Excel

Pivot Tables

Course Outline

1. What is a Pivot Table and Why Should You Care?
2. Inserting a Pivot Table in Excel
3. The Nuts & Bolts of an Excel Pivot Table
    a. Pivot Cache
    b. Values Area
    c. Rows Area
    d. Columns Area
    e. Filters Area
4. Analyzing Data Using the Pivot Table

What is a Pivot Table and Why Should You Care?

A Pivot Table is a tool in Microsoft Excel that allows you to quickly summarize huge datasets (with a few clicks).

Even if you’re absolutely new to the world of Excel, you can easily use a Pivot Table. It’s as easy as dragging and dropping rows/columns headers to create reports.

1.2

Suppose you have a dataset as shown below:

	A	B	C	D	E	F	G
1	***Date***	***Region***	***Retailer Type***	***Customer***	***Quantity***	***Revenue***	***Profit***
2	01-01-2016	South	Food & Staples	Winn-Dixie	1,100	22,000	7,480
3	01-01-2016	West	Multiline	Nordstrom	1,600	1,23,200	43,120
4	01-01-2016	West	Food & Staples	Costco	1,600	44,800	11,200
5	02-01-2016	North East	Specialty	Foot Locker	1,700	93,500	31,790
6	02-01-2016	South	Specialty	The Home Depot	800	48,800	6,832
7	02-01-2016	Mid West	Food & Staples	Target	400	9,200	1,288
8	03-01-2016	Mid West	Food & Staples	Casey's	300	15,000	2,100
9	03-01-2016	Mid West	Food & Staples	Casey's	500	9,500	1,710
10	05-01-2016	West	Multiline	Nordstrom	1,600	56,000	14,560
11	05-01-2016	Mid West	Multiline	Kohl's	1,300	32,500	9,425
12	05-01-2016	South	Multiline	Dollar General	1,400	1,06,400	20,216
13	05-01-2016	Mid West	Food & Staples	Target	900	12,600	3,780
14	06-01-2016	North East	Specialty	Foot Locker	1,200	14,400	3,312
15	06-01-2016	Mid West	Multiline	Kohl's	1,500	58,500	21,645
16	06-01-2016	West	Multiline	Nordstrom	200	13,400	2,412

This is sales data that consists of ~1000 rows.

It has the sales data by region, retailer type, and customer.

1.3

Now your boss may want to know a few things from this data:

- What were the total sales in the South region in 2016?
- What are the top five retailers by sales?
- How did The Home Depot’s performance compare against other retailers in the South?

You can go ahead and use Excel functions to give you the answers to these questions, but what if suddenly your boss comes up with a list of five more questions.

1.4

You'll have to go back to the data and create new formulas every time there is a change.

This is where Excel Pivot Tables comes in really handy.

Within seconds, a Pivot Table will answer all these questions (as you'll learn below).

But the real benefit is that it can accommodate your finicky data-driven boss by answering his questions immediately.

It's so simple, you may as well take a few minutes and show your boss how to do it himself.

Hopefully, now you have an idea of why Pivot Tables are so awesome. Let's go ahead and create a Pivot Table using the data set (shown above).

Inserting a Pivot Table in Excel

Here are the steps to create a pivot table using the data shown above:

- Click anywhere in the dataset.
- Go to Insert –> Tables –> Pivot Table.

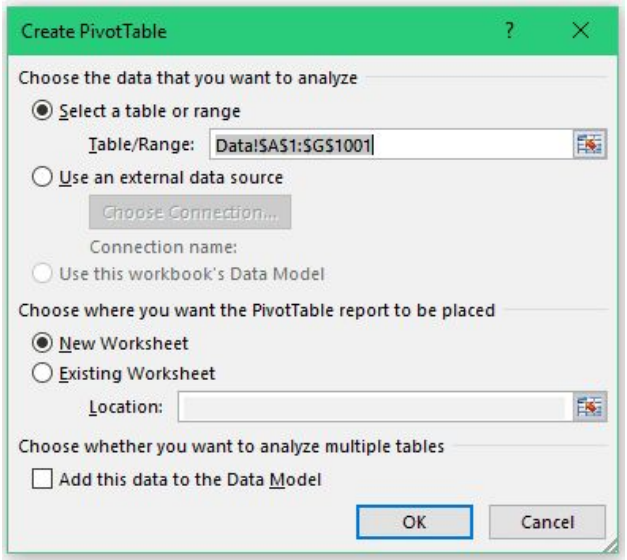
2.2

In the Create Pivot Table dialog box, the default options work fine in most of the cases. Here are a couple of things to check in it:

- *Table/Range:* It’s filled in by default based on your data set. If your data has no blank rows/columns, Excel would automatically identify the correct range. You can manually change this if needed.

