

Introduction to Excel

What Is a Spreadsheet?



OBJECTIVES

AFTER YOU READ THIS CHAPTER, YOU WILL BE ABLE TO:

1. Explore the Excel window
2. Enter and edit cell data
3. Create formulas
4. Use Auto Fill
5. Display cell formulas
6. Manage worksheets
7. Manage columns and rows
8. Select, move, copy, and paste data
9. Apply alignment and font options
10. Apply number formats
11. Select page setup options
12. Preview and print a worksheet

CASE STUDY | OK Office Systems

You are an assistant manager at OK Office Systems (OKOS) in Toronto. OKOS sells a wide range of computer systems, peripherals, and furniture for small- and medium-sized organizations in the Greater Toronto Area. To compete against large, global, big-box office supply stores, OKOS provides competitive pricing by ordering directly from local manufacturers rather than dealing with distributors.

Alesha Bennett, the general manager, asked you to calculate the retail price, sale price, and profit analysis for selected items on sale this month. Using markup rates provided by Alesha, you need to calculate the retail price, the amount OKOS charges its customers for the products. For the sale, Alesha wants to give customers between a 10% and 30% discount on select items. You need to use those discount rates to calculate the sale prices. Finally, you will calculate the profit margin to determine the percentage of the final sale price over the cost.

After you create the initial pricing spreadsheet, you will be able to change values and see that the formulas update the results automatically. In addition, you will be able to insert data for additional sale items or delete an item based on the manager's decision.

Although your experience with Microsoft Office Excel 2013 may be limited, you are excited to apply your knowledge and skills to your newly assigned responsibility. In the Hands-On Exercises for this chapter, you will create and format the analytical spreadsheet to practise the skills you learn.

Introduction to Spreadsheets

Organizing, calculating, and evaluating quantitative data are important skills needed today for personal and managerial decision making. You track expenses for your household budget, maintain a savings plan, and determine what amount you can afford for a house or car payment. Retail managers create and analyze their organizations' annual budgets, sales projections, and inventory records. Charitable organizations track the donations they receive, the distribution of those donations, and overhead expenditures.

You can use a spreadsheet to maintain data and perform calculations. A *spreadsheet* is an electronic file that contains a grid of columns and rows used to organize related data and to display results of calculations, enabling interpretation of quantitative data for decision making.

Performing calculations using a calculator and entering the results into a ledger can lead to inaccurate values. If an input value is incorrect or needs to be updated, you have to recalculate the results manually, which is time-consuming and can lead to inaccuracies. A spreadsheet makes data entry changes easy. If the formulas are correctly constructed, the results recalculate automatically and accurately, saving time and reducing room for error.

In this section, you will learn how to design spreadsheets. In addition, you will explore the Excel window and learn the name of each window element. Then, you will enter text, values, and dates in a spreadsheet.

Exploring the Excel Window

In Excel, a *worksheet* is a single spreadsheet that typically contains descriptive labels, numeric values, formulas, functions, and graphical representations of data. A *workbook* is a collection of one or more related worksheets contained within a single file. By default, new workbooks contain one worksheet. Storing multiple worksheets within one workbook helps organize related data together in one file and enables you to perform calculations among the worksheets within the workbook. For example, you can create a budget workbook of 13 worksheets, one for each month to store your personal income and expenses and a final worksheet to calculate totals across the entire year.

Excel contains the standard interface of Microsoft Office applications:

- **Quick Access Toolbar:** Save, Undo, and Redo/Repeat commands
- **Title bar:** File name (such as Book1) and software name (such as Excel)
- **Control buttons:** Microsoft Excel Help, Full Screen Mode, Minimize, Restore Down, and Close
- **Ribbon:** Commands (such as Align Left) organized within groups (such as Alignment) on various tabs (such as Home)
- **Scroll bars:** Tools to scroll vertically and horizontally through a worksheet

Identify Excel Window Elements

Figure 1 identifies elements specific to the Excel window, and Table 1 lists and describes the Excel window elements.

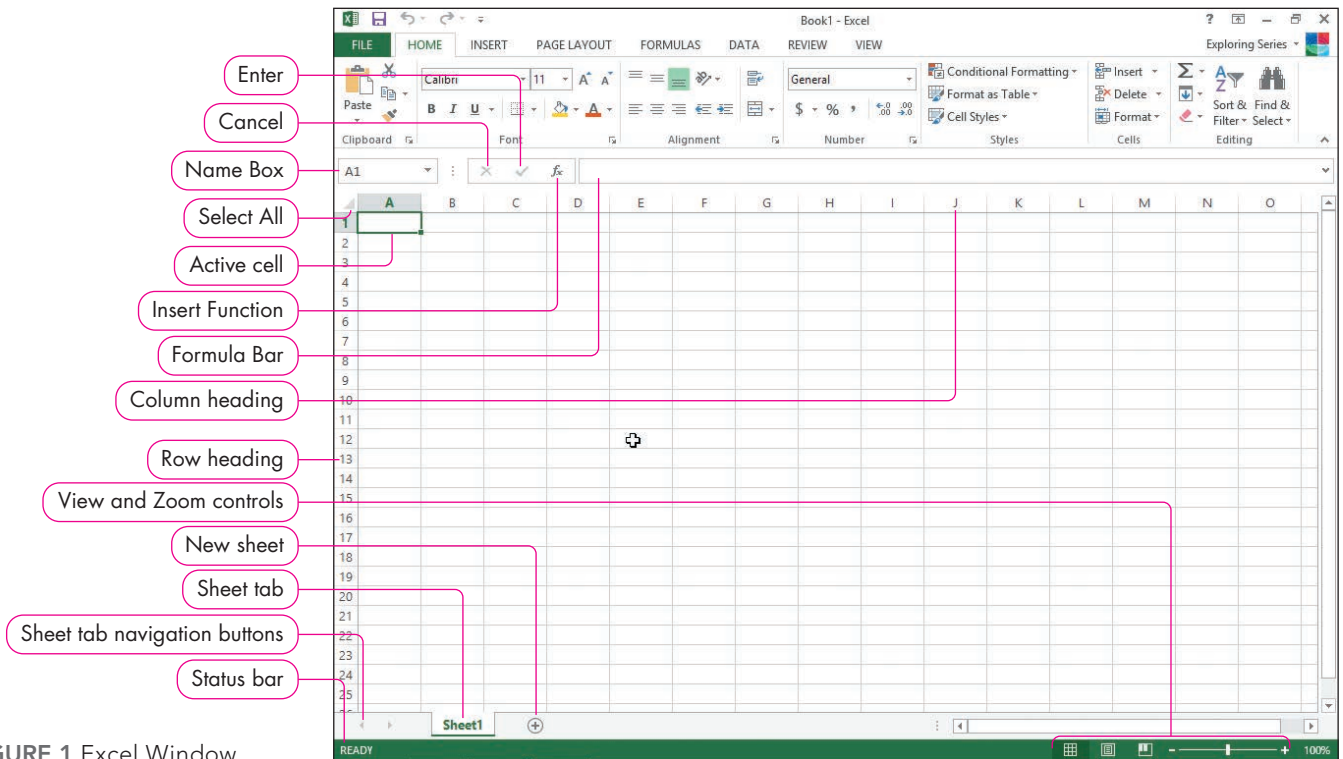


FIGURE 1 Excel Window

TABLE 1 Excel Elements






Element	Description
Name Box	The Name Box is an identifier that displays the address of the current cell in the worksheet. Use the Name Box to go to a cell, assign a name to one or more cells, or select a function.
Cancel 	When you enter or edit data, click Cancel to cancel the data entry or edit and revert back to the previous data in the cell, if any. The Cancel icon changes from grey to red when you position the mouse pointer over it.
Enter 	When you enter or edit data, click Enter to accept data typed in the active cell and keep the current cell active. The Enter icon changes from grey to blue when you position the mouse pointer over it.
Insert Function 	Click to display the Insert Function dialog box to search for and select a function to insert into the active cell. The Insert Function icon changes from grey to green when you position the mouse pointer over it.
Formula Bar	The Formula Bar shows the contents of the active cell. You can enter or edit cell contents here or directly in the active cell. Drag the bottom border of the Formula Bar down to increase the height of the Formula Bar to display large amounts of data or a long formula contained in the active cell.
Select All 	The triangle at the intersection of the row and column headings in the top-left corner of the worksheet. Click it to select everything contained in the active worksheet.
Column headings	The letters above the columns, such as A, B, C, and so on.
Row headings	The numbers to the left of the rows, such as 1, 2, 3, and so on.
Active cell	The active cell is the current cell, which is indicated by a dark green border.
Sheet tab	A sheet tab shows the name of a worksheet contained in the workbook. When you create a new Excel workbook, the default worksheet is named Sheet1.
New sheet 	Inserts a new worksheet to the right of the current worksheet.
Sheet tab navigation buttons	If your workbook contains several worksheets, Excel may not show all the sheet tabs at the same time. Use the buttons to display the first, previous, next, or last worksheet.

TABLE 1 Excel Elements (continued)

Element	Description
Status bar	Displays information about a selected command or operation in progress. For example, it displays <i>Select destination and press ENTER or choose Paste</i> after you use the Copy command.
View controls	Click a view control to display the worksheet in Normal, Page Layout, or Page Break Preview. Normal view displays the worksheet without showing margins, headers, footers, and page breaks. Page Layout view shows the margins, header and footer area, and a ruler. Page Break Preview indicates where the worksheet will be divided into pages.
Zoom control	Drag the zoom control to increase the size of the worksheet onscreen to see more or less of the worksheet data.

Identify Columns, Rows, and Cells

A worksheet contains columns and rows, with each column and row assigned a heading. Columns are assigned alphabetical headings from columns A to Z, continuing from AA to AZ, and then from BA to BZ until XFD, which is the last of the possible 16,384 columns. Rows have numeric headings ranging from 1 to 1,048,576.

The intersection of a column and row is a **cell**; a total of more than 17 billion cells are available in a worksheet. Each cell has a unique **cell address**, identified by first its column letter and then its row number. For example, the cell at the intersection of column A and row 9 is cell A9. Cell references are useful when referencing data in formulas, or in navigation.

Navigate In and Among Worksheets

The **active cell** is the current cell. Excel displays a dark green border around the active cell in the worksheet, and the cell address of the active cell appears in the Name Box. The contents of the active cell, or the formula used to calculate the results of the active cell, appear in the Formula Bar. You can change the active cell by using the mouse to click in a different cell. If you work in a large worksheet, use the vertical and horizontal scroll bars to display another area of the worksheet and click in the desired cell to make it the active cell.

To navigate to a new cell, click it or use the arrow keys on the keyboard. When you press Enter, the next cell down in the same column becomes the active cell. Table 2 lists the keyboard navigation methods. The Go To command is helpful for navigating to a cell that is not visible onscreen.

TABLE 2 Keystrokes and Actions

Keystroke	Used to
↑	Move up one cell in the same column.
↓	Move down one cell in the same column.
←	Move left one cell in the same row.
→	Move right one cell in the same row.
Tab	Move right one cell in the same row.
Page Up	Move the active cell up one screen.
Page Down	Move the active cell down one screen.
Home	Move the active cell to column A of the current row.
Ctrl+Home	Make cell A1 the active cell.
Ctrl+End	Make the rightmost, lowermost active corner of the worksheet—the intersection of the last column and row that contains data—the active cell. Does not move to cell XFD1048576 unless that cell contains data.
F5 or Ctrl+G	Display the Go To dialog box to enter any cell address.

To display the contents of another worksheet within the workbook, click the sheet tab at the bottom-left corner of the workbook window. The active sheet tab has a white background colour. After you click a sheet tab, you can then navigate within that worksheet.

Entering and Editing Cell Data

You should plan the structure before you start entering data into a worksheet. Using the OKOS case presented at the beginning of the chapter as an example, use the following steps to plan the worksheet design, enter and format data, and complete the workbook:

Plan the Worksheet Design

1. **State the purpose of the worksheet.** The purpose of the OKOS worksheet is to store data about products on sale and to calculate important details, such as the retail price based on markup, the sales price based on a discount rate, and the profit margin.
2. **Decide what input values are needed.** Input values are the initial values, such as variables and assumptions. You may change these values to see what type of effects different values have on the end results. For the OKOS worksheet, the input values include the costs OKOS pays the manufacturers, the markup rates, and the proposed discount rates for the sale. In some worksheets, you can create an *input area*, a specific region in the worksheet to store and change the variables used in calculations. For example, if you applied the same Markup Rate and same Percent Off for all products, it would be easier to create an input area at the top of the worksheet to change the values in one location rather than in several locations.
3. **Decide what outputs are needed to achieve the purpose of the worksheet.** Outputs are the results you need to calculate. For the OKOS worksheet, the outputs include columns to calculate the retail price (i.e., the selling price to your customers), the sale price, and the profit margin. In some worksheets, you can create an *output area*, the region in the worksheet to contain formulas dependent on the values in the input area.

Enter and Format the Data

4. **Enter the labels, values, and formulas in Excel.** Use the design plan (Steps 2–3) as you enter labels, input values, and formulas to calculate the output. In the OKOS worksheet, descriptive labels (the product names) appear in the first column to indicate that the values on a specific row pertain to a specific product. Descriptive labels appear at the top of each column, such as Cost and Retail Price, to describe the values in the respective column. Change the input values to test that your formulas produce correct results. If necessary, correct any errors in the formulas to produce correct results. For the OKOS worksheet, change some of the original costs and markup rates to ensure the calculated retail price, selling price, and profit margin percentage results update correctly.
5. **Format the numerical values in the worksheet.** Align decimal points in columns of numbers and add number formats and styles. In the OKOS worksheet, use Accounting Number Format and the Percent Style to format the numerical data. Adjust the number of decimal places as needed.
6. **Format the descriptive titles and labels so that they stand out.** Add bold and colour to headings so that they stand out and are attractive. Apply other formatting to headings and descriptive labels. In the OKOS worksheet, you will centre the main title over all the columns, bold and centre column labels over the columns, and apply other formatting to the headings. Figure 2 shows the completed OKOS worksheet.

Complete the Workbook

- Document the workbook as thoroughly as possible.** Include the current date, your name as the workbook author, assumptions, and purpose of the workbook. You can provide this documentation in a separate worksheet within the workbook. You can also add some documentation in the *Properties* section when you click the File tab.
- Save and share the completed workbook.** Preview and prepare printouts for distribution in meetings, send an electronic copy of the workbook to those who need it, or upload the workbook on a shared network drive or in the cloud.

Product	Cost	Markup Rate	Retail Price	Percent Off	Sale Price	Profit Amount	Profit Margin
Electronics							
Computer System	\$ 475.50	50.0%	\$ 713.25	15%	\$ 606.26	\$ 130.76	21.6%
Colour Laser Printer	\$ 457.70	75.5%	\$ 803.26	20%	\$ 642.61	\$ 184.91	28.8%
28" Monitor	\$ 195.00	83.5%	\$ 357.83	10%	\$ 322.04	\$ 127.04	39.4%
Furniture							
Desk Chair	\$ 75.00	100.0%	\$ 150.00	25%	\$ 112.50	\$ 37.50	33.3%
Solid Oak Computer Desk	\$ 700.00	185.7%	\$ 1,999.90	30%	\$ 1,399.93	\$ 699.93	50.0%
Executive Desk Chair	\$ 200.00	100.0%	\$ 400.00	25%	\$ 300.00	\$ 100.00	33.3%

FIGURE 2 Completed OKOS Worksheet

Enter Text

Text is any combination of letters, numbers, symbols, and spaces not used in calculations. Excel treats phone numbers, such as 555-1234, and Social Insurance Numbers, such as 123-456-789, as text entries. You enter text for a worksheet title to describe the contents of the worksheet, as row and column labels to describe data, and as cell data. In Figure 2, the cells in column A, row 1, and row 4 contain text, such as *Product*. Text aligns at the left cell margin by default. To enter text in a cell, do the following:

STEP 1

- Make sure the cell is active where you want to enter text.
- Type the text.
- Do one of the following to make another cell the active cell after entering data:
 - Press Enter on the keyboard.
 - Press an arrow key on the keyboard.
 - Press Tab on the keyboard.

Do one of the following to keep the current cell the active cell after entering data:

- Press Ctrl+Enter.
- Click Enter (the check mark between the Name Box and the Formula Bar).

As soon as you begin typing a label into a cell, the **AutoComplete** feature searches for and automatically displays any other label in that column that matches the letters you typed. For example, *Computer System* is typed in cell A6 in Figure 2. When you start to type *Co* in cell A7, AutoComplete displays *Computer System* because a text entry previously typed starts with *Co*. Press Enter to accept the repeated label, or continue typing to enter a different label, such as *Colour Laser Printer*.



To enable the Canadian dictionary in Excel:

- Click **File | Options**.
- Click **Language**.
- From the **Add additional editing languages** menu, select **English (Canada)**.
- Click the **Add** button.
- Click the **Set as Default** button.
- You will see a dialog box that reads: **The new editing language you just chose will take effect the next time you start Excel. Do you want to continue?**
- Click the **Yes** button.
- Click the **OK** button.
- You will need to restart Excel for the language change to take effect.



TIP Line Break in a Cell

If a long text label does not fit well in a cell, you can insert a line break to display the text label on multiple lines within the cell. To insert a line break while you are typing a label, press Alt+Enter where you want to start the next line of text within the cell.

