



# Excel Session 5

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## Introduction

Excel Session 5 is a course created for CAL PACT participants to learn more about the features of Excel. The course covers simple introductory material and applies to both the Windows and Macintosh computer platforms. This document serves as a supplement and future reference to the class.

### Skills needed to take this class

- how to use the mouse
- how to use the Windows computing environment
- mastery of the basic Excel material from the previous four sessions

### Skills and concepts learned in this class

- creating spreadsheet filters
- summarizing data
- creating and working with pivot tables

### Conventions used in this document

Menus and menu commands are separated by a vertical bar (|). In the document they will appear as **Menu | Command**. An example of this is "Select **File | New...**"

## Filtering

Filtering is a useful feature to quickly display a subset of data from a list. By setting criteria for filtering, Excel automatically hides rows that do not match the criteria. The example below demonstrates the filtering capability created by using the AutoFilter. The criteria "19900" was selected for the "Fund" column. Rows that do not match the criteria are automatically hidden. Excel allows for two methods of filtering - the AutoFilter and the Advanced Filter.

	A	B
1	Account	Fund
2	493876	20000
3	493876	69750
4	493876	07427
5	493876	19900
6	867509	20000
7	867509	69750
8	867509	19900

	A	B
1	Account	Fund
2	493876	(All)
3	493876	(Top 10...)
4	493876	(Custom...)
5	493876	07427
5	493876	19900
6	867509	20000
7	867509	34181
7	867509	34373
8	867509	34507

	A	B
1	Account	Fund
5	493876	19900
8	867509	19900
9	134581	19900
11	134581	19900
12	134581	19900
15	167280	19900
18	167280	19900

### AutoFiltering

The AutoFilter is the easiest method to set up a filter. When an AutoFilter is created, a drop-down list becomes available on the right side of the selected cells in the row as shown in the screenshots above. By clicking on the arrow, a drop-down list displays every unique entry in the column along with a few other options. Selecting one of the items in the drop-down list causes Excel to hide all of the rows that do not match that criteria. Multiple filters can be performed by selecting criteria from different drop-down lists. Excel will continue to filter the data in the order that the criteria are selected. When a filter is applied, the arrow appears blue. The row headers also appear in blue. Note that setting a filter only filters the data below that row.

### To create an AutoFilter

1. Select any cell within a list to have Excel automatically create the filter lists in the row it thinks is best. Select multiple adjacent cells to have Excel create the filter lists in those columns only. Select a cell and the cell below it to create the filter lists only for that one column. *Note:* Even though the filter list may not be applied to every column, any filtering affects the entire row.
2. Select **Data | Filter | AutoFilter**.

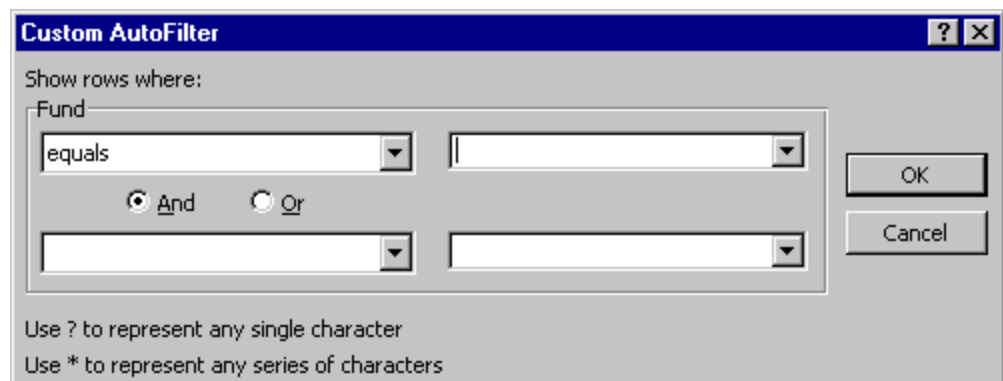
## To remove an AutoFilter

1. Select **Data | Filter | AutoFilter**. The AutoFilter command is a toggle switch. Select the command to turn it off and on.

## Working with the Criteria

Filtering data is as easy as selecting criteria from the drop-down list. When a criteria is selected, the resulting subset of data can be further filtered by selecting a criteria from a different drop-down list. Note that a drop-down list displays only the unique data entries from the rows that are visible. To reverse a filtered list, choose the criteria **(All)** from the list.

In special cases, a custom criteria is needed to display rows that match multiple values or a range of values. Using the normal method of selecting a criteria only allows for filtering by one unique item in each column. To set the custom criteria, select **(Custom)** from the drop-down list. The following dialog box appears.



In the first row field, select the option for the first criteria and type the value in the field on the right. This sets the first criteria. To set a second criteria, select the option and type the value for the second row field. Wildcard characters (? and \*) can be set for the value fields on the right to specify any character or phrase. Use the ? to specify any single character and \* to specify any series of characters. For example, using "1?900" will return values like 19900 and 15900, but will not return values like 198900 and 19847900. Using "1\*900" will return all of the previous examples.

Between the two rows are radio buttons for "and" and "or." Choose a button depending on how Excel should filter the data as follows:.

If the filter must match **both** criteria, select “and.”

If the filter must match **either** criteria, select “or.”

## Advanced Filter...

The Advanced Filter option is a tool used to filter lists using complex criteria. Using AutoFilter, it is only possible to filter one column by two different criteria through the **(Custom)** item. In the Advanced Filter, the filtering criteria is more robust, although a little more work is required in the set up. There are no drop-down lists from which to choose the criteria - a criteria range must be typed in a sheet. For example, in the graphic below, a filter has been applied to the data. The criteria range lies in the cell range A1:D3 while the filtered data lies in the cell range D5:F20. The criteria range is typed on the same sheet in this example.

	A	B	C	D	E	F
1	Account	Fund	Amount	Amount		
2	493876		>50	<=200		
3		20000				
4						
5				<b>Account</b>	<b>Fund</b>	<b>Amount</b>
6				493876	20000	1
7				493876	69750	100
8				493876	07427	199
10				867509	20000	397
17				134581	20000	1090
20				167280	20000	1387

## The Criteria Range

The criteria range is most commonly typed in the same sheet as the filtered list, but it can be located on any sheet or workbook. To begin the criteria, enter the criteria labels to filter on. In the example above, the labels are Account, Fund, and Amount. The format of the cells is not important, but the text is. To avoid mistakes, copy and paste the labels. Underneath the labels, the criteria are entered.

Criteria that fall in the same row finds records that meet all the criteria in that row. This is similar to the “and” option for the **(Custom)** AutoFilter.

Criteria that fall in different rows finds records that meet the criteria

of any row. This is similar to the “or” option for the **(Custom)** AutoFilter.

When a column label is repeated, the returned records must meet more than one criteria for the repeated column label. This is used to match ranges of values.