2.3

If you want to create the Pivot Table in a specific location, under the option ‘Choose where you want the PivotTable report to be placed’, specify the Location. Else, a new worksheet is created with the Pivot Table.

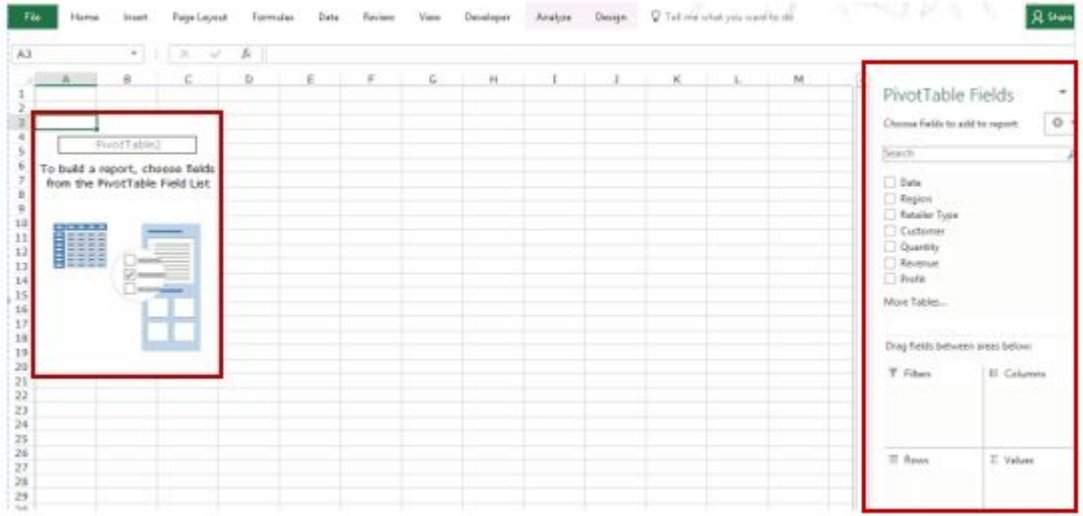


- Click OK.

2.4

As soon as you click OK, a new worksheet is created with the Pivot Table in it.

While the Pivot Table has been created, you'd see no data in it. All you'd see is the Pivot Table name and a single line instruction on the left, and Pivot Table Fields on the right.



The Nuts & Bolts of an Excel Pivot Table

To use a Pivot Table efficiently, it’s important to know the components that create a pivot table.

In this section, you’ll learn about:

- Pivot Cache
- Values Area
- Rows Area
- Columns Area
- Filters Area

Pivot Cache

As soon as you create a Pivot Table using the data, something happens in the backend. Excel takes a snapshot of the data and stores it in its memory. This snapshot is called the Pivot Cache.

When you create different views using a Pivot Table, Excel does not go back to the data source, rather it uses the Pivot Cache to quickly analyze the data and give you the summary/results.

3.2a

The reason a pivot cache gets generated is to optimize the pivot table functioning. Even when you have thousands of rows of data, a pivot table is super fast in summarizing the data. You can drag and drop items in the rows/columns/values/filters boxes and it will instantly update the results.

Note: One downside of pivot cache is that it increases the size of your workbook. Since it's a replica of the source data, when you create a pivot table, a copy of that data gets stored in the Pivot Cache.