Enter Values

STEP 2 >>

Values are numbers that represent a quantity or a measurable amount. Excel usually distinguishes between text and value data based on what you enter. The primary difference between text and value entries is that value entries can be the basis of calculations, whereas text cannot. In Figure 2, the data below the *Cost*, *Markup Rates*, and *Percent Off* labels are values. Values align at the right cell margin by default. After entering values, you can align decimal places and apply formatting by adding characters, such as \$ or %.

Enter Dates

STEP 3 >>

You can enter dates and times in a variety of formats in cells, such as 9/1/2016; 9/1/16; September 1, 2016; or 1-Sep-16. You can also enter times, such as 1:30 PM or 13:30. You should enter a static date to document when you create or modify a workbook or to document the specific point in time when the data were accurate, such as on a balance sheet or income statement. Later, you will learn how to use formulas to enter dates that update to the current date. In Figure 2, cell A2 contains a date. Dates are values, so they align at the right cell margin. However, the date in Figure 2 has been centred by the user.

Excel displays dates differently from the way it stores dates. For example, the displayed date 9/1/2016 represents the first day in September in the year 2016. Excel stores dates as serial numbers starting at 1 with January 1, 1900, so 9/1/2016 is stored as 42614 so that you can create formulas, such as to calculate how many days exist between two dates.

Enter Formulas

Formulas combine cell references, arithmetic operations, values, and/or functions used in a calculation. You must start the formula with an equal sign (=). In Figure 3, the data below the *Retail Price*, *Sale Price*, *Profit Amount*, and *Profit Margin* labels contain formulas. When a cell containing a formula is the active cell, the formula displays in the Formula Bar, and the result of the formula displays in the cell.

Edit and Clear Cell Contents

You can edit a cell's contents by doing one of the following:

- Click the cell, click in the Formula Bar, make the changes, and then click Enter (the check mark between the Name Box and the Formula Bar) to keep the cell the active cell.
- Double-click the cell, make changes in the cell, and then press Enter.
- Click the cell, press F2, make changes in the cell, and then press Enter.

You can clear a cell's contents by doing one of the following:

- Click the cell and press Delete.
- Click the cell, click Clear in the Editing group on the HOME tab, and then select Clear Contents.

**Quick
Concepts**



1. What are two major advantages of using an electronic spreadsheet instead of a paper-based ledger?
 2. What visual indicators let you know which cell is the active cell?
 3. What steps should you perform before entering data into a worksheet?
 4. What are four major things you can enter into a cell? Give an example (different from those in the text) for each type.
-

Hands-On Exercises



1 Introduction to Spreadsheets

As the assistant manager of OKOS, you need to create a worksheet that shows the cost (the amount OKOS pays its suppliers), the markup percentage (the amount by which the cost is increased), and the retail selling price. You also need to list the discount percentage (such as 25% off) for each product, the sale price, and the profit margin percentage.

Skills covered: Enter Text • Enter Values • Enter a Date and Clear Cell Contents

STEP 1 >> ENTER TEXT

Now that you have planned the OKOS worksheet, you are ready to enter labels for the title, column labels, and row labels. You will type a title in cell A1, product labels in the first column, and row labels in the fourth row. Refer to Figure 3 as you complete Step 1.

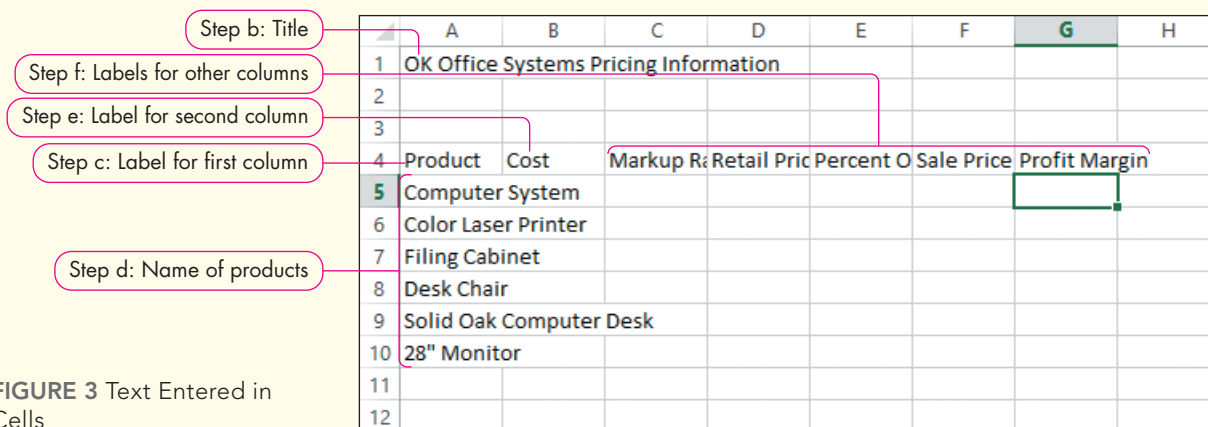


FIGURE 3 Text Entered in Cells

- Start Excel and open a new blank workbook. Save the new workbook as **e01h1Markup_LastFirst**.

When you save files, use your last and first names. For example, as the Excel author, I would save my workbook as *e01h1Markup_MulberyKeith*.

- Type **OK Office Systems Pricing Information** in cell **A1** and press **Enter**.

When you press Enter, the next cell down—cell A2 in this case—becomes the active cell. The text does not completely fit in cell A1, and some of the text appears in cells B1, C1, D1, and possibly E1. If you make cell B1, C1, D1, or E1 the active cell, the Formula Bar is empty, indicating that nothing is stored in those cells.

- Click cell **A4**, type **Product**, and then press **Enter**.
- Continue typing the rest of the text in cells **A5** through **A10** as shown in Figure 4. Text in column A appears to flow into column B.

When you start typing *Co* in cell A6, AutoComplete displays a ScreenTip suggesting a previous text entry starting with *Co*—*Computer System*—but keep typing to enter *Color Laser Printer* instead. You just entered the product labels to describe the data in each row.

- Click cell **B4** to make it the active cell. Type **Cost** and press **Tab**.

Instead of pressing Enter to move down column B, you pressed Tab to make the cell to the right the active cell.

- f. Type the following text in the respective cells, pressing **Tab** after typing each of the first four column labels and pressing **Enter** after the last column label:
- **Markup Rate** in cell C4
 - **Retail Price** in cell D4
 - **Percent Off** in cell E4
 - **Sale Price** in cell F4
 - **Profit Margin** in cell G4

The text looks cut off when you enter data in the cell to the right. Do not worry about this now. You will adjust column widths and formatting later in this chapter.

TROUBLESHOOTING: If you notice a typographical error, click in the cell containing the error and retype the label. Or press F2 to edit the cell contents, move the insertion point using the arrow keys, press Backspace or Delete to delete the incorrect characters, type the correct characters, and then press Enter. If you type a label in an incorrect cell, click the cell and press Delete.

- g. Save the changes you made to the workbook.

You should develop a habit of saving periodically. That way if your system unexpectedly shuts down, you will not lose everything you worked on.

STEP 2 >> ENTER VALUES

Now that you have entered the descriptive labels, you need to enter the cost, markup rate, and percent off for each product. Refer to Figure 4 as you complete Step 2.

	A	B	C	D	E	F	G	H
1	OK Office Systems Pricing Information							
2								
3								
4	Product	Cost	Markup Rate	Retail Price	Percent Off	Sale Price	Profit Margin	
5	Computer	400	0.5		0.15			
6	Color Laser	457.7	0.75		0.2			
7	Filing Cab	68.75	0.905		0.1			
8	Desk Chair	75	1		0.25			
9	Solid Oak	700	1.857		0.3			
10	28" Monitor	195	0.835		0.1			
11								
12								

FIGURE 4 Values Entered in Cells

- Click cell B5, type 400, and then press **Enter**.
- Type the remaining costs in cells B6 through B10 shown in Figure 4.

TIP Numeric Keypad

To improve your productivity, use the number keypad (if available) on the right side of your keyboard. It is much faster to type values and press Enter on the number keypad rather than using the numbers on the keyboard. Make sure Num Lock is active before using the number keypad to enter values.

- c. Click **cell C5**, type **0.5**, and then press **Enter**.

You entered the markup rate as a decimal instead of a percentage. You will apply Percent Style later, but now you can concentrate on data entry. When you enter decimal values less than zero, you can type the period and value without typing the zero first, such as .5. Excel will automatically add the zero. You can also enter percentages as 50%, but the approach this textbook takes is to enter raw data without typing formatting such as % and to use number formatting options through Excel to display formatting symbols.

- d. Type the remaining markup rates in **cells C6 through C10** as shown in Figure 4.

- e. Click **cell E5**, type **0.15**, and then press **Enter**.

You entered the Percent Off or markdown sale value as a decimal.

- f. Type the remaining Percent Off values in **cells E6 through E10** as shown in Figure 4 and save the workbook.

STEP 3 >> ENTER A DATE AND CLEAR CELL CONTENTS

As you review the worksheet, you realize you need to provide a date to indicate when the sale starts. Refer to Figure 5 as you complete Step 3.

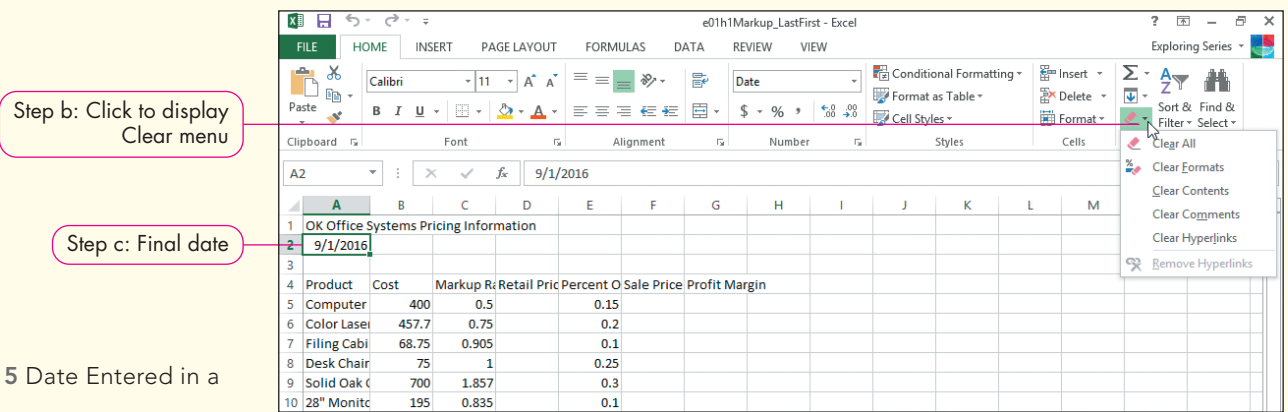


FIGURE 5 Date Entered in a Cell

- a. Click **cell A2**, type **9/1**, and then press **Enter**.

The date aligns on the right cell margin by default. Excel displays *1-Sep* instead of *9/1*.

- b. Click **cell A2**, click **Clear** in the Editing group on the HOME tab, and then select **Clear All**.

The Clear All command clears both cell contents and formatting in the selected cell(s).

- c. Type **9/1/2016** in **cell A2** and press **Enter**.

TROUBLESHOOTING: If you did not use Clear All and typed *9/1/2016* in cell A2, Excel would have retained the previous date format and displayed *1-Sep* again.

- d. Save the workbook. Keep the workbook open if you plan to continue with the next Hands-On Exercise. If not, close the workbook and exit Excel.

Mathematics and Formulas

Formulas transform static numbers into meaningful results that can update as values change. For example, a payroll manager can build formulas to calculate the gross pay, deductions, and net pay for an organization's employees, or a doctoral student can create formulas to perform various statistical calculations to interpret his or her research data.

You can use formulas to help you analyze how results will change as the input data change. You can change the value of your assumptions or inputs and explore the results quickly and accurately. For example, if the interest rate changes from 4% to 5%, how would that affect your monthly payment? Analyzing different input values in Excel is easy after you build formulas. Simply change an input value and observe the change in the formula results.

In this section, you will learn how to use mathematical operations in Excel formulas. You will refresh your memory of mathematical order of precedence and how to construct formulas using cell addresses so that when the value of an input cell changes, the result of the formula changes without you having to modify the formula.

Creating Formulas

Start a formula by typing the equal sign (=), followed by the arithmetic expression. Do not include a space before or after the arithmetic operator. Figure 6 shows a worksheet containing data and results of formulas. The figure also displays the actual formulas used to generate the calculated results. For example, cell E2 contains the formula =B2+B3. Excel uses the value stored in cell B2 (10) and adds it to the value stored in cell B3 (2). The result—12—appears in cell E2 instead of the actual formula. The Formula Bar displays the formula entered into the active cell.

	A	B	C	D	E	F
1	Description	Values		Description	Results	Formulas in Column E
2	First input value	10		Sum of 10 and 2	12	=B2+B3
3	Second input value	2		Difference between 10 and 2	8	=B2-B3
4				Product of 10 and 2	20	=B2*B3
5				Results of dividing 10 by 2	5	=B2/B3
6				Results of 10 to the 2nd power	100	=B2^B3

FIGURE 6 Formula Results

TROUBLESHOOTING: If you type B2+B3 without the equal sign, Excel does not recognize that you entered a formula and stores the data as text.

Use Cell References in Formulas

STEP 1 >>

You should use cell references instead of values in formulas where possible. You may include values in an input area—such as dates, salary, or costs—that you will need to reference in formulas. Referencing these cells in your formulas, instead of typing the value of the cell to which you are referring, keeps your formulas accurate if the values change.

STEP 2 >>

STEP 3 >>

When you create a formula, you can type the cell references in uppercase, such as =B2+B3, or lowercase, such as =b2+b3. Excel changes cell references to uppercase.

In Figure 6, cell B2 contains 10, and cell B3 contains 2. Cell E2 contains =B2+B3 but shows the result, 12. If you change the value of cell B3 to 5, cell E2 displays the new result, which is 15. However, if you had typed actual values in the formula, =10+2, you would have to edit the formula each time an input value changes. This would be problematic, as you might forget to edit the formula or you might make a typographical error if you edit the formula. Always design worksheets in such a way as to be able to change input values without having to modify your formulas if an input value changes later.



Constants in Formulas

Use cell references instead of actual values in formulas, unless the value is a constant. For example, assume that 25% is stored in cell D10. To calculate the reciprocal of 25%, type `=1-D10`. The constant, 1, represents 100%, a value that never changes, although the percentage in cell D10 might change. In this situation, 100% – 25% is 75%.

Apply the Order of Precedence

The *order of precedence* (also called order of operations) is a rule that controls the sequence in which arithmetic operations are performed, which affects the results of the calculation. Excel performs mathematical calculations left to right in this order: **P**ercent, **E**xponentiation, **M**ultiplication or **D**ivision, and finally **A**ddition or **S**ubtraction. Some people remember the order of precedence with the phrase *Please Excuse My Dear Aunt Sally*.

Table 3 lists the complete order of precedence. This chapter focuses on orders 4, 5, and 6.

TABLE 3 Order of Precedence

Order	Description	Symbols
1	Reference Operators	colon (:), space, and comma (,)
2	Negation	-
3	Percent	%
4	Exponentiation	^
5	Multiplication and Division	* and / (respectively)
6	Addition and Subtraction	+ and – (respectively)
7	Concatenation	ampersand symbol (&) to connect two text strings
8	Comparison	Equal sign (=), greater than (>), and less than (<)



Parentheses in Formulas

You can change the order of operations by using parentheses. For example, to add the values in cells A1 and A2 and multiply that result by the value in cell A3, enclose parentheses around the addition operation: `=(A1+A2)*A3`. Without parentheses, multiplication has a higher order of precedence than addition and will be calculated first.

Figure 7 shows formulas, the sequence in which calculations occur, calculations, the description, and the results of each order of precedence. The highlighted results are the final formula results. This figure illustrates the importance of symbols and use of parentheses.

	A	B	C	D	E	F
1	Input		Formula	Sequence	Description	Result
2	2		=A2+A3*A4+A5	1	3 (cell A3) * 4 (cell A4)	12
3	3			2	2 (cell A2) + 12 (order 1)	14
4	4			3	14 (order 2) + 5 (cell A5)	19
5	5					
6			=(A2+A3)*(A4+A5)	1	2 (cell A2) + 3 (cell A3)	5
7				2	4 (cell A4) + 5 (cell A5)	9
8				3	5 (order 1) * 9 (order 2)	45
9						
10			=A2/A3+A4*A5	1	2 (cell A2) / 3 (cell A3)	0.666667
11				2	4 (cell A4) * 5 (cell A5)	20
12				3	0.666667 (order 1) + 20 (order 2)	20.66667
13						
14			=A2/(A3+A4)*A5	1	3 (cell A3) + 4 (cell A4)	7
15				2	2 (cell A2) / 7 (order 1)	0.285714
16				3	0.285714 (order 2) * 5 (cell A5)	1.428571
17						
18			=A2^2+A3*A4%	1	4 (cell A4) is converted to percentage	0.04
19				2	2 (cell A2) to the power of 2	4
20				3	3 (cell A3) * 0.04 (order 1)	0.12
21				4	4 (order 2) + 0.12 (order 3)	4.12

FIGURE 7 Formula Results Based on Order of Precedence

Use Semi-Selection to Create a Formula

To decrease typing time and ensure accuracy, you can use *semi-selection*, a process of selecting a cell or range of cells for entering cell references as you create formulas. Semi-selection is often called *pointing* because you use the mouse pointer to select cells as you build the formula. To use the semi-selection technique to create a formula, do the following:

1. Click the cell where you want to create the formula.
2. Type an equal sign (=) to start a formula.
3. Click the cell or drag to select the cell range that contains the value(s) to use in the formula. A moving marquee appears around the cell or range you select, and Excel displays the cell or range reference in the formula.
4. Type a mathematical operator.
5. Continue clicking cells, selecting ranges, and typing operators to finish the formula. Use the scroll bars if the cell is in a remote location in the worksheet, or click a worksheet tab to see a cell in another worksheet.
6. Press Enter to complete the formula.