## **Comparison Criteria**

### Text Criteria

Entering a text criteria will return all records that begin with that criteria. For example, using “Ant” as a criteria will return all rows that begin with Ant even if the text is Anthonious. To specify exact text, enter

=“=text”

where *text* is the text value.

### Wildcards (? \*)

Wildcards are supported in the advanced filter. Use the ? to specify any single character and the \* to specify any phrase.

### Quantity Comparisons (=,>,<,<=,>=,<>)

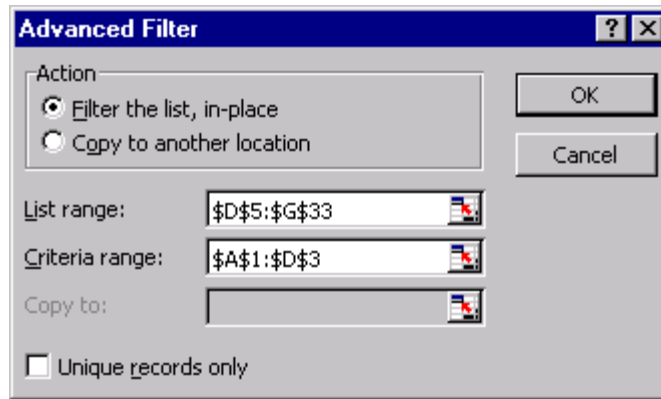
To specify quantity comparisons, use the operators below. Begin the criteria with the operator followed by the value. For example, >1000 specifies all rows where the values are greater than 1000.

- = Equal to
- > Greater than
- < Less than
- >= Greater than or equal to
- <= Less than or equal to
- <> Not equal to

## **Setting the Advanced Filter**

To start the advanced filter select **Data | Filter | Advanced Filter**. In the fields for list range and criteria range enter the cell range or click once in the field

and select the range on the sheet. Excel automatically enters the cell range. The checkbox for “Unique records only” will cause Excel to hide duplicate records.



### Removing an Advanced Filter

To remove an Advanced Filter select **Data | Filter | Show All**.

### Using the Copy To Function

When the Advanced Filter is selected, the option “Copy to another location” is available. Selecting this option will cause Excel to copy and paste the rows that match the criteria range. The list is not filtered in this case, only the returned data is copied. To use this option select the radio button. In the “Copy to” field select one cell or a range of cells.

If only one cell is selected, Excel copies all of the returned data.

If an empty cell range is selected, Excel copies all of the returned data into the cell range. If the returned data is larger than the cell range, Excel asks whether or not to continue pasting the data.

If the cell range contains the criteria labels, Excel copies only those columns of the returned data. Using the previous example, entering the column label “Account” in the copy to field copies only the account data and ignores the other fields. This is a useful function to isolate a particular column from an Advanced Filter.

### Special Note on a Filtered List

Cut, copy, paste, sorting, charting, and printing can be applied to a filtered list. Only the visible data will be affected or used.

## Summarizing Data

Automatically summarizing data is a useful feature in Excel. With this feature, Excel automatically calculates subtotals, grand totals, and inserts the proper labels, rows, and grouping. The example below displays the subtotal command. Notice that the subtotals were created for the item Account. Each time the account changes, a new subtotal row is created for the TOTL-\$ column.

	A	B
1	<b>ACCT</b>	<b>TOTL-\$</b>
2	400354	936985
3	400354	506
4	400354	1251704
5	400354	194150
6	468512	504966
7	468512	37078
8	468512	712334
9	500012	-
10	500012	257446
11	500012	459027
12	654987	304324
13	654987	768949
14	654987	4531
15	654987	312508

1	2	3	A	B
1			<b>ACCT</b>	<b>TOTL-\$</b>
2			400354	936985
3			400354	506
4			400354	1251704
5			400354	194150
6			<b>400354 Total</b>	2383345
7			468512	504966
8			468512	37078
9			468512	712334
10			<b>468512 Total</b>	1254378
11			500012	-
12			500012	257446
13			500012	459027
14			<b>500012 Total</b>	716473
15			654987	304324
16			654987	768949
17			654987	4531
18			654987	312508
19			<b>654987 Total</b>	1390312
20			<b>Grand Total</b>	5744508

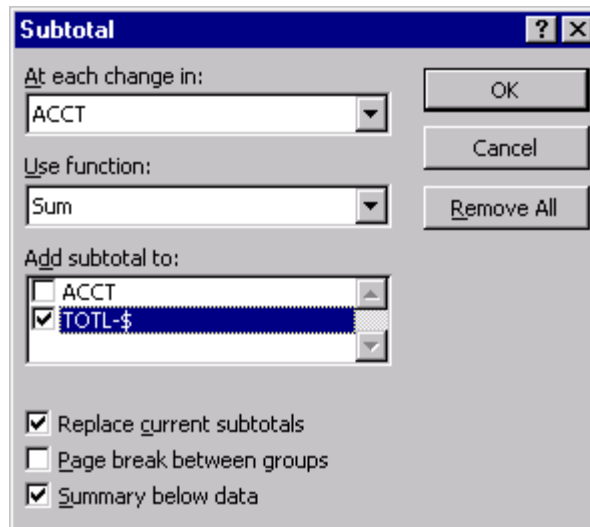
### Using the Subtotals Command

In order to use the **Data | Subtotals** command, the sheet must be properly formatted. Arrange the rows in the order that the items will be grouped together including the proper labels for each column. The data must have column labels or the Subtotals command will not function properly. In the example above notice that the account numbers were sorted together. After the sheet has been organized, use the following steps:

1. Select the area where the subtotals command will be applied - include the column labels. An alternate method is to select one cell in the list and Excel automatically determines the cell range to use. This is not as accurate as selecting the entire region, but it is useful to quickly process data if the list is nicely organized. Skipping one line between separate data lists is an easy

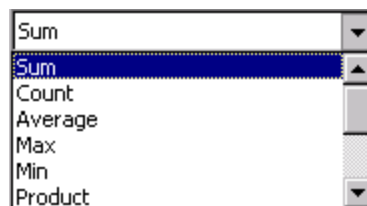
way to help Excel correctly determine the range.

2. Select **Data | Subtotals...** and the following window appears.



3. In the first field labeled “At each change in:” select the desired item to create subtotals for. Remember that the list should be properly sorted for this item.

4. In the field titled “Use function:” select the proper function to use. Even though this is a subtotal feature, the Sum function is not the only choice. Excel provides a variety of functions. When the row labels are inserted in the sheet, Excel displays the function name as a reminder. A list of the functions is shown below.



5. In the field titled “Add subtotals to:” click on the box to toggle on the check sign for each column that Excel should calculate.

