

CHAPTER

1

Microsoft Excel Basics

Objectives

After reading this chapter, you should be able to perform the following tasks:

- Describe how spreadsheets are used by engineers.
- Identify the main components on the Excel screen.
- Name at least two ways to access help for Excel.
- Create and save a new worksheet.
- Open and edit an existing worksheet.
- Undo mistakes.
- Perform spelling checks on text items.
- Preview and print a worksheet.

1.1 INTRODUCTION TO WORKSHEETS

A *spreadsheet* is a rectangular grid composed of addressable units called *cells*. A cell is addressed by referencing its column letter and row number. A cell may contain numerical data, textual data, or formulas (equations).

Spreadsheet application programs were originally intended to be used for financial calculations. The original electronic spreadsheets resembled the paper spreadsheets of an accountant. One characteristic of electronic spreadsheets that gives them an advantage over their paper counterparts is their ability to automatically recalculate all dependent values whenever a parameter is changed.

Over time, more and more functionality has been added to spreadsheet programs like Excel. A variety of mathematical and engineering functions now exists within Excel. Numerous analytical tools are also available, including scientific and engineering tools, statistical tools, data-mapping tools, and financial-analysis tools. Auxiliary functions include a graphing capability, database functions, and the ability to access the Internet.

As an engineering student, you may find that an advanced spreadsheet program such as Microsoft Excel will suffice for many of your computational and data presentation needs. You will still need a word processor, such as Microsoft Word, for working with reports and other documents, but tables and charts may be easily exported from Excel into Word.

Excel also has some capability for database management. However, if you wish to manage large or sophisticated databases, a specialized database application such as Microsoft Access or MySQL is preferable.

In addition, Excel has fairly sophisticated mechanisms for performing mathematical and scientific analyses. For example, you can use the Analysis Toolpack in Excel to perform mathematical analysis. If the analysis is large or very sophisticated, however, you may want to use a specialized mathematical or matrix package such as Mathcad[®] or Matlab[®].

The same principles hold for graphing or statistical analysis. Excel is a general tool that performs many functions for small- to medium-sized problems. As the size or sophistication of the function increases, other tools may be more applicable, such as SigmaPlot[®] or Origin[®] for graphing and SAS[®] or SPSS[®] for statistical analysis.

Microsoft Excel uses the term *worksheet* to denote a spreadsheet. A worksheet can contain more types of items than a traditional paper spreadsheet. These include charts, links to web pages, Visual Basic programs, and macros. We will treat the terms *worksheet* and *spreadsheet* synonymously in this text. Worksheets stored together in a file are called a *workbook*.

1.2 HOW TO USE THIS BOOK

This book is intended to get you, the engineering student, up and running with Excel 2007 as quickly as possible. (References to Excel 2003 are provided as well.) Examples are geared toward engineering and mathematical problems. Try to read the book while sitting in front of a computer. Learn to use Excel by re-creating each example in the text. Perform the instructions in the boxes labeled **PRACTICE**.

The book is not intended to be a complete reference manual for Excel. It is much too short for that purpose. Many books on the market are more appropriate for use as complete reference manuals. However, if you are sitting at the computer, one of the best reference manuals is at your fingertips. The online Excel help tools provide an excellent resource if properly used. These help tools are described later in this text.

1.3 TYPOGRAPHIC CONVENTIONS USED IN THIS BOOK

Throughout the text, the following conventions will be used:

Selection with the Mouse

The book frequently asks you to move the mouse cursor over a particular item and then click and release the left mouse button. This action is repeated so many times in the text that it will be abbreviated as follows:

Choose **Item**.

If the mouse button should not be released, or if the right mouse button should be used, then this will be stated explicitly.

A button, icon, or menu option that you should select with the mouse will be printed in boldface font. A key you should press will also be printed in boldface font. For example, if you are asked to choose an item from the options shown at the top of the screen, then it will be written as follows:

Choose **Paste** from the Ribbon's Home tab.

Multiple Selections

The book frequently refers to selections that require more than one step. For example, to format a group of cells, perform the following steps:

1. Choose **Cell Styles** from the Excel Ribbon.
2. Choose **Normal** style from the drop-down menu.

Multiple selections will be abbreviated by separating choices with a right arrow. For example, the two steps listed will be abbreviated as follows:

Choose **Cell Styles** → **Normal** from the Ribbon.

Multiple Keystrokes

If you are asked to simultaneously press multiple keys, the key names will be printed in bold font and will be separated with a plus sign. For example, to undo a

typing change, you can simultaneously press the **Ctrl** key and the **Z** key. This will be abbreviated as follows:

Press **Ctrl + Z**.

Key Terms

The first time a key term is used, it will be italicized. Key terms are summarized at the end of each chapter.

Literal Expressions

A word or phrase that is a literal transcription will be printed in bold. For example, the title bar at the top of the screen should contain the text **Microsoft Excel**. Another example is the literal name of a box or menu item, as in the following instruction:

Check the box labeled **Equal To**.

1.4 UNDERSTANDING THE EXCEL 2007 SCREEN

This section introduces you to the Microsoft Excel screen. To start the Excel program, use the Windows Start menu (illustrated in Figure 1.1):

Start → Microsoft Office Excel 2007

A screen that resembles Figure 1.2 will appear.



Figure 1.1
Launching Excel from the Start menu.

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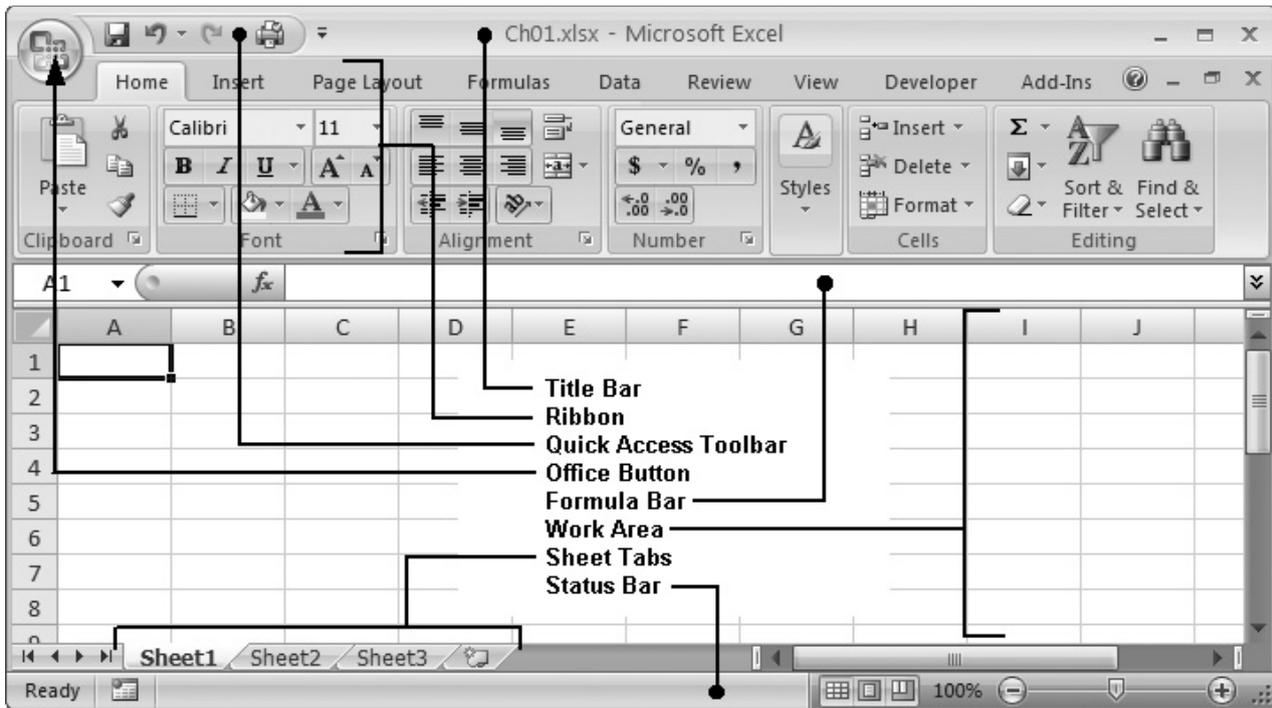


Figure 1.2
The Excel workbook.

We'll now discuss each of the components on the screen. The Excel screen consists of a number of components, including the following:

- Title Bar
- Ribbon (Menu Bar in Excel 2003)
- Quick Access Toolbar
- Office Button
- Formula Bar
- Work Area
- Sheet Tabs
- Status Bar

Try to become familiar with the names of these components as we proceed, as we will use these names throughout the book. Working generally from top to bottom, we will discuss each of the components in turn.

1.4.1 Title Bar

The bar at the top of the screen is called the *Title bar*. The Title bar contains the name of the worksheet currently being edited, Ch01.xlsx in Figure 1.2. If you are working in an unsaved workbook, the default name **Book1** will appear in the Title bar.

Figure 1.3 shows an example of a Title bar. The Title bar contains a number of useful buttons and features (from left to right):

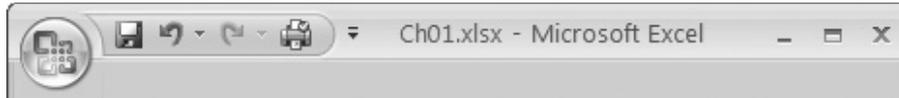


Figure 1.3
The Excel Title bar.

- **Office Button**—The big round button at the left end of the Title bar is the *Office button*. It is present in all Microsoft Office 2007 applications and replaces many of the features that used to be on the File menu in Excel 2003. It is used to
 - Open workbooks
 - Save workbooks
 - Print workbooks
 - Set Excel Options
- **Quick Access Toolbar**—The small collection of buttons just to the right of the Office button is the *Quick Access Toolbar*. This area is designed for your use, to add buttons for the features that you use most often. The small down arrow to the right of the Quick Access Toolbar opens a menu that you can use to customize the toolbar.
- **File Name**—The name of the workbook that is being edited is displayed in the center of the Title bar when the workbook has been maximized to fill the entire work area. If the current workbook is not maximized, then it will be displayed in its own window in the work area, with the file name shown at the left side of the workbook window's Title bar, as illustrated in Figure 1.4.
- **Control Buttons**—The three buttons at the right side of the Title bar are called the *Control buttons*. They are used to control the way the Excel window is displayed.
 - **Minimize Button**—The small flat line is the **Minimize** button. If you click the minimize button the Excel window will disappear from your desktop, except for the Excel icon on the Taskbar, usually at the bottom of the desktop. Click the Taskbar icon to restore the Excel window on your screen.
 - **Maximize/Restore Window Toggle Button**—The middle button is a toggle button that changes the display back and forth between two options.
 - If the window is not maximized, then the middle button maximizes the window (causes it to fill the entire desktop).

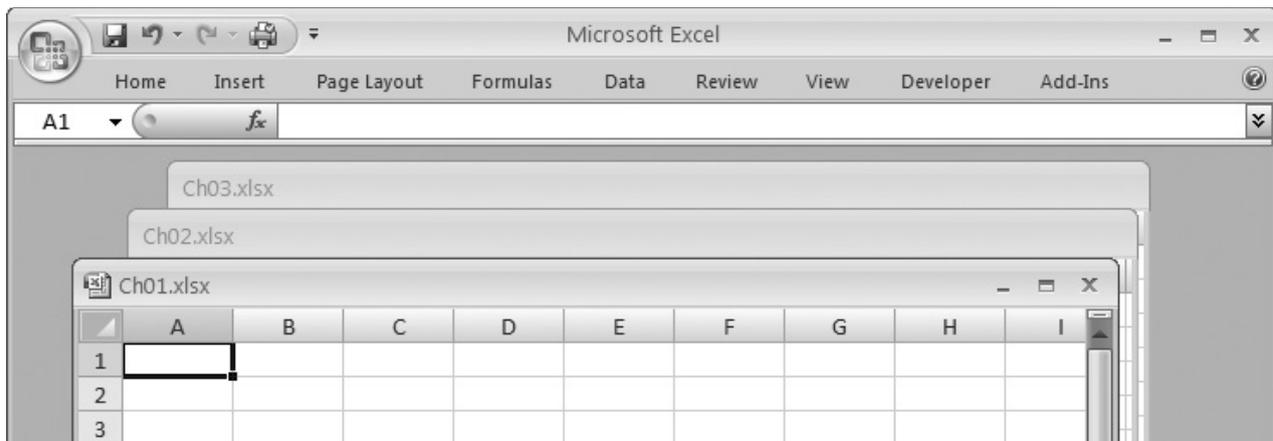


Figure 1.4
Multiple workbooks can be open in the work area.

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- If the window is already maximized, then the middle button restores the window to whatever size it was before it was last maximized.
- **Close button**—The rightmost button on the Excel Title bar is the **Close** button (shaped like an x). Closing the Excel window is equivalent to exiting the Excel program. If you have made changes to the workbook you will be asked if you want to save the workbook before exiting.

1.4.2 Ribbon

The *Ribbon* is a new feature in Office 2007, and it replaces the menu bar, most toolbars, and some dialog boxes. The Ribbon attempts to get everything you need to use Excel right where you can get at it quickly. It is context sensitive, so that when you are editing a chart, the Ribbon tabs related to working with charts are activated. The Ribbon can be minimized, as shown in Figure 1.4, but it is more commonly used in the expanded form shown in Figure 1.5.

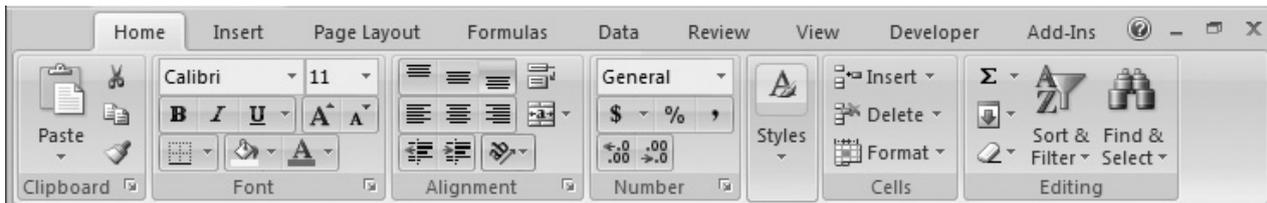


Figure 1.5
The Ribbon's Home tab.

The Ribbon is made up of a number of *tabs*:

- **Home tab**—very commonly used commands for formatting and sorting.
- **Insert tab**—used to insert objects such as charts and hyperlinks.
- **Page Layout tab**—used to modify entire sheets (apply themes, set print area, etc.).
- **Formulas tab**—used to insert functions and manage defined names of cells and cell ranges.
- **Data tab**—provides access to sorting and filtering features and to data analysis tools (if activated).
- **Review tab**—used to add comments and track changes to a worksheet.
- **View tab**—used to change the display magnification (zoom), and to show or hide features such as the Formula bar and gridlines.
- **Developer tab**—provides access to the Visual Basic editor and macros; by default, not displayed.
- **Add-Ins tab**—not displayed unless you have installed Excel Add-Ins. Excel Add-Ins are programs written for Excel by other software companies that are intended to extend the capabilities of Excel.

