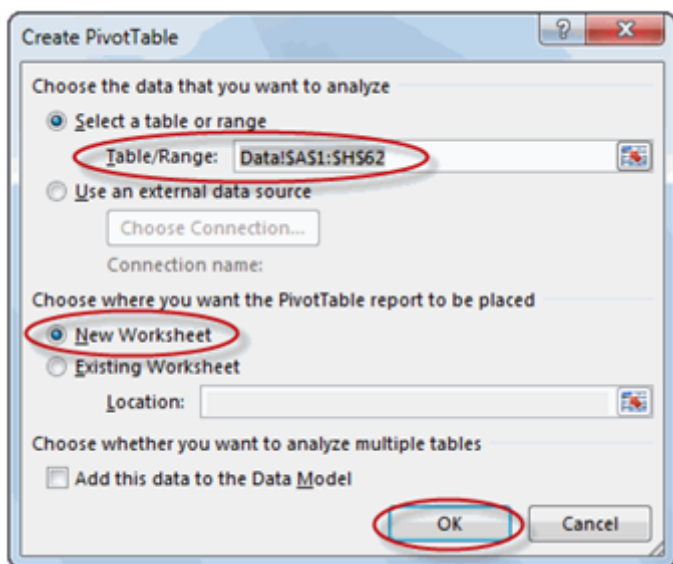
## Exercise Solution

1. To insert a pivot table showing total *sales* by *company* and to format the numbers as *Currency* and show *zero* decimal places:
  - A. Select any cell in the table (cells **A1:H62**).
  - B. On the **Insert** tab, in the **Tables** group, click the **PivotTable** command (and then select **PivotTable** in Excel 2007/2010):

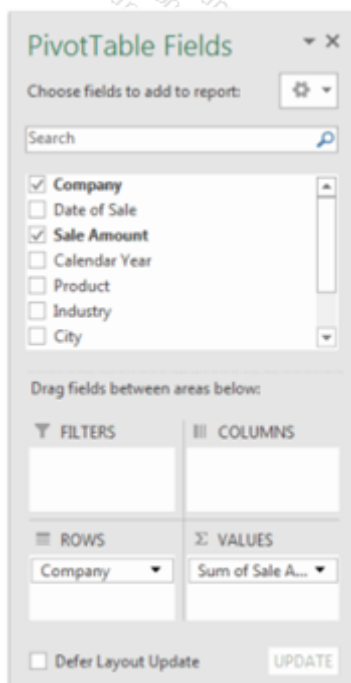


- C. In the **Create PivotTable** dialog box, verify that Excel has selected the correct range, select where you want the pivot table to show up (select **New Worksheet**), and then click **OK** :

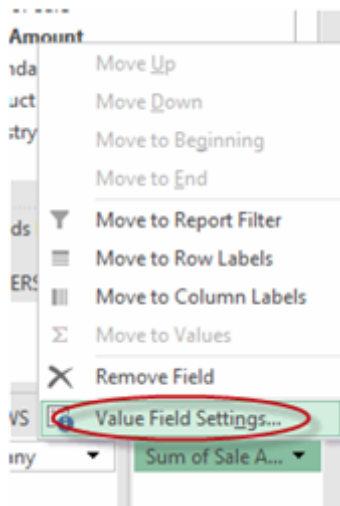




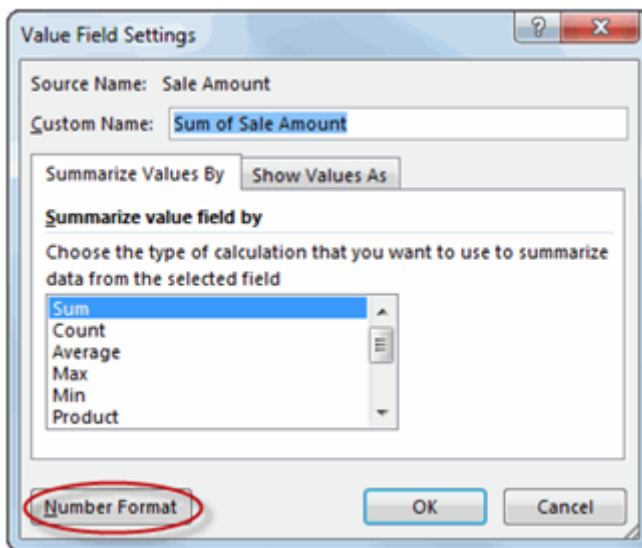
- D. In the **PivotTable Field List**, drag and drop **Company** into the **Row Labels** box and **Sale Amount** into the **Values** box:



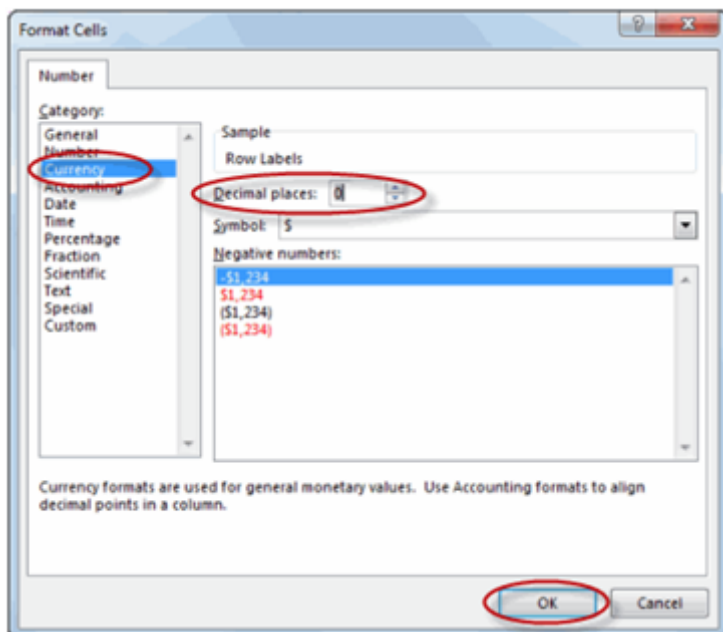
- E. Click **Sum of Sale Amount** and select **Value Field Settings** :



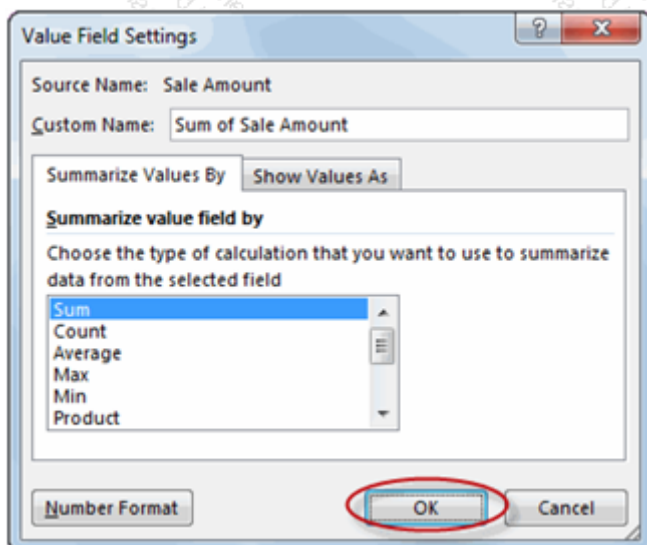
F. Click **Number Format** :



G. In the **Format Cells** dialog box, select **Currency** , change the number of decimal places to "0", and click **OK** :



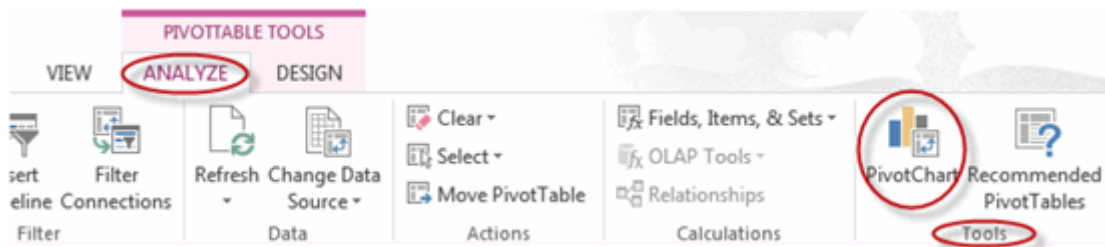
H. In the **Value Field Settings** dialog box, click **OK** :



