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Excel
Advanced
Student Edition
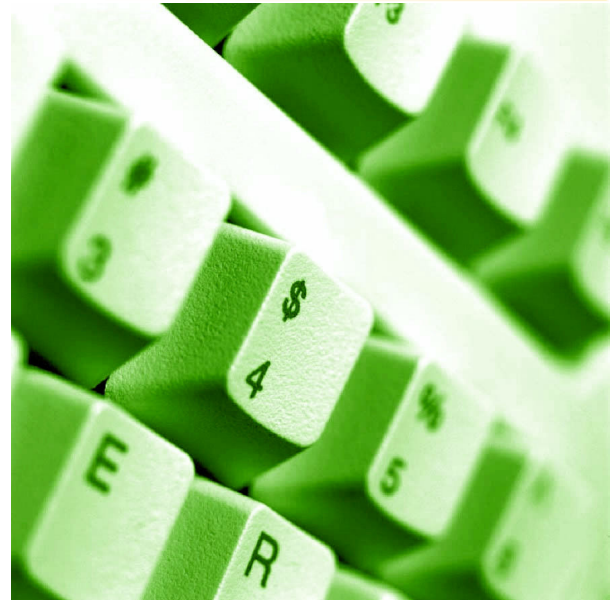
Option Greeks Based on Black-Scholes Option Pricing Model

$$d_1 = \frac{\ln\left[\frac{S_t}{X}\right] + \left(R_f + \frac{1}{2}\sigma^2\right)T}{\sigma\sqrt{T}}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

$$N(d_1) = N\left(\frac{\ln\left[\frac{S_t}{X}\right] + \left(R_f + \frac{1}{2}\sigma^2\right)T}{\sigma\sqrt{T}}\right)$$

$$N(d_2) = N(d_1 - \sigma\sqrt{T})$$

$$N'(d_1) = e^{\left[\frac{-|d_1|^2}{2}\right]}\frac{1}{\sqrt{2\pi}}$$
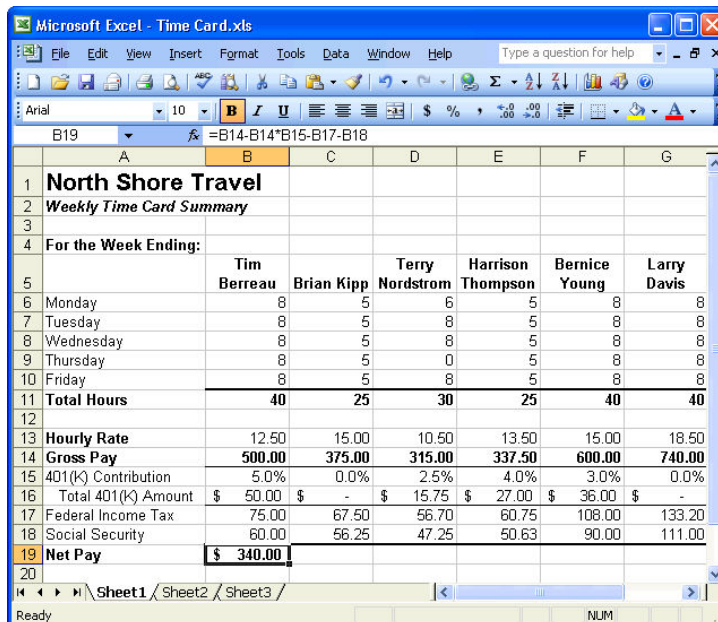
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2007 - 2008

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Section (1)

More Functions and Formulas

1: Formulas with Several Operators and Cell Ranges

We'll start this chapter by creating some more complicated formulas. First let's review: Formulas can contain several values, such as 81 and 3.5; cell references, such as B5 and C1:D11; operators, such as * (multiplication) + (addition); and functions, such as SUM and AVERAGE. When you combine several operations and functions into a single formula, Excel performs the operations in the order shown in *Table 6-1: Order in Which Excel Performs Operations in Formulas*. When a formula contains several operators with the same precedence Excel calculates the formula from left to right. You can change the order Excel calculates a formula by enclosing the part of the formula you want Excel to calculate first in parentheses.

You'll get some practice creating formulas with several references and operators in this lesson by creating formulas to compute employee 401(K) contributions and net pay.

1. **Start Microsoft Excel. If necessary, open the workbook Lesson 6A and save it as** Time Card**.**
If you do not know where your practice files are located, ask your instructor for help.
This time card calculates the employees weekly payroll for the Duluth North Shore Travel office. All the information and *almost* all of the formulas are already here; you just need to add a few more formulas to complete the timecard workbook. First, you need to create a formula to calculate how much to deposit to each employee's 401K account. North Shore Travel matches the employee's 401K contribution, so this formula will be a little trickier than what you're used to.

2. **Click cell B16 and type =.**
Typing an equal sign tells Excel that you want to enter a formula.

3. **Click cell B14, type * and click cell B15 (or you can type** B14*B15**).** *Don't press <Enter> after entering the formula!*

This part of the formula multiplies gross pay (in cell B14) with the percentage the employees want to deduct for their 401K contribution (in cell B15.) You're not finished with the formula yet—remember that North Shore Travel matches any 401K contributions made by their employees.

Remember: All formulas in Excel must begin with an equal sign (=).

4. Type *2 and press <Enter>.

Excel calculates the total 401K amount, $50. Copy the formula you just created to the rest of the row.

5. Copy the formula in cell B16 to the cell range C16:H16.

The worksheet needs one more formula: one to calculate the net pay.

6. Click cell B19, type = , click cell B14, and type – (minus sign).

Here's where the formula gets tricky. You can't directly subtract the 401K amount from cell B16 since it includes both the employee *and* company contribution. You will have to calculate the amount of the employee's 401K contribution and then subtract it from the gross pay.

7. Click cell B14 (that's right – click cell B14 again) type * click cell B15 and press <Enter>.

The formula subtracts the amount of the employee deduction (5% of $500, or $25) from the gross pay. The formula isn't finished yet—you have to go back and subtract the Federal Income Tax and Social Security amounts.

8. Click cell B19 and click the formula bar and type –B17-B18 at the end of the formula. The complete formula should now read =B14-B14*B15-B17-B18. Complete the formula by pressing <Enter>.

Your formula is finished and Excel calculates the net pay for the employee. Wow! There's not much money left over, is there?
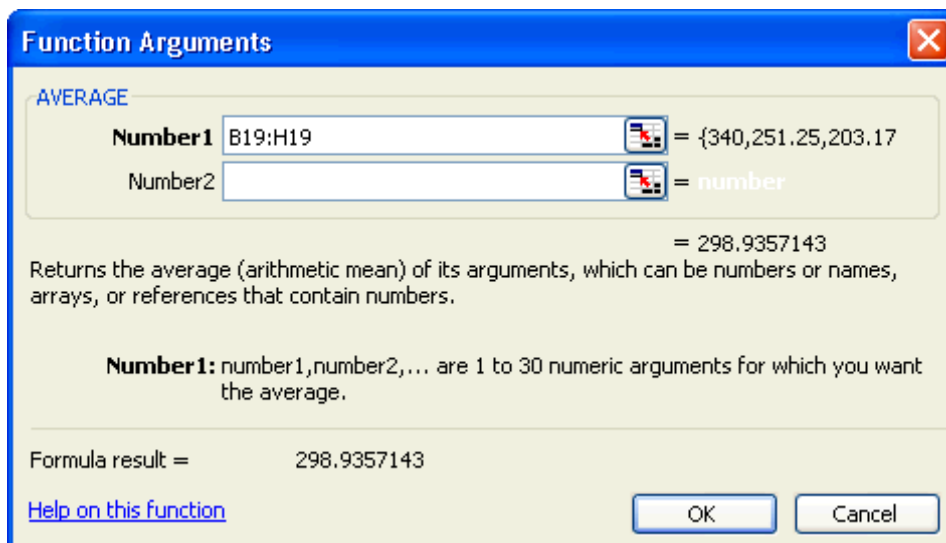
9. Copy the formula in cell B19 to the cell range C19:H19.

Compare your worksheet with the one in Figure 6-2.

When you use several operators in a formula, Excel performs the operations in the order shown in the following table. When a formula contains operators with the same precedence—for example, if a formula contains both a multiplication and division operator—Excel calculates them from left to right. To change the order of evaluation, enclose the part of the formula to be calculated first in parentheses. For example, the formula =(10-5)+(4/2) would subtract 5 from 10, then divide 4 by 2, and then add the results.

Operator	Description
( )	Parentheses change the order of evaluation. For example: =(20+5) / (10-5) would add 20 and 5 (25), subtract 10 by 5 (5) and then divide the results to equal 5. But... =20+5/10-5 would divide 5 by 10 (0.5), add the result to 20 (20.5) and then subtract 5 to equal 15.5.
:	Reference Operator
%	Percent
^	Exponentiation
* and /	Multiplication and division
+ and -	Addition and subtraction
= < > <= >=	Comparison

Operations Preformed in this Order

2: Using the Insert Function Feature
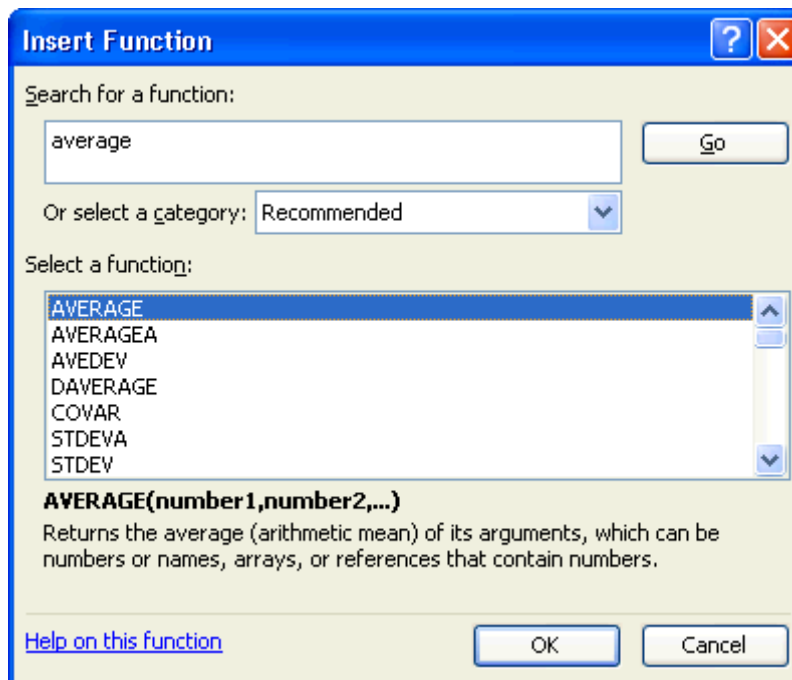
There are several hundred functions available in Excel. Some functions are rather easy to enter, such as the SUM function, while others are much more difficult. For example, the syntax for the DB function, which is used do depreciate an asset, is DB(cost,salvage,life,period,month). Yikes! How are you supposed to remember that? Luckily, if you use Excel's Insert Function feature you don't have to.

The Insert Function feature helps you select, enter, and edit worksheet functions. To use the Insert Function feature all you have to do is click the Insert Function button on the formula bar.

In this lesson, you will use the Insert Function feature to create a simple AVERAGE formula.

1. **Click cell A20, click the Bold button on the Formatting toolbar, type Average Net Pay and press <Tab>.**

In cell B20 you will use the Insert Function button to help you create a formula that

calculates the Average Net Pay.

2. Click the Insert Function button on the formula bar.

The Function Arguments dialog box appears, as shown in Figure 6-3. Simply type a brief description of what you want a function to do, then click Go. Excel will display a list of functions likely to fit your needs.

3. In the Search for a function box type average and click Go.

Excel displays a list of functions that are some how related to the world "average".

4. Select AVERAGE from the Function list.

Notice the bottom of the Function Arguments dialog box displays a description and the syntax of the selected function.

5. Click OK.

The Function Arguments dialog box closes, and the Function Arguments dialog box appears , as shown in Figure 6-4. The AVERAGE function is actually a very simple function—the only arguments (parts or values of a formula) it requires are the numbers you that you want to average.

6. Select the cell range B19:H19.

This range contains the Net Pay for all the employees.
NOTE: If the Function Arguments dialog box is in the way when you want to select a cell or cell range, you can click any text box's Collapse Dialog button to collapse the function palette and select the cell or cell range.

7. Press <Enter>.

The Function palette completes the formula for you and closes. Cell A22 calculates and displays the average Net Pay amount.

8. Save your work.

The Insertion Function dialog box organizes formulas by categories. Table 6-2: *Function Categories* lists and describes the different types of function categories that are available.
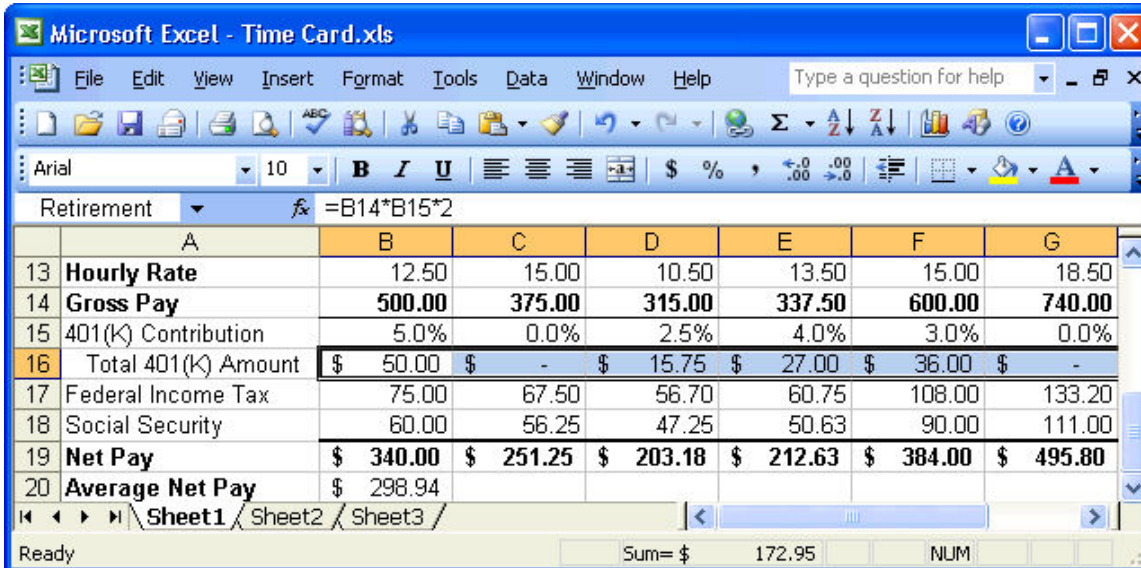
Category	Description
Most Recently Used	Lists the functions you've used most recently.
All	Lists every function available in Excel.
Financial	Lists financial functions to calculate interest, payments, loans, etc.
Date & Time	Lists functions to calculate date and times values.
Math & Trig	Lists math and trigonometry functions, such as SUM, COS, and TAN.
Statistical	Lists statistical functions, to calculate averages, standard deviations, etc.
Lookup & Reference	Lists functions that lookup or reference values.
Database	Lists functions that lookup or calculate values in a list or database.
Text	List functions that can be used with text or labels.
Logical	List IF...THEN functions.
Information	List functions that return information about values and the worksheet itself.
User Defined	Lists custom functions that you (or another use) have created.

3: Creating and Using Range Names

References for cells and cell ranges can sometimes be difficult to read and remember. In the current workbook, what does the cell range B16:H16 refer to? It's the cell range that contains the total 401K contributions (both the employee's and employer's) for each employee. Assigning a name to a cell or cell range makes it easier to read, remember, and use in formulas. So instead of totaling the 401K contributions with the formula, =SUM(B16:H16), you could use a range name to create the more legible formula, =SUM(Total401K). This lesson will show you how to create range names and use them in your formulas. This lesson also explains how to use column and row heading labels in your formulas, and how Excel can automatically create range names for you.

1. **Select the cell range B16:H16.**
The selected cell range contains the employer and employee contributions to each employee's 401K account. Here's how to give the selected cell range a meaningful name, instead of referring to it as B16:H16.

2. **With the cell range B16:H16 still selected, click the Name box in the formula bar, type Retirement and press <Enter>.**
Now when you need to reference the 401(K) amounts, you can use the Range Name "Retirement" instead of the obscure and hard-to-remember cell reference B16:H16.

3. **Click cell A21, click the Bold button on the Formatting toolbar, type Total 401K and press <Tab>.**

4. **In cell B21, type =SUM(Retirement) and press <Enter>.**
Excel calculates the sum of the Retirement range, B16:H16.

Once you create a Named Range you can quickly select it by picking it from the Name box in the Formula bar.
5. **Click the Name box arrow and select Retirement.**
Excel selects the Retirement range. You don't have to manually create names; you can have Excel automatically create them for you.

6. **Select the cell range A5:H11, and select Insert → Name from the menu.**
Here's a brief summary of what each of the items in the Name submenu does:
• **Define:** Creates a name for a cell, a cell range, or constant or computed value
that you can use to refer to the cell, range, or value. (This is the same as typing it
directly in the Name box.) You can also delete any existing names.
• **Paste:** Inserts the selected name into the formula bar. If the formula bar is
active and you begin a formula by typing an equal sign (=), clicking Paste will
paste the selected name at the insertion point. If the formula bar is not active,
double-clicking a name in the Paste Name box pastes an equal sign (=) followed
by the selected name into the formula bar.
• **Create:** Creates names by using labels in a selected range.
• **Apply:** Searches formulas in the selected cells and replaces references with
names defined for them, if they exist.
• **Label:** Creates names for formulas by using text labels from the rows or
columns of a selected range.

7. **Select Create from the Name menu.**
The Create Names dialog box appears, as shown in Figure 6-6. The Create Names will
automatically create range names based on the current selection.

8. **Verify that the Top row and Left column check boxes are checked and
click OK.**
The Create Names dialog box closes, and Excel automatically creates names for the
selected cell range. You can verify that Excel created the correct names by clicking the
Name box arrow.

9. **Click the Name Box List arrow.**
The column heading names should appear in the Name Box list.

10. **Click anywhere in the worksheet window to close the Name Box list.**
You can also use column and row labels in the worksheet to refer to data in formulas—
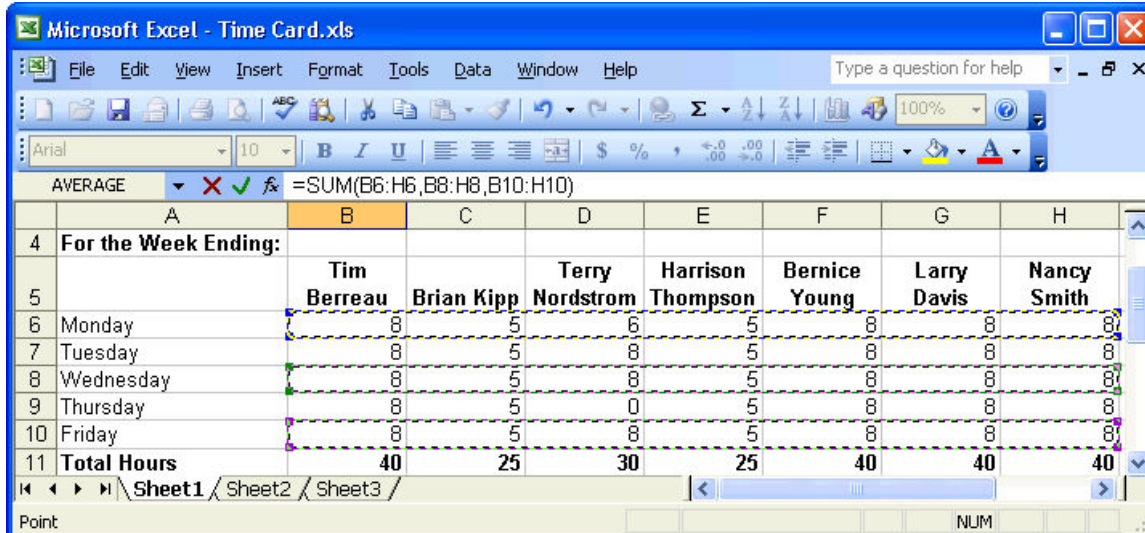without having to create any names at all!

11. **Click cell A22, click the Bold button on the Formatting toolbar, type** Max
Hourly Rate **and press <Tab>.**

12. **In cell B22, type** =MAX(Hourly Rate) **and press <Enter>.**
Excel returns the maximum value in the Hourly Rate row, 18.50.

13. **Save your work.**

4: Selecting Nonadjacent Ranges and Using AutoCalculate

If you've gotten this far in the book you obviously know how to select and use cell ranges in your formulas. But, how do you select cell ranges that aren't next to each other? That's the first topic explained in this lesson.

Also covered in this lesson is Excel's nifty *AutoCalculate* feature, used to calculate a total or average of a cell range without entering a formula.

1. **If necessary, open the workbook Lesson 6B and save it as Time Card.**
If you are unsure where to find this lesson, ask your instructor for assistance.

2. **Click cell A24, click the Bold button on the Formatting toolbar, type M-W-F and press <Tab>.**
Next you want to total the hours from only the Monday, Wednesday, and Friday rows. You can select several nonadjacent cell ranges by holding down the <Ctrl> key when you select the ranges.

2. **Make sure cell B24 is active and click the AutoSum button on the Standard toolbar.**
Excel selects the closest cell with data in it (B22) as the argument for the SUM function. This is isn't the cell range you want to use in your formula—you want to find the totals of the Monday, Wednesday, and Friday rows.

3. **Select Monday's cell range, B6:H6, press and hold the <Ctrl> key, select Wednesday's cell range, B8:H8, and then select Friday's cell range, B10:H10. Release the <Ctrl> button when you're finished.**
The nonadjacent ranges in the Monday, Wednesday, and Friday rows are all selected, as indicated by the shimmering dotted line around each of the columns. Notice the formula bar displays the cell ranges: =SUM(B6:H6,B8:H8,B10:H10).

4. **Press <Enter>.**
Excel calculates the total hours for the Monday, Wednesday, and Friday rows.

On to the second topic covered in this lesson—AutoCalculate. Sometimes you may want to calculate the total of several cells without actually creating a formula. Excel's AutoCalculate makes this incredibly easy—simply select the cell range you want to total, and the calculation is displayed on the status bar.

5. Select the cell range B6:H10.

The AutoCalculate area of the status bar displays the total of the selected cell range: Sum=240. You can also use AutoCalculate to do other simple and quick calculations. To change the calculation type, right-click the AutoCalculate area of the status bar.

6. Right-click the AutoCalculate area of the Status bar.

A shortcut menu appears with a list of the AutoCalculate options:
• **None:** Disables AutoCalculate.
• **Average:** Calculates the average of the selected cells.
• **Count:** Counts the number of non-empty cells.
• **Count Nums:** Counts the number of cells that contain numbers.
• **Max:** Returns the largest value in a range of cells.
• **Min:** Returns the smallest value in a range of cells.
• **Sum:** Adds all the numbers in a range of cells (the default setting).
You want AutoCalculate to display the average of any selected cells.
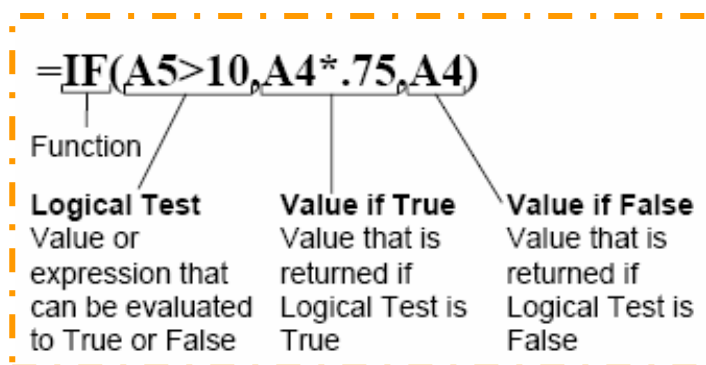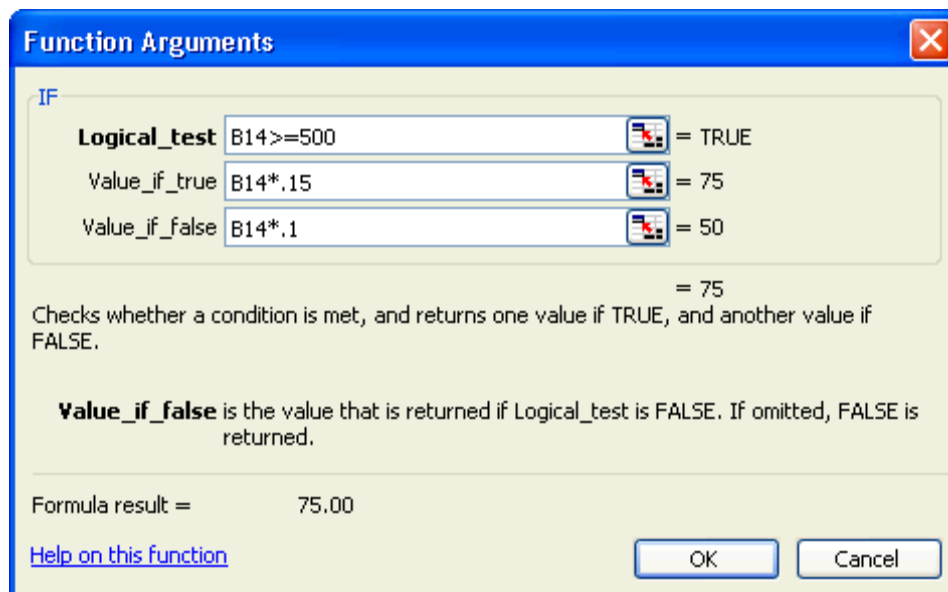
7. Select Average from the AutoCalculate shortcut menu.

AutoCalculate calculates the average for the selected cell range. Return AutoCorrect back to the default Sum setting.

8. Right-click the AutoCalculate area of the Status bar and select Sum.

9. Save your work.

5: Using the IF Function to Create Conditional Formulas

This lesson introduces a very useful function, the *IF* function. The IF function is a *conditional function* or *logical function* because it will evaluate a condition you specify and return one value if the condition is true and another value if the condition is false. For example, you could use the IF function in an invoice to create a formula that would subtract a 5% discount from the invoice if the total was more than $500.00, otherwise it wouldn't subtract anything. The IF function contains three parts or arguments, as shown in Figure 6-10. Since you can use the Insert Function button to help you create IF function formulas, you really don't need to memorize the syntax of the IF function.

1. Click cell **B17** and press **<Delete>** to clear the cell contents.

The Federal Income tax rate changes at different income levels. You have determined that employees who earn $500 or more in a week are subject to a 15% tax rate, while employees who earn less than $500 in a week are subject to a 10% tax rate. You can create a formula using the IF function to evaluate the employee's earnings and then multiply it by the appropriate tax rate. The IF function is a little more difficult than other functions, so use the Insert Function tool to help you enter it.

2. Click the **Insert Function button** on the Formula bar.

The Function Arguments dialog box appears.

3. Select Logical in the Function category list, select IF in the Function name list, and click OK.

The Function Arguments dialog box appears, as shown in Figure 6-9. You're ready to start entering the IF formula.

4. Type B14>=500 in the in Logical_test text box.

You just entered the first argument of the IF function, which evaluates a statement as true or false (see Figure 6-10). Here you want to evaluate if the value in B14 is equal to or greater than $500.

NOTE: Remember, you can also create cell references by clicking the cell or cell range you want to reference. Click the Collapse Dialog button to collapse the function palette and select the cell range if the Function Arguments dialog box is in the way.

The next step is entering true argument of the IF function.

5. Select the Value_if_true text box by clicking it or pressing the <Tab> key, and type B14*.15.

If the values in B14 is equal to or greater than 500 the IF function will multiply the value in cell B14 by 0.15. Move on to the next step to complete the IF function by entering the Value if false argument—what the function should do if the value is *not* equal to or greater than $500.

6. Move to the Value_if_false text box by clicking it or pressing the <Tab> key, and type B14*.1.

If the value in B14 is less than $500, the IF function will multiply the value in cell B14 by 0.10. Compare your screen with the one shown in Figure 6-9.

