Excel 2007 Pivot Tables and Pivot Charts

by Jay R. Carlson and Jill Trehearne

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DESCRIPTION

This training document introduces you to using Pivot Tables and Pivot Charts within Excel 2007. You will learn how to use pivots to manipulate data available in an Excel spreadsheet. You will work with columns and rows, and learn how to summarize data, such as the Sum and Average functions. You will learn how to open and use PivotChart Tools, including chart types, chart designs, and add chart titles. This training will also instruct how to import data from an external source.

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Module 1: What is this Pivot Thing Anyway?

Learning Objectives

After completing this module, you will be able to:

1. Define what pivot does.
2. Create a pivot table.
3. Manipulate data in a pivot table by moving columns and rows.
4. Summarize Data by using common functions, such as Sum and Average.

Overview of PivotTables and PivotCharts

There are a lot of ways to summarize, analyze, and display data in Microsoft Excel 2007. You can order data, filter data, sort data, analyze data by using statistical and financial functions, create pie charts, line charts, and scatterplots, create…. Well, you get the idea.

Also on the list of usable tools in Excel 2007 are pivot tables and pivot charts. Not only are pivot tables and pivot charts really hip buzzwords, it turns out the pivot tables and pivot charts are really cool ways to aggregate and analyze data in new ways. In some respects, you can think of pivot tables and pivot charts as down-level versions of data mining (now there's a buzzword for your next party).

But, why are they called *pivot* tables and charts? Well, because you can pivot columns and rows in a workbook. In other words you can make columns into rows and vice versa.

But, what good does that do? Is that really useful? Let's take a look at an example. Suppose a client brings you an Excel workbook that contains the following sales data:

Book1

	A	B	C	D
1				
2		**Sales Region**	**Product**	**Sales**
3		North	Cogs	12,000
4		South	Cogs	19,000
5		East	Cogs	24,000
6		West	Cogs	14,000
7		North	Widgets	8,000
8		South	Widgets	31,000
9		East	Widgets	12,500
10		West	Widgets	37,500
11		North	Sprockets	17,250
12		South	Sprockets	4,000
13		East	Sprockets	13,750
14		West	Sprockets	2,500
15		North	Tickers	43,000
16		South	Tickers	29,500
17		East	Tickers	26,250
18		West	Tickers	21,375
19				

Your client wants to analyze this data to determine the most profitable product line. She would also like to know the region with the highest sales. You could manually total the information. However, this would require a calculator (it's in the bottom drawer of your desk underneath the slide rule), and some fumbling about with a stone and chisel, err, pen and paper.

You could create several worksheets, and use the tools in Excel to filter and sum the data. There's a lot of bother with that one, too. Still another possibility is to export the data to Access, and use queries to extract the information. The Access option has lots of possibilities, but let's try using a pivot table to analyze the data.

For now, we're going to create a pivot table using the data in the workbook. Don't worry, we'll show how to create a pivot table shortly. For now, let's look at the results to see if this pivot table thing is worth the effort.

After we create a pivot table using the data above, it looks something like this:

Row Labels	Sum of Sales
Cogs	**69000**
East	24000
North	12000
South	19000
West	14000
Sprockets	**37500**
East	13750
North	17250
South	4000
West	2500
Tickers	**120125**
East	26250
North	43000
South	29500
West	21375
Widgets	**89000**
East	12500
North	8000
South	31000
West	37500
Grand Total	**315625**

Good stuff. When we create a pivot table, a default configuration of Excel (we'll discuss the options in Excel later) not only generates the product sales for each sales region automagically, but also sums the product sales for each region. Excel also calculates the grand total for the sales for all products in all regions! How cool is that?

Well, pretty darn cool if you ask us. Creating the pivot table took a couple of minutes. By inspecting the data in the pivot table, we can determine that Tickers are the best selling product, and the highest sale total for the pivot table was in the North sales region. Yup, they like their Tickers up North.

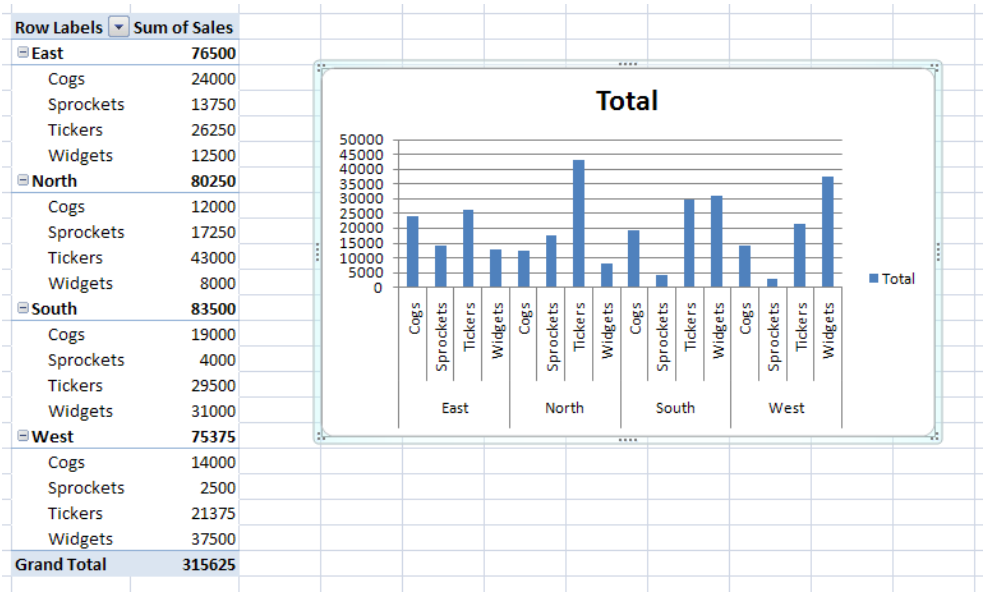
Because the client also wants to know about sales figures by region, we must also calculate that data. Not to worry, we can calculate that data with a single click of the mouse:

Sum of Sales	Column Labels				
Row Labels	East	North	South	West	Grand Total
Cogs	24000	12000	19000	14000	69000
Sprockets	13750	17250	4000	2500	37500
Tickers	26250	43000	29500	21375	120125
Widgets	12500	8000	31000	37500	89000
Grand Total	**76500**	**80250**	**83500**	**75375**	**315625**

Now that's very cool. By changing the pivot table options, we can now provide the client with all of the data that she requested. We can tell that Tickers are the best selling product (in terms of gross sales anyway), and that the West sales region has the highest gross sales. We can also inform the client that Sprockets don't sell that well, especially in the South and West sales regions.

So, maybe we should have a closer look at this pivot table thing. It looks like pivot tables are a neat way to display data from an Excel workbook. But what about pivot charts?

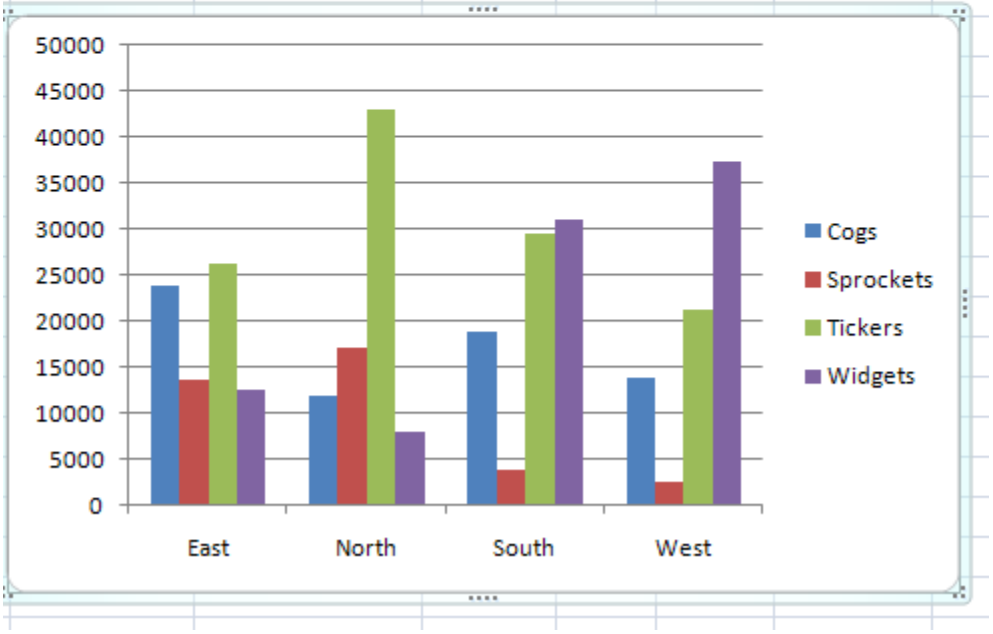
Pivot charts are just the data from an Excel workbook represented in a graph format. And, charts look good in PowerPoint presentations. So let's take a look at a pivot chart of the data:



Excel creates a pivot table similar to the one that was created earlier in this section. And, also creates a chart, in this case a column chart that displays the same data in a graphic format. Depending on the subject, audience, and venue, you can choose to use one the pivot table, pivot chart, or both.

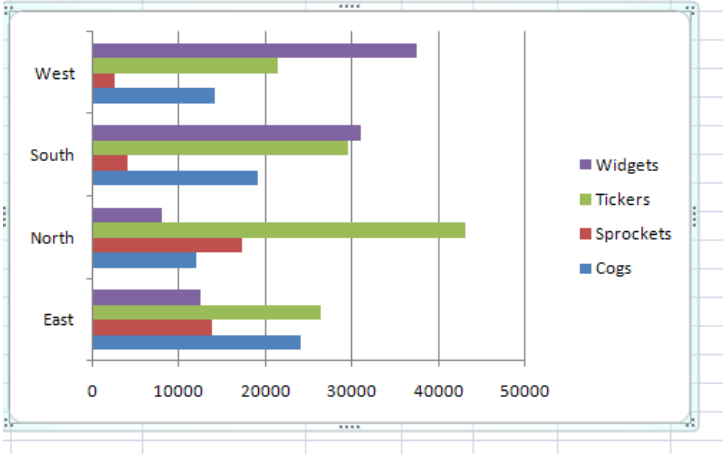
And, like the pivot chart, you can easily change how the workbook data appears in the pivot chart:

Sum of Sales	Column Labels				
Row Labels	Cogs	Sprockets	Tickers	Widgets	Grand Total
East	24000	13750	26250	12500	76500
North	12000	17250	43000	8000	80250
South	19000	4000	29500	31000	83500
West	14000	2500	21375	37500	75375
Grand Total	**69000**	**37500**	**120125**	**89000**	**315625**

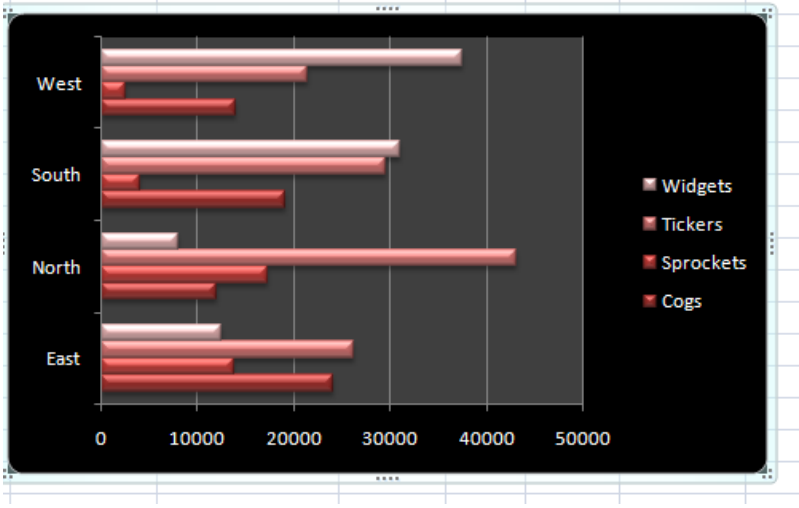


You can also easily change, in a mouse click or two, the type of chart that is used. For example, you can choose to display the data in a bar chart, and then change the chart style as well:

Sum of Sales	Column Labels				
Row Labels	Cogs	Sprockets	Tickers	Widgets	Grand Total
East	24000	13750	26250	12500	76500
North	12000	17250	43000	8000	80250
South	19000	4000	29500	31000	83500
West	14000	2500	21375	37500	75375
Grand Total	**69000**	**37500**	**120125**	**89000**	**315625**



Sum of Sales	Column Labels				
Row Labels	Cogs	Sprockets	Tickers	Widgets	Grand Total
East	24000	13750	26250	12500	76500
North	12000	17250	43000	8000	80250
South	19000	4000	29500	31000	83500
West	14000	2500	21375	37500	75375
Grand Total	**69000**	**37500**	**120125**	**89000**	**315625**



If you're still on-board, let's see how to create and tweak pivot tables and pivot charts.

Creating Pivot Tables

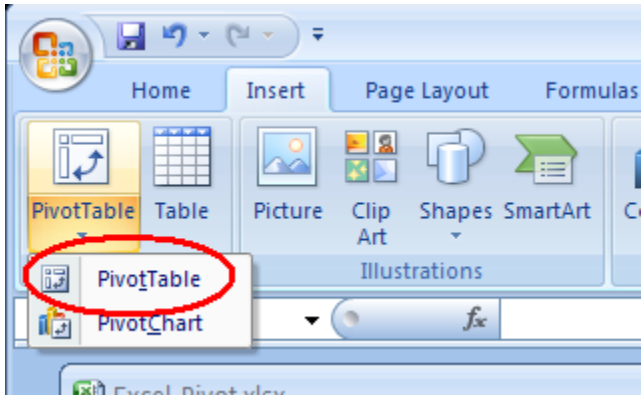
First, we'll need some data. Let's go ahead and use the data that appeared earlier in this section:

Book1

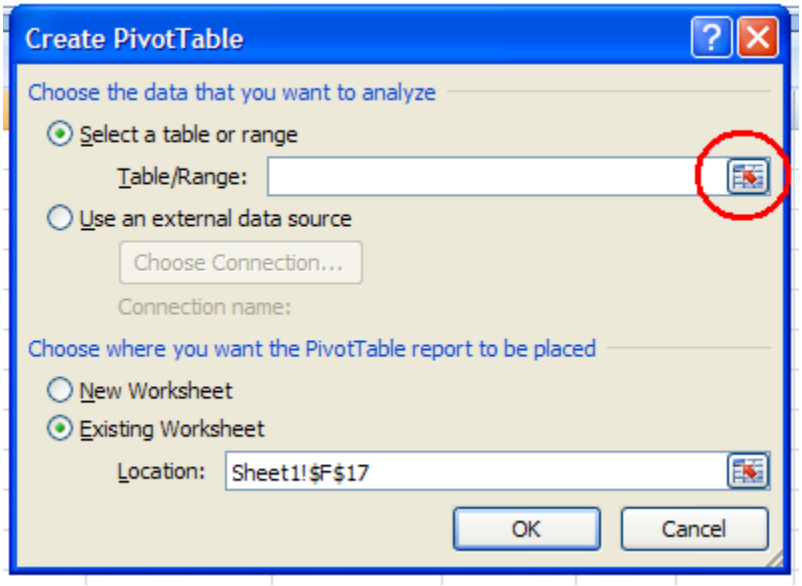
	A	B	C	D
1				
2		**Sales Region**	**Product**	**Sales**
3		North	Cogs	12,000
4		South	Cogs	19,000
5		East	Cogs	24,000
6		West	Cogs	14,000
7		North	Widgets	8,000
8		South	Widgets	31,000
9		East	Widgets	12,500
10		West	Widgets	37,500
11		North	Sprockets	17,250
12		South	Sprockets	4,000
13		East	Sprockets	13,750
14		West	Sprockets	2,500
15		North	Tickers	43,000
16		South	Tickers	29,500
17		East	Tickers	26,250
18		West	Tickers	21,375
19				

As mentioned earlier, the client would like to know the product with the highest gross sales. She would also like to know which sales region has the highest gross sales. There are a number of ways to calculate this data. However, we decided to see if creating a pivot table or pivot chart would be a quick and effective way to provide this information to the client. Let's see if that's true.