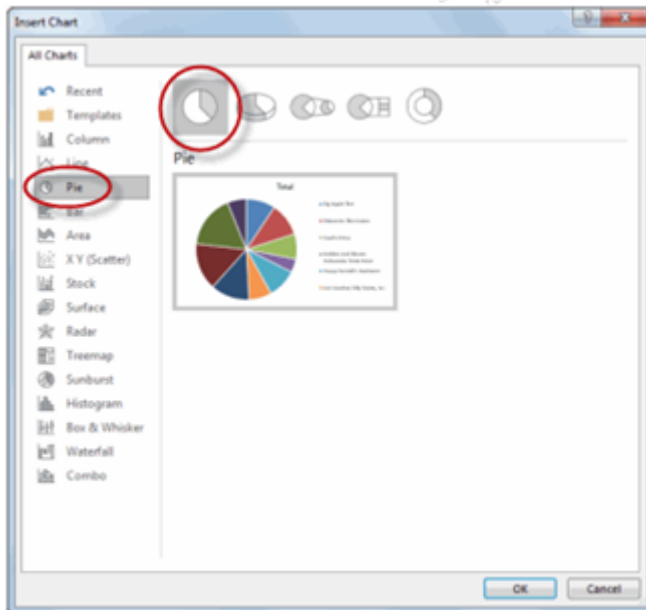
2. To insert the pivot chart showing total *sales* by *company*:

- A. Select any cell in the pivot table.
- B. On the **PivotTable Tools Analyze** tab ( **PivotTable Tools Options** tab in Excel

2007/2010), in the **Tools** group, click the **PivotChart** command:

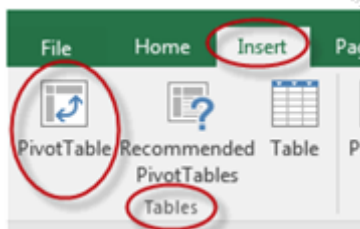


- C. In the **Insert Chart** dialog box, select **Pie** charts, select the first pie chart, and then click **OK** :



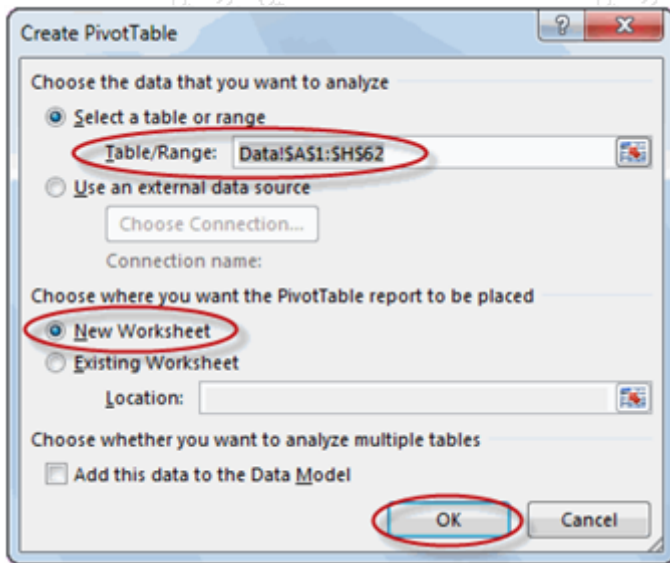
3. To insert a pivot table showing total *sales* in each *calendar year* by *industry* and to format the numbers as *Currency* and show *zero* decimal places:

- A. Select the sheet named Data and then select any cell in the table (cells **A1:H62**).
- B. On the **Insert** tab, in the **Tables** group, click the **PivotTable** command (and then select **PivotTable** in Excel 2007/2010):