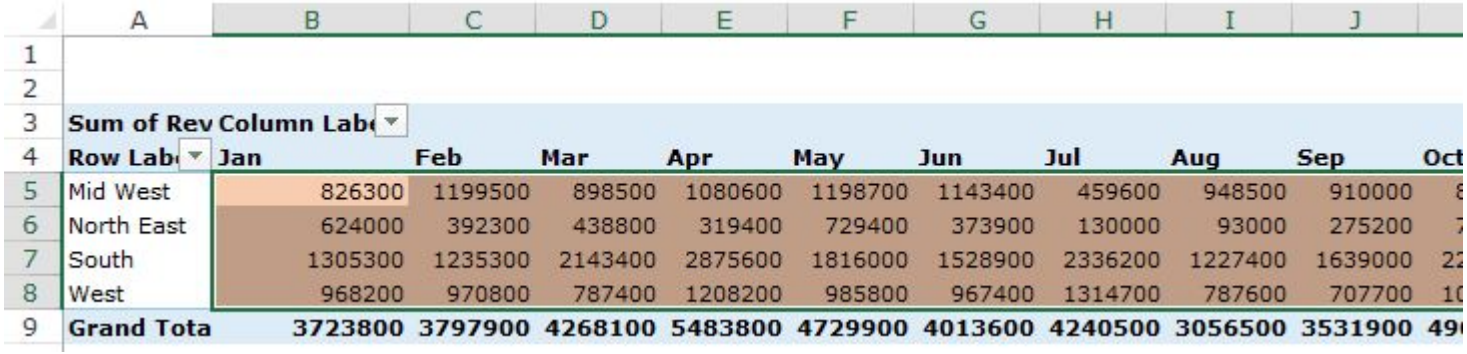
Values Area

The Values Area is what holds the calculations/values.

Based on the data set shown at the beginning of the tutorial, if you quickly want to calculate total sales by region in each month, you can get a pivot table as shown below (we'll see how to create this later in the tutorial).

3.2b

The area highlighted in orange is the Values Area.



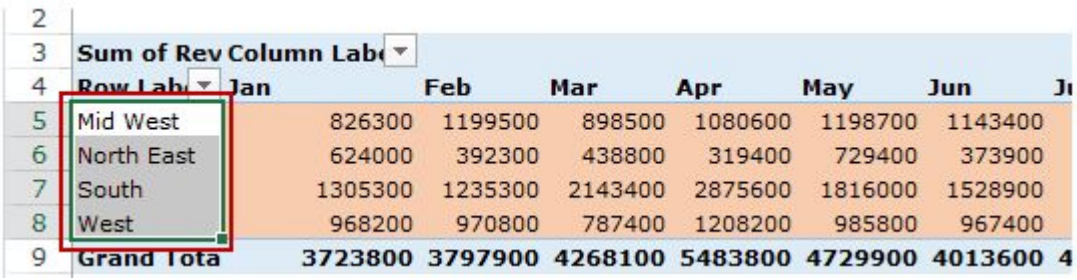
	A	B	C	D	E	F	G	H	I	J
1										
2										
3	Sum of Rev	Column Lab								
4	Row Lab	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
5	Mid West	826300	1199500	898500	1080600	1198700	1143400	459600	948500	910000	
6	North East	624000	392300	438800	319400	729400	373900	130000	93000	275200	
7	South	1305300	1235300	2143400	2875600	1816000	1528900	2336200	1227400	1639000	22
8	West	968200	970800	787400	1208200	985800	967400	1314700	787600	707700	1(
9	Grand Tota	3723800	3797900	4268100	5483800	4729900	4013600	4240500	3056500	3531900	49(

In this example, it has the total sales in each month for the four regions.

Rows Area

The headings to the left of the Values area makes the Rows area.

In the example below, the Rows area contains the regions (highlighted in red):



2								
3	Sum of Rev	Column Labe						
4	Row Labe	Jan	Feb	Mar	Apr	May	Jun	Ju
5	Mid West	826300	1199500	898500	1080600	1198700	1143400	
6	North East	624000	392300	438800	319400	729400	373900	
7	South	1305300	1235300	2143400	2875600	1816000	1528900	
8	West	968200	970800	787400	1208200	985800	967400	
9	Grand Tota	3723800	3797900	4268100	5483800	4729900	4013600	4

Columns Area

The headings at the top of the Values area makes the Columns area.