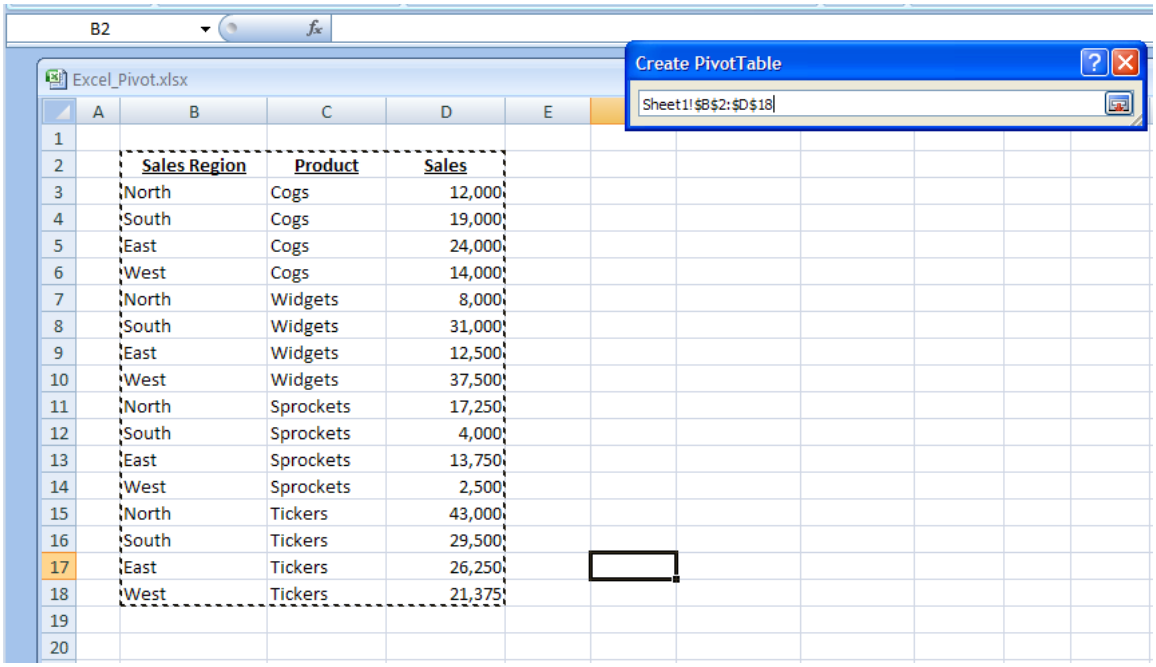
To create a pivot table, click the Insert tab, click PivotTable, and then click PivotTable:



In the Create Pivot Table dialog box, click the Table/Range icon to select the data that you want to analyze:



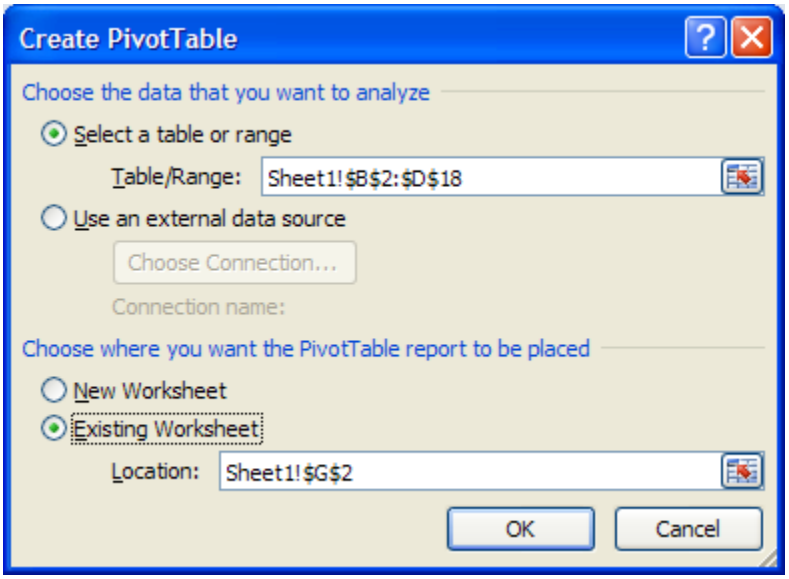
In the dialog box, you can either type the cell references for the range of data that you want to analyze, or you can click and drag to highlight the range. In this example, we used the click and drag method to highlight the range of data:



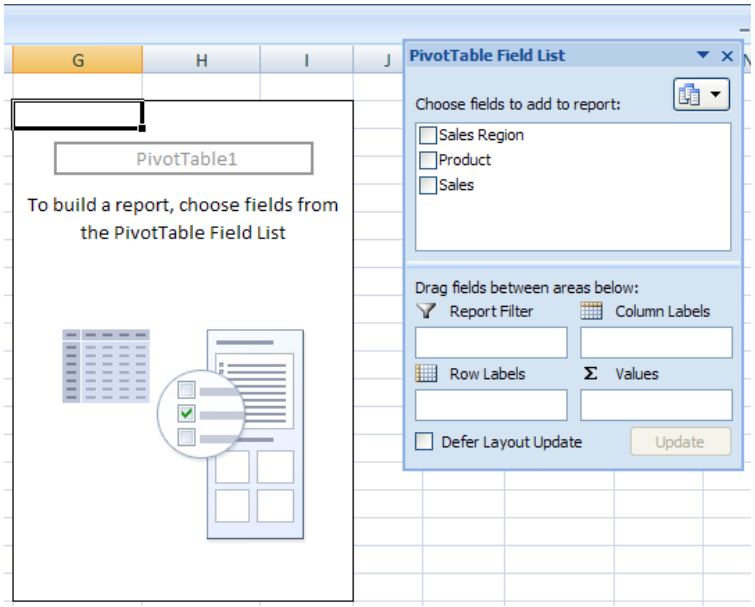
	A	B	C	D	E
1					
2		Sales Region	Product	Sales	
3		North	Cogs	12,000	
4		South	Cogs	19,000	
5		East	Cogs	24,000	
6		West	Cogs	14,000	
7		North	Widgets	8,000	
8		South	Widgets	31,000	
9		East	Widgets	12,500	
10		West	Widgets	37,500	
11		North	Sprockets	17,250	
12		South	Sprockets	4,000	
13		East	Sprockets	13,750	
14		West	Sprockets	2,500	
15		North	Tickers	43,000	
16		South	Tickers	29,500	
17		East	Tickers	26,250	
18		West	Tickers	21,375	
19					
20					

After you define the range that you want to analyze, click the Table/Range icon again:

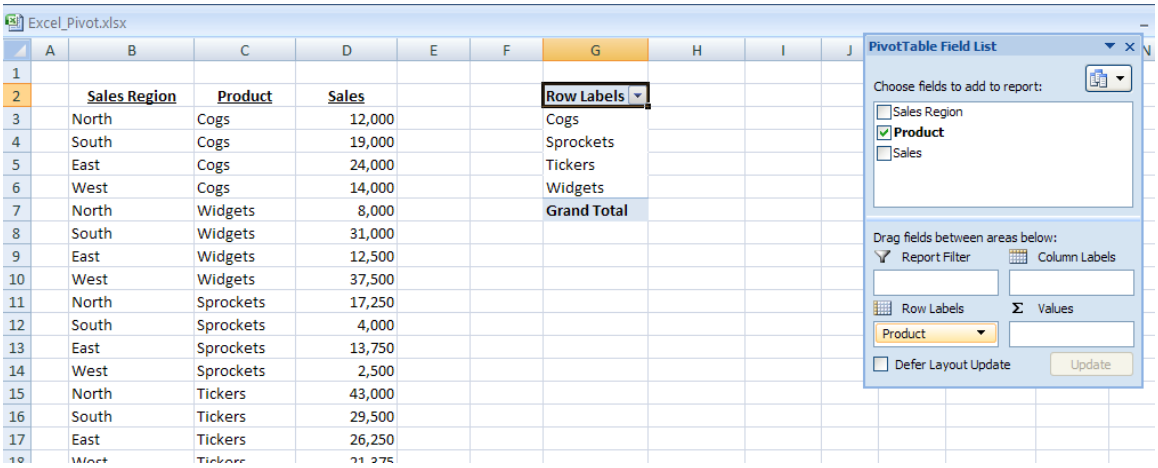
In the Create PivotTable dialog box, click Existing Worksheet, click the cell where you want to insert the pivot table, and then click OK:



After you click OK, the pivot table and PivotTable Field List dialog box appear. Notice that there is no data in the pivot table yet:



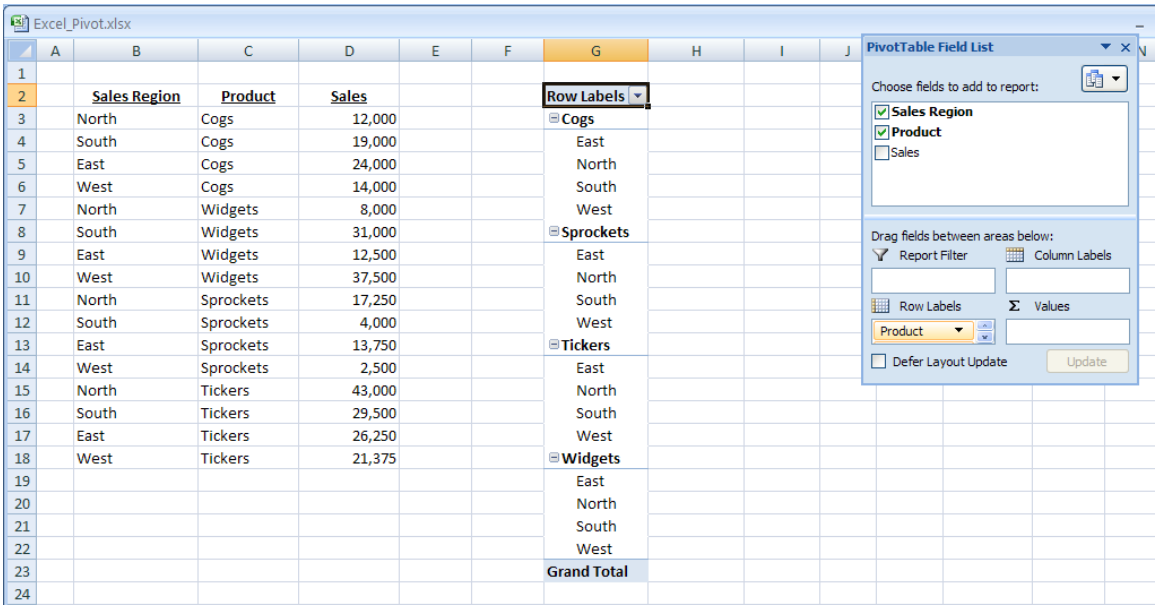
To populate the pivot table, we need to select the data fields that we want. To start, in the PivotTable Field List dialog box, click the Product check box:



Sales Region	Product	Sales
North	Cogs	12,000
South	Cogs	19,000
East	Cogs	24,000
West	Cogs	14,000
North	Widgets	8,000
South	Widgets	31,000
East	Widgets	12,500
West	Widgets	37,500
North	Sprockets	17,250
South	Sprockets	4,000
East	Sprockets	13,750
West	Sprockets	2,500
North	Tickers	43,000
South	Tickers	29,500
East	Tickers	26,250

Row Labels
Cogs
Sprockets
Tickers
Widgets
Grand Total

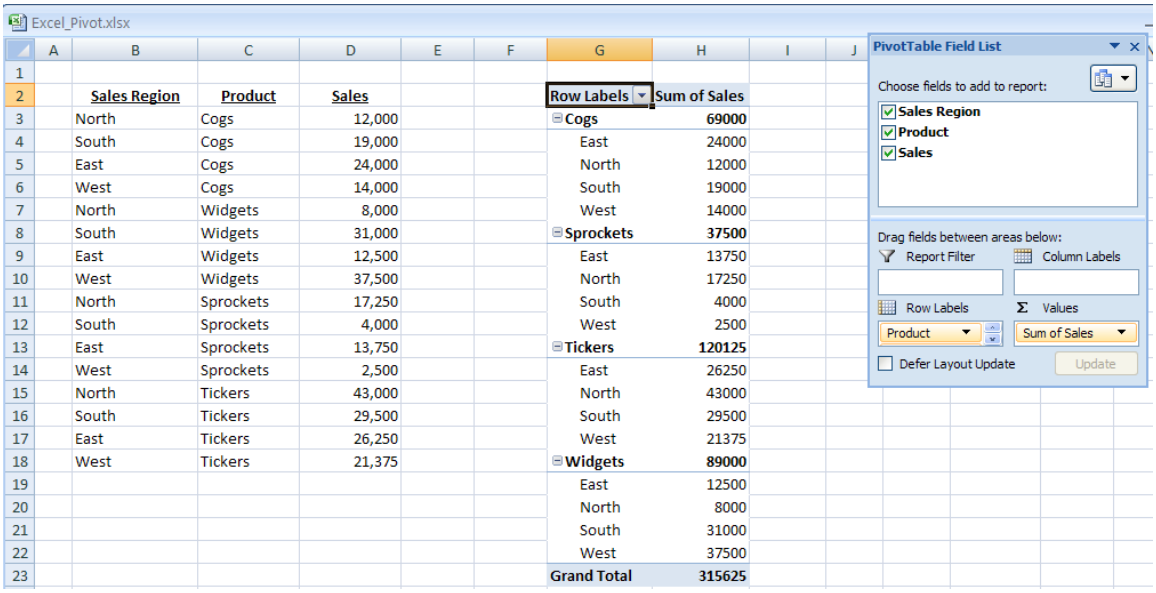
The Product field is added to the pivot table as expected. To continue populating the pivot table, click the Sales Region check box, and then note how the pivot table changes:



Sales Region	Product	Sales
North	Cogs	12,000
South	Cogs	19,000
East	Cogs	24,000
West	Cogs	14,000
North	Widgets	8,000
South	Widgets	31,000
East	Widgets	12,500
West	Widgets	37,500
North	Sprockets	17,250
South	Sprockets	4,000
East	Sprockets	13,750
West	Sprockets	2,500
North	Tickers	43,000
South	Tickers	29,500
East	Tickers	26,250
West	Tickers	21,375

Row Labels
Cogs
East
North
South
West
Sprockets
East
North
South
West
Tickers
East
North
South
West
Widgets
East
North
South
West
Grand Total

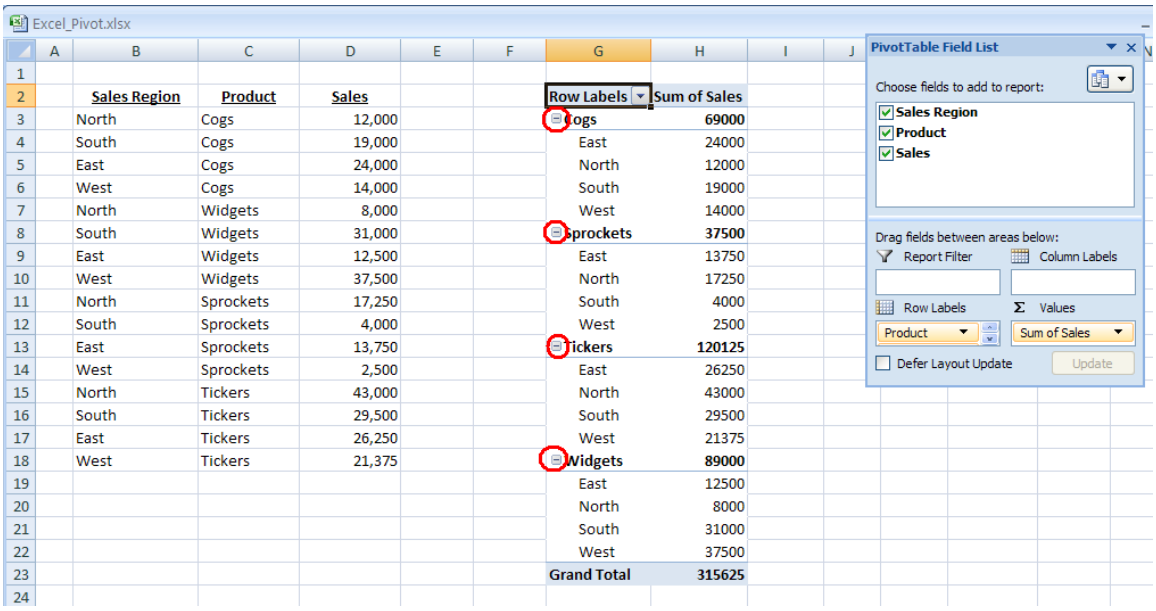
To finish populating the pivot table, check the Sales check box:



Sales Region	Product	Sales
North	Cogs	12,000
South	Cogs	19,000
East	Cogs	24,000
West	Cogs	14,000
North	Widgets	8,000
South	Widgets	31,000
East	Widgets	12,500
West	Widgets	37,500
North	Sprockets	17,250
South	Sprockets	4,000
East	Sprockets	13,750
West	Sprockets	2,500
North	Tickers	43,000
South	Tickers	29,500
East	Tickers	26,250
West	Tickers	21,375