Most of the features you will need for day-to-day problem solving will be on the Home tab.

Each tab is divided into *Groups* of related buttons, selection lists, and menus. For example, the Font group on the Home tab (shown in Figure 1.5) contains drop-down lists for font size and style, toggle buttons for font attributes (bold, italic), and combination buttons (buttons with a small down arrow on the right

side) for setting background (fill) and font colors. Clicking the button applies the color shown on the button. Clicking the down arrow opens a color palette so that you can select a color.

When this text instructs you to use a Ribbon option, it will be in the following general form:

Tab → Group → Drop-down Menu → Button

1.4.3 Formula Bar

The *Formula bar*, located just below the Ribbon, displays the formula (or text, or value) in the currently selected cell (called the *active cell*). In Figure 1.6, cell B3 is the active cell, and it contains the formula

$$= 3 + 4$$

When cell B3 is selected, the result of the calculation is displayed in the cell (as shown in Figure 1.6) and the cell contents (the formula) are displayed in the Formula bar.

	A	B	C	D	E
1					
2					
3		7			
4					

Figure 1.6
The Formula bar displays the contents of the active cell.

When you are entering a formula, you can type in the Formula bar or type directly into the cell that will hold the formula. Most people enter formulas directly into the cells, but the Formula bar can be useful when you are entering a formula in a cell near the right edge of the work area.

The left side of the Formula bar is called the Name box. The Name box displays the name of the active cell. In Figure 1.6 the Name box appears in the top-left corner and displays “B3” since that is the active cell.

The **Insert Function** button also resides on the Formula bar. The icon on the **Insert Function** button shows f_x , a common nomenclature for “function.”

Click in cell C3 to make it the active cell, then click on the **Insert Function** button. The Insert Function dialog box will appear, as shown in Figure 1.7. From the Insert Function dialog box, you can choose a function category and function name. In Figure 1.7, we have chosen the category **Math & Trig** and the function **SIN**.

Near the bottom of the Insert Function dialog box, a brief description of the function is displayed. The dialog box also has a search feature to help you locate a function. There are over 200 built-in functions available in Excel.

Choose the **SIN** function, then click **OK**. The Function Arguments dialog box will appear, as shown in Figure 1.8. This dialog prompts for the arguments to the named function. Arguments may be a range of cells, numbers, or other functions.

A short explanation about the expected arguments appears in the bottom of the window. In this case, the *SIN* function takes its arguments in radians. The formula for converting radians to degrees is also displayed.

Figure 1.7
The Insert Function dialog box.

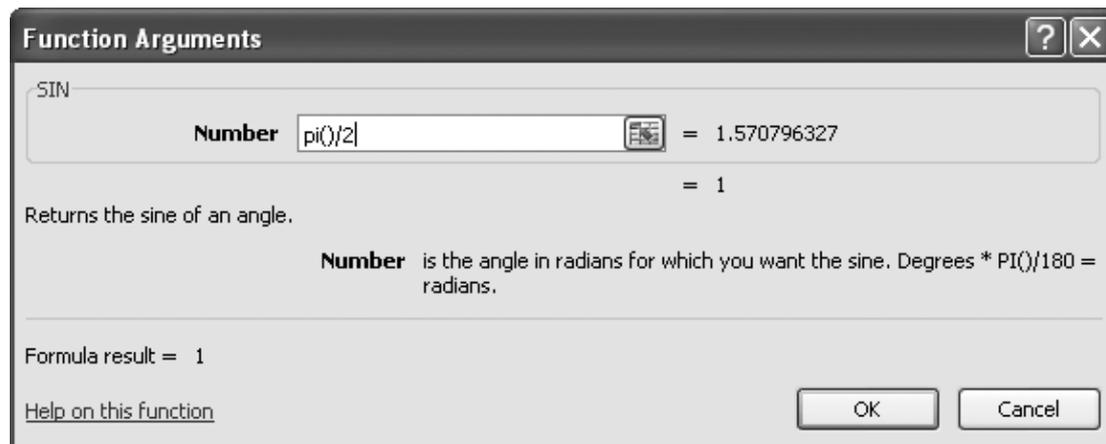
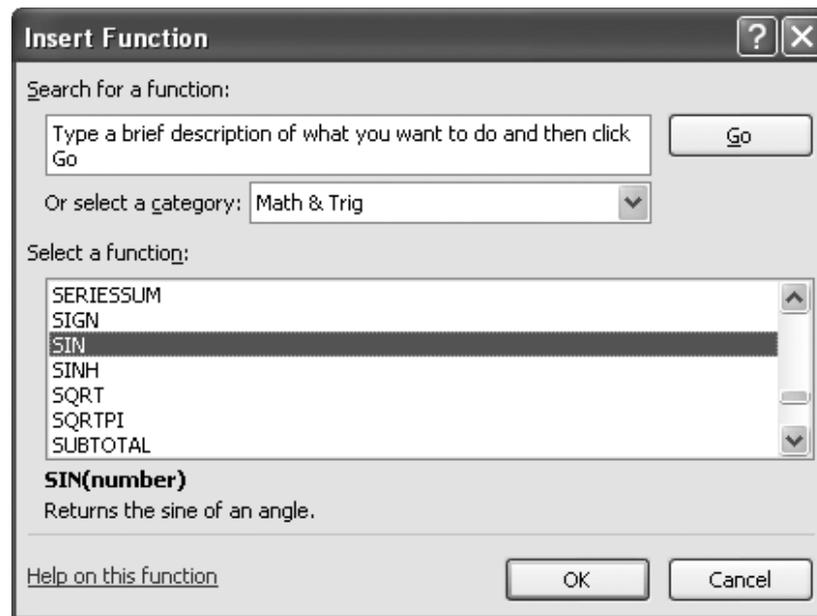


Figure 1.8
The Function Arguments dialog box for the *SIN* function.

Type

$\text{pi}()/2$

as the **Number** argument. The effect of this is to call another built-in function, named *PI* (returns the value of π), and divide the result by 2.

When you click OK the Function Arguments dialog box will disappear and the formula

$$=\text{SIN}(\text{PI}()/2)$$

will be entered into the active cell (cell C3). This is illustrated in Figure 1.9.

	A	B	C	D	E
1					
2					
3		7	1		
4					

Figure 1.9
The formula = $\text{SIN}(\text{PI}()/2)$ entered in cell C3.

1.4.4 Work Area

The *Work area* (also called the *Workbook window*) is the area on the screen where data are entered and displayed. The Work area contains one or more worksheets.

The maximum size for a worksheet is 1,048,576 rows by 16,384 columns (Excel 2003: 65,536 \times 256). The columns are labeled A, B, C, ..., AA, AB, ..., AAA, AAB, ..., XFD and the rows are labeled 1, 2, 3, ..., 1048576.

A single cell can be selected by placing the mouse over the cell and clicking the mouse. The selected cell is called the *active cell*. A *range* of cells can be selected by holding the left mouse button down and dragging it over the selected cell range. When a cell range is selected, the first cell selected is the active cell. In Figure 1.10 the cell range B2:C4 is selected, and cell B2 is the active cell.

	A	B	C	D	E
1					
2					
3					
4					
5					

Figure 1.10
Selected cell range B2:C4, with active cell B2.

An entire column can be selected by clicking the left mouse button on the column heading. An entire row can be selected by clicking on the row heading. The entire worksheet can be selected by clicking on the heading in the top-left corner of the workbook.

1.4.5 Sheet Tabs

The *Sheet tabs* are located at the bottom of the displayed worksheet, as shown in Figure 1.11. You can have more than one worksheet in a workbook. The Sheet tabs identify all of the worksheets in the current workbook.

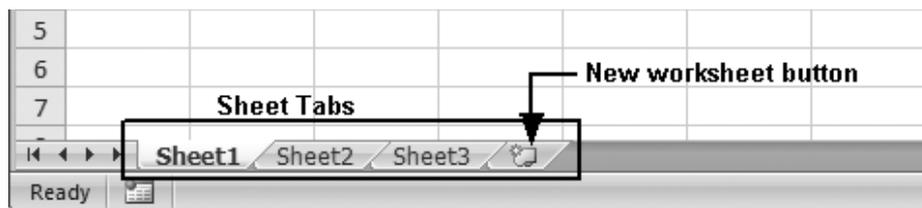


Figure 1.11
The Excel window with the Sheet Tabs indicated.

You can move quickly from worksheet to worksheet by selecting a Sheet tab. You can also use the arrows to the left of the Sheet tabs to move from sheet to sheet, which can be useful when a workbook contains a large number of worksheets. By default, Excel creates three worksheets when you create a new workbook.

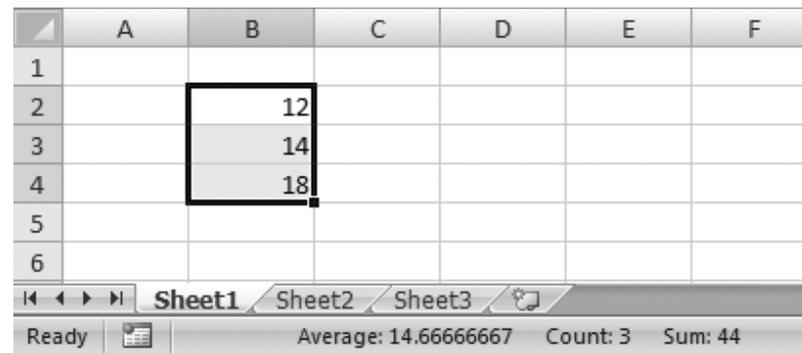
The rightmost Sheet tab is actually a button that can be used to add a new worksheet to the workbook.

1.4.6 Status Bar

The *Status bar* is normally positioned at the very bottom of the Excel screen. The Status bar displays information about a command in progress and shows some aggregate values for a selected cell range. In Figure 1.12, the Status bar shows that Excel is in **Ready mode** (ready for data entry). When multiple cells are selected, the average, count, and sum of the selected values are displayed in the Status bar. Right-click on the Status bar to customize the display.

Figure 1.12

The Status bar shows the current data entry mode (Ready), and some aggregate statistics about selected values.



1.5 GETTING HELP

Excel contains a large online help system. To access the help menu, click the Help button on the right side of the Ribbon, as indicated in Figure 1.13. (Excel 2003: choose Help from the menu bar.) The Excel Help window will open, as shown in Figure 1.14.

The Help window provides several ways to obtain help, including:

- Browsing the Help Topic List.
- Searching the Help system.

Each of these methods will be discussed in the next sections.

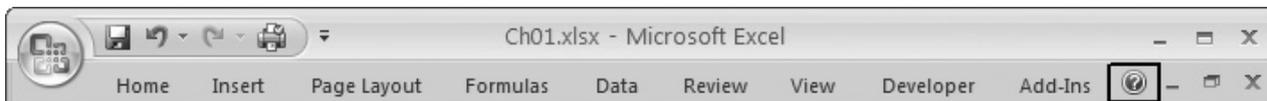


Figure 1.13

The Help button is located on the right side of the Ribbon.

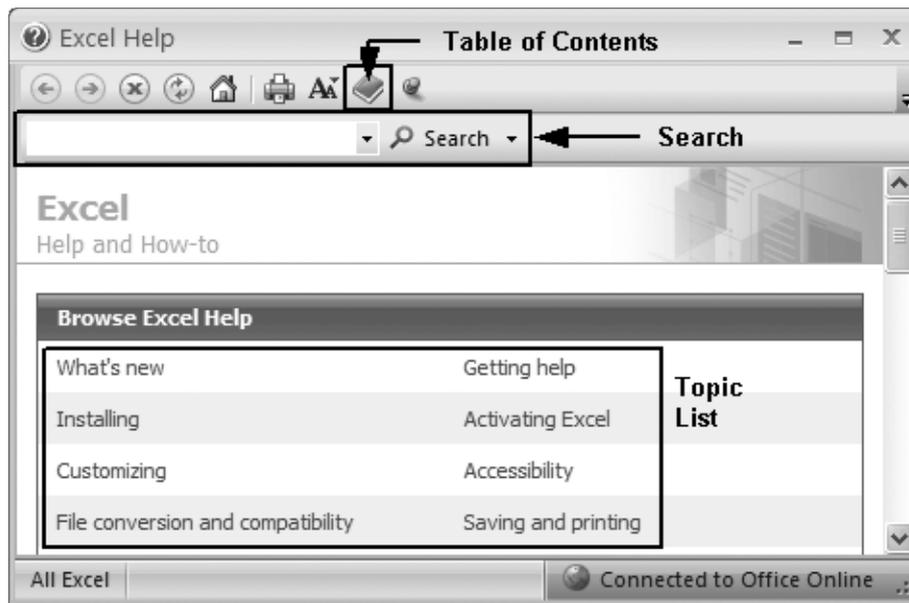


Figure 1.14
The Excel Help window.

1.5.1 Browsing the Help Topic List

This method is useful if you have time to read about a general topic. Reading through a topic could serve as a tutorial and may provide related information that can expand your skill base, but it is not the method to use if you have a specific question and you want an immediate answer. To view a Help topic, simply select the title in the Browse Excel Help list.

In Excel 2003, open the Table of Contents using these steps:

1. Choose **Help** → **Microsoft Excel Help** from the menu bar (or press **F1**.) The Help Task pane will be displayed.
2. Click the Table of Contents link on the Task pane.

Note: Excel 2007 users can also open the Table of Contents in the Excel Help window, but the topics in the Table of Contents are exactly the same as the topics in the Browse Excel Help list.

1.5.2 Searching the Help System

While the Browse Excel Help list and Table of Contents provide general information about help topics, the quickest way to find answers to specific questions is to search the Excel help system. Simply type a key word or a question into the search box, shown in Figure 1.14. (Excel 2003: There are search fields on the Help Task pane, and on the Menu bar.)

You enter a key word or a question in the search field to search the Help system. Figure 1.15 illustrates the result of searching the help system for the word “sine.” Notice that the term “sine” was found in four Help topics. Clicking on any of the Help topic titles will cause the topic to be displayed.



Figure 1.15
Results from searching for
"sine" in the Help system.

1.6 CREATING AND SAVING WORKSHEETS AND WORKBOOKS

1.6.1 Creating a New Workbook

When the Excel application is started, a blank workbook containing (by default) three worksheets is automatically created. To create another new workbook, follow these steps:

1. Click the **Office** button to open the Office menu shown in Figure 1.16.
2. Click the **New** button. The New Workbook dialog box will open, as shown in Figure 1.17.
3. Click the **Blank Workbook** icon to select it, then click the **Create** button to create the new workbook. (Or, double-click the **Blank Workbook** icon.) (Excel 2003: Use File → New, then choose New → Blank Workbook from the Task pane.)

