

Excel 2007

Creating & Using PivotTables

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INTRODUCTION

What is a PivotTable

A pivot table allows you to quickly create reports with meaningful data. It is a great reporting tool that sorts and sums independent of the original data layout in the spreadsheet.

Information can be pivoted from one axis to another to display different relationships in the data thus, permitting the viewing of data from varying perspectives.

Choosing Appropriate Data for a Pivot Table

Before you begin setting up a PivotTable be sure your source data (Excel worksheet) is well prepared for the report by:

1. Data resides in an Excel spreadsheet
2. It conforms to fundamental Excel database structural conventions. Data should adhere to these basic rules:
 1. Each column of the database should contain the data for a single field.
 2. Each row of the database should contain the fields relating to a single record.
 3. The first row of the database should contain the field names,.
 4. There should be no blank rows or columns embedded within the database.
3. **Two types of data** fields in your spreadsheet.
 - **Data:** contains a value
 - **Category:** Describes the data

It is very important that your data is in proper format, otherwise trying to use a PivotTable reports will not be effective.

Pivot Table Terminology

PivotTable terminology to be familiar with:

- Axis** A component or dimension of a PivotTable - row, column or page
- Field** A column in the source Excel database
- Item** A single member of a field
- Pivot** To restructure the PivotTable by adding, deleting or moving fields

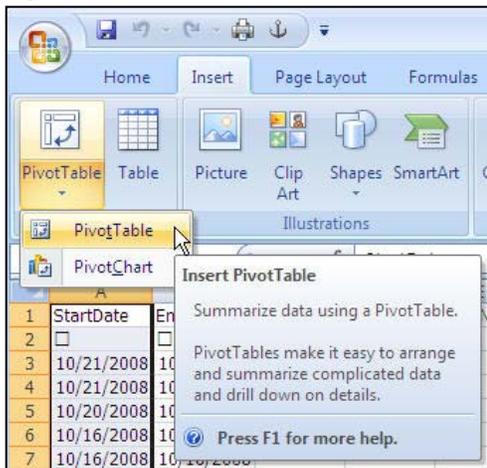
GET STARTED

To set up a PivotTable, **make sure the data in the spreadsheet conforms to Excel database conventions**. Be sure it has column titles and is in list format.

Insert a PivotTable

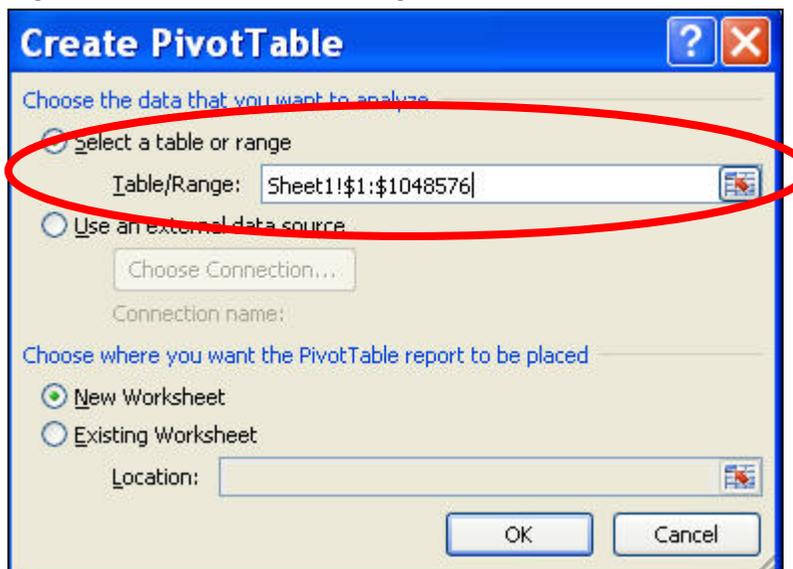
1. Position the cell pointer anywhere within the range of cells defining the database.
2. From the **Insert Tab**, in the **Tables group**, select **PivotTables**, then select PivotTable again. See figure below.

