Microsoft® Excel 2003
Advanced II

A Workshop for San Diego State University Faculty and Staff

Sponsored by Academic Affairs

Where to Find Help When You Need It

Help from your Division/College's Computer Consultant
Some divisions and colleges have computer consultants assigned to them. You can contact these consultants when you need help. To determine if you have a consultant assigned to your division or college, look to: http://rohan.sdsu.edu/~facstaff

Help from the BATS Web Page
BATS (Baseline Access, Training and Support) is a California State University initiative to provide all students, faculty, and staff with "baseline" access to information resources via networks, training in the uses of baseline hardware and software systems, and ongoing professional and technical support for utilization of computer resources at San Diego State University. You can access the BATS Web Page by pointing your browser to: **http://rohan.sdsu.edu/~bats/**

Help in the San Diego State University, Faculty Room
The Faculty Room is staffed Monday through Friday with computing consultants who will try to answer your questions.

Location:	Adams Humanities, 1109
Phone Number:	x45727
Semester Hours:	7:30am – 6:00pm Monday -Thursday
	7:30am – 4:30pm Friday
Semester Intersession:	7:30am – 4:30pm Monday – Friday

Help from the Faculty Computing Help Line

Phone Number: x41348	**E-mail:** helpline@mail.sdsu.edu
Semester Hours:	7:30am – 6:00pm Monday – Thursday
	7:30am – 4:30pm Friday
Semester Intersession:	7:30am – 4:30pm Monday – Friday

Help from the Staff Computing Help Line

Phone Number: x40824	**E-mail:** staffhelp@sdsu.edu
Semester Hours:	7:30am – 6:00pm Monday – Thursday
	7:30am – 4:30pm Friday
Semester Intersession:	7:30am – 4:30pm Monday – Friday

TABLE OF CONTENTS

ARRAYS

You can perform multiple calculations and return either a single result or multiple results by using an array formula. Array formulas use two or more sets of values called array arguments.

The first set of arguments generally refers to a range of cells that contains data used in the calculation and the second set of arguments generally refers to a range of cells where the results will be displayed.

Each array argument must have the same number of rows and columns. You create array formulas in the same way that you create other formulas, except you press CTRL+SHIFT+ENTER to enter the formula.

Single Result

To use an array formula to obtain a result in a single cell, choose the destination cell, create the formula and press **CTRL+SHIFT+ENTER** to enter the formula.

Multiple Results

To use an array formula to obtain results in a range of cells, select the range of cells where the results are to be displayed. The selected range of cells must have the same number of rows and columns as the argument(s) used in the array formula. Create the formula and press **CTRL+SHIFT+ENTER** to enter the formula.

Edit an Array Formula

To change an array formula:

1. Select **any cell** in the array range.
2. Either press **F2** to edit within the cell or click in the Formula Bar. (Note that the braces ({}) do not appear when working in the Formula Bar.
3. Make your changes to the formula
4. Press **CTRL+SHIFT+ENTER** to enter the formula.

Delete an Array Formula

To delete an array formula:

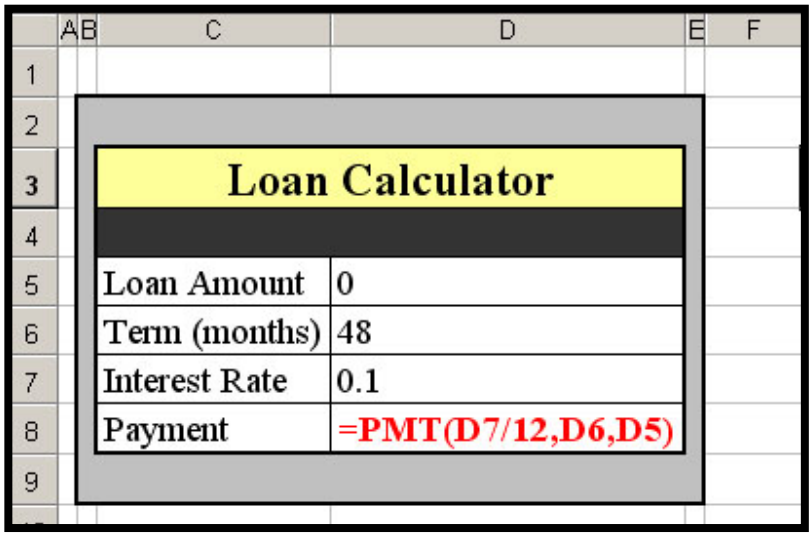
1. Select the **cell** that contains the array formula (if you created a single result array) or select the **range of cells** that contains the array formula (if you created a multiple result array).