1.6.2 Opening an Existing Workbook

To open an existing workbook, do the following:

1. Click the **Office** button to open the Office menu, shown in Figure 1.18.
2. Click the **Open** button. The Open dialog box will be displayed (Figure 1.19). (Excel 2003: Choose File → Open from the Menu bar.)
3. Browse for the file you want to open. In this example, a workbook named **Ch01.xlsx** has been selected.
4. Click **Open** to open the file in Excel.

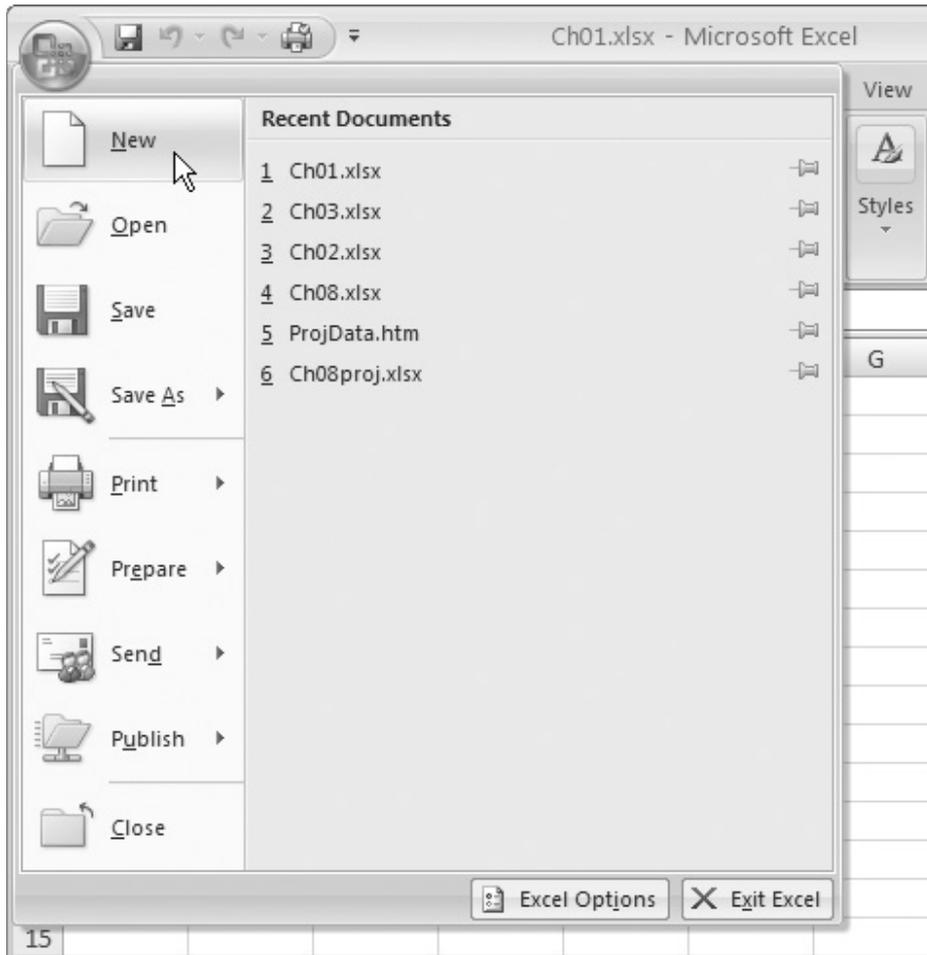


Figure 1.16
The Office menu with New button selected.

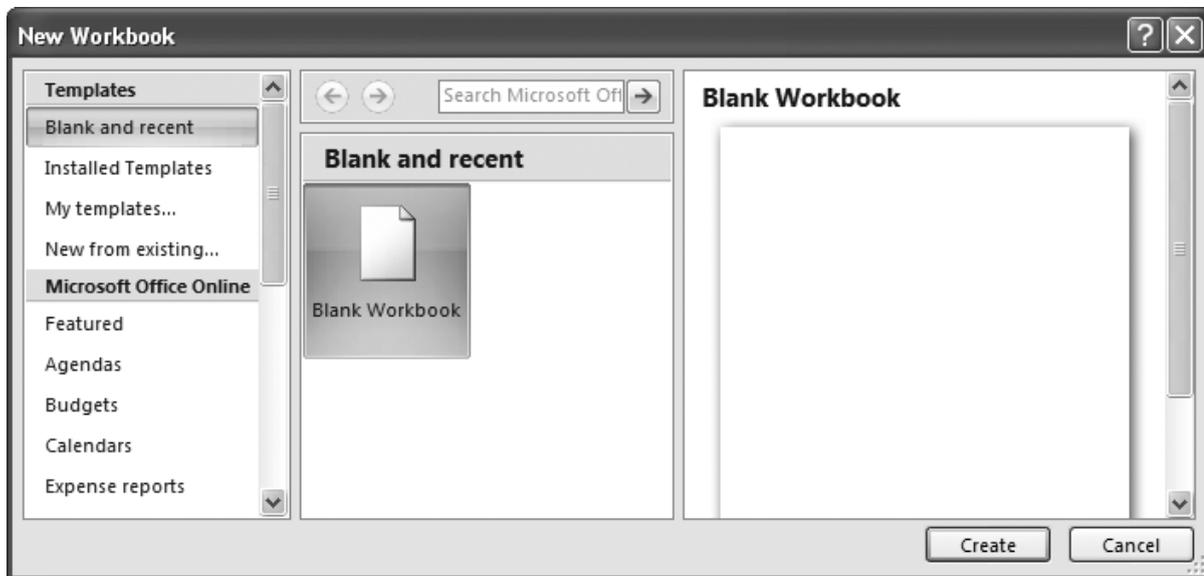


Figure 1.17
The New Workbook dialog.

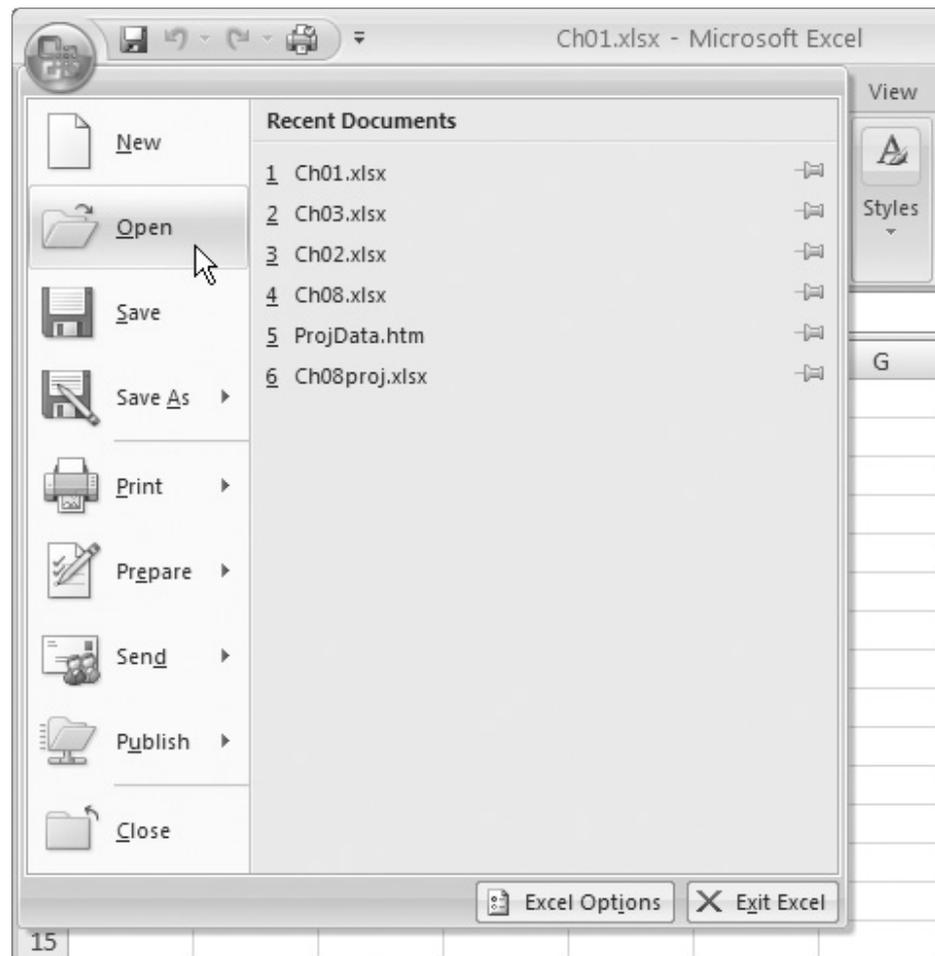


Figure 1.18
The Office menu with the
Open button selected.

From the Open dialog box, you can type in a path and file name in the **File name** field, or you can browse the file system to locate a file. The icons along the left side of the Open dialog box are used to help you find files quickly. By clicking on the icon labeled **My Recent Documents**, you will be shown the locations of your most recently used files. By clicking on the icon labeled **My Documents**, you will be taken to a special folder named **My Documents**. If you are working in a computer lab, be aware that the My Documents folder may be shared by other students. Ask your instructor where you should store your workbooks.

New Excel file extensions

Prior to Excel 2007, the file extension for an Excel file was .xls. With Excel 2007, two new file extensions are being used:

- .xlsx—the default file name extension, macros disabled.
- .xlsm—macro-enabled workbook.

The .xlsx file name extension indicates that macros (and Visual Basic programs) have been disabled. This ensures that the workbook cannot transmit a macro virus. If the file you want to open uses the .xlsm file extension, macros and Visual

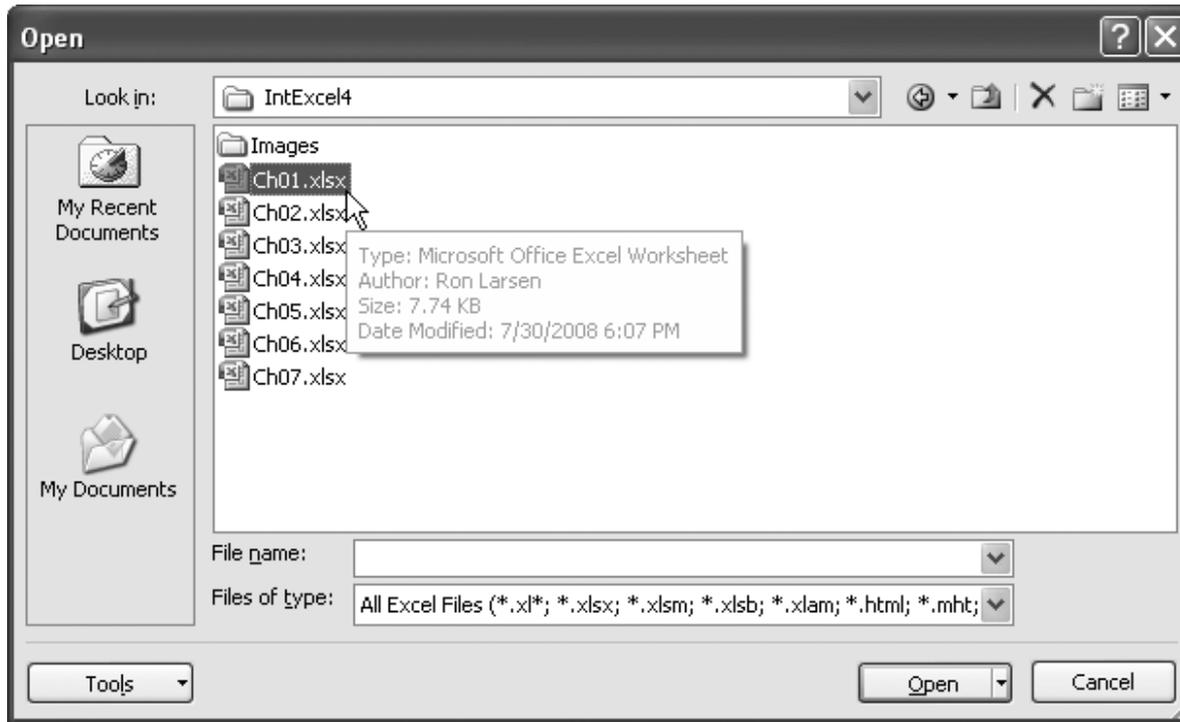


Figure 1.19
The Open dialog box.

Basic programs are enabled and you should open the file only if you trust the source.

1.6.3 Creating a New Worksheet

Within a workbook, you can have many worksheets. The number of worksheets that you can have in a single workbook is limited only by the available memory on your computer.

To create a new worksheet in an open workbook, click the **Insert Worksheet** button that is the rightmost Sheet tab (See Figure 1.20.) (Excel 2003: Choose Insert → Worksheet from the Menu.)

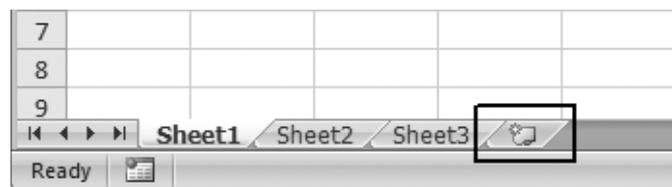


Figure 1.20
The Insert Worksheet button on the Sheet tab row.

