CHAPTER 1
INTRODUCTION TO MICROSOFT EXCEL

This chapter is an introduction to Microsoft Excel and how to perform basic operations such as entering data, using formulas, saving worksheets, retrieving worksheets, and printing. Microsoft Excel is a spreadsheet application whose capabilities include graphics and database applications. After completing this chapter, you will be able to create worksheets and modify existing ones, create formulas and solve problems, and use spreadsheets to illustrate statistical concepts.

The Excel Workbook

An Excel program can be opened by double clicking on Microsoft Excel icon found on the desktop screen or from the start menu- highlight programs-highlight Microsoft Excel-then click the left mouse button. An Excel worksheet is a sheet (or a spreadsheet) consisting of cells arranged in an array of rows and columns. The cells can contain text, numbers, or formulas.

When you start Microsoft Excel, a blank worksheet titled “Microsoft Excel-Book1” appears [see Figure (1.1)]. This worksheet is the document that Microsoft Excel uses for sorting and manipulating data. Note that there are three tabs at the bottom of the screen, called “Sheet 1”, “Sheet 2”, and “Sheet 3”. The default is a workbook with three sheets, but other sheets can be added as we will see later.
Components of a Workbook

A workbook consists of various sheets in which information is displayed. Sheets may be named, and their names will appear as tabs at the bottom of the workbook.

The following are some components of the workbook.

- **Standard Toolbar**: An area of the Excel screen containing a series of icon buttons used to access commands and other features, such as saving, cut and paste, copying, spell check, and Chart Wizard.
- **Menu bar**: Groups of command choices, pull-down menus that allow you to perform different tasks, such as open an Excel file, save an Excel file, print the current worksheet or sort data [see Figure (1.2)].

![Figure (1.2)](image)

- **Worksheet area**: The grid of rows and columns into which you enter text, numbers, and formulas.
- **Cell**: Located at the intersection of a row and a column.
- **Cell address**: Location of a cell (active cell) based on the intersection of a row and a column. In a cell address, the column is always listed first and the row second, so B3 means column B, row 3.
- **Active cell**: The worksheet cell receiving the information you type. A thick border always surrounds it.
- **Formula bar**: Area near the top of the Excel screen where you enter and edit data.
- **Scroll bars**: Allow you to display parts of the worksheet that are currently off-screen.
- **Sheet tabs**: Identify the names of individual worksheets.
- **Formatting bar**: Format the cell contents by selecting the type, font, size, and other attributes, such as bold or italics.
Entering & Modifying Information

When a new Excel worksheet is opened, the cell A1 is automatically the active cell. You may use the arrow keys, up, down, right, or left to move around the worksheet. After you insert the data in the active cell and press the **Enter** key, your data is entered into the cell and the cell immediately below it becomes the active cell. To edit a cell, double click with your mouse on that cell, and the cell can be edited. You can select several cells at once to work with, called a range. A range is a group of cells forming a rectangular block.

*Example 1.1:*

Suppose you wanted to show the distribution of the number of pounds of snack food consumed during a sporting event. Use Microsoft Excel to generate the following table.

<table>
<thead>
<tr>
<th>Snack</th>
<th>Pounds</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potato Chips</td>
<td>12</td>
<td>$18</td>
</tr>
<tr>
<td>Snickers</td>
<td>28</td>
<td>$42</td>
</tr>
<tr>
<td>Banana Chips</td>
<td>7</td>
<td>$14</td>
</tr>
<tr>
<td>Cookies</td>
<td>13</td>
<td>$39</td>
</tr>
<tr>
<td>Swiss Cake Rolls</td>
<td>10</td>
<td>$20</td>
</tr>
<tr>
<td>Pretzels</td>
<td>5</td>
<td>$15</td>
</tr>
</tbody>
</table>

*Solution:*

- Activate cell A1 by clicking on it and type snack then press the **Enter** key.
- In the cell A2, type potato chips, then press the **Enter** key.
- Similarly, type the Snickers…etc.
- Some words do not all fit into one cell and go into the adjacent cell after you entered all the data in that column. To widen the column, place the mouse pointer on the column headings rows between columns, for example, A & B. The mouse pointer changes to a thick black plus sign then double click on the left mouse button.
- In column B, type pounds in the first cell, B1, and the rest of the column in B2, B3… B7.
- In column C, type price in the first cell, C1, and the rest of the column in C2, C3,…, C7.
- To format the values in column C so that they will represent dollar amounts, click on C at the top of the column. The entire column is
now highlighted, then click on the currency icon ($) found on the formatting bar. Another way for formatting is by using the Format menu. The table created by Microsoft Excel is shown in the following figure [see Figure (1.3)].

![Figure (1.3)](image)

**Cut/Copy/Paste**

To move text to a new position,
- Highlight the cells, click on the cut icon.
- Select the new location by activating the cell in which you wish the text to be located, click on the paste icon.

If you wish to copy text, follow the same procedures for moving text, but instead of the cut icon select copy icon.