Figure – Insert a Pivot Table



3. The **Create PivotTable** dialog box opens. See figure below.

Figure – Create PivotTable Dialog Box

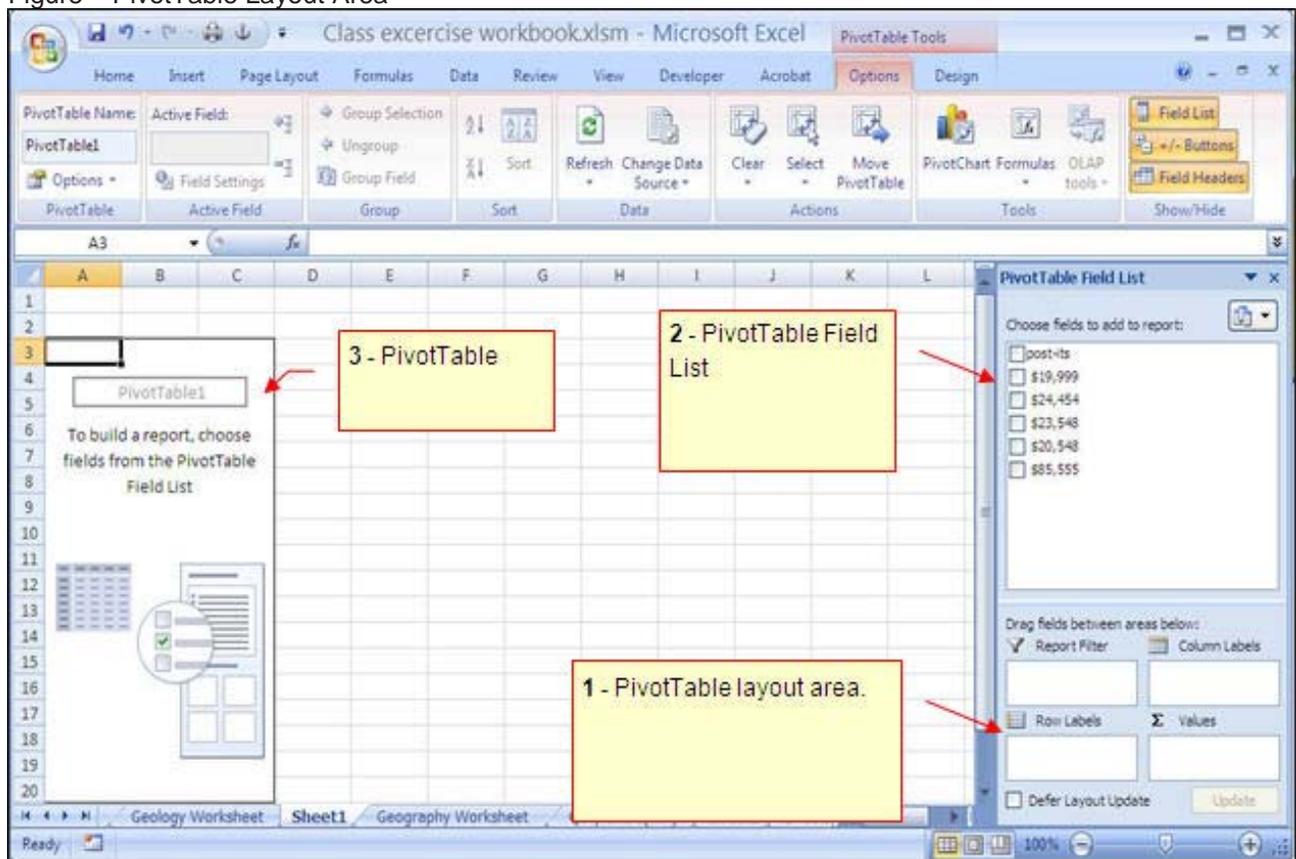


4. The **Select a table or range** field is already selected for you.
5. **New Worksheet** is also selected for you as the place where the report will be placed (you can select Existing Worksheet if you do not want the report placed in a new worksheet)
6. Select **OK**

Creating the PivotTable Layout

The PivotTable layout area seen in the figure below is what you see in the new worksheet after you have selected OK to close the Create PivotTable dialog box.

Figure – PivotTable Layout Area



- #1 The **layout area** – Is to help you decide where the data should appear in the PivotTable report.
- #2 The **PivotTable Field List**.– Shows the column titles/categories from the source data worksheet and the drag and drop fields of a PivotTable.
- #3 **PivotTable Area** – Where the data will appear

Each item in the PivotTable Field List can be selected and dragged to the PivotTable layout.

The table below describes the four areas used to arrange data in the PivotTable. **Page, Row and Column** are axes of the PivotTable that contain the **fields used to define how data is to be summarized**.

Area	Description
Report Filter	Displays data separately for each item in the field.
Row Labels	Displays items in the field as row labels.
Column Labels	Displays items in the field as column labels.
Values	Displays the values from the field in the body of the PivotTable. This is the field on which you will perform a summary calculation.

Build a PivotTable report

1. **Select an item** in the field list
2. **Drag the item to a location** in the “Drag fields between areas below” section in the PivotTable Field list box.
3. The results display at the left in the PivotTable as you drag and drop fields.
4. Continue to drag fields to display in the area you want them to appear on the PivotTable. You do not have to use all the fields in the field list.
5. The Data area **MUST** have at least one field in it.