You can use multiple worksheets to help keep your work organized. For example, if you are preparing a laboratory report you might use the following worksheets, as shown in Figure 1.21:

- Lab Data
- Report
- Charts

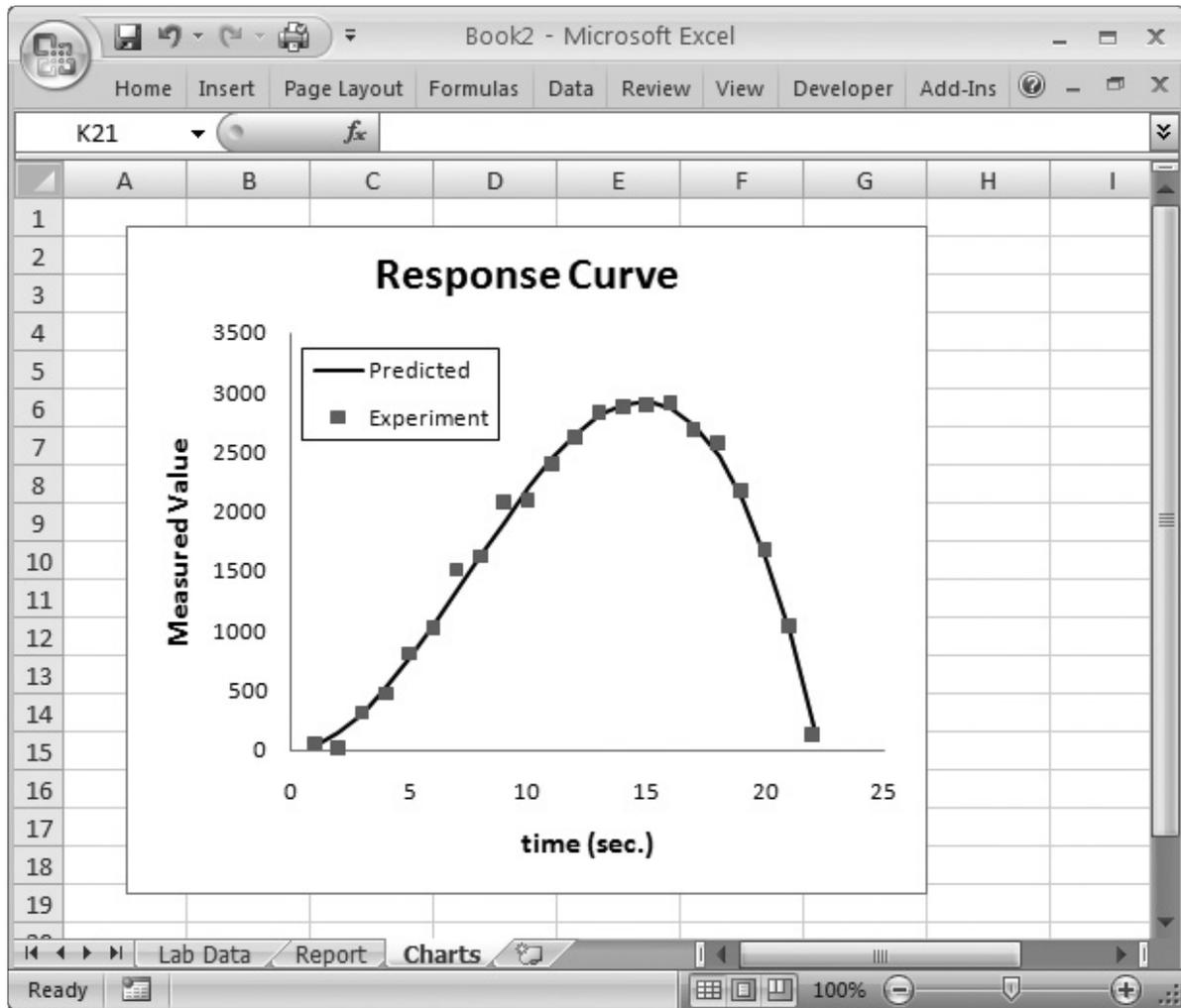


Figure 1.21
Using worksheets to organize your work.

To assign a descriptive name to a worksheet tab,

1. Double-click on the worksheet tab to select the tab and enter text entry mode.
2. Type the new worksheet name.
3. Click anywhere outside the worksheet tab to complete the text entry.

1.6.4 Introduction to Templates

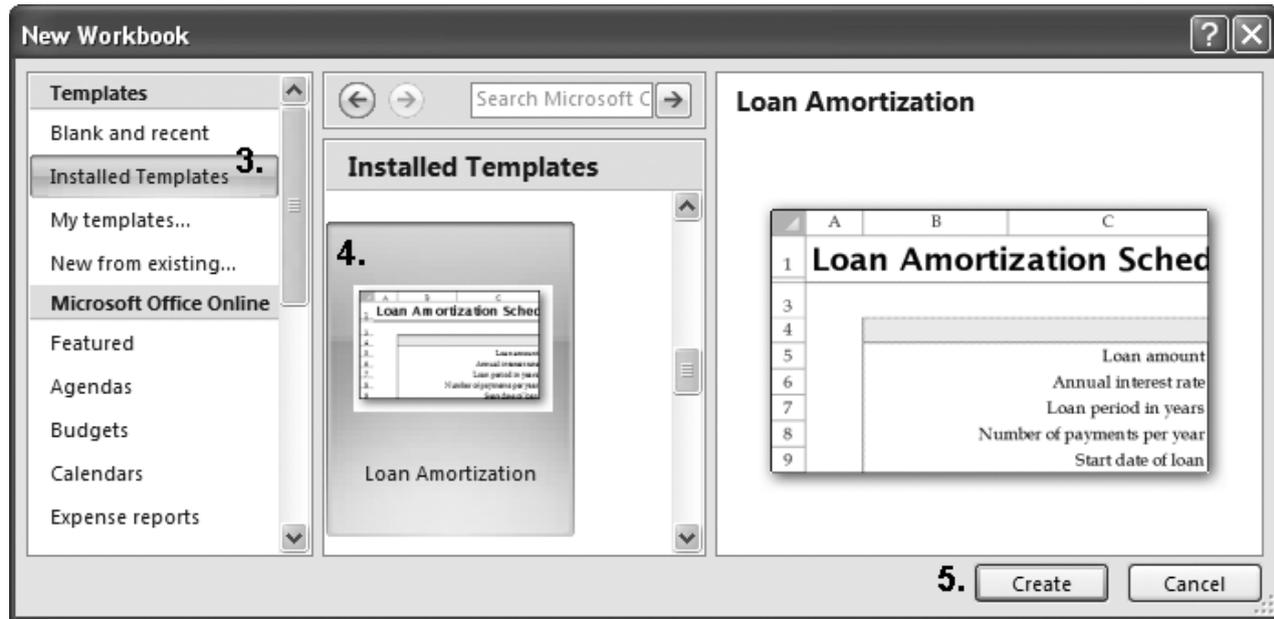
A *template* is a workbook that has some of its cells filled in. If you use similar formatting for many documents, then you will benefit from creating and using a template. You may build your own template or customize preformatted templates and, in time, create a library of your own templates. Excel is installed with a number of sample templates, including one that creates a Loan Amortization Schedule. To open the Loan Amortization template, follow these steps:

Excel 2007

1. Click the Office button to open the Office menu.
2. Click the New button to open the New Workbook dialog box, shown in Figure 1.22.
3. Choose **Installed Templates** from the **Templates** list.
4. Select **Loan Amortization** from the **Installed Templates** list.
5. Click the **Create** button to open the template.

Excel 2003

1. Choose **File → New** from the Menu bar. The New Workbook Task pane will be displayed.
2. Choose **On my Computer ...** from the **Templates** section. The Templates dialog box will open.
3. Choose the **Spreadsheet Solutions** panel.
4. Select the **Loan Amortization** template.

**Figure 1.22**

Choosing an installed template.

The resulting Loan Amortization workbook is quite large; only a portion is shown in Figure 1.23.

The Loan Amortization template is a preassembled worksheet. Fill in the blank cells labeled

- Loan amount \$15,000 in this example
- Annual interest rate 5%
- Loan period in years 4 years
- Number of payments per year 12
- Start data of loan 1/1/2009

	A	B	C	D	E	F
1	Loan Amortization Schedule					
3						
4				Enter values		
5		Loan amount	\$	15,000.00	Required Values	
6		Annual interest rate		5.00 %		
7		Loan period in years		4		
8		Number of payments per year		12		
9		Start date of loan		1/1/2009		
10		Optional extra payments				
11						
12		Lender name:	<input type="text"/>			
13						
16	Pmt. No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment
18	1	2/1/2009	\$ 15,000.00	\$ 345.44	\$ -	\$ 345.44
19	2	3/1/2009	\$ 14,717.06	\$ 345.44	\$ -	\$ 345.44
20	3	4/1/2009	\$ 14,432.94	\$ 345.44	\$ -	\$ 345.44
21	4	5/1/2009	\$ 14,147.64	\$ 345.44	\$ -	\$ 345.44
22	5	6/1/2009	\$ 13,861.15	\$ 345.44	\$ -	\$ 345.44

Figure 1.23
A portion of the Loan Amortization Schedule.

The worksheet will build an amortization table for you. An amortization table shows a list of required payments on a loan and the amount remaining to be paid after each payment. When all of the required values are entered, the worksheet is automatically completed to show the required payments.

1.6.5 Opening Workbooks with Macros

A *macro* is a short computer program that records a group of tasks. Excel stores macros in a Visual Basic (programming language) module. Macros allow a set of frequently repeated commands to be stored and then executed with a single mouse click whenever needed.

Macros are very powerful tools. However, macros can contain a *macro virus* that will infect files on your computer. For this reason, you should only enable macros if you are certain of the origin of the macro. If you are unsure of the source of a macro, you should check the document by using virus-protection software before opening the document. Virus-protection software is not provided with Microsoft Excel and must be purchased separately.

In Excel 2007, there are now two file extensions used with workbooks:

- .xlsx—the default file name extension, macros disabled.
- .xlsm—macro-enabled workbook.

The default .xlsx file name extension tells you that macros (and Visual Basic programs) are disabled. This ensures that the workbook cannot transmit a macro virus. The .xlsm file extension means macros and Visual Basic programs are enabled; you should be careful when opening .xlsm files.

Because of the harm that can be done by macro viruses, Excel comes with Macro Security enabled. To check or change the level of macro security on your installation of Excel, follow these steps:

Excel 2007

1. Click the **Office** button to open the Office menu.
2. Click the **Excel Options** button at the bottom of the Office menu. The Excel Options dialog will open as shown in Figure 1.24.
3. Choose the **Trust Center** panel.
4. Click the **Trust Center Settings ...** button (shown in Figure 1.24). The Trust Center dialog box will open.
5. Click **Macro Settings**. The current level of protection is shown in the Macro Settings option list.

In Figure 1.25, the security is set so that macros are disabled, but you are notified (and have an option to enable it if desired).

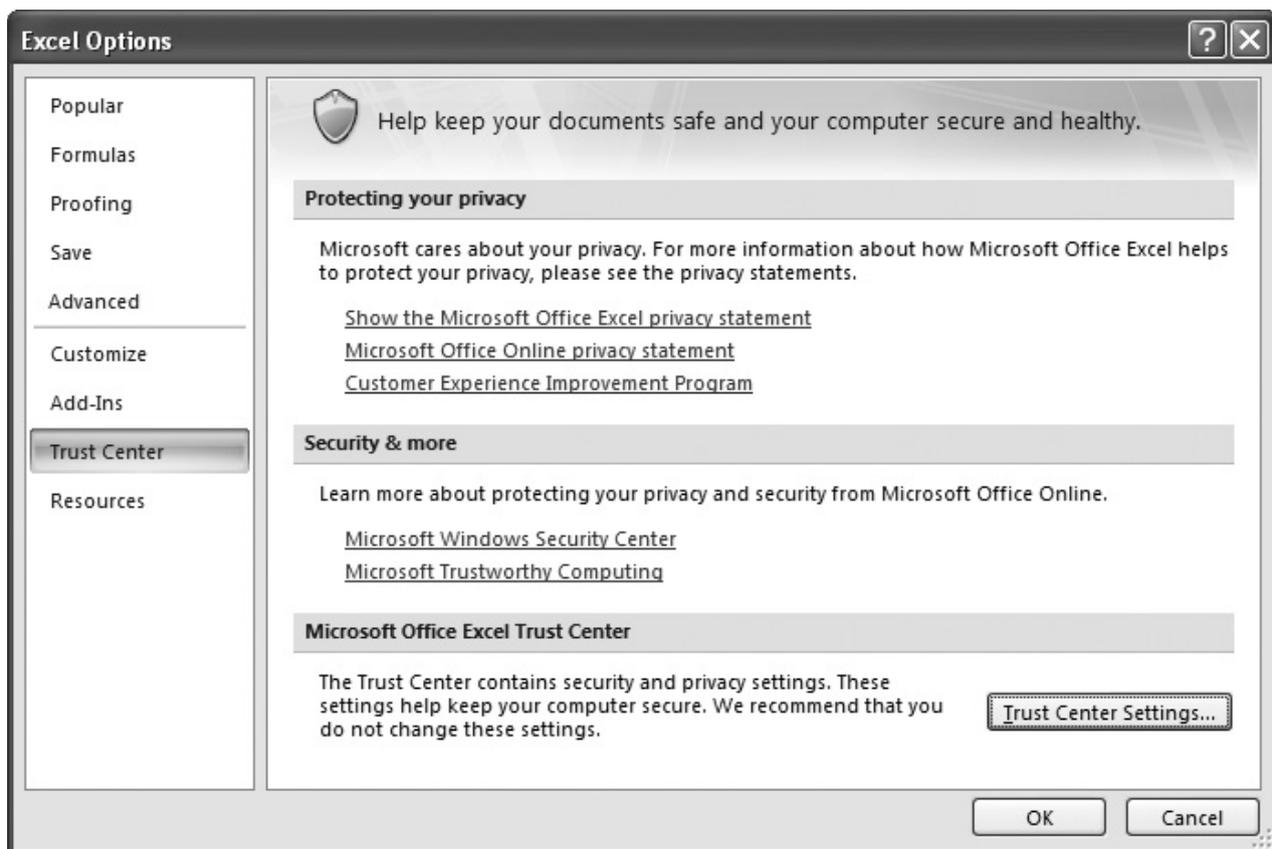


Figure 1.24
The Excel Options dialog box, Trust Center panel.

Figure 1.25
The Trust Center dialog box showing the current level of macro security.

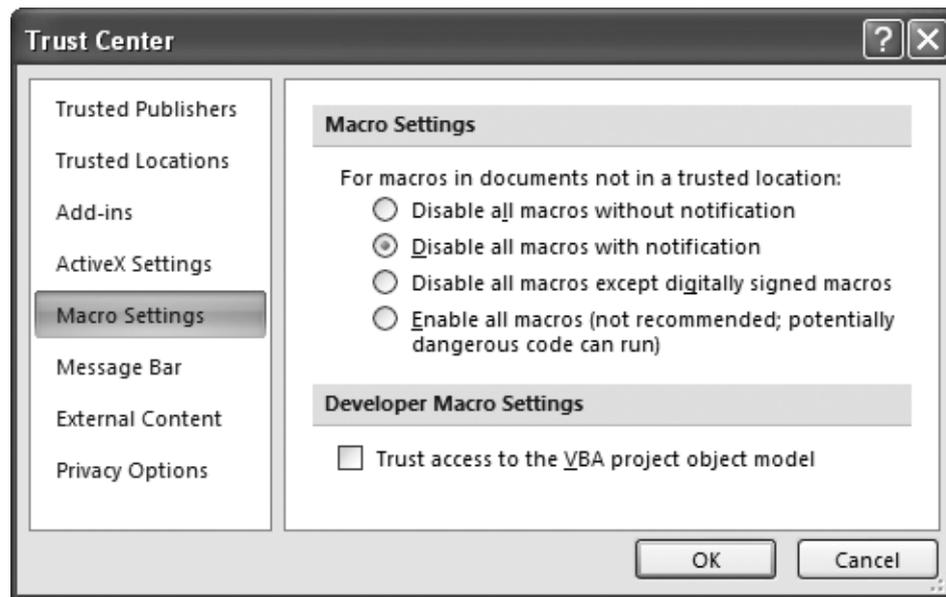


Figure 1.26
The Save As options.