Using Auto Fill

Auto Fill enables you to copy the contents of a cell or a range of cells by dragging the *fill handle* (a small green square appearing in the bottom-right corner of the active cell) over an adjacent cell or range of cells. To use Auto Fill, do the following:

1. Click the cell with the content you want to copy to make it the active cell.
2. Point to the fill handle in the bottom-right corner of the cell until the mouse pointer changes to the fill pointer (a thin black plus sign).
3. Drag the fill handle to repeat the content in other cells.

Copy Formulas with Auto Fill

STEP 4

After you enter a formula in a cell, you can duplicate the formula without retyping it by using the fill handle to copy the formula in the active cell down a column or across a row, depending on how the data are organized. Excel adapts each copied formula based on the type of cell references in the original formula.

Complete Sequences with Auto Fill

You can also use Auto Fill to complete a sequence. For example, if you enter January in a cell, you can use Auto Fill to enter the rest of the months in adjacent cells. Other sequences you can complete are quarters (Qtr 1, etc.), weekdays, and weekday abbreviations, by typing the first item and using Auto Fill to complete the other entries. For numeric sequences, however, you must specify the first two values in sequence. For example, if you want to fill in 5, 10, 15, and so on, you must enter 5 and 10 in two adjacent cells, select the two cells, and then use Auto Fill so that Excel knows to increment by 5. Figure 8 shows the results of filling in months, abbreviated months, quarters, weekdays, abbreviated weekdays, and increments of 5.

	A	B	C	D	E	F	G	H	I
1	January	Jan	Qtr 1	Monday	Mon	5			
2	February	Feb	Qtr 2	Tuesday	Tue	10			
3	March	Mar	Qtr 3	Wednesday	Wed	15			
4	April	Apr	Qtr 4	Thursday	Thu	20			
5	May	May		Friday	Fri	25			
6	June	Jun		Saturday	Sat	30			
7	July	Jul		Sunday	Sun	35			
8	August	Aug							
9	September	Sep							
10	October	Oct							
11	November	Nov							
12	December	Dec							
13									
14									
15									

FIGURE 8 Auto Fill Examples

Immediately after you use Auto Fill, Excel displays the Auto Fill Options button in the bottom-right corner of the filled data (see Figure 8). Click Auto Fill Options to display five fill options: Copy Cells, Fill Series, Fill Formatting Only, Fill Without Formatting, or Flash Fill.



Double-Clicking the Fill Handle

You can double-click the fill handle to quickly copy a formula down a column. Excel will copy the formula in the active cell for each row of data to calculate in your worksheet.

Displaying Cell Formulas

Excel shows the result of the formula in the cell (see the top half of Figure 9); however, you might want to display the formulas instead of the calculated results in the cells (see the bottom half of Figure 9). To display cell formulas, do one of the following:

STEP 5 >>

- Press Ctrl and the grave accent (`) key, sometimes referred to as the tilde (~) key, in the top-left corner of the keyboard, below the Esc key.
- Click Show Formulas in the Formula Auditing group on the FORMULAS tab.

To hide the formulas and display the formula results again, repeat the preceding process.

Results of formulas

The top screenshot shows the results of formulas for a table of electronics products. The bottom screenshot shows the same table with formulas entered in the cells.

Product	Cost	Markup Rate	Retail Price	Percent Off	Sale Price	Profit Amount	Profit Margin
Electronics							
Computer System	\$ 475.50	50.0%	\$ 713.25	15%	\$ 606.26	\$ 130.76	21.6%
Colour Laser Printer	\$ 457.70	75.5%	\$ 803.26	20%	\$ 642.61	\$ 184.91	28.8%
28" Monitor	\$ 195.00	83.5%	\$ 357.83	10%	\$ 322.04	\$ 127.04	39.4%

Product	Cost	Markup Rate	Retail Price	Percent Off	Sale Price	Profit Amount	Profit Margin
Computer System	475.5	0.5	=B5*(1+C5)	0.15	=D5-D5*E5	=F5-B5	=(F5-B5)/F5
Colour Laser Printer	457.7	0.755	=B6*(1+C6)	0.2	=D6-D6*E6	=F6-B6	=(F6-B6)/F6
28" Monitor	195	0.835	=B7*(1+C7)	0.1	=D7-D7*E7	=F7-B7	=(F7-B7)/F7

FIGURE 9 Formulas and Formula Results

Quick Concepts

1. What is the order of precedence? Provide and explain two examples that use four different operators, one with parentheses and one without.
2. What is the purpose of Auto Fill? Provide an example of data you can complete using Auto Fill.
3. Why would it be useful to display formulas instead of formula results in a worksheet?

Hands-On Exercises



2 Mathematics and Formulas

In Hands-On Exercise 1, you created the basic worksheet for OKOS by entering text, values, and a date for items on sale. Now you need to insert formulas to calculate the missing results—specifically, the retail (before sale) value, sale price, and profit margin. You will use cell addresses in your formulas, so when you change a referenced value, the formula results will update automatically.

Skills covered: Use Cell References in a Formula and Apply the Order of Precedence • Use the Semi-Selection Method to Enter a Formula • Use Cell References in a Formula and Apply the Order of Precedence • Copy Formulas with Auto Fill • Change Values and Display Cell Formulas

STEP 1 >> USE CELL REFERENCES IN A FORMULA AND APPLY THE ORDER OF PRECEDENCE

The first formula you need to create will calculate the retail price. The retail price is the price you originally charge. It is based on a percentage of the original cost so that you earn a profit. Refer to Figure 10 as you complete Step 1.

Step d: Enter command blue when mouse is over it

Step d: Formula displayed in Formula Bar

Step c: Red border and red cell reference

Step c: Blue border and blue cell reference

Product	Cost	Markup	R: Retail Price	Percent O	Sale Price	Profit Margin
Computer	400	0.5	=B5*(1+C5)			
Color Laser	457.7	0.75		0.2		
Filing Cabi	68.75	0.905		0.1		
Desk Chair	75	1		0.25		
Solid Oak C	700	1.857		0.3		
28" Monitc	195	0.835		0.1		

FIGURE 10 Retail Price Formula

- a. Open *e01h1Markup_LastFirst* if you closed it at the end of Hands-On Exercise 1 and save it as *e01h2Markup_LastFirst*, changing *h1* to *h2*.

TROUBLESHOOTING: If you make any major mistakes in this exercise, you can close the file, open *e01h1Markup_LastFirst* again, and then start this exercise over.

- b. Click cell D5, the cell where you will enter the formula to calculate the retail selling price of the first item.
- c. Type `=B5*(1+C5)` and view the formula and the coloured cells and borders on the screen.

As you type or edit a formula, each cell address in the formula displays in a specific colour, and while you type or edit the formula, the cells referenced in the formula have a temporarily coloured border. For example, in the formula `=B5*(1+C5)`, B5 appears in blue, and C5 appears in red. Cell B5 has a temporarily blue border and cell C5 has a temporarily red border to help you identify cells as you construct your formulas (see Figure 10).



Alternative Formula

An alternative formula also calculates the correct retail price: $=B5*C5+B5$ or $=B5+B5*C5$. In this formula, 400 (cell B5) is multiplied by 0.5 (cell C5); that result (200) represents the dollar value of the markup. Excel adds the value 200 to the original cost of 400 to obtain 600, the retail price. You were instructed to enter $=B5*(1+C5)$ to demonstrate the order of precedence.

- d. Click **Enter** (the check mark between the Name Box and the Formula Bar) and view the formula in the Formula Bar to check it for accuracy.

The result of the formula, 600, appears in cell D5, and the formula displays in the Formula Bar. This formula first adds 1 (the decimal equivalent of 100%) to 0.5 (the value stored in cell C5). Excel multiplies that sum of 1.5 by 400 (the value stored in cell B5). The theory behind this formula is that the retail price is 150% of the original cost.

TROUBLESHOOTING: If the result is not correct, click the cell and look at the formula in the Formula Bar. Click in the Formula Bar, edit the formula to match the formula shown in Step c, and then click Enter (the check mark between the Name Box and the Formula Bar). Make sure you start the formula with an equal sign.

- e. Save the workbook with the new formula.

STEP 2 >> USE THE SEMI-SELECTION METHOD TO ENTER A FORMULA

Now that you have calculated the retail price, you need to calculate a sale price. This week, the computer is on sale for 15% off the retail price. Refer to Figure 11 as you complete Step 2.

	A	B	C	D	E	F	G	H
1	OK Office Systems Pricing Information							
2	9/1/2016							
3								
4	Product	Cost	Markup R	Retail Pric	Percent O	Sale Price	Profit Margin	
5	Computer	400	0.5	600	0.15	510		
6	Color Laser	457.7	0.75		0.2			
7	Filing Cabi	68.75	0.905		0.1			
8	Desk Chair	75	1		0.25			
9	Solid Oak C	700	1.857		0.3			
10	28" Monitc	195	0.835		0.1			
11								

Formula Bar: F5 =D5-D5*E5

Step b: Formula in Formula Bar

Step b: Result of formula in cell

FIGURE 11 Sale Price Formula

- a. Click cell F5, the cell where you will enter the formula to calculate the sale price.
- b. Type =, click cell D5, type -, click cell D5, type *, and then click cell E5. Notice the colour-coding in the cell addresses. Press **Ctrl+Enter** to keep the current cell the active cell.

You used the semi-selection method to enter a formula. The result is 510. Looking at the formula, you might think $D5-D5$ equals zero; remember that because of the order of precedence rules, multiplication is calculated before subtraction. The product of 600 (cell D5) and 0.15 (cell E5) equals 90, which is then subtracted from 600 (cell D5), so the sale price is 510. If it helps to understand the formula better, add parentheses: $=D5-(D5*E5)$.

- c. Save the workbook with the new formula.



Spot-Check Your Work

You should check the result for logic. Use a calculator to spot-check the accuracy of formulas. If you mark down merchandise by 15% of its regular price, you are charging 85% of the regular price. You can spot-check your formula to ensure that 85% of 600 is 510 by multiplying 600 by 0.85.

STEP 3 >> USE CELL REFERENCES IN A FORMULA AND APPLY THE ORDER OF PRECEDENCE

After calculating the sale price, you want to know the profit margin OKOS will earn. OKOS paid \$400 for the computer and will sell it for \$510. The profit of \$110 is then divided by the \$400 cost, which gives OKOS a profit margin of 21.57%. Refer to Figure 12 as you complete Step 3.

The screenshot shows an Excel spreadsheet with the following data:

Product	Cost	Markup R	Retail Price	Percent O	Sale Price	Profit Margin
Computer	400	0.5	600	0.15	510	0.215686
Color Laser	457.7	0.75		0.2		
Filing Cabinet	68.75	0.905		0.1		
Desk Chair	75	1		0.25		
Solid Oak	700	1.857		0.3		
28" Monitor	195	0.835		0.1		

The formula bar shows the formula $= (F5 - B5) / F5$. Callouts indicate: 'Step b: Formula in Formula Bar' pointing to the formula bar, and 'Step b: Result of formula in cell' pointing to the value 0.215686 in cell G5.

FIGURE 12 Profit Margin Formula

- Click cell G5, the cell where you will enter the formula to calculate the profit margin.
The profit margin is the profit (difference in sales price and cost) percentage of the sale price.
- Type $= (F5 - B5) / F5$ and notice the colour-coding in the cell addresses. Press **Ctrl+Enter**.
The formula must first calculate the profit, which is the difference between the sale price (510) and the original cost (400). The difference (110) is then divided by the sale price (510) to determine the profit margin of 0.215686, or 21.6%.

TROUBLESHOOTING: If you type a backslash (\) instead of a forward slash (/), Excel will display an error message box. Make sure you type / as the division operator.

- Look at the Formula Bar and save the workbook with the new formula.

STEP 4 >> COPY FORMULAS WITH AUTO FILL

After double-checking the accuracy of your calculations for the first product, you are ready to copy the formulas down the columns to calculate the retail price, sale price, and profit margin for the other products. Refer to Figure 13 as you complete Step 4.

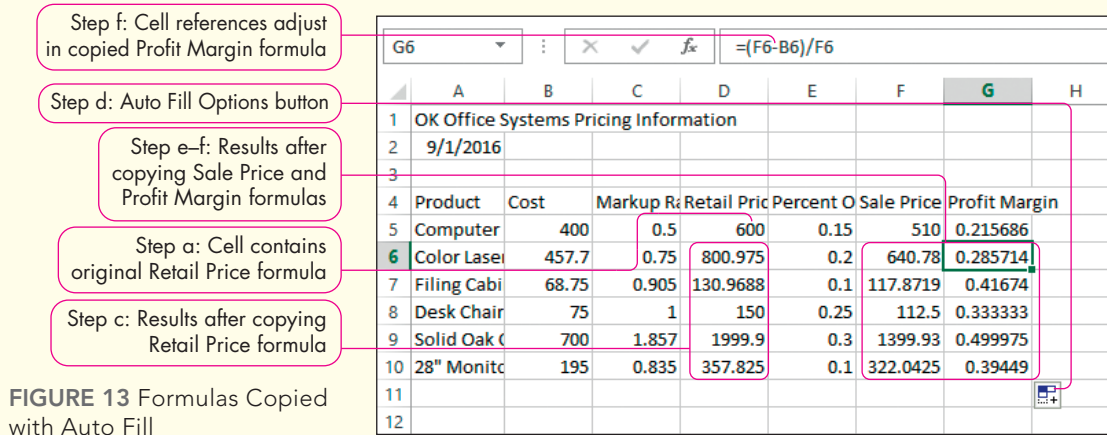


FIGURE 13 Formulas Copied with Auto Fill

- Click cell D5, the cell containing the formula to calculate the retail price for the first item.
- Position the mouse pointer on the cell D5 fill handle. When the pointer changes from a white plus sign to a thin black plus sign, double-click the fill handle.

Excel's Auto Fill feature copies the retail price formula for the remaining products in your worksheet. Excel detects when to stop copying the formula when it encounters a blank row, such as in row 11.

- Click cell D6, the cell containing the first copied retail price formula, and look at the Formula Bar.

The formula in cell D5 is $=B5*(1+C5)$. The copied formula in cell D6 is $=B6*(1+C6)$. Excel adjusts the cell addresses in the formula as it copies the formula down a column so that the results are based on each row's data rather than using the original formula's cell addresses for other products.

TROUBLESHOOTING: The result in cell D7 may show more decimal places than shown in Figure 13. This may be due to different screen resolutions. Do not worry about this slight difference.

- Select the range F5:G5. Double-click the fill handle in the bottom-right corner of cell G5.

Auto Fill copies the selected formulas down their respective columns. Auto Fill Options are available down and to the right of the cell G10 fill handle, indicating you could select different fill options if you want.

TROUBLESHOOTING: If Excel displays pound symbols, such as #####, instead of results, that means the column is not wide enough to show results. You will learn how to adjust column widths in the third section.

- Click cell F6, the cell containing the first copied sale price formula, and view the Formula Bar.

The original formula was $=D5-D5*E5$. The copied formula in cell F6 is adjusted to $=D6-D6*E6$ so that it calculates the sales price based on the data in row 6.

- Click cell G6, the cell containing the first copied profit margin formula, and look at the Formula Bar. Save the workbook.

The original formula was $=(F5-B5)/F5$, and the copied formula in cell G6 is $=(F6-B6)/F6$.

STEP 5 >> CHANGE VALUES AND DISPLAY CELL FORMULAS

You want to see how the prices and profit margins are affected when you change some of the original cost values. For example, the supplier might notify you that the cost to you will increase. In addition, you want to see the formulas displayed in the cells temporarily. Refer to Figures 14 and 15 as you complete Step 5.

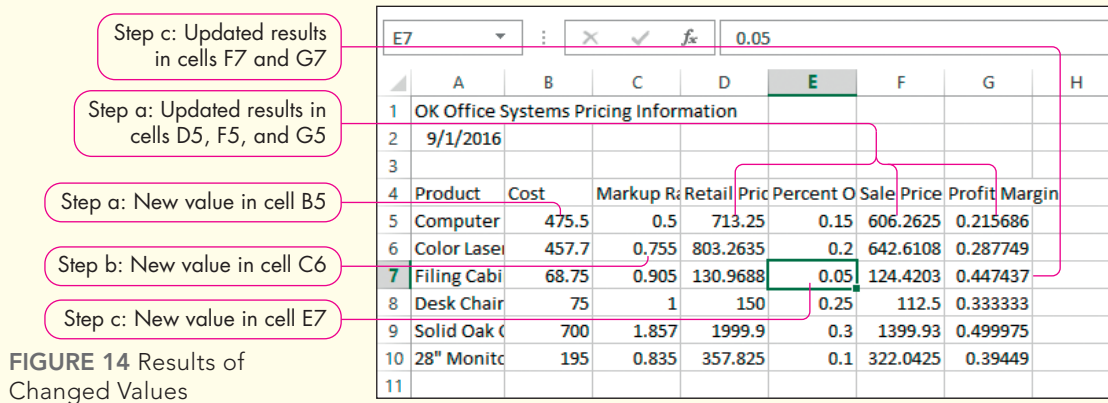


FIGURE 14 Results of Changed Values

- a. Click cell B5, type 475.5, and then press Enter.