2. Press the **DELETE** key.

GOAL SEEK

You can use Goal Seek if you want to produce a specific value in a specific cell by adjusting only one input cell.

For example, the following calculator was created and formatted in Excel.

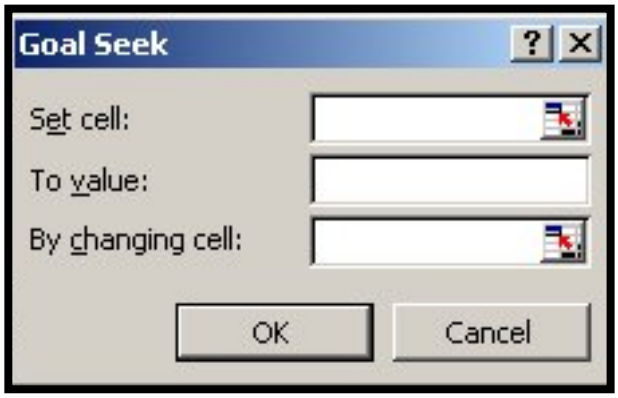


Text was added to cells C5 through C8. Values were added in cells D6 (48) and D7 (10% or 0.1). Finally the Payment Function was added to cell D8. (The formula is visible because the spreadsheet was in formula view when the image was captured.)

This calculator can be used to determine the size of a loan that would be supported by a certain payment amount. For instance, if an individual was only able to afford a payment of $700 per month, Goal Seek would calculate the loan amount that equates to the payment.

To use Goal Seek:

1. Click on **Tools** on the Menu Bar and select **Goal Seek**.

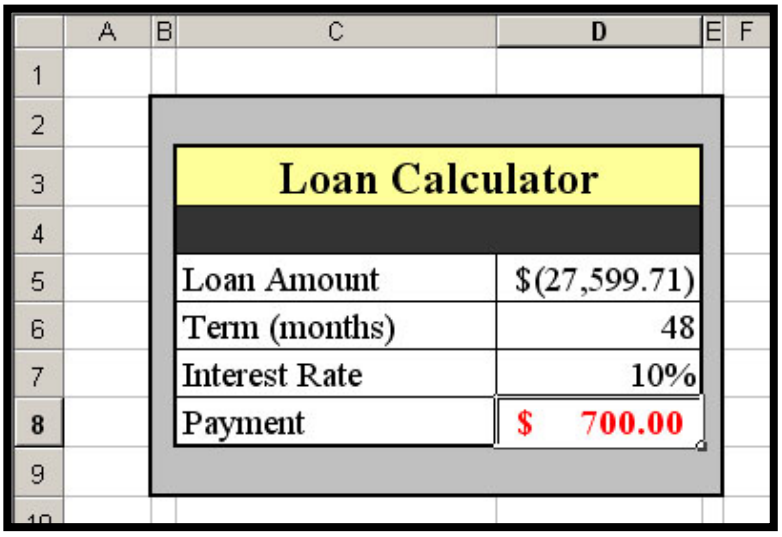


2. Use the **Set cell** text box to reference the cell containing the formula you want to force to a specific value. (D5 in this example.)

3. In the **To value** text box, enter the target amount (700).

4. Use the **By changing cell** text box to reference the cell address of the cell you want to change.

5. Click on **OK** and Goal Seek will display a dialog box indicating that a solution was found. In the below example the calculator will display the desired loan amount as $27,599.71 as follows:



PIVOT TABLES AND CHARTS

You can use a PivotTable report to quickly summarize large amounts of data. A Pivot Chart allows you to view data graphically.

The reports are interactive which means that you can rotate the data (rows and columns) to see different summaries of your data. You can filter the data by displaying different pages, or display the details for areas of interest. If you change anything in the PivotTable the PivotChart will reflect those changes. If you change anything in the PivotChart, the PivotTable will reflect those changes.

Source Data

In order to create a PivotTable or PivotChart it's imperative that the source of the data be set up properly.