Excel 2003

1. Choose **Tools** → **Options** from the Menu bar.
2. Choose the **Security** tab.
3. Click the **Macro Security** button. The Security dialog box will open.
4. Choose the **Security Level** tab.

The current level of protection is shown in the option list.

1.6.6 Saving Documents

The first time you save an Excel workbook, you need to assign the workbook a name and choose a folder. To save a document for the first time, follow these steps:

Excel 2007

1. Click the **Office** button to open the Office menu.
2. Move the mouse over the **Save As ...** button. The **Save a copy of the document** options are displayed as shown in Figure 1.26.
3. Select one of the following **Save** options:
 - Excel Workbook (.xlsx)—this is the default format in Excel 2007.
 - Excel Macro-Enabled Workbook (.xlsm)—use only if macros or Visual Basic programs are stored with the workbook.
 - Excel Binary Workbook (.xlsb)—rarely used except for very large workbooks.
 - Excel 97-2003 Workbook (.xls)—used if compatibility with older versions of Excel is needed.
 - Other Formats (e.g., htm)—used to access various less-common formats such as .htm for web pages.
4. The Save As dialog will open as shown in Figure 1.27.

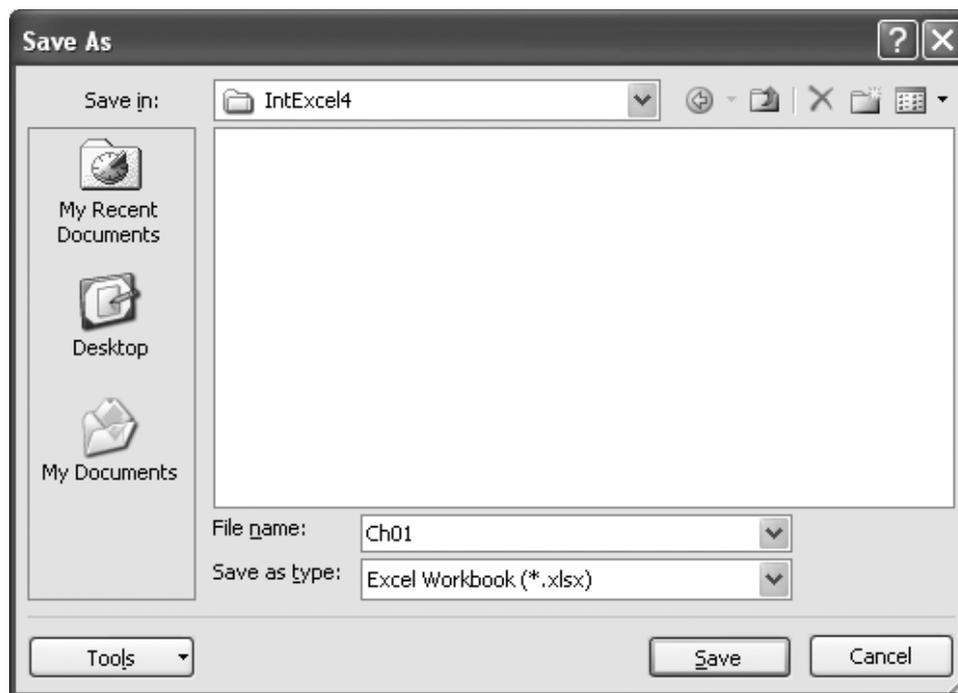


Figure 1.27
The Save As dialog box.

5. Browse for the desired folder to store the workbook.
6. Enter the workbook name in the **File name** field. In this example, “Ch01” was entered as the workbook name. You do not need to enter the file extension; Excel will automatically add the file extension shown in the **Save as type** field (.xlsx in this example).
7. Click **Save** to save the workbook with the entered file name in the selected folder.

Excel 2003

1. Choose **File** → **Save As** from the Menu bar. The Save As dialog box will open.
2. Browse for the desired folder to store the workbook.
3. Enter the workbook name in the **File name** field.
4. Click **Save** to save the workbook.

To save an open document that was previously named, follow these steps:

Excel 2007

1. Click the **Office** button to open the Office menu.
2. Click the **Save** button to resave the workbook with any changes.

Or, click the **Save** button on the Quick Access Toolbar.

Excel 2003

Choose **File** → **Save** from the Menu bar.

You should save your work frequently. It is also important to make backup copies of your important documents on floppy disks, CDs, or some other physical device. There are many tales of woe from students (and professors) who have lost hours of work after a power failure.

1.6.7 The AutoRecover Feature

Excel has an automatic recovery feature, called *AutoRecover*, that can help protect your work from a power failure. When AutoRecover is on, Excel automatically saves a copy of your workbook periodically. Then, if there is a power failure or Excel crashes for any reason, you can open the most recent copy of your workbook to recover most of your work.

Note: AutoRecover files are erased each time you save your workbook, so using AutoRecover is not equivalent to creating backup copies of your important workbooks. The task of making backup copies is something that you must perform manually.

To check or change the AutoRecover features, follow this procedure:

Excel 2007

1. Click the **Office** button to open the Office menu.
2. Click the **Excel Options** button at the bottom of the Office menu. The Excel Options dialog will open as shown in Figure 1.28.
3. Choose the **Save** panel.

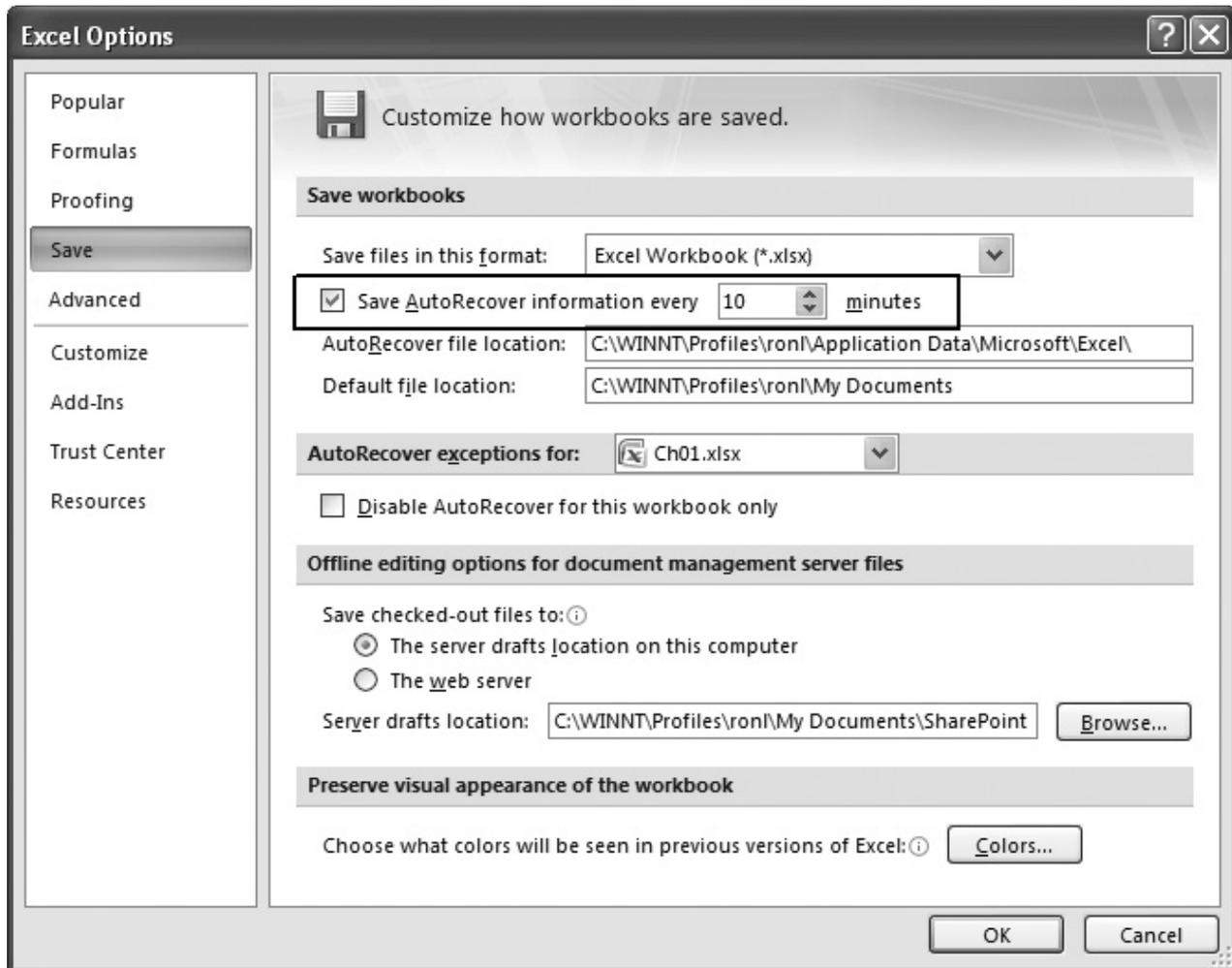


Figure 1.28
The Excel Options dialog box, Save panel.

4. If the box next to **Save AutoRecover information** is checked, then the AutoRecover feature is active.
5. Use the **every** field to change the time interval.

Excel 2003

1. Choose **Tools** → **Options** from the Menu bar. The Options dialog box will open.
2. Chose the **Save** tab.
3. If the box next to **Save AutoRecover info** is checked, then the AutoRecover feature is active.
4. Use the **every** field to change the time interval.

While you have the Options dialog box open, take some time to view the other user options that may be customized. Browse through the other tabs on the Options dialog

box. Until you become more familiar with Excel, you should probably leave most of the options set to their default values.

1.6.8 Naming Documents

It is important to develop a methodical and consistent method for naming worksheets. Over time, the number of worksheets that you maintain will grow larger, and it will become harder to locate or keep track of them. Documents that are related should be grouped together in a separate folder. Do not use the default workbook names (i.e., Book1, Book2, Book3, etc.), or chaos will soon ensue.

If documents are not given meaningful names, then the documents may be inadvertently overwritten. Documents that have very general names (e.g., Workbook), will be difficult to locate later.

One approach that students might use is to create a folder for each course, and use the assignment number with a brief description as the workbook name. In the example shown in Figure 1.29, ENGR 101 might be a computer course, and ENGR 262 a fluid mechanics course.

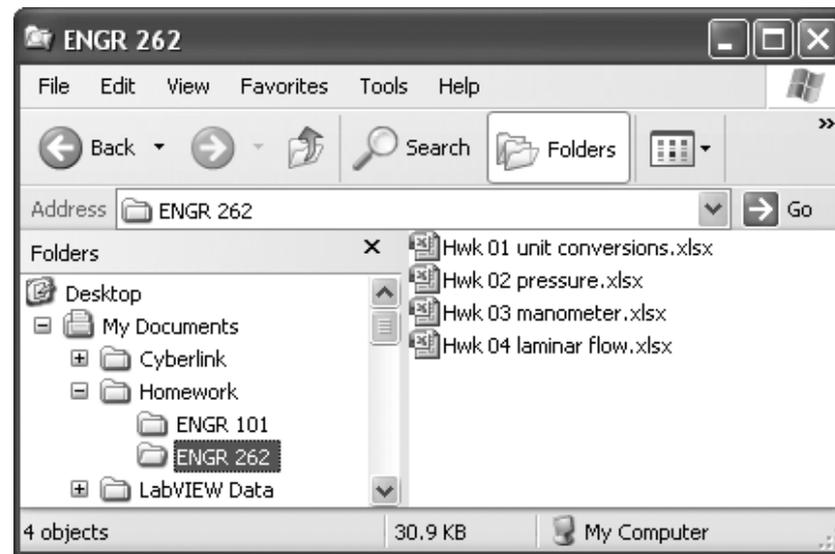


Figure 1.29
Using folders to organize homework files.

File formats and file extensions

Prior to Excel 2007, the file extension for an Excel file was .xls. Excel 2007 has a new file format as well as new file extensions (.xlsx and .xlsm). The new file format is called *Office Open XML* and it is intended to improve file management and data recovery. Excel 2007 users need to be aware that **workbooks saved in the new format cannot be read in older versions of Excel**. However, workbooks saved in Excel 2003 (or older versions) can be opened in Excel 2007.

A common scenario during a transition from one version of a program to another is that you may use a new version at school or work, and still have the older version at home (or vice versa). As long as you continue to use the older version of Excel, you will need to save your workbooks using the old format. The **Save As** option on the Office menu provides an option to **Save As → Excel 97-2003 Workbook** (shown in Figure 1.30). This ensures that older versions of Excel can open the saved workbook.

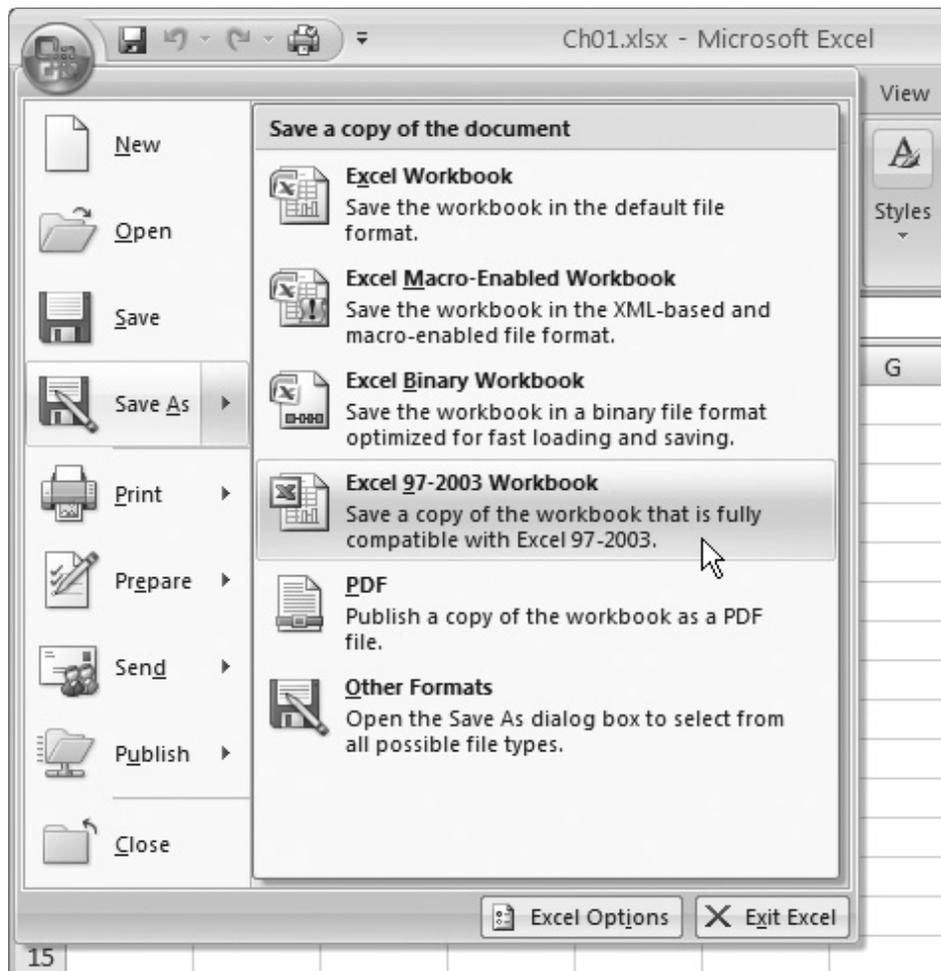


Figure 1.30
Saving a workbook for
older versions of Excel.