CHANGE & MANIPULATE A PIVOTTABLE

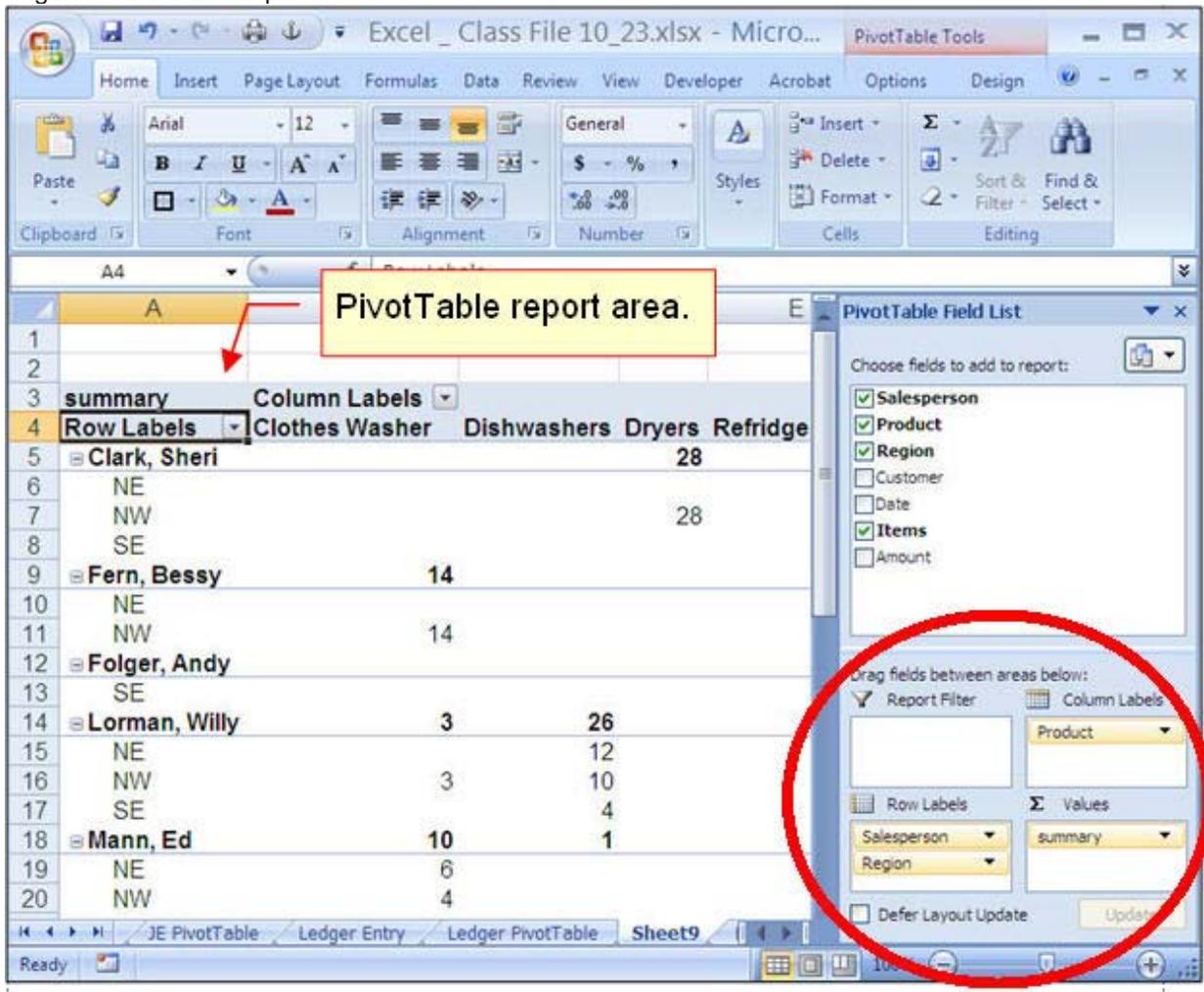
A pivot table is not a static object. You can continue to modify and tweak it until it looks exactly how you want it to look. Don't worry about building a report incorrectly. Excel makes it easy to try things out and to see how data looks in different relationships (areas of the report). If a report is not how you want it at first, just lay out the data in another way by dragging the field to a different area.

Move Field List Items to a Different Field

1. In the **Drag fields between areas below** section, **left click and hold** the mouse button down **on the field** you want to move. See figure 4.
2. **Drag the field to another area** of the report in this same section.
3. The change is immediately apparent in the PivotTable report at the left.

NOTE To remove a field from a report, clear the check box beside the field name in the PivotTable Field List. To remove all the fields from the report so that you can start over, on the Ribbon, from the Options tab, in the Actions group, click the arrow on the Clear button, and then select Clear All.

Figure - PivotTableReport



TIP If you click outside of the layout area (of a PivotTable report) the PivotTable Field List disappears. To get the field list back, click inside the PivotTable layout area or report.

- **To remove a field from the PivotTable**, simply deselect the check box of the item in the “Choose fields to add to report:” area of the PivotTable Field List.
- **To add fields to the PivotTable**, click the check box next to the item in the “Choose fields to add to report:” area of the PivotTable Field List. Next, drag the item to the appropriate field list area.

- **To move a field around in the PivotTable**, drag and drop the field list item to the new placement on the PivotTable area. Either the Report Filter, Row Labels, Column Labels or Value area.

Dropping a field in the wrong position can produce very different results than what you expect. If your pivot table is not analyzing the data quite the way you expect, try changing the relative positions of the row or column fields.

- **Multiple fields can be dropped into the report areas** thus creating a multidimensional summary of the data. The names of the fields and items can be changed simply by editing any occurrence of that particular field or item.

NOTE The order in which you enter the fields in the row and column areas affect how the data in the PivotTable is grouped.

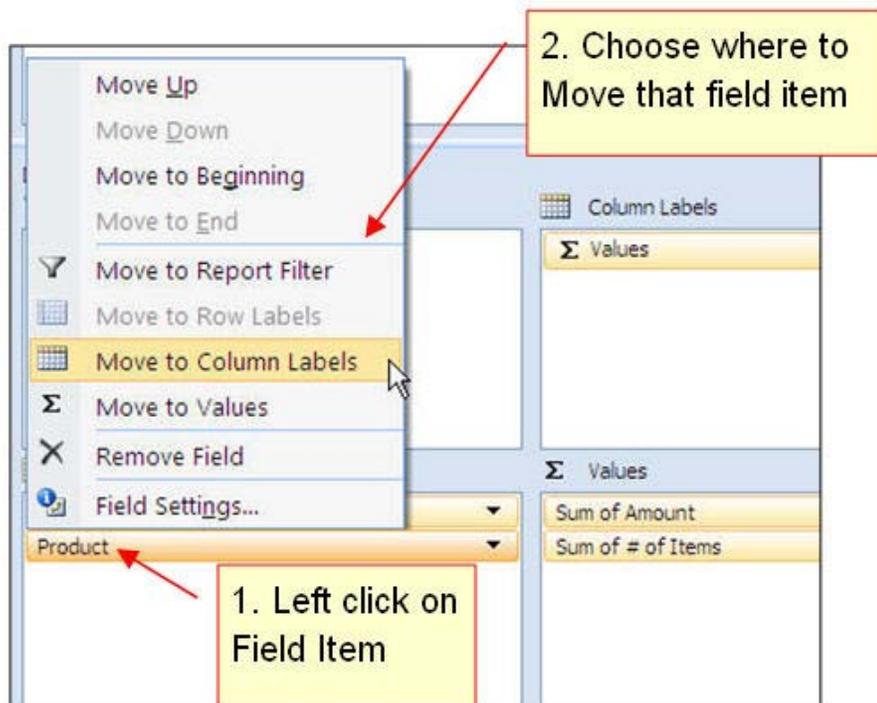
Pivot Data to get a Different View

You can pivot the report data to get a different view of the data. Pivoting a report, transposes the vertical or horizontal view of a field, moving rows to the column area or moving columns to the row area.