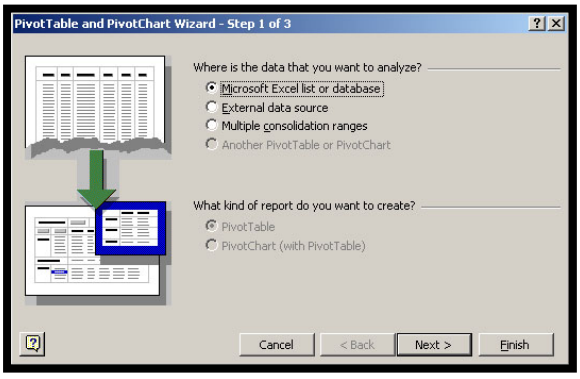
The data needs to be arranged in rows and columns. The first row must contain Field Names. Each column must contain like data. All automatic totals must be removed prior to creating the PivotTable.

Create a PivotTable/ PivotChart

You can create a PivotTable by itself or you can create a Pivot Chart with a PivotTable together.

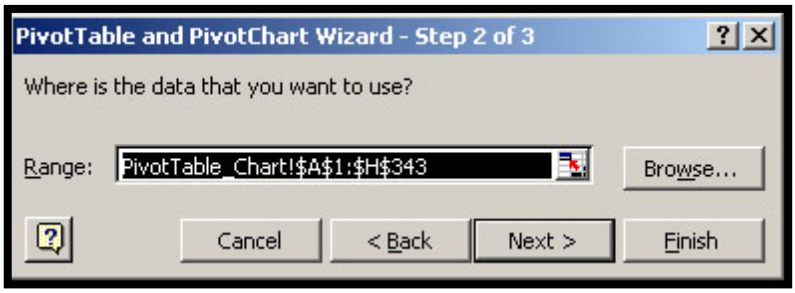
To create a PivotTable:

1. Click on **Data** on the Menu Bar and then select **PivotTable and Pivot Chart Report** to launch the PivotTable and Pivot Chart Wizard.



2. Choose the data source and select the type of report you want to create. Click **Next**.

3. Step 2 asks you to indicate the range of cells that contains the data you want to analyze. Select the **range of cells** and click **Next**.



4. In the final step of the wizard you are able to tell Excel where you want the PivotTable located (existing work sheet or new work sheet), and you are able to lay out the table. To lay out the table click on the **Layout** button.

5. In the layout window, you will find your field names represented as buttons in the lower right corner of the window (see below). In the center of the window you have PivotTable fields as follows:

   - **Page Field** - This field allows you to select the data that is to appear in the PivotTable.

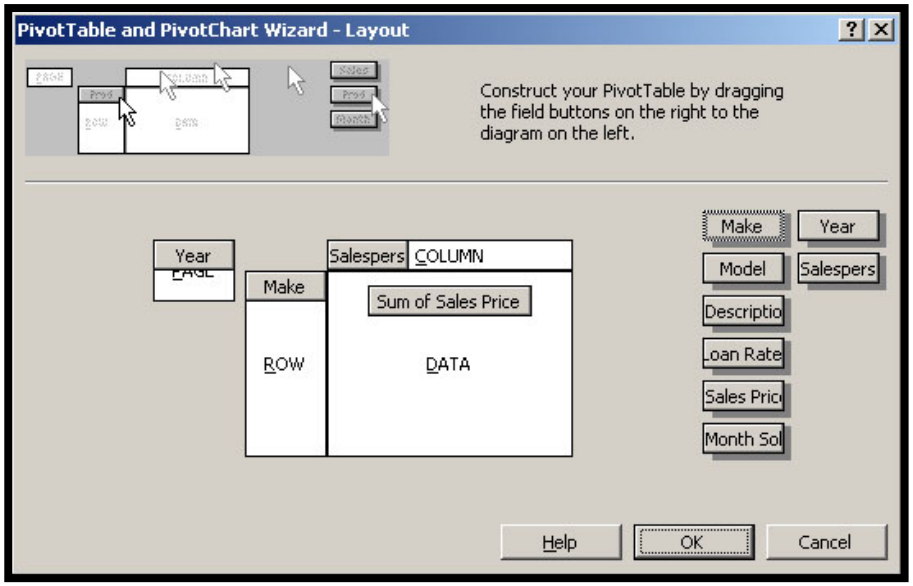
   - **Row Field** - This field summarizes information across rows.

   - **Column Field** - This field summarizes information across columns.