7. Click OK to complete the formula.

The Function Arguments dialog box closes. The IF function in B17 multiplies the Gross Pay by 15%, since it is equal to or greater than $500.

8. Copy the formula in cell B17 to the remaining cells in row 17.

After copying the IF formula, notice that those columns with Gross Pay less than $500 are multiplied by 10% instead of 15%.

9. Save your work and close the current workbook.

The IF function is one of the more difficult functions, but it's also very powerful and is well worth the effort of learning how to use it.

6: Using the PMT Function
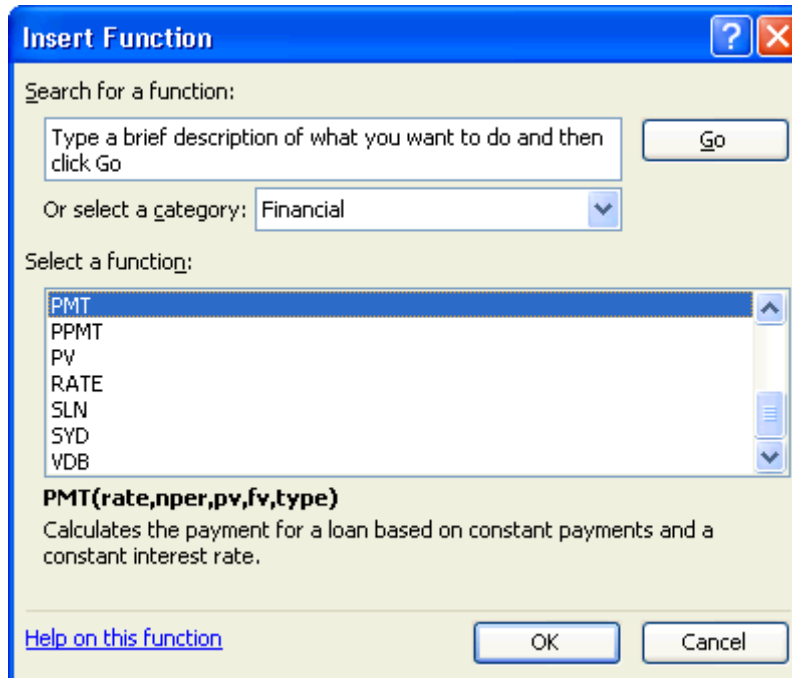
The PMT function is a very valuable function if you work with real estate, investments, or are considering taking out a loan. The PMT function calculates the payment for a loan based on periodic payments and a constant interest rate. For example, say you want to take out a $10,000 car loan at 8% interest and will pay the loan off in four years. You can use the PMT function to calculate that the monthly payments for such a loan would be $244.13.You can also use the PMT function to determine payments to annuities or investments. For example, if you want to save $50,000 in 20 years by saving the same amount each month, you can use

PMT to determine how much you must save.

1. Open the workbook named Lesson 6C and save it as Mortgage Table.
If you do not know where your practice files are located, ask your instructor for assistance. All of the information you need to find the monthly payments has already been entered. All you have to do is use the PMT function to calculate the monthly payment. The PMT function is a little complicated, so use the Insert Function feature to help you enter it.

2. Click cell D4 and click the Insert Function button on the Formula bar.

3. Select Financial from the Or Select a Category list, scroll down the Select a Function list, select PMT and then click OK.
The Function Arguments dialog box appears, as shown in Figure 6-12. You're ready to start entering the PMT formula to calculate the monthly mortgage payments. Look at Figure 6-12: the first argument of the PMT function is the interest rate. Since the Function Arguments dialog box is in the way, you'll have to click the *Collapse Dialog button* to see and reference the cells on the worksheet.

4. Click the Rate Collapse Dialog Box button, click cell C4, and press <Enter>.
Because you want to calculate monthly payments instead of annual payments, you will need to divide the annual interest rates by 12.

5. Type /12 to divide the annual interest rate.
C4/12 should appear in the Rate text box. The next argument in the PMT function is the *Nper*—the total number of payments for the loan.

6. Click the Nper box and type B4*12.
Again, you want to calculate monthly payments so you need to multiply the total number of years by 12. The last step in the PMT formula is entering the *Pv*—the principal.

7. Click the Pv Collapse Dialog Box button, click cell A4, and press <Enter>.
You're finished entering the PMT formula so you can close the Function Arguments dialog box.

8. Click OK.
The Function Arguments dialog box closes, and the monthly payment, ($1,162.95), appears in cell D4.
Hey! Why does the monthly payment appear red (a negative number)? It's because the PMT formula shows the borrower's point of view, and therefore the payments are calculated as a negative cash flow. You can easily change the formula so that it shows a positive number by editing the formula and placing a minus sign in front of the Pv value.

9. Edit the formula in cell D4 by clicking the Formula bar, and adding a - (minus sign) immediately after the = sign, so that the formula reads =-PMT(C4/12,B4*12,A4), then click the Enter button on the Formula bar.
The PMT formula now displays the monthly payments as a positive number. Copy the

formula to find the monthly payments for the other loans.

10. **Copy the formula you just created to the cell range D4:D6.**
The PMT formula is copied. Cell D5 displays a monthly payment of $1,208.39 and cell D6 displays a monthly payment of $1,048.82. Now that you have calculated the monthly payments for each of the three loans, you can easily calculate even more information, such as the total interest paid and total amount paid on each loan.

11. **Click cell E4, type =, click cell D4, type *, click cell B4, type *12, so that the formula reads =D4*B4*12, and click the Enter button on the Formula bar.**
Now that you know the total amount of all the loan payments, you can find how much the total interest will be.

12. **Click cell F4, type =, click cell E4, type -, click cell A4 and click the Enter button on the Formula bar.**
Wow! That interest really adds up, doesn't it?

13. **Copy the formula in cell E4 into cells E5:E6. Copy the formula in cell F4 into cells F5:F6. Compare your workbook with the one in Figure 6-14.**

14. **Try experimenting with different loan amounts, interest rates, and loan lengths for the different loans, then save your work and close the Mortgage table worksheet.**

7: Displaying and Printing Formulas
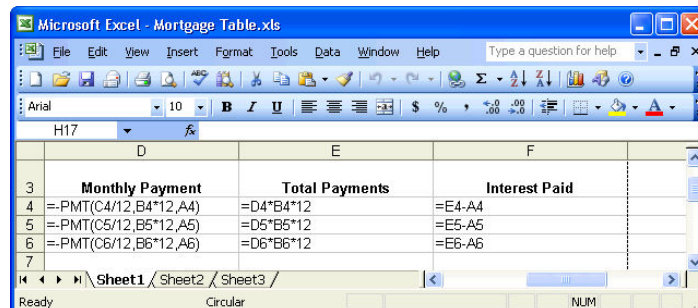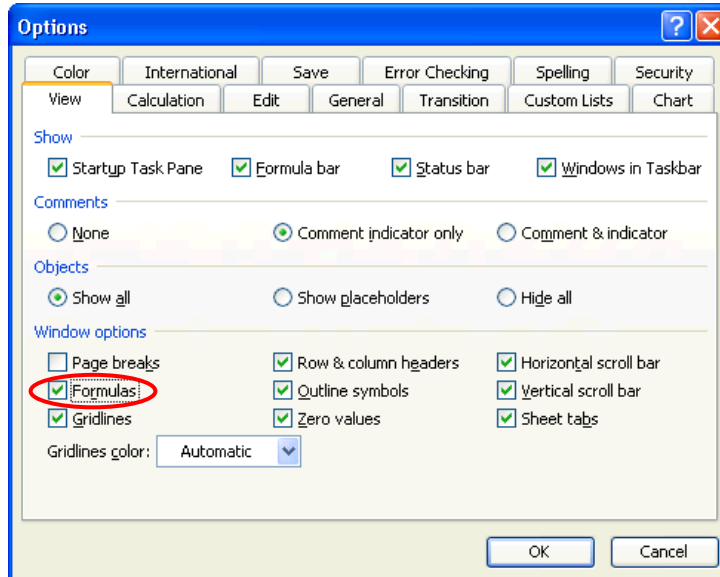
Excel normally displays the results of formulas in the worksheet, but not the actual formula. You can choose to have Excel display the actual formulas in the worksheet cells instead of their results, however, and learning how to do that is the topic of this lesson. Once you display a worksheet's formulas, you can print them for documentation purposes.

1. Select **Tools → Options** from the menu and click the **View tab.**
The View tab of the Options dialog box appears, as shown in Figure 6-15.

2. In the Window options section, check the **Formulas check box**, then click **OK**.
The Options dialog box closes. Notice that the worksheet columns are expanded, and instead of displaying the results of formulas, they now display the actual formulas, as shown in Figure 6-16. Since the worksheet columns are so wide, you will have to scroll through the worksheet to see all of the formulas.

3. Scroll the worksheet horizontally, until you can see the F column.
You can also print the worksheet with the formulas displayed. For the formulas to be meaningful when they are printed, however, you need to tell Excel to print the worksheet row number and column letter headings.

4. Select **File → Page Setup** from the menu and click the **Sheet tab**.

Now specify that you want the row and column headings to be printed.

5. **Check the Row and Column Headings check box and click OK.**

Now preview your worksheet to see how it will look when printed.

6. **Click the Print Preview button on the Standard toolbar. Use the pointer to zoom in and out of the worksheet.**

The worksheet will be printed with the formulas and row and column headings displayed.
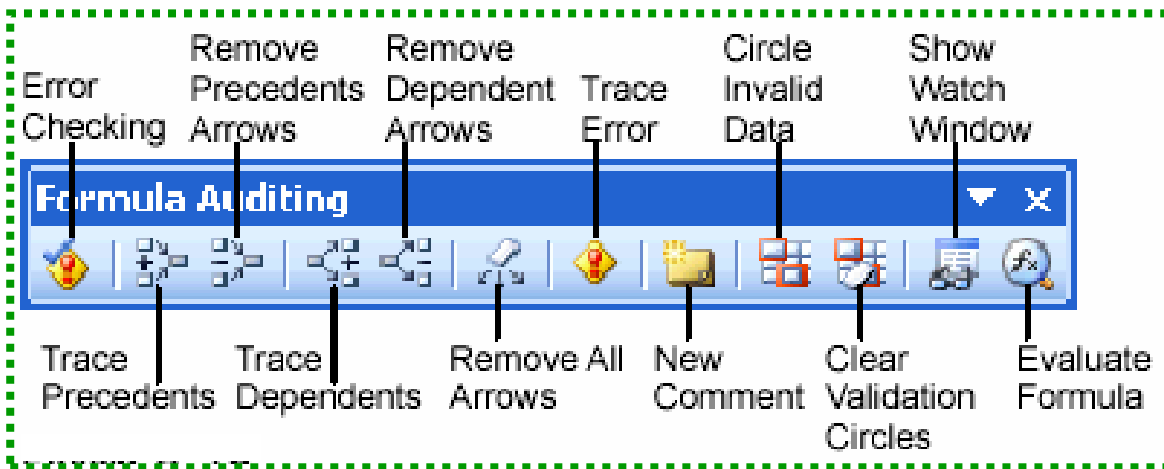
7. **Click Close.**

8. **Select Tools → Options from the menu, make sure the View tab is selected, click the Formulas check box to deselect it, and then click OK.**

Excel displays the results of the formulas instead of the formulas themselves.

9. **Close the workbook without saving it.**

8: Fixing Formula Errors

Sometimes Excel comes across a formula that it cannot calculate. When this happens, it displays an error value. Error values occur because of incorrectly written formulas, referencing cells or data that doesn't exist, or breaking the fundamental laws of mathematics.

1. **Navigate to your Practice folder and open the workbook Lesson 6D.**
If you do not know where your practice files are located, ask your instructor for assistance. This workbook, (created by a user who is not as proficient in Excel as you are), contains several common errors that you will likely encounter. Notice that cells B7, B8, B10, and B12 all have a string of #####s in them. Technically, this isn't an error—the numerical information in the cells is just too large to be displayed in the current cell width. To fix the problem you simply need to widen the column.

2. **Double-click the line between the B and C column headers.**
Excel automatically adjusts the width of the selected column so that it can display the widest cell entry and the #####s disappear.
Excel 2003 includes a useful new feature that checks for errors in your formulas—think of it as spell check for math. Errors are always indicated by a green triangle in the upper left corner of the cell. This indicates that there is an error in the formula.

3. **Click cell D5 to select it.**
This cell displays #DIV/0!. This error code results when Excel tries to divide a number by zero. Notice that a Trace Error button appears next to the cell. The button offers a drop-down list of things you can do to correct the cell.

4. **Click the Trace Error button drop-down list and select Show Formula Auditing Toolbar from the list.**

The Formula Auditing toolbar appears, as shown in **Figure 6-18**. The Formula Auditing toolbar helps you find cells that have a relationship to a formula, displays formulas affected by changes made to the cell, and tracks down the sources of errors.

5. **Click cell D5, and then click the Trace Error button on the Formula Auditing toolbar.**

An arrow appears from the active cell, D5, to the cells that caused the error, as shown in figure 6-17. Notice cell B5 contains a value, while cell C5 is blank—the source of the #DIV/0! error in cell D5. To fix the error, you must enter a value in cell C5.

6. **Click cell C5, type** 1 **and press <Enter>. Click the Remove All Arrows button on the Formula Auditing toolbar to remove the tracer arrow.**

The error value in cell D5 is replaced by the correct calculation of the formula. Next, look at cell B12, the one that calculates the agent's commission. The commission rate at North Shore travel is 5 percent, so this commission amount seems too large. You can investigate this value by tracing the cell precedents.

7. **Click cell B12 and click the Trace Precedents button on the Formula Auditing toolbar.**

Arrows appear from the cell range B4:B10 to cell B12. You can now easily see the source of the problem: the cell range includes both the sales totals *and* the sum of the sales totals, doubling the value used to calculate commission. Fix the error.

8. **Edit the formula in cell B12 so it reads =B10*0.05 and press <Enter>.**

The formula now calculates a more reasonable commission amount, $731.70. You can close the Formula Auditing toolbar since you're finished using it.

9. **Click the Formula Auditing toolbar's close button to close it.**

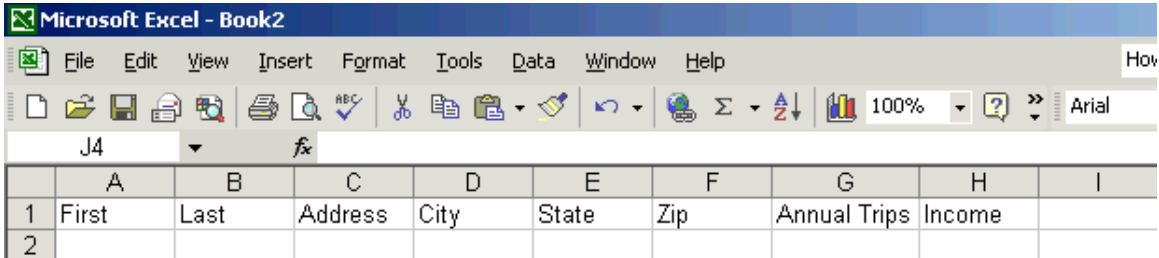| Error Value	Description
#####	The numeric value is too wide to display within the cell. You can resize the column by dragging the boundary between the column headings.
#VALUE!	You entered a mathematical formula that references a text entry instead of a numerical entry.
#DIV/0!	You tried to divide a number by zero. This error often occurs when you create a formula that refers to a blank cell as a divisor.
#NAME?	You entered text in a formula that Excel doesn't recognize. You may have misspelled the name or function, or typed a deleted name. You also may have entered text in a formula without enclosing the text in double quotation marks.
#N/A	This error occurs when a value is not available to a function or a formula. If certain cells on your worksheet contain data that is not yet available, enter #N/A in those cells. Formulas that refer to those cells will then return #N/A instead of attempting to calculate a value.
#REF!	The #REF! error value occurs when a cell reference is not valid. You probably deleted the cell range referenced to in a formula.
#NUM!	The #NUM! error value occurs when you used an invalid argument in a worksheet function.
#NULL!	You specified an intersection of two ranges in a formula that do not intersect.
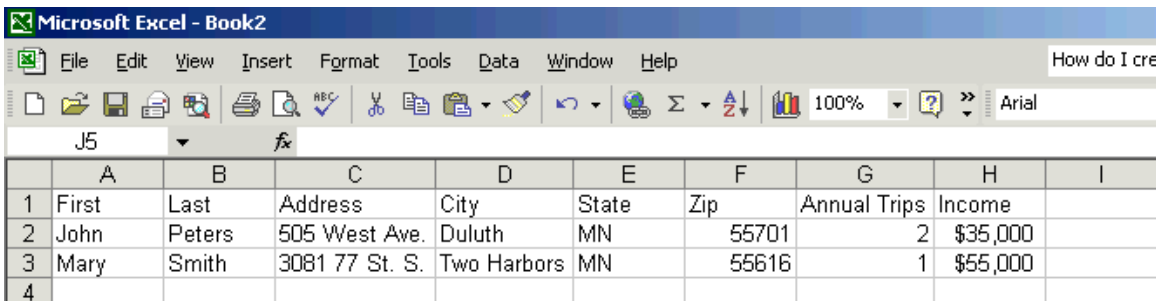
Section (2)

Working with Lists

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1: Creating a List

We'll start this chapter by creating a list. Lists are organized by *records*. Each record contains information about a thing or person, just like an individual listing in a phone book. Records are broken up into fields which store specific pieces of information. For example, the LastName field would contain people's last names, and the Phone field would contain their phone numbers. In Excel, the columns contain the list's fields, and the rows contain the list's records. See Figure 7-2 for an example of how information is stored in columns and rows. Creating a list in Excel is easy—almost too easy, and people often create lists without planning and thinking about how they will work with the information in the future. Think ahead when you create a list. It's often difficult to make changes to the structure of the list once there is information in it. Table 7-1: *Guidelines for Creating Lists* for some guidance on creating list.

1. **Start Microsoft Excel.**
The first step in creating a list is entering the field names for the list. Make sure you always put the field names in the first row of the list.

2. **Type** First **in cell** **A1** **and press the** **<Tab>** **key to move to the next cell.**

3. **Type the remaining field names, each in its own cell, as shown in Figure 7-1.**
Don't worry if the field names are wider than the cells—the information is there, you just can't see all of it. Move on to the next step to add a couple records to the list.

4. **Enter the information from Figure 7-2 in the second and third rows. Add an apostrophe (') before you type the Zip Codes (i.e. '55701).**
The apostrophe enters the Zip Code as a label instead of a value. A green triangle appears, indicating that it is an error. Ignore this. If you didn't add an apostrophe, Excel would remove the leading zeros (0) from any Zip Codes beginning (0), such as 01586. That's all there is to creating a list. There are, however, a few things you can do to the list to make working with it a little easier. First, make the field headings stand out more by making them bold.

5. **Select the cell range A1:H1 and click the Bold button on the Formatting toolbar.**
When working with lists (especially longer ones) it is usually also a good idea to split and freeze the worksheet window so the field headings always remain visible when you move through the rest of the worksheet.

6. **Move the pointer over the vertical split box, located at the top of the vertical scroll bar. When the pointer changes to a , drag the split box down directly beneath row 1.**
Excel splits the worksheet window vertically into two separate panes.

7. **Select Window → Freeze Panes from the menu.**
The frozen heading row will always be visible at the top of the worksheet, even if the list contains thousands of records.

Guidelines for Creating Lists

Guideline	Why?
Only have one list on a worksheet	Some list management features, such as filtering, can be used on only one list at a time.
Leave at least one blank column and one blank row between the list and other data on the worksheet.	Excel can then more easily detect and select the list when you sort, filter, or insert automatic subtotals.
Avoid putting blank rows and columns in the list.	So that Microsoft Excel can more easily detect and select the list.
Create column labels in the first row of the list.	Excel uses the labels to create reports and to find and organize data.
Design the list so that all rows have similar items in the same column.	This makes the list more meaningful and organized.
Try to break up information as much as possible.	This gives you more power to sort, filter and manipulate the list.
Each column should contain the same type of information.	This will make the list easier to read and understand.
Don't use duplicate field names.	Duplicate field names can cause problems when entering and sorting information.

2: Using the Data Form to Add Records
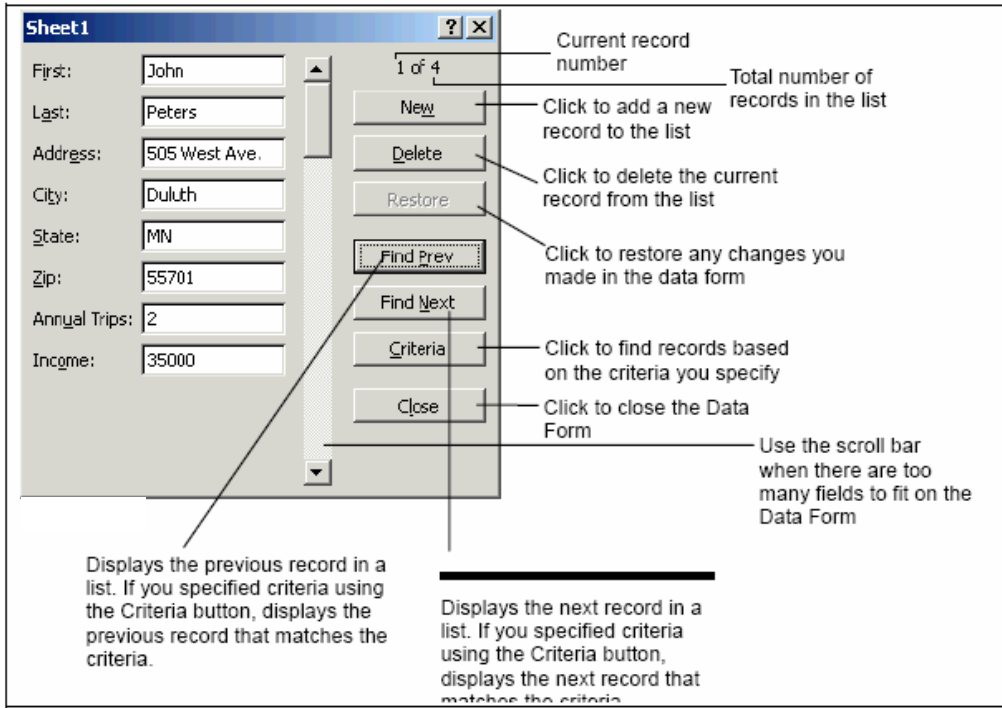
There are two ways to add records to a list. We already covered the first method in the previous lesson, simply by entering them to the rows in the list range. Once you have entered the field names for a list, another way to add records to a list is with Excel's Data Form dialog box, which you can find under the Data → Form menu. Actually, the Data Form can do a lot of things, including:

• Adding records
• Displaying and scrolling through records
• Editing existing records
• Deleting records
• Finding specific records

This lesson focuses on using the Data Form to display and add records to the current list. We'll cover some of the other topics in the next few lessons.

1. **Make sure the active cell is located somewhere inside the list (the cell range (A1:H3).**
The active cell must be within the list in order to use the Data Form.

2. **Select Data → Form from the menu.**
The Data Form dialog box appears, with the first record in the list, John Peters, as shown in Figure 7-3. One of the benefits of the Data Form is that it makes it easy to display and navigate through the various records in a list.

3. **Click the Find Next button to move to the next record in the list.**
The next record in the list, Mary Smith, appears in the Data Form.

4. **Click the Find Prev button to move to the previous record in the list.**
The previous record, John Peters, appears in the Data Form. You can also use the Data

Form to add new records.

5. Click the New button.
A blank data form appears. Notice the text "New Record" appears where the record number counter was, indicating you are adding a new record to the list. The insertion point appears in the first field of the Data Form.

6. Type Susan **in the First box and press <Tab> to move the insertion point to the next field.**
Go ahead and enter the rest of the information for this record, as shown in the next step.

7. Enter the rest of the information for Susan Ratcliff in the fields as follows:
First Last Address City
Susan Ratcliff Rt. 8, Box 109 Duluth
State Zip Annual Trips Income
MN 55801 4 $40,000
Press <Tab>after each entry to move to the next field. Go on to the next step when you've finished.

8. Click the New button to open another blank Data Form, and enter a record for Harold Williams using the following information:
First Last Address City
Harold Williams 55 Sugar Lane Duluth
State Zip Annual Trips Income
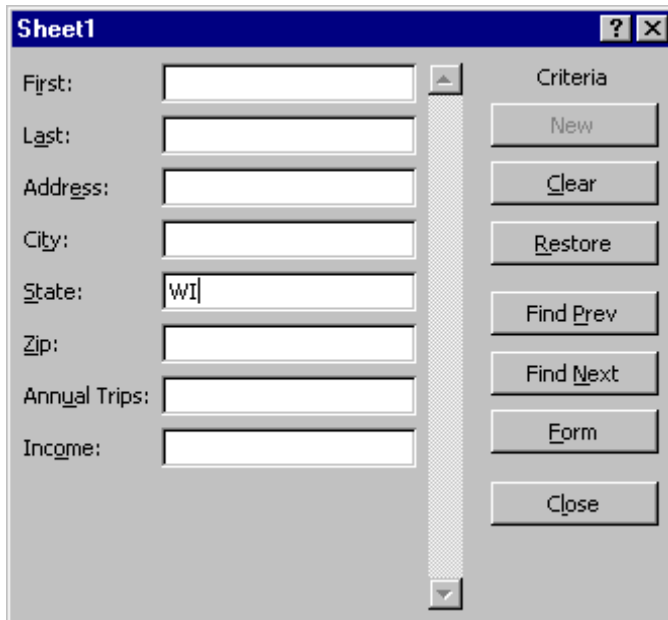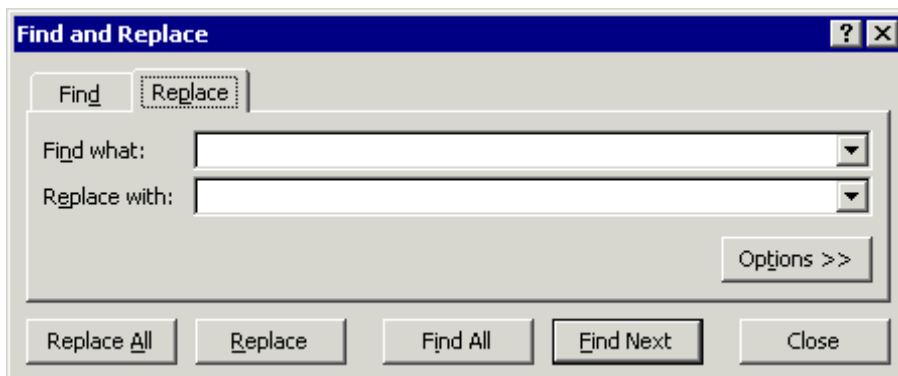MN 55701 2 $25,000

9. Click Close when you have finished entering the information for Harold Williams.
The Data Form dialog box closes. Notice the records you added are placed at the end of the list.

10. Save your worksheet as List Practice **and close it.**

3: Finding Records

A task you will undoubtedly want to do if you work with a list is look up or find a specific record or records, such as a record for a particular client. Like so many other procedures in Excel, there are two different ways to search for records in your lists:
• Using the Edit → Find Command
• Using the Data Form dialog box
This lesson examines both methods; plus you'll also learn how you can find and replace information. For example, if you misspell a city's name throughout a list, you can use the Find and Replace command to replace every occurrence of the incorrect spelling with the correct spelling.

1. **Open the workbook named Lesson 7A and save it as** Database List**.**
If you do not know where your practice files are located, ask your instructor for assistance.
One method of finding a specific record in a list is to use the Data Form.

2. **Make sure the active cell is located inside the list and select Data →**
Form from the menu.
The Data Form appears.

3. **Click the Criteria button.**

A blank data form appears. Notice the text Criteria appears where the record number counter was, indicating you are working with a Criteria Data Form. To use the Criteria Data Form, simply type what you want to look for in the appropriate fields and click the Find Next button.

4. **Click the State field, type WI and click Find Next.**

The Data Form displays the first record it finds in the list that is from WI.

5. **Click Find Next to move to the next record that matches the WI criteria.**

The Data Form moves to the next WI record.