To pivot a field list item from a row to a column:

1. **Left click on one of the field list items** in the Layout area
2. From the short cut menu, point to the appropriate **Move** choice.

Figure - Pivot a Field

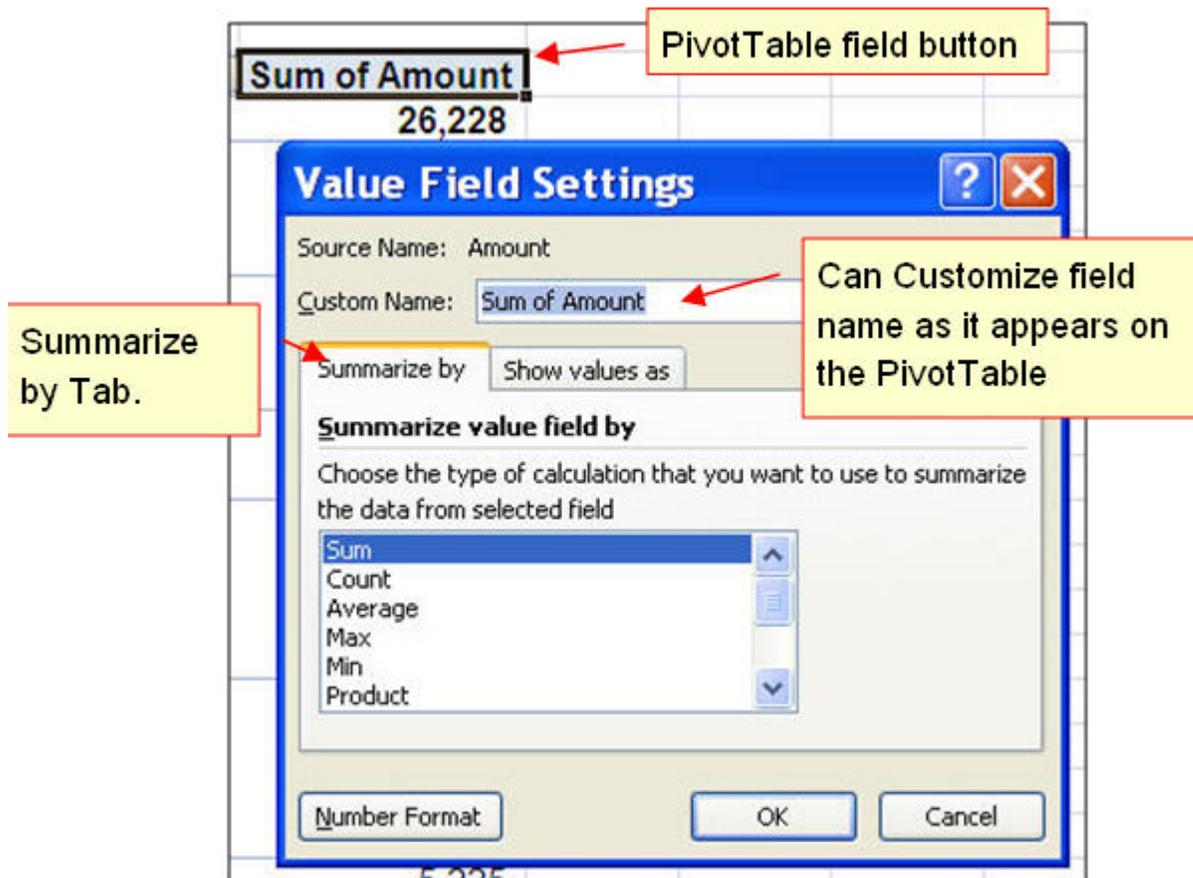


Customizing a PivotTable Field

There are several options available for fields within a pivot table. To access these options:

1. **Right-Click field button** on the PivotTable. See figure below.
2. Choose **Value Field Settings** from shortcut menu.
3. Excel displays a PivotTable Value Field dialog box. (See figure below) This field box can vary in appearance depending on the field button chosen.

Figure - Value Field Setting Dialog Box



Subtotals can calculate using many different functions, which are available in the Summarize by area of the dialog box. The following are functions with explanations.