6. The check boxes at the bottom set some minor options for the command. Checking off the box titled “Replace Current Subtotals” allows Excel to apply multiple subtotals to the same data list when multiple functions are used. To use this feature, use the Subtotal command with the first function then apply the subtotal command again. Checking off the box titled “Page

break between groups” causes Excel to insert a page break after each grouping. Checking off the box titled “Summary below data” causes Excel to place the subtotal and grandtotal row below each grouping. Although this may be easy, it is often better to see the grand total on a large list when it is at the top. Scrolling to the bottom of the list may be inconvenient.

### **Subtotaling a Filtered List**

A filtered list can be subtotaled using the same steps outlined above; however, there is one important difference when the **Subtotals** command is applied to the filtered list. Applying the **Subtotals** command will only incorporate the data that is visible on the screen.

Using a filtered list to calculate subtotals is not the same as hiding a row using the **Format | Row | Hide** command. Excel still uses the hidden data when creating the subtotals.

### **Removing Subtotals**

To remove subtotals use one of the following three methods:

Use the Undo command to remove a subtotal that was just inserted.

Create another Subtotal to replace the existing subtotals in a list. Remember to check off the option titled “Replace subtotals.”

Select **Data | Subtotals** and click on the “Remove All” button to remove all subtotals in a list.

### **Advanced Summarizing**

Advanced summarizing is used to calculate totals based on data which meet certain criteria. These totals are created using Excel functions so they are not bound to display in any specified location. The functions can be entered in any worksheet location.

#### **Summing Values for a Single Criteria**

To sum values which match a single criteria, enter the following function in the cell where the result will appear:

`=SUMIF(range,criteria,sum_range)`

*range* - the cell range to evaluate against the criteria

*criteria* - the criteria to use for evaluation (enclose in quotes)

*sum\_range* - the cell range to use for summing

Look at the example in the screenshot below to get a better understanding of the proper use. In the example, the data is shown in column A and B. In cell C2, the function “=SUMIF(A2:A15,”<500000”,B2:B15)” is entered. The function is set with the following values:

A2:A15 is the *range*

“<500000” is the *criteria*

B2:B15 is the *sum\_range*

Excel looks at the cells from A2:A15 to find the rows that have an “ACCT” less than 500000. For the rows that meet the criteria, the associated cells in the range B2:B5 will be used in the summing.

	A	B	C	D	E	F
1	<b>ACCT</b>	<b>TOTL-\$</b>	<b>Adv. Totals</b>			
2	400354	1251704	=SUMIF(A2:A15,"<500000",B2:B15)			
3	400354	936985				
4	400354	194150				
5	400354	506				
6	468512	504966				
7	468512	37078				
8	468512	712334				
9	500012	-				
10	500012	257446				
11	500012	459027				
12	654987	304324				
13	654987	768949				
14	654987	4531				
15	654987	312508				

### Counting Values for a Single Criteria

To count the number of cells that meet a criteria, enter the following function in the cell where the results will appear:

=COUNTIF(*range,criteria*)

*range* is the cell range to evaluate against the criteria

*criteria* is the criteria to use for evaluation

## Summarizing Using Complex Criteria

Summarizing values against multiple or complex criteria is performed by utilizing the database functions and a criteria range, which was covered earlier in the Filtering section. The format for using the database functions is:

*Dfunction(database,field,criteria)*

*Dfunction* is the database function to use

*database* is the cell range which contains the list

*field* is the column to use in the calculation

*criteria* contains the reference for the criteria range

The example below shows a sample of one of the database functions. The formula =DMAX(A5:B19,B5,A1:B2) is entered in cell C6 using the database function DMAX (returns the maximum value). The cell range A5:B19 contains the list to evaluate against the criteria. The reference B5 indicates on which column to perform the calculations. Finally, A1:B2 references the criteria range. Here, the formula will return the maximum value for the accounts that are between 450000 and 650000.

Creating the criteria range was previously covered in the section on Filtering. For a full listing of the database functions, use the Function Wizard and access the Database function category.

	A	B	C	D	E
1	<b>ACCT</b>	<b>ACCT</b>			
2	>450000	<650000			
3					
4					
5	<b>ACCT</b>	<b>TOTL-\$</b>	<b>Adv. Totals</b>		
6	400354	1251704	=DMAX(A5:B19,B5,A1:B2)		
7	400354	936985			
8	400354	194150			
9	400354	506			
10	468512	504966			
11	468512	37078			
12	468512	712334			
13	500012	-			
14	500012	257446			
15	500012	459027			
16	654987	304324			
17	654987	768949			
18	654987	4531			
19	654987	312508			

## Pivot Tables

Pivot tables are interactive worksheet tables that quickly summarize large amounts of data using chosen formats and calculation methods. They serve as quick methods to display and analyze the summary data. The rows and column headers in the table can be rotated around the core data to provide different views of the source data. As source data changes, the pivot table can be updated to reflect the new data.

The power of the pivot table arises from its versatility. Subtotals and grand totals are automatically added to the table; the level and type of detail can be quickly and easily changed; and report data and charts can be created directly from the pivot table.

The examples below were created by changing the column and row header. With this one change, the data is viewed in a completely different format.

### Setting Up a Worksheet for Pivot Tables

In order for Excel to create a pivot table, the worksheet must be properly formatted in a list format. This list format consists of data organized in

	A	B	C	D	E
1		Fund Type	Year		
2		Designated			
3	Funds	1988-1989	1989-1990	1990-1991	1991-1992
4	Academic Support	0.833177	6.46	5.812	4.739
5	Auxiliary Enterprises	32.438306	36.526	38.086	42.044
6	Institutional Support	21.092945	19.103	19.353	26.026
7	Instruction	18.875659	21.49	19.427	28.716
8	Operation and Maintenance of Plant	3.8835	5.816	8.373	7.694
9	Public Service	13.430901	13.267	12.471	14.164
10	Research	3.157395	5.234	3.917	3.949
11	Student Financial Aid	9.071576	10.531	10.554	15.098
12	Student Services	38.691586	41.526	41.534	27.632
13	Grand Total	141.475045	159.953	159.527	170.062

	A	B	C	D	E
1			Year		
2	Funds	Fund Type	1988-1989	1989-1990	1990-1991
3	Academic Support	Designated	0.833177	6.46	5.812
4		General	53.604423	55.324	53.707
5		Restricted	8.407802	10.649	13.556
6	Academic Support Total		62.845402	72.433	73.075
7	Auxiliary Enterprises	Designated	32.438306	36.526	38.086
8		General	0	0	0
9		Restricted	1.131492	1.119	1.321
10	Auxiliary Enterprises Total		33.569798	37.645	39.407
11	Institutional Support	Designated	21.092945	19.103	19.353
12		General	28.808825	34.203	36.434
13		Restricted	2.890297	3.922	3.191