6. **Click Close.**

You can also find information in a list using Excel's standard Find function, located under Edit → Find. You can also find and replace information. There is a mistake in the list: the Zip Code for Chekov, MN 55411 should be 55414. Use Replace to fix the mistake.

7. **Select Edit → Replace from the menu.**

The Replace dialog box appears, as shown in Figure 7-6. Enter the incorrect Zip Code you want to replace—55411, and the Zip Code you want to replace it with—55414.

8. **In the Find what box, type 55411, click the Replace with box and type 55414.**

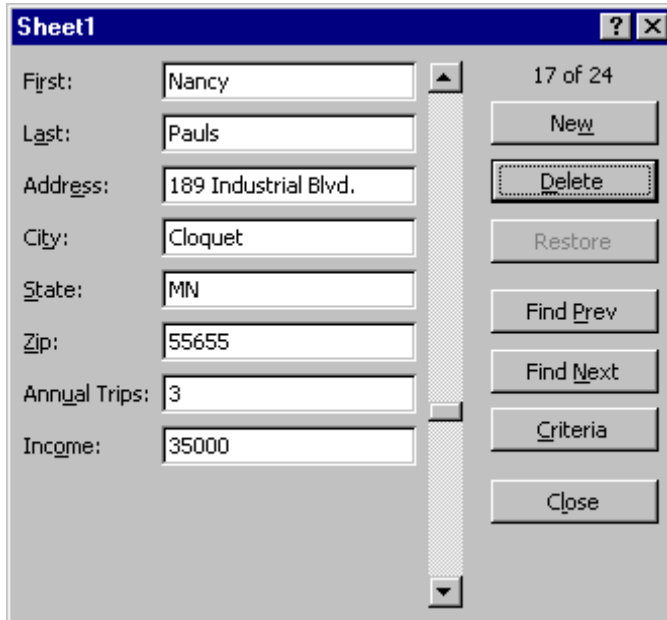Now you can replace all the incorrect Zip Codes with the correct Zip Codes.

9. **Click Replace All.**

The Replace dialog box closes, and all of the 55411 Zip Codes are changed to 55414.

NOTE: Think before using the Replace All button—you might not want it to replace every instance of a word or value! You can find and replace each individual occurrence of a word, phrase, or value by clicking Find Next and then Replace.

10. **Save your work.**

4: Deleting Records

Deleting records is another basic list or database skill you need to know. For example, if you used a list to track membership, you keep the list up-to-date by deleting people that are no longer members. There are two ways to delete records:
• By using the Data Form dialog box.
• By deleting the row on which the record is stored.
This lesson will give you some practice using each method.

1. **Make sure the active cell is located inside the list and select Data →**
Form from the menu.
You need to delete the record for Nancy Pauls. First, you need to find her record.

2. **Click the Criteria button.**
The Criteria Data Form appears.

3. **In the First field box type Nancy, click the Last field box, type Pauls,**
and click the Find Next button.
The record for Nancy Pauls appears in the Data Form.

4. **Click the Delete button.**
A dialog box appears, asking you to confirm the deletion, as shown in Figure 7-8.

5. **Click OK to confirm the deletion of the record.**

The record for Nancy Pauls is deleted, and the next record, Susan Scott, appears in the data form.

6. **Click Close to return to the worksheet.**

Notice that there are no blank rows where the previously deleted records were. When you delete a record using the Data Form dialog box, Excel automatically moves the following rows up to replace the deleted record.
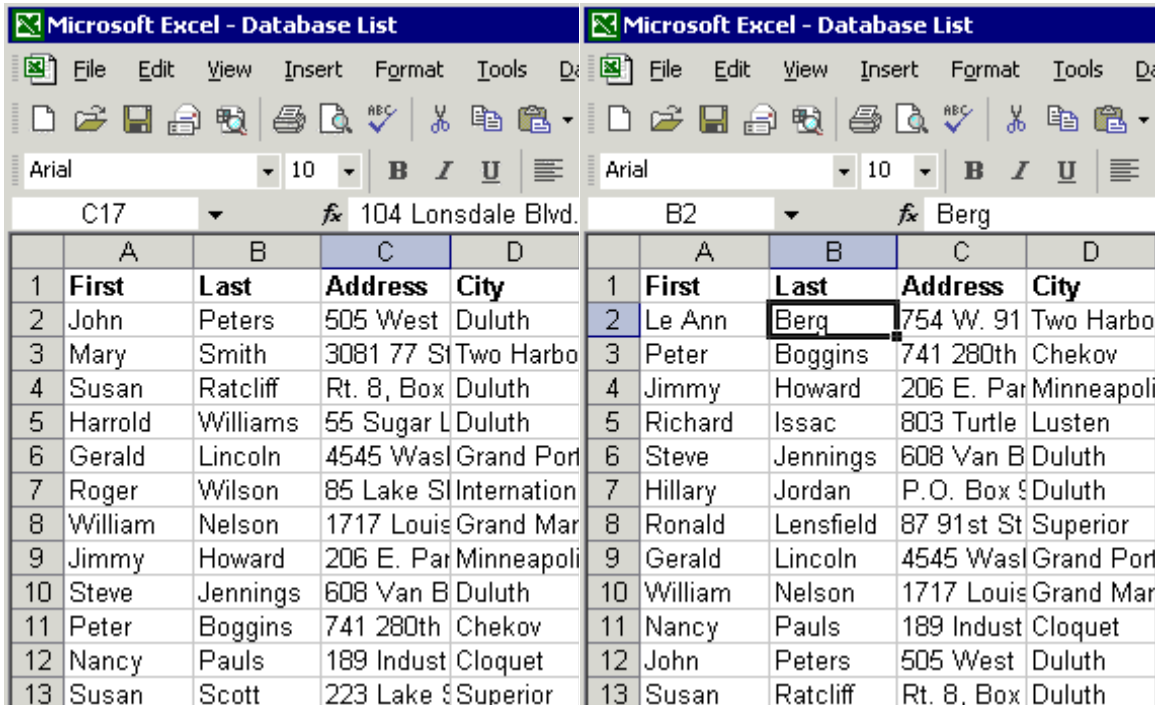You can also delete records by deleting the record's row.

7. **Right-click the Row 12 Heading and select Delete from the shortcut menu.**

The entire row is deleted, and the remaining rows move up to replace the deleted row.
You're doing great! Believe it or not, you've already made it halfway through the chapter and are well on your way to learning everything there is to know about lists.

5: Sorting a List

Normally, when you enter new records to a list, you add them to the end of the list, in the order you receive them. That's fine, but what if you want the list's records to appear in alphabetical order? Excel also has great ability to sort information. Excel can sort records alphabetically, numerically, or chronically (by date). Additionally, Excel can sort information in ascending (A to Z) or descending (Z to A) order. You can sort an entire list or any portion of a list by selecting it. This lesson will show you several techniques you can use to sort information in your lists.

1. Click cell B1 to make it active.

You want to sort the list by the last name, so you have selected the Last field.

2. Click the Sort Ascending button on the Standard toolbar.

Excel sorts this list, ordering the records in ascending (A-Z) order by last name, as shown in Figure 7-10. You can also sort a list in descending (Z-A) order.

3. Click cell A1 to make it active, then click the Sort Descending button on the Standard toolbar.

The list is sorted in descending (Z-A) order by the First field.

So far, you have sorted the list by a single field. You can sort lists by up to three fields by using the Sort dialog box found under Data → Sort.

4. Select Data → Sort from the menu.

The Sort dialog box appears, as shown in Figure 7-11. You want to sort the list by the last name and then by the first name.

5. Select Last from the Sort by arrow and make sure the Ascending option is selected.

The list will be sorted in ascending order (A-Z) by the last name. Next, specify the second field you want to sort the list by.

6. Click the first Then by arrow, select First, and make sure the Ascending option is selected.

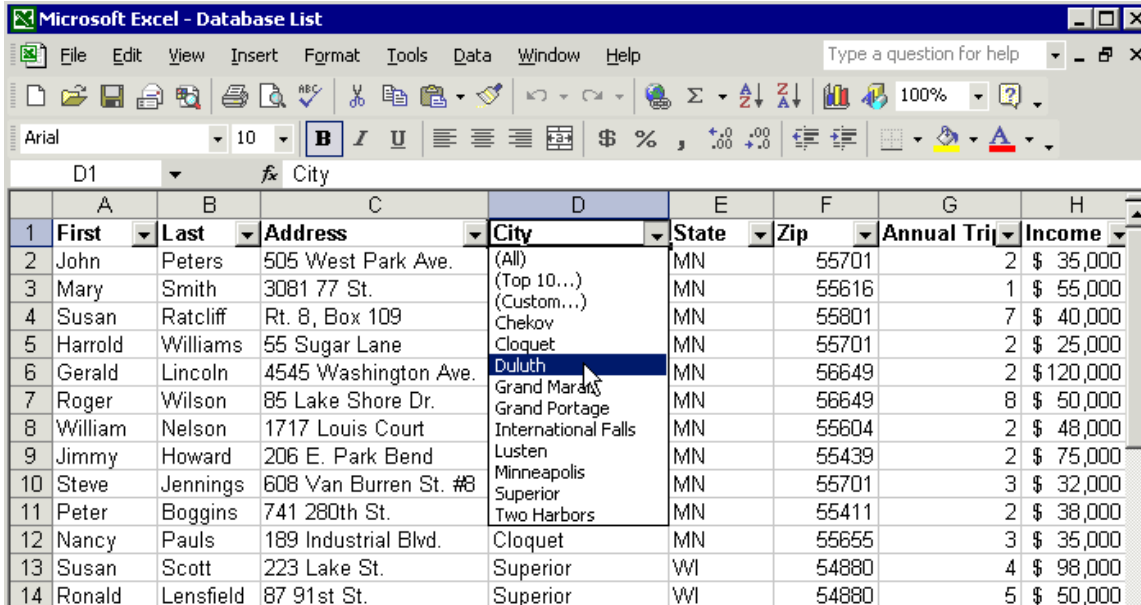You're ready to sort the list.

7. Click OK.

The Sort dialog box closes and the list is sorted in ascending order, first by the last names, and then by first names.

8. Save your work.

The information you sorted in this lesson was in a list, but you can use the same sorting techniques to sort information anywhere in a worksheet, whether it is in a list or not.

Order	Alphabetic	Numeric	Date
Ascending	A, B, C	1, 2, 3	1/1/99, 1/15/99, 2/1/99
Descending	C, B, A	3, 2, 1,	2/1/99, 1/15/99, 1/1/99

6: Filtering a List with the AutoFilter

Sometimes you may want to see only certain records in your lists. By *filtering* a list, you display only the records that meet your criteria, and hide the records that do not. For example, you could filter a client list to display only clients who live in California. There are several ways to filter your lists. In this lesson, you will learn the fastest and easiest way to filter a list with Excel's nifty *AutoFilter* feature.

1. **If necessary, open the workbook named Lesson 7B and save it as** Database List.
If you do not know where your practice files are located, ask your instructor for assistance.

2. **Make sure the active cell is located inside the list and select Data → Filter → AutoFilter from the menu.**
List arrows appear to the right of each of the field names.

3. **Click the City list arrow.**
An AutoFilter list containing all the cities in the column appears beneath the City field.

4. **Select Duluth from the AutoFilter list.**
Excel filters the list so that only records that contain Duluth in the City field are displayed, as shown in Figure 7-13. Notice the status bar indicates the number of records that matched the filter and that the AutoFilter list arrow for the City field changes colors, indicating it is filtering the worksheet. You can filter a list by more than one field at a time.

5. **Click the Annual Trips list arrow and select 2 from the AutoFilter list.**
Excel narrows the filter so that only those records that contain *Duluth* in the City field and *2* in the Annual Trips field are displayed. Notice that the colors of the AutoFilter list arrows for both the City field and Annual Trip field are different colors, indicating

they are filtering the worksheet. Here's how to remove the current filter criteria and display all the records.

6. Select Data → Filter → Show All from the menu.

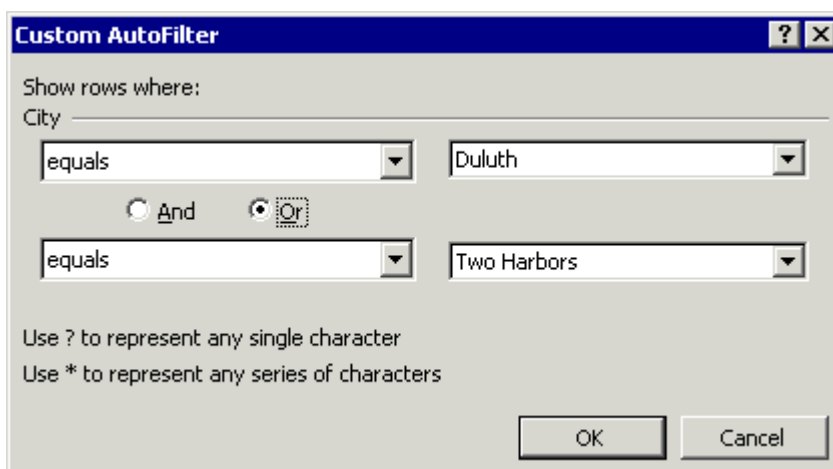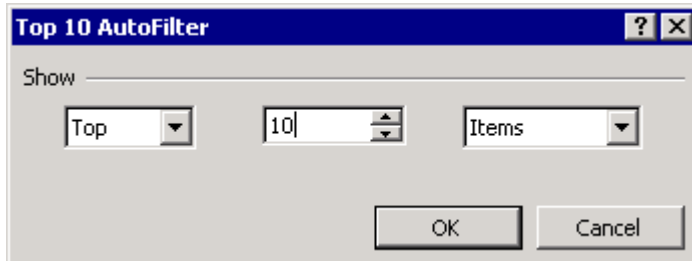All the records are displayed. You can also completely remove an AutoFilter.

7. Select Data → Filter → AutoFilter from the menu to deselect it.

The AutoFilter is turned off, all the records are listed, and the AutoFilter arrows disappear from the right of the field headings.

The following table describes those other confusing items that appear in a field's AutoFilter list.

Options	Description
(All)	Display all rows.
(Top 10...)	Display all rows that fall within the upper or lower limits you specify, either by item or percentage; for example, the amounts within the top 10 % of income.
(Custom...)	Apply two criteria values within the current column, or use comparison operators other than AND (the default operator). See the next lesson for more information on this option.
(Blanks)	Display only rows that contain a blank cell in the column.
(NonBlanks)	Display only rows that contain a value in the column.

7: Creating a Custom AutoFilter

```
Top 10 AutoFilter                    ? X
Show
   [Top  ▼]   [10  ▲▼]   [Items  ▼]

                    [  OK  ]  [ Cancel ]
```

```
Custom AutoFilter                        ? X
Show rows where:
City
   [equals        ▼]      [Duluth          ▼]
        ○ And    ● Or
   [equals        ▼]      [Two Harbors      ▼]

Use ? to represent any single character
Use * to represent any series of characters

                         [  OK  ]  [ Cancel ]
```

In the previous lesson, you learned how to use the AutoFilter feature to filter records by selecting a single value for one or more columns. When you need to filter using more complicated criteria, you have to use a *Custom AutoFilter*. Custom AutoFilters are more difficult to set up and create than ordinary AutoFilters, but they're much more flexible and powerful. Custom AutoFilter can filter records based on more than one value, such as clients in a list that live in California *or* Oregon and can filter records based on ranges, such as clients with an income greater than $40,000.

This lesson explains how to create and use a Custom AutoFilter. First, though, we need to cover one more ordinary AutoFilter topic—how to use the Top 10 option:

1. **Select Data → Filter → AutoFilter from the menu.**
Lists arrows appear to the right of each of the field names. You can use AutoFilter to filter records with the highest (top) or lowest (bottom) values in a list.

2. **Click the Income list arrow and select (Top 10…) from the AutoFilter list.**
The Top 10 AutoFilter dialog box appears, as shown in Figure 7-14.

3. **Replace the 10 in the middle box with a 5 and click OK.**
The records for the clients with the highest five incomes are displayed. Now that you know which clients have the highest incomes, you can remove the filter.

4. **Click the Income list arrow and select (All) from the AutoFilter list.**
The filter is removed and all the records are displayed.

5. **Click the City list arrow and select (Custom…) from the AutoFilter list.**
The Custom AutoFilter dialog box appears, as shown in Figure 7-15.

6. **Make sure equals appears in the City list, then click the top comparison list arrow (adjacent to the equals option) and select Duluth.**
In the next step, you'll specify that you want to filter any records from Two Harbors as well.

7. **Click the Or option, click the bottom City list arrow and select equals, click the bottom comparison list arrow and select Two Harbors.**
Compare your dialog box to Figure 7-15. The custom AutoFilter will now display records in which the City field equals Duluth *or* Two Harbors. This type of search criteria is called a *Logical Condition*. You could also specify the logical condition criteria in a way so that only records from Duluth *and* those with incomes greater than $30,000 are filtered.
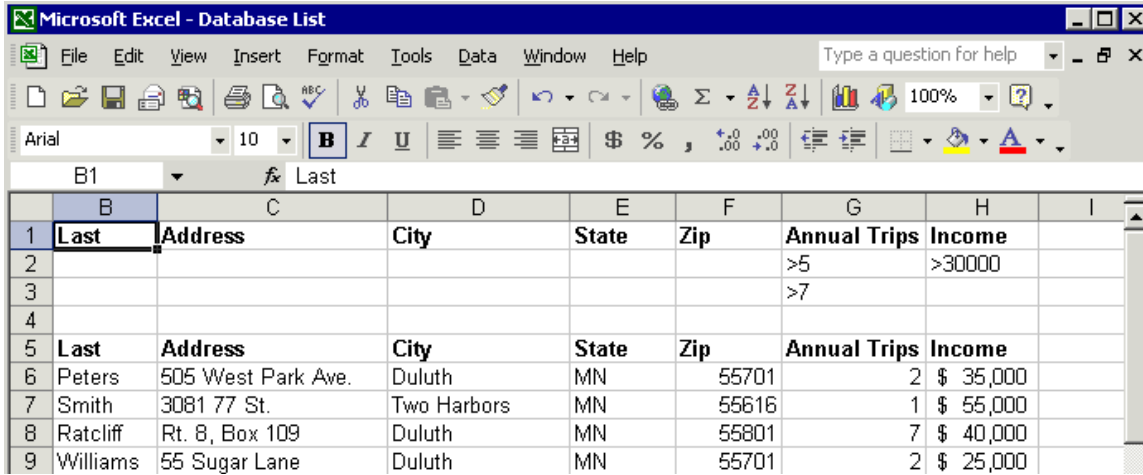
8. **Click OK.**
The dialog box closes, and only the records from the city of Duluth or Two Harbors are displayed.

9. **Select Data → Filter → AutoFilter from the menu to deselect it.**
The AutoFilter is turned off and all the records are displayed.
Custom AutoFilters are much more flexible and powerful than ordinary AutoFilters, but they still have some limitations. For example, you can't filter lists based on more than two values (such as clients from California, Oregon, or Washington). For really complicated filtering tasks, you'll need to use an *advanced filter*, which is covered in the next lesson.

8: Filtering a List with an Advanced Filter

Advanced filtering is by far the most powerful and flexible way to filter your lists. It's also by far the most difficult method, and requires more work to set up and use. Advanced Filters do have several capabilities their simpler AutoFilter cousins lack, including:

• **More complex filtering criteria:** You can filter a list based on as many values in as many columns as you want.

• **The ability to extract the filtered records:** Once you have created an Advanced Filter, you can copy the filtered records to a new location. This is the main reason most people use Advanced Filters.

To create an Advanced Filter you must start by defining a *criteria range*. A criteria range is a cell range, located at the top of your list, which contains the filter criteria. Figure 7-16 shows an example of a worksheet with a criteria range.

1. Select **rows 1 through 4**, right-click any of the selected row number headings and select **Insert** from the shortcut menu.

Excel inserts 4 blank rows above the list. These blank rows will be the *Criteria Range*—the cell range that contains a set of search conditions you will use in your advanced filter. The next step in creating an Advanced Filter is to copy the column labels from the list you want to filter.

2. Select the cell range **A5:H5**, click the **Copy button** on the Standard toolbar, click cell **A1**, and click the **Paste button** on the Standard toolbar to paste the copied cells.

Next, you need to specify the criteria for the advanced filter. You want to display only those clients with incomes greater than $30,000 *and* that have taken more than five trips *or* those clients that have taken more than seven trips.

3. Click cell **G2**, type >5, click cell **H2**, type >30000, and press **<Enter>**.

This will filter clients that have taken more than five annual trips *and* have incomes greater than $30,000. Next, you want to add a logical condition so that any clients who have taken more than seven annual trips are also selected, regardless of their income.

4. Type >7 in cell **G3** and press **<Enter>**.

Compare your worksheet to the one in Figure 7-16. You're ready to filter the data.

NOTE: Make sure there is always only one blank row between the criteria values and

the list. Having more than one blank row or no blank row at all will cause your Advanced filter not to work!

5. **Click any of the cells in the list range and select Data → Filter → Advanced Filter from the menu.**

The Advanced Filter dialog box appears, as shown in Figure 7-17. Since you opened the Advanced Filter with the active cell in the list, the list range is already selected. You still have to specify what the criteria range is, however.

6. **Click the Criteria range box and select the Criteria range—A1:H3.**

You're ready to apply the advanced filter.

NOTE: Make sure you don't select the blank row between the criteria range and the list range, or the Advanced Filter won't work!

**7.** **Verify that the Filter the list, in-place option is selected and click OK.**

The list range is filtered to match the criteria you specified in the criteria range. Notice the Status bar displays how many records were found. You remove Advanced Filters just the same as AutoFilters.

8. **Select Data → Filter → Show All from the menu.**

All the records are again displayed.

Options	Description
=	Equal to
< >	Not equal to
>	Greater than
<	Less than
> =	Greater than or equal to
< =	Less than or equal to
*	Wildcard--any number of characters in the same position as the asterisk **Example:** *east finds "Northeast" and "Southeast"
?	Any single character in the same position as the question mark. **Example:** sm?th finds "smith" and "smyth"

10: Using Data Validation
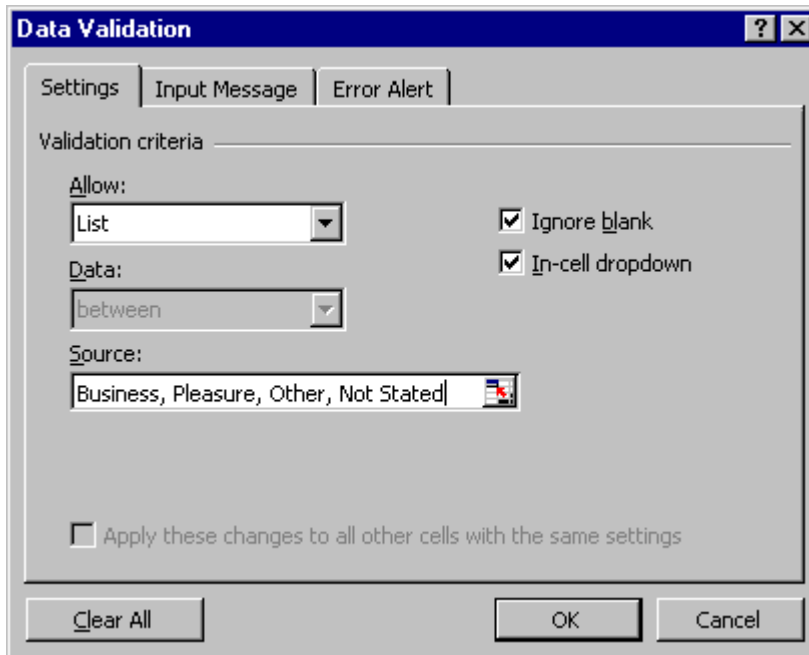
You can help users enter accurate and appropriate information into your worksheets with Excel's *Data Validation* feature. Data validation restricts the type of information that can be entered in a cell and can provide the user with instructions on entering information in a cell.

1. **Click cell I4 to select it, click the Bold button and the Center button on the Formatting toolbar, type** Purpose**, and press <Enter>.**
You have just entered a new field heading for your list.

2. **Click the Column I header to select the entire column.**
You want to restrict any entries to the Purpose field to a list of specific options.

3. **Select Data → Validation from the menu and click the Settings tab if necessary.**
The Data Validation dialog box appears, as shown in Figure 7-20. You want to provide the user with a list of entries they can select from for the Purpose.

4. **Click the Allow list arrow, select List, then click the Source box and type** Business, Pleasure, Other, Not Stated**, as shown in Figure 7-20. Make sure the In-cell dropdown checkbox is checked to display the list of valid entries whenever a cell in the Purpose column is selected**

You're ready to test your data validation rules.

5. **Click OK, then click cell I5.**

Notice a dropdown list arrow appears to the right of the cell, as shown in Figure 7-21.

6. **Click the dropdown list arrow and select Pleasure from the list.**

Excel enters the Pleasure option from the list. Move on to the next step to see what happens if you type an invalid entry.

7. **Make sure cell I5 is selected, type** Unknown**, and press <Enter>.**

A warning dialog box appears, preventing you from entering invalid information.

8. **Click Cancel to close the dialog box.**

A list is just one way of validating data—there are many other ways to restrict data entry. In the next step, you will use the Validation feature to verify that entries made to the State column use two-digit state abbreviations.

9. **Click the Column E column header to select the entire column, then select Data → Validation from the menu.**

The Data Validation dialog box appears. You must specify that any entries in the selected cells must contain no more or no less than two digits.

10. **Click the Allow list arrow, select Text Length, click the Minimum textbox and type** 2**, and then click the Maximum textbox and type** 2**.**

You can also use the Data Validation dialog box to provide a user filling out your form with helpful information or feedback.

11. **Click the Input Message tab.**

The Input Message tab appears, as shown in Figure 7-22.

12. **Click the Input Message textbox, type** Enter the client's state of residence **and click OK.**

The dialog closes. Test out the data validation options for the state column.

13. **Click cell E6.**

The message "Enter the client's state of residence" you entered in the Data Validation dialog box appears next to the cell, as shown in Figure 7-23.
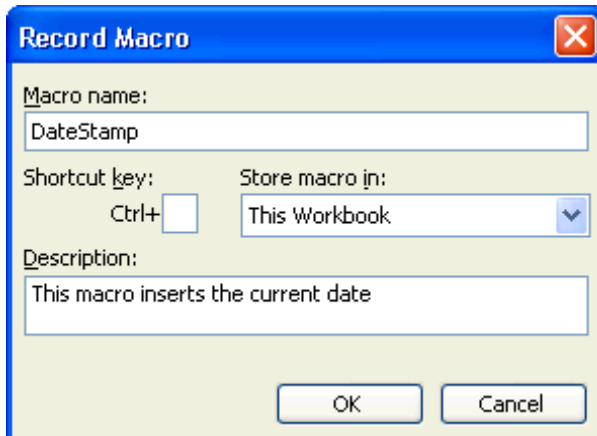
14. **Save your work and exit Excel.**

Section (3)

Automating Tasks with Macros

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1: Recording a Macro

A macro is a series of Excel commands and instructions that are grouped together and executed as a single command. Instead of manually performing a series of time-consuming, repetitive actions in Excel yourself, you can create a macro to perform the task for you. There are two ways to create a macro: by recording them or by writing them in Excel's built-in Visual Basic programming language. This lesson explains the easy way to create a macro—by recording the task(s) you want the macro to execute for you.

When you record a macro, imagine you're being videotaped; *everything* is recorded—all your commands, the data you enter, even any mistakes you make! Before you record a macro, you should write down a script that contains all the steps you want the macro to record. Practice or rehearse your script a couple times, to make sure it works, before you actually record it. If you do make a mistake while recording a macro, don't worry—you can delete the existing macro and try again or you can edit the macro's Visual Basic source code and fix the mistake (more on that later). Let's get started!

1. **Open the workbook named Lesson 8A and save it as Macro Practice.**
If you do not know where your practice files are located, ask your instructor for assistance.
In this exercise, you'll create a macro that inserts the current data into a cell. You can do this by entering the =TODAY() function (which inserts the current date) into a cell and then copying the formula. Use the Paste Special command to paste only the formula's resulting value, because the =TODAY() function displays whatever the *current* date is, and would keep changing. Writing a formula and using the Paste Special command is a time-consuming process, however, so record a macro to perform this repetitive task for you.