Microsoft Excel allows you to check the spelling of the text in your entire workbook or selected cells.
- To check the spelling of the whole workbook, click on cell A1, for example, and then click on the spelling icon. A dialog box will appear.
giving you several choices. If the spelling is incorrect, highlight the correct spelling from the suggestion box, and click on the change button.

- To check a selected area, highlight the cell or cells you want Excel to check, and then click on the spelling icon, and follow the same procedure as above [see Figure (1.4)].

![Microsoft Excel - Snack Food Example(1.1)](image)

Figure (1.4)

A worksheet may be printed in either portrait or landscape as follows.

- From the Menu bar, select File. Select Page setup. A dialog box appears with four tabs.
- The page tab should already be selected. You may select Portrait icon or Landscape icon, and then select OK [see Figure (1.5)].
Figure (1.5)

Formatting Cells

Figure (1.6) shows some of the formatting icons available in the Excel worksheet. Highlighted cells can be formatted by either clicking the formatting icon or by clicking Format from the menu bar [see Figure (1.7)]. Other options are accessible through cells under the menu command Format.
Figure (1.6)

Figure (1.7)
Saving a Worksheet

- Select File, from the menu bar, then scroll down and click on the menu item Save as.
- Select the directory location where you want your file saved.
- Enter the name of the file.
- Click on save.

Understanding and Using Formulas

An existing worksheet will be used to create formulas and to solve problems. Formulas are mathematical expressions that use the values or formulas in other cells to create new values or formulas. All formulas begin with an equal (=) sign and are entered directly by hand in the cell, or in the text entry area of the formula bar. The formula in Excel makes use of basic arithmetic operations: addition (+), subtraction (-), multiplication (*), division (/), and exponent (^).

To enter a formula:
- Select the cell in which a formula is to be entered.
- Enter an equal sign (=) followed by a designed arithmetic expression.
- Press the Enter key.

For example, in Example (1.1), to find the sum of pounds, we type in the cell B8 the formula = B2+B3+B4+B5+B6+B7, then we press the Enter key. Note that on the standard toolbar, the \( \sum \) button automatically sums the values in the selected cells. Microsoft Excel places the sum under the selected cells, [see Figure (1.8)].
Example 1.2:
For the data given in Example (1.1), find the percentages of the number of pounds and the percentages of the prices.

Solution:
- In cells B8 and C8, find the sum of the pounds and prices, respectively.
- In cell D1, type % Pound, and press the Enter key.
- In cell D2, type = B2/75, and press the Enter key.
- Make cell D2 the active cell. Put the mouse pointer on the lower right corner and drag the mouse pointer down to fill the cells D3, D4,…, D7.
- Similarly, we follow the same procedure to find the percentages of the prices. The table in Figure (1.9) summarizes the results.
Modifying Your Workbook

Inserting and deleting rows/columns

To insert a row (or a column), highlight the row (or column) by right-clicking on the number at the start of the row (or letter at the head of the column). A drop-down menu should open. Choose insert. The new row will be inserted above the selected row. A new column will be inserted to the left of the selected column.

To delete a row (or column), highlight the row (or column) by right-clicking on the number at the start of the new row (or the letter at the head of the column). A drop-down menu should open. Choose Delete. The old row (or column) is removed from the worksheet and is replaced by the data in the adjoining row (or column).
Changing column width and row height

To adjust the column width
- Position the mouse pointer on the right border of the letter heading at the top of the column you wish to adjust. The mouse pointer should change to a black cross with an arrowhead at each end of the horizontal line.
- Press and hold down the left mouse button, dragging the right side at the column to increase or decrease the column width.
- Move the mouse back and forth. Release the mouse button when you have a column the width you like.

To adjust the row height
- Position the mouse pointer on the lower border of the numerical row whose size you wish to adjust. The mouse pointer should change to a black cross with an arrowhead at each end of the horizontal line.
- Press and hold down the left mouse button, dragging the border to increase or decrease the row height.
- Move the mouse back and forth. Release the mouse button when you have it.

To add/delete/rename worksheets to a workbook

When you open a new workbook in Excel, you will see that there are three worksheets available to you. This gives you the ability to do three separate problems or (variations) of a problem with one workbook. It is possible to have up to sixteen worksheets within one workbook.

To add a single worksheet, click worksheet on the insert menu. To delete sheets from a workbook, select the sheets you want to delete. Then on the edit menu, click Delete Sheets. To rename a sheet, double-click the sheet tab and type a new name over the current one.

Inserting/Showing/Editing/Removing a Comment:

To enter a comment into excel worksheet:
- Click the cell to which you want to add the comment
- Click on the insert menu. Highlight comment, and then click.
- In the box, type the text of your comment.
When you finish typing, click outside the comment box. A triangle will appear in the upper right hand corner of the cell that contains the comment.

To view the comment, move the cursor over the cell that contains the comment.