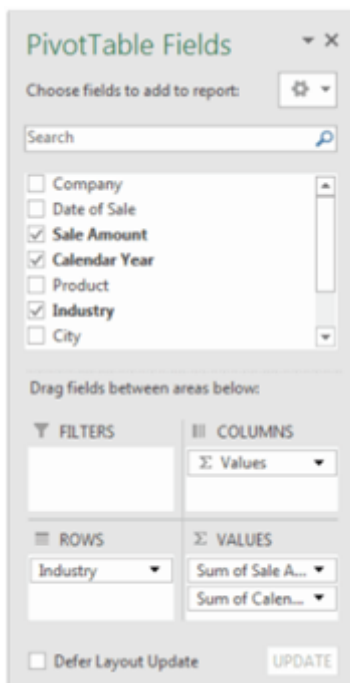


- C.

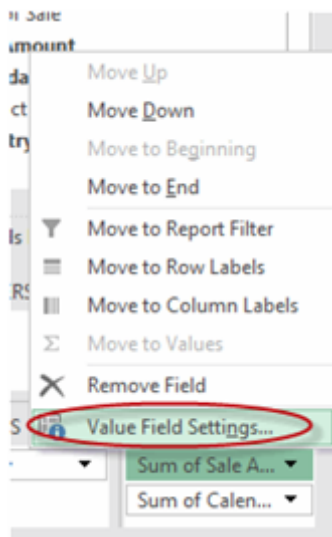
In the **Create PivotTable** dialog box, verify that Excel has selected the correct range, select where you want the pivot table to show up (select **New Worksheet** ), and click **OK** :



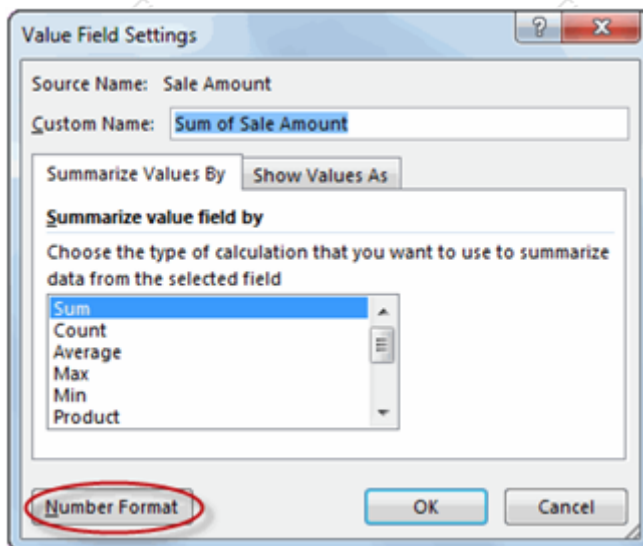
- D. In the **PivotTable Field List** , drag and drop **Industry** into the ROW box ( **Row Labels** box in Excel 2007/2010), **Calendar Year** into the COLUMN box ( **Column Labels** box in Excel 2007/2010), and **Sale Amount** into the **VALUES** box:



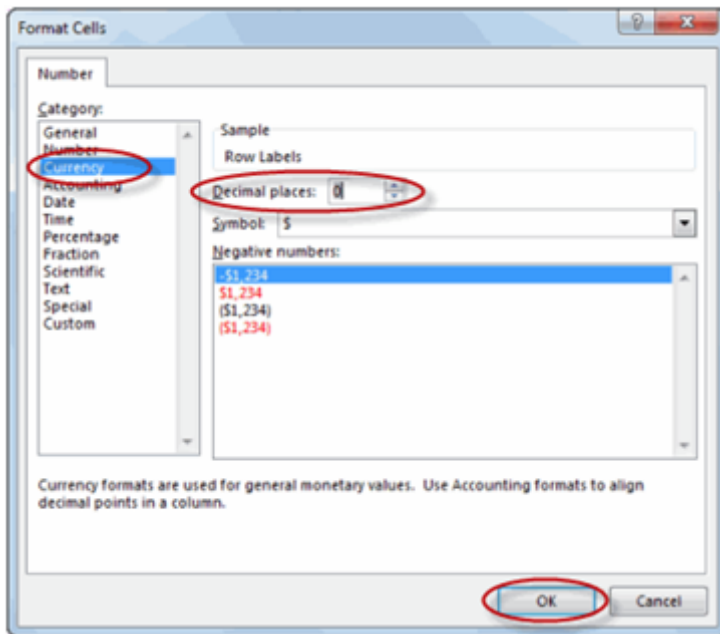
- E. Click **Sum of Sale Amount** and select **Value Field Settings** :