2. **Click cell B3.**
This is where you want to insert the current date. You're ready to start recording your macro.

3. **Select Tools → Macro → Record New Macro from the menu.**
The Record Macro dialog box opens, as shown in Figure 8-1. You must give your new macro a name, and if you want, assign a shortcut key to it. Notice the store macro list box—you can store macros in one of three locations:
• **Personal Macro Workbook:** If you want a macro to be available whenever

you use Microsoft Excel, store the macro in your Personal Macro Workbook.
• **New Workbook:** Stores the macro in a new workbook.
• **This Workbook:** Stores the macro in the active or current workbook.

4. In the Macro name box, type DateStamp, then in the Description box, type This macro inserts the current date.

Macro names can be no longer than 25 characters and cannot include spaces.

5. Click OK.

The Record Macro dialog disappears and you return to the worksheet. Notice the Macro toolbar appears in the document window, as shown in Figure 8-2. The Macro toolbar indicates that Excel is currently recording everything you type and every command into the DateStamp macro. Do the next several steps *very carefully*—you don't want to make a mistake and have it recorded in your macro!

6. Type =Today() and click the Enter button on the Formula bar.

The TODAY() function will display the current date in the active cell. That's OK for today, but not for any day after, when the date changes. You need to copy the formula and then paste the resulting value using the Paste Special command.

7. Make sure cell B3 is selected and click the Copy button on the Standard toolbar.

Next, use the Paste Special command to paste the resulting value of the TODAY() formula in the cell.

8. Make sure cell B3 is selected and select Edit → Paste Special from the menu.

The Paste Special dialog box appears.

9. Select the Values option under the Paste section and click OK.

The Paste Special dialog box closes, and Excel pastes the value of the TODAY() formula in cell B3. Next, format the cell.

10. Click the Bold button and then the Center button on the Formatting toolbar.

The active cell is now boldfaced and centered. This is the last step you want in the macro, so you can stop the macro recorder.

11. Click the Stop button on the Macro Record toolbar.

The Macro toolbar closes indicating that you are no longer recording a macro.
NOTE: If the Macro Record toolbar is no longer on your screen at this step, just select Tools → Macro → Stop Recording from the menu.
In the next lesson, you will learn how to play the macro you just recorded.

2: Playing a Macro and Assigning a Macro a Shortcut Key
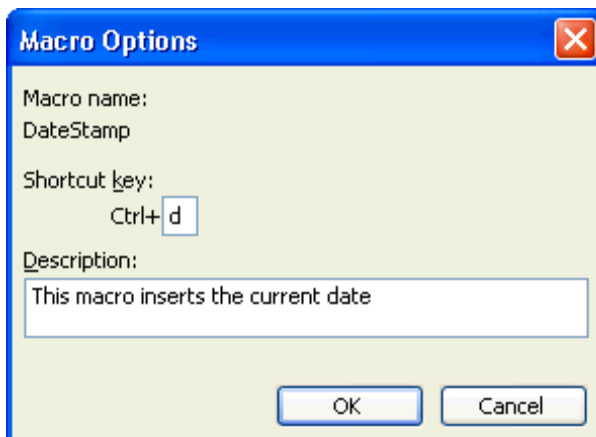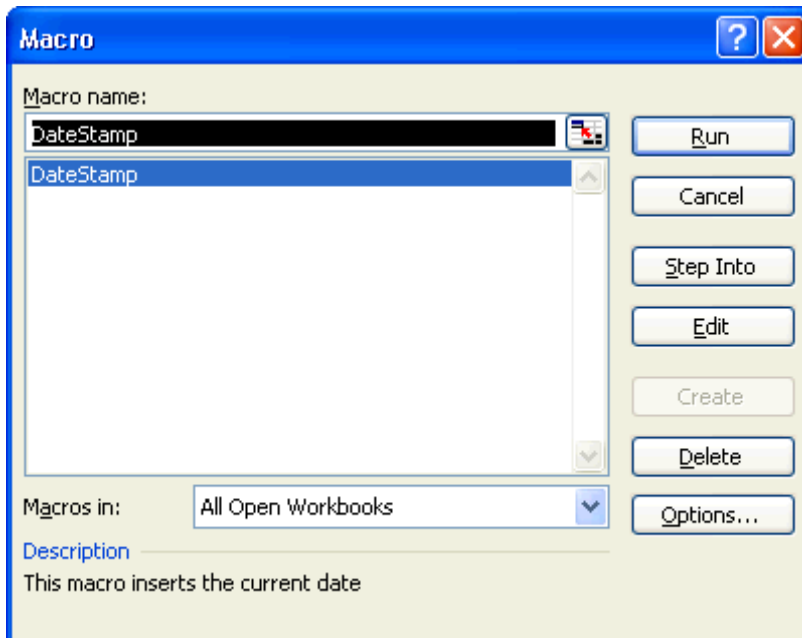
In this lesson you get to play the DateStamp macro you recorded in the previous lesson. Once you have created a macro you can assign a keystroke shortcut to it, such as <Ctrl> + <D>, to make it faster and easier to access—something you'll learn in this lesson.

1. **Click cell C3.**
You want to enter the current date in this cell. Watch how your DateStamp macro saves you time.

2. **Select Tools → Macro → Macros from the menu.**
The Macro dialog box appears, as shown in Figure 8-3. The Macro dialog box displays the available macros you can run.

3. **Click the DateStamp from the Macro Name list macro and click Run.**

The DateStamp macro you recorded in the previous lesson runs, automatically entering the TODAY() function, then copying and pasting its resulting value, and finally formatting it.

If you use a particular macro frequently, you can assign it a keyboard shortcut. For example, instead of selecting Tools → Macro → Macro from the menu, select the macro and click the Run button you could run the macro by pressing a keystroke shortcut, such as <Ctrl> + <D>.

4. Select Tools → Macro → Macros from the menu.

The Macro dialog box appears.

5. Select the DateStamp macro and click the Options button.

The Macro Options dialog box appears, as shown in Figure 8-4. Here's how you can assign a shortcut key to the macro:

6. Click the Shortcut key box, type d, and click OK.

Close the Macro dialog box and try running the macro using your new <Ctrl> + <D> shortcut key.

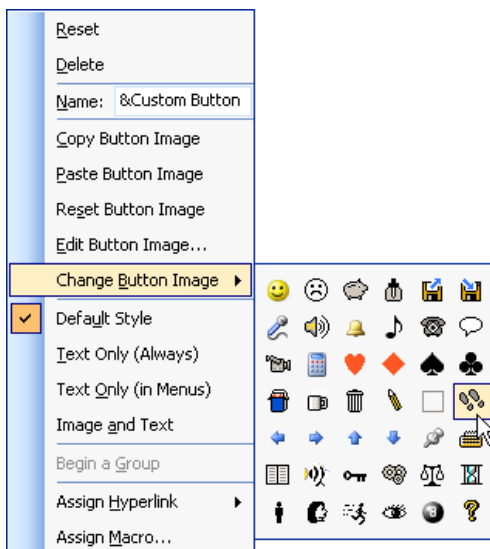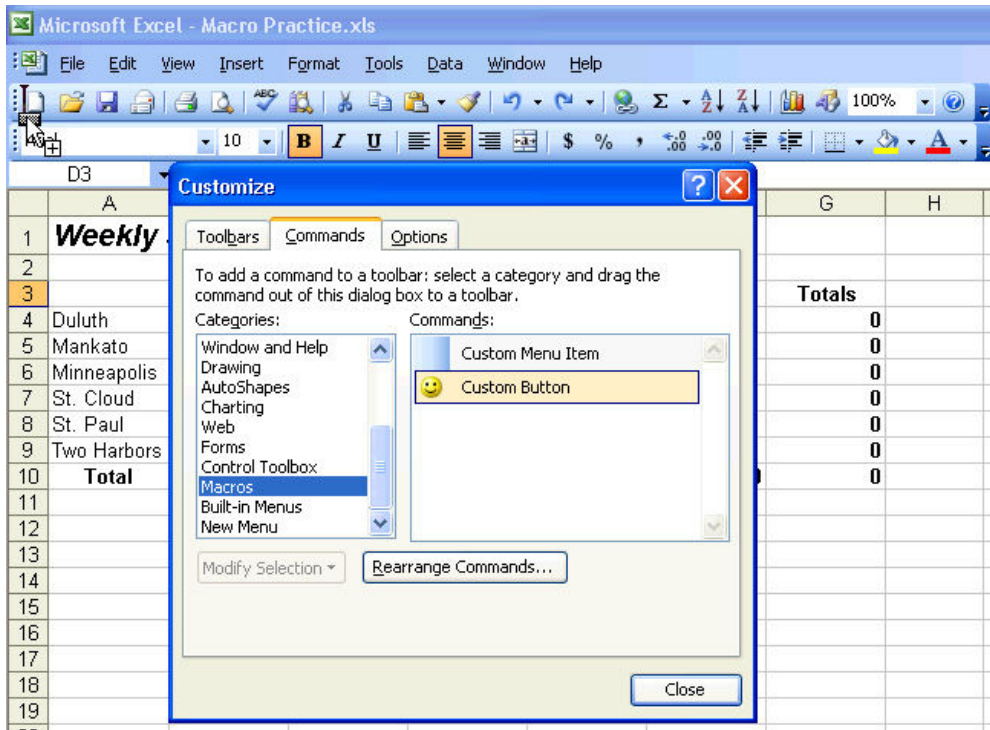**7. Click the Macro dialog box's close button.**

The Macro dialog box closes.

8. Click cell D3 and press <Ctrl> + <D>.

Excel executes the DateStamp macro and inserts today's date in the active cell.

Well done! You've already learned how to record a macro, how to play a macro, and how to assign a shortcut keystroke to macro. Not bad for only two lessons.

3: Adding a Macro to a Toolbar

Another way to make macros fast and easy to access is by adding them as buttons to a toolbar. In this lesson, you will add the DateStamp macro you've created to a button on the Standard toolbar.

1. Select View → Toolbars → Customize from the menu and click the Commands tab.
The Customize dialog box appears, as shown in Figure 8-5. The Commands tab lets you select commands and macros you want to add on your toolbars. The commands are organized by categories, just like Excel's menus.

2. **In the Categories list, scroll to and click the Macros category.**
Notice the Commands list is updated and lists a custom menu item and a custom
button, as shown in Figure 8-5.

3. **Drag the Custom button to the very beginning of the Standard toolbar,
as shown in Figure 8-5.** Now you need to assign a macro to the button.

4. **With the Customize dialog box still open, right-click the custom button
you just added to the Standard toolbar and select Assign Macro from
the Shortcut menu.**
The Assign Macro dialog box appears, as shown in Figure 8-6**.**

5. **Select the DateStamp macro and click OK.**
The DateStamp macro is assigned to the selected button. Follow the next step to give
the DateStamp button a more meaningful name and image.

6. **With the Customize dialog box still open, right-click the Custom button
you just added to the Standard toolbar.**
The button shortcut menu appears.

7. **Select the Name textbox from the Shortcut menu and replace the text &
Custom Button with** Date Stamp**.**
Don't press <Enter> yet. You still need the shortcut menu open in order to change the
image on the button.

8. **Select Change Button Image from the Shortcut menu, and select
from the list of pictures, as shown in Figure 8-7.** You're finished adding the DateStamp macro to a
button on the Standard toolbar, so you can close the Customize dialog box.

9. **Click Close to close the Customize dialog box.**
The Customize dialog closes. Now test the new toolbar button.

10. **Move the pointer over the Date Stamp button on the Standard toolbar.**
After a moment, a Screen Tip appears by the button with its name—Date Stamp.

11. **Click cell E3 and click the Date Stamp button on the Standard toolbar.**
Excel executes the DateStamp macro and inserts today's date in the active cell. Now
that you know how to add macros to toolbar buttons, you can remove the Date Stamp
button from the Standard toolbar.

12. **Select View → Toolbars → Customize from the menu.**
Now that the Customize dialog is displayed, you can remove the Date Stamp button
from the Standard toolbar.

13. **Drag the Date Stamp button off the Standard toolbar into the Customize
dialog box.** The Date Stamp button is deleted from the Standard toolbar.

14. **Click Close to close the Customize dialog box.**

4: Editing a Macro's Visual Basic Code
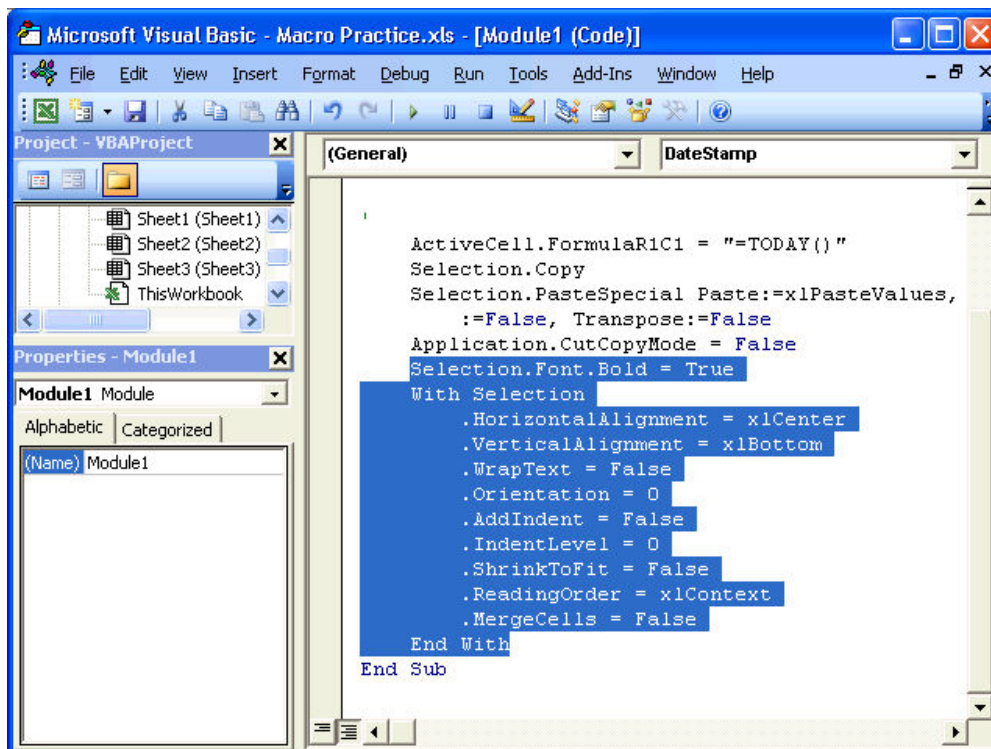
This lesson introduces you to the Visual Basic (also called VB or VBA) programming language. Visual Basic is the code Excel uses to record macros. Okay, you're probably thinking, "You can't be serious! I can't program my VCR!" Relax. This lesson is meant to help you become familiar with the Visual Basic language and the Visual Basic editor so you can make *minor* changes to your macros once you have recorded them. Just imagine you're learning several words in a foreign language so when you're presented with a menu you'll recognize some of the entrées. Let's get started, and don't worry; it's not going to be nearly as bad as you probably think it will be.

The best way to learn about Visual Basic is to view existing code. In this lesson we'll view and edit the DateStamp macro.

1. **Select Tools → Macro → Macros from the menu.**

The Macros dialog box appears.

2. **Select the DateStamp macro from the Macro Name list and click Edit.**

The Microsoft Visual Basic Editor program appears, as shown in Figure 8-8. Yikes! You're probably thinking, "What is all of that complex programming code doing on my screen?" Those funny-looking words aren't Hungarian, they're *Visual Basic*—the code or language the macro you recorded is written in. Whenever you record a macro, Excel writes and saves it in *Visual Basic*.

You don't have to learn Visual Basic to be proficient at Excel, but knowing the basics can be helpful if you ever want to modify an existing macro. Take a closer look at the code for the DateStamp macro. Some of the procedures should make a little sense to you. For example, the line "Selection.Copy" is the copy procedure and the "Selection.Paste" is the paste procedure.

You decide that you no longer want the DateStamp macro to center and bold the current cell's contents. Before you move on to the next step, look at the macro's code and see if you can guess which lines of code apply the bold and center formatting.

3. **Find the line of code that says With Selection.**

Believe it or not, the portion of code beginning with "With Selection" and ending with "End Selection" (eight lines down) is the part of the macro that centers and boldfaces the current selection. The line of code after End Selection, *Selection.Font.Bold = True* is what applies bold formatting to the current selection. Since you no longer want the macro to format or align the selected cell, you can delete all of this code.

4. **Select the block of code beginning with Selection.Font.Bold = True and ending with End With, as shown in Figure 8-8.**

Delete the selected text.

5. **Press <Delete> to delete the selected code.**

That's it! You've made the necessary modifications so that the DateStamp macro still enters the current date but will no longer perform any formatting functions.

6. **Click the Save button on the Visual Basic Standard toolbar to save the code.**

Now that you've finished editing the macro's code, you can close the Visual Basic Editor.

7. **Close the Visual Basic Editor by clicking the close button or selecting File → Close and return to Microsoft Excel from the menu.**

The Visual Basic Editor window closes and you return to Excel. Try out your newly modified macro to see if it works.

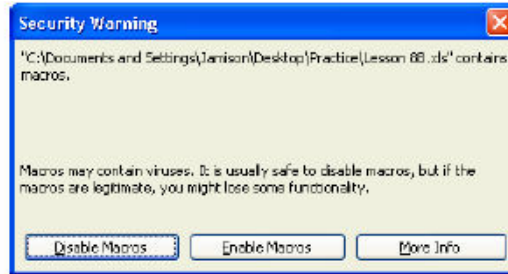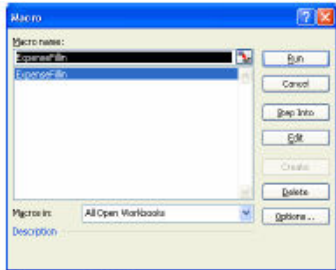**8.** **Click cell A3, then select Tools → Macro → Macros from the menu.**

The Macro dialog box appears.

9. **In the Macro Name list, click the DateStamp macro, then click Run.**

The modified DateStamp macro runs, this time entering the current date without formatting the cell.

10. **Save your work.**

5: Inserting Code in an Existing Macro


```
Sub DateStamp()
'
' DateStamp Macro
'
    ActiveCell.FormulaR1C1 = "=TODAY()"
    Selection.Copy
    Selection.PasteSpecial
        Paste:=xlValues,
End Sub
```

```
Sub ExpenseFillin()
'
' ExpenseFillin Macro
'
    Range("A5:C5").Select
    Range("C5").Activate
    Selection.ClearContents
    Range("A5").Select
    ActiveCell.FormulaR1C1 = "Jeff Nelson"
    Range("B5").Select
    ActiveCell.FormulaR1C1 = "45177"
    Range("C5").Select
    ActiveCell.FormulaR1C1 = "=TODAY()"
    Selection.Copy
    Selection.PasteSpecial
        Paste:=xlValues,
End Sub
```

This portion of code of the
DateStamp macro's code is copied...

...and pasted here in the
ExpenseFillin macro's code

Let's face it—unless you're a programmer, it's unlikely that you will ever learn any of Visual Basic's hundreds of functions, statements, and expressions, and that's okay. You have already learned how you can view and even edit Visual Basic code created by Excel's macro recorder. A very useful technique you can use to edit and create macros is to insert code that has been copied, or plagiarized, from another macro. This technique lets you add steps to your existing macros by recording the steps you want to add in new macros, copying the appropriate code and inserting it in the existing macro.

1. **Open the Lesson 8B workbook and save it as** Employee Expenses
(leave the current Macro Practice workbook open).
If you do not know where your practice files are located, ask your instructor for assistance. When you open the Lesson 8B file a frightening-looking dialog box like the one shown in Figure 8-10 might appear. Macros are like miniature programs, so there is an almost infinitesimally small chance that a macro in an Excel worksheet could in fact be a virus created by some disgruntled, malicious loser. If you know where the workbook came from, it's probably safe to enable the macros it contains.

2. **If necessary, click Enable Macros.**
Imagine this is an employee expense report you have to fill out once a week. Since you enter the same information in this workbook on a regular basis, you have recorded a macro to perform some of the repetitive work of filling out the form for you.

3. **Select Tools → Macro → Macros from the menu.**
The Macro dialog box opens. The name of the macro that fills in the basic, repetitive

information is ExpenseFillin.

4. Select the macro ExpenseFillin and click Run.

The Macro dialog box closes, and Excel runs the ExpenseFillin macro, which fills in the employee name and number. It would be nice if the ExpenseFillin macro also added the date you completed the Expense Report. You can do this by copying the procedure from the DateStamp macro you created in the Macro Practice workbook and pasting it in the code of the ExpenseFillin macro.

5. Select Tools → Macro → Macros from the menu.

The Macro dialog box appears. First, you need to copy the code from the DateStamp macro, located in the Macro Practice workbook.

6. Select the macro 'Macro Practice.xls'!DateStamp and click Edit.

The Microsoft Visual Basic editor appears with the DateStamp macro code. You need to copy only the portion of code inserts today's date into the active cell.

7. Select the block of code beginning with ActiveCell.FormulaR1C1 = "=TODAY()" and ending with Selection.PasteSpecial Paste:=xlPasteValues, as shown in Figure 8-11, and click the Copy button on the Visual Basic toolbar.

Now that you've copied the procedure that inserts the current date, you must insert, or paste it into the appropriate place in the ExpenseFillin macro.

8. Close the Visual Basic Editor by clicking the close button or selecting File → Close from the menu. The Visual Basic Editor window closes and you return to Excel.

9. Select Tools → Macro → Macros from the menu, select the macro ExpenseFillin and click Edit.

The Microsoft Visual Basic editor appears with code for the ExpenseFillin macro. You need to paste the copied DateStamp code into the appropriate place in the ExpenseFillinMacro code.

10. Move the insertion point to the end of the line Range("C5").Select, press <Enter> to add a blank line, then click the Paste button on the Visual Basic toolbar.

The copied code from the DateStamp macro is inserted into the ExpenseFillin macro. Compare your macro to the one shown in Figure 8-11 (don't worry if your code is spaced differently and has different tabs).

11. Close the Visual Basic Editor by clicking the close button or selecting File → Close from the menu. It's time to test your macro.

12. Select Tools → Macro → Macros from the menu, select the ExpenseFillin macro and click Run.

Excel runs the ExpenseFillin macro, which now also adds the current date in cell C5. Clear the information the macro entered and save the workbook to finish this lesson.

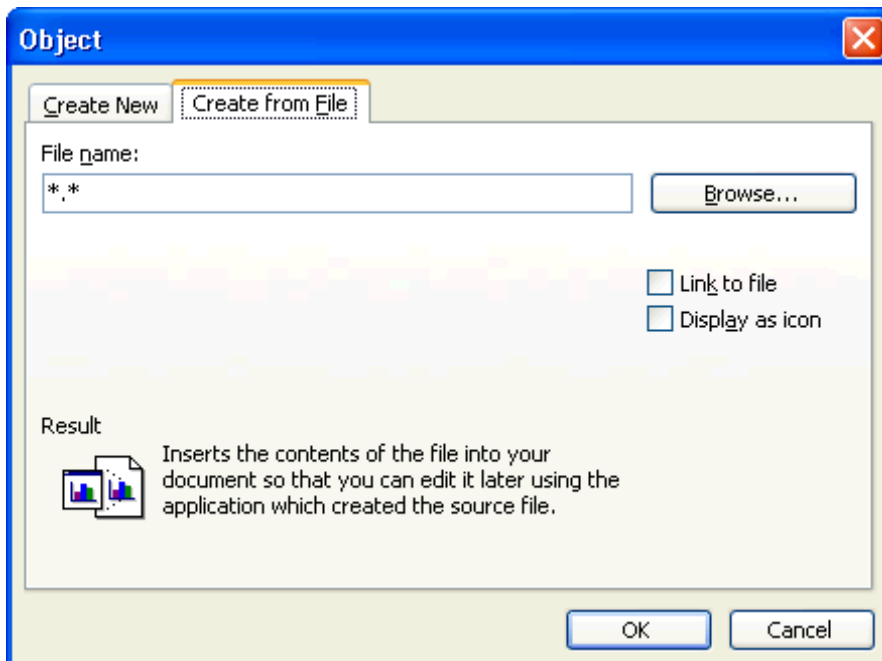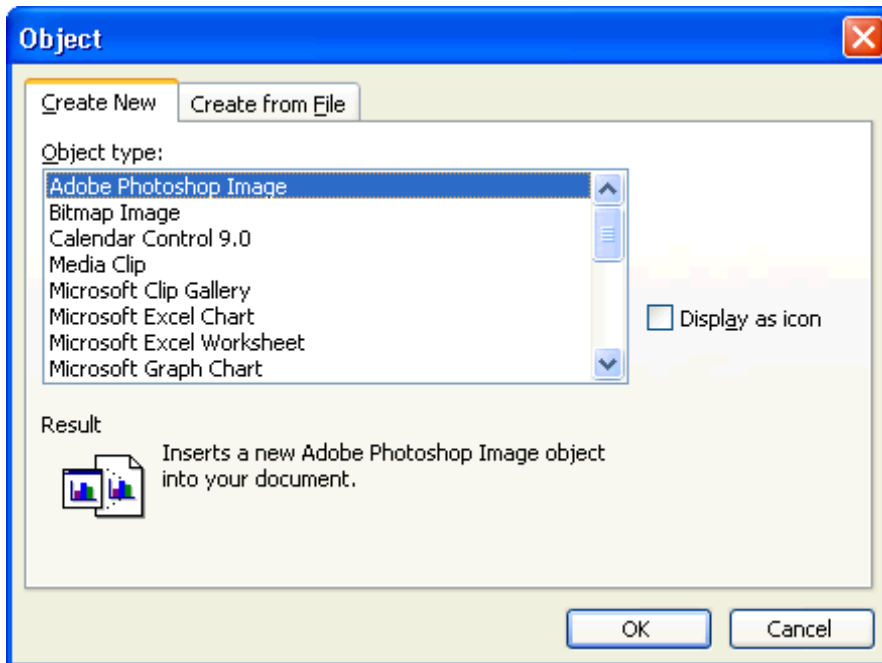**13. Select the cell range A5:C5, press the <Delete> key, and then save the workbook.**

Section (4)

Working with Other Programs

1: Inserting an Excel Worksheet into a Word Document

Microsoft Word is a powerful word processing program that can create professional-looking documents. Since Word is part of the Microsoft Office XP Suite, it makes sense that more people use Excel together with Word than any other program. In this lesson, you will learn how to *embed* an Excel worksheet into a Word document.

1. Start the Microsoft Word program.

---

2. **Navigate to your Excel 2003 Practice folder and open the document named Interoffice Memo.**

If you do not know where your practice files are located, ask your instructor for assistance.

The procedure for opening a file in Word is identical to opening a file in Excel. Click the Open button on the Standard toolbar or select File → Open from the menu. The Interoffice Memo document appears in Word's main document window.

3. **Move the insertion point ( ) to the end of the document by pressing the down arrow key <↓>, or by clicking to the end of the document with the mouse.**

This is where you want to insert an Excel worksheet.

4. **Select Insert → Object from the menu.**

The Object dialog box appears with the Create New tab in front, as shown in Figure 9-1. You can create and insert new objects with the Create New tab, or you can insert an existing file with the Create from File tab. You have already created and saved a worksheet in Excel, so you need to insert the worksheet from an existing file.

5. **Click the Create from File tab.**

The Create from File tab appears in front, as shown in Figure 9-2. You need to specify the name and location of the file you want to insert into the document.

6. **Click the Browse button.**

The Browse dialog box appears, allowing you to find and locate the file you want to insert into your document.

7. **Navigate to your practice folder or disk and select the Expenses file.**

Notice that the icon for the Expenses file indicates that it is a Microsoft Excel file.

8. **Click OK.**

The Browse dialog box closes and you return to the Create from File tab of the Object dialog box. Notice the Expenses file name and location appear in the File name box. There are several other options on this page you should know about:

• **Link to file:** Inserted objects are normally *embedded*, or saved inside the documents in which they are inserted. If you check the *Link to file* option the object will still be inserted in the document, but Word will only create a link to the original file instead of saving a copy of it inside the document. You should use the Link to file when you want to ensure that any changes made in the original file are updated and reflected in the document it is inserted in.