The results of the retail price, sale price, and profit margin formulas change based on the new cost.

- b. Click cell C6, type 0.755, and then press Enter.

The results of the retail price, sale price, and profit margin formulas change based on the new markup rate.

- c. Click cell E7, type 0.05, and then press Ctrl+Enter.

The results of the sale price and profit margin formulas change based on the new markdown rate. Note that the retail price did not change, since that formula is not based on the markdown rate.

- d. Press Ctrl+` (the grave accent mark).

The workbook now displays the formulas rather than the formula results (see Figure 15). This is helpful when you want to review several formulas at one time.

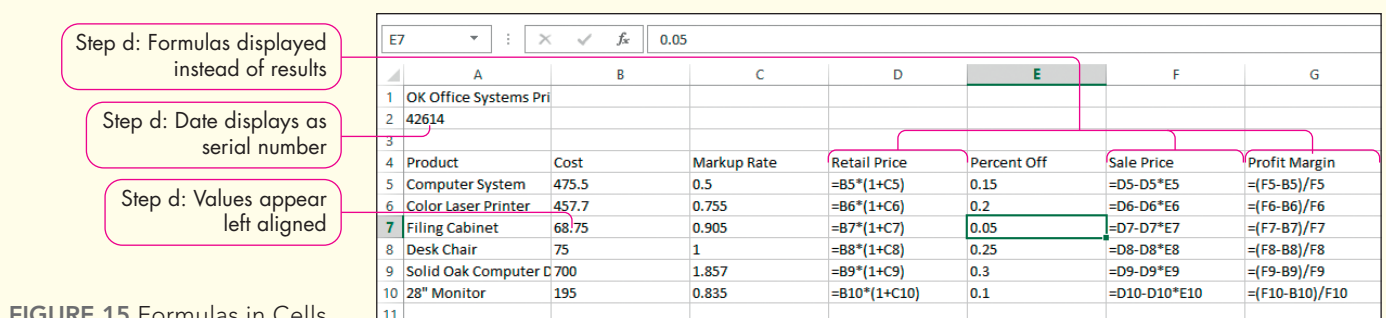


FIGURE 15 Formulas in Cells

- e. Press Ctrl+` (the grave accent mark).

The workbook now displays the formula results in the cells again.

- f. Save the workbook. Keep the workbook open if you plan to continue with the next Hands-On Exercise. If not, close the workbook and exit Excel.

Workbook and Worksheet Management

When you start a new blank workbook in Excel, the workbook contains one worksheet named Sheet1. However, you can add additional worksheets. The text, values, dates, and formulas you enter into the individual sheets are saved under one workbook file name. Having multiple worksheets in one workbook is helpful to keep related items together. For example, you might want one worksheet for each month to track your monthly income and expenses for one year. When tax time comes around, you have all your data stored in one workbook file.

Although you should plan the worksheet and workbook before you start entering data, you might need to add, delete, or rename worksheets. Furthermore, within a worksheet you may want to insert a new row to accommodate new data, delete a column that you no longer need, or adjust the size of columns and rows.

In this section, you will learn how to manage workbooks by renaming, inserting, and deleting worksheets. You will also learn how to make changes to worksheet columns and rows, such as inserting, deleting, and adjusting sizes.

Managing Worksheets

Creating a multiple-worksheet workbook takes some planning and maintenance. Worksheet tab names should reflect the contents of the respective worksheets. In addition, you can insert, copy, move, and delete worksheets within the workbook. You can even apply background colour to the worksheet tabs so that they stand out onscreen. Figure 16 shows a workbook in which the sheet tabs have been renamed, colours have been applied to worksheet tabs, and a worksheet tab has been right-clicked so that the shortcut menu appears.

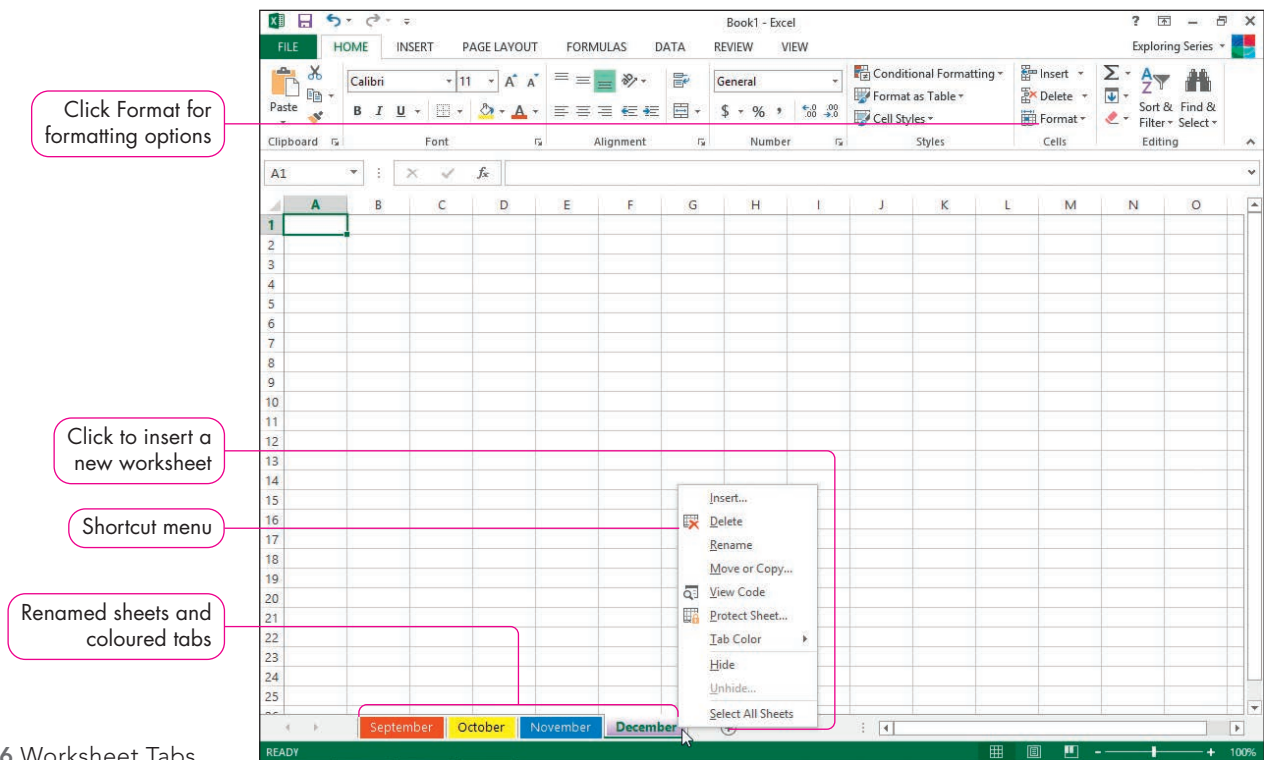


FIGURE 16 Worksheet Tabs

Rename a Worksheet

STEP 1

The default worksheet name Sheet1 does not describe the contents of the worksheet. You should rename worksheet tabs to reflect the sheet contents. For example, if your budget workbook contains monthly worksheets, name the worksheets September, October, etc. Although you can have spaces in worksheet names, keep worksheet names relatively short. The longer the worksheet names, the fewer sheet tabs you will see at the bottom of the workbook window without scrolling.

To rename a worksheet, do one of the following:

- Double-click a sheet tab, type the new name, and then press Enter.
- Click the sheet tab for the sheet you want to rename, click Format in the Cells group on the HOME tab (refer to Figure 16), select Rename Sheet (see Figure 17), type the new sheet name, and then press Enter.
- Right-click the sheet tab, select Rename from the shortcut menu (see Figure 16), type the new sheet name, and then press Enter.

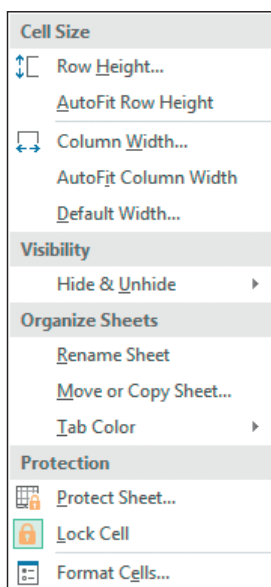


FIGURE 17 Format Menu

Change Worksheet Tab Colour

STEP 1

The active worksheet tab is white with a green bottom border. When you use multiple worksheets, you might want to apply a different colour to each worksheet tab to make the tab stand out or to emphasize the difference between sheets. For example, you might apply red to the September tab, green to the October tab, dark blue to the November tab, and purple to the December tab.

To change the colour of a worksheet tab, do one of the following:

- Click the sheet tab for the sheet you want to rename, click Format in the Cells group on the HOME tab (refer to Figure 16), point to Tab Color (refer to Figure 17), and then click a colour on the Tab Color palette.
- Right-click the sheet tab, point to Tab Color on the shortcut menu (refer to Figure 16), and then click a colour on the Tab Color palette.

Insert and Delete a Worksheet

STEP 2

Sometimes you need more than one worksheet in the workbook. For example, you might create a workbook that contains 12 worksheets—a worksheet for each month of the year. To insert a new worksheet, do one of the following:

- Click *New sheet* to the right of the last worksheet tab.
- Click the Insert arrow—either to the right or below Insert—in the Cells group on the HOME tab and select Insert Sheet.
- Right-click any sheet tab, select Insert from the shortcut menu (refer to Figure 16), click Worksheet in the Insert dialog box, and then click OK.
- Press Shift+F11.



Ribbon Commands with Arrows

Some commands, such as Insert in the Cells group, contain two parts: the main command and an arrow. The arrow may be below or to the right of the command, depending on the command, window size, or screen resolution. Instructions in the Exploring Series use the command name to instruct you to click the main command to perform the default action, such as *Click Insert in the Cells group* or *Click Delete in the Cells group*. Instructions include the word *arrow* when you need to select an additional option, such as *Click the Insert arrow in the Cells group* or *Click the Delete arrow in the Cells group*.

If you no longer need the data in a worksheet, delete the worksheet. Doing so will eliminate extra data in a file and reduce file size. To delete a worksheet in a workbook, do one of the following:

- Click the Delete arrow—either to the right or below Delete—in the Cells group on the HOME tab and select Delete Sheet.
- Right-click any sheet tab and select Delete from the shortcut menu (refer to Figure 16).

If the sheet you are trying to delete contains data, Excel will display a warning: *You can't undo deleting sheets, and you might be removing some data. If you don't need it, click Delete.* If you try to delete a blank worksheet, Excel will not display a warning; it will immediately delete the sheet.

Move or Copy a Worksheet

After inserting and deleting worksheets, you can arrange the worksheet tabs in a different sequence, especially if the newly inserted worksheets do not fall within a logical sequence. To move a worksheet, do one of the following:

- Drag a worksheet tab to the desired location. As you drag a sheet tab, the pointer resembles a piece of paper. A down-pointing triangle appears between sheet tabs to indicate where the sheet will be placed when you release the mouse button.
- Click Format in the Cells group on the HOME tab (refer to Figure 16) and select *Move or Copy Sheet*, or right-click the sheet tab you want to move and select *Move or Copy* to display the Move or Copy dialog box (see Figure 18). You can move the worksheet within the current workbook, or you can move the worksheet to a different workbook. In the *Before sheet* list, select the worksheet you want to come after the moved worksheet and click OK. For example, you have just created a new worksheet named August and you want it to come before the September worksheet. You would select September in the *Before sheet* list.

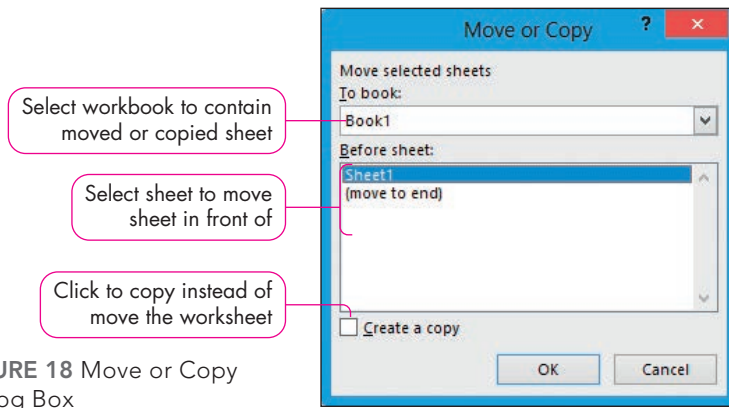


FIGURE 18 Move or Copy Dialog Box

After creating a worksheet, you may want to copy it to use as a template or starting point for similar data. For example, if you create a worksheet for your September budget, you can copy the worksheet and then easily edit the data on the copied worksheet to enter data for your October budget. Copying the entire worksheet would save you a lot of valuable time in entering and formatting the new worksheet. The process for copying a worksheet is similar to moving a sheet. To copy a worksheet, press and hold Ctrl as you drag the worksheet tab. Alternatively, display the Move or Copy dialog box, select the *To book* and *Before sheet* options (refer to Figure 18), click the *Create a copy* check box, and then click OK.

Managing Columns and Rows

As you enter and edit worksheet data, you can adjust the row and column structure. You can add rows and columns to add new data, or you can delete data you no longer need. Adjusting the height and width of rows and columns, respectively, can present the data better.

Insert Cells, Columns, and Rows

STEP 3 >>

After you construct a worksheet, you might need to insert cells, columns, or rows to accommodate new data. For example, you might need to insert a new column to perform calculations or a new row to list a new product. When you insert cells, rows, and columns, cell addresses in formulas adjust automatically.

To insert a new column or row, do one of the following:

- Click in the column or row for which you want to insert a new column to the left or a new row above, respectively. Click the Insert arrow in the Cells group on the HOME tab and select Insert Sheet Columns or Insert Sheet Rows.
- Right-click the column (letter) or row (number) heading for which you want to insert a new column to the left or a new row above, respectively, and select Insert from the shortcut menu.

Excel inserts new columns to the left of the current column and new rows above the active row. If the current column is column C and you insert a new column, the new column becomes column C, and the original column C data are now in column D. Likewise, if the current row is 5 and you insert a new row, the new row is row 5, and the original row 5 data are now in row 6.

Inserting a cell is helpful when you realize that you left out an entry in one column after you have entered columns of data. Instead of inserting a new row for all columns, you just want to move the existing content down in one column to enter the missing value. You can insert a single cell in a particular row or column. To insert a cell, click in the cell where you want the new cell, click the Insert arrow in the Cells group on the Home tab, and then select Insert Cells. Select an option from the Insert dialog box (see Figure 19) to position the new cell and click OK. Alternatively, click Insert in the Cells group. The default action of

clicking Insert is to insert a cell at the current location, which moves existing data down in that column only.

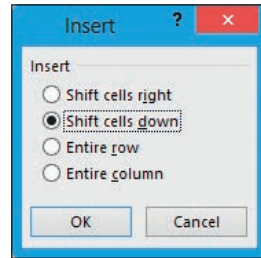


FIGURE 19 Insert Dialog Box

Delete Cells, Columns, and Rows

STEP 4

If you no longer need a cell, column, or row, you can delete it. In these situations, you are deleting the entire cell, column, or row, not just the contents of the cell to leave empty cells. As with inserting new cells, any affected formulas adjust the cell references automatically. To delete a column or row, do one of the following:

- Click the column or row heading for the column or row you want to delete. Click Delete in the Cells group on the HOME tab.
- Click in any cell within the column or row you want to delete. Click the Delete arrow in the Cells group on the HOME tab and select Delete Sheet Columns or Delete Sheet Rows, respectively.
- Right-click the column letter or row number for the column or row you want to delete and select Delete from the shortcut menu.

To delete a cell or cells, select the cell(s), click the Delete arrow in the Cells group, and then select Delete Cells to display the Delete dialog box (see Figure 20). Click the appropriate option to shift cells left or up and click OK. Alternatively, click Delete in the Cells group. The default action of clicking Delete is to delete the active cell, which moves existing data up in that column only.

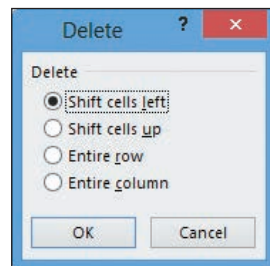


FIGURE 20 Delete Dialog Box

Adjust Column Width

STEP 5

After you enter data in a column, you often need to adjust the *column width*—the number of characters that can fit horizontally using the default font or the number of horizontal pixels—to show the contents of cells. For example, in the worksheet you created in Hands-On Exercises 1 and 2, the labels in column A displayed into column B when those adjacent cells were empty. However, after you typed values in column B, the labels in column A appeared cut off. You will need to widen column A to show the full name of all of your products.



TIP Pound Signs Displayed

Numbers appear as a series of pound signs (#####) when the cell is too narrow to display the complete value, and text appears to be truncated.