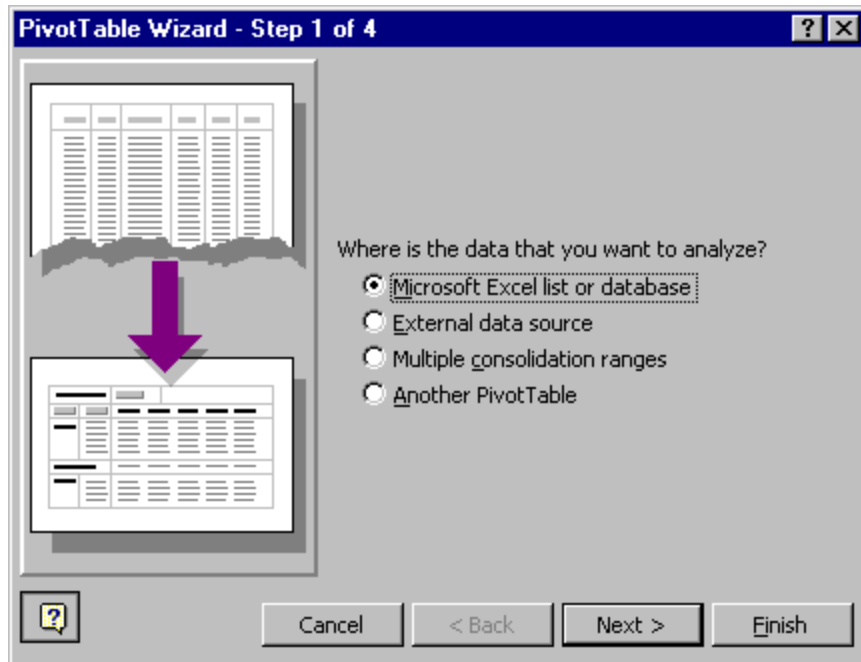
columns with column labels at the top of the list. Excel will not create pivot tables unless the sheet is organized in this format.

### The Pivot Table Wizard

The easiest way to create a pivot table is through the Pivot Table Wizard. Begin by selecting the cell range or a cell within the list.

#### Step 1

Select **Data | Pivot Table Report**. The following screen appears.



This screen specifies the data source to analyze. Pick the data source and click Next to continue to Step 2 of the Pivot Table Wizard. The options are summarized below.

Microsoft Excel list or database

External data source

Multiple consolidation ranges

Another PivotTable

Microsoft Excel list or database

External data source

Multiple consolidation ranges

Another PivotTable

Microsoft Excel list or database

External data source

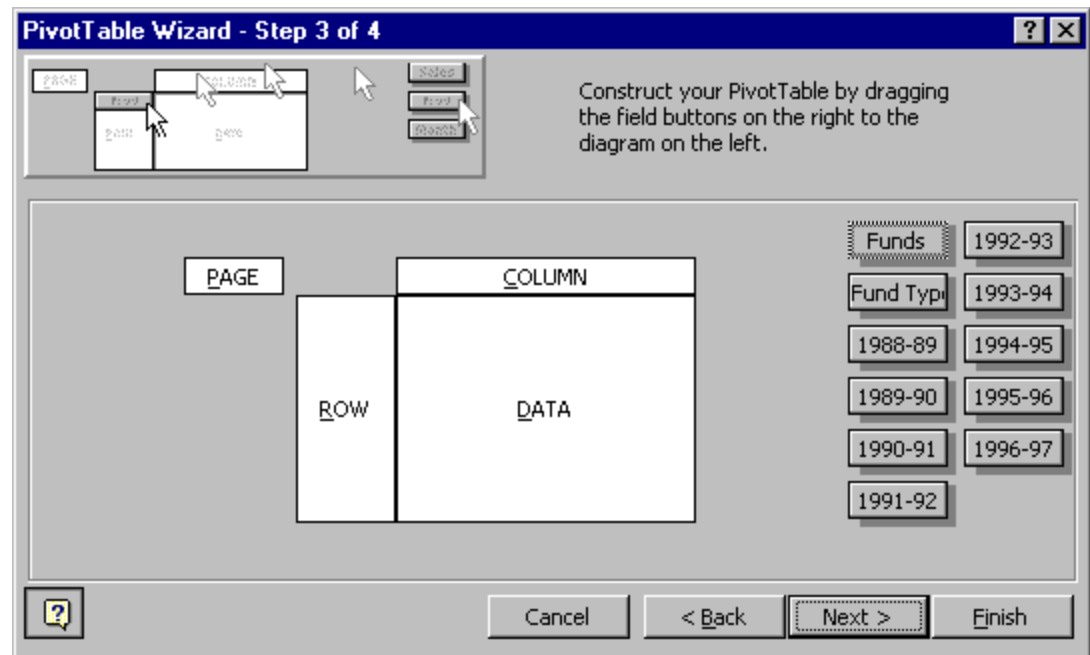
## Step 2

This step is used to specify the location of the data. The dialog box that appears is dependent on the data type chosen in Step 1. In the fields that appear, enter the proper cell references or select the cell references on the sheet. If a cell range was selected before the wizard was started, Excel may already have the correct cell range entered.



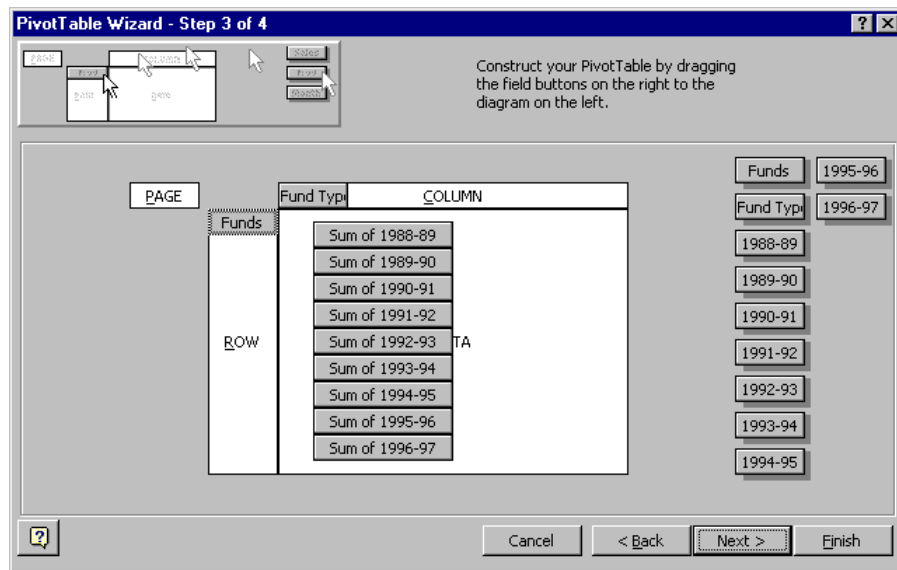
## Step 3

After specifying the type and location of the data, Excel processes the column labels in the data lists and prepares to construct the pivot table. A screen similar to the following will appear. Along the right side of the