   - **Data Field** - This is the central area in the PivotTable where the actual data will display.

6. You set up your PivotTable by moving (dragging and dropping) your Field Names into one of the PivotTable Field areas.

In the following example "Year" was placed into the Page Field, "Make" was placed in the Row Field, "Salesperson" was placed in the Column Field and "Sales Price" was placed in the Data Field.



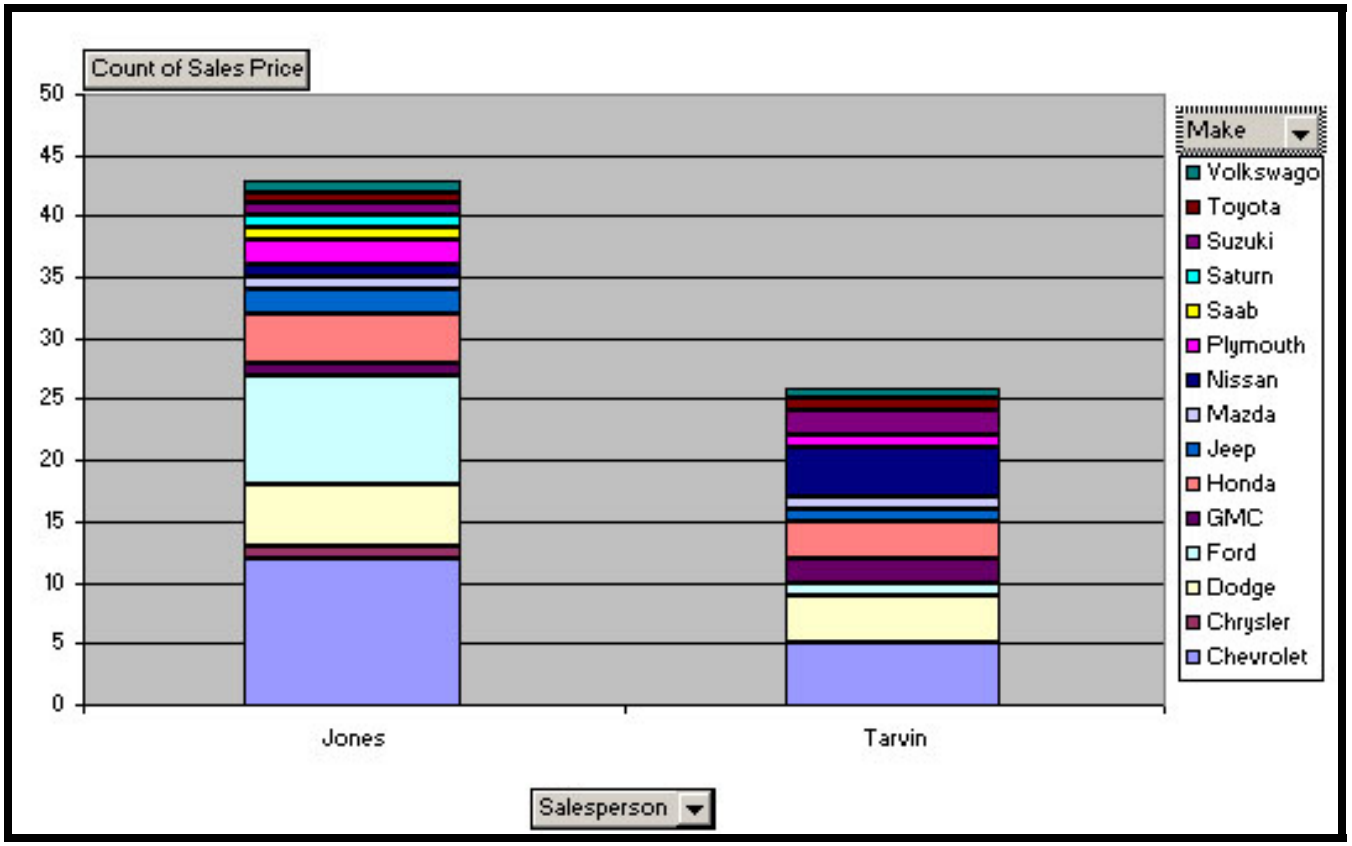
7. Once the layout is complete, click **OK**, and then click **Finish**.