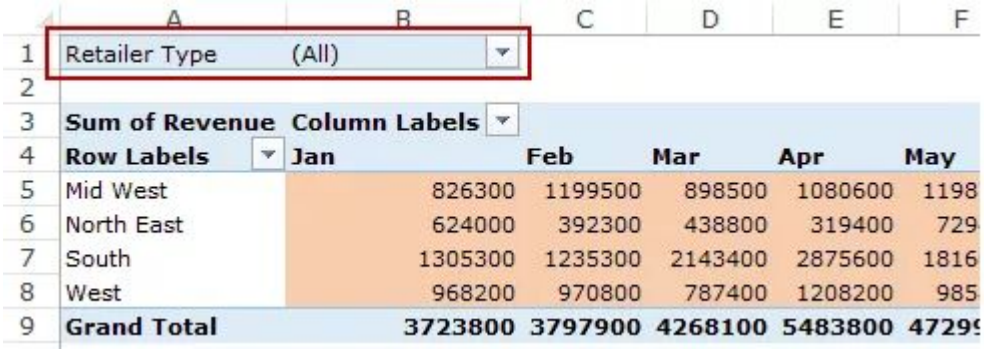
In the example below, Columns area contains the months (highlighted in red):

3	Sum of Rev	Column Labe						
4	Row Labe	Jan	Feb	Mar	Apr	May	Jun	Jı
5	Mid West	826300	1199500	898500	1080600	1198700	1143400	
6	North East	624000	392300	438800	319400	729400	373900	
7	South	1305300	1235300	2143400	2875600	1816000	1528900	
8	West	968200	970800	787400	1208200	985800	967400	
9	Grand Tota	3723800	3797900	4268100	5483800	4729900	4013600	4

Filters Area

Filters area is an optional filter that you can use to further drill down in the data set.

For example, if you only want to see the sales for Multiline retailers, you can select that option from the drop down (highlighted in the image below), and the Pivot Table would update with the data for Multiline retailers only.



	A	B	C	D	E	F
1	Retailer Type	(All)				
2						
3	**Sum of Revenue**	**Column Labels**				
4	**Row Labels**	**Jan**	**Feb**	**Mar**	**Apr**	**May**
5	Mid West	826300	1199500	898500	1080600	1198
6	North East	624000	392300	438800	319400	729
7	South	1305300	1235300	2143400	2875600	1816
8	West	968200	970800	787400	1208200	985
9	**Grand Total**	**3723800**	**3797900**	**4268100**	**5483800**	**4729**

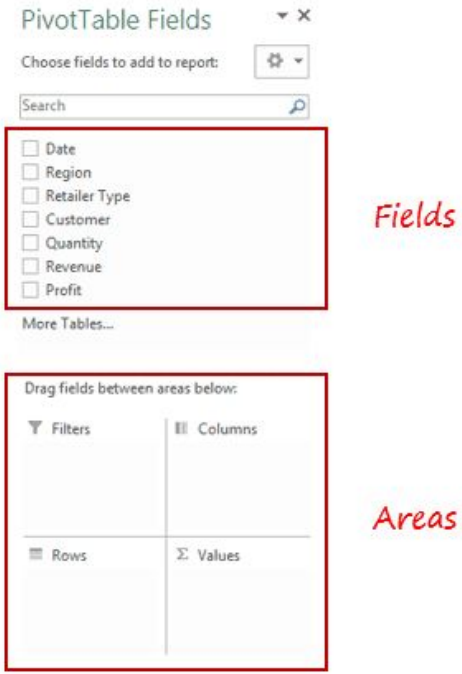
Analyzing Data Using the Pivot Table

Now, let’s try and answer the questions by using the Pivot Table we have created.

To analyze data using a Pivot Table, you need to decide how you want the data summary to look in the final result. For example, you may want all the regions in the left and the total sales right next to it. Once you have this clarity in mind, you can simply drag and drop the relevant fields in the Pivot Table.