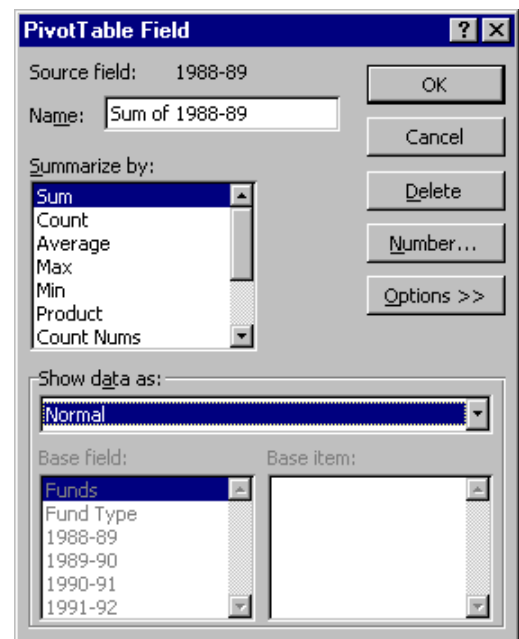
window are the column labels identified in the data source. Depending on the data, the labels will differ. The center of the window contains the set up area for the pivot table. This area is divided into four regions: page, column, row, and data. Click and drag a label to the desired region to specify

the details shown in the pivot table. More details can be shown by dragging multiple labels to an area. If there is a large amount of data, labels dragged onto the page area will allow only certain data to be viewed in the table, similar to filtering lists. To remove a field from the pivot table area, click and drag the label outside of the pivot table area. In the previous example, the following setup was used.



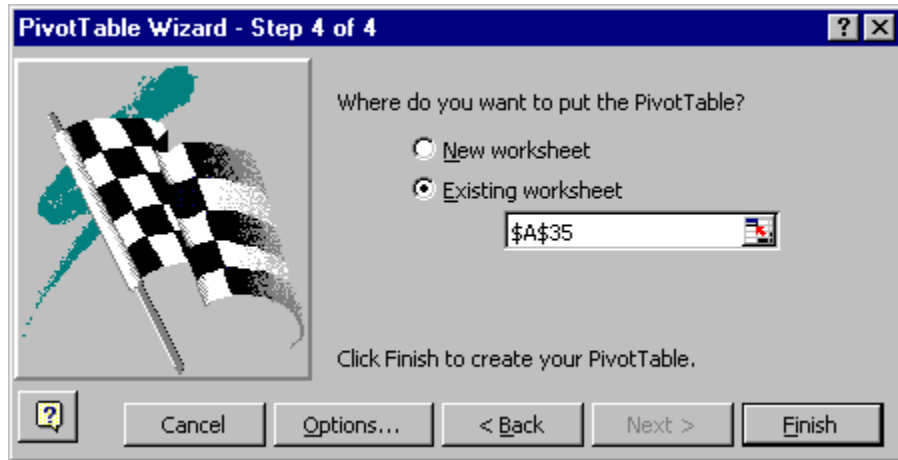
This setup specifies the Fund in the row area, the Fund Type in the column area, and the fiscal years in the Data area. The items in the data area of the pivot table are summarized using one of Excel's functions. By default, the sum function is chosen. To change the function used, double click the label in the data area and the window to the right will appear. In the screenshot, the "Options >>" button has also been selected. In addition to the summarizing function, this window also controls the display for the label. The "Normal" option is the default. Make the desired changes from the available list.

*Note:* Any part of the set up used in this step can be easily changed after the table is created.



### Step 4

The final step of the wizard is used to specify the location of the pivot table. The option “New worksheet” will create a new sheet for the pivot table. If the option “Existing worksheet” is selected, a starting cell must be entered or selected as in the example below. Click Finish to create the table.



### Changing Pivot Table Layouts

When a pivot table is created, the row and column labels specify how the data is displayed. The easiest way to alter the data display is through clicking and dragging the labels. This is used to adjust the field order and location. Each time a change is performed, Excel will automatically reorganize or recalculate the data.

#### Changing Field Order Within a Column or Row

Click and drag the label into the desired heading area. As the mouse is moved, notice that the mouse pointer changes. As the pointer is dragged to different areas, a gray bar displays on the sheet to indicate the location that the pointer has moved to. In the example below, the column items are being reorganized by moving the “Year” label after the “Fund Type.” The “Year” label is being dragged into the column heading designated by the fund type. The gray bar appears starting in cell B3.

	A	B	C
1		Year	Fund Type
2		Sum of 1988-89	
3	Funds	Desired	General
4	Academic Support	833177	53.604423
5	Auxiliary Enterprises	32.438306	0
6	Institutional Support	21.092945	28.808825

### Moving Fields Between Rows and Columns

Change the fields using the same principle as changing the order within a column/row. Click and drag the label to change from the row to the column or from the column to the row. In the example below, the “Fund Type” is being changed to a row label.

	A	B	C
1		Fund Type	Year
2		Designated	
3	Funds	Sum of 1988-89	Sum of 1989-90
4	Academic Support	0.833177	6.46
5	Auxiliary Enterprises	32.438306	36.526
6	Institutional Support	21.092945	19.103

### Moving Fields Between Page and Columns/Rows

Moving the first column label is the easiest way to change a field to a page label. Although it is possible to directly move the other column labels and any row labels, the easiest method is to change a field to column orientation before moving to a page label. To create a page label, click and drag the column label upward. In the example below, the “Fund Type” is being moved to a page label. Notice that a different mouse cursor appears.

	A	B	C
1		Fund Type	Year
2		Designated	
3	Funds	Sum of 1988-89	Sum of 1989-90
4	Academic Support	0.833177	6.46

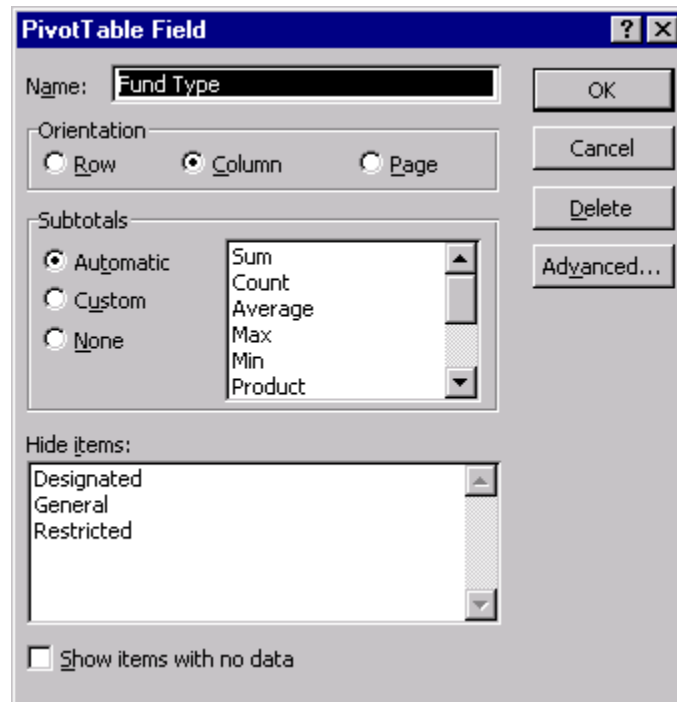
Click and drag the page label to change it to a row or column label. In the example below the “Fund Type” is being moved back to a column label.