To widen a column to accommodate the longest label or value in a column, do one of the following:

- Position the pointer on the vertical border between the current column heading and the next column heading. When the pointer displays as a two-headed arrow, double-click the border. For example, if column B is too narrow to display the content in that column, double-click the border between the column B and C headings.
- Click Format in the Cells group on the HOME tab (refer to Figure 16) and select AutoFit Column Width (refer to Figure 17).

To widen a column to an exact width, do one of the following:

- Drag the vertical border to the left to decrease the column width or to the right to increase the column width. As you drag the vertical border, Excel displays a ScreenTip specifying the width (see Figure 21) from 0 to 255 characters and in pixels.
- Click Format in the Cells group on the HOME tab (refer to Figure 16), select Column Width (refer to Figure 17), type a value in the Column width box in the Column Width dialog box, and then click OK.

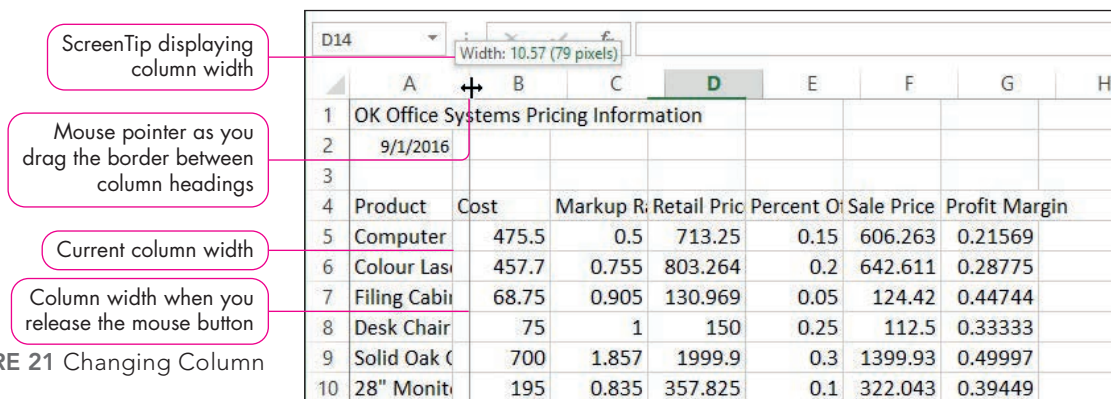


FIGURE 21 Changing Column Width

Adjust Row Height

When you increase the font size of cell contents, Excel automatically increases the **row height**—the vertical measurement of the row. However, if you insert a line break or wrap text to create multiple lines of text in a cell, Excel might not increase the row height. You can adjust the row height in a way similar to how you change column width by double-clicking the border between row numbers or by selecting Row Height or AutoFit Row Height from the Format menu (refer to Figure 17). In Excel, row height is a value between 0 and 409 based on point size (abbreviated as *pt*) and pixels. Whether you are measuring font sizes or row heights, one point size is equal to 1/183 of a centimetre (1/72 of an inch). Your row height should be taller than your font size. For example, with an 11-pt font size, the default row height is 15.



TIP Multiple Column Widths and Row Heights

You can set the size for more than one column or row at a time to make the selected columns or rows the same size. Drag across the column or row headings for the area you want to format, and then set the size using any method.

Hide and Unhide Columns and Rows

STEP 6

If your worksheet contains confidential information, you might need to hide some columns and/or rows before you print a copy for public distribution. However, the column or row is not deleted. If you hide column B, you will see columns A and C side by side. If you hide row 3, you will see rows 2 and 4 together. Figure 22 shows that column B and row 3 are hidden. Excel displays a double line between **column headings** (such as between A and C), indicating one or more columns are hidden, and a double line between row headings (such as between 2 and 4), indicating one or more rows are hidden.

Double vertical line indicates hidden column

Double horizontal line indicates hidden row

	A	C	D
1			
2			
4			
5			

FIGURE 22 Hidden Column and Row

To hide a column or row, do one of the following:

- Click in the column or row you want to hide, click Format in the Cells group on the HOME tab (refer to Figure 16), point to Hide & Unhide (refer to Figure 17), and then select Hide Columns or Hide Rows, depending on what you want to hide.
- Right-click the column or row heading(s) you want to hide and select Hide.

You can hide multiple columns and rows at the same time. To select adjacent columns (such as columns B through E) or adjacent rows (such as rows 2 through 4), drag across the adjacent column or row headings. To hide nonadjacent columns or rows, press and hold Ctrl while you click the desired column or row headings. After selecting multiple columns or rows, use any acceptable method to hide the selected columns or rows.

To unhide a column or row, select the columns or rows on both sides of the hidden column or row. For example, if column B is hidden, drag across column letters A and C. Then do one of the following:

- Click Format in the Cells group on the HOME tab (refer to Figure 16), point to Hide & Unhide (refer to Figure 17), and then select Unhide Columns or Unhide Rows, depending on what you want to display again.
- Right-click the column(s) or row(s) you want to hide and select Unhide.



TIP Unhiding Column A, Row 1, and All Hidden Rows/Columns

Unhiding column A or row 1 is different because you cannot select the row or column on either side. To unhide column A or row 1, type A1 in the Name Box and press Enter. Click Format in the Cells group on the Home tab, point to Hide & Unhide, and then select Unhide Columns or Unhide Rows to display column A or row 1, respectively. If you want to unhide all columns and rows, click Select All and use the Hide & Unhide submenu.

Quick Concepts



1. What is the benefit of renaming a worksheet?
2. What are two ways to insert a new row in a worksheet?
3. How can you delete cell B5 without deleting the entire row or column?
4. When should you adjust column widths instead of using the default width?

Hands-On Exercises



3 Workbook and Worksheet Management

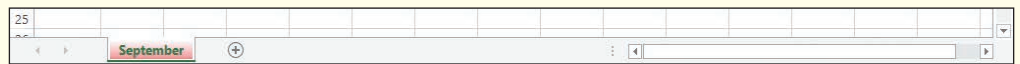
After reviewing the OKOS worksheet, you decide to rename the worksheet, change the worksheet tab colour, insert a worksheet, and delete an empty worksheet. In addition, you need to insert a column to calculate the amount of markup and delete a row containing data you no longer need. You also need to adjust column widths to display the labels in the columns.

Skills covered: Rename a Worksheet and Select a Tab Colour • Insert, Move, and Delete a Worksheet • Insert a Column and Rows • Delete a Row • Adjust Column Width and Row Height • Hide and Unhide Columns

STEP 1 >> RENAME A WORKSHEET AND SELECT A TAB COLOUR

You want to rename Sheet1 to describe the worksheet contents and add a colour to the sheet tab. Refer to Figure 23 as you complete Step 1.

FIGURE 23 Renamed Worksheet with Tab Colour



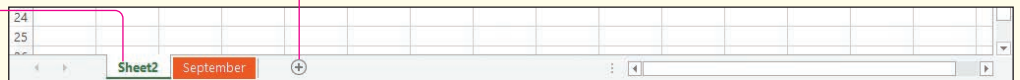
- Open *e01h2Markup_LastFirst* if you closed it at the end of Hands-On Exercise 2 and save it as *e01h3Markup_LastFirst*, changing *h2* to *h3*.
- Double-click the **Sheet1** sheet tab, type **September**, and then press **Enter**.
You renamed Sheet1 September.
- Right-click the **September** sheet tab, point to *Tab Color*, and then click **Red** in the *Standard Colors* section.
The worksheet tab colour is red.
- Save the workbook.

STEP 2 >> INSERT, MOVE, AND DELETE A WORKSHEET

Your supervisor asks you to add another worksheet to the workbook. She wants you to place it before the September worksheet so that she can add August data. After you do this, she calls you on the phone and tells you that she won't be adding the August data after all. Therefore, you will delete that worksheet. Refer to Figure 24 as you complete Step 2.

- Click to insert new sheet
- New sheet moved to the left

FIGURE 24 New Sheet Inserted



- Click **New sheet**, the plus icon to the right of the September sheet tab.
Excel adds a new worksheet named either Sheet1 or Sheet2 to the right of the previously active sheet.
- Drag the **Sheet tab** to the left of the September sheet tab.
- Click the **Sheet tab**, click the **Delete arrow** in the Cells group on the HOME tab, and then select **Delete Sheet**.
You deleted the blank worksheet from the workbook.

TROUBLESHOOTING: Delete in the Cells group, like some other commands in Excel, contains two parts: the main command icon and an arrow. Click the main command icon when instructed to click Delete to perform the default action. Click the arrow when instructed to click the Delete arrow for additional command options.

TROUBLESHOOTING: Notice that Undo is unavailable on the Quick Access Toolbar. You cannot undo deleting a worksheet. It is deleted!

d. Save the workbook.

STEP 3 >> INSERT A COLUMN AND ROWS

You decide that you need a column to display the amount of profit. Because profit is a dollar amount, you want to keep the profit column close to another column of dollar amounts. Therefore, you will insert the profit column before the profit margin (percentage) column. You also want to insert new rows for product information and category names. Refer to Figure 25 as you complete Step 3.

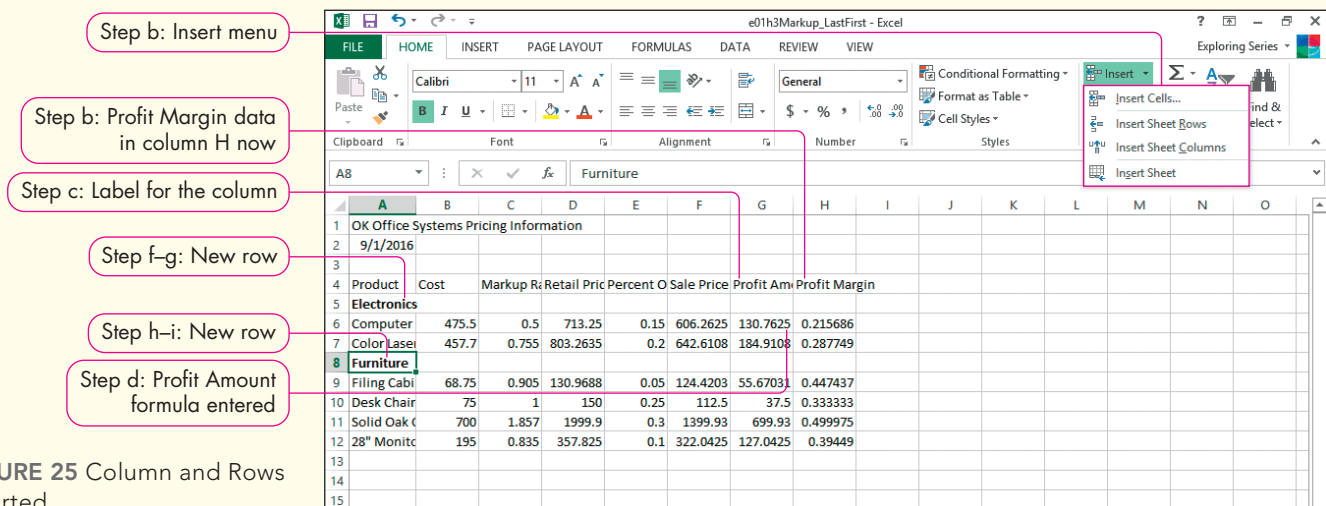


FIGURE 25 Column and Rows Inserted

a. Click cell G5 (or any cell in column G), the column containing the Profit Margin.

You want to insert a column between the Sale Price and Profit Margin columns so that you can calculate the profit amount in dollars.

b. Click the **Insert** arrow in the Cells group and select **Insert Sheet Columns**.

You inserted a new, blank column G. The data in the original column G are now in column H.

c. Click cell G4, type **Profit Amount**, and then press **Enter**.

d. Make sure the active cell is cell G5. Type **=F5-B5** and click **Enter** (the check mark between the Name Box and the Formula Bar). Double-click the cell G5 fill handle to copy the formula down the column.

You calculated the profit amount by subtracting the original cost from the sale price. Although steps e and f below illustrate one way to insert a row, you can use other methods presented in this chapter.

e. Right-click the row 5 heading, the row containing the Computer System data.

Excel displays a shortcut menu consisting of commands you can perform.

- f. Select **Insert** from the shortcut menu.

You inserted a new blank row 5, which is selected. The original rows of data move down a row each.

- g. Click cell A5. Type **Electronics** and press **Ctrl+Enter**. Click **Bold** in the Font group on the HOME tab.

You typed and bolded the category name *Electronics* above the list of electronic products.

- h. Right-click the **row 8 heading**, the row containing the Filing Cabinet data, and select **Insert** from the shortcut menu.

- i. Click cell A8. Type **Furniture** and press **Ctrl+Enter**. Click **Bold** in the Font group on the HOME tab.

You typed and bolded the category name *Furniture* above the list of furniture products.

- j. Save the workbook.

STEP 4 >> DELETE A ROW

You just realized that you do not have enough filing cabinets in stock to offer on sale, so you need to delete the Filing Cabinet row. Refer to Figure 26 as you complete Step 4.

Step b: Click Delete arrow

Step c: Filing Cabinet row deleted

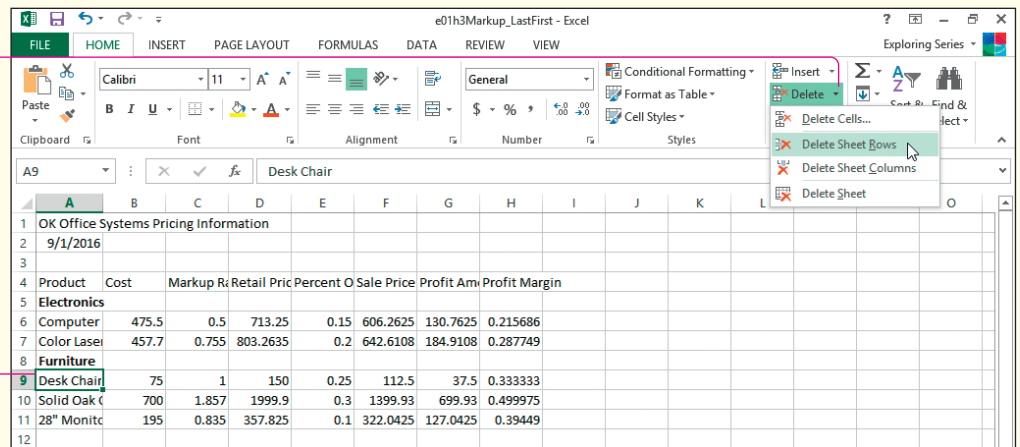


FIGURE 26 Row Deleted

- a. Click cell A9 (or any cell on row 9), the row that contains the Filing Cabinet data.
- b. Click the **Delete** arrow in the Cells group.
- c. Select **Delete Sheet Rows** and save the workbook.

The Filing Cabinet row is deleted and the remaining rows move up one row.

TROUBLESHOOTING: If you accidentally delete the wrong row or accidentally select Delete Sheet Columns instead of Delete Sheet Rows, click Undo on the Quick Access Toolbar to restore the deleted row or column.

STEP 5 >> ADJUST COLUMN WIDTH AND ROW HEIGHT

As you review your worksheet, you notice that the labels in column A appear cut off. You need to increase the width of that column to display the entire product names. In addition, you want to make row 1 taller. Refer to Figure 27 as you complete Step 5.

The screenshot shows the Excel interface with the following data in the worksheet:

Product	Cost	Markup R	Retail Pric	Percent O	Sale Price	Profit Am	Profit Margin
Computer System	475.5	0.5	713.25	0.15	606.2625	130.7625	0.215686
Color Laser Printer	457.7	0.755	803.2635	0.2	642.6108	184.9108	0.287749
Desk Chair	75	1	150	0.25	112.5	37.5	0.333333
Solid Oak Computer Desk	700	1.857	1999.9	0.3	1399.93	699.93	0.499975
28" Monitor	195	0.835	357.825	0.1	322.0425	127.0425	0.39449

Annotations in the image:

- Step b: ScreenTip when setting width (points to the column width adjustment between columns A and B).
- Step d: Row height increased (points to the row height adjustment for row 1).

FIGURE 27 Column Width and Row Height Changed

- Position the pointer between the column A and B headings. When the pointer looks like a double-headed arrow, double-click the border.
When you double-click the border between two columns, Excel adjusts the width of the column on the left side of the border to fit the contents of that column. Excel increased the width of column A based on the cell containing the longest content (the title in cell A1, which will eventually span over all columns). Therefore, you want to decrease the column to avoid so much empty space in column A.
- Position the pointer between the column A and B headings again. Drag the border to the left until the ScreenTip displays **Width: 23.00 (166 pixels)**. Release the mouse button.
You decreased the column width to 23 for column A. The longest product name is visible. You will not adjust the other column widths until after you apply formats to the column headings in Hands-On Exercise 5.
- Click **cell A1**. Click **Format** in the Cells group and select **Row Height** to display the Row Height dialog box.
- Type **30** in the **Row height** box and click **OK**. Save the workbook.
You increased the height of the row that contains the worksheet title so that it is more prominent.

STEP 6 >> HIDE AND UNHIDE COLUMNS

To focus on the dollar amounts, you decide to hide the markup rate, discount rate, and profit margin columns. Refer to Figure 28 as you complete Step 6.