A PivotTable and PivotChart will be created (in the below example the PivotTable was placed in the same worksheet that contained the source data. The PivotTable has a gray background in order to differentiate it from the source data.)

PIVOTTABLE

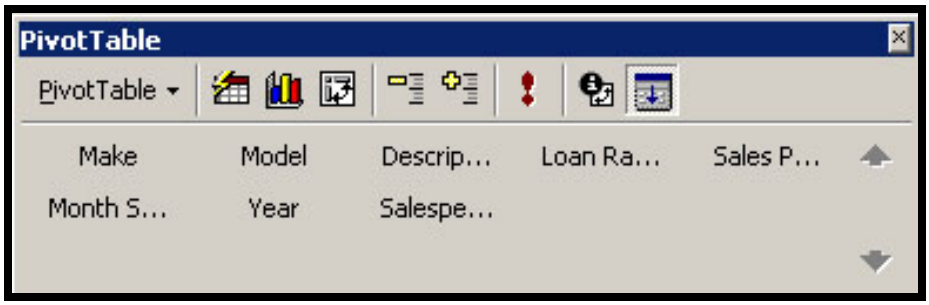
	A	E	G	H	I	J	K	L
1	**Make**	**Sales Pric**	**Year**	**Salesperson**	**Year**	**(All)**		
2	Chevrolet	$ 22,205.00	2003	Jones				
3	Chrysler	$ 25,681.00	2004	Burnette	**Sum of Sales Price**	**Salesperson**		
4	Plymouth	$ 15,889.00	2002	Correll	**Make**	**Jones**	**Tarvin**	**Grand Total**
5	GMC	$ 33,056.00	2001	Decker	**Chevrolet**	**233605**	**92246**	**325851**
6	Ford	$ 31,562.00	2003	Burnette	**Chrysler**	**21565**		**21565**
7	Saturn	$ 10,562.00	2001	Bernal	**Dodge**	**111891**	**92523**	**204414**
8	Nissan	$ 30,568.00	2003	Correll	**Ford**	**171126**	**31562**	**202688**
9	Ford	$ 20,220.00	2003	Fitzgerald	**GMC**	**33056**	**63315**	**96371**
10	Suzuki	$ 11,896.00	2000	Correll	**Honda**	**78808**	**51345**	**130153**
11	Saturn	$ 12,596.00	2001	Bernal	**Jeep**	**31396**	**21555**	**52951**
12	Saturn	$ 10,562.00	2004	Correll	**Mazda**	**31045**	**17852**	**48897**
13	Ford	$ 11,050.00	2001	Correll	**Nissan**	**30568**	**89524**	**120092**
14	Plymouth	$ 18,005.00	2002	Bernal	**Plymouth**	**33894**	**18005**	**51899**
15	Ford	$ 20,220.00	2000	Fitzgerald	**Saab**	**39562**		**39562**
16	Jeep	$ 15,698.00	2000	Carlin	**Saturn**	**12596**		**12596**
17	Honda	$ 19,853.00	2000	Tarvin	**Suzuki**	**8532**	**17064**	**25596**
18	Plymouth	$ 18,005.00	2001	Carlin	**Toyota**	**20596**	**20596**	**41192**
19	Dodge	$ 22,790.00	2003	Correll	**Volkswagon**	**17586**	**18653**	**36239**
20	Chevrolet	$ 16,000.00	2000	Burnette	**Grand Total**	**875826**	**534240**	**1410066**
21	Volkswagon	$ 18,653.00	2003	Correll				

PIVOTCHART



PivotTable Toolbar

Once the PivotTable and PivotChart are built the PivotTable toolbar is displayed.



The buttons on the toolbar function as follows (from left to right):

PivotTable/Pivot Chart

Use this button to access a menu of PivotTable and PivotChart commands

Format Report

Clicking on this button will cause a display of preformatted reports to be displayed. Choose one of the options and the formatting of that option will be applied to your PivotTable. (Does not display when the PivotChart is selected.)

Chart Wizard

Use this button to automatically create a PivotChart that is based on the current PivotTable. Row Fields in the PivotTable become Category Fields in the PivotChart and Column Fields in the PivotTable become Series Fields in the PivotChart.

The PivotChart will be placed in a new worksheet.

PivotTable Wizard

You can use the wizard not only to create new PivotTables, but it can be used to edit existing PivotTables. (Does not display when the PivotChart is selected.)