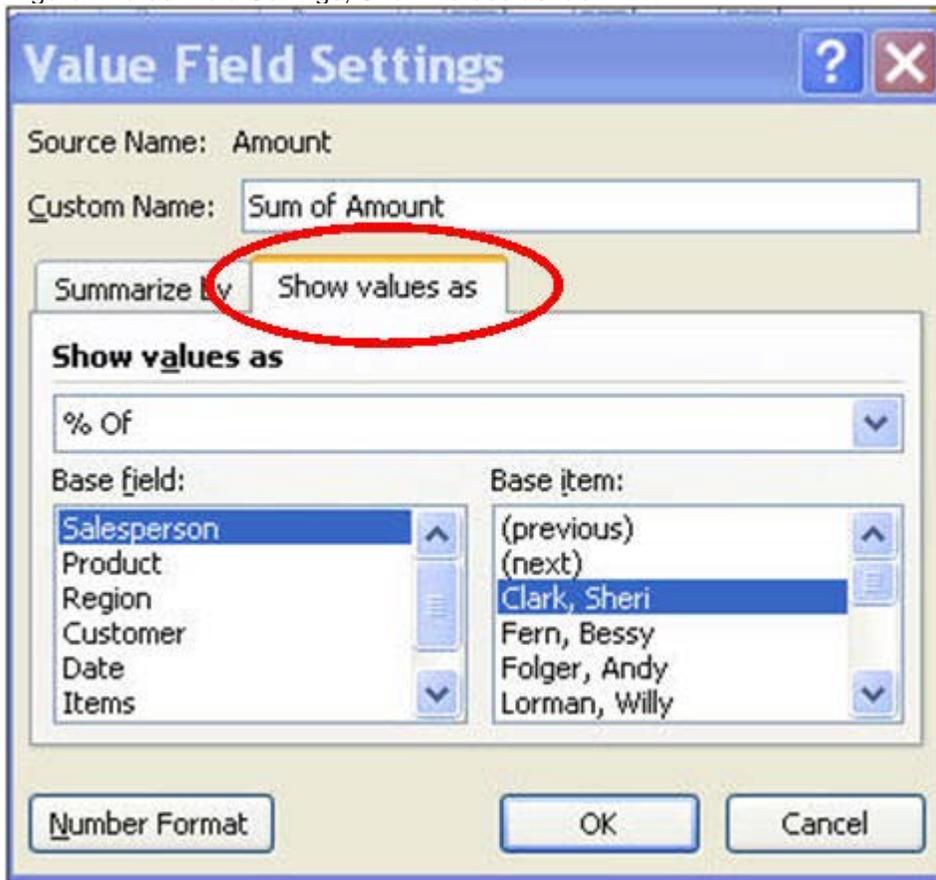
- COUNT - how many occurrences
- AVERAGE - arithmetic mean of occurrences
- MAX - Maximum value
- MIN - Minimum value

- PRODUCT - Product of all values
- STDDEV - standard deviation
- VAR - variance

4. Any field can be modified:

- **Custom Name:** Changes the name that is displayed on the field button on the PivotTable.
- **Summarize by** tab: Lets you change the type of subtotaling that is displayed. Subtotaling is relevant only if you have more than one field displayed as rows or columns.
- **Show values as** tab: Options on this Tab will change the way the value is compared. See Figure 6 below for an example.

Figure - Value Field Settings, Show Values as tab



Refresh a PivotTable

If data is changed on the source spreadsheet refresh the PivotTable by:

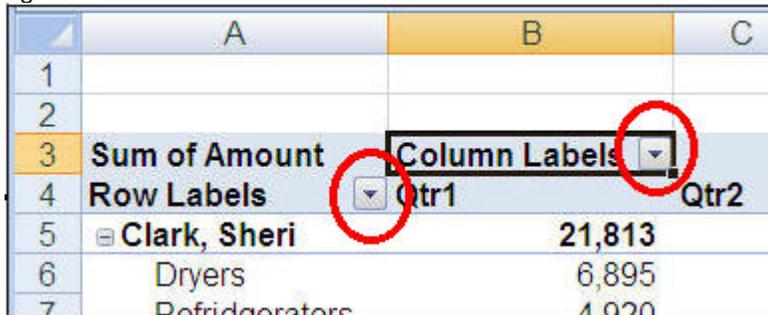
1. From the **Data Tab** in the **Connections Group** select the **small drop down arrow** next to the **Refresh All** command button.
2. Choose **Refresh** from the option menu.

Filter PivotTable Items

PivotTable items can be filtered in much the same way that items of an Excel Spreadsheet. Column Labels and Row Labels both can be filtered on a PivotTable.

1. Filter Arrow indicators appear on both the Column Labels and Row Labels field. See figure below.

Figure - Filter Arrow indicators on the PivotTable.