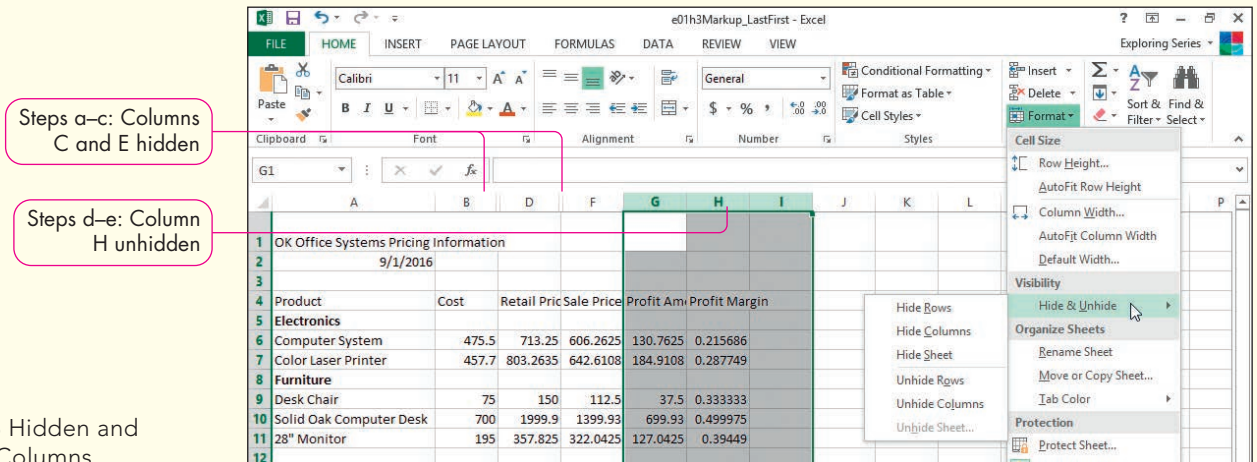


FIGURE 28 Hidden and Unhidden Columns

- Click the **column C heading**, the column containing the Markup Rate values.
- Press and hold **Ctrl** as you click the **column E heading** and the **column H heading**. Release **Ctrl** after selecting the headings.
Holding down **Ctrl** enables you to select nonadjacent ranges. You want to hide the rate columns temporarily.
- Click **Format** in the Cells group, point to **Hide & Unhide**, and then select **Hide Columns**.
Excel hides the selected columns. You see a gap in column heading letters, indicating columns are hidden (refer to Figure 28).
- Drag to select the **column G and I headings**.
You want to unhide column H, so you must select the columns on both sides of the hidden column.
- Click **Format** in the Cells group, point to **Hide & Unhide**, and then select **Unhide Columns**.
Column H, which contains the Profit Margin values, is no longer hidden. You will keep the other columns hidden and save the workbook as evidence that you know how to hide columns. You will unhide the remaining columns in the next Hands-On Exercise.
- Save the workbook. Keep the workbook open if you plan to continue with the next Hands-On Exercise. If not, close the workbook and exit Excel.

Clipboard Tasks

Although you plan worksheets before entering data, you might decide to move data to a different location in the same worksheet or even in a different worksheet. Instead of deleting the original data and then typing it in the new location, you can select and move data from one cell to another. In some instances, you might want to create a copy of data entered so that you can explore different values and compare the results of the original data set and the copied and edited data set.

In this section, you will learn how to select different ranges. Then you will learn how to move a range to another location, make a copy of a range, and use the Paste Special feature.

Selecting, Moving, Copying, and Pasting Data

You may already know the basics of selecting, cutting, copying, and pasting data in other programs, such as Microsoft Word. These tasks are somewhat different when working in Excel.

Select a Range

STEP 1 >>

A **range** refers to a group of adjacent or contiguous cells. A range may be as small as a single cell or as large as the entire worksheet. It may consist of a row or part of a row, a column or part of a column, or multiple rows or columns, but will always be a rectangular shape, as you must select the same number of cells in each row or column for the entire range. A range is specified by indicating the top-left and bottom-right cells in the selection. For example, in Figure 29, the date is a single-cell range in cell A2, the Colour Laser Printer data are stored in the range A6:G6, the cost values are stored in the range B5:B10, and the sales prices and profit margins are stored in range F5:G10. A **nonadjacent range** contains multiple ranges, such as B5:B10 and F5:G10. At times, you need to select nonadjacent ranges so that you can apply the same formatting at the same time, such as formatting the nonadjacent range C5:C10 and E5:E10 with Percent Style.

	A	B	C	D	E	F	G	H
1	OK Office Systems Pricing Information							
2	9/1/2016							
3								
4	Product	Cost	Markup R.	Retail Pric	Percent O	Sale Price	Profit Margin	
5	Computer System	475.50	0.5	713.25	0.15	606.263	0.21569	
6	Colour Laser Printer	457.7	0.755	803.264	0.2	642.611	0.28775	
7	Filing Cabinet	68.75	0.905	130.969	0.05	124.42	0.44744	
8	Desk Chair	75	1	150	0.25	112.5	0.33333	
9	Solid Oak Computer Desk	700	1.857	1999.9	0.3	1399.93	0.49997	
10	28" Monitor	195	0.835	357.825	0.1	322.043	0.39449	
11								
12								

FIGURE 29 Sample Ranges

Table 4 lists methods you can use to select ranges, including nonadjacent ranges.

TABLE 4 Selecting Ranges

To Select:	Do This:
A range	Drag until you select the entire range. Alternatively, click the first cell in the range, press and hold Shift, and then click the last cell in the range.
An entire column	Click the column heading.
An entire row	Click the row heading.
Current range containing data	Click in the range of data and press Ctrl+A.
All cells in a worksheet	Click Select All or press Ctrl+A twice.
Nonadjacent range	Select the first range, press and hold Ctrl, and then select additional range(s).

A green border appears around a selected range, and the Quick Analysis button displays in the bottom-right corner of the selected range. Any command you execute will affect the entire range. The range remains selected until you select another range or click in any cell in the worksheet.



TIP Name Box

You can use the Name Box to select a range by clicking in the Name Box, typing a range address such as B15:D25, and then pressing Enter.

Move a Range to Another Location

STEP 1

You can move cell contents from one range to another. For example, you might need to move an input area from the right side of the worksheet to above the output range. When you move a range containing text and values, the text and values do not change. However, any formulas that refer to cells in that range will update to reflect the new cell addresses. To move a range, do the following:

1. Select the range.
2. Use the Cut command to copy the range to the Clipboard. Unlike cutting data in other Microsoft Office applications, the data you cut in Excel remain in their locations until you paste them elsewhere. After you click Cut, a moving dashed green border surrounds the selected range and the status bar displays *Select destination and press ENTER or choose Paste*.
3. Make sure the destination range—the range where you want to move the data—is the same size or greater than the size of the cut range. If any cells within the destination range contain data, Excel overwrites that data when you use the Paste command.
4. Click in the top-left corner of the destination range, and then use the Paste command to insert the data contained in the selected range and remove that data from the original range.

Copy and Paste a Range

STEP 2

You may need to copy cell contents from one range to another. For example, you might copy your January budget to another worksheet to use as a model for creating your February budget. When you copy a range, the original data remain in their original locations. Cell references in copied formulas adjust based on their relative locations to the original data. To copy a range, do the following:

1. Select the range.
2. Use the Copy command to copy the contents of the selected range to the Clipboard. After you click Copy, a moving dashed green border surrounds the selected range and the status bar displays *Select destination and press ENTER or choose Paste*.
3. Make sure the destination range—the range where you want to copy the data—is the same size or greater than the size of the copied range. If any cells within the destination range contain data, Excel overwrites that data when you use the Paste command.
4. Click in the top-left corner of the destination range where you want the duplicate data, and then use the Paste command. The original range still has the moving dashed green border, and the pasted copied range is selected with a solid green border. Figure 30 shows a selected range and a copy of the range.
5. Press Esc to turn off the moving dashed border around the originally selected range.

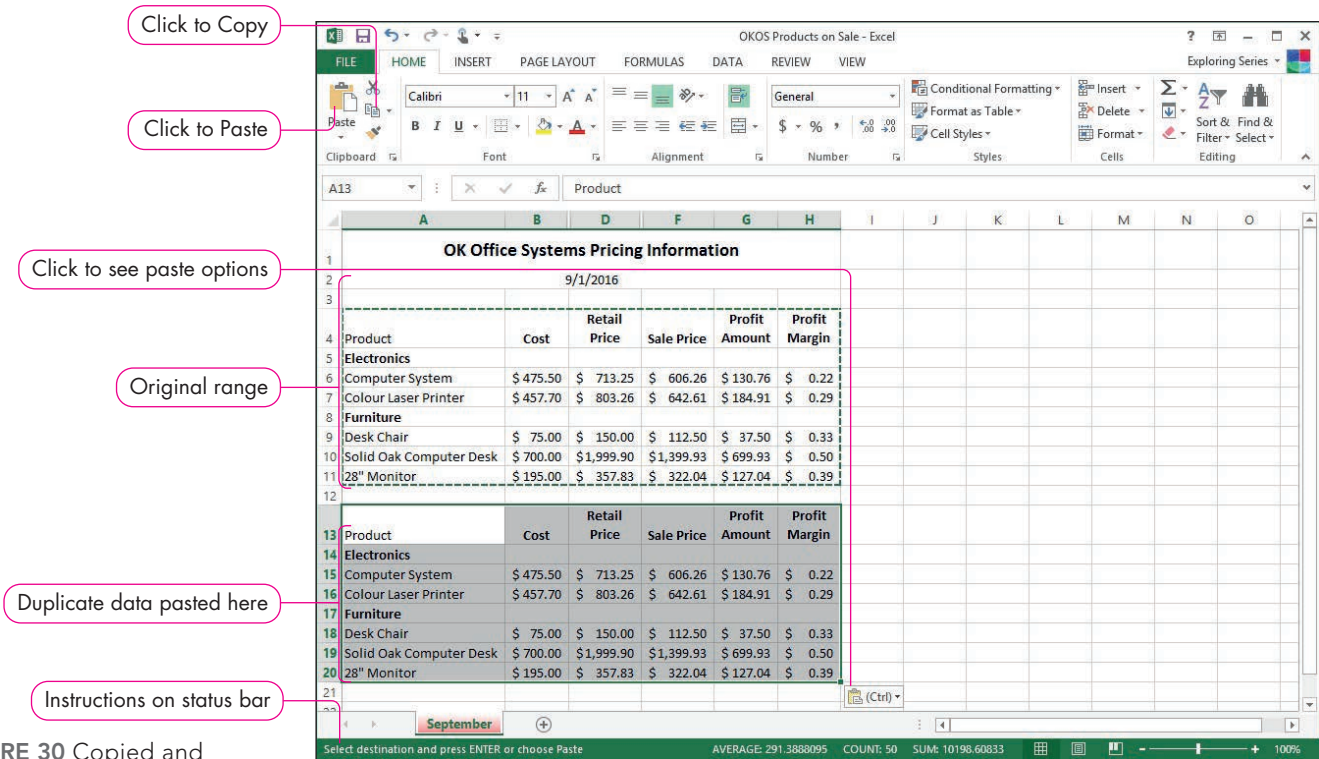


FIGURE 30 Copied and Pasted Range

TIP Copy as Picture

Instead of clicking Copy, if you click the Copy arrow in the Clipboard group, you can select Copy (the default option) or Copy as Picture. When you select Copy as Picture, you copy an image of the selected data. You can then paste the image elsewhere in the workbook or in a Word document or PowerPoint presentation. However, when you copy the data as an image, you cannot edit individual cell data after you paste the image.

Use Paste Options and Paste Special

STEP 3 >>

Sometimes you might want to paste data in a different format than they are in the Clipboard. For example, you might want to copy a range containing formulas and cell references, and paste the range as values in another workbook that does not have the referenced cells. If you want to copy data from Excel and paste them into a Word document, you can paste the Excel data as a worksheet object, as unformatted text, or in another format. To paste data from the Clipboard into a different format, click the Paste arrow in the Clipboard group, and hover over

a command to see a ScreenTip and a preview of how the pasted data will look. In Figure 31, the preview shows that a particular paste option will maintain formulas and number formatting; however, it will not maintain the text formatting, such as font colour and centred text. After previewing different paste options, click the one you want in order to apply it.

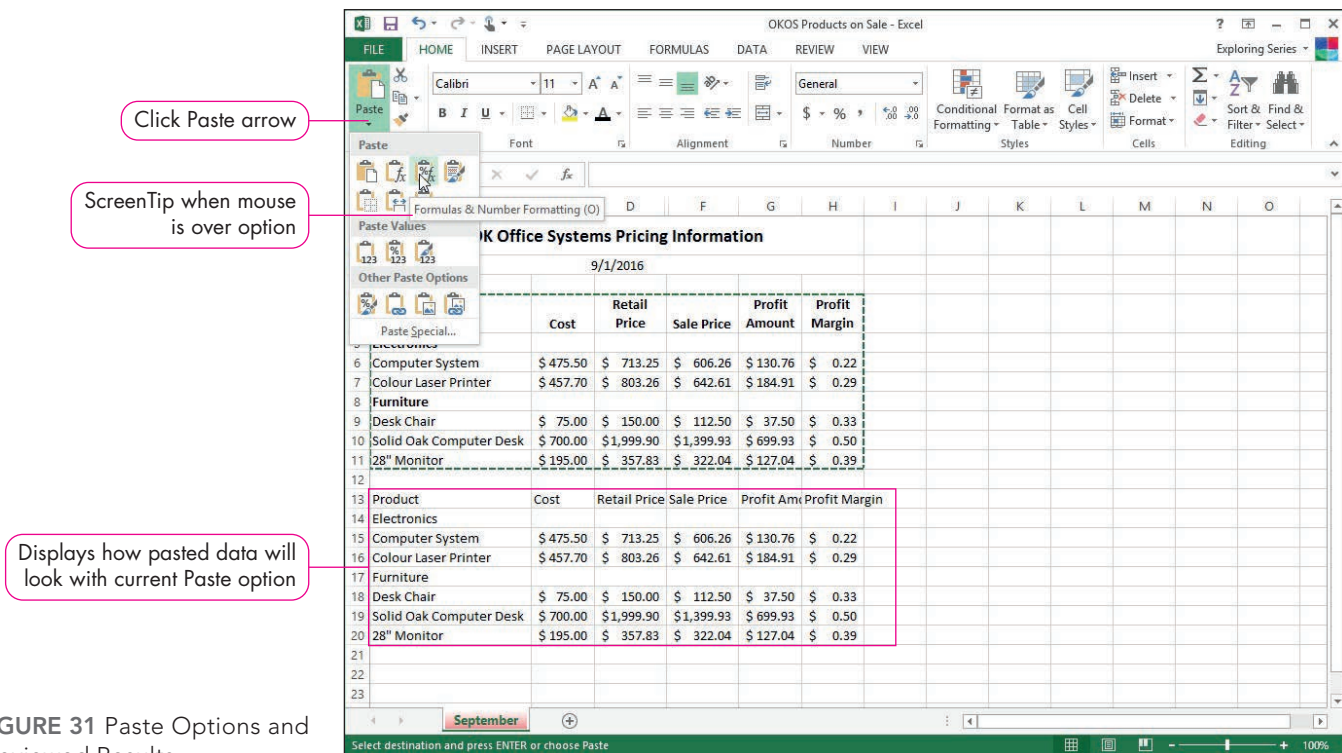


FIGURE 31 Paste Options and Previewed Results

For more specific paste options, click the Paste arrow, and then select Paste Special to display the Paste Special dialog box (see Figure 32). This dialog box contains more options than the Paste menu. Click the desired option and click OK.

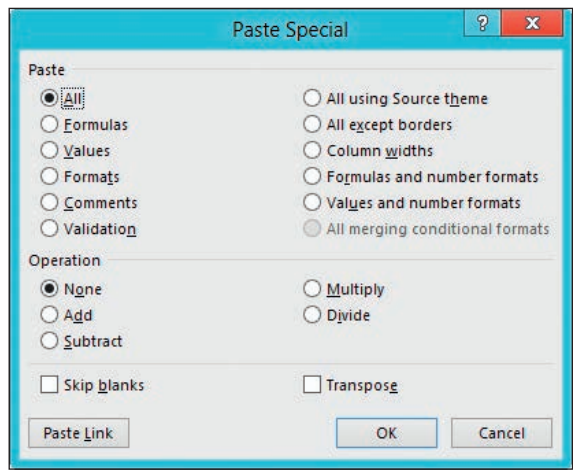


FIGURE 32 Paste Special Dialog Box

TIP Paste Options Button

When you copy or paste data, Excel displays the *Paste Options* button in the bottom-right corner of the pasted data (refer to Figure 30). Click Paste Options to see different results for the pasted data.



Transposing Columns and Rows

After entering data into a worksheet, you might want to transpose the columns and rows so that the data in the first column appear as column labels across the first row, or the column labels in the first row appear in the first column. To transpose worksheet data, select and copy the original range, click the top-left corner of the destination range, click the Paste arrow, and then click Transpose.

Copy Excel Data to Other Programs

You can copy Excel data and use it in other applications, such as in a Word document or in a PowerPoint slide show. For example, you might perform statistical analyses in Excel, copy the data into a research paper in Word or create a budget in Excel, and then copy the data into a PowerPoint slide show for a meeting.

After selecting and copying a range in Excel, you must decide how you want the data to appear in the destination application. Click the Paste arrow in the destination application, such as Word, to see a gallery of options or to select the Paste Special option.