	A	B	C
1	Fund Type	(All)	
2			
3		Year	
4	Funds	Sum of 1988-89	Sum of 1989-90
5	Academic Support	62.845402	72.433
6	Auxiliary Enterprises	33.569798	37.645

### An Alternate Method to Change the Fields

In addition to using the mouse to drag fields between the column, row, and

page orientation, an alternate method is to double click on the label. The following window appears. Under the "Orientation" region, select a radio button to change the orientation.



### Changing the Item Order

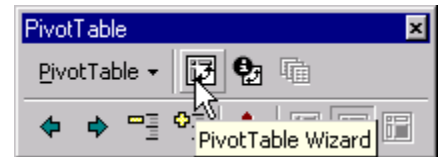
The item order can be altered to change how the items appear next to each other. Begin by single clicking the item to move. Notice that the entire column of data is selected. Move the mouse pointer to the border of the selected area; the mouse pointer will change from the white plus sign to an arrow. Click and drag the field to the desired location. In the example below, the "Sum of 1988-89" is being moved so that it appears after the "Sum of 1989-90."

	A	B	C	D
1				
2				
3		Fund Type	Year	
4		Designated		
5	Funds	Sum of 1988-89	Sum of 1989-90	Sum of 1990-91
6	Academic Support	0.833177	6.4	
7	Auxiliary Enterprises	32.438306	36.526	3
8	Institutional Support	21.092945	19.103	C5:C15
9	Instruction	18.875659	21.49	1

## Adding and Removing Fields

Adding and removing fields is easily accomplished by a variety of different methods. These include using the Pivot Table toolbar, the menu bar, and the right mouse button.

The first method to add or remove fields is through the Pivot Table Wizard. Select any area within the pivot table and select the pivot table wizard. This can be done by using the button in the toolbar, selecting **Data | Pivot Table Report...**, or right clicking on one of the labels and selecting **Wizard...**. This will open a window to Step 3 of the wizard. Choose the desired format and click finish to recreate the pivot table in the same location. It is possible to create the pivot table in a new location by selecting Next to move to Step 4 of the wizard.



The second method to remove fields is through the right mouse button. To remove a field, right click on the label to remove and select "Delete" from the context menu. *Note:* The "Insert" command in the context menu is not used to insert fields.

## Changing GrandTotals and SubTotals

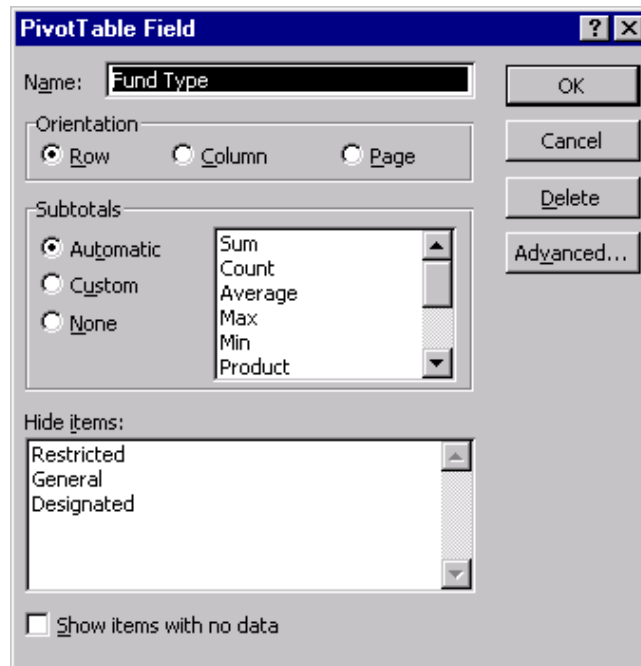
Excel calculates grand totals and subtotals by default. Grand totals provide total values for the rows, columns, and table. Subtotals are provided whenever there are multiple column fields or row fields. When the totals are calculated, the source data for the pivot table is used. Grand totals use the same summary function that is chosen for the data area of the pivot table. Subtotals are defaulted to use the SUM function, but a different function can be chosen.

## Hiding and Showing the Grand Total

To hide or show the grand totals, use the option screen for the pivot table. When using the Pivot Table wizard, click on the Options button in Step 4. If the pivot table has already been created, right click anywhere inside the pivot table and select "Options" from the context menu. From the window which appears, use the checkboxes to show or hide the grand totals for the rows and columns. If the check box is clear, the grand total will not display.

## Hiding, Showing, and Changing the Subtotals

To change the options for the subtotals, double click the desired label field and a window similar to the following will appear. Remember that Excel defaults to calculating subtotals for each field label. If there are multiple fields, each fields must be individually changed.



In the Subtotals region, the function list displays all of the available functions. Select a function in the list to change how the subtotals are calculated. Select the radio button "None" to hide the subtotals for the field.

## Hiding and Showing Field Items

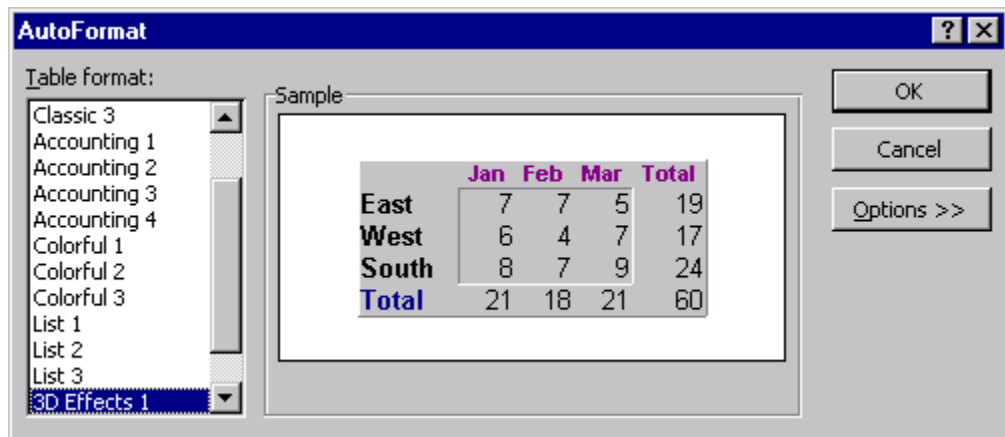
To hide and show field items, double click the desired field label to open the window shown above in the previous section. In the "Hide Items:" box, click on each field to hide. When an item is hidden, the item name will be highlighted. Select the field again to show the field.