• **Display as icon:** Inserted objects are normally viewable directly from the Word document window. Checking the "Display as icon box" option causes the inserted objects to appear only as an icon. You must double-click the object in order to view it.

9. **Click OK.**

Word accesses the Excel file and then inserts it into the document at the insertion point.
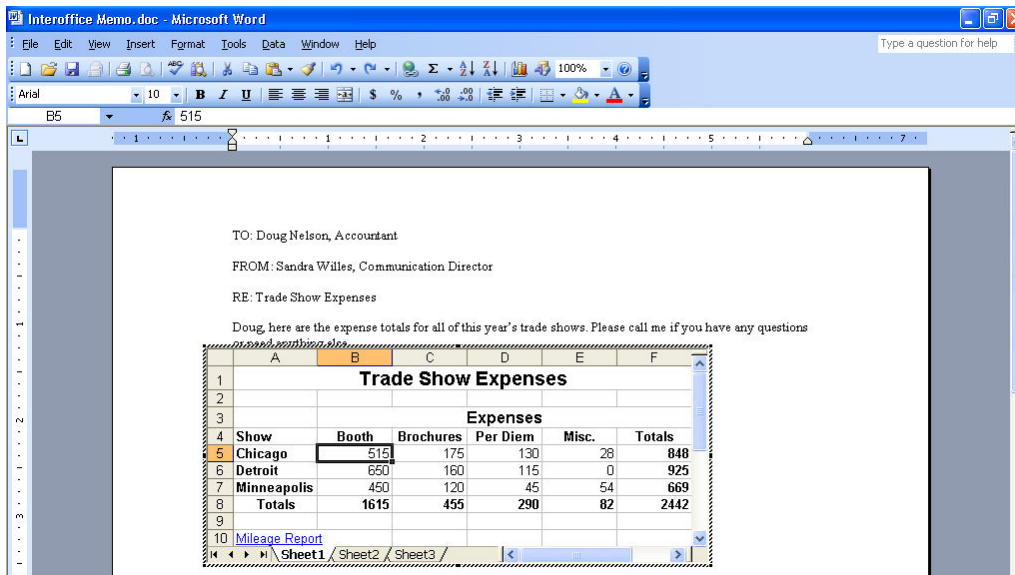
10. **Compare your document with the one in Figure 9-3.**

11. **Save the changes you've made to the Word document by clicking the Save button on the Standard toolbar.**

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2: Modifying an Inserted Excel Worksheet

After you insert an Excel worksheet, you can make changes to the worksheet simply by double-clicking it. Double-clicking any embedded or linked object opens the source program the object was created in, or, in the case of this lesson, Microsoft Excel. If the program the object was created with isn't installed on your computer you can still view and print the object but you can't make changes to it.

1. Double-click the inserted worksheet object in the document.
The Excel program opens inside of the Word document, as shown in Figure 9-4. Notice that Excel menus and toolbars replace the Word toolbars and menus. Now you can make changes to the worksheet object.

2. Select cell B5.
With the cell selected, you can replace the cell's data simply by typing.

3. Type 515 and press <Tab>.
The number 515 replaces the number 500 and Excel moves to the next cell.

4. Select the entire Detroit row by clicking the row 6 heading.
The entire row is selected.

5. Select Insert → Rows from the menu.
A new row is inserted immediately above the Detroit row. Now enter the data for the new row.

6. Click cell A6, type Milwaukee and press <Tab> to move to the next cell.

7. Type the following, pressing <Tab> after making each entry.

470 135 110 25

Now that you have entered the data you must calculate the total for the row.

8. **Click the AutoSum button on the Standard toolbar.**

Excel makes an educated guess regarding which cells you want to use to calculate the total and selects them—in your case, Excel guesses correctly.

9. **Press <Enter> to accept the formula.**

Excel calculates the row total and moves to the next cell. Notice that after you inserted a new row, the bottom total row is no longer displayed. Here's how to resize the Excel worksheet object so that the entire worksheet is displayed.

10. **Position the pointer over the lower-right sizing handle, until the pointer changes to a , then click and hold the left mouse button and drag the mouse down until you can see the bottom row of the worksheet, then release the mouse button.**

The entire worksheet object should be visible in the document window.

11. **Click anywhere outside the worksheet object to stop modifying the worksheet to and return to Word.**

The standard Word menu and toolbars replace the Excel menu and toolbars. Compare your document to the one in Figure 9-5.

12. **Save your work.**

It can be confusing knowing what the differences are between linked and embedded objects. Table 9-1: *Embedded vs. Linked Objects* compares each of these methods for inserting information created with other programs into Word documents.

Heading	Heading
Embedded	An embedded object is actually saved within the file. Files with embedded objects are larger than files with linked objects. The advantage of using embedded objects is that the objects are actually saved inside the file, so you don't have to worry about any attached files becoming erased or lost.
Linked	A linked object is not saved in the file. Instead, a link contains information on where to find the source data file. The advantage of using linked objects is that when the source file is changed, the linked object in the file is automatically updated to reflect the changes.

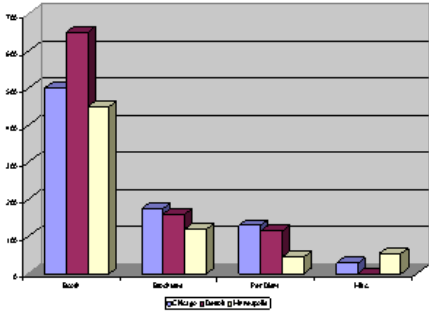# 3: Inserting a Linked Excel Chart in a Word Document

So far you have been inserting and working with an *embedded* Excel worksheet. This lesson mixes things up a bit. You will still be inserting information created in Excel, but in this lesson you will be inserting a *linked* Excel chart. Remember; when you insert an *embedded* object you are actually storing and saving the object inside the file. A *linked* file is not stored and saved in a Word document, but is connected to it. So if you make changes to the linked source file it will be automatically updated in the Word document.

1. Press <Ctrl> + <End> to move to the end of the document.

Just like in Excel, <Ctrl> + <End> moves you to the end of a document in Word.

2. Press <Enter> twice to add two blank lines.

Now insert the linked chart object.

3. Select Insert → Object from the menu and click the Create from File tab if it does not appear in front.

The Create from File tab appears in front, as shown in Figure 9-6. You need to specify the name and location of the file you want to insert into your document.

4. Click the Browse button.

The Browse dialog box appears, allowing you to find and locate the file you want to insert into your document.

5. Navigate to your Practice folder or disk and select the Trade Show Chart file.

Notice the icon for the Trade Show Chart file indicates that it is a Microsoft Excel file.

6. Click OK.

The Browse dialog box closes and you return to the Create from File tab of the Object dialog box. Notice the "Trade Show Chart" file name and location now appears in the File name text box.

7. Click the Link to file checkbox.

Checking the Link to file checkbox only inserts a link to the specified file in the Word document instead of inserting an embedded copy of the file. You should use Link to file if you want to display any changes made to the original file in your document.
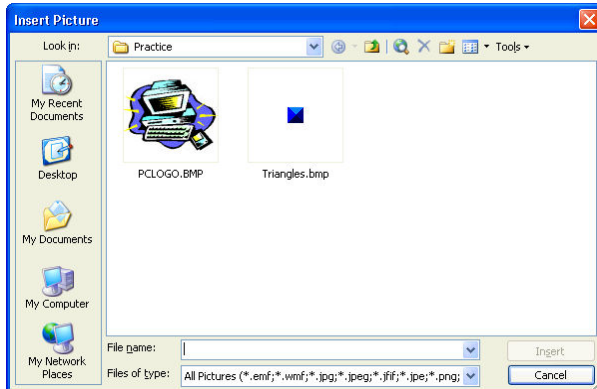
8. Click OK.

Word accesses the Excel chart and then inserts a link to it in the document at the insertion point.

9. Resize the Chart object so it is similar in size to the one shown in Figure 9-7.

10. Save your work.

11. Select File → Exit from the menu to close the Microsoft Word program.

4: Inserting a Graphic into a Worksheet
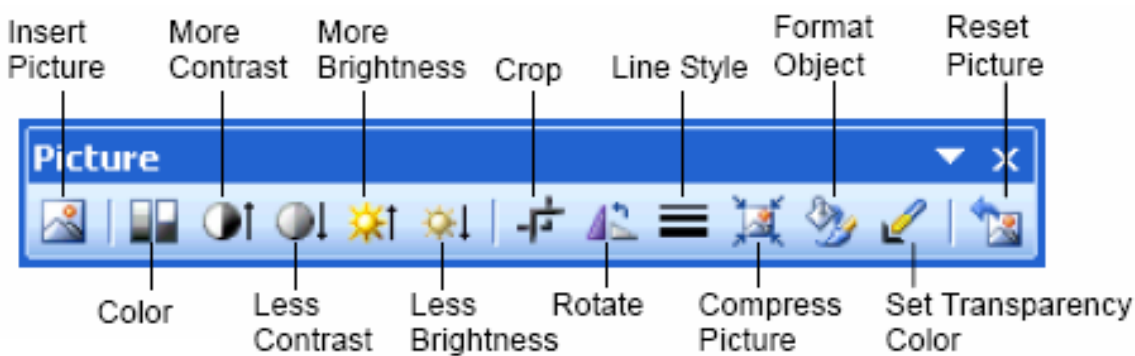
Pictures, graphics, and illustrations can make your worksheets more professional looking. This lesson explains how to insert clip art and graphics into your worksheets. You can insert graphics and pictures created with graphics programs such as Microsoft Paint (which comes with Windows), scanned pictures, or graphics from a clip art library.

1. Start Microsoft Excel, open the Expenses workbook and save it as Trade Show Expenses**.**
If you don't know where your practice files are located, ask your instructor for assistance.

2. Click cell A1.
This is where you want to insert the graphic.

3. Select Insert → Picture → From File from the menu.
The Insert Picture dialog box appears, as shown in Figure 9-8. You need to specify the name and location of the graphic file to be inserted into your Excel worksheet.

4. Navigate to your Practice folder or disk and select the PCLogo file.
Excel displays a preview of the graphic in the left side panel of the Insert Picture dialog box.

5. Click the Insert button to insert the PCLogo graphic.
Excel inserts the picture file PC Logo in the worksheet.

6. **Select the picture (if necessary) of the PCLogo by clicking it.**
See the six boxes along the edges of the picture? Those are *sizing handles* and are used
to resize or crop objects. Go ahead and resize the picture.

7. **Position the pointer over the lower-right sizing handle, until the pointer
changes to a , then click and hold the left mouse button and drag the
mouse diagonally down and to the right until the bottom of the
picture is flush with the top of row 4, then release the mouse button.**

8. **With the picture still selected, click and hold the left mouse button and
drag the picture to the right side of the page, as shown in Figure 9-9.
Release the left mouse button to drop the picture.**

9. **Save your work and close the Trade Show Expenses workbook.**
You probably noticed several other options listed under the Insert → Picture menu. Here's
what they are and what they do:

Insert	Description
Clip Art	Opens the Clip Gallery where you can select a clip art image to insert.
From File	Inserts a graphic file in the active cell.
AutoShapes	Inserts a ready-made shape, such as a circle, rectangle, star, arrow, etc.
Organization Chart	Inserts a Microsoft Organization Chart object into worksheet.
WordArt	Creates spectacular text effects, such as WordArt.
From Scanner	Scans an image and inserts it at the insertion point.

5: Opening and Saving Files in Different Formats
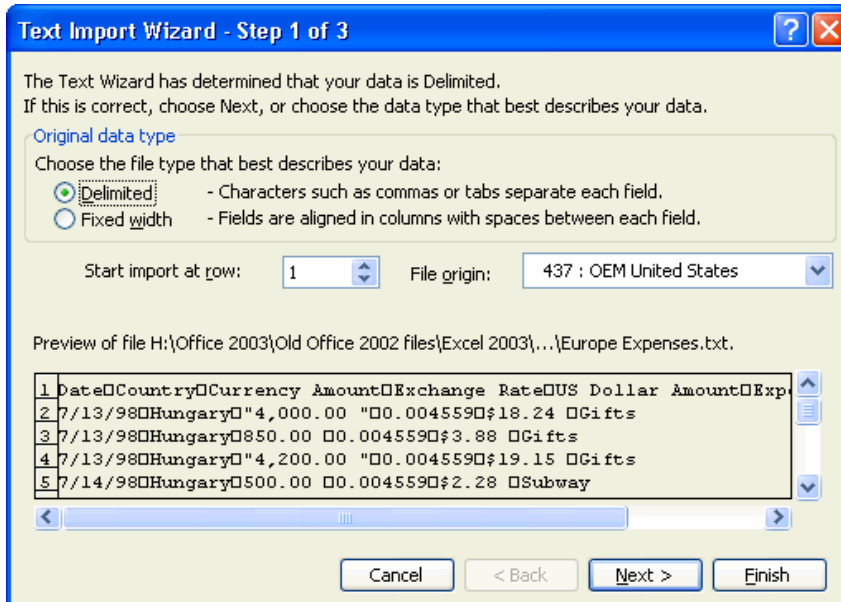
People from different countries speak different languages. Likewise, computer programs save files in different formats that other programs sometimes can't read. Fortunately, just as some people can speak several languages, Excel can read and write in other file formats.

This lesson shows how you can open one of the most common file formats in Excel—a tab delimited text file.

1. Click the Open button on the Standard toolbar and navigate to your Practice folder or disk.

Normally the Open dialog box only displays files created with Microsoft Excel. To open files created with other programs you need to select the file type you want from the Files of type list arrow—in this case, Text files.

2. Click the Files of type list arrow, select Text Files, select the Europe Expenses file and click Open.

The Text Import Wizard dialog box appears, as shown in Figure 9-11. You must specify how the information is stored in the text file. There are two options:

• **Delimited:** Tabs, colons, semicolons, or other characters separate items in your text file. This is the most common (and default) option.

• **Fixed Width:** All the items in your text file are the same length.

The Europe Expenses is a *tab delimited* text file, that is, tabs separate its fields, so you don't need to make any changes and can continue on to the next step.

3. Click Next.

The second step of the Text Import Wizard appears. Notice the tab box is checked under Delimiters (what separates the text). No changes needed here.

4. Click Next.

The third step of the Text Import Wizard allows specifying formatting options for any of the columns of data. For example, you could specify that a particular column be

formatted as a data or number field. It isn't important to format any of the columns here, however, so you can complete the Text Import Wizard.

5. **Click Finish.**
The Text Import Wizard closes and the imported text file appears in the Excel worksheet window.
Here's how to save a workbook in a different format:

6. **Select File → Save As from the menu.**
The Save As dialog box appears.

7. **Click the Save as type list arrow, scroll down the list and select WKS (1-2-3).**
This will save the file in Lotus 1-2-3 format.

8. **Click Save to save the Europe Expenses workbook as a Lotus 1-2-3 file, then close it (but leave Microsoft Excel open!).**

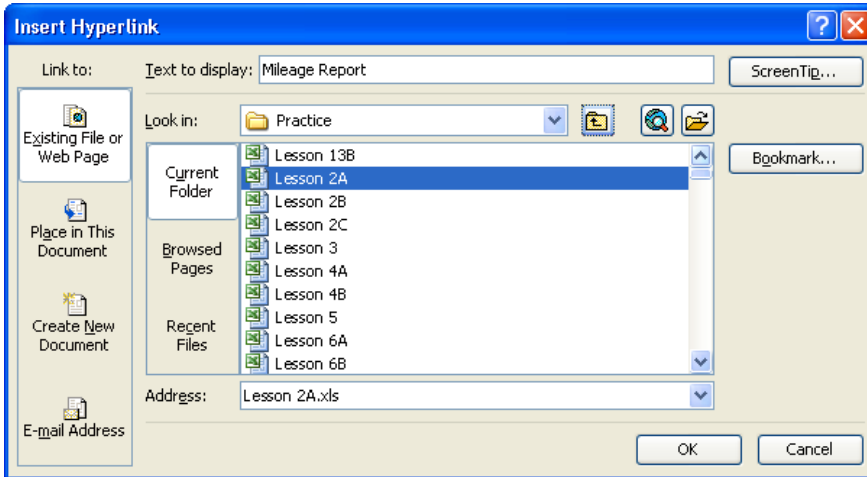| File Format	Extensions
Microsoft Excel 97/2000/2002 /2003	.xls, .xlt
Microsoft Excel 5.0/95	.xls, .xlt
Microsoft Excel 4.0, 3.0, 2.0	.xls, .xlw, .wlc, .xlm
Lotus 1-2-3	.wk4, .wk3, .fm3, .fmt, .all, .wk1, .wks
Quattro Pro	.wb1, .wbi
Text (Both tab and comma delimited)	.txt, .csv
Dbase 2, 3, 4	.dbf
Microsoft Access 2.0, 95, 97	.mdb

Section (5)

Using Excel with
The Internet

1: Adding and Working with Hyperlinks

In this lesson, you will learn how to use hyperlinks in Excel. A *hyperlink* points to a file, a specific location in a file, or a Web page on the Internet or on an Intranet. Whenever you click on a hyperlink, you jump to the hyperlink's destination (if it's available). A hyperlink is usually indicated by colored and underlined text. If you have ever been on the World Wide Web you've used hyperlinks all the time to move between different Web pages.

1. **Open the workbook named Lesson 10 and save it as Trade Show Expenses.**
You may need to click the Files of Type list and select Microsoft Excel Files if you can't find it.

2. **Click cell A10, type Mileage Report and press <Enter>.**
This is the text for the hyperlink. The next step is to create the destination for the hyperlink. A hyperlink's destination can be any file on your computer, on the network, or even on the Internet.

3. **Click cell A10 and click the Insert Hyperlink button on the Standard toolbar.**
The Insert Hyperlink dialog box appears, as shown in Figure 10-1. Here you can specify a Web address or name and location of a file you want to add as a hyperlink. If you know the location and name of the file or Web address, you can type it directly in the dialog box; otherwise, you can navigate to the file. There are three different buttons in the Insert Hyperlink dialog box that let you browse for four different types of Hyperlink destinations. These buttons are:
• **Existing File or Web Page:** Create a link that takes you to another Excel workbook or to a file created in another program, such as a Microsoft Excel worksheet, or to a web page on the Internet.
• **Place in This Document:** Take you to a bookmark in the same document.
• **Create New Document:** Creates a new Microsoft Excel workbook and then inserts a hyperlink into it.
• **E-mail Address:** Creates a clickable e-mail address.

4. **Click the Existing File or Web Page button.**

The Look in: list appears, which displays a list of files that you can use as the destination for your hyperlink. The file you want is in the Practice folder, however, so you will have to navigate to its location.

5. **Navigate to your Practice folder or disk. Select the Lesson 2A workbook file and click OK.**

The Insert Hyperlink dialog box closes and you return to the worksheet window. Notice the text "Mileage Report" appears blue and underlined, signifying it's a hyperlink. For now, *don't click the Mileage Report Hyperlink!* We'll cover that in the next lesson.

Once you create a hyperlink, you can easily edit it to change its title or target, copy it, or delete it by clicking by right-clicking the hyperlink. Try it!

6. **Right-click the hyperlink and select Edit Hyperlink from the shortcut menu.**

A shortcut menu with the most frequently used hyperlink commands appears. Here, you could select Edit Hyperlink to change the hyperlink's target or edit the hyperlink's title; Open Hyperlink to open the hyperlink's target; or Remove Hyperlink to unlink the text to its destination. Your hyperlink is fine the way it is, so close the shortcut menu.

7. **Click anywhere in the worksheet window to close the shortcut menu.**

8. **Save your work.**

In the next lesson, you will get a chance to actually use the hyperlink you just created, and see how you can browse Excel's files using the Web toolbar.

2: Browsing Hyperlinks and using the Web Toolbar

If an Excel workbook contains one or more hyperlinks, you can navigate or browse between the files connected by the hyperlinks. In this lesson you will test the hyperlinks you created earlier to make sure they work. Chances are, browsing between two files will be nothing new to you, because browsing hyperlinks in Microsoft Excel is no different than browsing the Web.

1. **Click the hyperlink Mileage Report in cell A10.**
Two things happen whenever you click a hyperlink in Excel: First, you immediately jump to the hyperlink's destination—in this case Lesson 2A, the Mileage Report workbook. Second, Excel displays the Web toolbar (if it isn't there already) so you can easily navigate between your files just like you would if you were surfing the Internet. Move on to the next step, and we'll create a hyperlink to the first workbook, Trade Show Expenses, so that the user can easily return to it.

2. **Click cell A14, type Return to Trade Show Expenses and press <Enter>.**
This text will contain the hyperlink to the workbook "Trade Show Expenses."

3. **Click cell A14 and click the Insert Hyperlink button on the Standard toolbar.**
The Insert Hyperlink dialog box appears.

4. **Make sure your Practice folder appears as the Current Folder.**
If it isn't the current folder, navigate to it in the Look in: list.

5. **Scroll down the list, select the Trade Show Expenses workbook file and click OK.**
The Link to File dialog box closes and the name and location of the Trade Show Expenses is added to the Link to file or URL text box.

6. **Click the hyperlink Return to Trade Show Expenses in cell A14.**

The Trade Show Expenses workbook appears in the worksheet window. Use the Web toolbar to jump back to the previously viewed document.

7. **Click the Back button on the Web toolbar.**

You're back to the Lesson 2A workbook. Now jump forward to the Trade Show Expenses workbook.

**8.** **Click the Forward button on the Web toolbar.**

The Trade Show Expenses workbook appears in the worksheet window. Excel can browse and navigate Web pages on the Internet just as easily as it can browse workbooks. In the next lesson, you'll learn how to save an Excel workbook as a Web page, so it can be viewed on the Internet.

You don't need the Web toolbar anymore, so go ahead and close it.

9. **Right-click the Web toolbar and select Web to close the Web toolbar.**

Button	Description
Back	Brings you back to the previously viewed Web page.
Forward	Brings to forward to the next viewed Web page.
Stop Current Jump	Stops loading a Web page.
Refresh Current Page	Reloads or refreshes the current Web page.
Start Page	Brings you to your home page.
Search the Web	Search the Web for specified information.
Favorites	Quickly brings you to Web pages that you have bookmarked and use frequently.
Go	Displays a list of Web commands that also appear on the Web toolbar.
Shown Only Web Toolbar	Toggles whether toolbars other than the Web toolbar should be displayed or hidden.

3: Saving a Workbook as a Non-Interactive Web Page
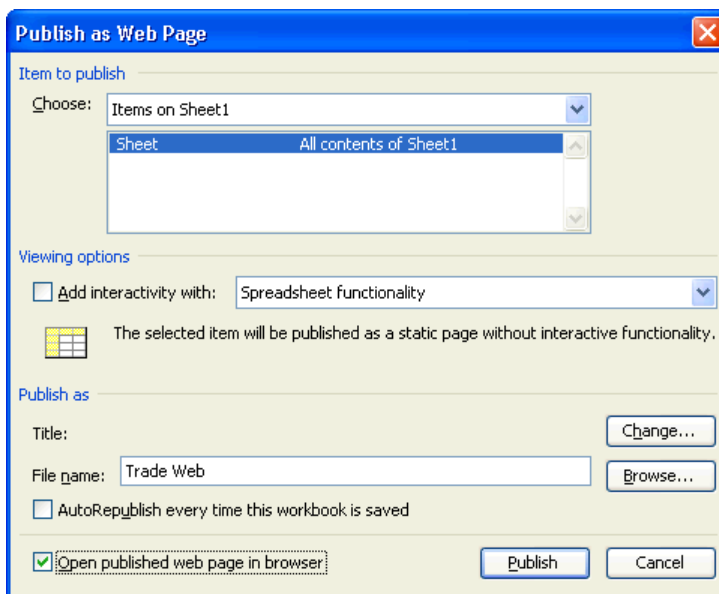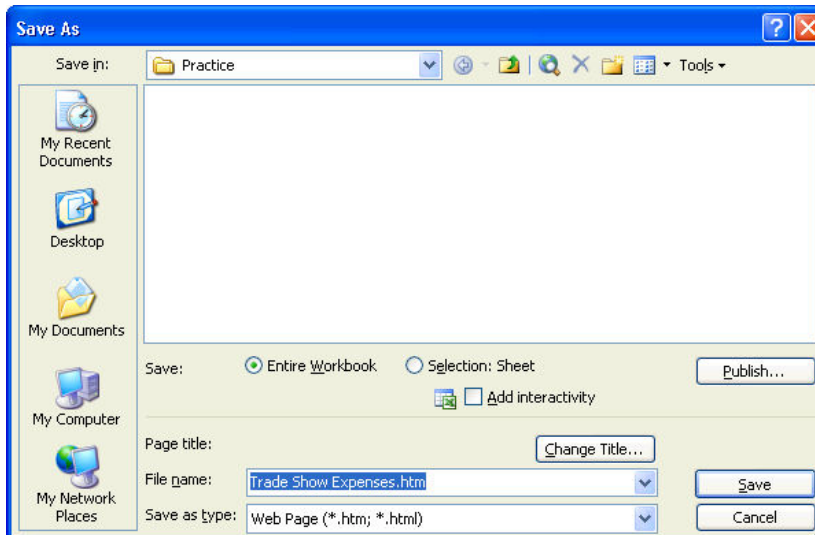
This lesson explains how you can save your Excel worksheets as Web pages so they can be viewed on the Internet. You can save any existing Excel worksheets as Web page files (also known as HTML files) by selecting File → Save as Web Page from the menu.

Saving Excel workbooks as Web pages isn't anything new. What is new, however, is that Excel 2003 can save workbooks as Interactive Web pages. This means that users can interact with the data on your Web page because they have basic spreadsheet functionality. Interactive Web Pages lets your users enter data, format data, calculate data, and sort and filter. There is one major drawback to Interactive Web pages, however—only users who have Microsoft's Internet Explorer 4.01 or later Web browsing software (surprise!) can use Office 2003's Interactive Web pages, so any Netscape Navigator users are left in the dark. If your Web audience includes Netscape Navigator users, you can still save your workbooks as static noninteractive Web pages. Table 10-5: *Interactive vs. Non-Interactive Web Pages* explains some of the differences between the two.

This lesson explains how to save a non-interactive Web page.

1. **Make sure Trade Show Expenses is the active workbook, then select File → Save as Web Page from the menu.**

The Save As dialog box appears, as shown in Figure 10-4. You can save an Excel workbook as several different types of Web pages:

• **Entire Workbook (Non-Interactive):** Saves everything in the workbook— all your worksheets and charts—as non-interactive web pages. To save the entire workbook, check the Entire Workbook check box.

• **Sheet or Selection (Interactive or Non-Interactive):** Saves a worksheet or selected cell range. To save a sheet or selection, click the Publish button and specify the area of the workbook you want to save. You can add interactivity by checking the Add Interactivity box and selecting Spreadsheet functionality from the drop-down list.