1. When you move or copy a worksheet, what are some of the decisions you must make?
2. How can you select nonadjacent ranges, such as B5:B10 and F5:F10? Why would you select nonadjacent ranges?
3. Why would you use the Paste Special options in Excel?

Hands-On Exercises



4 Clipboard Tasks

You realize the 28" Monitor data is in the Furniture category instead of the Electronics category. You need to move the product to its appropriate location. In addition, your supervisor will ask you to enter data for a new product. Because it is almost identical to an existing product, you can copy the original data and edit the copied data to save time. You also want to experiment with the Paste Special option to see the results of using it in the OKOS workbook.

Skills covered: Select a Range and Move a Row to a New Location • Copy and Paste a Range • Use Paste Special

STEP 1 >> SELECT A RANGE AND MOVE A ROW TO A NEW LOCATION

You want to move the 28" Monitor product to be immediately after the Color Laser Printer product. Before moving the 28" Monitor row, you need to insert a blank row between the Color Laser Printer and Furniture rows. Refer to Figure 33 as you complete Step 1.

Step e: Click to cut original Monitor data

Step g: Click to paste Monitor data on row 8

Step g: Monitor data moved to this row

Step d: Row originally containing monitor data

Product	Cost	Markup R	Retail Pric	Percent O	Sale Price	Profit Am	Profit Margin
Electronics							
Computer System	475.5	0.5	713.25	0.15	606.2625	130.7625	0.215686
Color Laser Printer	457.7	0.755	803.2635	0.2	642.6108	184.9108	0.287749
28" Monitor	195	0.835	357.825	0.1	322.0425	127.0425	0.39449
Furniture							
Desk Chair	75	1	150	0.25	112.5	37.5	0.333333
Solid Oak Computer Desk	700	1.857	1999.9	0.3	1399.93	699.93	0.499975

FIGURE 33 Row Moved to New Location

a. Open *e01h3Markup_LastFirst* if you closed it at the end of Hands-On Exercise 3 and save it as **e01h4Markup_LastFirst**, changing *h3* to *h4*.

b. Select the **column B, D, and F headings**. Unhide columns C and E as you learned in Hands-On Exercise 3.

You kept those columns hidden when you saved the *e01h3Markup_LastFirst* workbook to preserve evidence that you know how to hide columns. Now you need the columns visible to continue.

c. Right-click the **row 8 heading** and select **Insert** from the menu.

You need to insert a blank row so that you can move the 28" *Computer Monitor* data to be between the *Color Laser Printer* and *Furniture* rows.

d. Select the **range A12:H12**.

You selected the range of cells containing the 28" Monitor data.

e. Click **Cut** in the Clipboard group.

A moving dashed green border outlines the selected range. The status bar displays the message *Select destination and press ENTER or choose Paste*.

- f. Click **cell A8**, the new blank row you inserted in step c.

This is the first cell in the destination range.

- g. Click **Paste** in the Clipboard group and save the workbook.

The 28" Monitor data are now located on row 8.

TROUBLESHOOTING: If you cut and paste a row without inserting a new row first, Excel will overwrite the original row of data, which is why you inserted a new row in step c. If you forgot to do step c, click Undo until the 28" Monitor data is back in its original location and start with step c again.

STEP 2 >> COPY AND PASTE A RANGE

Alesha told you that a new chair is on its way. She asked you to enter the data for the Executive Desk Chair. Because most of the data is the same as the Desk Chair data, you will copy the original Desk Chair data, edit the product name, and then change the cost to reflect the cost of the second chair. Refer to Figure 34 as you complete Step 2.

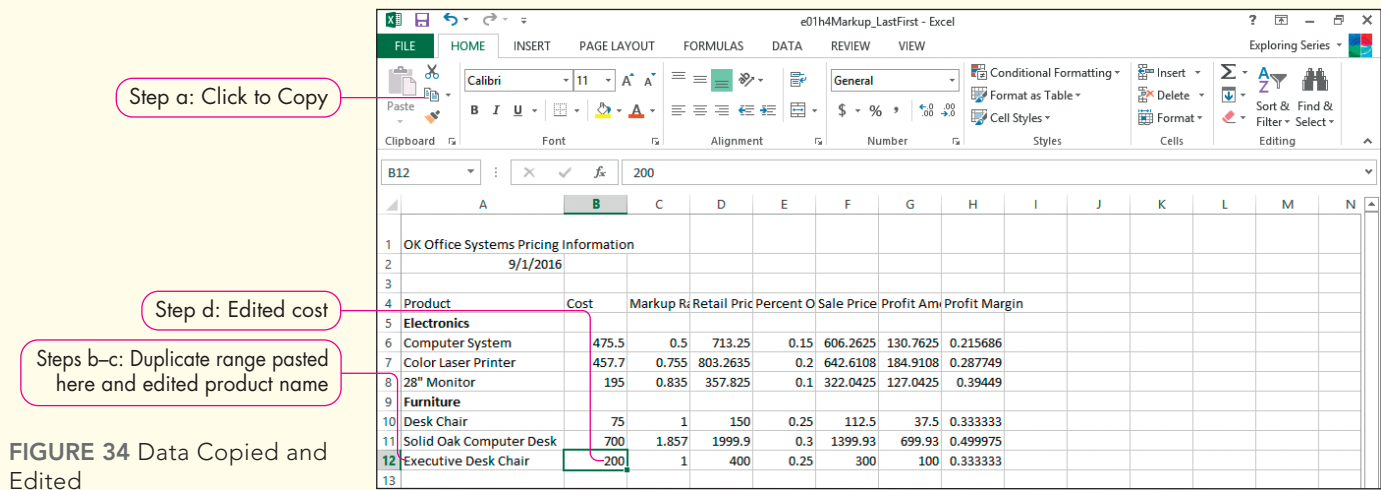


FIGURE 34 Data Copied and Edited

- a. Select the **range A10:H10**, the row containing the Desk Chair product data, and click **Copy** in the Clipboard group.

- b. Click **cell A12**, the location for the duplicate data, and click **Paste** in the Clipboard group. Press **Esc**.

The pasted range is selected in row 12.

- c. Click **cell A12**, press **F2** to activate Edit Mode, press **Home**, type **Executive**, press **Spacebar**, and then press **Enter**.

You edited the product name.

- d. Change the value in **cell B12** to **200**. Save the workbook.

The formulas calculate the results based on the new cost of 200 for the Executive Desk Chair.

STEP 3 >> USE PASTE SPECIAL

During your lunch break, you want to experiment with some of the Paste Special options. Particularly, you are interested in pasting Formulas and Value & Source Formatting. First, you will bold the title and apply a font colour to help you test these Paste Special options. Refer to Figure 35 as you complete Step 3.

The screenshot shows the Excel interface with the following data tables:

Product	Cost	Markup R	Retail Pric	Percent O	Sale Price	Profit Am	Profit Margin
OK Office Systems Pricing Information							
9/1/2016							
Electronics							
Computer System	475.5	0.5	713.25	0.15	606.2625	130.7625	0.215686
Color Laser Printer	457.7	0.755	803.2635	0.2	642.6108	184.9108	0.287749
28" Monitor	195	0.835	357.825	0.1	322.0425	127.0425	0.39449
Furniture							
Desk Chair	75	1	150	0.25	112.5	37.5	0.333333
Solid Oak Computer Desk	700	1.857	1999.9	0.3	1399.93	699.93	0.499975
Executive Desk Chair	200	1	400	0.25	300	100	0.333333

The second table (rows 15-24) is identical to the first, but the formula in cell H20 is now a value: 0.215686274509804.

Annotations in the image:

- Step b: Click to copy selected range (points to the first table)
- Step f: Value pasted instead of formula (points to cell H20 in the second table)
- Step a: Formatted title (points to the title in the second table)
- Step d: Click to see Paste Special options (points to the Paste Special options menu)
- Step f: Formatting maintained (points to the formatted title in the second table)

FIGURE 35 Paste Special Results

- Click cell A1. Apply these font formats to the title: **14 pt, Bold, and Gold, Accent 4, Darker 50% font colour** in the Font group on the HOME tab.
You need to format text to see the effects of using different Paste Special options.
- Select the **range A1:H12** and click **Copy** in the Clipboard group.
- Click cell A15, the top-left corner of the destination range.
- Click the **Paste arrow** in the Clipboard group and position the mouse pointer over *Formulas*.
Without clicking the command, Excel shows you a preview of what that option would do. The pasted copy would not contain the font formatting you applied to the title or the bold on the two category names. In addition, the pasted date would appear as a serial number. The formulas would be maintained.
- Position the mouse pointer over *Values & Source Formatting*.
This option would preserve the formatting, but it would convert the formulas into the current value results.
- Click **Values & Source Formatting**, click cell H6 to see a formula, and then click cell H20. Press **Esc** to turn off the border.
Cell H6 contains a formula, but in the pasted version, the equivalent cell H20 has converted the formula result into an actual value. If you were to change the original cost on row 20, the contents of cell H20 would not change. In a working environment, this is useful only if you want to capture the exact value in a point in time before making changes to the original data.
- Save the workbook. Keep the workbook open if you plan to continue with the next Hands-On Exercise. If not, close the workbook and exit Excel.

Formatting

After entering data and formulas, you should format the worksheet. A professionally formatted worksheet—through adding appropriate symbols, aligning decimals, and using fonts and colours to make data stand out—makes finding and analyzing data easy. You apply different formats to accentuate meaningful details or to draw attention to specific ranges in a worksheet.

In this section, you will learn to apply different alignment options, including horizontal and vertical alignment, text wrapping, and indent options. In addition, you will learn how to format different types of values.

Applying Alignment and Font Options

Alignment refers to how data are positioned in cells. Text aligns at the left cell margin, and dates and values align at the right cell margin. You can change the alignment of cell contents to improve the appearance of data within the cells. The Alignment group (see Figure 36) on the Home tab contains several features to help you align and format data.

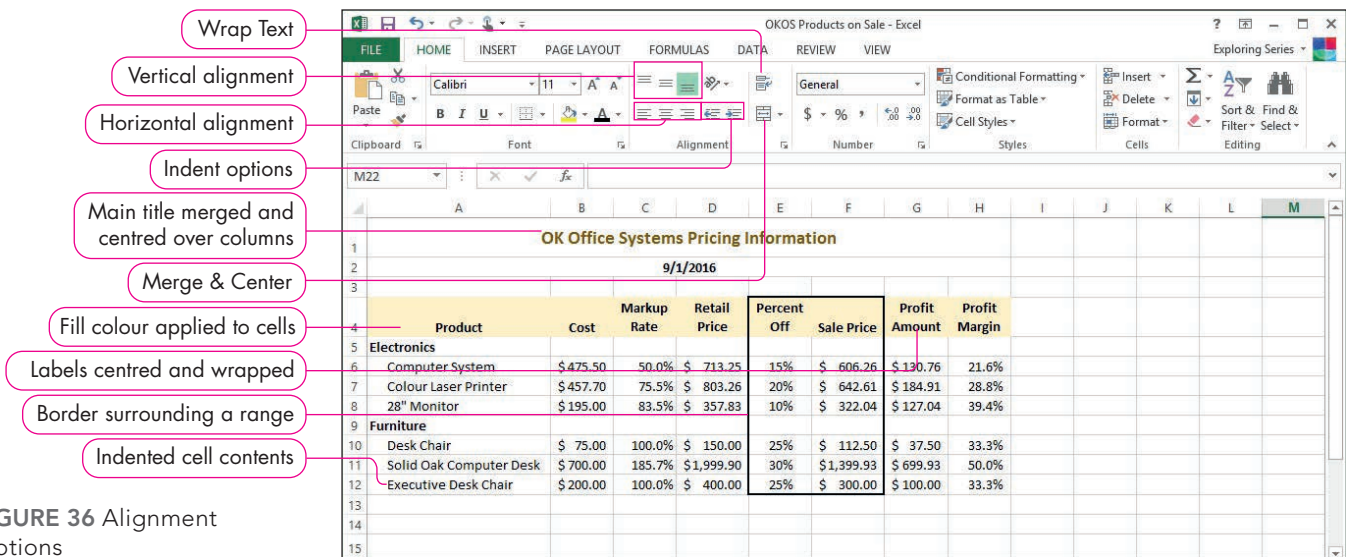


FIGURE 36 Alignment Options



Alignment Options

The Format Cells dialog box contains additional alignment options. To open the Format Cells dialog box, click the Dialog Box Launcher in the Alignment group on the Home tab. The Alignment tab in the dialog box contains the options for aligning data.

Merge and Centre Labels

STEP 1

You may want to place a title at the top of a worksheet and centre it over the columns of data in the worksheet. You can centre main titles over all columns in the worksheet, and you can centre category titles over groups of related columns. To create a title, enter the text in the far left cell of the range. Select the range of cells across which you want to centre the title and click Merge & Center in the Alignment group on the Home tab. Only data in the far left cell (or top right cell) are merged. Any other data in the merged cells are deleted. Excel merges the selected cells together into one cell, and the merged cell address is that of the original cell on the left. The data are centred between the left and right sides of the merged cell.

If you merge too many cells and want to split the merged cell back into its original multiple cells, click the merged cell and click Merge & Center. Unmerging places the data in the top-left cell.

For additional options, click the Merge & Center arrow. Table 5 lists the four merge options.

TABLE 5 Merge Options	
Option	Results
Merge & Center	Merges selected cells and centres data into one cell.
Merge Across	Merges the selected cells but keeps text left-aligned or values right-aligned.
Merge Cells	Enables you to merge a range of cells on multiple rows as well as in multiple columns.
Unmerge Cells	Separates a merged cell into multiple cells again.

Change Horizontal and Vertical Cell Alignment

STEP 2 >>

Horizontal alignment specifies the position of data between the left and right cell margins, and **vertical alignment** specifies the position of data between the top and bottom cell margins. Bottom Align is the default vertical alignment (as indicated by the light green background), and Align Left is the default horizontal alignment for text. In Figure 36, the labels on row 4 have Center horizontal alignment and the title in row 1 has Middle Align vertical alignment.

If you increase row height, you might need to change the vertical alignment to position data better in conjunction with data in adjacent cells. To change alignments, click the desired alignment setting(s) in the Alignment group on the Home tab.



TIP Rotate Cell Data

People sometimes rotate headings in cells. You can rotate data in a cell by clicking Orientation in the Alignment group and selecting an option, such as Angle Clockwise.

Wrap Text

STEP 2 >>

Sometimes you have to maintain specific column widths, but the data do not fit entirely. You can use **wrap text** to make data appear on multiple lines by adjusting the row height to fit the cell contents within the column width. When you click Wrap Text in the Alignment group, Excel wraps the text on two or more lines within the cell. This alignment option is helpful when the column headings are wider than the values contained in the column. In Figure 36, the *Markup Rate* and *Percent Off* labels on row 4 are examples of wrapped text.

Increase and Decrease Indent

STEP 3 >>

To offset labels, you can indent text within a cell. **Indenting** helps others see the hierarchical structure of data. Accountants often indent the word *Totals* in financial statements so that it stands out from a list of items above the total row. To indent the contents of a cell, click Increase Indent in the Alignment group on the Home tab. The more you click Increase Indent, the more text is indented in the cell. To decrease the indent, click Decrease Indent in the Alignment group. In Figure 36, *Computer System* and *Desk Chair* are indented.



TIP Indenting Values

Values right-align by default. You should align the decimal places in a column of values. If the column label is wide, the values below it appear too far on the right. To preserve the values aligning at the decimal places, use the Align Right horizontal alignment and click Increase Indent to shift the values over to the left a little for better placement.

Apply Borders and Fill Colour

STEP 4

You can apply a border or fill colour to accentuate data in a worksheet. A **border** is a line that surrounds a cell or a range of cells. You can use borders to offset some data from the rest of the worksheet data. To apply a border, select the cell or range that you want to have a border, click the Borders arrow in the Font group, and then select the desired border type. In Figure 36, a border surrounds the range E4:F12. To remove a border, select No Border from the Borders menu.

To add some colour to your worksheet to add emphasis to data or headers, you can apply a fill colour. **Fill colour** is a background colour that displays behind the data. You should choose a fill colour that contrasts with the font colour. For example, if the font colour is Black, you might want to choose Yellow fill colour. If the font colour is White, you might want to apply Blue or Dark Blue fill colour. To apply a fill colour, select the cell or range that you want to have a fill colour, click the Fill Color arrow on the Home tab, and then select the colour choice from the Fill Color palette. In Figure 36, the column labels in row 4 contain the Gold, Accent 4, Lighter 80% fill colour. If you want to remove a fill colour, select No Fill from the bottom of the palette.

For additional border and fill colour options, click the Dialog Box Launcher in the Font group to display the Format Cells dialog box. Click the Border tab to select border options, including the border line style and colour. Click the Fill tab to set the background colour, fill effects, and patterns.

Applying Number Formats

Values have no special formatting when you enter data. You should apply **number formats** based on the type of values in a cell, such as applying either the Accounting or Currency number format to monetary values. Changing the number format changes the way the number displays in a cell, but the format does not change the number's value. If, for example, you enter 123.456 into a cell and format the cell with the Currency number type, the value shows as \$123.46 onscreen, but the actual value 123.456 is used for calculations. When you apply a number format, you can specify the number of decimal places to display onscreen.

Apply a Number Format

STEP 5

The default number format is General, which displays values as you originally enter them. General does not align decimal points in a column or include symbols, such as dollar signs, percent signs, or commas. Table 6 lists and describes the primary number formats in Excel.