Hide Detail

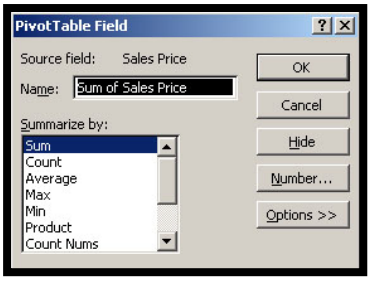
Use this to hide a selected PivotTable field's data. (Does not display when the PivotChart is selected.)

Show Detail

Use this to show hidden PivotTable data. (Does not display when the PivotChart is selected.)

Refresh Data

If data has been added, deleted or modified in your data source, click on this button to have the PivotTable display the current data.



Field Settings

Clicking the Field Settings button causes the PivotTable Field dialog box to display. You can choose different ways to summarize the data in the PivotTable. (Does not display when the PivotChart is selected.)

Hide Fields/Display Fields

Hides or displays the data fields on the bottom of the PivotTable toolbar. (Does not display when the PivotChart is selected.)

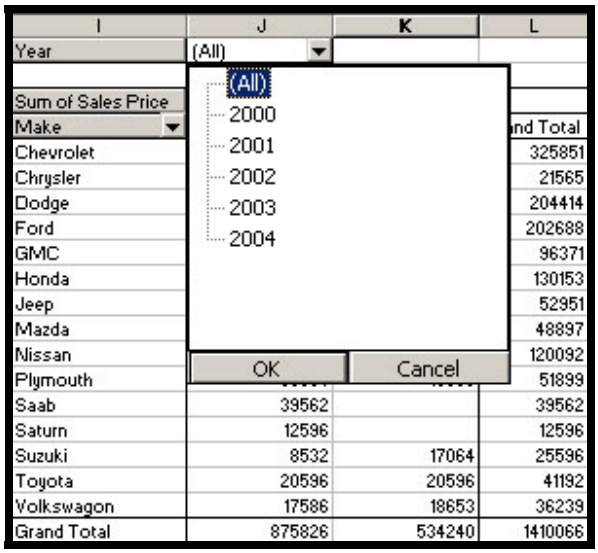
Using the PivotTable

You can analyze data a variety of ways. You can pick and choose among all the options that are available to you and you can reorganize the table.

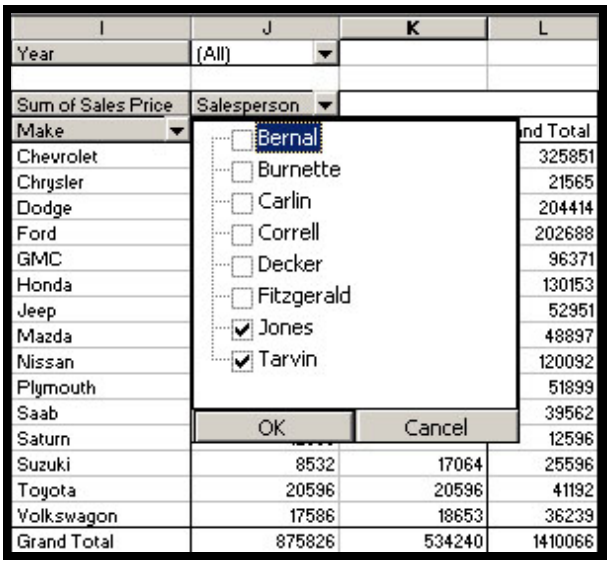
Picking Options

The following examples are from the PivotTable, but the PivotChart works the same way.

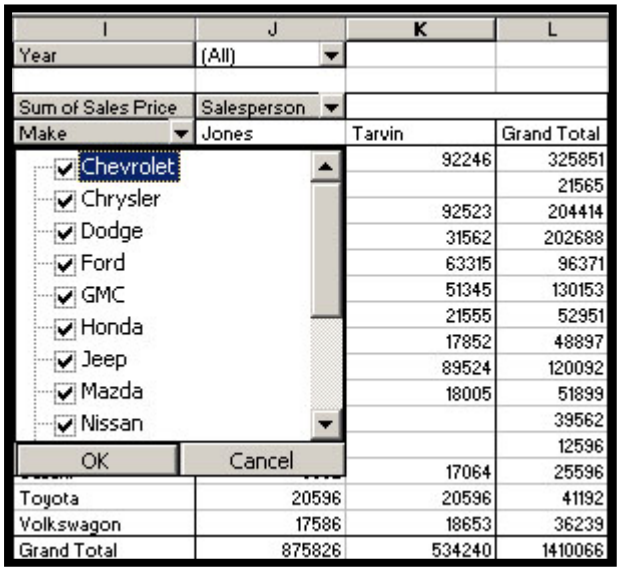
You can click on the **small arrow to the right of "Year (All)"** (below) and you can pick a specific year or years to analyze.