• **PivotTable (Interactive):** Saves a worksheet or selected cell range as an Interactive PivotTable on the Web, which users can use to pivot, filter, and sort data. To save a sheet or selection as a PivotTable, click the Publish button, specify the area of the workbook you want to save, check the Add Interactivity with box and select PivotTable functionality from the drop-down list.
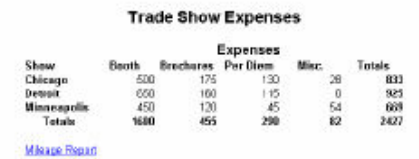
2. **Click the Publish button.**

The Publish as Web Page dialog box appears, as shown in Figure 10-5. Here you have to specify which areas of your workbook you want to save and how to save them.
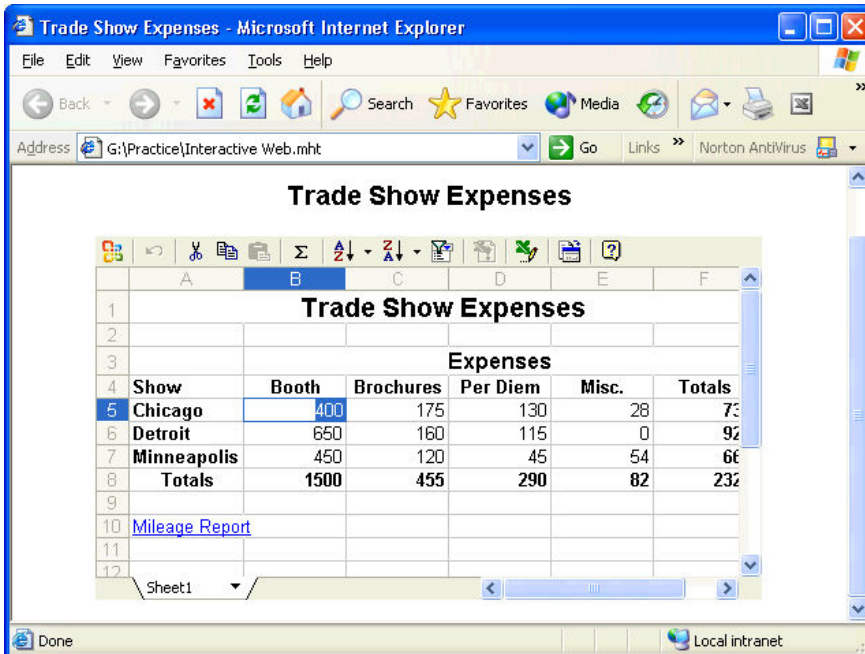
3. **Select Items on Sheet1 from the Choose list, then select Sheet All Contents of Sheet1 from the box under the Choose list.**

4. **Type Trade Web in the File name box, check the Open published web page in browser box and click the Publish button.**

Of course, you can also click the Browse button and Navigate to the drive and folder where you want to save your Web page. Excel saves Sheet1 of the Trade Show Expenses workbook as a non-interactive Web page and then opens the Web page in your computer's Web browser. Since the Web page isn't interactive, you can only view its information. We'll create an interactive Web page in the next lesson.

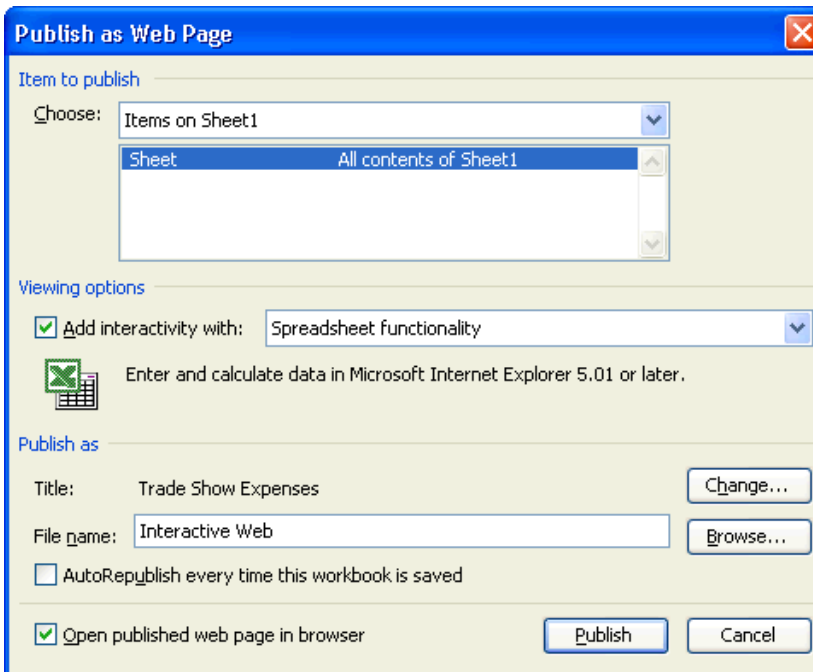| Web Page Type	Description
Interactive Web Pages	Interactive Web pages let users interact with the data on your Web page because they include basic spreadsheet functionality. Interactive Web Pages let your users enter data, format data, calculate data, and sort and filter. Interactive Web Pages require Microsoft Internet Explorer 4.01 or greater so not everyone can use them.
Non-Interactive Web Pages	Non-interactive Web pages allow users to view worksheet data but not interact with it. Users can view non-interactive Web pages in any Web browser, unlike when they view interactive pages, which requires Microsoft Internet Explorer version 4.01 or later.

4: Saving a Workbook as an Interactive Web Page

In the previous lesson you learned how to save a workbook as a non-interactive Web page. Non-interactive Web pages are great if you only want to present information and/or if you don't know which Web browser your audience has. If you're publishing to a corporate Intranet and/or you know your audience uses Microsoft Internet Explorer 4.01 or later, you can save your workbooks as interactive Web pages, which allow users to add, change, sort, filter, and calculate the data presented on a Web page.

1. **If necessary, open the workbook named Lesson 10 and save it as** Trade Show Expenses**.**
If you do not know where your practice files are located, ask your instructor for assistance.

2. **Make sure Trade Show Expenses is the active workbook, then select File → Save as Web Page from the menu.** The Save As dialog box appears.

3. **Click the Publish button.**
The Publish as Web Page dialog box appears, as shown in Figure 10-8. First you have to specify which areas of the workbook you want to publish.

4. **Select Items on Sheet1 from the Choose list, then select Sheet All Contents of Sheet1 from the box under the Choose list.**
Next you have to tell Excel that you want to save the Web page with interactivity. When you save a worksheet as a Web page you can add interactivity with:
• **Spreadsheet functionality:** Enables users to enter, change, and calculate data like they're using an Excel worksheet.
• **PivotTable functionality:** Enables users to pivot, filter, sort, and analyze data like they would using an Excel PivotTable report (see the chapter on Data Analysis and PivotTables it you're a little unclear about what a PivotTable report is).

5. **Add a check to the Add Interactivity with box and verify that Spreadsheet functionality appears in the drop-down list to the right.**
You can also create or change the title that appears at the top of your Web page, whether or your Web page is interactive or not.

6. **Click the Change button.**
The Set Title dialog box appears.

7. **Type** Trade Show Expenses **in the Title box and click OK.**
Lastly you have to specify a file name for the Web page and where you want to save it.

8. **Type** Interactive Web **in the File name box add a check to the Open published web page in browser box and click the Publish button.**
Excel saves Sheet1 of the Trade Show Expenses workbook as an interactive Web page and opens the Web page in Microsoft Internet Explorer, as shown in Figure 10-7. Let's test the interactive Web page.

9. **Click cell B5, type** 400 **and press <Enter>.**
Wow! The Web page let's you change the worksheet's number and recalculates it, just like Microsoft Excel! By no means do Interactive Web pages have all of Excel's bells and whistles features, but they have enough functionality for you to perform basic calculations. Notice the Web page even has an Excel toolbar, which contains buttons for the basic worksheet functions, such as cut, copy, paste, AutoSum, and sort.

10. **Place the cell pointer anywhere in the A column and click the Sort Ascending button on the toolbar.**
Excel sorts the contents of the A column from the Web Page alphabetically by ascending order.

11. **Close Microsoft Internet Explorer and close all open workbooks in Excel.**

5: Import an External Data Source
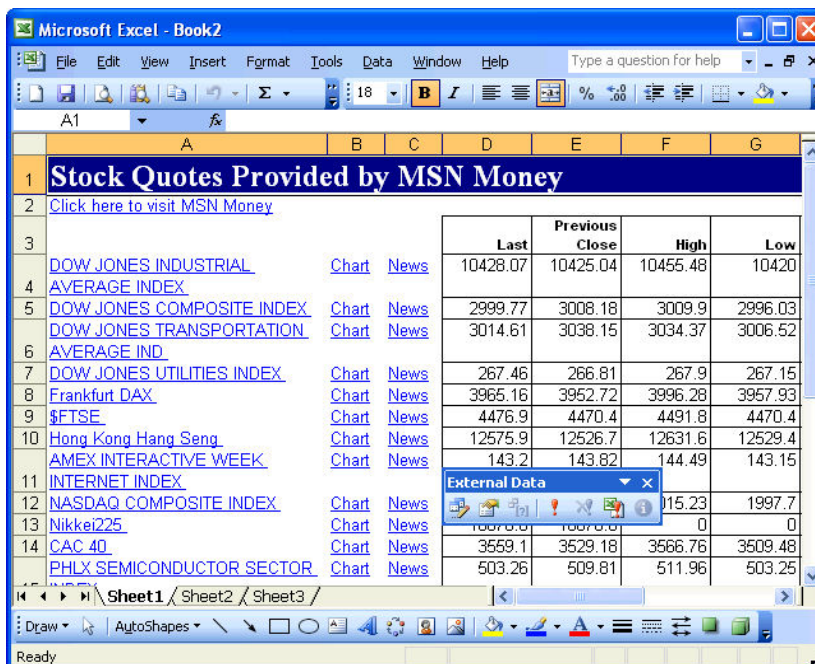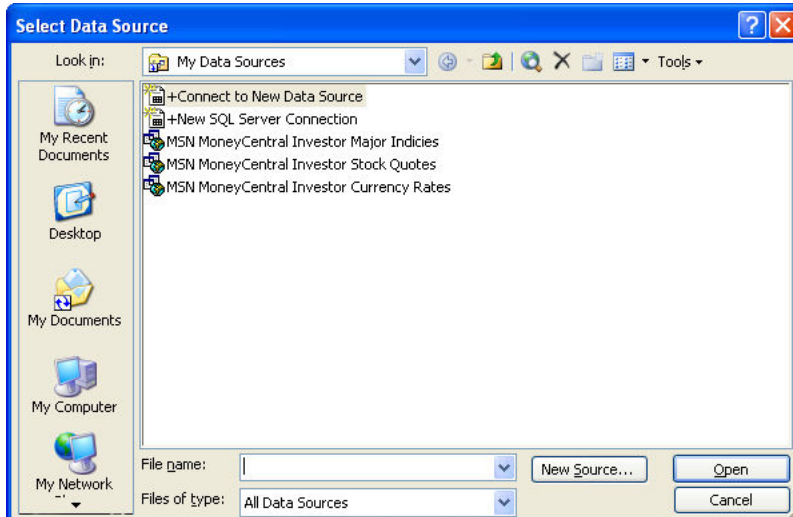
This lesson explains how to import external data into your Excel worksheet. You can import information that is currently on your computer, or information that is on the Internet, which saves you a lot of typing. Better yet, you can update the data you import with any new information that might appear in the original source. For example, you need a data sheet of the Dow Jones stock quotes every day. Instead of re-importing that information every day, you can simply refresh the original Dow Jones data source you imported in Excel, and the information will automatically be updated. Ready to try it?

1. Create a new workbook. Make sure you are connected to the Internet.
This lesson will require a connection to the Internet to import the data source in this lesson.

2. Select Data → Import External Data → Import Data from the menu.

The Select Source Data dialog box appears, as shown in Figure 10-10.
A list of data sources appears in the window. These are queries that Microsoft has already created for your convenience. As you can see, almost all of these data sources are online stock quotes, which many Excel users would find useful.

3. Click MSN MoneyCentral Investor Major Indicies to select it.
This data source compiles a list of Dow Jones stock quotes daily on the Internet.

4. Click Open.
The Import Data dialog box appears, asking where you want to import the information on your worksheet. A line like marching ants should appear around cell A1, where the information will be imported. If you want the information to be imported into another area of the worksheet, just click the cell.

5. Click OK to close the Import Data dialog box.
Excel imports the data source into the work sheet and the External Data toolbar appears, as shown in Figure 10-11. You can use these buttons to refresh the imported data source.
You can also import data that is already on your computer or company Intranet.

6. Click Sheet 2 of the workbook to start a new page.
You will import a data source from your Practice folder.

7. Select Data → Import External Data → Import Data from the menu.
The process is a bit different from importing a data source on the Internet.
Notice that the left side of the dialog box includes five buttons. You can use these buttons to navigate to different areas of your computer. The Look in list is your best bet to find your Practice folder, however.

8. Navigate to your Practice folder in the Look in list of the Select Source Data dialog box.
The Practice folder contains the data source you want to import to Sheet 2.

9. Select Office Expenses in the Practice folder, and click Open.
The New Web Query dialog box appears, asking which tables you want to import.

10. Click Import to import the entire table.
The Import Data dialog box appears, asking where you want to insert the imported information in your worksheet.

11. Click cell A1 in the worksheet.
A line that looks like marching ants surrounds the cell, indicating that the imported data source will be inserted there.
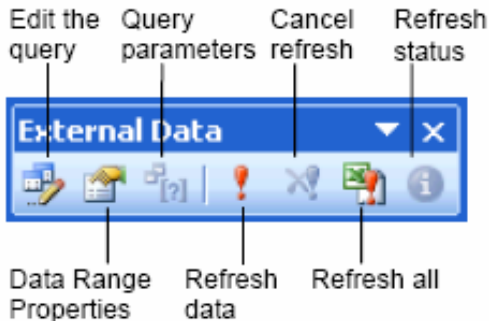
12. Click OK.
Excel imports the Office Expenses Sheet 1 into the worksheet.
That's all there is to importing an external data source!

6: Refresh a Data Source and Set Data Source Properties

Just because a data source was imported does not mean its properties or formatting are set in stone forever. Once you have inserted a data source, you may find that you want to change its properties. This lesson is a brief overview of how to change your data source's properties.

1. Make sure Sheet 1 is open. Click the Data Range Properties button on the External Data toolbar. The External Data Range Properties dialog box appears. You can set how you want Excel to import the information into your worksheet here.

2. Check the Adjust column width and Preserve cell formatting check boxes. A dialog box appears telling you that if you continue the refresh, hyperlinks in the external data range will no longer work.

3. Click OK. Refer to Table 10-6: *Data Range Properties* to find out more information on what these options and other commands in the Properties dialog box do.

4. Click the Refresh Data button on the External Data toolbar.
The Refresh Data dialog box appears to ask if the file is secure.

5. The file is secure, so click OK. Excel updates the data source to include the most recent information available from its location on the Internet. Pretty neat, eh?
If there is more than one data source in your workbook, you can refresh all data sources at one time.

6. Click the Refresh All button on the External Data toolbar.
This refreshes all of the data sources in the workbook.
Notice that the cursor changes into an hourglass when you refresh the data source. This indicates that Excel is updating the information in the data source. If you find that this action is taking a while, you can click the Refresh Status button to see how the refresh process is going.

7. Click the Refresh Status button on the External Data toolbar.
The External Data Refresh Status dialog box appears, as shown in Figure 10-14. The dialog box tells you how much information has been downloaded, how much time has elapsed, and other information.
Refer to the table below for more information on the properties you can set in a data source.

7: Create a New Web Query
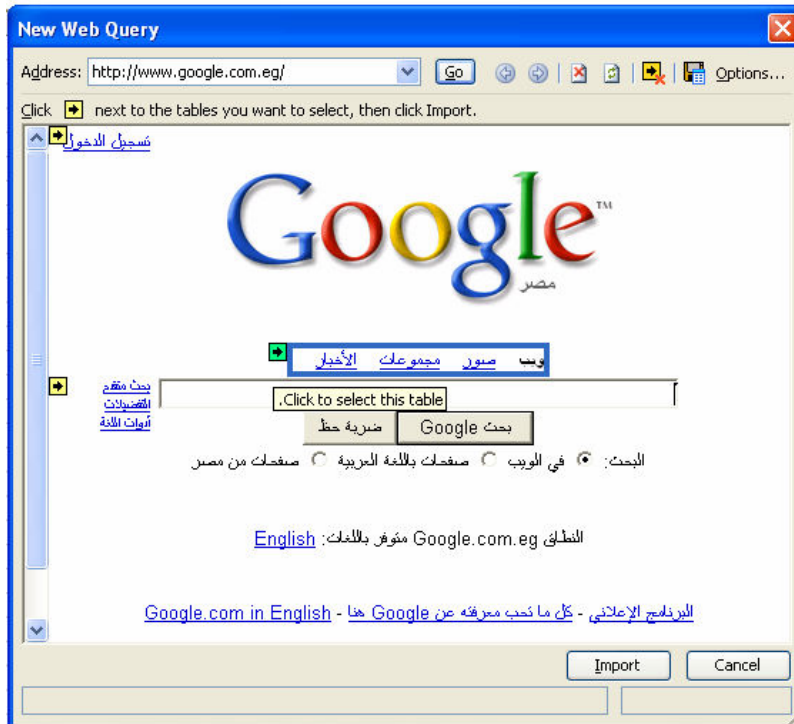
For the most part, any information you may want to add to an Excel worksheet can be done with the Import Data command. Sometimes, however, you may want to specialize the information you import, which requires a more advanced procedure. For example, you might want to import only a specific part of a Web page. You would create a new query to perform this procedure.

1. Create a new workbook.

2. Select **Data → Import External Data → New Web Query** from the menu.
The New Web Query dialog box appears with the MSN web site in the window (how shameless). In case you want to import the contents of a different Web page, you have to type the address of the Web page you want to import in the text box.

3. Type www.google.com in the **Address text box, and click Go**.
The Google Web page appears in the New Web Query dialog box (how shameless). Notice that there are little yellow boxes with arrows in them spread out over the page. Each button is attached to a different table or section of the page. When you see a section of the page you want to import, all you have to do is click the yellow button near it.

4. Click three **buttons** on the Google page.
Notice that the yellow arrow buttons turn into green check buttons after they are clicked. Only the checked boxes will return information from their respective tables in the Web page. This is a great improvement from Excel 2000, where you had no choice; you had to import entire Web pages at a time.
NOTE: If you will need to retrieve or query the Web page again in the future you can

save the Web query by clicking the Save Query button. The query will then appear in the Select Data Source dialog box, along with the queries that are already created for Excel.

5. Click Import.

Excel asks where you want to put the queried information. You can place the data in a location on any existing worksheet, or you can place the data on a new worksheet.

6. Click OK to place the queried data in cell A1 of the current worksheet.

Excel retrieves the data from the Google Web page and puts it in cell A1 of the current worksheet, as shown in Figure 10-11. The External Data toolbar also appears, which you can later use to refresh the data to make sure you have the most recent numbers.

7. Exit Microsoft Excel without saving any of your work.

Well done! You've finished another chapter and have learned a new set of skills. Move on to the Chapter review and see how much you've retained.
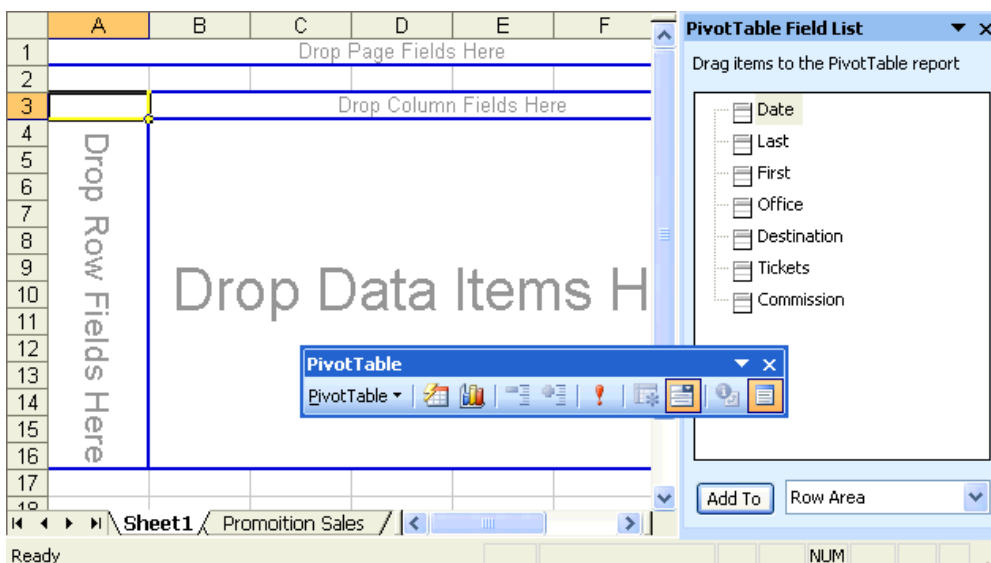
Section (6)

Data Analysis and PivotTables

1: Creating a PivotTable

Creating a PivotTable is remarkably easy. You create PivotTables using the PivotTable

Wizard, which asks which fields you want to include in the PivotTable, how you want your PivotTable organized, and which types of calculations your PivotTable should perform. PivotTables may sound confusing, but they will make a lot more sense when you've actually created one.

1. **Open the workbook named Lesson 11A and save it as PivotTable.**

If you do not know where your practice files are located, ask your instructor for assistance.

This workbook contains figures for ticket sales from a recent promotion. The list contains flight dates, agents, offices which sold the tickets, destinations, sales amounts, and if the agents received a commission or not. It's difficult to see the bottom line in a large list like this. For example, how many tickets did the Blaine office sell, or how many tickets were sold to London? The PivotTable Wizard can help you summarize the list and provide you with meaningful information.

2. **Make sure the cell pointer is located in the list (A1:I200) and select Data → PivotTable and PivotChart Report from the menu.**

The First Step of the PivotTable Wizard dialog box appears. Here you must specify the location of the data you want to use in your PivotTable. There are four options:

• **Microsoft Excel list or database:** Creates a PivotTable from data in columns on your worksheet (the most commonly used option).

• **External data source:** Creates a PivotTable from data stored in a file or database outside of the current workbook or Microsoft Excel.

• **Multiple consolidation ranges:** Creates one PivotTable from multiple cell ranges in different worksheets.

• **Another PivotTable:** Creates a PivotTable from another PivotTable in the same workbook.

You also have to specify if you want to create a PivotTable Report or a PivotTable Report along with a corresponding PivotChart report.

3. **Verify that the Microsoft Excel list or database and the PivotTable options are both selected and click Next.**

Step Two of the PivotTable Wizard appears. You need to tell the PivotTable Wizard where the data you want to use in the PivotTable is located. Because the cell pointer was located inside the list when you started the PivotTable Wizard, the cell range of the list (A1:I200) is already selected.

4. **Click Next.**

The third and last step of the PivotTable Wizard appears, as shown in Figure 11-4. Here's where you tell Excel to put your PivotTable report. You can place your PivotTable report in:

• A new worksheet

• Embedded in an existing worksheet.

5. **Verify that the New worksheet option is selected and click Finish.**

The PivotTable Wizard dialog box closes and the PivotTable appears on a new worksheet, as shown in Figure 11-5. Notice that the PivotTable is empty—that's because we haven't specified the data we want to analyze yet—something you'll learn in the next lesson.

2: Specifying the Data a PivotTable Analyzes
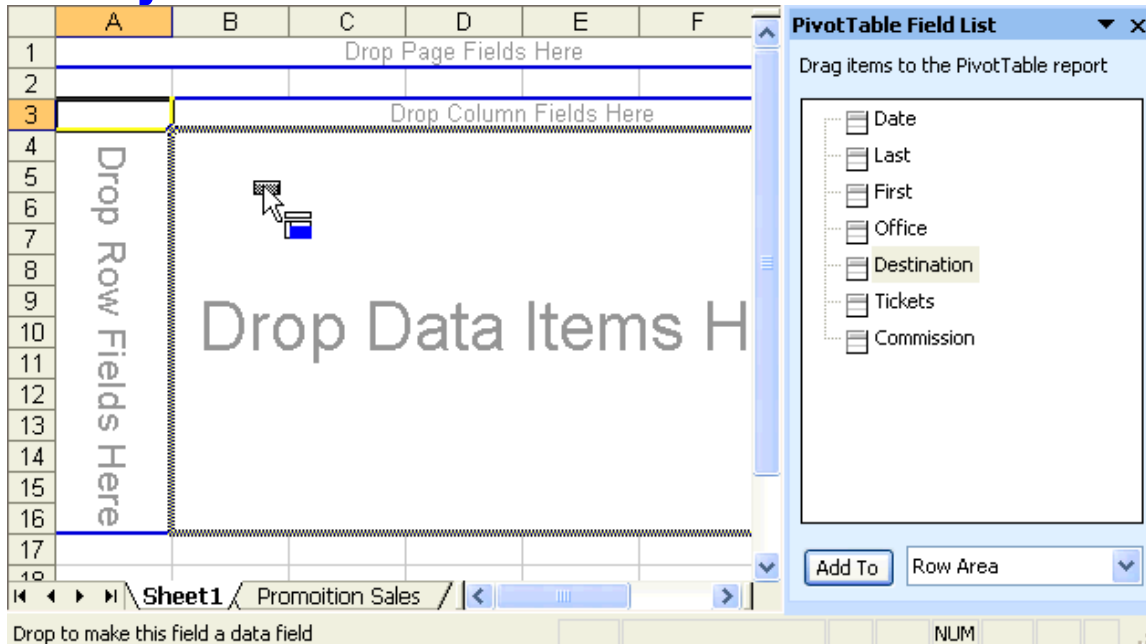
Once you've created your PivotTable report, you have to specify the data you want to analyze with the PivotTable. It's easy to specify which data you want to analyze—simply drag it from the PivotTable toolbar and onto the Row, Column, or Data area on the PivotTable report. You're not going to understand how to do this unless you try it—so let's get started!

1. Drag the Destination field button from the PivotTable Field List to the ROW area of the PivotTable diagram.
The Destination field appears at the top of the ROW area in the PivotTable. Next, make the Office field the column heading for the PivotTable.

2. Drag the Office field button from the PivotTable Field List to the COLUMN area of the PivotTable diagram, as shown in Figure 11-6.
You have selected the Destination field to be the row heading and the Office field to be the column heading for your PivotTable. Now you need to select the field you want to summarize.

3. Drag the Number of Tickets field button from the PivotTable Field List to the DATA area of the PivotTable diagram.
Compare your dialog box with the one shown in Figure 11-7.
The neat thing about PivotTables is that their information is *dynamic*. What this means is once you've created a PivotTable, you can rearrange or "pivot" it to view its data in different ways. For example, you could rearrange the PivotTable you just created so that it summarizes the amount of the total ticket sales instead of the total number of tickets sold.

4. Drag the Sum of Tickets field button (located in cell A3) off the PivotTable diagram.
The PivotTable will no longer total the number of tickets sold. You can easily

summarize another field by dragging it onto the DATA area of the PivotTable diagram.

5. **Drag the** **Total field button** **to the** **DATA** **area of the PivotTable diagram.**

You can also rearrange a PivotTable's headings.

6. **Drag the** **Destination field button** **from the ROW area of the PivotTable diagram to the** **COLUMN** **area and drag the** **Office field button** **from the COLUMN area of the PivotTable diagram to the** **ROW** **area.**

Hopefully, you're starting to understand the true power of PivotTables. PivotTables can usually make information stored in even the longest lists easy to understand. And once you make a PivotTable you can change the information it summarized in an instant, simply by dropping and dragging.

3: Changing a PivotTable's Calculation
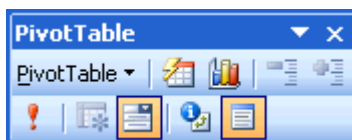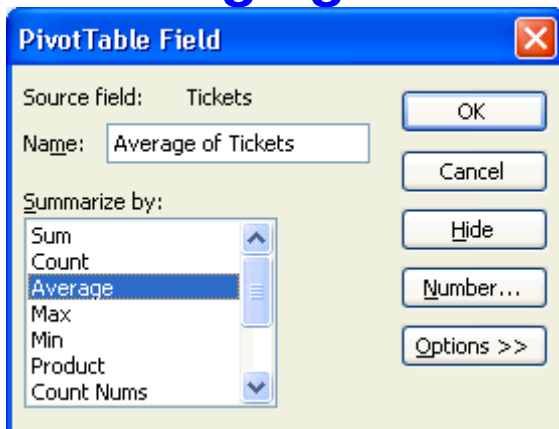
In the previous lesson, you learned how to change the data you want included in the PivotTable report. You can also change how a PivotTable summarizes its information. For example, you might want a PivotTable to display averages instead of totals.

1. **Click cell A3 and select Window → Freeze Panes from the menu.**
Now the column and row headings to the left and above the active cell (B3) will always be visible as you scroll through the worksheet.

2. **Scroll down to row 23.**
The PivotTable has created column totals, which calculates the total number of reservations made at each office.