To make a comment visible all time, right-click on the cell that contains the comment. Then highlights show comment and then click.

To edit a comment, right-click on the cell that contains the comment. Then, highlights edit comment, and then click.

To remove a comment, right-click on the cell that contains the comment. Then highlight delete comment, and then click.

**Getting Help**

Usually information about Excel is stored in the program. If you forgot how to use a command or need general information, you can ask Excel for Help. From the menu bar, choose Help. A drop down menu will appear, giving you a choice between Microsoft Excel Help (F1 key) or the Office Assistant [see Figure (1.10)].
Undoing Your Work

When using Excel, it often happens that you do something wrong and you would like to correct it. You can undo your last action, simply by clicking on the counterclockwise arrow located on the menu bar or by clicking Undo typing from the edit menu.

Printing an Excel Worksheet

To print all of the cells in the correct worksheet, click on the print button located on the tool bar. If you click on file, then select print. You will get a dialog box that allows you to change printing options, such as the number of copies or printer being used [see Figure (1.11)].
Closing Files and Closing Excel

To close an Excel file, click on file, and then click on close. Alternatively, you can simply click on X box located at the extreme right of the bar just above columns Labels A, B, C… etc.

To close the entire Excel program, Click on file, then click on Exit; alternatively, you can simply click on the X box located in the upper right corner of the screen.
Microsoft Excel Lab Experiments

Lab Experiment 1.1:
Open or retrieve the worksheet *Price_of_gasoline.xls* from the CD-ROM included with this manual. This file contains the prices of gasoline for each month from the year 1976 to the year 2004. The prices were given in dollars per gallon.

(a) Create a new worksheet containing only the prices of gasoline from the year 1980 to the year 2000. Save this worksheet under a new name and print a copy of this worksheet.

(b) If the prices of gasoline in part (a) are doubled, create a new worksheet that consists of the old and the new prices. Save this worksheet under a new name and print a copy of this worksheet.

Lab Experiment 1.2:
Open or retrieve the worksheet *Weather.xls* from the CD-ROM included with this manual. Do the following in Excel.

1. Create a new worksheet containing only the data for the first 15 days of February.
2. Save the worksheet under a new name.
3. Print the worksheet.
4. Close the worksheet.
5. Open the worksheet.
6. Using the mouse, click on the cell in the top left corner of the worksheet, then hold the mouse button and slide the mouse to the right and down so that the top half of the table is highlighted. Release the mouse button, then press Delete key. Describe what happens to the worksheet. Now click on the Undo arrow (the counter-clockwise arrow on the tool bar or from the Edit menu) and describe what happens.
**Lab Experiment 1.3:**

Open or retrieve the worksheet `States.xls` from the CD-ROM included with this manual. This file contains the State’s Abbreviation, Postal Abbreviation, Area, and Population of the 50 states.

(a) Create a new worksheet that consists of the first twenty states with their areas and populations. Save this worksheet under a new name and print a copy of this worksheet.

(b) Let X represents the population of each state in part (a). If each population is modified according to the formula Y = 2X+5000, create a new worksheet that consists of the first twenty states, their areas, and the population (X) of each state and the new population (Y). Save this worksheet under a new name and print a copy of this worksheet.

**Lab Experiment 1.4:**

Given below the body temperatures of 25 students in degrees Fahrenheit,

<table>
<thead>
<tr>
<th>Degrees Fahrenheit</th>
<th>Degrees Celsius</th>
</tr>
</thead>
<tbody>
<tr>
<td>98.6</td>
<td>36.9</td>
</tr>
<tr>
<td>97.0</td>
<td>36.0</td>
</tr>
<tr>
<td>97.2</td>
<td>36.0</td>
</tr>
<tr>
<td>97.1</td>
<td>36.0</td>
</tr>
<tr>
<td>98.4</td>
<td>36.8</td>
</tr>
<tr>
<td>97.8</td>
<td>36.5</td>
</tr>
<tr>
<td>98.0</td>
<td>36.0</td>
</tr>
<tr>
<td>97.1</td>
<td>36.0</td>
</tr>
<tr>
<td>98.4</td>
<td>36.8</td>
</tr>
</tbody>
</table>

The formula for converting degrees Fahrenheit to degrees Celsius is C = 5/9*(F-32). Use Excel to create a worksheet that contains the body temperatures of the 25 students in degrees Fahrenheit and degrees Celsius.

1. Type “Degrees Fahrenheit” in cell A1.
2. Type “Degrees Celsius” in cell B1.
3. In cells A2 to A26, enter body temperatures of the 25 students.
4. In cell B2, enter the formula to convert from degrees Fahrenheit to degrees Celsius.
5. Copy this formula through to cell B26.
6. Format the values in column B to three decimal places.
7. Add a comment to column B to explain how degrees Celsius are obtained from degrees Fahrenheit.
8. Rename your worksheet as “Temperature Conversion”.
9. Save your worksheet.
10. Print out your worksheet.