1.7 MOVING AROUND A WORKSHEET

There are several methods of moving from place to place in an Excel worksheet. If the worksheet is relatively small, all of these methods will work equally well. As a worksheet grows in size, movement becomes more difficult, and you can save a lot of time by learning the various movement methods.

The currently selected cell is called the *active cell*, and the cell name (e.g., D3) is displayed in the *Name box* on the left-hand side of the Formula bar, as shown in Figure 1.31.

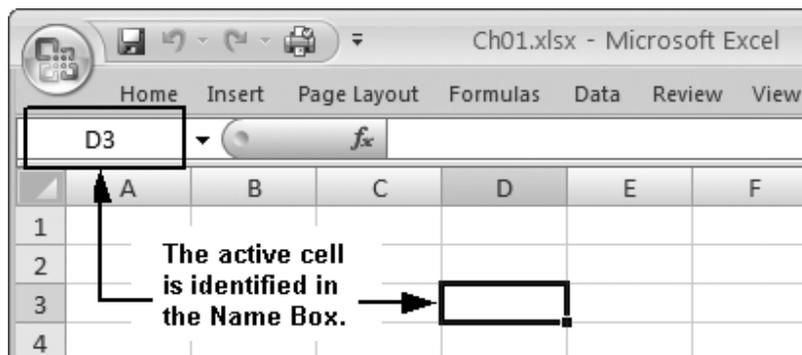


Figure 1.31
The active cell (D3) is identified in the Name Box.

The three general methods for moving around a document are as follows:

- Movement by using the keyboard.
- Movement by using the mouse.
- Movement by using the Go To dialog box.

1.7.1 Movement by Using the Keyboard

The keyboard may be used to select a worksheet from a workbook. The keyboard may also be used to navigate around a single worksheet quickly and effectively. You may already use the arrow keys to move up, down, left, and right. Combining the Ctrl key with the arrow keys gives you the means for rapid movement. Table 1.1 lists the most frequently used key combinations for movement.

Table 1.1 Movement Using the Keyboard

Key Combination	Action
←	Move one cell to the left
→	Move one cell to the right
↑	Move up one cell
↓	Move down one cell
Ctrl + →	Move to the far right of the worksheet
Ctrl + ↓	Move to the bottom of the worksheet
Page Down	Move down one screen
Page Up	Move up one screen
Ctrl + Page Down	Select next worksheet
Ctrl + Page Up	Select previous worksheet
Home	Move to far-left column of worksheet
Ctrl + Home	Move to top-left cell of worksheet (A1)
End, →	Move to right end of contiguously filled cell range
End, ↑	Move to top of contiguously filled cell range
End, ←	Move to left end of contiguously filled cell range
End, ↓	Move to bottom of contiguously filled cell range

Practice!

1. Open a new workbook.
2. Create several worksheets in the workbook using the **Insert Worksheet** button on the Sheet tab bar. (Excel 2003: Insert → Worksheet.)
3. Create a block of cells containing values, as shown in Figure 1.32.
4. Practice the keyboard movement commands in Table 1.1.
5. Move to the far right and bottom row of a worksheet. What is the maximum size of a worksheet?

	A	B	C	D	E	F
1						
2						
3		1	3	5	7	
4		2	4	6	8	
5		3	5	7	9	
6		4	6	8	10	
7		5	7	9	11	
8						

Figure 1.32

A 5 × 4 block of contiguously filled cells for experimenting with the End key movements.

Answer: A worksheet is 1,048,576 rows by XFD (16,384) columns in Excel 2007 and 65,536 rows × 256 columns in Excel 2003.

1.7.2 Movement by Using the Mouse

The mouse is the most common way to move within a worksheet, at least, fairly small worksheets. To select a worksheet, choose a tab from the Sheet tab bar as depicted in Figure 1.33.

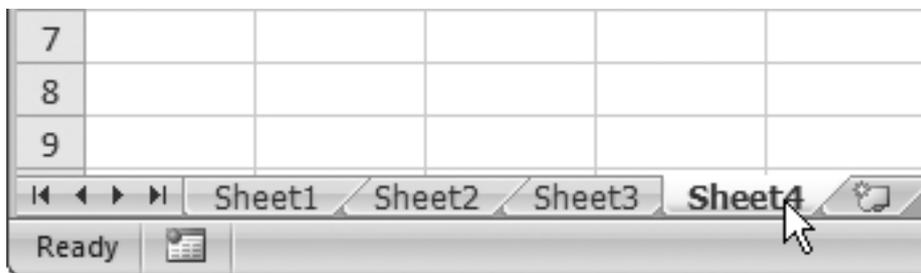


Figure 1.33
Click on a Sheet tab to display that worksheet.

One method of moving around a worksheet with the mouse is to click on a cell. This is most useful if the new insertion point is located on the same screen. If the desired location is on a different page, then the Vertical and Horizontal scrollbars may be used to move quickly to a distant location.

1.7.3 Movement by Using the Go To Dialog Box

If you have a large worksheet that covers many screens, then using the keyboard and mouse can be a cumbersome way of moving through the worksheet. The Go To dialog box offers a method for moving directly to distant locations on the worksheets.

To move to a location using the Go To feature, do the following:

1. Open the Go To dialog box with Ribbon options: **Home tab** → **Editing group** → **Find & Select drop-down menu** → **Go To ... button**. (Excel 2003: Edit → Go To.) The Go To dialog box will open, as depicted in Figure 1.34.

Or, you can press the **F5** key to open the Go To dialog box.

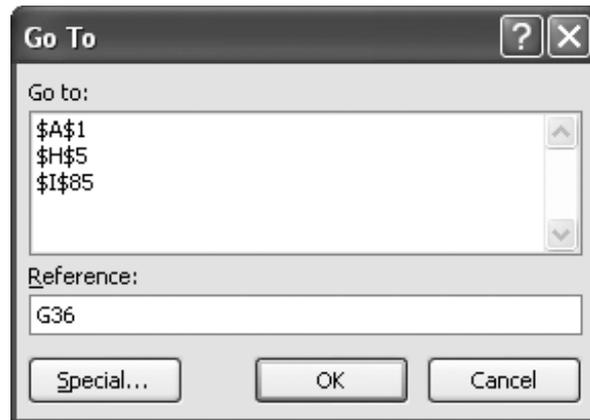


Figure 1.34
The Go To dialog box.

2. Type in a cell reference. For example, type G36, then click **OK**.

The screen will display cell G36, and it will become the active cell.

A history of previous references is kept in the **Go To** window, so recently visited cells can be located quickly simply by selecting them with the mouse.

In addition to moving to cells by location, you can move to cells of a particular type. We have not yet shown you how to create cells of different types. However, imagine that you have created a number of cells containing formulas. You can locate formulas with errors in them by using the Go To Special dialog box as follows:

1. Open the Go To Special dialog box with Ribbon options: **Home tab** → **Editing group** → **Find & Select drop-down menu** → **Go To Special ... button**. The Go To Special dialog box will open, as depicted in Figure 1.35.
Or, you can click the **Special ...** button on the Go To dialog box.
2. Select the type of cell you want to locate (e.g., **Formulas with Errors**), then click **OK**.

Figure 1.35
The Go To Special dialog box.



The first formula with an error will become the active cell, and all other formulas with errors will be highlighted.

1.8 SELECTING A REGION

Much of the time spent in worksheet preparation involves moving, copying, and deleting regions of cells or other objects. In this section, we will be selecting regions of cells, but the same principles apply to regions that contain charts, formulas, and other objects. Before an action can be applied to a region, the region must be selected. The selection process can be performed by using either the mouse or the keyboard.

1.8.1 Selection by Using Cell References

In many cases, you will have the option of typing a cell reference. For example, you can type cell references into a formula. A single cell is denoted by its column letter and row number. A rectangular range of cells is denoted by the reference for the top-left and bottom-right cells. For example, the rectangle bordered by B2 on the top left and E5 on the bottom right is denoted as B2:E5 (see Figure 1.36). Note that the first selected cell (cell B2 in Figure 1.36) is shown in a different color, and indicates the active cell.

	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						

Figure 1.36
The selected cell range B2:E5.

1.8.2 Selection by Using the Mouse

To select a region of cells, called a *cell range*, with the mouse, click the mouse on the first cell in the range, then drag the mouse cursor to the cell at the other end of the range. As you drag the mouse, the selected region will be highlighted.

To select a cell range that is larger than one screen, drag the mouse to the bottom of the screen. If you hold the mouse at the bottom of the screen without releasing the mouse button, the screen will scroll and the selected region will continue to grow. This takes a little practice.

To select a whole column, click on the column header. To select a whole row, click on the row header. This is illustrated in Figure 1.37.

	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						

Figure 1.37
Selecting an entire row.

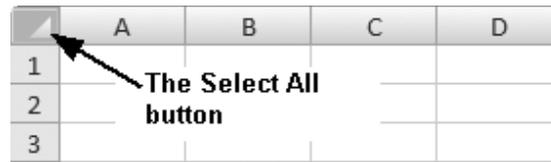


Figure 1.38
The Select All button.

To select the entire worksheet, choose the header at the top-left corner of the worksheet, between A and 1, as illustrated in Figure 1.38. This unlabeled header is called the **Select All** button. This is useful if you are applying a change to every cell in a worksheet.

1.8.3 Selection by Using the Keyboard

An alternative method for selecting regions of a document is to use the keyboard, as follows:

1. Click the mouse on one corner of the region that you wish to select.
2. Hold down the **Shift** key and use the arrow keys to move to the other end of the region.
3. Release the **Shift** key.

The selected region will be highlighted. If you make a mistake and incorrectly select a region, then click the mouse cursor anywhere on the worksheet window before you apply an action (such as delete). If the highlighting disappears, then you have deselected the region.

Practice!

Try the following exercise to practice selecting regions:

1. Click in cell B2 and type the number 5.
2. Press the **down-arrow** key.
3. Type the number 6.
4. Press the **down-arrow** key.
5. Type the number 7.
6. With the mouse, select cell range B2:B4, as shown in Figure 1.39.

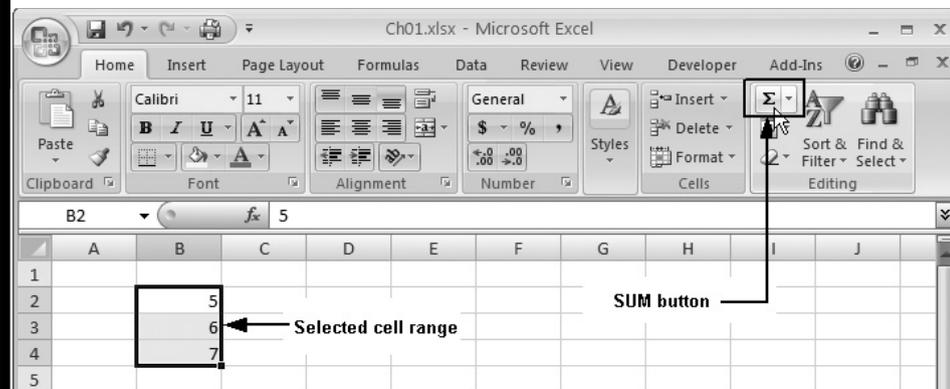


Figure 1.39
Click the SUM button after selecting the cells to be added.

7. Choose the **SUM** button on the Ribbon's Home tab: **Home tab** → **Editing group** → **SUM button**. (Excel 2003: **AutoSum** button on the Standard Toolbar.)

A formula for cell B5 will be added that contains the sum of cells B2, B3, and B4. The results should resemble Figure 1.40.

	A	B	C	D	E
1					
2		5			
3		6			
4		7			
5		18			
6					

Figure 1.40

The *SUM* function is entered just below the selected cell range.

1.9 CUTTING, MOVING, COPYING, AND PASTING

Once a region has been selected, you may take several actions, such as delete, move, copy, and paste. As usual, Excel provides several ways to accomplish the same actions. These include using keyboard commands and mouse commands.

The cut, copy, and paste commands make use of a special location called the *Windows clipboard*. The clipboard is a temporary storage location that can be used to hold the contents of a cell, a range of cells, or most other objects such as charts. To view the contents of the clipboard, click the **Clipboard** button at the bottom-right corner of the Clipboard group in the Ribbon's Home tab as shown in Figure 1.41. (You do not need to see the clipboard contents to use the clipboard.)

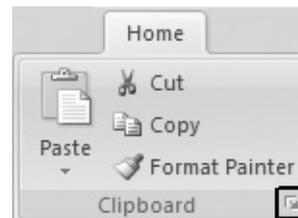


Figure 1.41

The Clipboard group on the Ribbon's Home tab.

1.9.1 Cutting a Region

Cutting a region (e.g., a range of cells) removes the contents of the selected region from the worksheet and leaves them on the clipboard. A region may be cut by using the mouse or the keyboard.

To cut a region using the mouse, follow these steps:

1. Select a region.
2. Click the **Cut** button in the Clipboard group in the Ribbon's Home tab. (Excel 2003: Choose Edit → Cut.)

The region to be cut will be highlighted by a rotating dashed line.

Alternative methods for cutting a selected region include the following:

- Select the region to be cut, then right-click on the selected region. Select **Cut** from the pop-up menu.
- Select the region to be cut, then press **Ctrl + X**.

No matter which method you use to cut the region, the effect is to place the contents of the region on the clipboard. This will be displayed in the Clipboard Task pane, if the pane is visible. Figure 1.42 illustrates a region of four cells in Column B that have been selected and cut.

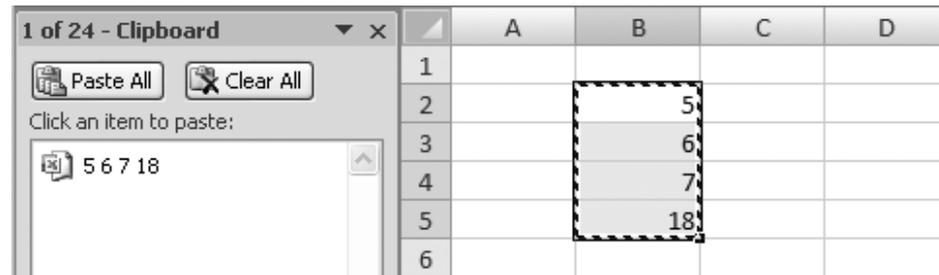


Figure 1.42
Four cells on the clipboard.