4.2

In the Pivot Tabe Fields section, you have the fields and the areas (as highlighted below):



Fields

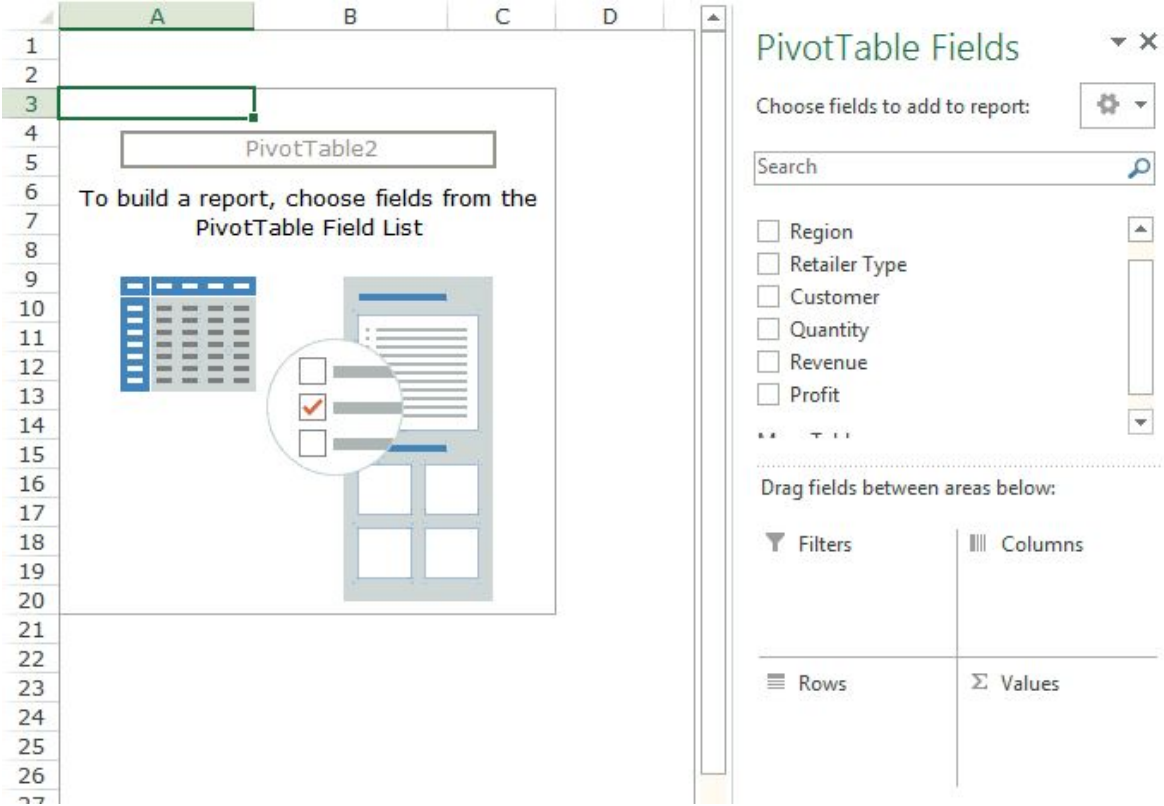
Areas

4.3

The Fields are created based on the backend data used for the Pivot Table. The Areas section is where you place the fields, and according to where a field goes, your data is updated in the Pivot Table.

It’s a simple drag and drop mechanism, where you can simply drag a field and put it in one of the four areas. As soon as you do this, it will appear in the Pivot Table in the worksheet.

4.4


A
B
C
D
PivotTable2
To build a report, choose fields from the PivotTable Field List
PivotTable Fields
Choose fields to add to report:
Search
Region
Retailer Type
Customer
Quantity
Revenue
Profit
Drag fields between areas below:
Filters
Columns
Rows
Values

4.5

Now let’s try and answer the questions your manager had using this Pivot Table.

Q1: What were the total sales in the South region?

Drag the Region field in the Rows area and the Revenue field in the Values area. It would automatically update the Pivot Table in the worksheet.

Note that as soon as you drop the Revenue field in the Values area, it becomes Sum of Revenue. By default, Excel sums all the values for a given region and shows the total. If you want, you can change this to Count, Average, or other statistics metrics. In this case, the sum is what we needed.

4.6

The answer to this question would be 21225800.