Row Labels	Sum of Sales
Cogs	69000
East	24000
North	12000
South	19000
West	14000
Sprockets	37500
East	13750
North	17250
South	4000
West	2500
Tickers	120125
East	26250
North	43000
South	29500
West	21375
Widgets	89000
East	12500
North	8000
South	31000
West	37500
Grand Total	315625

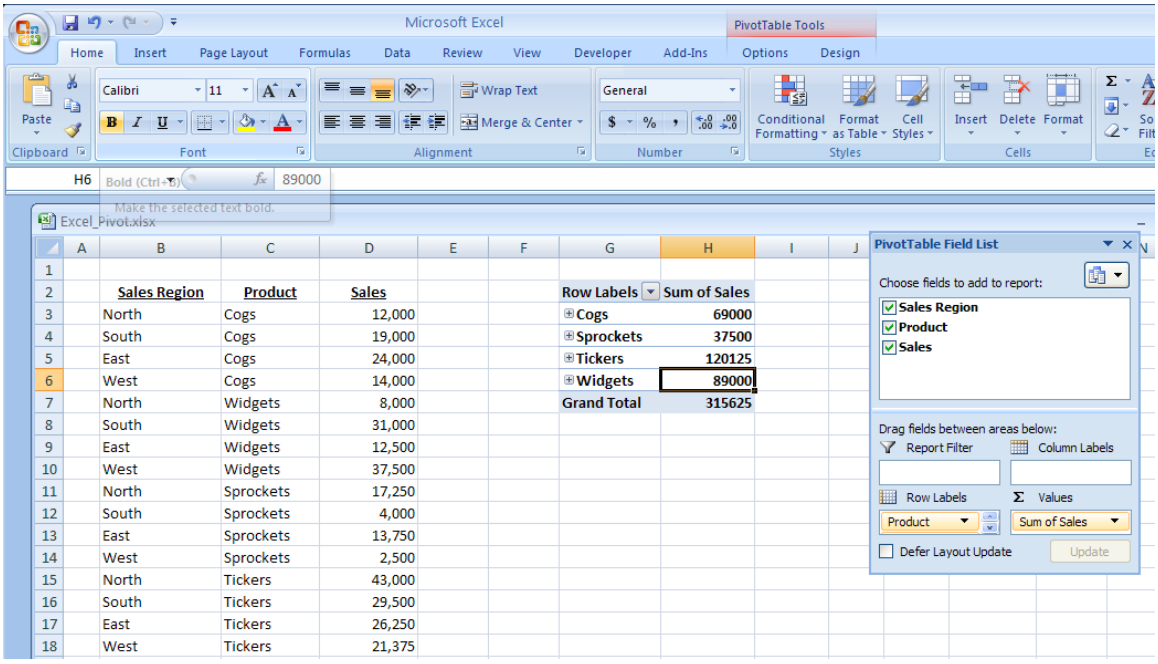
Now, we have some usable data for the client. As we demonstrated earlier in this section, we can now see that Tickers are the best selling product, at least in terms of gross sales. We can make the product gross sales comparison even easier if we collapse the detail view for each product:



Sales Region	Product	Sales
North	Cogs	12,000
South	Cogs	19,000
East	Cogs	24,000
West	Cogs	14,000
North	Widgets	8,000
South	Widgets	31,000
East	Widgets	12,500
West	Widgets	37,500
North	Sprockets	17,250
South	Sprockets	4,000
East	Sprockets	13,750
West	Sprockets	2,500
North	Tickers	43,000
South	Tickers	29,500
East	Tickers	26,250
West	Tickers	21,375

Row Labels	Sum of Sales
Cogs	69000
East	24000
North	12000
South	19000
West	14000
Sprockets	37500
East	13750
North	17250
South	4000
West	2500
Tickers	120125
East	26250
North	43000
South	29500
West	21375
Widgets	89000
East	12500
North	8000
South	31000
West	37500
Grand Total	315625

After you collapse the detail view, the pivot table should look like this:



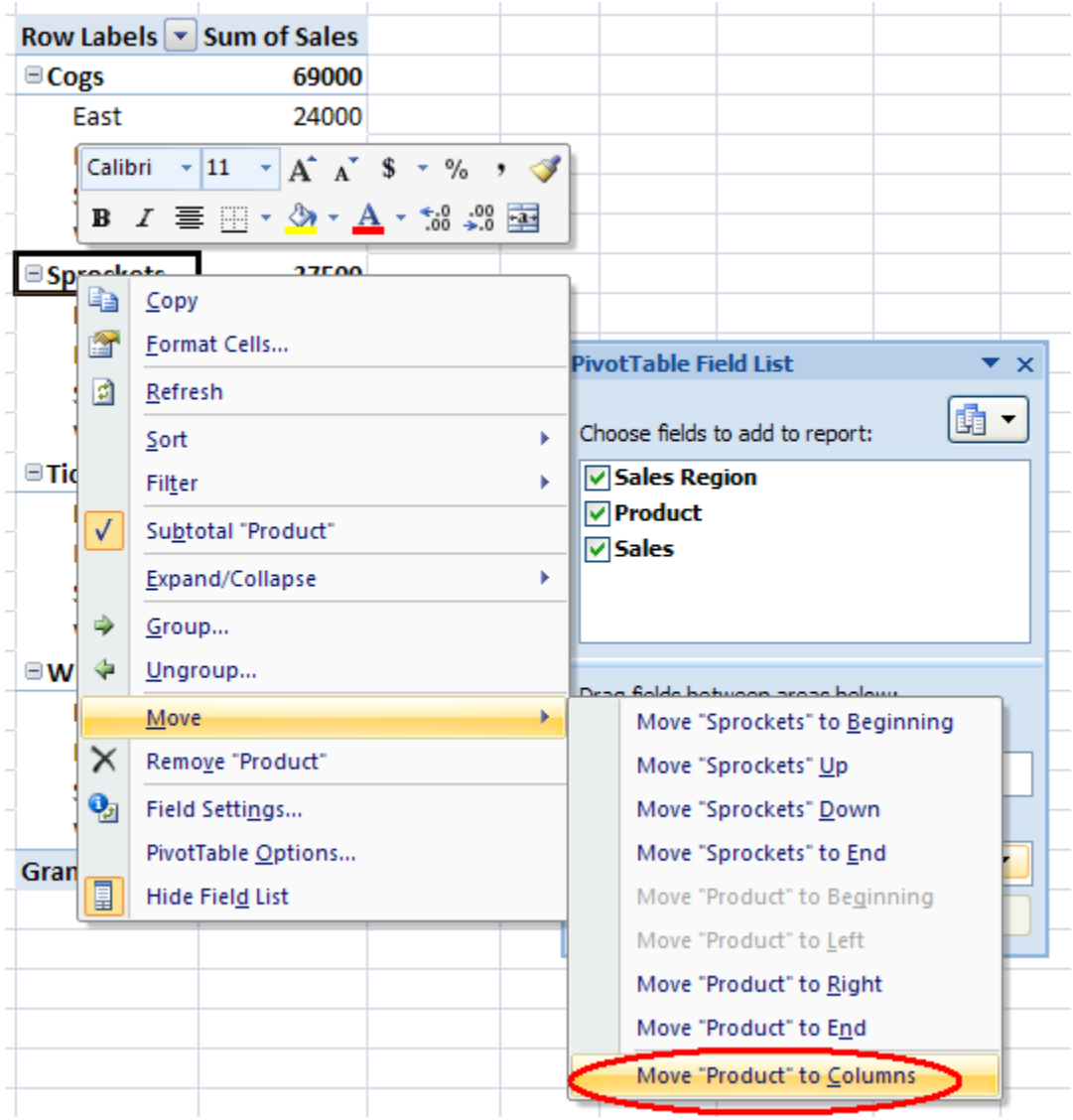
	A	B	C	D	E	F	G	H	I	J
1										
2		Sales Region	Product	Sales			Row Labels	Sum of Sales		
3		North	Cogs	12,000			Cogs	69000		
4		South	Cogs	19,000			Sprockets	37500		
5		East	Cogs	24,000			Tickers	120125		
6		West	Cogs	14,000			Widgets	89000		
7		North	Widgets	8,000			Grand Total	315625		
8		South	Widgets	31,000						
9		East	Widgets	12,500						
10		West	Widgets	37,500						
11		North	Sprockets	17,250						
12		South	Sprockets	4,000						
13		East	Sprockets	13,750						
14		West	Sprockets	2,500						
15		North	Tickers	43,000						
16		South	Tickers	29,500						
17		East	Tickers	26,250						
18		West	Tickers	21,375						

However, we cannot easily determine the sales region with the highest gross sales. How can we display the sales figures for each region? Well, let's "pivot" the table by manipulating the columns and rows.

Before we "pivot" the table, let's take a minute to think about what we're trying to accomplish. The pivot table, before we collapsed the detail view, looked like this:

Row Labels	Sum of Sales
Cogs	**69000**
East	24000
North	12000
South	19000
West	14000
Sprockets	**37500**
East	13750
North	17250
South	4000
West	2500
Tickers	**120125**
East	26250
North	43000
South	29500
West	21375
Widgets	**89000**
East	12500
North	8000
South	31000
West	37500
Grand Total	**315625**

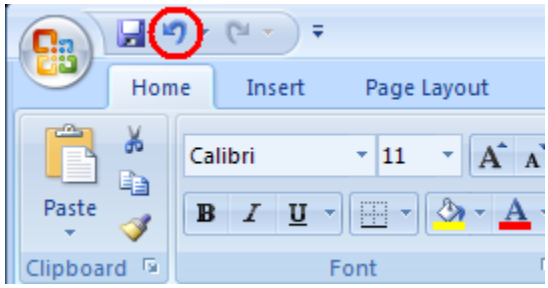
To display the sales data by region, we need to manipulate the data by moving either “Products” or “Sales Regions” to a column. Let’s try moving “Products” to a column first. To do this, right-click a product, “Sprockets” for example, click Move, and then click Move “Product to Columns”:



After you click Move “Product to Columns” the pivot table should look something like this:

Sum of Sales	Column Labels				
Row Labels	Cogs	Sprockets	Tickers	Widgets	Grand Total
East	24000	13750	26250	12500	76500
North	12000	17250	43000	8000	80250
South	19000	4000	29500	31000	83500
West	14000	2500	21375	37500	75375
Grand Total	**69000**	**37500**	**120125**	**89000**	**315625**

We could have chosen to move the sales region to a column and gotten similar results. Let’s try that, and we’ll also see how easy it is to make changes to a pivot table. To undo, the current table formatting, just click the Undo button in the title bar:

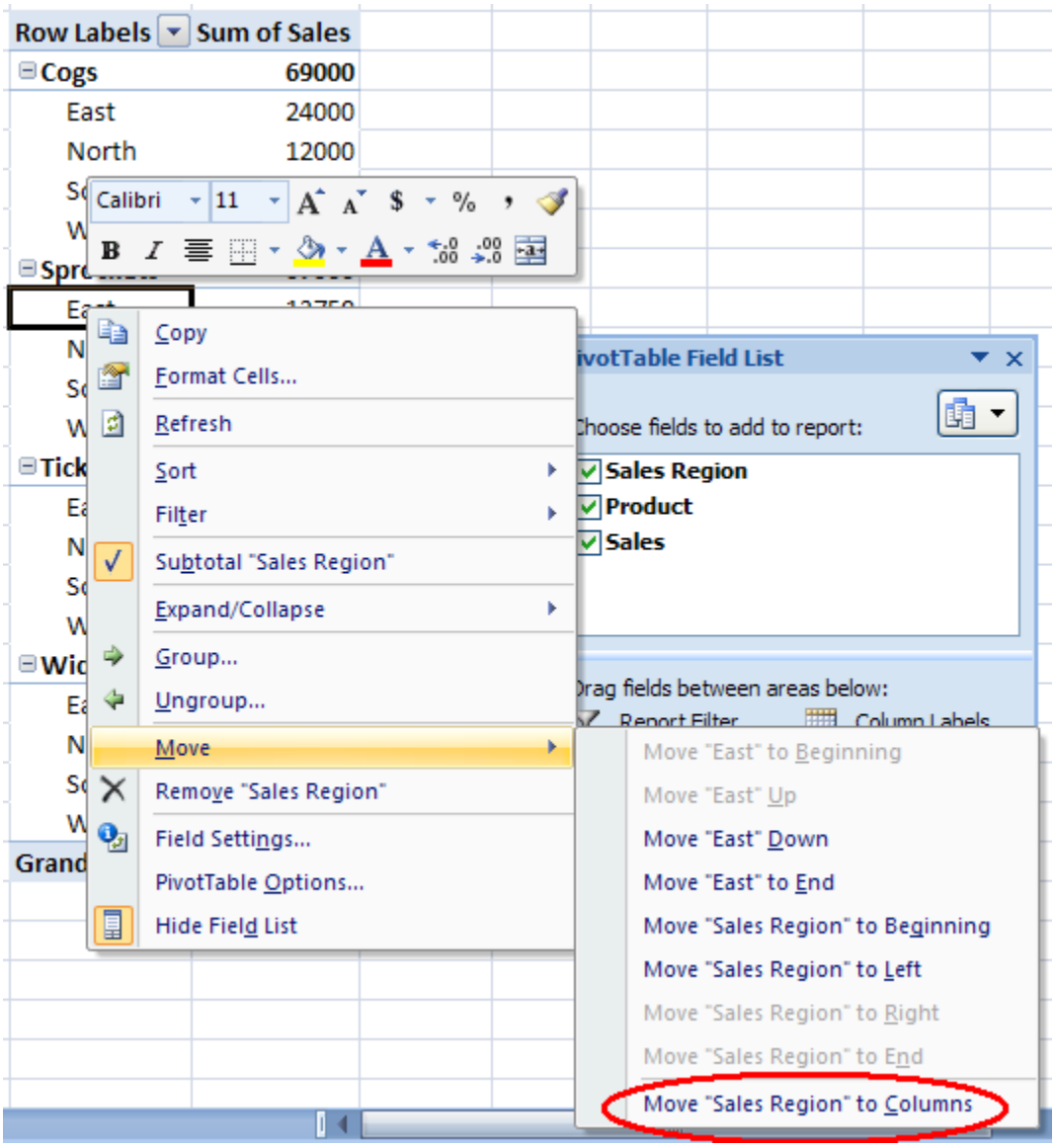


Note: You can also use the CTRL+Z keyboard command to undo an action.