Notice that the cut cells have not been removed from the worksheet. The process of cutting the cells marks the cells for removal, but they are not actually removed unless the cut procedure is followed by a paste procedure. This is described in the next section.

1.9.2 Moving a Region (Cut and Paste)

A region may be moved by first cutting the region (to the clipboard) and then pasting it (from the clipboard) to the new location. The cut and paste operation may be performed by using the mouse or the keyboard.

To move a region using the mouse, do the following:

1. Select and cut a region. This places the contents of the region on the clipboard.
2. Select a destination cell or region.
3. Click the **Paste** button in the Clipboard group in the Ribbon's Home tab. (Excel 2003: Choose **Edit** → **Paste** from the Menu bar.)

The region of cells should now appear in the new location. If you do not select a destination region of the same size and shape as the cut region, then Excel will create a region with the appropriate size.

Alternative methods for pasting clipboard contents include the following:

- Right-click on the selected destination region, and then select **Paste** from the pop-up menu.
- Select the destination, then press **Ctrl + V**.

1.9.3 Copying a Region

Copying a region is very similar to moving a region, except that the contents of the original region remain intact; they are copied to the clipboard, not cut (moved) to the clipboard.

To copy a region using the mouse, follow these steps:

1. Select a region.
2. Click the **Copy** button in the Clipboard group in the Ribbon's Home tab. (Excel 2003: Choose Edit → Copy.)

The region to be cut will be highlighted by a rotating dashed line.

Alternative methods for cutting a selected region include the following:

- Select the region to be cut, then right-click on the selected region. Select **Copy** from the pop-up menu.
- Select the region to be cut, then press **Ctrl + C**.

Note: The keyboard shortcuts for cutting (**Ctrl + X**), copying (**Ctrl + C**), and pasting (**Ctrl + V**) use adjacent keys, shown in Figure 1.43, to make them easier to remember.

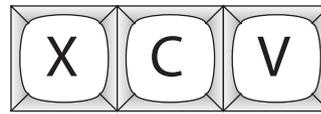


Figure 1.43
Cut (X), Copy (C), and Paste (V) keyboard shortcuts.

1.10 INSERTING AND DELETING CELLS

New cells may be added to a worksheet, and existing cells may be deleted (removed) or cleared (emptied).

1.10.1 Deleting Cells

Deleting a region of cells removes the cells from the worksheet. The vacancies, or holes, that are left behind must be filled in, and Excel will open the Delete dialog box (shown in Figure 1.44) to ask you how you want to fill the vacancies.

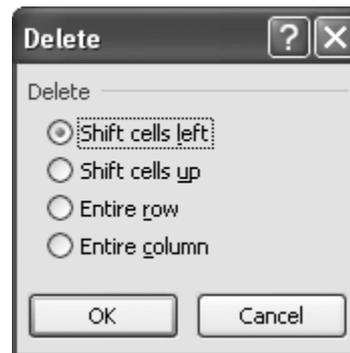


Figure 1.44
The Delete dialog box.

To delete a region of cells, follow these steps:

1. Select the region of cells to be deleted.
2. Right-click the selected region and choose **Delete ...** from the pop-up menu. The Delete dialog box will appear, as shown in Figure 1.44.
3. Choose whether you want Excel to fill the vacancies created by deleting the cells by
 - shifting the remaining cells up or to the left,
 - shifting the entire row below the vacancies up, or
 - shifting the entire column to the right of the vacancies to the left.
4. Click **OK** to close the Delete dialog box and delete the selected cells.

1.10.2 Clearing Cells

To remove the contents of cells without deleting the cells themselves, perform these steps:

1. Select the region of cells to be deleted.
2. Right-click the selected region and choose **Clear Contents** from the pop-up menu. (Or, press the **Delete** key.)

1.10.3 Inserting Cells

You can insert new cells, rows, columns, or an entire worksheet using the Insert drop-down menu on the Ribbon's Home tab (see Figure 1.45): **Home tab** → **Cells group** → **Insert drop-down menu**. (Excel 2003: Use the Insert menu option.)

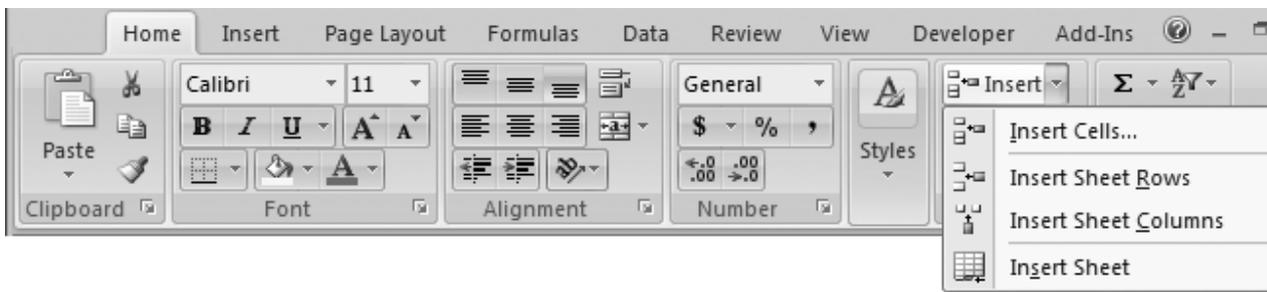


Figure 1.45
The Insert drop-down menu.

1.11 SHORTCUT KEYS

As a novice user, you may have trouble finding commands. The Ribbon in Excel 2007 has been designed to display commonly used commands where you can find them, but it still takes some getting used to. *Shortcut keys* are the quickest way to

Table 1.2 Commonly Used Shortcut Keys

Command	Shortcut
New Workbook	Ctrl + N
Open Workbook	Ctrl + O
Save Workbook	Ctrl + S
Print	Ctrl + P
Undo	Ctrl + Z
Cut	Ctrl + X
Copy	Ctrl + C
Paste	Ctrl + V
Find	Ctrl + F
Replace	Ctrl + H
Go To	Ctrl + G
Format Cells	Ctrl + 1
Help	F1
Spell Check	F7

execute a command and can save time, but they have to be memorized. The good news is that most are commonly used by lots of programs, not just Excel. Table 1.2 lists common shortcut key combinations.

One method of learning some of the shortcuts is to look at the *Screen Tips* for Ribbon items. Screen Tips are descriptions that are displayed when you let the mouse hover over a Ribbon item. For example, in Figure 1.46, the Screen Tip for the Copy button is shown, and it indicates that the keyboard shortcut for the copy operation is **Ctrl + C**.

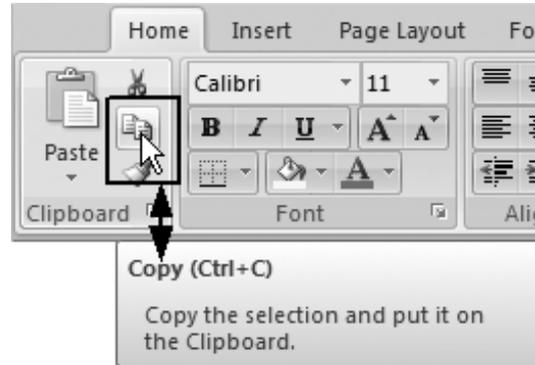


Figure 1.46
The Screen Tips for Ribbon items often indicate the keyboard shortcut.

1.12 FINDING AND CORRECTING MISTAKES

Let's face it, mistakes happen. Finding mistakes in a complex Excel worksheet can be a challenge. A couple of simple fixes are described here:

- Undo (**Ctrl + Z**)
- Spell Check (**F7**)
- AutoCorrect

1.12.1 Undoing Mistakes

Excel allows actions to be undone or reversed. To undo the last action, click the **Undo** button on the Quick Access toolbar (indicated in Figure 1.47) or type **Ctrl + Z**. (Excel 2003: Choose Edit → Undo from the Menu bar.)

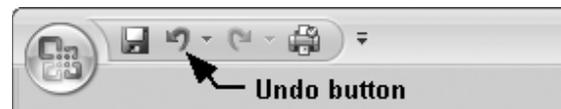


Figure 1.47
The Undo button on the Quick Access Toolbar.

To see the list of recent actions, choose the down-arrow button next to the **Undo** button. From this list, you may select one or more actions to be undone. Note that if you select an action on the list, then all of the actions above it in the list will also be undone! If you accidentally undo an action, then you may redo it by selecting the **Redo** button, which is next to the **Undo** button.

1.12.2 Checking Spelling

Excel can check the spelling of cells containing text. To check the spelling in a region, first select the region, then click the Spelling button on the Ribbon's Review tab: **Review tab** → **Proofing group** → **Spelling button**. Or, press the **F7**



Figure 1.48
The Spelling dialog box.

key. If Excel finds a spelling mistake, then the Spelling dialog box will appear, as shown in Figure 1.48.

The text thought to be in error is displayed in the top text box. Suggestions for changes are presented in the bottom text box. At any point in the process, you can choose whether to accept or ignore the suggestions. If you choose a suggested correction, then you may click the **Change All** button to change all occurrences of the misspelled word in the selected region.

You may add new words to the dictionary by choosing the **Add to Dictionary** button. This will probably be necessary as you proceed through your coursework, since many engineering terms are not in the default dictionary.

1.12.3 The AutoCorrect Feature

The Excel *AutoCorrect* feature recognizes some spelling errors and corrects them automatically. AutoCorrect performs actions such as automatically capitalizing the first letter of a sentence or correcting a word whose first two letters are capitalized.

You can test to see if the AutoCorrect feature is turned on for your installation of Excel. Try typing the letters *yuo*, then press the spacebar. Was the word automatically retyped as *you*? If so, then you have AutoCorrect turned on.

To see your AutoCorrect settings and dictionary, use **Office → Excel Options → Proofing tab → AutoCorrect Options** (Excel 2003: Tools → AutoCorrect Options). The AutoCorrect dialog box will appear, as shown in Figure 1.49.

From the AutoCorrect dialog box, you can select (or deselect) various options. You can also scroll through the AutoCorrect dictionary, add entries to the dictionary, and add exceptions to the dictionary. Creating an exception list will be necessary if you use all of the AutoCorrect features. For example, if you have selected the option that automatically converts the second capital letter to lowercase, you may have an occasional exception. Be careful when adding new entries into the AutoCorrect dictionary. You may inadvertently add an entry for a misspelling that is a legitimate word.

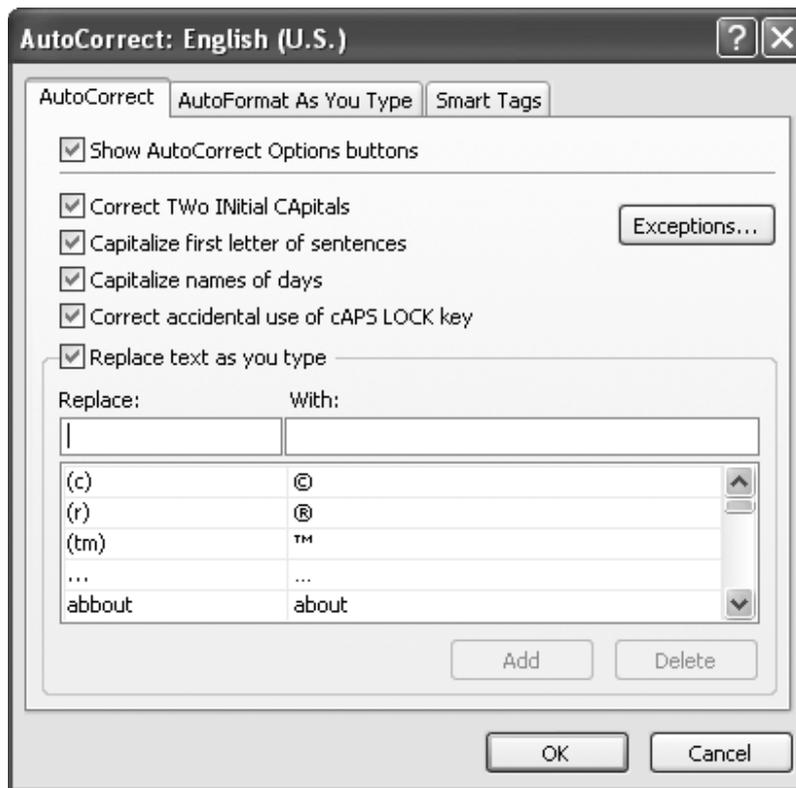


Figure 1.49
The AutoCorrect dialog box.

1.13 PRINTING

Before attempting to print a document, make sure that your printer is correctly configured. See your operating system and printer documentation for assistance.

1.13.1 Setting the Print Area

An Excel 2007 worksheet contains 1,048,576 rows by 16,384 columns. That would be a huge area to print. Excel never prints all cells in a worksheet; it prints a rectangular region that contains all of the cells that have contents. If you want to print a smaller region of a worksheet, you must first set the *print area*. To set the print area, perform the following steps:

1. Select the region that is to be printed.
2. Set the print area using Ribbon options: **Page Layout tab** → **Page Setup group** → **Print Area drop-down menu** → **Set Print Area option**. (Excel 2003: File → Print Area → Set Print Area.)

1.13.2 Previewing a Worksheet

It is advisable to use the *Print Preview* feature to preview a document before printing it. Many formatting problems can be resolved during the preview process. To preview the document as it will be printed, do the following:

1. Set the print area (if you want to print only a portion of your work.)
2. Activate print preview: **Office button** → **Print submenu** → **Print Preview**. (Excel 2003: File → Print Preview.)