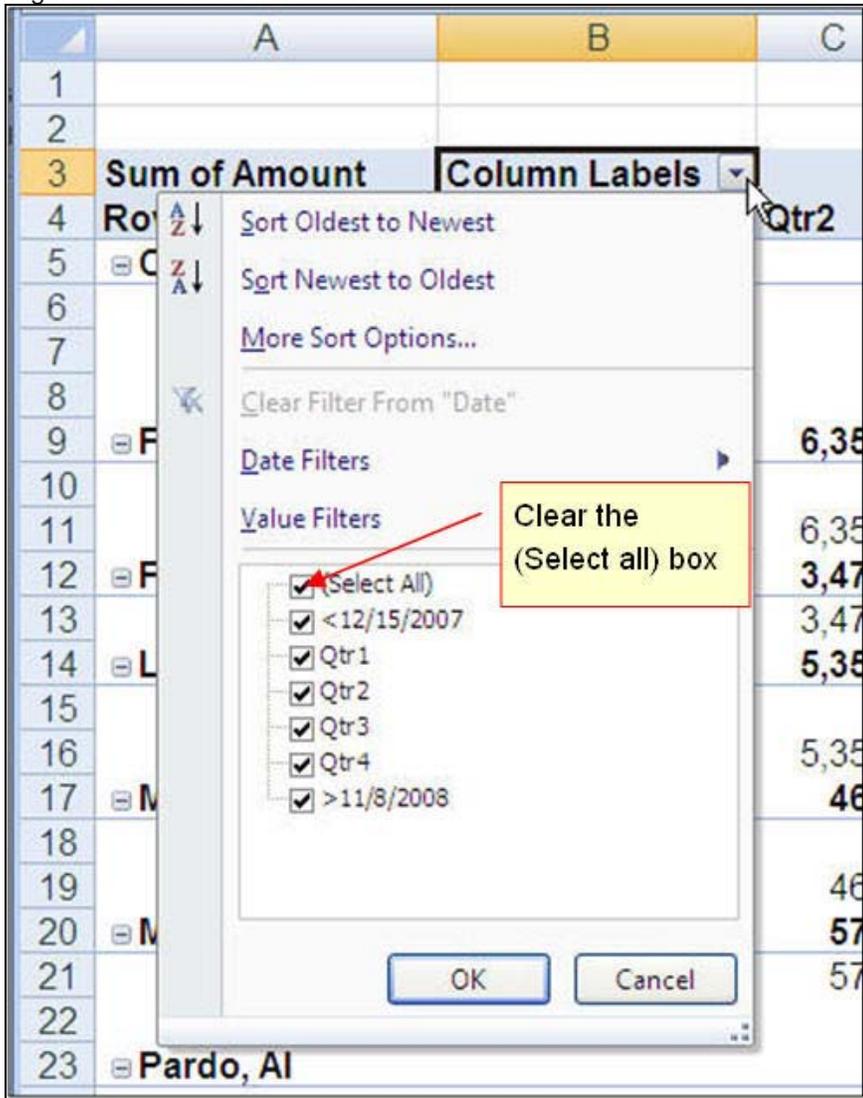
The screenshot shows an Excel PivotTable with the following structure:

	A	B	C
1			
2			
3	Sum of Amount	Column Labels	
4	Row Labels	Qtr1	Qtr2
5	Clark, Sheri	21,813	
6	Dryers	6,895	
7	Refridgerators	4,920	

Red circles highlight the small downward-pointing filter arrows on the 'Column Labels' and 'Row Labels' fields.

2. **Left Click the filter arrow.**
3. From the sub menu, **clear the (Select All) check box** in the list. (see figure below) That clears the check boxes next to every item in the list.
4. Select the check box next to the item to be filtered. The PivotTable report will show only the data for that item.

Figure - Filter arrow sub menu



TIP It is not always easy to tell if data has been filtered or not. When an item is filtered, the filter icon arrow changes. A filter icon also appears next to the field name in the PivotTable Field List.

Figure – Filter Icon Changes



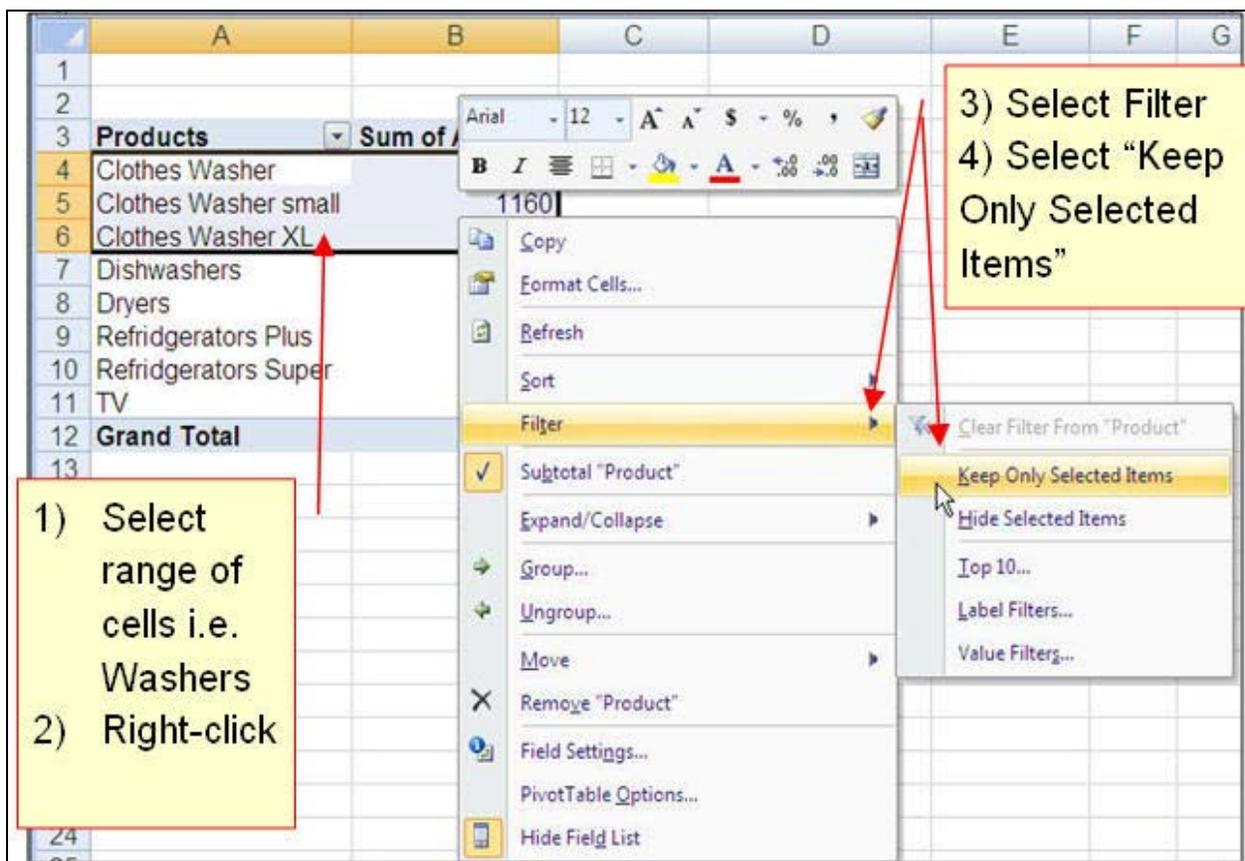
Narrow the Filter

Filtering can be narrowed to show only specific items within the filter. Filter the report to a single type by using the following method:

1. **Select the range of cells** for the single item type. See figure below.
2. **Right-Click** and point to **Filter**
3. From the sub menu select **Keep Only Selected Items**

Now just the item type data selected should be displayed. The new filter hides all the other items.

Figure - Narrowing the Filtering of data in a Pivot Report



SUMMARIZE DATA OTHER WAYS

There are so many different options for viewing and changing data in a Pivot Report. Suppose you want to change the report from a sum function for adding amounts to count function. This could be helpful when wanting to look at totals in quantities bought or sold.

Change the Value to Count Function

The figure below shows data collected to track salespeople, product, amounts along with other fields.

Figure –Sample Data Spreadsheet

	A	B	C	D	E	F	G
3	Salesperson	Product	Region	Customer	Date	# of Items	Amount
4	Mann, Ed	Dishwashers	SW	Appliance Mart	5/30/08	1	460
5	Lorman, Willy	Dishwashers	NE	Appliance Mart	8/20/08	12	7140
6	Fern, Bessy	Clothes Washer XL	NW	Appliance Mart	9/29/08	14	4915
7	Lorman, Willy	Clothes Washer	NW	Appliance Mart	10/15/08	3	1735
8	Poppy, Rick	Dryers	SW	Appliance Mart	1/7/08	5	1875
9	Clark, Sheri	Refridgerators Super	NE	Appliance Mart	3/24/08	15	4920
10	Folger, Andy	TV	SE	Appliance Mart	4/24/08	6	3470
11	Morgan, Erin	Clothes Washer XL	SW	Appliance Mart	6/19/08	1	570
12	Poppy, Rick	Dryers	SW	Appliance Mart	6/21/08	12	6070
13	Mann, Ed	Clothes Washer	NE	Appliance Mart	9/11/08	6	3190
14	Stout, Urcella	Dishwashers	NW	Appliance Mart	10/9/08	14	8230
15	Clark, Sheri	Dryers	NW	Appliance Mart	11/7/08	12	4415

The figure below is a Pivot Report created to look at this data by sales person and total amount sold by salesperson.

	A	B
1		
2		
3	Row Labels	Sum of Amount
4	Clark, Sheri	26228
5	1/25/08	9998
6	3/23/08	6895
7	3/24/08	4920
8	11/7/08	4415
9	Fern, Bessy	11266
10	5/19/08	3985
11	6/8/08	2366
12	9/29/08	4915
13	Folger, Andy	3470
14	4/24/08	3470
15	Lorman, Willy	16450
16	5/30/08	5350
17	8/20/08	7140
18	9/9/08	2225
19	10/15/08	1735
20	Mann, Ed	5782
21	12/15/07	2132
22	5/30/08	460
23	9/11/08	3190

To change the function of a value in the Value area of the report: (Sum of Amount) to a Count function:

1. Right-Click on the **Subtotal amount** value. See figure below

1. Make active cell one of the subtotal amounts for the data then Right Click.

2. Select "Summarize Data By"
3. Select Count from Submenu.

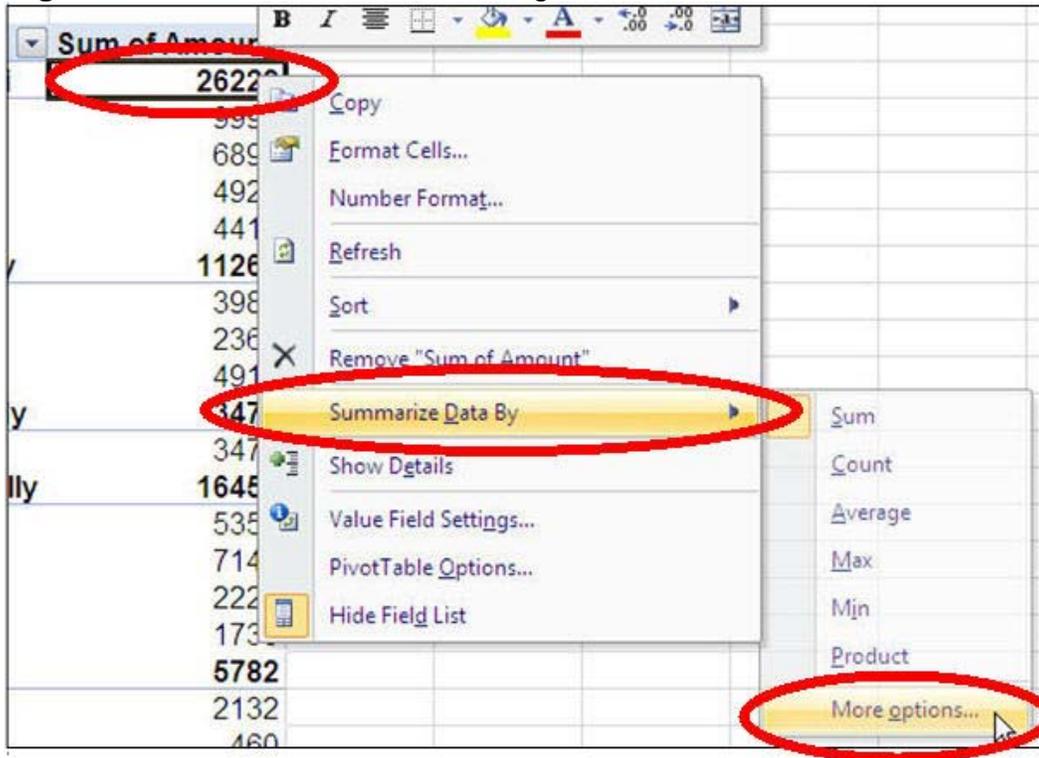
2. From the shortcut menu, point to **Summarize Data by**
3. From the **Submenu, Select Count**. This changes the Value column from a totaling Sum function to a Count function.
4. The data in the Value field now reflects a number count of sales by each salesperson.