After we click the Undo button, we’re back to the original pivot table format:

Row Labels	Sum of Sales
Cogs	**69000**
East	24000
North	12000
South	19000
West	14000
Sprockets	**37500**
East	13750
North	17250
South	4000
West	2500
Tickers	**120125**
East	26250
North	43000
South	29500
West	21375
Widgets	**89000**
East	12500
North	8000
South	31000
West	37500
Grand Total	**315625**

To make “Sales Regions” into columns, just click a sales region, “East” for example, click Move, and then click Move “Sales Region” to Columns:



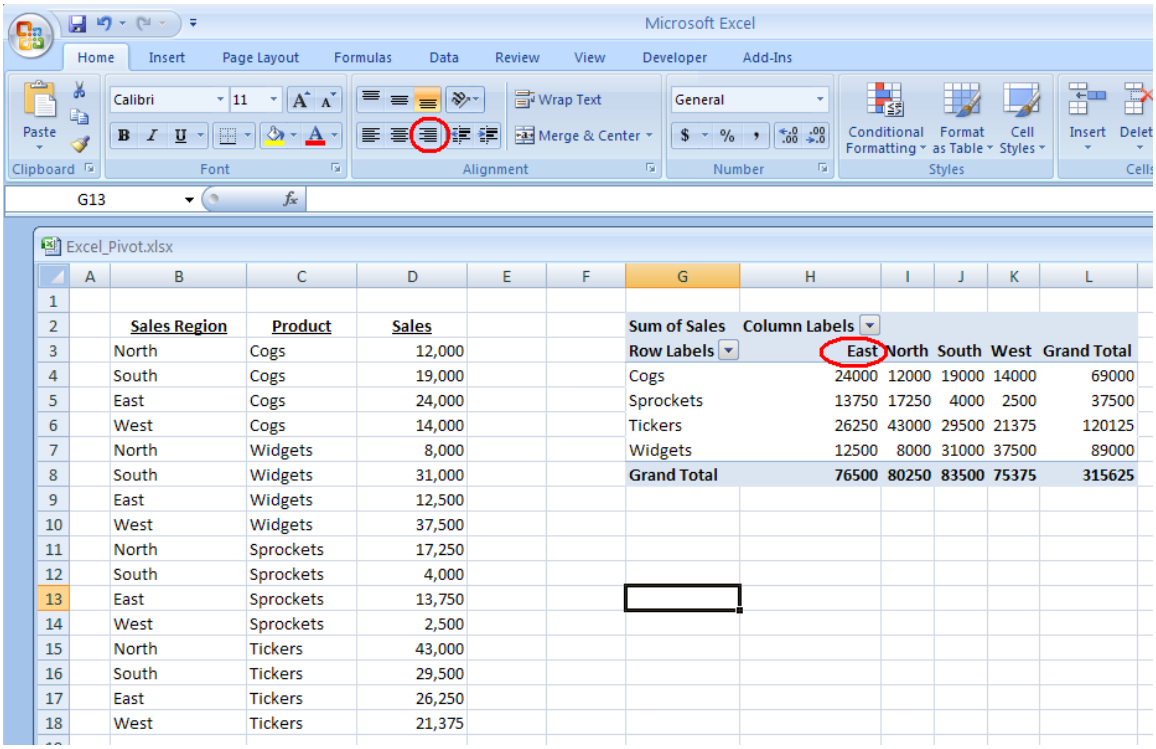
After you click Move “Sales Region” to Columns, the pivot table should look something like this:

Sum of Sales	Column Labels				
Row Labels	East	North	South	West	Grand Total
Cogs	24000	12000	19000	14000	69000
Sprockets	13750	17250	4000	2500	37500
Tickers	26250	43000	29500	21375	120125
Widgets	12500	8000	31000	37500	89000
Grand Total	**76500**	**80250**	**83500**	**75375**	**315625**

You may experience an alignment issue in the column headings. In this example, the alignment of the“East” sales region column label may be confusing:

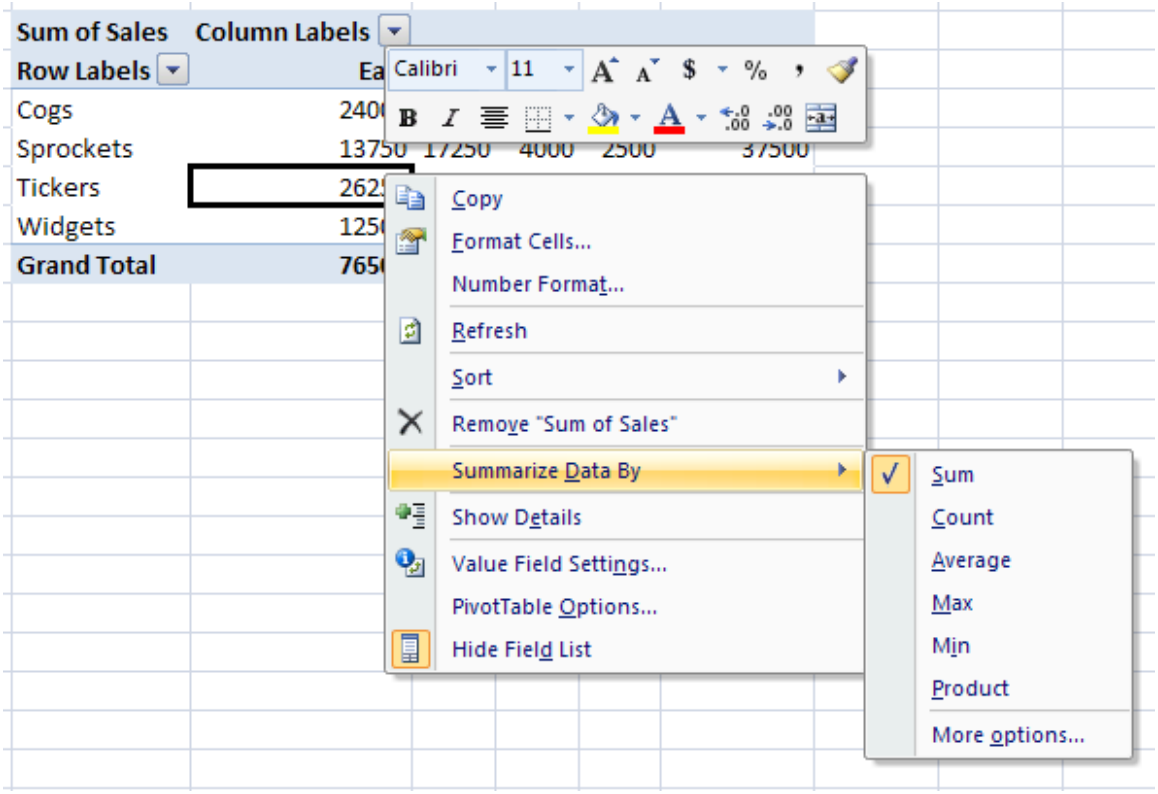
Sum of Sales	Column Labels				
Row Labels	East	North	South	West	Grand Total
Cogs	24000	12000	19000	14000	69000
Sprockets	13750	17250	4000	2500	37500
Tickers	26250	43000	29500	21375	120125
Widgets	12500	8000	31000	37500	89000
Grand Total	**76500**	**80250**	**83500**	**75375**	**315625**

To fix this, click the cell that is not aligned correctly, and then click the alignment that you want in the Alignment area on the Home tab:



	A	B	C	D	E	F	G	H	I	J	K	L
1												
2		Sales Region	Product	Sales			Sum of Sales	Column Labels				
3		North	Cogs	12,000			Row Labels	East	North	South	West	Grand Total
4		South	Cogs	19,000			Cogs	24000	12000	19000	14000	69000
5		East	Cogs	24,000			Sprockets	13750	17250	4000	2500	37500
6		West	Cogs	14,000			Tickers	26250	43000	29500	21375	120125
7		North	Widgets	8,000			Widgets	12500	8000	31000	37500	89000
8		South	Widgets	31,000			Grand Total	76500	80250	83500	75375	315625
9		East	Widgets	12,500								
10		West	Widgets	37,500								
11		North	Sprockets	17,250								
12		South	Sprockets	4,000								
13		East	Sprockets	13,750								
14		West	Sprockets	2,500								
15		North	Tickers	43,000								
16		South	Tickers	29,500								
17		East	Tickers	26,250								
18		West	Tickers	21,375								

Finally, the client asks if you can provide an average of sales both by product and by sales region for comparison purposes. To do this, right-click the pivot table, click Summarize Data By, and then click Average:



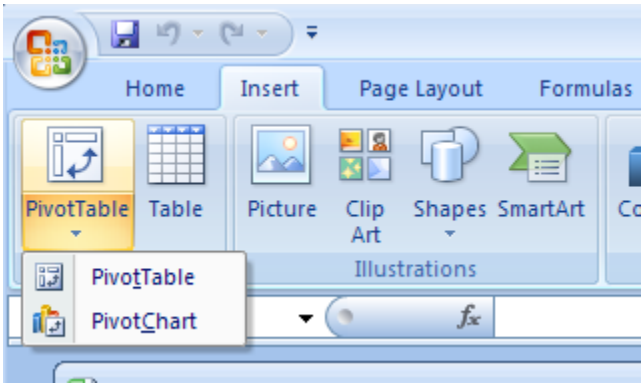
After you click Average, the pivot table should look something like this:

Average of Sales	Column Labels				
Row Labels	East	North	South	West	Grand Total
Cogs	24000	12000	19000	14000	17250
Sprockets	13750	17250	4000	2500	9375
Tickers	26250	43000	29500	21375	30031.25
Widgets	12500	8000	31000	37500	22250
Grand Total	**19125**	**20062.5**	**20875**	**18843.75**	**19726.5625**

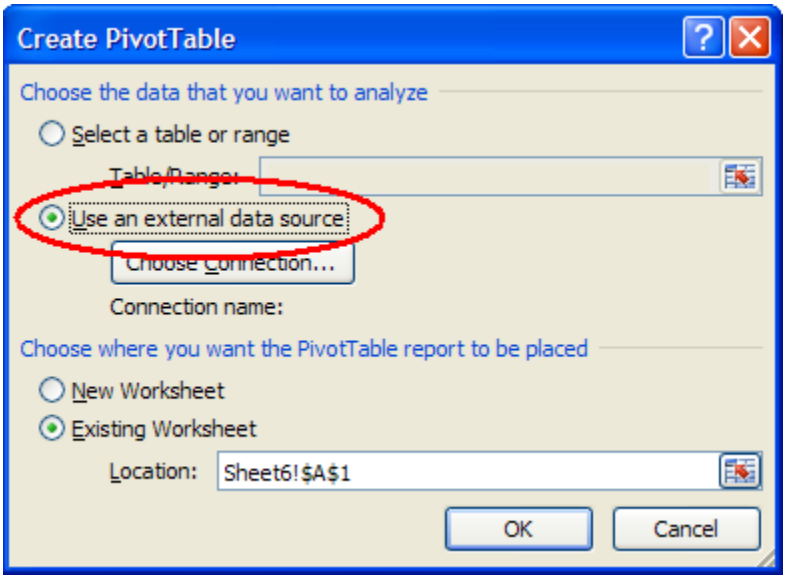
When we created a pivot table earlier, you may have noticed that you can use data from an external source when you create a pivot table. The other item to know is how to update or refresh your pivot table when a data source is changed.

Bringing in an External Data Source

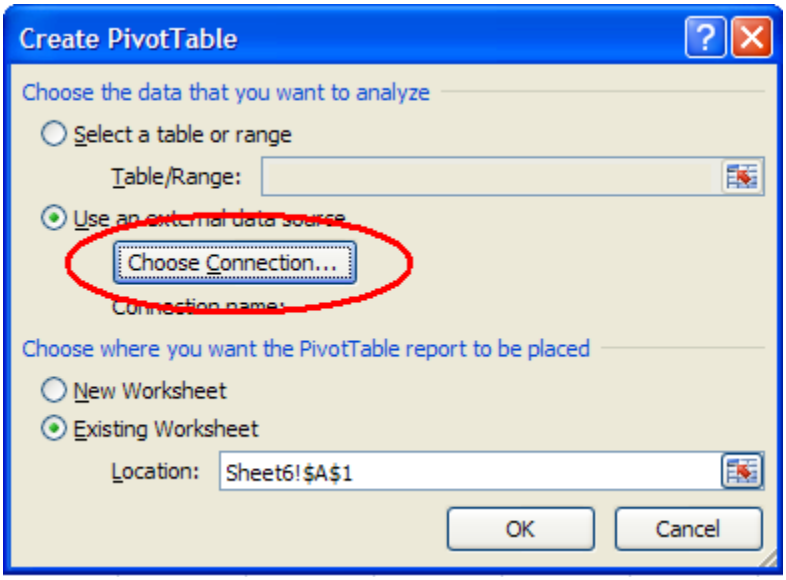
To use an external data source to create a pivot table, click the Insert tab, click PivotTable, and then click PivotTable:



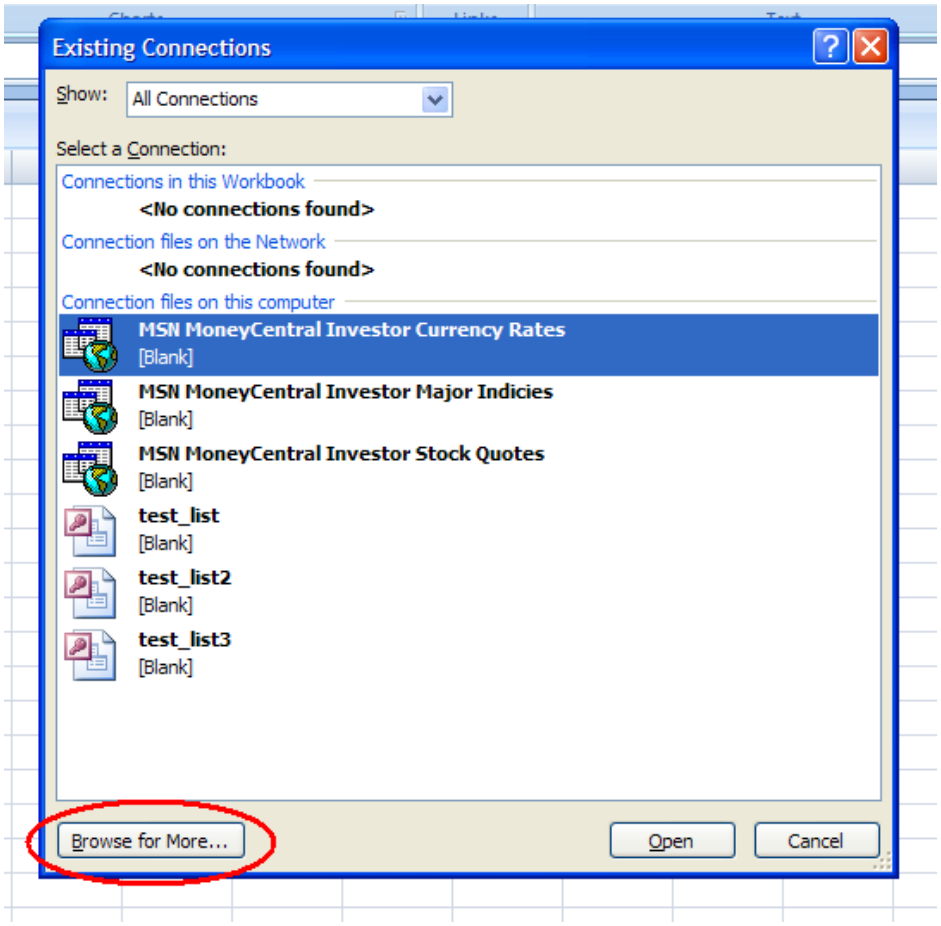
In the Create PivotTable dialog box, click Use an external data source:



Click Choose Connection:



In the Existing Connections dialog box, click the connection that you want, or click Browse for More:



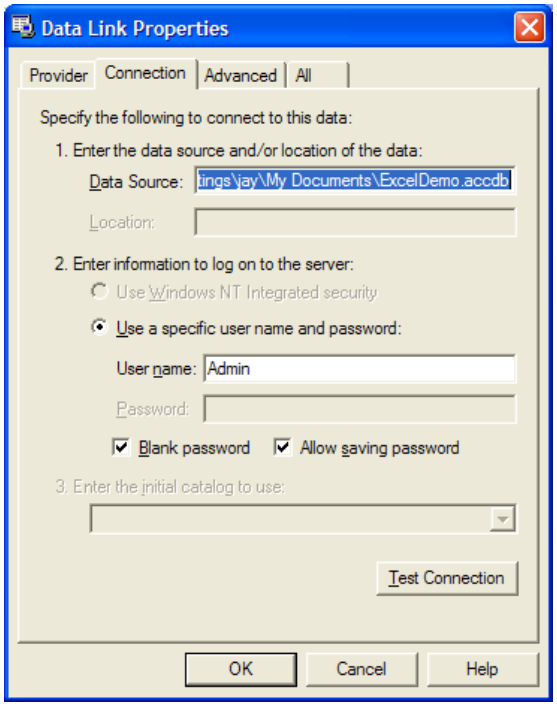
In this case, we'll use an Access database file named ExcelDemo.accdb as the external data source. The data in the Access file looks like this (you're probably pretty darn familiar with this data by now):

Sheet1

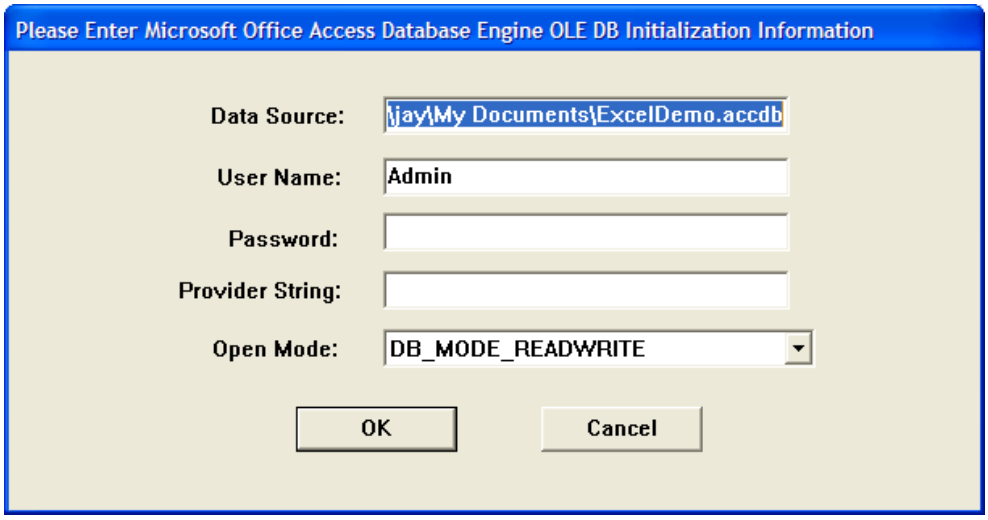
ID	Sales Regior	Product	Sales
1	North	Cogs	12,000
2	South	Cogs	19,000
3	East	Cogs	24,000
4	West	Cogs	14,000
5	North	Widgets	8,000
6	South	Widgets	31,000
7	East	Widgets	12,500
8	West	Widgets	37,500
9	North	Sprockets	17,250
10	South	Sprockets	4,000
11	East	Sprockets	13,750
12	West	Sprockets	2,500
13	North	Tickers	43,000
14	South	Tickers	29,500
15	East	Tickers	26,250
16	West	Tickers	21,375

In this case, the ExcelDemo.accdb file is located in the My Documents folder. In the Select Data Source dialog box, you would browse to the My Documents folder, click the ExcelDemo.accdb file, and then click Open.