3. **Scroll to the T column.**
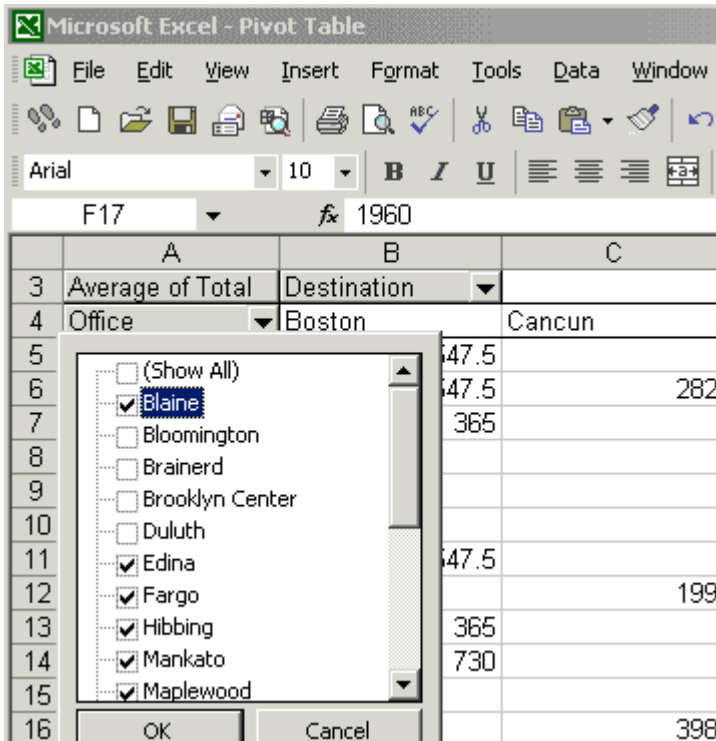The PivotTable has also calculated the total number of reservations made to each destination.

4. **Click the Field Settings button on the PivotTable toolbar.**
The PivotTable Field dialog box appears, as shown in Figure 11-8. The PivotTable Field dialog box lets you change how a PivotTable is calculated. For example, instead of totaling the ticket sales made, you could find the average:
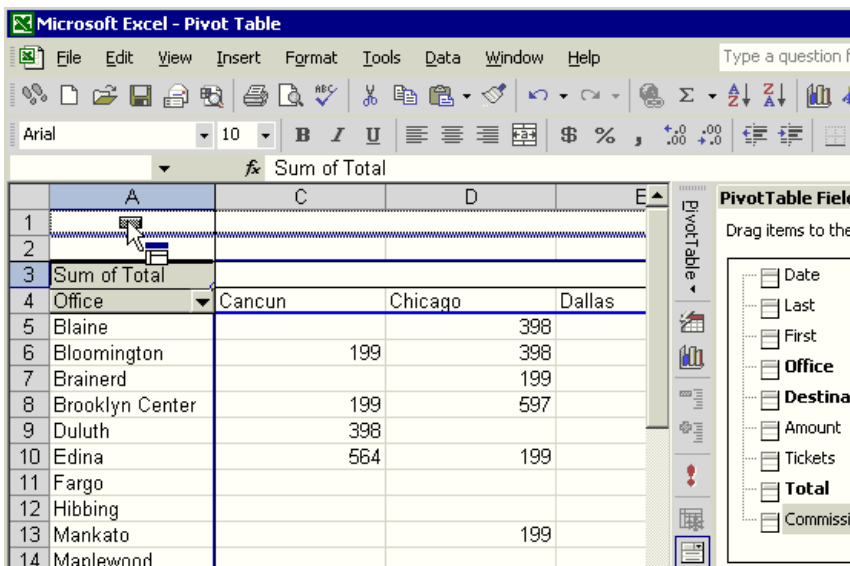
5. **Select Average from the Summarize by list and click OK.**
The PivotTable Field dialog box closes and the PivotTable displays the average ticket sales.

4: Selecting What Appears in a PivotTable

You can filter which information is summarized in a PivotTable by clicking a row or column field's drop-down arrows and selecting the items you want to include in the PivotTable report or by adding a *page field* to the PivotTable. In this lesson, you'll learn how to filter the information that is included in a PivotTable Report using both methods.

1. **If necessary, find and open the Lesson 11B workbook and save it as** PivotTable**.**
If you do not know where your practice files are located, ask you instructor for help**.**

2. **Click the Office field drop-down list located in cell A4.**
A drop-down list appears beneath the Office field, as shown in Figure 11-12. Check the values that you want in your PivotTable and uncheck those you don't.

3. **Remove the checkmark from the Blaine, Bloomington, Brainerd, Brooklyn Center, and Duluth boxes and click OK.**
These offices no longer appear in the PivotTable report. You can also filter the information that appears in a PivotTable report by adding a Page Field to the PivotTable.

4. **Drag the Commission field button to the PAGE area of the PivotTable diagram.**
Now you will be able to filter the PivotTable using the commission field and display data for sales with commissions, sales without commissions, or both.

5. **Click the Commission list arrow, select Yes and click OK.**
The PivotTable displays only information for commissioned sales.

5: Grouping Dates in a PivotTable

	A	B	C	D	E
1	Commission	Yes ▼			
2					
3	Average of Total	Date ▼			
4	Destination ▼	1/2/1999	1/3/1999	1/4/1999	1/5/1999
5	Boston	730			
6	Cancun				
7	Chicago				
8	Dallas				374

	A	B	C	D	E
1	Commission	Yes ▼			
2					
3	Average of Total	Date ▼			
4	Destination ▼	Jan	Feb	Mar	Apr
5	Boston	608.3333333	365	730	730
6	Cancun			597	
7	Chicago	398	398	696.5	1194
8	Dallas	374	561		374

PivotTables can usually summarize information without any outside help from you. When you want to summarize a list by dates, however, you will probably need to coach Excel and tell it how you want to group the information in the PivotTable: by days, months, quarters, or years. In this lesson, we'll rearrange out PivotTable and summarize its information by month. First, you need to rearrange your PivotTable to summarize it by date.

1. Drag the **Office field button** off the PivotTable diagram and drag the **Destination field button** from the Column area of the PivotTable to the **Row** area.

Next, you need to add the Date field to the PivotTable's Column area.

2. Drag the **Date field button** to the **Column** area of the PivotTable.

Now the PivotTable summarizes ticket sales by destination and date as shown in Figure 11-15. The only problem is that the PivotTable summarizes the dates by day—making the summary information rather meaningless. You can make the PivotTable more useful by grouping the days into months using the Group command. First you need to specify what information you want to group by—the dates.

3. Click the **Date button** located in cell **B3** then select **Data → Group and Outline → Group** from the menu.

The Grouping dialog box appears, as shown in Figure 11-16. You need to select a date or time interval by which to group.

4. Select **Months** from the By list and click **OK**.

The Group dialog box closes and the PivotTable groups the dates by month, as shown in Figure 11-17.

6: Updating a PivotTable

	A	B	C	D	E	F	G	H
1	Commission	Yes ▼						
2								
3	Sum of Total	Date ▼						
4	Destination ▼	Jan	Feb	Mar	Apr	May	Jun	Grand Total
5	Boston	1825	365	730	730	365		4015
6	Cancun			1194			199	1393
7	Chicago	398	796	1393	1194	398		4179
8	Dallas	374	561		748	374	935	2992
9	Detroit	980		2940	245	490		4655

Refresh Data button

If you modify the source data a PivotTable is based on, the PivotTable isn't automatically updated. Instead you must manually *refresh* the PivotTable anytime you change its underlying source data. This lesson explains how to do just that.

1. **Click cell A3 and then click the Field Settings button on the PivotTable toolbar. Select Sum from the dialog box, and click OK.**
Now the PivotTable will display the Sum of the total, instead of the Average.

2. **Click the Promotion Sales tab. Click cell G19, type 100 and press <Enter>.**
Obviously, Philip Grahams didn't sell 100 tickets to Boston, but this is a big enough number that you will be able see the changes in the PivotTable's February column when you update it.

3. **Click the Sheet1 tab to return to the PivotTable.**
Look at cell C5, the February column. The PivotTable does not reflect the increased ticket sales you made to the list, as shown in Figure 11-18.

4. **Click anywhere in the PivotTable and click the Refresh Data button on the PivotTable toolbar.**
The PivotTable is refreshed and correctly displays the current list data, as shown in Figure 11-19.

5. **Go back and change cell G19 back to 1, and press <Enter>. Click the Sheet1 tab to return to the PivotTable and click the Refresh Data button on the PivotTable toolbar.**
That's it—we're finished working with PivotTables! PivotTables are the most powerful way to summarize information in a list, but they're not the only method you can use. The remainder of this chapter explores some of the other ways to summarize list information.

7: Formatting and Charting a PivotTable
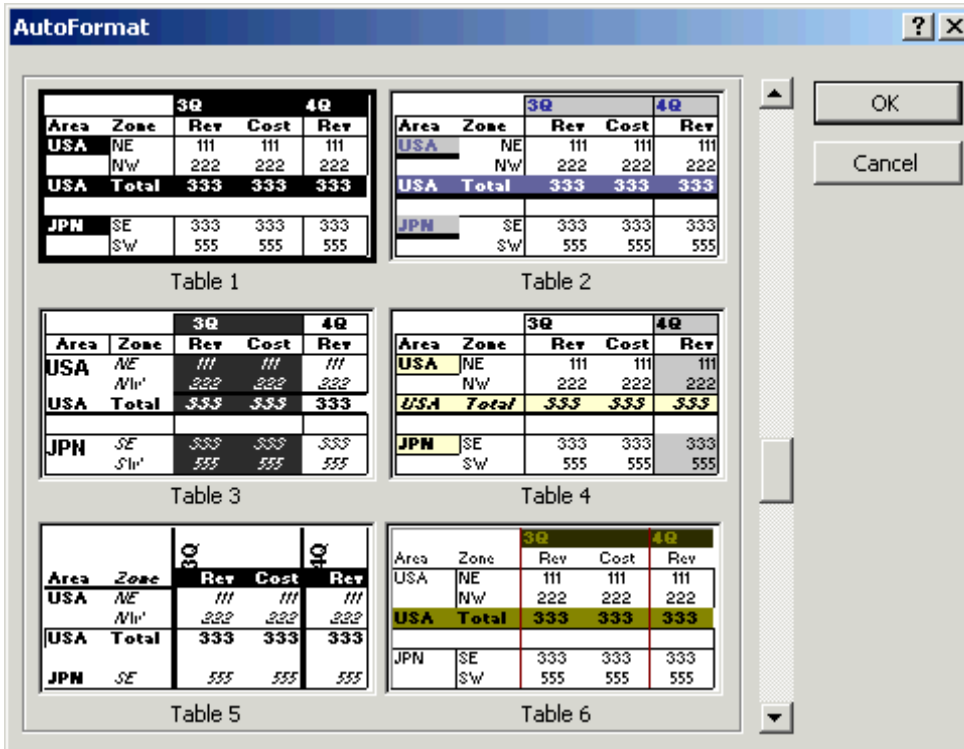
This lesson explains how you can quickly format a PivotTable report using the AutoFormat command and how to create a PivotChart—both new features introduced in Excel 2003. First, let's discuss how to format your PivotTable with AutoFormat. AutoFormat is a built-in collection of formats such as font sizes, patterns, and alignments you can quickly apply to a PivotTable report. AutoFormat lets you select from 20 different preset formats. AutoFormat is a great feature if you want your PivotTables to look sharp and professional, but don't have the time to format them yourself.

1. **Make sure the cell pointer is located in the PivotTable report and click the Format Report button on the PivotTable toolbar.**
The AutoFormat dialog box appears, as shown in Figure 11-20. You can format your PivotTable report using a preset format.

2. **Scroll down the AutoFormat dialog box, select the Table 2 format and click OK.**
The PivotTable is formatted with the preset Table 2 formatting settings.
Let's move on to this lesson's other topic; creating a PivotChart. A PivotChart is similar to an ordinary chart created in Excel, except that it plots a PivotTable's information. PivotCharts differ from ordinary Excel charts because they are dynamic, just like PivotTable reports. You can change a PivotChart's structure just like you would with a PivotTable.

3. **Make sure the cell pointer is located in the PivotTable report and click the Chart Wizard button on the PivotTable toolbar.**
Excel creates a chart from the PivotTable and places it on a new sheet tab, labeled

Chart1. You can format and work with a PivotChart just like you would with a regular chart. Since there's so much information in our PivotTable, the PivotChart we just created looks cluttered. As with PivotTables, you can specify which items you want to appear in a PivotChart.

4. **Click the Destination drop-down list located above the chart's legend and remove the checkmarks from all the destinations except Boston, Cancun, Chicago, and Dallas, and click OK.**

Only the specified destinations are plotted on the PivotChart. Let's change the chart type to make our PivotChart easier to understand.

5. **Select Chart → Chart Type from the menu.**

The Chart Type dialog box appears.

6. **Select a Clustered Column Chart from the Chart Sub-Type list and click OK.**

The chart type is changed to a clustered column chart, as shown in Figure 11-21.
Just about everything you can do to a PivotTable report you can do to a PivotChart. For example, you can easily add, change, remove, or rearrange what the PivotChart plots.

7. **Drag the Sum of Total field (located in the upper left corner of the chart) from the PivotChart back to the PivotTable Field List to remove it.**

Since the PivotChart has no data to plot, it displays the message "Drop Data Items Here."
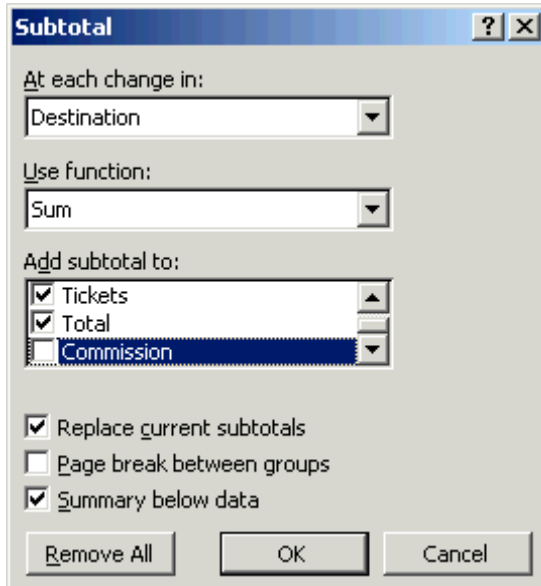
8. **Drag the Tickets field from the PivotTable toolbar to the empty Data area of the PivotChart.**

The PivotChart now plots the total number of tickets sold to each destination.

9. **Save your work and then close the Pivot Table worksheet.**

That's it—we're finished working with PivotTables and PivotCharts! PivotTables are the most powerful way to summarize information in a list, but they're not the only method you can use. The remainder of this chapter explores some of the other ways to summarize list information.

8: Creating Subtotals

So far in this chapter, we've been summarizing information in a list using PivotTables.
Another quick and easy way to group and summarize data is to use Excel's *subtotals* feature.
Usually you create subtotals with the SUM function, but you can also create subtotals using
functions such as COUNT, AVERAGE, MAX, and MIN.

1. **Open the workbook named Lesson 11C.**
If you do not know where your practice files are located, ask your instructor for help.
You need to sort the list before you use the Subtotals command. You want to sort the
list alphabetically by destination.

2. **Click any cell in the E column and click the Sort Ascending button on
the Standard toolbar.**
The list is sorted alphabetically by destination. Now that the list is sorted, you can use
the Subtotals command.

**3. Make sure the active cell is located within the list and select Data →
Subtotals from the menu.**

The Subtotal dialog box appears, as shown in Figure 11-22. You want to summarize the
list based on the Destination field—the field you sorted in the previous step.

**4. Select Destination from the At each change in list, then select Sum
from the Use function list.**

This will create subtotals every time the destination changes (which is why you had to
sort the list based on destination back in Step 2). Next, you need to specify that you
want to add subtotals to the Annual Trips and Annual Cost of Tickets fields.

**5. In the Add subtotal to list, check the Tickets check box, and the Total
check box (you may have to scroll up or down to find them). Make sure
the other check boxes in the list aren't checked.**

This will add subtotals to the Tickets and Total columns.

**6. Make sure the Replace current subtotals and Summary below data
check boxes are checked.**

Compare your Subtotal dialog box to the one in Figure 11-22.

7. Click OK.

The dialog box closes and Excel summarizes the list and calculates the subtotals for
each time the destination field changes. Notice Excel displays the outline symbols to
the left of the worksheet, as shown in Figure 11-23. We'll save outlining for another
lesson. For now, try using the Outline buttons to hide the list details.

8. Click the 2 Column Level Symbol button.

Excel hides the third level of detail in the list (the employees) and now only displays
the totals for each office.

9. Click the 3 Column Level Symbol button.

All the outline details are again visible. You can turn off the subtotaling now.

**10. Make sure the active cell is located within the list and select Data →
Subtotals from the menu, then click Remove All.**

The subtotals and outlining are removed from the list. You can remove Subtotals from
a workbook at any time.

11. Close the workbook without saving it.

Knowing how to use the Subtotals command will give you an edge on many other Excel
users. Most users don't realize Excel can automatically add subtotals to their worksheets, and
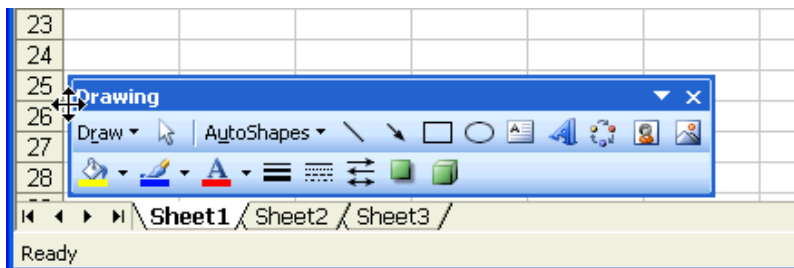as a result they needlessly spend hours manually adding subtotals themselves.
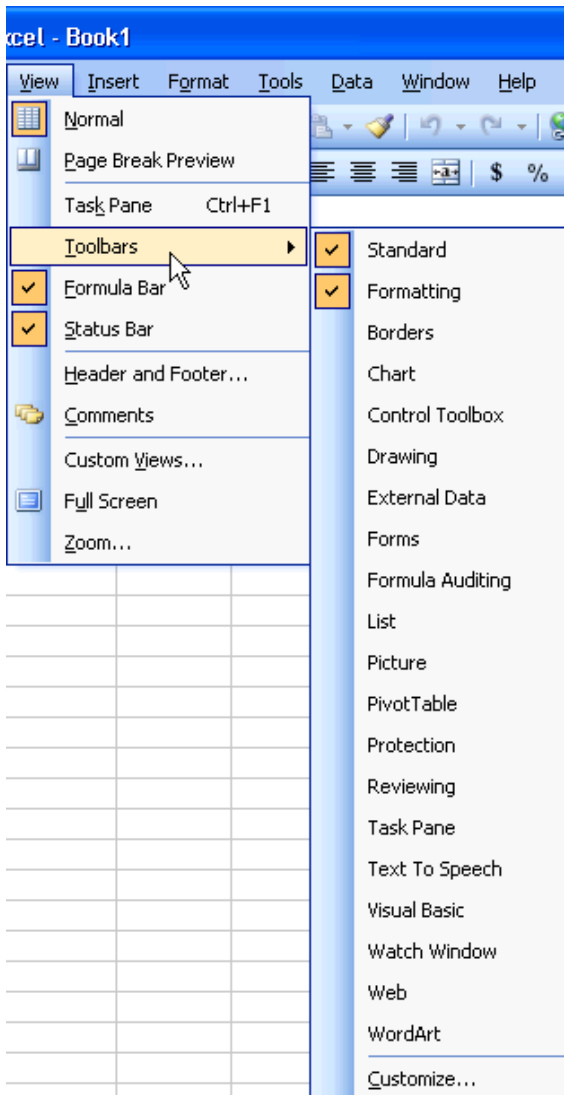
Section (7)

Advanced Topics

1: Hiding, Displaying, and Moving Toolbars

When you first start Excel, two toolbars—Standard and Formatting —appear by default. As you work with Excel, you may want to display other toolbars, such as the Drawing toolbar or the Chart toolbar, to help you accomplish your tasks. Before you know it, your screen is covered with more buttons than NASA's mission control room. This lesson explains how to remove all that clutter by moving Excel's toolbars to different positions on the screen or by

removing them all together.

1. Select View → Toolbars from the menu.

A list of available toolbars appears, as shown in Figure 13-1. Notice that check marks appear next to the Standard and Formatting toolbars: This indicates the toolbars are already selected and appear on the Excel screen.

2. Select Formatting from the toolbar menu.

The Formatting toolbar disappears. You can hide a toolbar if you don't need to use any of its commands or if you need to make more room available on the screen to view a document.

3. Select View → Toolbars → Formatting from the menu.

The Formatting toolbar reappears. Another way to add and remove toolbars is to right-click anywhere on a toolbar or menu.

4. Right-click either the Standard toolbar or the Formatting toolbar.

A shortcut menu appears with the names of available toolbars.

5. Click Drawing from the Toolbar shortcut menu.

The Drawing toolbar appears along the bottom of the Excel screen (unless someone has previously moved it). You can view as many toolbars as you want; however, the more toolbars you display, the less of the document window you will be able to see.

6. Move the pointer to the move handle, , at the far left side of the Drawing toolbar. Click and drag the toolbar to the middle of the screen, then release the mouse button.

The Drawing toolbar is torn from the bottom of the screen and floats in the middle of the document window. Notice that a title bar appears above the Drawing toolbar. You can move a floating toolbar by clicking its title bar and dragging it to a new position. If you drag a floating toolbar to the edge of the program window, it becomes a docked toolbar.
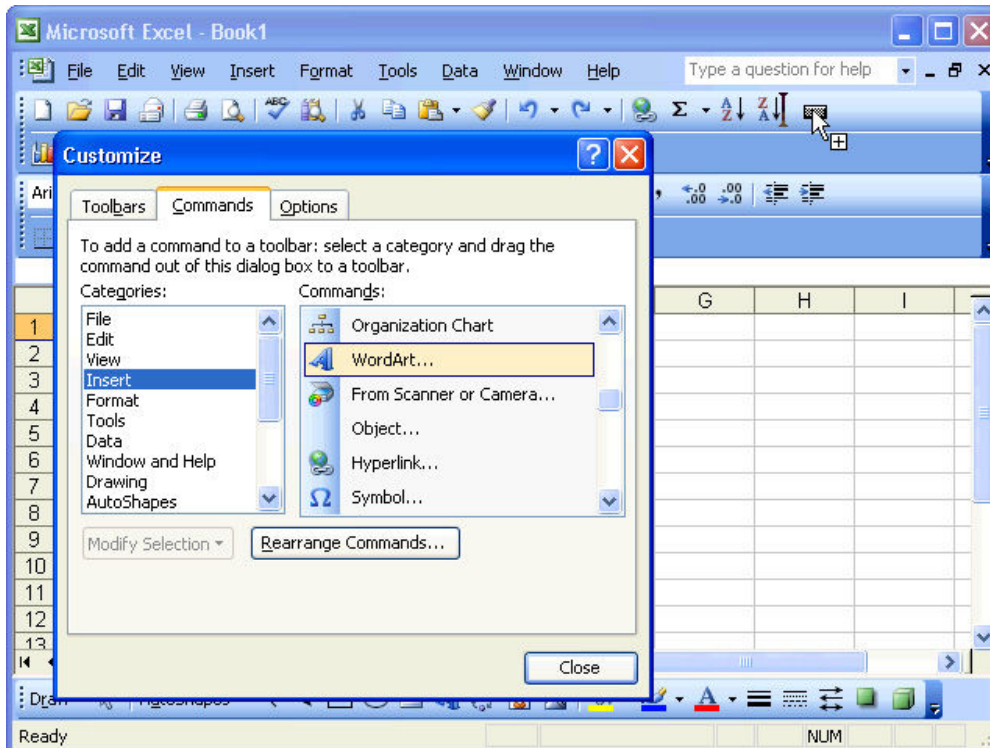
7. Click the Drawing toolbar's title bar and drag the toolbar down until it docks with to the bottom of the screen.

The Drawing toolbar is reattached to the bottom of the Excel screen.

8. Right-click any of the toolbars and select Drawing from the Toolbar shortcut menu.

The Drawing toolbar disappears.

2: Customizing Excel's Toolbars

The purpose of Excel's toolbars is to provide buttons for the commands you use most frequently. If Excel's built-in toolbars don't contain enough of your frequently used commands, you can modify Excel's toolbars by adding or deleting their buttons. If that isn't enough, you can even create your own custom toolbar.
In this lesson, you will learn how to modify Excel's toolbars.

1. Select View → Toolbars → Customize from the menu.
The Customize dialog box appears, as shown in Figure 13-3. You can select toolbars you want to view or create a new custom toolbar in this dialog box.

2. Click the Commands tab.
The Commands tab appears in front of the Customize dialog box, as shown in Figure 13-5. Here you select the buttons and commands you want to appear on your toolbar. The commands are organized by categories just like Excel's menus.

3. In the Categories list, scroll to and click the Insert category.
Notice the Commands list is updated to display all the available commands in the "Insert" category.

4. In the Commands list, scroll to the WordArt button and drag it to the end of the Standard toolbar, as shown in Figure 13-3.
The WordArt button appears in the Standard toolbar.
It's easy to change the image or text that appear on any toolbar button. Here's how:

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5. **Right-click the WordArt button on the toolbar and select Change Button Image → as shown in Figure 13-4.**

You're finished modifying the toolbar!

6. **Click Close to close the Customize dialog box.**

Notice the icons appears on the new WordArt button on the Standard toolbar. When you no longer need a toolbar button, you can remove it. Here's how:

7. **Select View → Toolbars → Customize from the menu.**

The Customize dialog box appears. To remove a button, simply drag it off the toolbar.

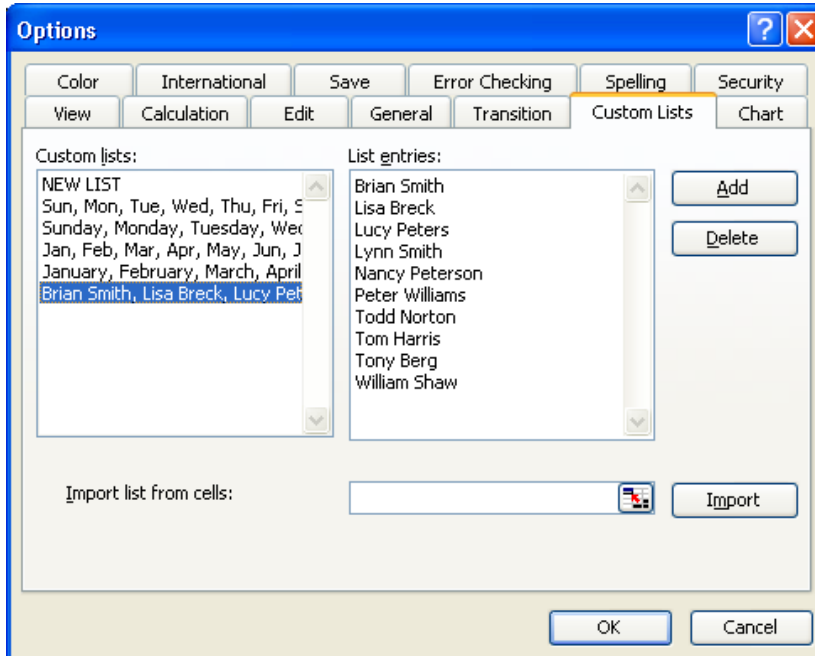**8.** **Click and drag the WordArt button off the toolbar.**

Move on to the next step and close the Customize dialog box.

9. **Click Close to close the Customize dialog box.**

Adding your frequently used commands to the toolbar is one of the most effective ways you can make Microsoft Excel more enjoyable and faster to use.

3: Creating a Custom AutoFill List

You're already familiar with Excel's *AutoFill* feature. It's the nifty function that automatically enters a series of values. If you find yourself typing the same list of words frequently, you can save yourself a lot of time by creating a *custom AutoFill list*. Once you have created a custom AutoFill list all you have to do is type the first entry of the list in a cell, and use AutoFill to have Excel complete the rest of the list for you.

1. **Click cell A1 and type** Monday**.**

For a quick refresher, we'll use AutoFill to enter the remaining days of the week.

2. **Position the pointer over the fill handle of cell A1, until it changes to a ,
then click and hold the mouse and drag the fill handle down to cell A7,
then release the mouse button.**

AutoFill completes the series, entering the days of the week in the selected cell range.