Change the Value to Percent of Total Function

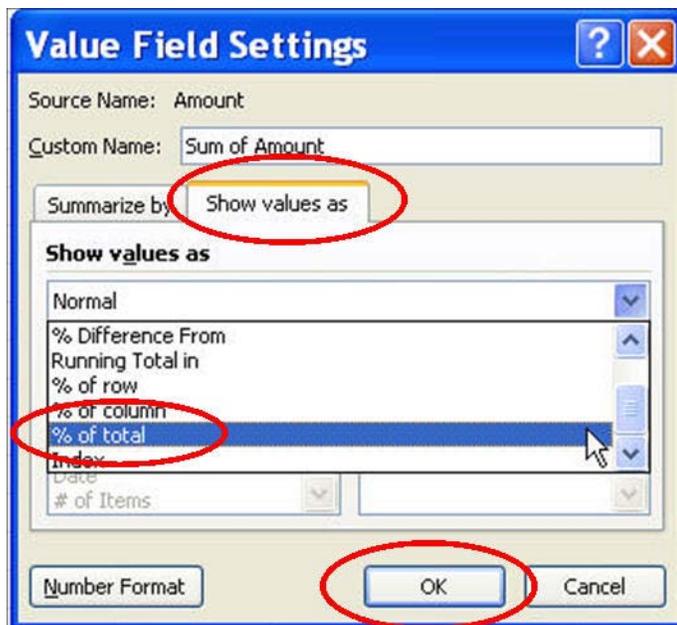
Using the data we have and the Pivot report created from this data now we want to see what **percentage of the grand total** of sales was made by each salesperson. We can use the **custom calculation** option to create a running total, or calculate percentage.

To do this:

1. **Right-click** in the Values area. See figure below



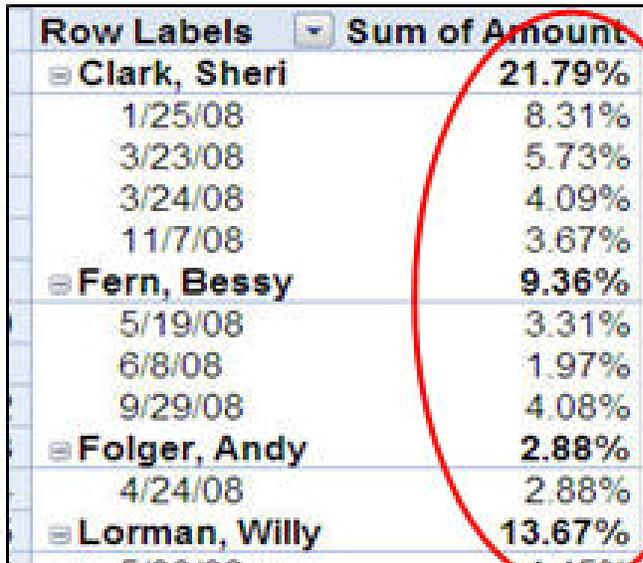
2. From the shortcut menu, **point to Summarize Data by**
3. From the Submenu, **Select the More Options.**
4. The Value Field Settings dialog box appears. See figure below.
5. **Select the Show values as tab.**



6. From the **Show values as field**, use the drop down arrow at the right of the field, scroll down to select **% of total**.
7. Click the **OK** button

The Pivot Report Sum of Amount column changes to now reflect percentages. See Figure below.

Figure - Change Sum of Amount to reflect percentages.



Row Labels	Sum of Amount
Clark, Sheri	21.79%
1/25/08	8.31%
3/23/08	5.73%
3/24/08	4.09%
11/7/08	3.67%
Fern, Bessy	9.36%
5/19/08	3.31%
6/8/08	1.97%
9/29/08	4.08%
Folger, Andy	2.88%
4/24/08	2.88%
Lorman, Willy	13.67%

There are other custom calculations that can be performed using the same steps as previous. On the next page you will find a table that lists each of those custom calculation functions and their results

Custom Calculations

Function	Result
Normal	Turns off custom calculations
Difference From	Displays values as the difference from the value of the Base item in the Base field
% Of	Displays values as a percentage of the value
% Difference From	Displays values as a percentage difference from the value
Running Total In	Displays value for successive items in the Base field as a running total
% of row	Displays the value in each row or category as a percentage of the total for the row or category.
% of column	Displays all the values in each column or series as a percentage of the total for the column or series.
% of total	Displays values as a percentage of the grand total of all the values or data points in the report.
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