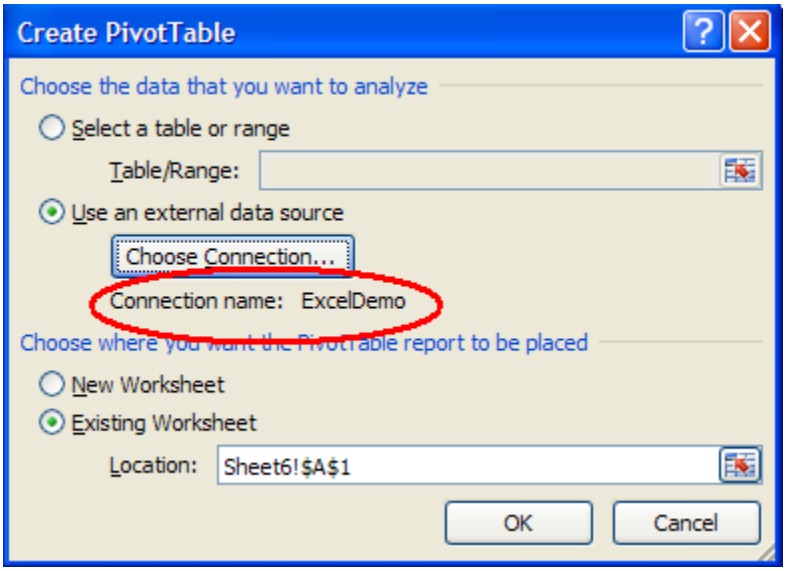
After you click Open, the Data Link Properties dialog box appears. Verify that the information on the Connection tab is correct, and then click OK:



If necessary, verify that the initialization information is correct, and then click OK:

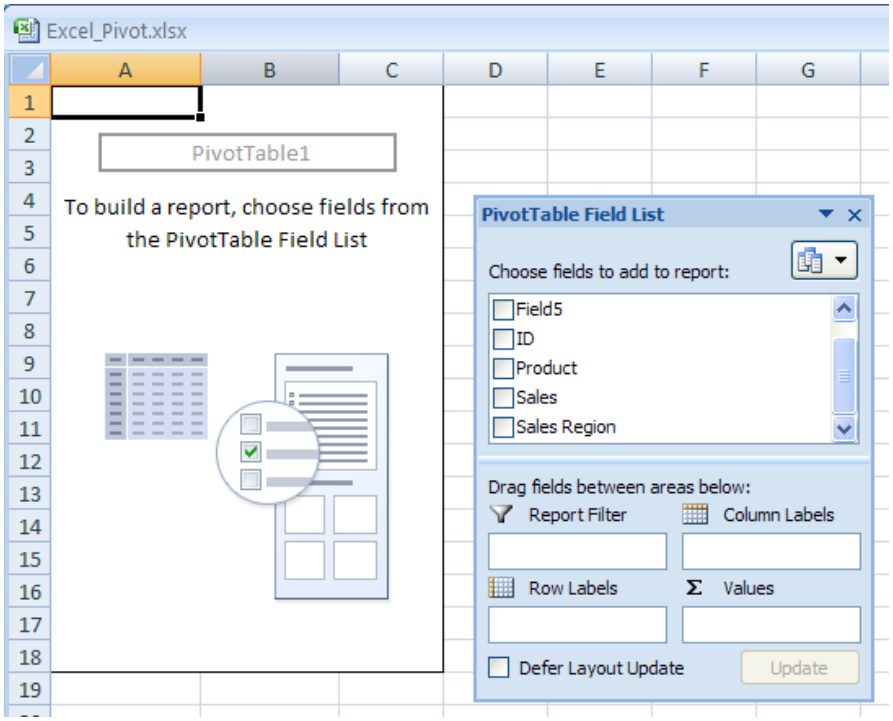


Note: that the connection name now appears in the Create PivotTable dialog box:

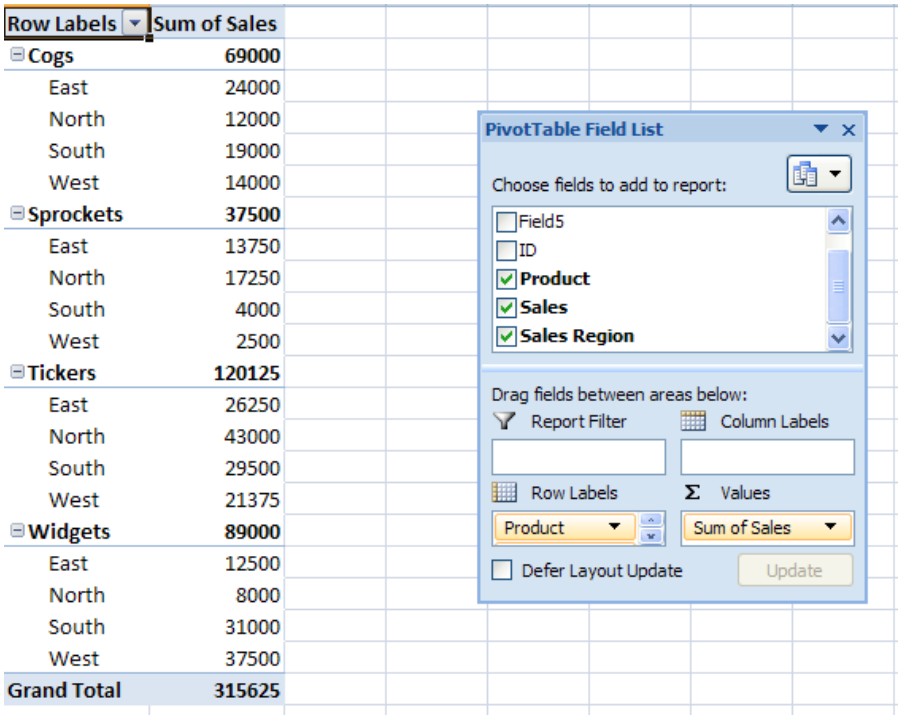


In the Create PivotTable dialog box, verify that the location where you want to insert the pivot table is correct, and then click OK.

After you click OK, the PivotTable and the PivotTable Field List dialog box appear:



From here on, it's just like creating a pivot table: Click to select the Product, Sales, and Sales Region dialog boxes, and then click OK. After you click OK, the pivot table looks oddly familiar:



That's because it is the same as a pivot table that uses Excel spreadsheet data.

More Pivot Manipulation

The client appreciates the quick analysis you provide. She appreciates it so much that she returns a couple of days later with a more detailed workbook. The data in the workbook is as follows:

Sales Region	Product	Size	Sales
North	Cogs	Small	7,500
North	Cogs	Large	4,500
South	Cogs	Small	6,500
South	Cogs	Large	12,500
East	Cogs	Small	10,000
East	Cogs	Large	14,000
West	Cogs	Small	8,000
West	Cogs	Large	6,000
North	Widgets	Small	3,500
North	Widgets	Large	4,500
South	Widgets	Small	22,500
South	Widgets	Large	8,500
East	Widgets	Small	8,000
East	Widgets	Large	4,500
West	Widgets	Small	19,000
West	Widgets	Large	18,500
North	Sprockets	Small	7,250
North	Sprockets	Large	10,000
South	Sprockets	Small	3,000
South	Sprockets	Large	1,000
East	Sprockets	Small	4,500
East	Sprockets	Large	9,250
West	Sprockets	Small	500
West	Sprockets	Large	2,000
North	Tickers	Small	25,250
North	Tickers	Large	17,750
South	Tickers	Small	17,000
South	Tickers	Large	12,500
East	Tickers	Small	11,500
East	Tickers	Large	14,750
West	Tickers	Small	16,875
West	Tickers	Large	4,500

She asks you do a similar analysis using the more detailed set of data. You agree, and create a pivot table from the data:

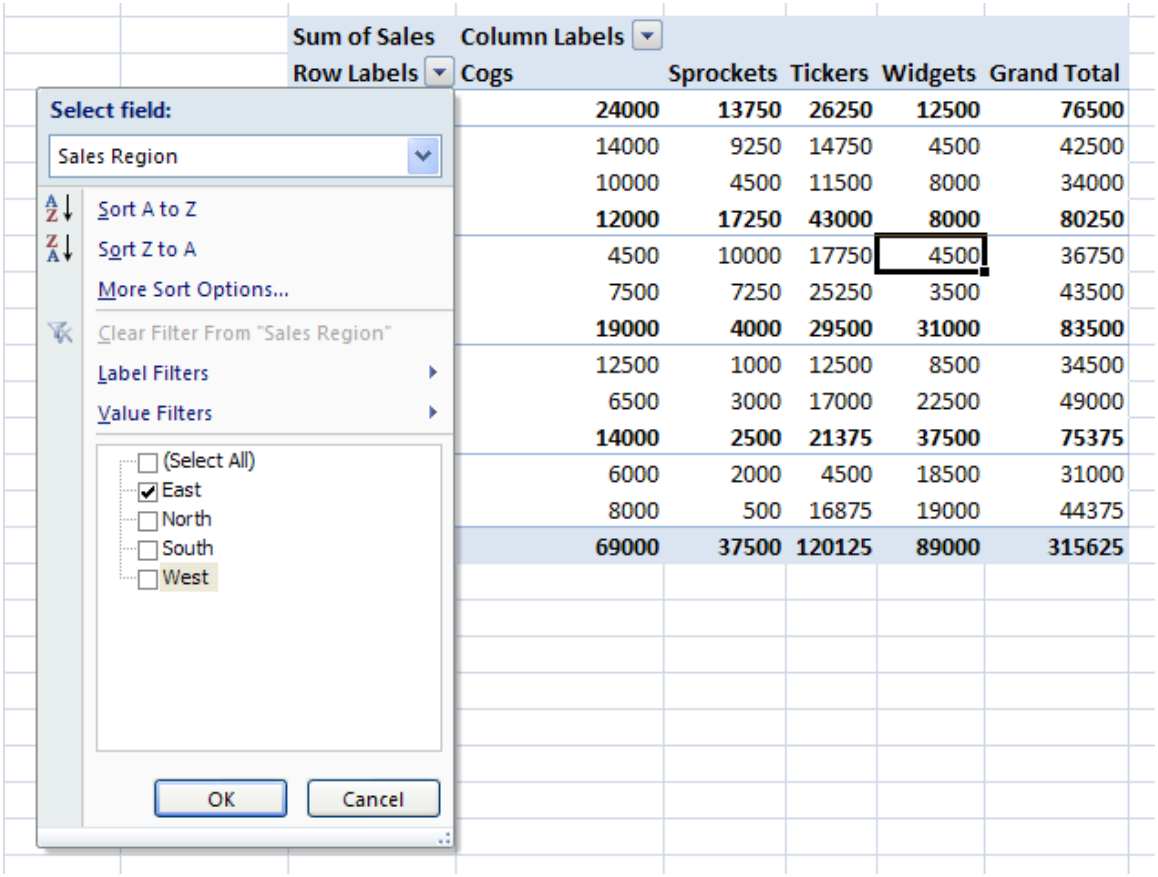
Row Labels	Sum of Sales
East	76500
Cogs	24000
Large	14000
Small	10000
Sprockets	13750
Large	9250
Small	4500
Tickers	26250
Large	14750
Small	11500
Widgets	12500
Large	4500
Small	8000
North	80250
Cogs	12000
Large	4500
Small	7500
Sprockets	17250
Large	10000
Small	7250
Tickers	43000
Large	17750
Small	25250
Widgets	8000
Large	4500
Small	3500

After you move “Products” to columns, the pivot table looks like this:

Sum of Sales	Column Labels				
Row Labels	Cogs	Sprockets	Tickers	Widgets	Grand Total
East	24000	13750	26250	12500	76500
Large	14000	9250	14750	4500	42500
Small	10000	4500	11500	8000	34000
North	12000	17250	43000	8000	80250
Large	4500	10000	17750	4500	36750
Small	7500	7250	25250	3500	43500
South	19000	4000	29500	31000	83500
Large	12500	1000	12500	8500	34500
Small	6500	3000	17000	22500	49000
West	14000	2500	21375	37500	75375
Large	6000	2000	4500	18500	31000
Small	8000	500	16875	19000	44375
Grand Total	69000	37500	120125	89000	315625

In looking over the data, your client notices that the grand total of sales numbers for the “Small” version outsell the “Large” version in the North, South, and West sales regions. However, the “Large” versions are the best seller in the East sales region. She asks if she can view the sales data for the East sales region only.

To do this, you click the dropdown for Row Labels, click to clear the North, South, and West check boxes, and then click OK:

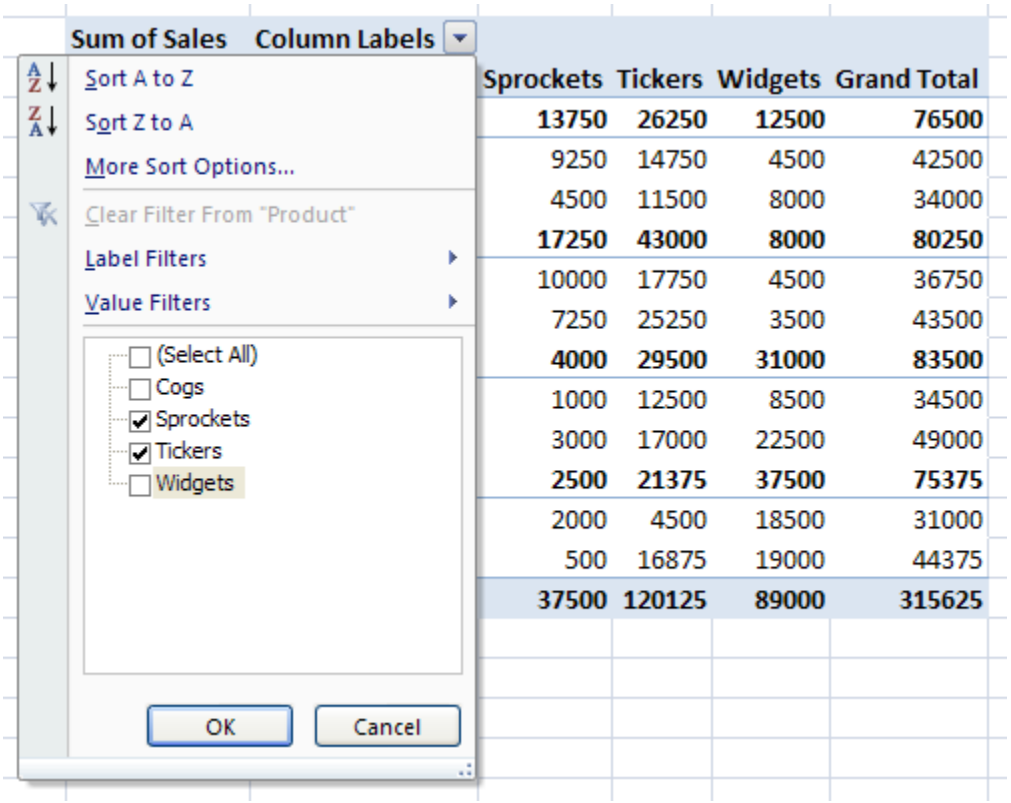


The pivot table looks something like this:

Sum of Sales	Column Labels				
Row Labels	Cogs	Sprockets	Tickers	Widgets	Grand Total
East	24000	13750	26250	12500	76500
Large	14000	9250	14750	4500	42500
Small	10000	4500	11500	8000	34000
Grand Total	24000	13750	26250	12500	76500

After you reconfigure the pivot table to display sales data for all regions, your client notices that “Sprockets” line seems to have the lowest sales. She also notices that the “Tickers” line is the best selling. She would like to see the sales figures for those two lines side-by-side.