You can click on the **small arrow to the right of Salesperson** (below) and you can pick a specific salesperson or salespersons to analyze.



You can click on the **small arrow to the right of Make** (below) and you can pick a specific Make or several Makes to analyze.



	I	J	K	L
1	Year	(All)		
2				
3	Sum of Sales Price	Salesperson		
4	Make	Jones	Tarvin	Grand Total
5	Chevrolet		92246	325851
6	Chrysler			21565
7	Dodge		92523	204414
8	Ford		31562	202688
9	GMC		63315	96371
10	Honda		51345	130153
11	Jeep		21555	52951
12	Mazda		17852	48897
13	Nissan		89524	120092
14	OK	Cancel	18005	51899
15				39562
16				12596
17			17064	25596
18	Toyota	20596	20596	41192
19	Volkswagon	17586	18653	36239
20	Grand Total	875826	534240	1410066

Reorganizing Tables and Charts

You can change the way the data is analyzed by adding and deleting fields, and you can physically move fields from rows to columns or from columns to rows.

Add a Field

To add a field, ensure that the PivotTable Toolbar is showing. If it isn't showing, click on View on the Menu Bar, choose Toolbars and then click on PivotTable.

Click anywhere in the PivotTable and the toolbar will display all the fields of data in the data file. Click and drag the desired field from the toolbar to the desired location in the PivotTable.

Delete a Field

To delete a field from the PivotTable, simply drag the field button off of the PivotTable.

Moving Fields

Fields can be move into and out of Row Fields, Column Fields and the Page Field area. To move a field, simply drag the field button to the desired location in the PivotTable.

Refreshing a Table

If you add or delete data from the data source, you will need to refresh the PivotTable in order to view current data. To refresh the PivotTable click on the **red exclamation point button** on the PivotTable toolbar.

LOOKUP FUNCTION

Two lookup functions are available so that Excel can find data in a lookup table for use somewhere else.

Lookup Tables

Tables can be created two ways. You can have table headings at the top of the table or the heading can reside in the first column of a table.

Average	Grade
0	F
60	D-
63	D
67	D+
70	C-
73	C
77	C+
80	B-
83	B
87	B+
90	A-
93	A

Table arranged vertically

Table arranged horizontally

Average	0	60	63	67	70	73	77	80	83	87	90	93
Grade	F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

When you create your tables, the order of the data in the tables may or may not matter, depending on how you look up data.

If you are always looking up exact matches, the order of the data in the tables does not matter.

However, if you will be looking up approximate matches (the largest value that is less than the lookup_value), you must sort the data in ascending order (-2, -1, 0, 1, 2 or A-Z).

NOTE: If lookup_value is smaller than the smallest value in table, LOOKUP gives the #N/A error value.

VLOOKUP

The more commonly used of the Lookup functions is VLOOKUP, or "vertical lookup". Excel will search a designated area of a worksheet column by column for specific information.

VLOOKUP will search for a specific record in the leftmost column of a lookup table. When it finds the specified information, it will then retrieve information from another column in the table.

The syntax for VLOOKUP is:
VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)

HLOOKUP

Less commonly used is HLOOKUP, or "horizontal lookup". HLOOKUP will search for a specific record in the first row of a table. When it finds the specified information, it will then retrieve information from another row in the table.

The syntax for HLOOKUP is:
HLOOKUP(lookup_value,table_array,col_index_num,range_lookup)

Variable Definitions

The following defines each variable:

lookup_value: This is the value that you are looking up. The value can be a number, a string of text or a cell reference.

table_array: This is a range of cells that comprises the table where the lookup value is stored.

col_index_num: This identifies the column (VLOOKUP) or row (HLOOKUP) from which the value will come.

col_index_num: If you are looking for an exact match, enter FALSE. If you are looking for an approximate match (the largest value that is less than the lookup_value) either enter TRUE or leave blank.