	A	B
1		
2		
3	**Row Labels**	**Sum of Revenue**
4	Mid West	10899100
5	North East	5162900
6	South	21225800
7	West	11670700
8	**Grand Total**	**48958500**

4.7

Q2 What are the top five retailers by sales?

Drag the Customer field in the Row area and Revenue field in the values area. In case, there are any other fields in the area section and you want to remove it, simply select it and drag it out of it.

You’ll get a Pivot Table as shown below:

4.8

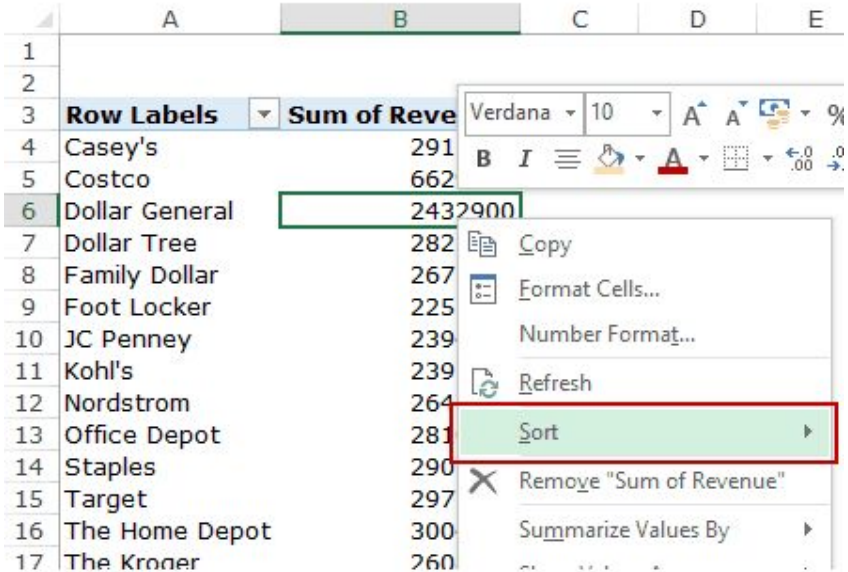
Row Labels	Sum of Revenue
Casey's	2915900
Costco	6629700
Dollar General	2432900
Dollar Tree	2821300
Family Dollar	2673500
Foot Locker	2257800
JC Penney	2394000
Kohl's	2397300
Nordstrom	2647000
Office Depot	2810500
Staples	2905100
Target	2977600
The Home Depot	3004600
The Kroger	2608300
Walmart	4057000
Winn-Dixie	3426000
Grand Total	**48958500**

Note that by default, the items (in this case the customers) are sorted in an alphabetical order.

4.9

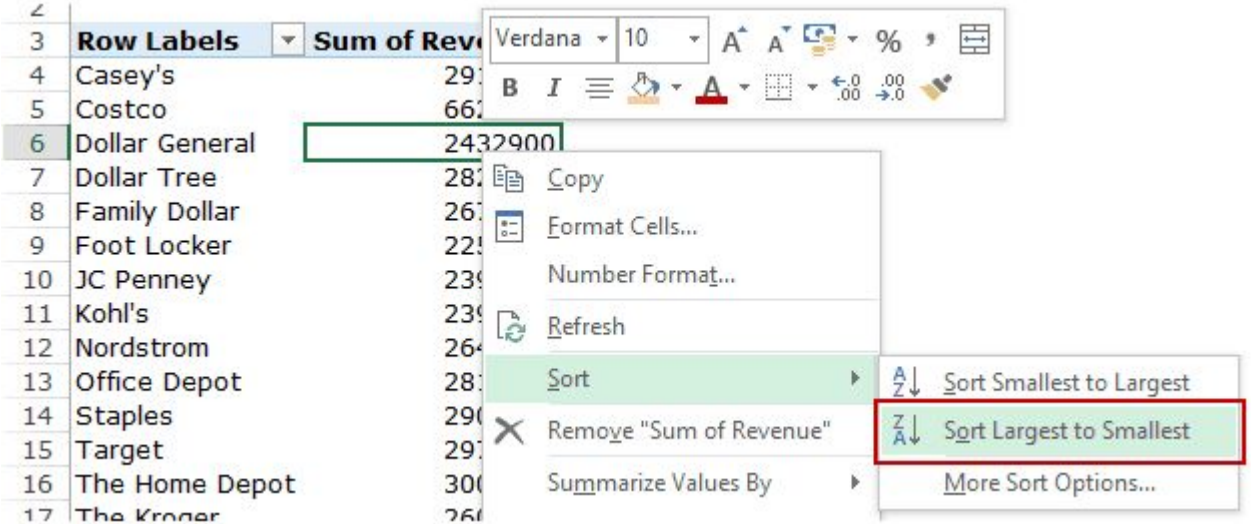
To get the top five retailers, you can simply sort this list and use the top five customer names. To do this:

- Right-click on any cell in the Values area.



4.10

Go to Sort –> Sort Largest to Smallest.



4.11

This will give you a sorted list based on total sales.

3	Row Labels	Sum of Revenue
4	Costco	6629700
5	Walmart	4057000
6	Winn-Dixie	3426000
7	The Home Depot	3004600
8	Target	2977600
9	Casey's	2915900
10	Staples	2905100
11	Dollar Tree	2821300
12	Office Depot	2810500
13	Family Dollar	2673500
14	Nordstrom	2647000
15	The Kroger	2608300
16	Dollar General	2432900
17	Kohl's	2397300
18	JC Penney	2394000
19	Foot Locker	2257800
20	**Grand Total**	**48958500**

4.12

Q3: How did The Home Depot's performance compare against other retailers in the South?

You can do a lot of analysis for this question, but here let's just try and compare the sales.

Drag the Region Field in the Rows area. Now drag the Customer field in the Rows area below the Region field. When you do this, Excel would understand that you want to categorize your data first by region and then by customers within the regions. You'll have something as shown below:

4.13

Row Labels	Sum of Revenue
Costco	6629700
Walmart	4057000
Winn-Dixie	3426000
The Home Depot	3004600
Target	2977600
Casey's	2915900
Staples	2905100
Dollar Tree	2821300
Office Depot	2810500
Family Dollar	2673500
Nordstrom	2647000
The Kroger	2608300
Dollar General	2432900
Kohl's	2397300
JC Penney	2394000
Foot Locker	2257800
Grand Total	**48958500**

4.14

Now drag the Revenue field in the Values area and you'll have the sales for each customer (as well as the overall region).

	A	B
1		
2		
3	**Row Labels**	**Sum of Revenue**
4	**Mid West**	**10899100**
5	Casey's	2915900
6	Kohl's	2397300
7	Target	2977600
8	The Kroger	2608300
9	**North East**	**5162900**
10	Foot Locker	2257800
11	Staples	2905100
12	**South**	**21225800**
13	Dollar General	2432900
14	Dollar Tree	2821300
15	Family Dollar	2673500
16	Office Depot	2810500
17	The Home Depot	3004600
18	Walmart	4057000
19	Winn-Dixie	3426000
20	**West**	**11670700**
21	Costco	6629700
22	JC Penney	2394000
23	Nordstrom	2647000
24	**Grand Total**	**48958500**

4.15

You can sort the retailers based on the sales figures by following the below steps:

- Right-click on a cell that has the sales value for any retailer.
- Go to Sort –> Sort Largest to Smallest.

This would instantly sort all the retailers by the sales value.

4.16

Now you can quickly scan through the South region and identify that The Home Depot sales were 3004600 and it did better than four retailers in the South region.

	A	B
1		
2		
3	**Row Labels**	**Sum of Revenue**
4	**Mid West**	**10899100**
5	Target	2977600
6	Casey's	2915900
7	The Kroger	2608300
8	Kohl's	2397300
9	**North East**	**5162900**
10	Staples	2905100
11	Foot Locker	2257800
12	**South**	**21225800**
13	Walmart	4057000
14	Winn-Dixie	3426000
15	The Home Depot	3004600
16	Dollar Tree	2821300
17	Office Depot	2810500
18	Family Dollar	2673500
19	Dollar General	2432900
20	**West**	**11670700**
21	Costco	6629700
22	Nordstrom	2647000
23	JC Penney	2394000
24	**Grand Total**	**48958500**