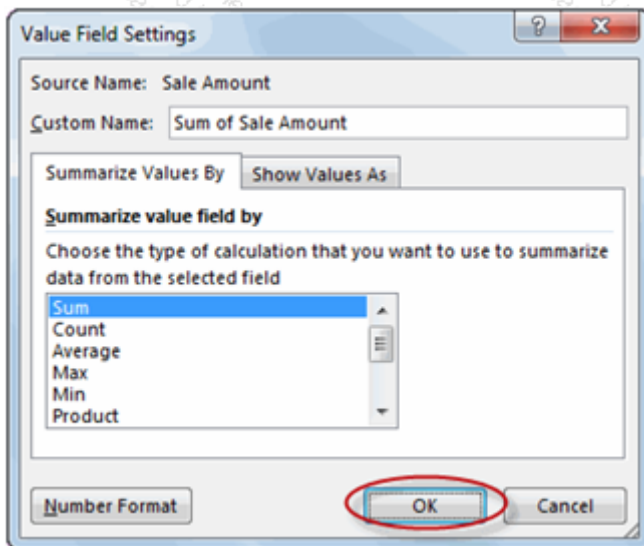
F. Click **Number Format** :



G. In the **Format Cells** dialog box, select **Currency** , change the number of decimal places to "0", and click **OK** :



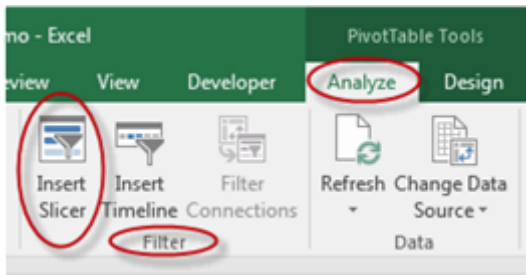
H. In the **Value Field Settings** dialog box, click **OK** :



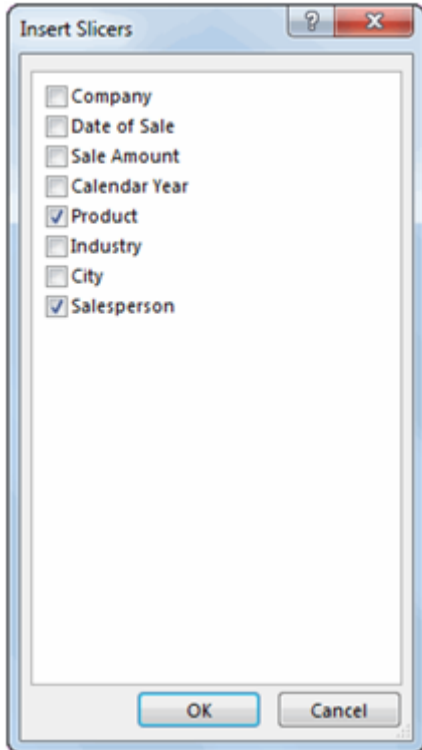
4. To insert Slicers to analyze sales by *salesperson* and *product* in addition to *industry*:

- A. Select any cell in the pivot table.
- B. On the **PivotTable Tools Analyze** tab ( **PivotTable Tools Options** tab in Excel

2007/2010), in the **Filter** group ( **Sort & Filter** group in Excel 2007/2010), click the **Insert Slicer** command (and select **Insert Slicer** in Excel 2007/2010):



- C. In the **Insert Slicers** dialog box, check the **Product** and **Salesperson** check boxes and click **OK** :



- D. To use the Slicer, simply select one of the fields in either Slicer to filter your data by that field.

## Conclusion

In this lesson, you learned to use pivot tables to analyze data, to edit pivot tables, to format pivot tables, to insert pivot charts, and to use Slicers.