## Renaming a Field Label or Item

To rename a field label, double click the field label to open the window shown above. Type in the desired name in the "Name:" box. To rename an Item, select the item and type the new name. Any changes only affect the pivot table display; the source data is not changed.

## Formatting a Pivot Table

Data in a pivot table is treated with a special format because it is constantly recalculated and reformatted each time the layout changes. Because of this the pivot table should not be manually formatted. Each time the layout changes, the formatting may disappear. The best way to format the pivot table is to use an AutoFormat. Select any cell within the pivot table and select **Format | AutoFormat**. From the window that appears, select the desired format.



## Changing the Number Format

To change the number format in the pivot table, select the desired cells. Right click within the selected region and choose **Format Cells...** or choose **Format | Cells...** in the menu bar.

## Changing the Summary Function and Calculation Type

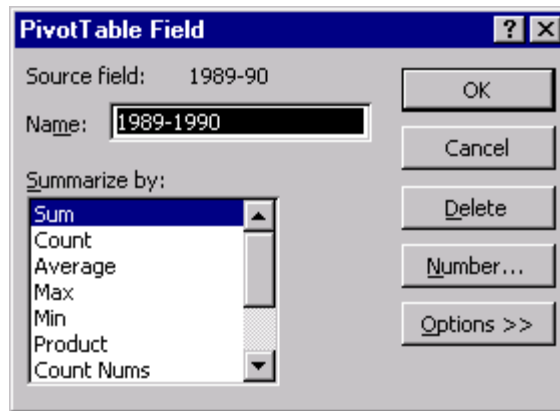
When the data area is calculated and displayed in a pivot table, Excel uses the SUM function as the default function, displaying the data as it normally would. These options can be easily changed to provide a different summary of the data.

### The Summary Function

To change the summary function that is used, select a cell containing the data field to change. Open the Pivot Table Field window by right clicking on the cell and choosing **Field...** or by selecting the toolbar button.



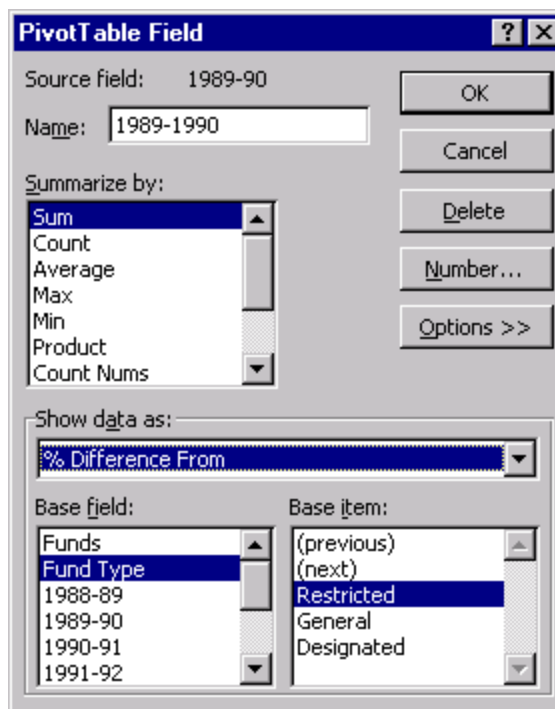
Select the desired summary function to use from the following window.



*Note:* This is an additional location to change the name of the field.

### The Calculation Type

To change the calculation type follow the same steps described in the previous section to open the Pivot Table Field Window. In the window, select the Options>> button to expand the window similar to the screenshot below.



The “Show data as:” box specifies the calculation type for the data area. The default option is normal. Select the down arrow to reveal a list of the possible options. The following table describes each option.

Calculation Type	Explanation
Difference From	Displays the data as the difference from a field and item specified.
% Of	Displays the data as a percentage of a field and item specified.
% Difference From	Displays the data as a percentage difference from a field and item specified.
Running Total In	Displays the data for successive items as a running total.
% of Row	Displays the data as a percentage of the row's total.
% of Column	Displays the data as a percentage of the column's total.
% of Total	Displays the data as a percentage of the grand total.
Index	Displays the data using the following algorithm: $\frac{[(value\_in\_cell) * (Grand\ Total)]}{[(Grand\_Row\_Total) * (Grand\_Column\_Total)]}$

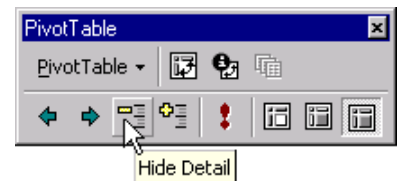
When a calculation type is selected, the "Base Field:" and "Base Item:" boxes may be highlighted. Certain calculation types require additional information in order to properly display the data.

### Showing and Hiding Details

When a pivot table contains more than one row or column field, the item details can be hidden to show only the summary data.

#### Hiding Detail Rows or Columns

To hide the details, double click the item in an outer row or column. Another method is to select the item in the outer row or column and use the toolbar button to hide details. In the example below, double clicking on Academic Support hides the Fund Type details.



	A	B	C
1			Year
2	Funds	Fund Type	1988-1989
3	Academic Support	Designated	0.833177
4		General	53.604423
5		Restricted	8.407802
6	Academic Support Total		62.845402

	A	B	C
1			Year
2	Funds	Fund Type	1988-1989
3	Academic Support		62.845402

### Showing Detail Rows or Columns

To show the details, double click the summary item or select the item and use the toolbar button to show details.

### Hiding and Showing Details for All Rows and Columns

To hide and show all details click on the outer row or column label to select all of the items. Then use the toolbar buttons to show and hide the details. This is a time saving feature to avoid repeating the command for each individual item.

### Displaying the Source Data

To quickly display the source data for a cell in the data area, double click the cell. All of the original data values used to calculate the cell will be displayed in a new worksheet.

### Sorting

#### Simple Sorting by Label

To sort the pivot table by the label, select the label and use the toolbar buttons for sorting ascending or descending.