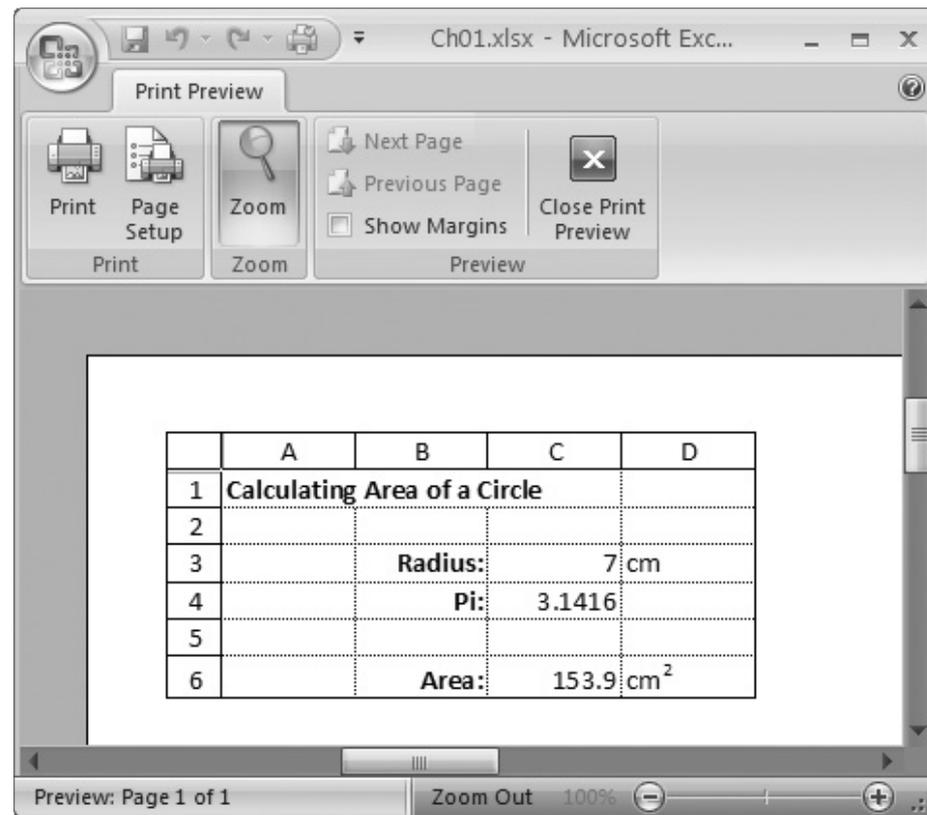


Figure 1.50
The Print Preview screen and Ribbon tab.

The Print Preview screen will be displayed, along with the Print Preview Ribbon tab, as shown in Figure 1.50.

There are four very useful commands available on the Print Preview Ribbon tab:

- **Print button**—sends what you are previewing to the printer.
- **Page Setup button**—opens the Page Setup dialog box which allows you to adjust the way your document prints.
- **Show Margins button**—displays margin lines on the preview screen. You can move the margin lines with the mouse to adjust the margins.
- **Close Print Preview button**—gets you back to the Excel worksheet.

To really control the way your worksheet prints, you will want to use the Page Setup dialog box, shown in Figure 1.51. Two of the most useful controls are on the Page panel, shown in this figure.

- Select **Orientation**: Portrait or Landscape.
- **Fit to** 1 page wide by 1 tall.

The Fit to option takes everything that is going to be printed and scales it to fit on the number of pages you indicate. The most common use is to force a worksheet to print on one page.

The **Margins panel** on the Page Setup dialog box provides another way to adjust margins. The **Header/Footer panel** allows you to print a header or footer on

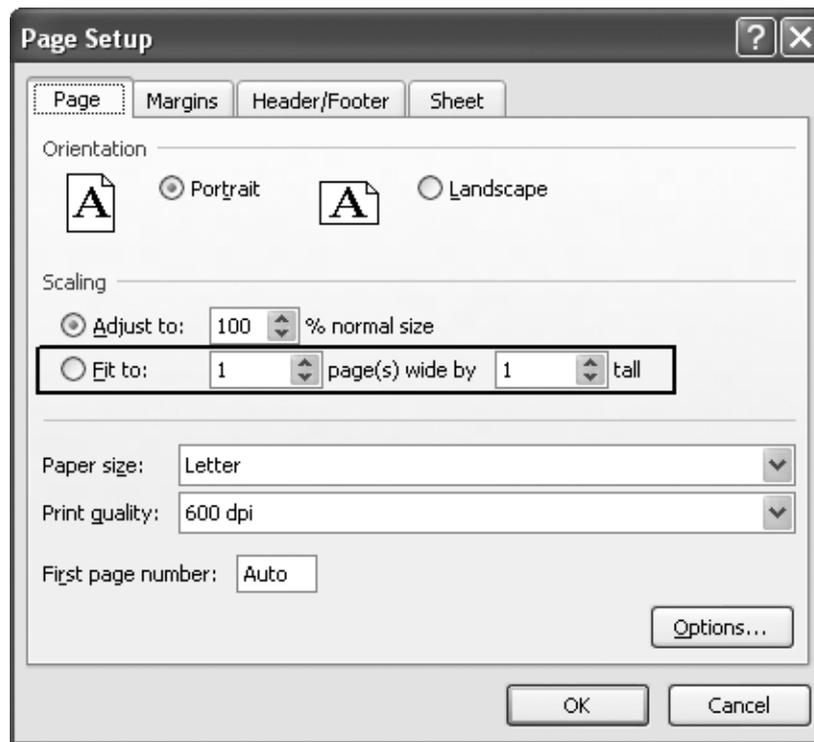


Figure 1.51
The Page Setup dialog box,
Page panel.

each page of the printout. Options include page numbers, author name, file name, or custom text.

The **Sheet panel** can be used to include

- **Gridlines** (to show the cells)
- **Row and column headings**

on the printout.

1.13.3 Printing a Worksheet

You can print a worksheet in several ways. To print a worksheet, choose one of the following methods:

- Use **Office button** → **Print sub-menu** → **Print**. (Excel 2003: File → Print.)
- Click the **Print** button on the Ribbon's Print Preview tab.
- Press **Ctrl + P**.

Whichever method you use, the Print dialog box will open as shown in Figure 1.52. The Print dialog box allows you to select a printer, activate or deactivate collating, indicate the number of copies to print, and select a range of pages. The **Properties** button provides access to a set of options that depends on the type of printer you have connected to your computer or network.

Once you have set the desired printing characteristics, click the **OK** button to send your worksheet to your printer.

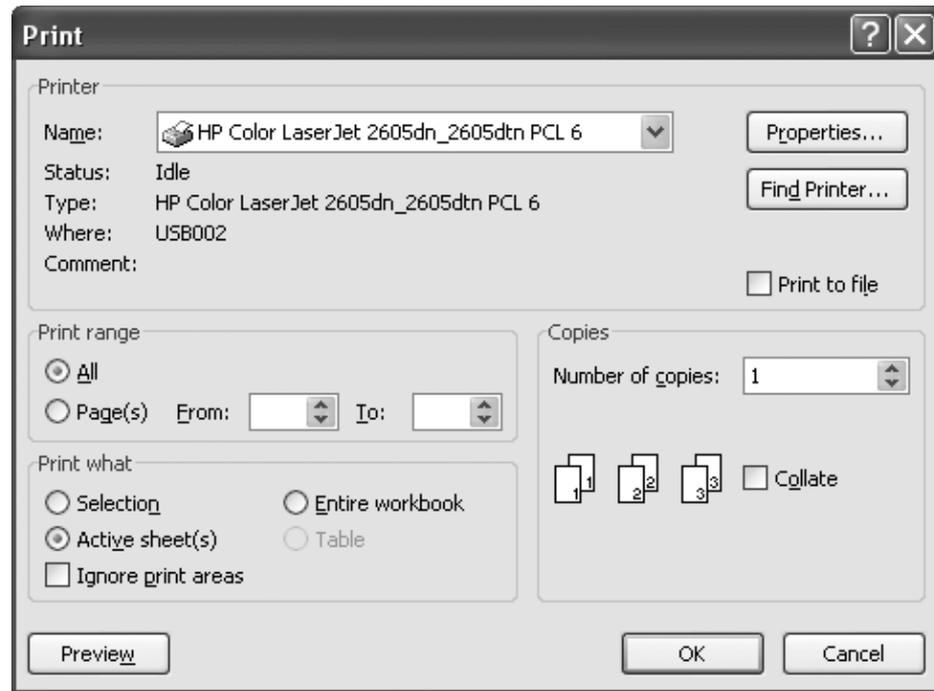


Figure 1.52
The Print dialog box.

KEY TERMS

active cell	Formula bar	Ribbon
AutoCorrect	gridlines	Ribbon tabs
AutoRecover	group (Ribbon group)	row heading
backup	Help System	Screen Tip
cell	Home tab	search
cell range	Insert Function button	Sheet tab
cell reference (e.g., B2)	macro	shortcut keys
clipboard (Windows clipboard)	macro virus	spell check
close button	Maximize/Restore button	spreadsheet
column heading	Minimize button	Status bar
control buttons	Name box	template
copy	Office button	Title bar
cut	paste	Undo button
dialog box	print	work area
Excel	print area	workbook
file extensions (.xls, .xlsx, .xlsm)	print preview	workbook window
formula (equation)	Quick Access Toolbar	worksheet
	range (cell range)	
	Redo button	

SUMMARY

Excel Screen Layout

- Title Bar
- Ribbon
- Quick Access Toolbar
- Office Button

- Formula Bar
- Work Area
- Sheet Tabs
- Status Bar

Office Button

- Open workbooks
- Save workbooks
- Print workbooks
- Set Excel Options

Control Buttons

- Minimize Button
- Maximize/Restore Window Toggle
- Close button

Ribbon

Tab → Group → Drop-down Menu → Button

- **Home tab**—commonly used commands for formatting and sorting.
- **Insert tab**—used to insert objects such as charts and hyperlinks.
- **Page Layout tab**—used to modify entire sheets (apply themes, set print area, etc.).
- **Formulas tab**—used to insert functions and manage defined names of cells and cell ranges.
- **Data tab**—provides access to sorting and filtering features, and data analysis tools (if activated).
- **Review tab**—used to add comments and track changes to a worksheet.
- **View tab**—used to change the display magnification (zoom), and to show or hide features such as the Formula bar and gridlines.

Help System (F1)

- Browsing the Help Topic List
- Searching the Help system

Working with Excel Workbooks

- Create a New Workbook: **Office → New → Blank Workbook → Create**
- Open an Existing Workbook: **Office → Open → (browse to find file) → Open**
- Saving a Workbook:
 - First time: **Office → Save As → (browse for folder, assign file name) → Save**
 - If already named: **Office → Save** (Or, click **Save** button on Quick Access Toolbar.)

Adding a Worksheet to a Workbook

- Click the **Insert Worksheet** button that is the rightmost Sheet tab.

Excel File Extensions

- .xls—version 2003 or earlier
- .xlsx—the default file name extension in Excel 2007, macros disabled
- .xlsm—Excel 2007 macro-enabled workbook

Moving around Worksheet Using the Keyboard

Key Combination	Action
←	Move one cell to the left
→	Move one cell to the right
↑	Move up one cell
↓	Move down one cell
Ctrl + →	Move to the far right of the worksheet
Ctrl + ↓	Move to the bottom of the worksheet
Page Down	Move down one screen
Page Up	Move up one screen
Ctrl + Page Down	Select next worksheet
Ctrl + Page Up	Select previous worksheet
Home	Move to far-left column of worksheet
Ctrl + Home	Move to top-left cell of worksheet (A1)
End, →	Move to right end of contiguously filled cell range
End, ↑	Move to top of contiguously filled cell range
End, ←	Move to left end of contiguously filled cell range
End, ↓	Move to bottom of contiguously filled cell range

Cut or Copy

1. Select a region.
2. Click the **Cut** or **Copy** button in the Clipboard group in the Ribbon's Home tab.

Paste

1. When there is material on the Clipboard, select a destination cell or region.
2. Click the **Paste** button in the Clipboard group in the Ribbon's Home tab.

Shortcut Keys

Command	Shortcut
New Workbook	Ctrl + N
Open Workbook	Ctrl + O
Save Workbook	Ctrl + S
Print	Ctrl + P
Undo	Ctrl + Z
Cut	Ctrl + X
Copy	Ctrl + C
Paste	Ctrl + V
Find	Ctrl + F
Replace	Ctrl + H
Go To	Ctrl + G
Format Cells	Ctrl + 1
Help	F1
Spell Check	F7

Printing

Set Print Area

1. Select the region that is to be printed.
2. Set the print area using Ribbon options: **Page Layout tab** → **Page Setup group** → **Print Area drop-down menu** → **Set Print Area option**.

Print Preview

- **Office button** → **Print submenu** → **Print Preview**.

Print Alternatives

- Use **Office button** → **Print submenu** → **Print**. (Excel 2003: File → Print.)
- Click the **Print** button on the Ribbon's Print Preview tab.
- Press **Ctrl + P**.

PROBLEMS

- 1.1 Test your understanding by filling in the blanks.
 - The _____ displays the name of the currently open workbook.
 - The Home, Insert, and Page Layout tabs are found on the _____.
 - Clicking on the Save button on the Quick Access Toolbar has the same effect as choosing _____ from the Office menu.
- 1.2 What is the maximum number of rows and columns for a single Excel worksheet?
- 1.3 Use the Insert Function dialog box to identify the Excel function names for the following mathematical functions:
 - _____ sine
 - _____ arithmetic mean
 - _____ natural logarithm
 - _____ convert degrees to radians
 - _____ remove or truncate the decimal part of a number
 - _____ return e raised to the power of a number
- 1.4 Name two ways to undo a mistake.
- 1.5 Identify the shortcut keys for the following actions:
 - _____ Help
 - _____ Copy selected region
 - _____ Cut select region
 - _____ Move to the beginning of a worksheet
- 1.6 Visit the U.S. National Institute of Standards and Technology (NIST) Physics Laboratory's website about the International System of Units (SI) at <http://physics.nist.gov/cuu/units>.
 - Click on the menu item labeled SI units, and locate the table for SI Base Units. Use that table to fill in the missing entries in Table 1.3.

Table 1.3 SI Base Units

Quantity	Name	Symbol
length		m
	kilogram	kg
time	second	
electric current	ampere	
temperature		K
	mole	mol
luminous intensity		cd

- 1.7** The electronic spreadsheet has played an important role in the history of computing. The links presented here discuss the history of electronic spreadsheets. Access these websites with your web browser and then answer the questions that follow:

Power, D.J., A Brief History of Spreadsheets, at <http://www.dssresources.com/history/sshistory.html>.

Mattessich, Richard. Spreadsheet: Its First Computerization (1961–1964) at <http://www.j-walk.com/ss/history/spreadsh.htm>.

- What is the name of the first marketed electronic spreadsheet that was partly responsible for the early success of the Apple computer?
 - In what year was Excel originally introduced (for Macintosh computers)?
- 1.8** Excel's trigonometric function *PI* returns an approximation of the mathematical constant π . Read the information about *PI* on the Insert Function dialog box to determine the number of digits of accuracy of the constant returned by this function.
- 1.9** Describe the difference between three of Excel's logarithm functions: LN, LOG, and LOG10. Use the Help system to find the answer to this question.
- 1.10** Explain the difference between Cut-and-Paste and Copy-and-Paste. Which would you use if you needed to
- move a column of values to a new location within a worksheet?
 - create a table in a Word document from a table of values in an Excel worksheet (leaving the Excel worksheet unchanged)?
- 1.11** Access Microsoft's website (www.microsoft.com) to find a calendar template for Excel. (Enter *Excel calendar template* in the search box on the Microsoft web page.) How many Excel calendar templates are available for downloading?
- 1.12** Perform a Google® search on the phrase *Excel Tips*. On a scale from 0 (no information) to 10 (massive amounts of information), how much information is available about Excel online?