3. **Close the current workbook (you don't need to save it) and open the
workbook named Lesson 13A.**

If you do not know where your practice files are located, ask your instructor for assistance.

This workbook contains a list you need to type out regularly—the names of the employees in your office. To save time, you decide to add the names to an AutoFill list. To do this you first need to select the information you want to define as an AutoFill list—in this case the employee's names.

4. **Select the cell range A1:A10.**

Now that the names are selected, you can add them to a custom AutoFill list.

5. **Select Tools → Options from the menu and click the Custom Lists tab.**

The Custom Lists tab of the Options dialog box appears, as shown in Figure 13-6. Here you can view or delete the existing AutoFill lists, or add your own. Notice the Import list from cells textbox contains the cell range you selected, A1:A10.

6. Click Import.
The list of employees is added to the Custom lists box, and its contents are displayed in the List entries box. Close the Options dialog box.

7. Click OK.
Test out your new AutoFill list.

8. Click the Sheet2 tab type Brian Smith in cell A1 and then click the Enter button on the Formula bar.

9. Position the pointer over the fill handle of cell A1, until it changes to a , click and hold the mouse and drag the fill handle down to cell A10 then release the mouse button.
Excel fills the selected range with the list of employees. Now that you know how to create your own custom AutoFill list, you need to delete it.

10. Select Tools → Options, and then click the Custom Lists tab.
The Custom Lists tab of the Options dialog box reappears.

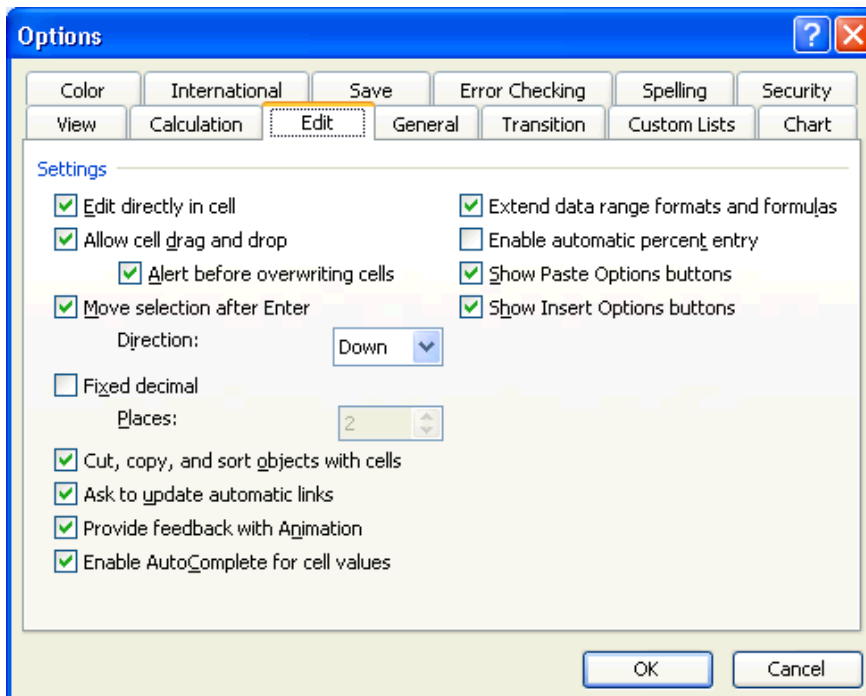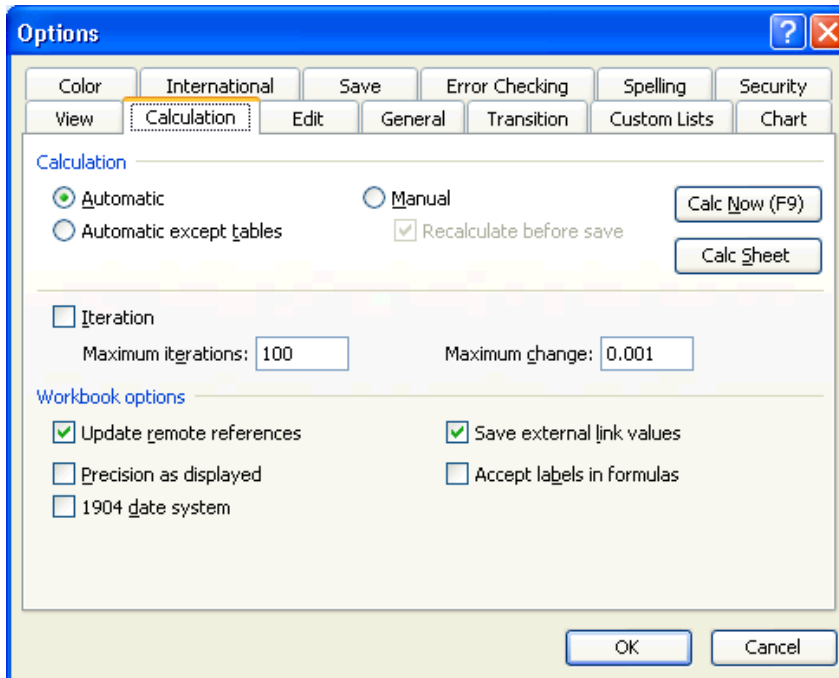**11. Select the list of employees in the Custom lists box and click Delete.**
A dialog box appears, asking you to confirm the deletion of the custom list.

12. Click OK to confirm the deletion, then click OK again to close the dialog box.

13. Close the workbook without saving any changes.

4: Changing Excel's Options

Microsoft spent a lot of time and research when it decided what the default settings for Excel should be. However, you may find that the default settings don't always fit your own needs.
For example, you might want to change the default folder where Excel saves your workbooks from C:\My Documents to a drive and folder on the network.
This lesson isn't so much an exercise as it is a reference on how to customize Excel by changing its default settings.
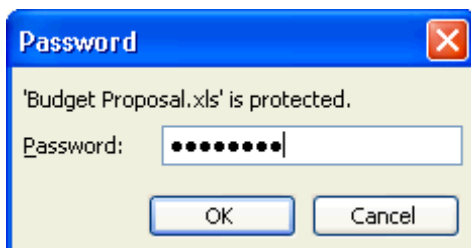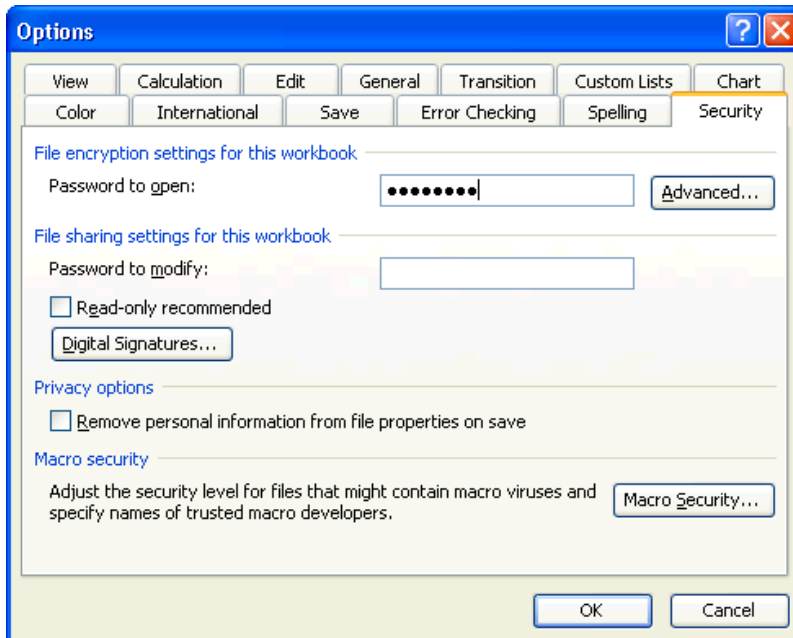
1. Select **Tools → Options** from the menu.
The Options dialog box appears.

2. Refer to Table 13-1: *The Options Dialog Box Tabs* and click each of the tabs shown in the table to familiarize yourself with the Options dialog box. Click **OK** when you're finished.

5: Password Protecting a Workbook

If a workbook contains sensitive data you don't want anyone else to see or modify, you can password protect the workbook, restricting the workbook access to only yourself or those people that know the password. You can assign passwords so that users must enter a password to either open and/or modify a workbook. This lesson will show you how to add a password to a workbook, how to open a password protected workbook, and how to remove a password if you decide a workbook no longer needs to be password protected.

1. **Open the workbook named Lesson 13B and save it as** Budget Proposal**.**
If you do not know where your practice files are located, ask your instructor for assistance.
Here's how to password protect a workbook.

2. **Select Tools → Options from the menu and click the Security tab.**
The Options dialog box appears, as shown in Figure 13-12. Here you can assign passwords to your workbook, requiring users to enter a password to either open or modify the workbook. Notice there are two text boxes where you can enter a password:
• **Password to open:** Adding a password here will require that a user enter the assigned password in order to open the workbook.
• **Password to modify:** Adding a password here will require that a user enter

the assigned password in order to modify the workbook.

3. **In the Password to open textbox, type** flower**.**
Notice the text you type appears as a string of •••••••'s. This is so someone can't
look over your shoulder and see your password.

4. **Click OK.**
The Confirm Password dialog box appears. You must reenter your password, flower,
once more, just in case you mistyped the first time.

5. **Type** flower**, then click OK.**
Now you need to save your workbook.

6. **Click the Save button on the Standard toolbar.**
Excel saves the Budget Proposal workbook.

7. **Close the workbook.**

8. **Select File → 1 Budget Proposal from the recent files list from the
menu.**
The Password dialog box appears, as shown in Figure 13-13. You must enter the
correct password, *flower*, in order to open the workbook. Try entering an incorrect
password to see what happens.

9. **Type** pencil **and then click OK.**
The Incorrect Password dialog appears. You cannot open a password protected
workbook without entering the correct password. A dialog box appears informing you
that you have typed an incorrect password.

10. **Click OK to close the Incorrect Password dialog box.**

11. **Select File → 1 Budget Proposal from the recent files list in the menu.**
The Password dialog box appears. This time enter the correct password.

12. **Type** flower **and then click OK.**
The Budget Proposal opens. Removing password protection from a workbook is just as
easy as adding it.
Removing password protection from a workbook is just as easy as adding it.

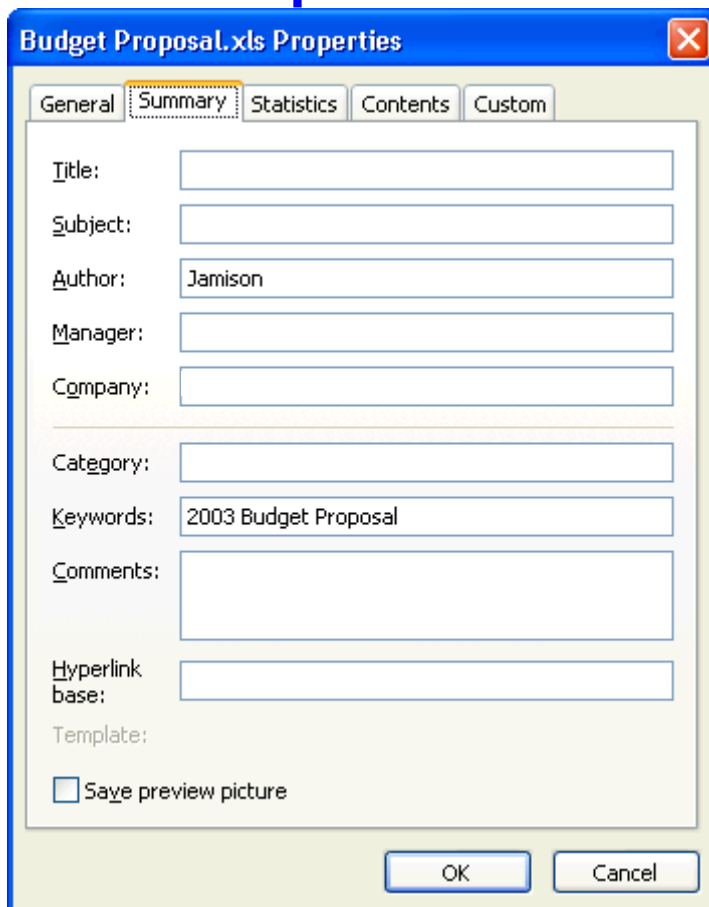**13.** **Select Tools → Options from the menu and click the Security tab.**
The options dialog box appears.

14. **Delete the •••••••• in the Password to open textbox, and then click OK.**

15. **Click the Save button on the Standard toolbar.**
Excel saves the workbook without any password protection.

6: File Properties and Finding a File

We'll cover two related topics in this lesson. The first topic is File Properties. Information about the size of a workbook, when it was created, when it was last modified, and who created it, can all be found with the File → Properties command. The File Properties dialog box also has custom fields, such as Subject and Category, so you can add your own information to your workbooks.

The second topic covered in this lesson is how to find a file. It is just as easy to misplace and lose a file in your computer as it is to misplace your car keys—maybe easier! Luckily, Excel comes with a great Find feature that can track down your lost files. Find can search for a file, even if you can't remember its exact name or location.

1. **Verify that the** **Budget Proposal** **workbook is open, then select** **File →** **Properties** **from the menu, and click the** **General tab**.

The General tab of the Properties dialog box appears. The General tab of the Properties dialog box tracks general information about the file, such as its size, its location, when the file was created, and when it was last accessed or modified.

2. **Click the** **Summary tab**.

The Summary tab of the Properties dialog box lets you enter your own information to describe and summarize the file, such as the author, subject, keywords, and category. You can use the information in the Summary tab to help you search for files.

3. **Click the** **Keywords** **box, type** 1999 Budget Proposal **and click** **OK**.

Excel saves the summary information and closes the Properties dialog box.

4. **Save your changes and close the workbook.**

Okay, let's move on to how to find a file. Actually, the Find feature is part of Windows and can be used to find any type of file—not just those created in Microsoft Excel.

5. **Click the Windows Start button and select Search.**

The Search Results window appears.

NOTE: If you are using an earlier version of Windows, click Start → Find → Files and folders, type Budget in the Named box, and click Find Now. Double-click the Budget Proposal file in the Search Results list to open the workbook.

6. **Click the All files and folders arrow.**

This opens the Search by Criteria dialog box.

7. **Type Budget in the All or part of the file name box.**

This will search for any file that contains the word "budget," such as "1999 Budget Proposal" and "Budget Report." So, if you only know part of the file name, you can enter the part of the file name that you know.
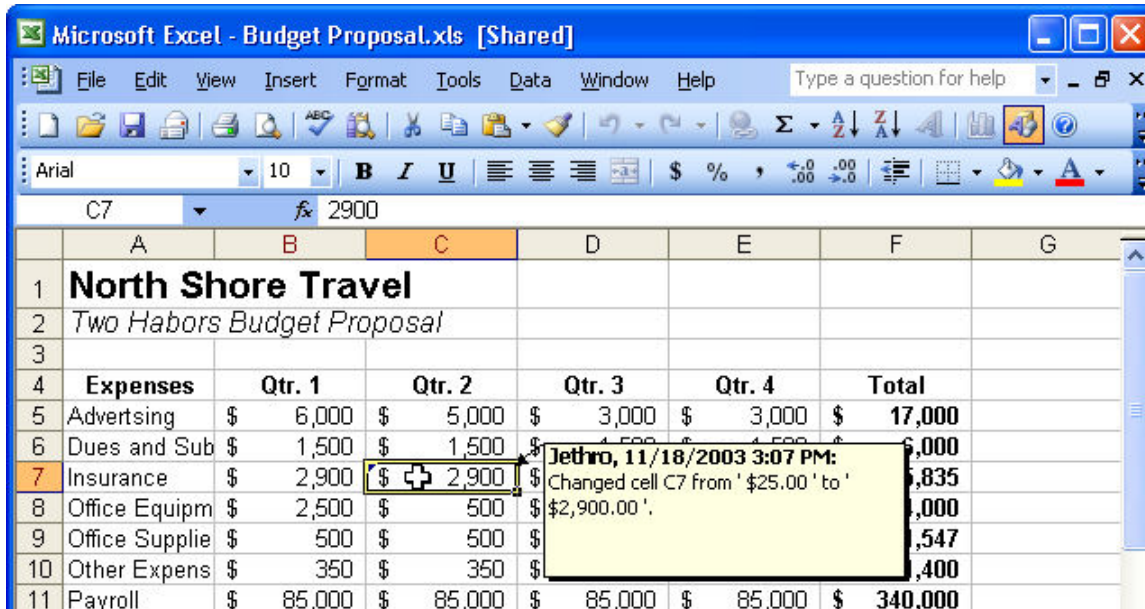
8. **Using the Look in drop-down menu, navigate to your Practice folder or disk, then click Search.**

A list of files that match the criteria you entered in the All or part of the file name box appear in the window.

9. **Double-click the Budget Proposal file.**

The Budget Proposal workbook opens in Microsoft Excel.

7: Sharing a Workbook and Tracking Changes

You can share your Excel workbook files with other people, so that you can work on the data collaboratively. *Sharing* a workbook has several benefits:
• Several people can use the same shared workbook simultaneously.
• Excel keeps track of any changes made to a shared workbook, when they were made, and who made them.
• You can review and accept or reject any changes made to a shared workbook.
This lesson explains how you can share a workbook when you need to collaborate on a project with other people.

1. **Make sure the Budget Proposal workbook is open, select Tools →**
Track Changes → Highlight Changes from the menu.
The Highlight Changes dialog box appears, as shown in Figure 13-18.

2. **Check the Track changes while editing check box.**
Checking this checkbox does two things: (1) it shares the workbook, so other users can use it simultaneously, and (2) it tracks any changes made to the workbook.

3. **Click OK.**
A dialog box appears, informing that Excel must save the workbook in order to share it.

4. **Click OK.**
Excel saves and shares the Budget Proposal workbook. Notice that [Shared] appears after the workbook name in Excel's title bar, indicating that you are working on a shared workbook.
That's all there is to sharing a workbook. If you're on a network, multiple users can now open and edit the workbook at the same time (normally, only one person can open and edit the same file at a time). Now that the workbook is shared, you or other users can track any changes made to the workbook. The remainder of this lesson and the next

lesson will show how you can track changes in a shared workbook.
You decide to break up the insurance payment of $5,800 into payments spanning two quarters instead of one. Move on to the next step to make the revisions.

5. Select cell B7, type 2900, press <Tab> to move to cell C7, type 2900 and press <Enter>.
Excel highlights the revisions you made in cell B7 and C7 with tiny blue triangles in the upper left-hand corners of the modified cells, as shown in Figure 13-19. You can review your changes later and accept or reject them.

6. Move the cell pointer over the revised cell B7.
A note appears by the cell listing the revisions made to it.

7. Click the Save button on the Standard toolbar to save your changes to the shared workbook.
You can also make copies of the workbook that you can distribute to reviewers. When you make a copy of a shared workbook, you can later compare, or *merge*, the copied workbook to the original to review any changes that have been made to the copy.
Here's how you can create a copy of a shared workbook:

8. Select File → Save As from the menu.
The Save As dialog box appears. Save a copy of the shared workbook with a different name.
NOTE: When you make copies of a shared workbook, make sure you give the copies a different name than the original.

9. Type Revised Budget in the File name text box, and click OK.
The "Budget Proposal" workbook is saved with the new name, "Revised Budget," and the original workbook, "Budget Proposal," closes. Now that you're working with a copy of the original workbook (the Revised Budget file) make some revisions to the workbook. You will get a chance to accept or reject the changes in the next lesson.

10. Click cell B5, type 6000, press <Tab> to move to cell C6, type 6000, and press <Enter>.
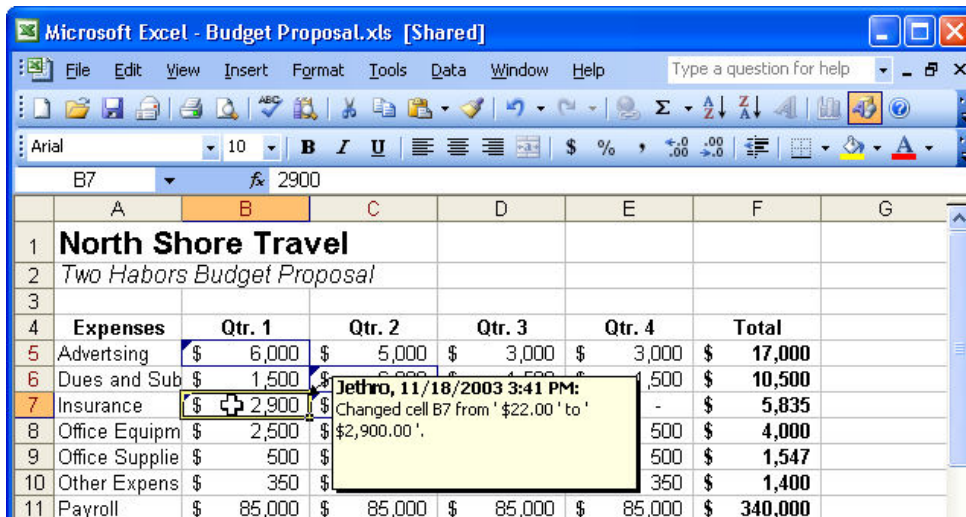Remember— now you're working with the copied workbook "Revised Budget" and not the original "Budget Proposal" workbook. Excel highlights your changes in cell C6.

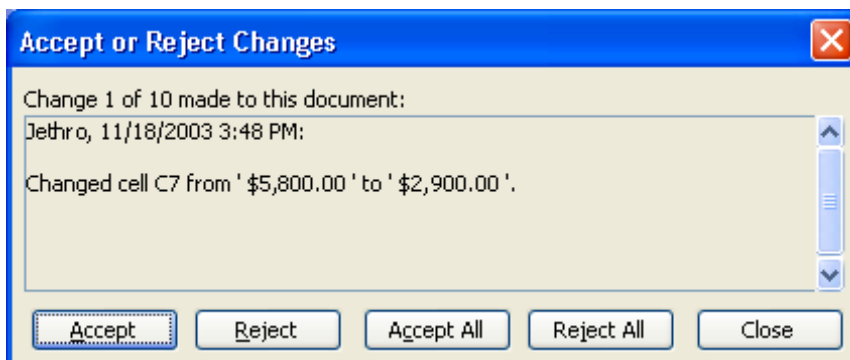**11. Click cell A10, type Misc Expenses and press <Enter>.**
You're finished making revisions to the Revised Budget workbook, so save your changes and close the workbook.

12. Save your changes and then close the Revised Budget workbook.

8: Merging and Revising a Shared Workbook

Once a shared workbook has been revised, you can review the changes and decide if you want to accept the changes and make them part of the workbook or reject the changes. Revising workbooks using Excel's revision features can save a lot of time, because you merely have to accept the changes to incorporate them into your workbook instead of manually typing the changes yourself.
You can also compare, or *merge*, copies made of a shared workbook, and review, accept, and/or reject any changes made.

1. **Open the workbook named Budget Proposal.**
If you do not know where your practice files are located, ask your instructor for assistance.
Budget Proposal is the shared workbook you created in the previous lesson. Display the revisions you made in the previous lesson.

2. **Select Tools → Track changes → Highlight changes from the menu.**
The Track Changes dialog box appears.

3. **Verify that the When box is checked, then click the When drop-down**

list, select **All** and click **OK**.

Excel highlights the revisions you made in cells B7 and C7.

Now that you have the original shared workbook open, you can merge it with the copied workbook, Revised Budget, to review any revisions made to the copy.

4. Select **Tools → Compare and Merge Workbooks** from the menu.

The Select Files to Merge Into Current Workbook dialog box appears. Here you must select the copy of the shared workbook that you want to compare or merge with the original.

5. Select the **Revised Budget** workbook and click **OK**. Click **OK** if you are prompted to save the shared workbook.

Excel merges the revisions made into the Revised Budget workbook with the original Budget Proposal workbook, as shown in Figure 13-20.

6. Move the cell pointer over the revised cell **B7**.

A note appears by the cell with the revisions made to it. To review all the revisions made to a shared workbook and either accept or reject them, select Tools → Track Changes → Accept or Reject Changes from the menu.

7. Select **Tools → Track Changes → Accept or Reject Changes** from the menu.

The Accept or Reject Changes dialog box appears, as shown in Figure 13-21.

8. Make sure the When check box is selected, and that Not yet reviewed appears in the When list box, then click **OK**.

The Accept or Reject Changes dialog box appears with the first of five changes made to the workbook—changed cell B7 from $5,800.00 to $2,900.00. Accept this change.

9. Click **Accept** to accept the first change, and **Accept** again to accept the second change in the workbook—changed cell C7 from $5,800.00 to $2,900.00.

After accepting the first two changes made to the workbook, the third change appears—changed cell B5 from $5,000 to $6,000. You decide to reject this change.

10. Click **Reject** to reject the third change, and **Reject** again to reject the fourth change in the workbook—changed cell C5 from $5,000.00 to $6,000.00.

You decide to accept the fifth change made to the shared workbook—changed cell A10 from "Other Expenses" to Misc. Expenses".

11. Click **Accept** to accept the fifth change made to the shared workbook.

The Accept or Reject Changes dialog box closes, and the revisions you accepted are made to the workbook.

12. Save the Budget Proposal workbook and exit Microsoft Excel.

9: Using Detect and Repair
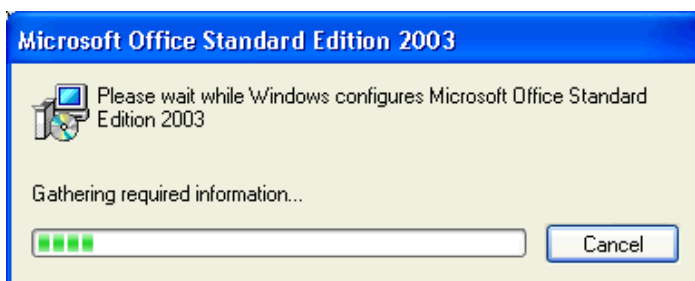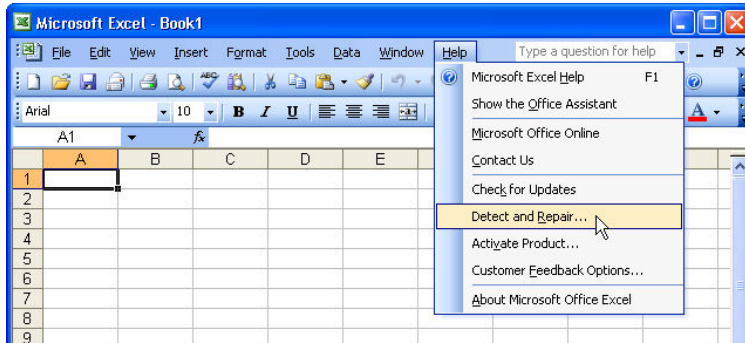
It's a sad fact of life. The more complicated programs get, the more there is that can go wrong with them. Programs sometimes become corrupted and have to be reinstalled to make them work right again. Fortunately for you and your network administrator Microsoft has made this process relatively painless with Office XP's new *Detect and Repair* feature. Detect and Repair searches for corrupted files and incorrect settings in any Microsoft Office XP applications and then finds and reinstalls the appropriate files.

Should your installation of Microsoft Excel become corrupted or buggy this lesson explains how you can use Detect and Repair to fix the problem.

1. **Make sure the Office XP CD is inserted in your computer's CD-ROM drive, or is available through the network.**

If you are connected to a large corporate network, hopefully your friendly network administrator will have made the Office XP files available to everyone on the network so that you can use the Office XP Detect and Repair feature. The only way you can find out if the Office XP installation files are available is to run Detect and Repair.

2. **Select Help → Detect and Repair from the menu.**

The Detect and Repair dialog box appears as shown in Figure 13-24. Here we go…

3. **Click Start.**

If Detect and Repair finds the Office XP installation files, it begins looking for and repairing any problems it finds with any Office XP programs. This might be a good time for you to take a coffee break as Detect and Repair takes a long time to fix everything. Detect and Repair not only fixes problems with Microsoft Excel, but with all your Microsoft Office XP applications as well, such as Microsoft Word and Microsoft PowerPoint.

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