#### Simple Sorting by Values in the Data Area

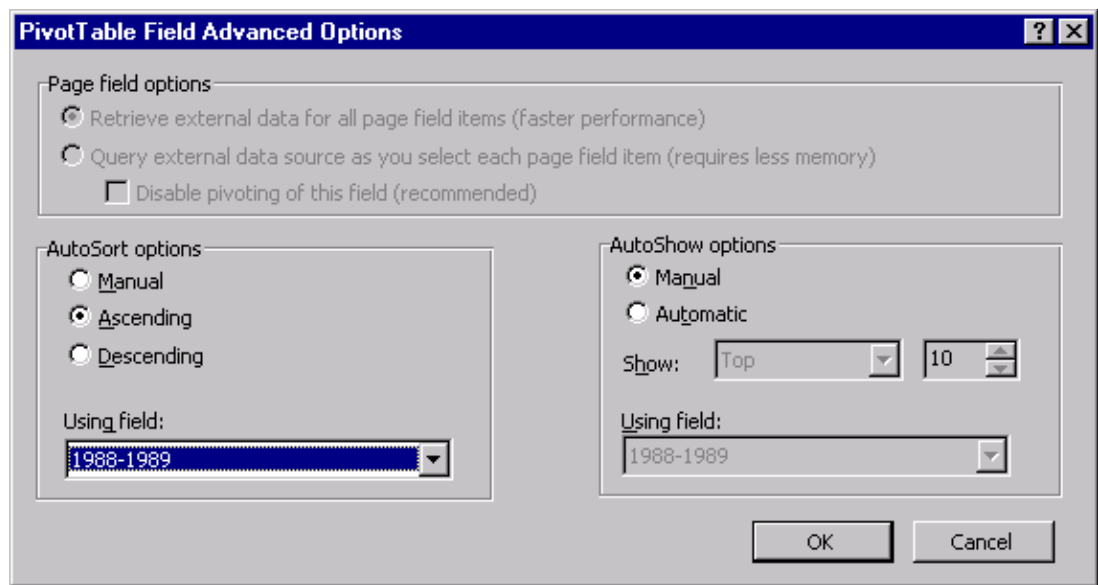
To sort by the data area, select the desired cell column in the data area and use the toolbar buttons. Notice that the entire data area has been sorted, not just the individual column. This is because the data in each of the rows are linked. Excel must move the entire row. In the example below, notice that sorting the year 1988-1989 for Academic Support reorganizes all of the Fund Types in each Fund.

	A	B	C
1			Year
2	Funds	Fund Type	1988-1989
3	Academic Support	Designated	0.833177
4		Restricted	8.407802
5		General	53.604423
6	Academic Support	Total	62.845402
7	Auxiliary Enterpris	Designated	32.438306
8		Restricted	1.131492
9		General	0

	A	B	C
1			Year
2	Funds	Fund Type	1988-1989
3	Academic Support	General	53.604423
4		Restricted	8.407802
5		Designated	0.833177
6	Academic Support	Total	62.845402
7	Auxiliary Enterpris	General	0
8		Restricted	1.131492
9		Designated	32.438306

### Changing the Autosort

In the previous example, sorting by the values automatically reordered the fund type within each Fund. If the pivot table needed to be sorted by the 1988-1989 column for each fund, the Autosort must be changed. Autosort allows for one field to be sorted by a different field. To do this, right click on the field label which needs to be sorted and select **Field...** from the context menu. In the example, the Fund Type will be sorted by the 1988-1989 field. From the Pivot Table Field window, select the **Advanced...** button to open the window shown below.



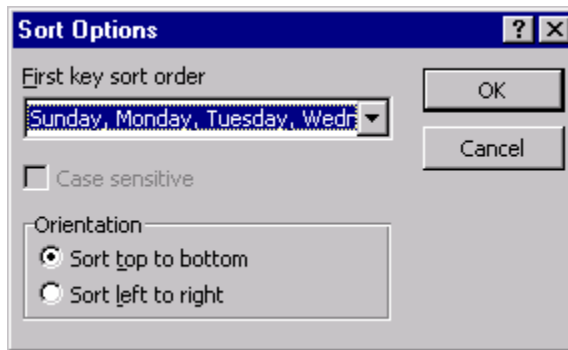
In the “AutoSort options” box select the order for sorting. When a sort order is selected, the “Using field:” region will display a drop down list of the available fields. Select the desired field to sort by. In the example, the Fund Type will be sorted ascending using the 1988-1989 field. The before and after screen shots are shown below. Notice that the fund type within each fund is sorted by Column C.

	A	B	C
1			Year
2	Funds	Fund Type	1988-1989
3	Academic Support	Designated	0.833177
4		Restricted	8.407802
5		General	53.604423
6	Academic Support	Total	62.845402
7	Auxiliary Enterpris	Designated	32.438306
8		Restricted	1.131492
9		General	0

	A	B	C
1			Year
2	Funds	Fund Type	1988-1989
3	Academic Support	Designated	0.833177
4		Restricted	8.407802
5		General	53.604423
6	Academic Support	Total	62.845402
7	Auxiliary Enterpris	General	0
8		Restricted	1.131492
9		Designated	32.438306

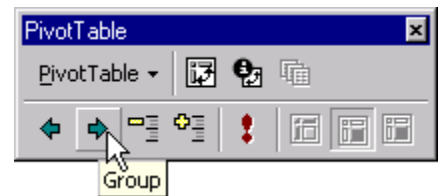
### Sorting by a Custom List

In certain situations, a list contains items (like months) which are sorted chronologically rather than alphabetically. Instead of using a simple sort, a custom sort must be performed. Begin by selecting the cells or field label to sort. Instead of using the toolbar sorting buttons, choose **Data | Sort...** and select the "Options..." button. In the window, click the down arrow and select the custom list.



### Grouping Data

Grouping data in a pivot table is similar to the concept behind grouping data in a spreadsheet. Select the field items to group and use the toolbar button. To ungroup the field select the group and use the toolbar

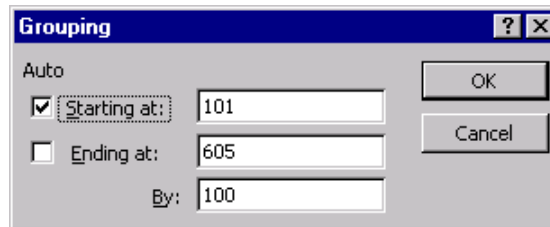


button to ungroup. When a group is created, Excel generates an outer row or column area to hold the grouping as shown in the example below. The group name can be changed by selecting the cell and typing in the new name.

	A	B	C	D	
1				Year	
2	Funds2	Funds	Fund Type	1988-1989	
3	Group1	Academic S	Designated	0.833177	
4			Restricted	8.407802	
5			General	53.604423	
6		Academic Support Total		62.845402	
7		Auxiliary En	General	0	
8			Restricted	1.131492	
9			Designated	32.438306	
10		Auxiliary Enterprises Tot		33.569798	
11		Institutional Suppo	Institutional	Restricted	2.890297
12				Designated	21.092945
13	General			28.808825	
14	Institutional Support Total		52.792067		

## Grouping Numeric Items into Ranges

When the field items are composed of numbers, Excel can automatically group the values into specified ranges. Selecting the desired field and then selecting the grouping function causes the following window to appear.



This window controls the starting and ending values for which to create ranges. The check boxes determine if Excel should automatically choose the starting and ending values. The "By:" value controls how large each range should be. Using the screen shot above, Excel will create 6 groups:

101-200  
201-300  
301-400  
401-500  
501-600  
601-700

The grouping will replace the existing field with the new range values. To show the original values, ungroup the data.

## Grouping Date and Times into Ranges

Similar to grouping numbers, when the field items are composed of dates or times, the following window appears. The new ranges that are created will once again replace the existing field with the new values.