To do this, you click the dropdown for Column Labels, click to clear the “Cogs” and “Widgets” check boxes, and then click OK:



	Sprockets	Tickers	Widgets	Grand Total
	13750	**26250**	**12500**	**76500**
	9250	14750	4500	42500
	4500	11500	8000	34000
	17250	**43000**	**8000**	**80250**
	10000	17750	4500	36750
	7250	25250	3500	43500
	4000	**29500**	**31000**	**83500**
	1000	12500	8500	34500
	3000	17000	22500	49000
	2500	**21375**	**37500**	**75375**
	2000	4500	18500	31000
	500	16875	19000	44375
	37500	**120125**	**89000**	**315625**

After you click OK, the pivot table looks like this:

Sum of Sales	Column Labels		
Row Labels	Sprockets	Tickers	Grand Total
East	**13750**	**26250**	**40000**
Large	9250	14750	24000
Small	4500	11500	16000
North	**17250**	**43000**	**60250**
Large	10000	17750	27750
Small	7250	25250	32500
South	**4000**	**29500**	**33500**
Large	1000	12500	13500
Small	3000	17000	20000
West	**2500**	**21375**	**23875**
Large	2000	4500	6500
Small	500	16875	17375
Grand Total	**37500**	**120125**	**157625**

Module 2: Pivot Charts

Learning Objectives:

After completing this module, you will be able to:

1. Create a pivot chart.
2. Manipulate data in a pivot chart.
3. Customize the pivot chart design.
4. Change the pivot chart type.

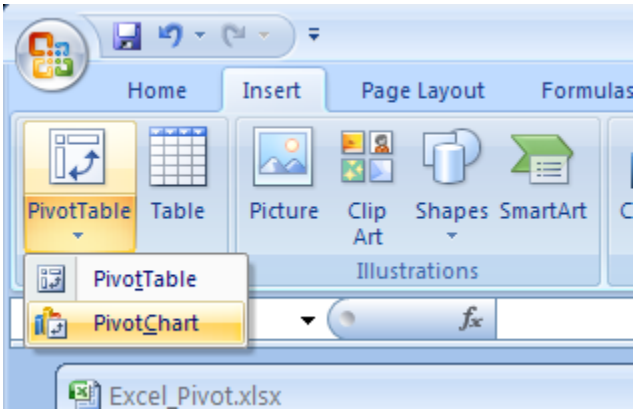
Creating Pivot Charts

That's the basics of pivot tables. The previous pages beg the question: Are pivot charts just as easy? Yeah, pretty much. Let's check it out.

We'll use the same data set for this example:

Sales Region	Product	Sales
North	Cogs	12,000
South	Cogs	19,000
East	Cogs	24,000
West	Cogs	14,000
North	Widgets	8,000
South	Widgets	31,000
East	Widgets	12,500
West	Widgets	37,500
North	Sprockets	17,250
South	Sprockets	4,000
East	Sprockets	13,750
West	Sprockets	2,500
North	Tickers	43,000
South	Tickers	29,500
East	Tickers	26,250
West	Tickers	21,375

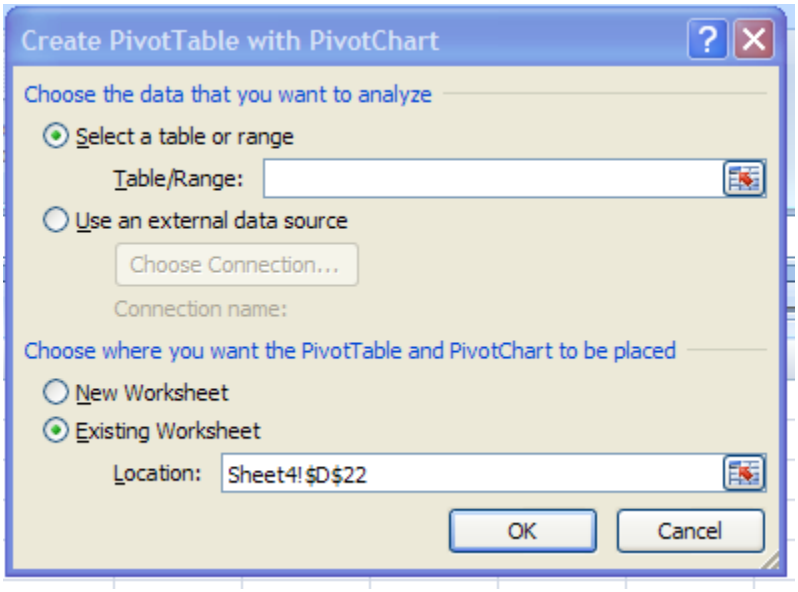
To create a pivot chart, click the Insert tab, click PivotTable, and then click PivotChart:



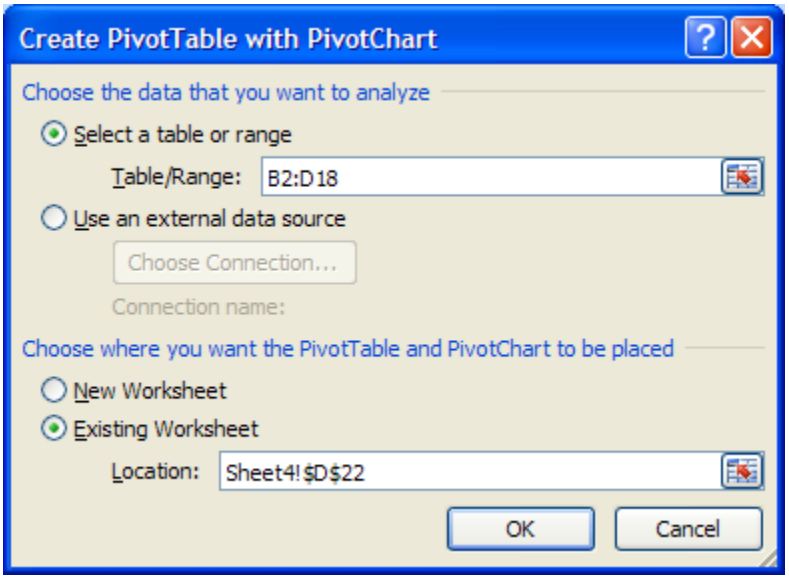
When you click PivotChart, the Create PivotTable with PivotChart dialog box appears. As mentioned earlier, a pivot table is automatically created when you create a pivot chart. You almost expect a rousing "But wait… there's more!" at this point.

The Create PivotTable with PivotChart dialog box resembles the Create PivotTable dialog box.

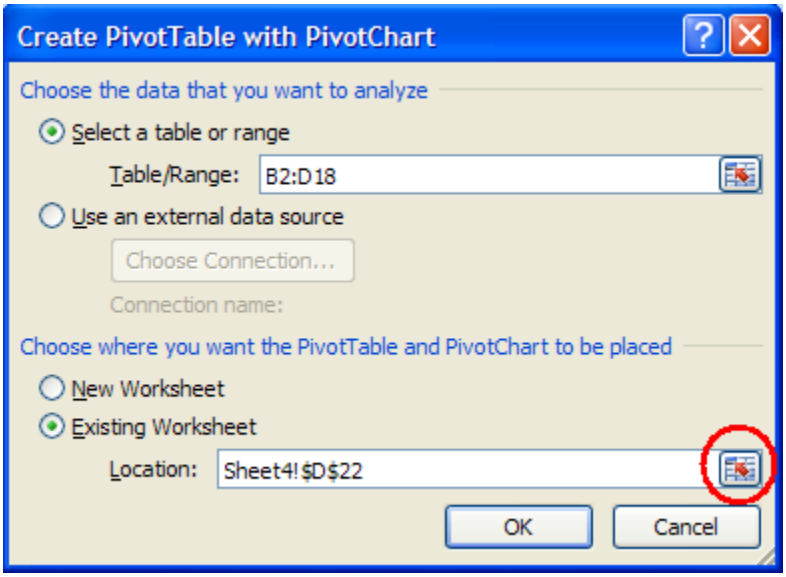
Ok, it's exactly like the Create PivotTable dialog box:



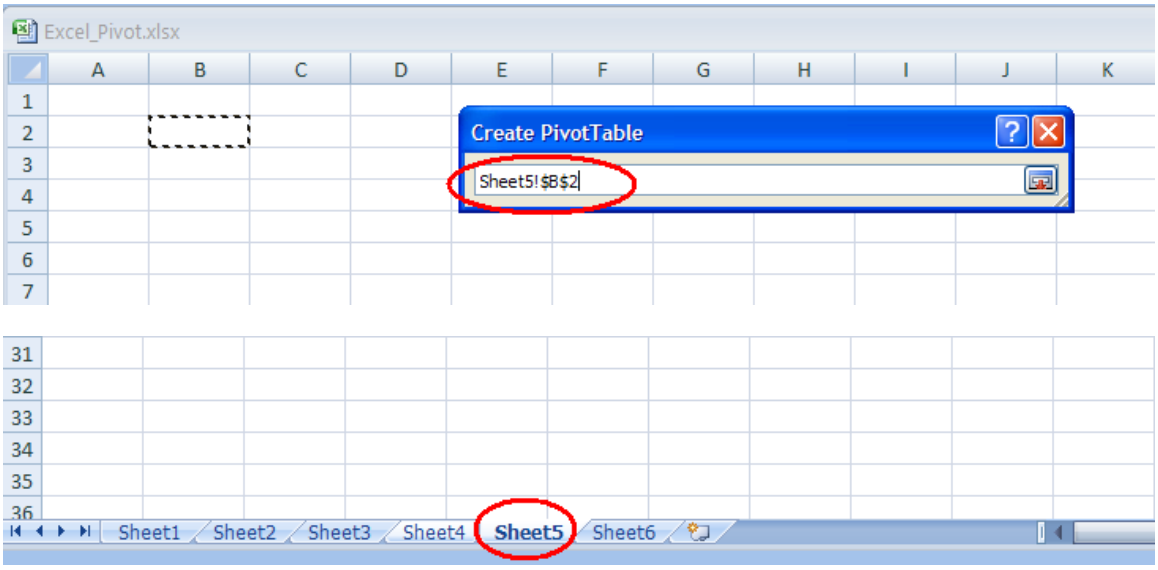
As when creating a pivot table, you can click and drag to select the cells that you want to use, or you can type the range in the Table/Range box. Just for a change, we'll just type the range this time:



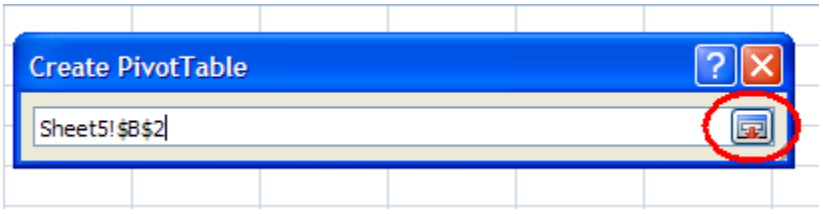
Let's go ahead and insert the pivot table and pivot chart on a separate worksheet. To do this, click the Location icon:



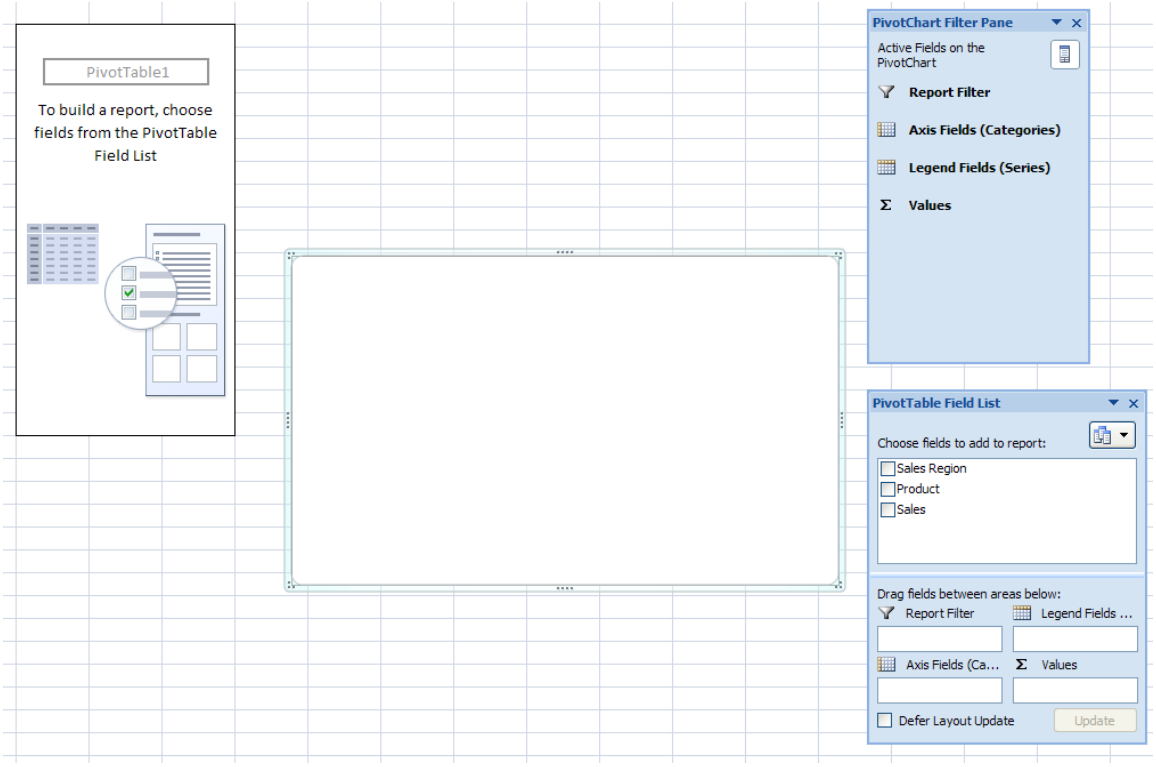
To create the pivot table and pivot chart, click the worksheet and then the cell that you want. In this example, we'll insert the pivot table and pivot chart in cell B2 on Sheet5:



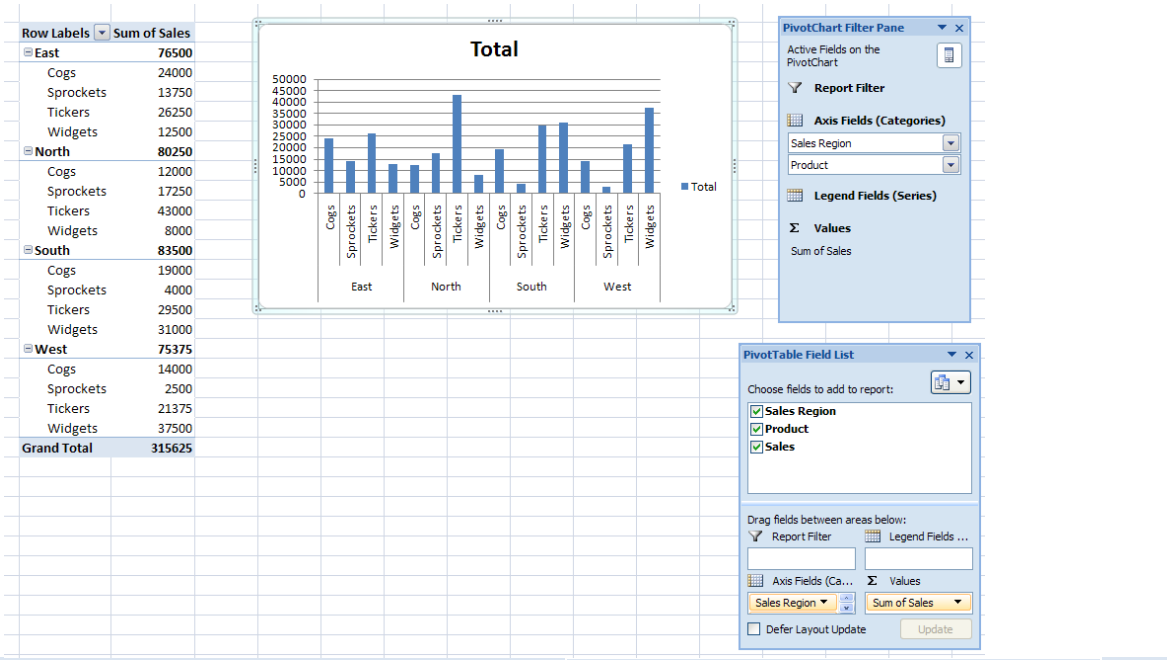
After you select the worksheet and cell, click the Location icon again:



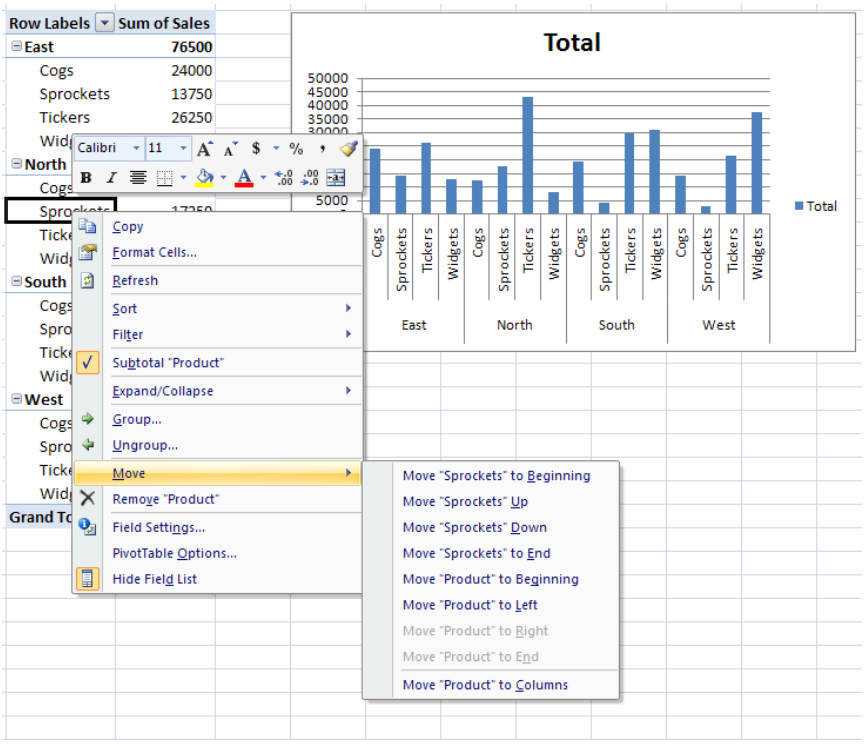
Verify that the Table/Range and Location values are correct, and then click OK. After you click OK, both the pivot table (as expected based on our experience creating pivot tables) and pivot chart are blank:



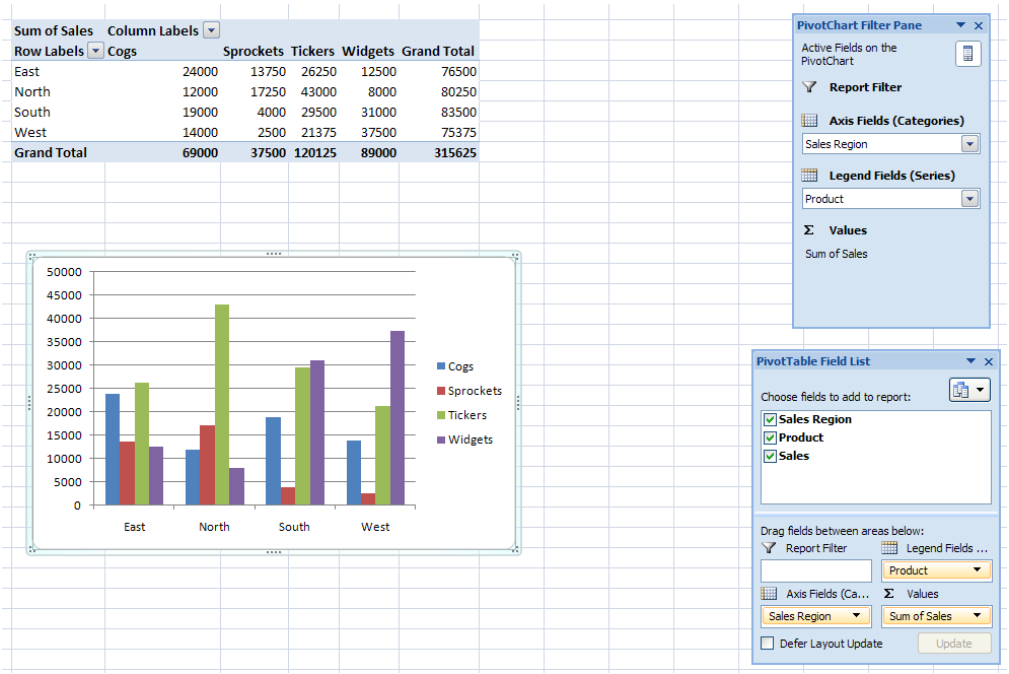
To populate the pivot table *and* pivot chart, click to select the fields that you want in the PivotTable Field List dialog box:



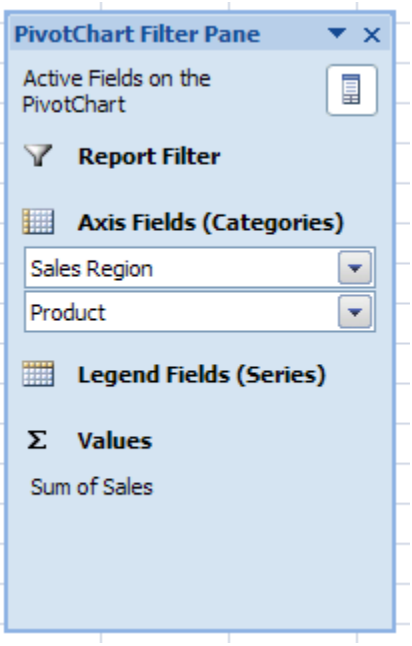
Let's see what happens if we pivot the data. Right-click "Sprockets" in the pivot table, click Move, and then click Move "Product" to Columns:



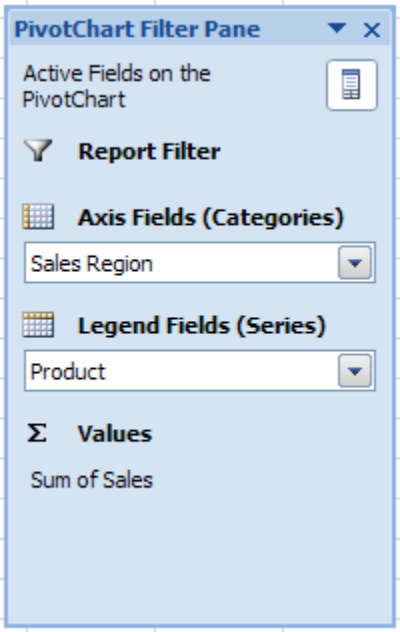
After you click Move "Product" to Columns, the worksheet should look something like this (although you may have to move some stuff around):



When we pivot the data, the chart changes as well. One good way to see the difference is to examine the PivotChart Filter Pane. Before we "pivoted" the data, the PivotChart Filter Pane looked like this:

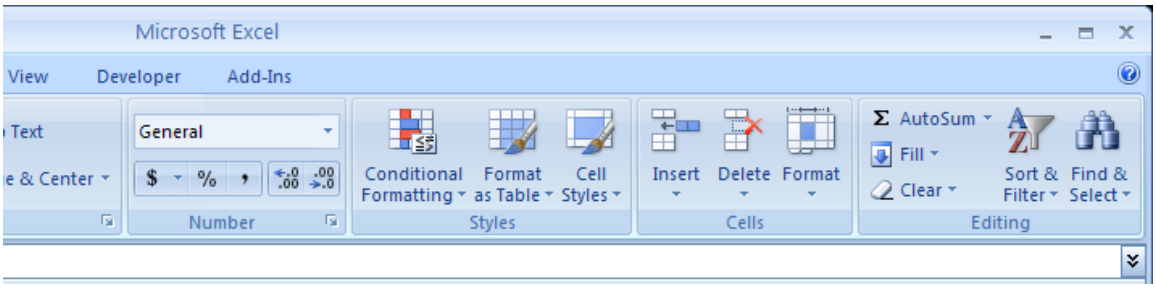


After we "pivot" the data, the PivotChart Filter Pane looks like this:

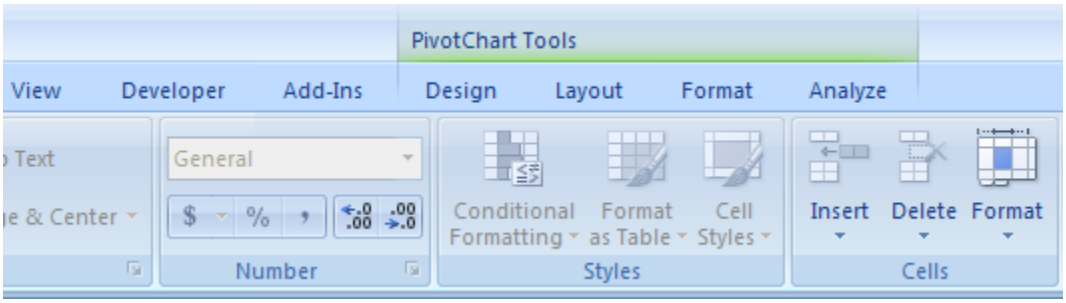


Customizing the Chart

So, now that we have a chart that represents the data in the pivot table, let's customize the chart a little. When you click on a cell outside of the pivot chart, notice that the right side of the Office ribbon looks like this:



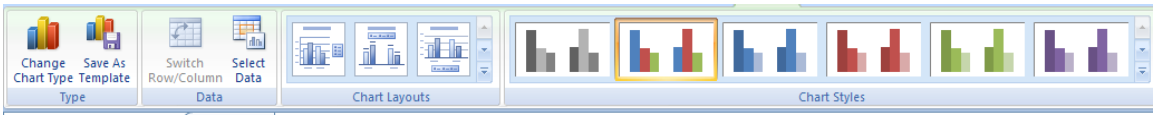
Now click on the pivot table. When you click on a cell in the pivot table, the right side of the Office Ribbon looks like this:



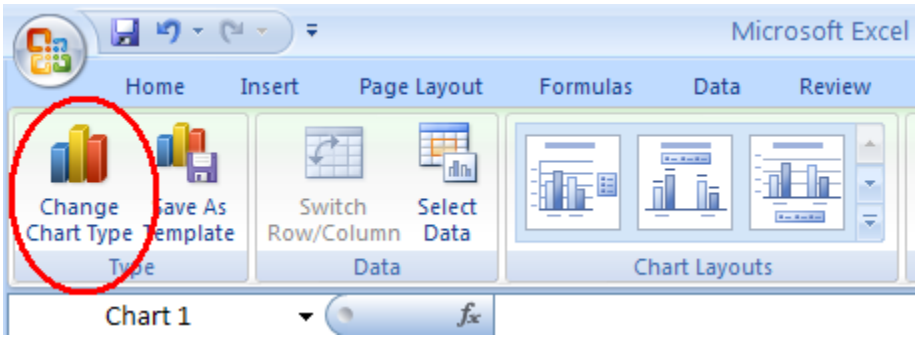
The PivotChart Tools menu item is a contextual tab. Contextual tabs are a new feature in Office 2007. These tabs appear when you click on certain objects. Another example of a contextual tab is the Picture Tools contextual tab that appears when you click a graphic file in Word 2007.

But, back in Excel 2007, the PivotChart Tools tab appears when you click in a pivot chart. When the PivotChart Tools tab appears, you can click on the Design, Layout, Format, or Analyze to customize the pivot chart.

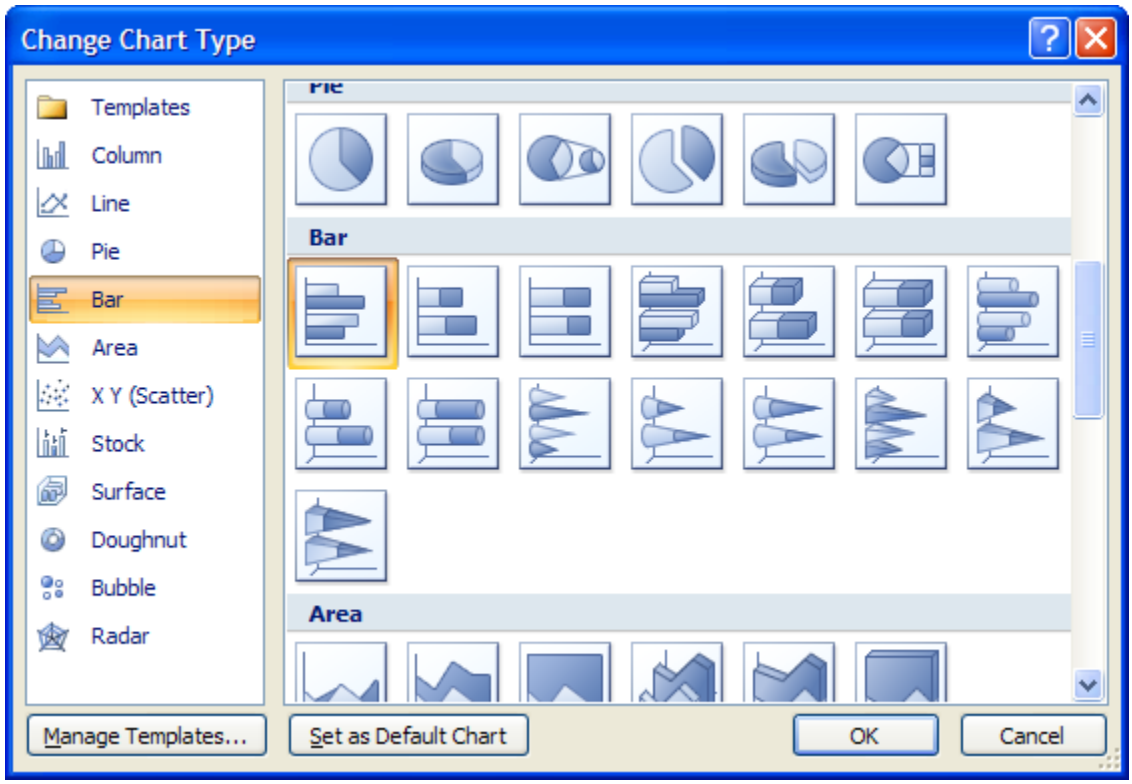
For example, the following items appear on the PivotChart Tools contextual tab when you click Design:



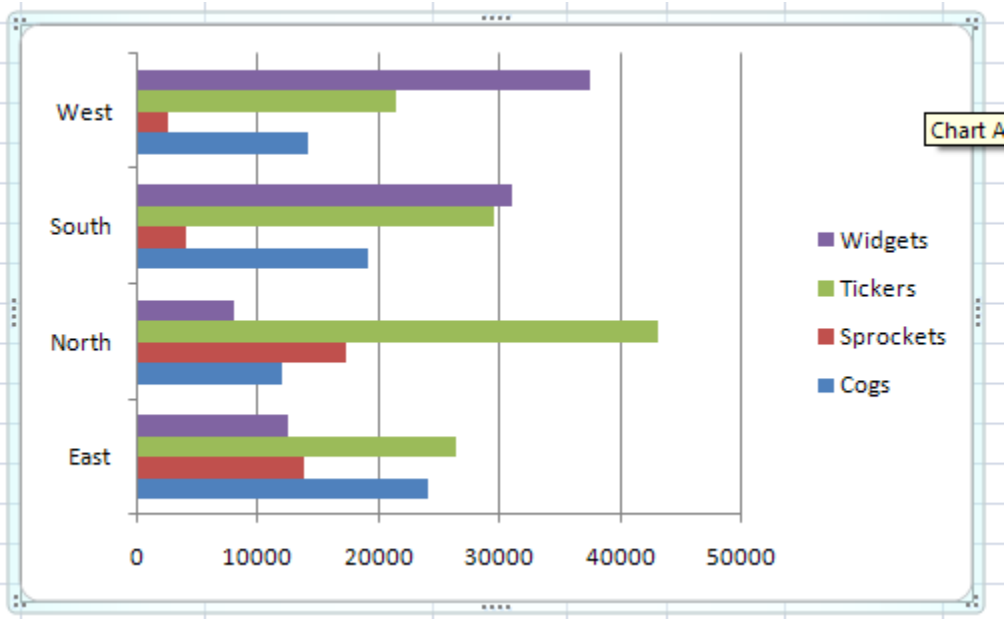
Let's change the chart style for the pivot table. To do this, click Change Chart Type:



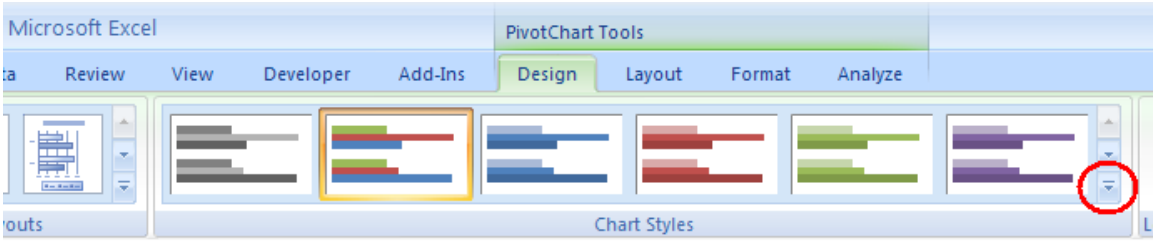
When you click Change Chart Type, the Change Chart Type dialog box appears. You can select from column charts, pie charts, stock charts, doughnut charts, and bubble charts (yeah, I didn't know either. Turns out that bubble charts are a version of scatter charts.). In this case, let's be a little cautious, and just go with a bar chart:



After you click OK, the pivot chart now looks like this:

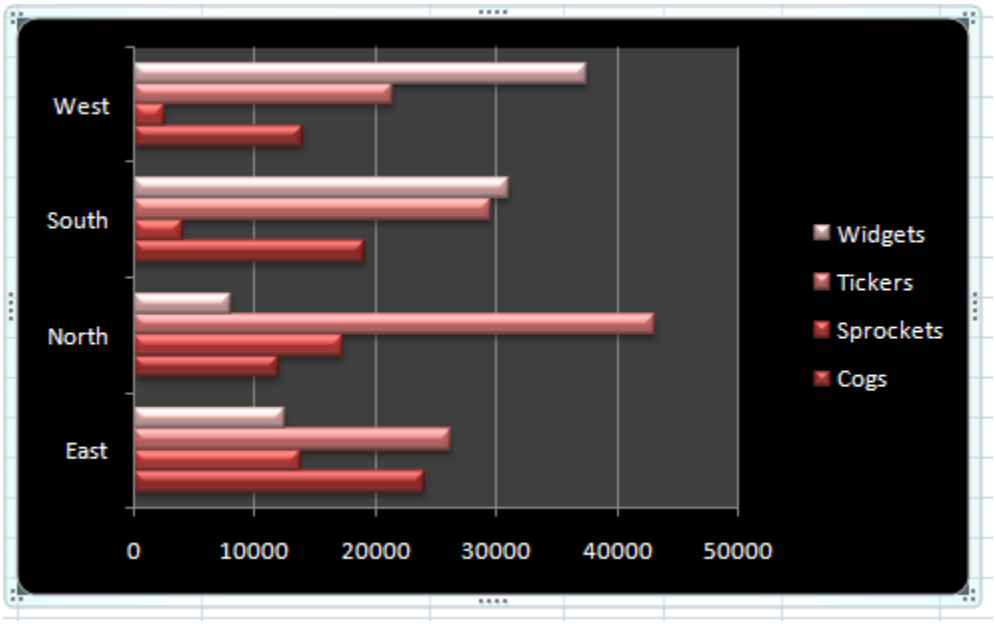


Let's do something about those colors as well. They painted Mercedes-Benz sedans those colors back in the '70s. You can select from the default chart styles in the Office Ribbon, or you can click the More button, and select from a lot more styles:

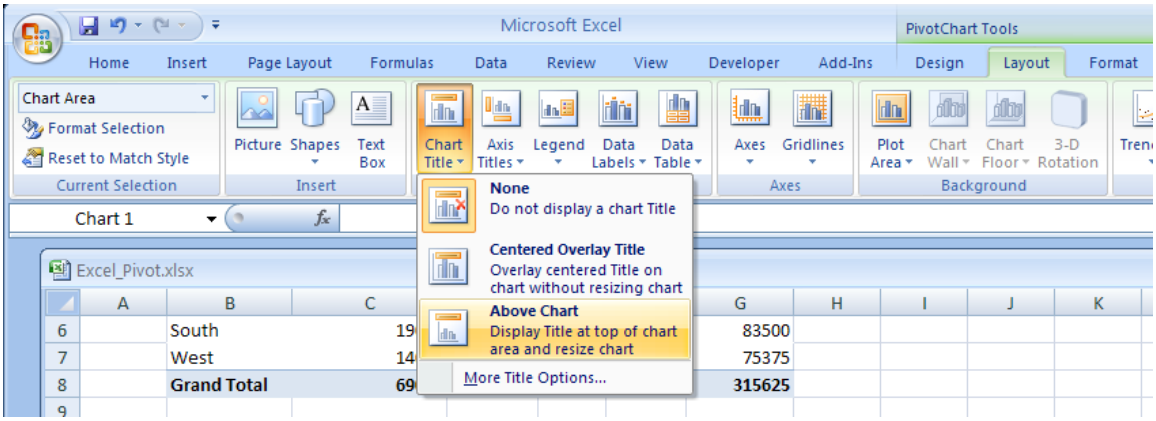


After you click the More button, you can choose from a palette of styles:

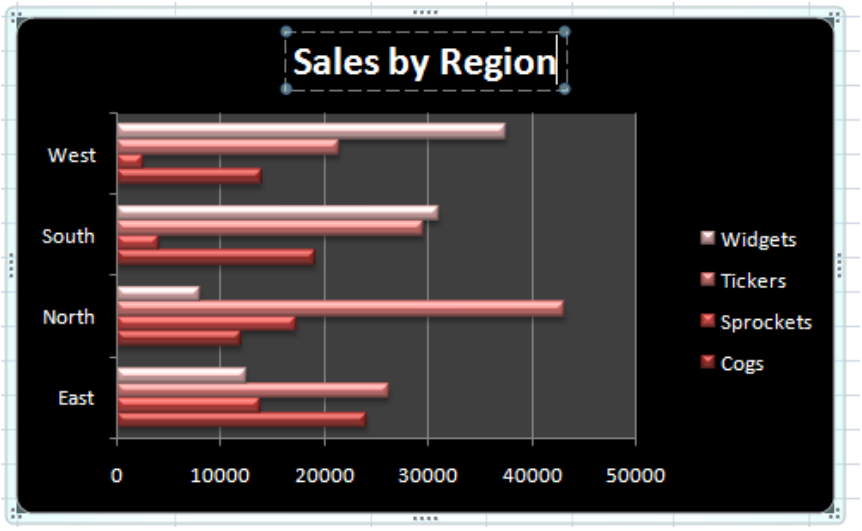
After choosing the style that you want, the pivot table looks something like this:



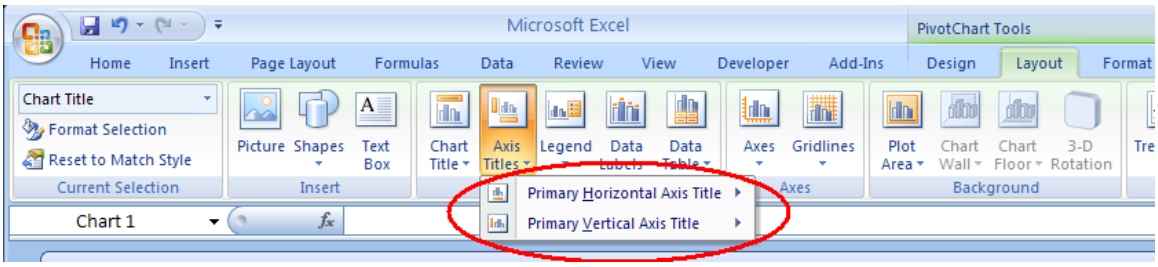
More better, at least from here. Your mileage may vary. In any case, let's add a chart title. To add a chart title, click Layout, click Chart Title, and then click the chart title type that you want:



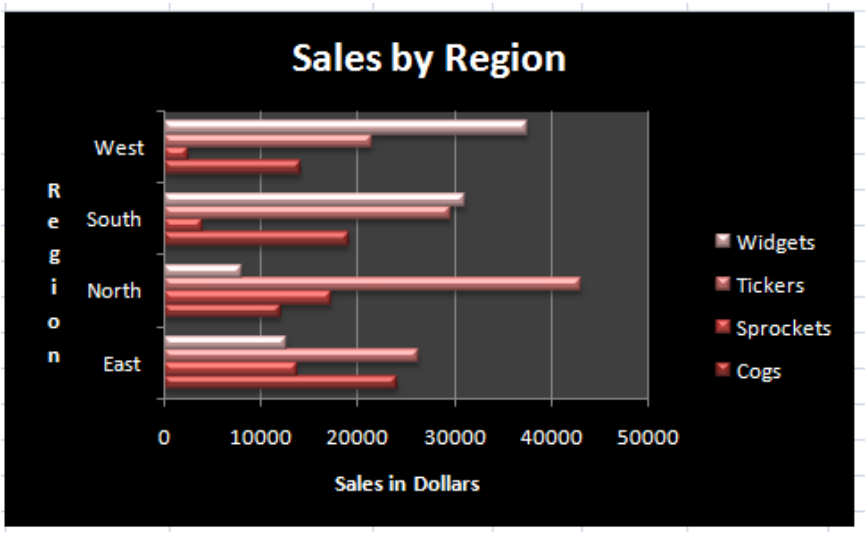
Choose Above Chart, and type a chart title:



You can also click Axis Titles, to add axis titles to the horizontal and vertical axes:



After you add titles to the horizontal and vertical axes, the pivot chart might look something like this:



Maybe a little busy, but it'll do.

Refreshing a Pivot Table / Chart

So, what happens if the data in a worksheet changes and you need to update a pivot table? Do you have to delete the existing pivot table and/or pivot chart and create a new one?

For example, your client calls and apologetically says that some of the data in the original worksheet was not correct. You might remember that she was surprised by the lackluster sales of the Sprockets line. She brings over the updated worksheet for you to analyze.

The Sprockets sales figures in the original worksheet looked like this:

North	Sprockets	17,250
South	Sprockets	4,000
East	Sprockets	13,750
West	Sprockets	2,500

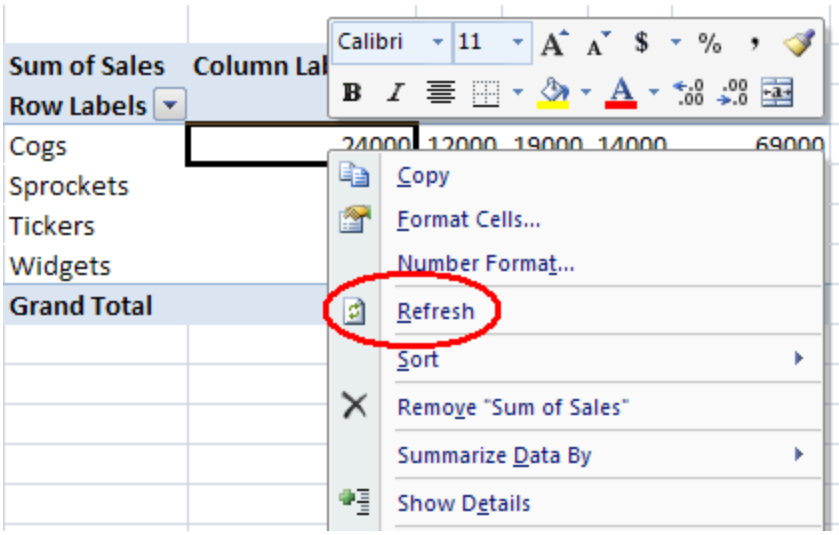
The pivot table for this data currently looks like this:

Sum of Sales	Column Labels				
Row Labels	East	North	South	West	Grand Total
Cogs	24000	12000	19000	14000	69000
Sprockets	13750	17250	4000	2500	37500
Tickers	26250	43000	29500	21375	120125
Widgets	12500	8000	31000	37500	89000
Grand Total	**76500**	**80250**	**83500**	**75375**	**315625**

However, the updated (and correct) sales figures for the Sprocket line look like this:

North	Sprockets	22,250
South	Sprockets	14,000
East	Sprockets	18,250
West	Sprockets	17,500

So, after you update the worksheet to include the correct sales figures, how do you update the pivot table data? Pretty easily as it turns out. To update the pivot table, just right-click the pivot table and then click Refresh:



After you click Refresh, the pivot table looks like this:

Sum of Sales	Column Labels				
Row Labels	East	North	South	West	Grand Total
Cogs	24000	12000	19000	14000	69000
Sprockets	18250	22250	14000	17500	72000
Tickers	26250	43000	29500	21375	120125
Widgets	12500	8000	31000	37500	89000
Grand Total	**81000**	**85250**	**93500**	**90375**	**350125**

Conclusion

So, that's it for pivot tables and pivot charts. As we've seen, pivot tables and pivot charts are a quick way to look at data in different ways. Because data mining is the transformation of data to see hidden patterns, pivot tables and pivot charts can be thought of as a simpler version of data mining.

Pivot tables not only let you look at data in different ways, but you can also change the way data is summarized. For example, you can not only sum data, but also use counts, averages, maximum, and minimum. Number geeks rejoice.

Pivot charts are a great way to prepare data for presentations. Because lots of numbers may divert the attention of an audience from the main message of a presentation, you can often use pivot charts to support, rather than overwhelm, the main points in a presentation.

Final Exam Questions

1. In the Create PivotTable wizard, use which selection to bring information not within an Excel worksheet?
    a. New Worksheet.
    b. Select a table or range.
    c. Existing Worksheet.
    d. Use an external data source.
2. Pivot Tables & Charts are great ways to help analyze, sort and filter data. This done by what process?
    a. Manipulating columns and rows of a targeted range of data from a worksheet.
    b. Manipulating cells and rows of a targeted range of data from a workbook.
    c. Manipulating cells and columns of a targeted range of data from a worksheet.
    d. Manipulating columns and rows of a targeted range of data from a workbook.
3. To select cells of the current Excel worksheet to be used, use which step in the Create PivotTable wizard?
    a. Choose use an external data source.
    b. Choose existing worksheet and give it's location.
    c. Choose New Worksheet.
    d. Choose Select a table or range, then click the Table/Range icon and choose your cells.
4. The original worksheet has been updated, how do you update the PivotTable?
    a. Press F5 on the keyboard.
    b. Right-click the pivot table, then click Refresh.
    c. Right-click the pivot-table, then click Summarize by.
    d. Click View, then Refresh.
5. To perform a function, such as Average or Sum, which would you choose after right-clicking the pivot table?
    a. Summarize Data By
    b. Value Field Settings
    c. PivotTable Options
    d. Format Cells

Row Labels	Sum of Sales
Cogs	69000
East	24000
North	12000
South	19000
West	14000
Sprockets	37500
East	13750
North	17250
South	4000
West	2500
Tickers	120125
East	26250
North	43000
South	29500
West	21375
Widgets	89000
East	12500
North	8000
South	31000
West	37500
Grand Total	315625

Fig. 1

Sum of Sales	Column Labels				
Row Labels	Cogs	Sprockets	Tickers	Widgets	Grand Total
East	24000	13750	26250	12500	76500
North	12000	17250	43000	8000	80250
South	19000	4000	29500	31000	83500
West	14000	2500	21375	37500	75375
Grand Total	69000	37500	120125	89000	315625

Fig. 2

6. To get from Figure 1 to Figure 2, you have chosen which of the following after right-clicking the pivot table?
    a. Move “Sprockets” to Beginning.
    b. Move “Products” to Columns.
    c. Move “Sprockets” to End.
    d. Move “Products” to Right.

Sum of Sales	Column Labels				
Row Labels	Cogs	Sprockets	Tickers	Widgets	Grand Total
East	24000	13750	26250	12500	76500
Large	14000	9250	14750	4500	42500
Small	10000	4500	11500	8000	34000
North	12000	17250	43000	8000	80250
Large	4500	10000	17750	4500	36750
Small	7500	7250	25250	3500	43500
South	19000	4000	29500	31000	83500
Large	12500	1000	12500	8500	34500
Small	6500	3000	17000	22500	49000
West	14000	2500	21375	37500	75375
Large	6000	2000	4500	18500	31000
Small	8000	500	16875	19000	44375
Grand Total	69000	37500	120125	89000	315625

Figure 3.

7. In Figure 3, you need to filter the view to see only the data for “North.” Which steps are correct?
    a. Right-click the pivot table, choose Value Field Settings.
    b. Right-click the pivot table, choose Hide Field List.

c. Click Column Labels drop down, and de-select the items not needed.
d. Click Row Labels drop down, and de-select the items not needed.

8. When you create a PivotTable and add fields to the report, a default table layout is used. How do you change the PivotTable layout?
    a. Drag and drop the fields from the PivotTable Field List.
    b. Right-click the field, click Move, and then choose where to move the field.
    c. Use the Move Field feature.
    d. Click the Data table, and then click move.
9. Which of the following is not an option when you change how data is summarized in a PivotTable?
    a. Min
    b. Average
    c. Standard Deviation
    d. Count
10. Which of the following is not an available chart type in the change Chart Type dialog box?
    a. Doughnut
    b. Bar
    c. Area
    d. Float