TABLE 6 Number Formats

Format Style	Display
General	A number as it was originally entered. Numbers are shown as integers (e.g., 12345), decimal fractions (e.g., 1234.5), or in scientific notation (e.g., 1.23E+10) if the number exceeds 11 digits.
Number	A number with or without the 1,000 separator (e.g., a comma) and with any number of decimal places. Negative numbers can be displayed with parentheses and/or red.
Currency	A number with the 1,000 separator and an optional dollar sign (which is placed immediately to the left of the number). Negative values are preceded by a minus sign or are displayed with parentheses or in red. Two decimal places display by default.
Accounting Number Format	A number with the 1,000 separator, an optional dollar sign (at the left border of the cell, vertically aligned within a column), negative values in parentheses, and zero values as hyphens. Two decimal places display by default. Changes alignment slightly within the cell.
Comma	A number with the 1,000 separator. Used in conjunction with Accounting Number Style to align commas and decimal places.
Date	The date in different ways, such as Long Date (March 14, 2016) or Short Date (3/14/16 or 14-Mar-16).
Time	The time in different formats, such as 10:50 PM or 22:50.
Percent Style	The value as it would be multiplied by 100 (for display purpose), with the percent sign. The default number of decimal places is zero if you click Percent Style in the Number group or two decimal places if you use the Format Cells dialog box. However, you should typically increase the number of decimal points to show greater accuracy.
Fraction	A number as a fraction; use when no exact decimal equivalent exists. A fraction is entered into a cell as a formula such as =1/3. If the cell is not formatted as a fraction, the formula results display.
Scientific	A number as a decimal fraction followed by a whole number exponent of 10; for example, the number 12345 would appear as 1.23E+04. The exponent, +04 in the example, is the number of places the decimal point is moved to the left (or right if the exponent is negative). Very small numbers have negative exponents.
Text	The data left aligned; is useful for numerical values that have leading zeros and should be treated as text, such as postal codes or phone numbers. Apply Text format before typing a leading zero so that the zero displays in the cell.
Special	A number with editing characters, such as hyphens in a Social Insurance Number.
Custom	Predefined customized number formats or special symbols to create your own customized number format.

The Number group on the Home tab contains commands for applying *Accounting Number Format*, *Percent Style*, and *Comma Style* numbering formats. You can click the Accounting Number Format arrow and select other denominations, such as English pounds or euros. For other number formats, click the Number Format arrow and select the numbering format you want to use. For more specific numbering formats than those provided, select More Number Formats from the Number Format menu or click the Number Dialog Box Launcher to open the Format Cells dialog box with the Number tab options readily available. Figure 37 shows different number formats applied to values.

	A	B
1	General	1234.567
2	Number	1,234.57
3	Currency	\$1,234.57
4	Accounting \$	1,234.57
5	Comma	1,234.57
6	Percent	12%
7	Short Date	3/1/2016
8	Long Date	Tuesday, March 1, 2016

FIGURE 37 Number Formats

Increase and Decrease Decimal Places

STEP 5

After applying a number format, you may need to adjust the number of decimal places that display. For example, if you have an entire column of monetary values formatted in Accounting Number Format, Excel displays two decimal places by default. If the entire column of values contains whole dollar values and no cents, displaying *.00* down the column looks cluttered. You can decrease the number of decimal places to show whole numbers only.

To change the number of decimal places displayed, click **Increase Decimal** in the **Number** group on the **Home** tab to display more decimal places for greater precision or **Decrease Decimal** to display fewer or no decimal places.

Quick Concepts



1. What is the importance of formatting a worksheet?
2. Describe five alignment and font formatting techniques used to format labels that are discussed in this section.
3. What are the main differences between Accounting Number Format and Currency format? Which format has its own command on the Ribbon?

Hands-On Exercises



5 Formatting

In the first four Hands-On Exercises, you entered data about products on sale, created formulas to calculate markup and profit, and inserted new rows and columns to accommodate the labels *Electronics* and *Furniture* to identify the specific products. You are ready to format the worksheet. Specifically, you need to centre the title, align text, format values, and then apply other formatting to enhance the readability of the worksheet.

Skills covered: Merge and Centre the Title • Align Text Horizontally and Vertically and Wrap Text • Increase Indent • Apply Borders and Fill Colour • Apply Number Formats and Increase and Decrease Decimal Places

STEP 1 » MERGE AND CENTRE THE TITLE

To make the title stand out, you want to centre it over all the data columns. You will use the Merge & Center command to merge cells and centre the title at the same time. Refer to Figure 38 as you complete Step 1.

Step e: Date merged, centred, and bold A2:H2

	A	B	C	D	E	F	G	H	I
1	OK Office Systems Pricing Information								
2	9/1/2016								
3									
4	Product	Cost	Markup R	Retail Pric	Percent O	Sale Price	Profit Am	Profit Margin	
5	Electronics								
6	Computer System	475.5	0.5	713.25	0.15	606.2625	130.7625	0.215686	
7	Color Laser Printer	457.7	0.755	803.2635	0.2	642.6108	184.9108	0.287749	
8	28" Monitor	195	0.835	357.825	0.1	322.0425	127.0425	0.39449	
9	Furniture								
10	Desk Chair	75	1	150	0.25	112.5	37.5	0.333333	
11	Solid Oak Computer Desk	700	1.857	1999.9	0.3	1399.93	699.93	0.499975	
12	Executive Desk Chair	200	1	400	0.25	300	100	0.333333	
13									

FIGURE 38 Title and Date Merged and Centred

a. Open *e01h4Markup_LastFirst* if you closed it at the end of Hands-On Exercise 4 and save it as **e01h5Markup_LastFirst**, changing *h4* to *h5*.

b. Select the range **A15:H26** and press **Delete**.

You maintained a copy of your Paste Special results in the *e01h4Markup_LastFirst* workbook, but you do not need it to continue.

c. Select the range **A1:H1**.

You want to centre the title over all columns of data.

d. Click **Merge & Center** in the Alignment group.

Excel merges cells in the range A1:H1 into one cell and centres the title horizontally within the merged cell, which is cell A1.

TROUBLESHOOTING: If you merge too many or not enough cells, you can unmerge the cells and start again. To unmerge cells, click in the merged cell. The Merge & Center command is shaded in green when the active cell is merged. Click Merge & Center to unmerge the cell. Then select the correct range to merge and use Merge & Center again.

- e. Select the **range A2:H2**. Merge and centre the date and bold it.

TROUBLESHOOTING: If you try to merge and centre data in the range A1:H2, Excel will keep the top-left data only and delete the date. To merge separate data on separate rows, you must merge and centre data separately.

- f. Save the workbook.

STEP 2 >> ALIGN TEXT HORIZONTALLY AND VERTICALLY AND WRAP TEXT

You will wrap the text in the column headings to avoid columns that are too wide for the data, but which will display the entire text of the column labels. In addition, you will horizontally centre column labels between the left and right cell margins. Refer to Figure 39 as you complete Step 2.

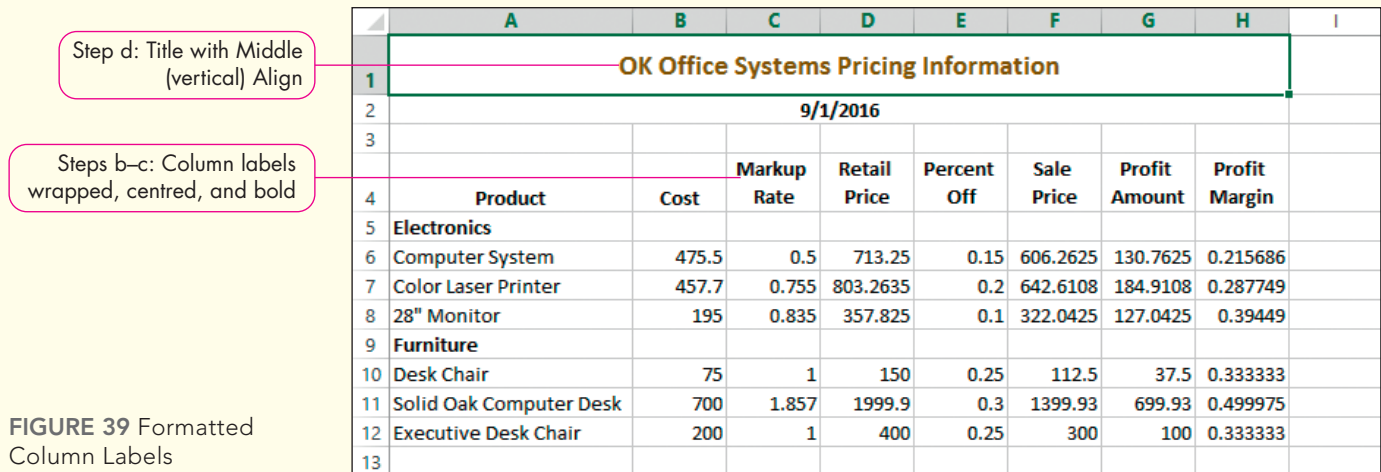


FIGURE 39 Formatted Column Labels

- a. Select the **range A4:H4** to select the column labels.
- b. Click **Wrap Text** in the Alignment group.
The multiple-word column headings are now visible on two lines within each cell.
- c. Click **Center** in the Alignment group. Bold the selected column headings.
The column headings are centred horizontally between the left and right edges of each cell.
- d. Click **cell A1**, which contains the title, click **Middle Align** in the Alignment group, and then save the workbook.
Middle Align vertically centres data between the top and bottom edges of the cell.

STEP 3 >> INCREASE INDENT

As you review the first column, you notice that the category names, Electronics and Furniture, do not stand out. You decide to indent the labels within each category to better display which products are in each category. Refer to Figure 40 as you complete Step 3.

Step d: Column A width increased to 26.00

Step b: Electronics product labels indented twice

Step c: Furniture product labels indented twice

FIGURE 40 Indented Cell Contents

	A	B	C	D	E	F	G	H	I
1	OK Office Systems Pricing Information								
2	9/1/2016								
3									
4	Product	Cost	Markup Rate	Retail Price	Percent Off	Sale Price	Profit Amount	Profit Margin	
5	Electronics								
6	Computer System	475.5	0.5	713.25	0.15	606.2625	130.7625	0.215686	
7	Color Laser Printer	457.7	0.755	803.2635	0.2	642.6108	184.9108	0.287749	
8	28" Monitor	195	0.835	357.825	0.1	322.0425	127.0425	0.39449	
9	Furniture								
10	Desk Chair	75	1	150	0.25	112.5	37.5	0.333333	
11	Solid Oak Computer Desk	700	1.857	1999.9	0.3	1399.93	699.93	0.499975	
12	Executive Desk Chair	200	1	400	0.25	300	100	0.333333	
13									

- Select the **range A6:A8**, the cells containing electronic products labels.
- Click **Increase Indent** in the Alignment group twice.
The three selected product names are indented below the *Electronics* heading.
- Select the **range A10:A12**, the cells containing furniture products, and click **Increase Indent** twice.
The three selected product names are indented below the *Furniture* heading. Notice that the one product name appears cut off.
- Increase the column A width to **26.00**. Save the workbook.

STEP 4 >> APPLY BORDERS AND FILL COLOUR

You want to apply a light gold fill colour to highlight the column headings. In addition, you want to emphasize the percent off and sale prices. You will do this by applying a border around that range. Refer to Figure 41 as you complete Step 4.

Step b: Gold, Accent 4, Lighter 80%

Step c: Thick Box Border applied

FIGURE 41 Border and Fill Colour Applied

The screenshot shows the Excel interface with the 'Theme Colors' palette open. The 'Gold, Accent 4, Lighter 80%' color is selected. The 'Product' column heading (A4) and the 'Percent Off' and 'Sale Price' columns (E5:F5) are highlighted with this gold fill. A thick black box border is applied to the 'Percent Off' and 'Sale Price' cells in rows 6 through 12.

	A	B	C	D	E	F	G	H	I
1	OK Office Systems Pricing Information								
2	9/1/2016								
3									
4	Product	Cost	Markup Rate	Retail Price	Percent Off	Sale Price	Profit Amount	Profit Margin	
5	Electronics								
6	Computer System	475.5	0.5	713.25	0.15	606.2625	130.7625	0.215686	
7	Color Laser Printer	457.7	0.755	803.2635	0.2	642.6108	184.9108	0.287749	
8	28" Monitor	195	0.835	357.825	0.1	322.0425	127.0425	0.39449	
9	Furniture								
10	Desk Chair	75	1	150	0.25	112.5	37.5	0.333333	
11	Solid Oak Computer Desk	700	1.857	1999.9	0.3	1399.93	699.93	0.499975	
12	Executive Desk Chair	200	1	400	0.25	300	100	0.333333	
13									

- Select the **range A4:H4** and click the **Fill Color** arrow in the Font group.
- Click **Gold, Accent 4, Lighter 80%** in the *Theme Colors* section. It is the second colour down in the third column from the right.
You applied a fill colour to the selected cells to draw attention to these cells.

- c. Select the **range E4:F12**, click the **Border arrow** in the Font group, and then select **Thick Box Border**.

You applied a border around the selected cells.

- d. Click in an empty cell below the columns of data to deselect the cells. Save the workbook.

STEP 5 >> APPLY NUMBER FORMATS AND INCREASE AND DECREASE DECIMAL PLACES

You need to format the values to increase readability and look more professional. You will apply number formats and adjust the number of decimal points displayed. Refer to Figure 42 as you complete Step 5.

The screenshot shows an Excel spreadsheet with the following data:

OK Office Systems Pricing Information								
9/1/2016								
Product	Cost	Markup Rate	Retail Price	Percent Off	Sale Price	Profit Amount	Profit Margin	
Electronics								
Computer System	\$ 475.50	50.0%	\$ 713.25	15%	\$ 606.26	\$ 130.76	21.6%	
Color Laser Printer	\$ 457.70	75.5%	\$ 803.26	20%	\$ 642.61	\$ 184.91	28.8%	
28" Monitor	\$ 195.00	83.5%	\$ 357.83	10%	\$ 322.04	\$ 127.04	39.4%	
Furniture								
Desk Chair	\$ 75.00	100.0%	\$ 150.00	25%	\$ 112.50	\$ 37.50	33.3%	
Solid Oak Computer Desk	\$ 700.00	185.7%	\$ 1,999.90	30%	\$ 1,399.93	\$ 699.93	50.0%	
Executive Desk Chair	\$ 200.00	100.0%	\$ 400.00	25%	\$ 300.00	\$ 100.00	33.3%	

Callouts in the image point to specific formatting actions:

- Step f: Percent Style, Align Right, Indent twice (points to H6:H12)
- Step e: Percent Style (points to E6:E12)
- Steps c-d: Percent Style with one decimal place (points to C6:C12)
- Step b: Accounting Number Format (points to B6:B12)

FIGURE 42 Number Formats and Decimal Places

- a. Select the **range B6:B12**. Press and hold **Ctrl** as you select the **ranges D6:D12** and **F6:G12**.

Because you want to format nonadjacent ranges with the same formats, you hold down Ctrl.

- b. Click **Accounting Number Format** in the Number group. If some cells contain pound signs, increase the column widths as needed.

You formatted the selected nonadjacent ranges with the Accounting Number Format. The dollar signs align on the left cell margins and the decimals align.

- c. Select the **range C6:C12** and click **Percent Style** in the Number group.

You formatted the values in the selected ranges with Percent Style, showing whole numbers only.

- d. Click **Increase Decimal** in the Number group.

You increased the decimal to show one decimal place to avoid misleading your readers by displaying the values as whole percentages.

- e. Apply **Percent Style** to the **range E6:E12**.

- f. Select the **range H6:H12**, apply **Percent Style**, and then click **Increase Decimal**.

- g. Select the **range E6:E12**, click **Align Right**, and then click **Increase Indent** twice. Select the **range H6:H12**, click **Align Right**, and then click **Increase Indent**.

With values, you want to keep the decimal points aligned, but you can then use Increase Indent to adjust the indent so that the values appear more centred below the column labels.

- h. Save the workbook. Keep the workbook open if you plan to continue with the next Hands-On Exercise. If not, close the workbook and exit Excel.

Page Setup and Printing

Although you might distribute workbooks electronically as e-mail attachments or you might upload workbooks to a corporate server, you should prepare the worksheets in the workbook for printing. You should prepare worksheets in case you need to print them or in case others who receive an electronic copy of your workbook need to print the worksheets. The Page Layout tab provides options for controlling the printed worksheet (see Figure 43).

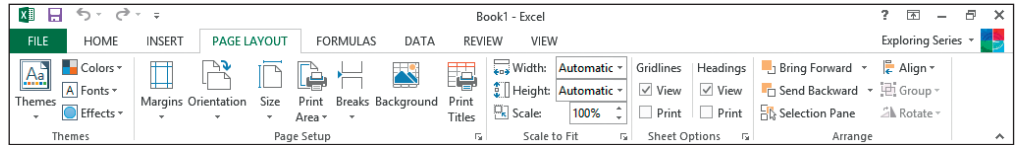


FIGURE 43 Page Layout Tab

In this section, you will select options on the Page Layout tab. Specifically, you will use the Page Setup, Scale to Fit, and Sheet Options groups. After selecting page setup options, you are ready to print your worksheet.

Selecting Page Setup Options

The Page Setup group on the Page Layout tab contains options to set the margins, select orientation, specify page size, select the print area, and apply other options. The *Scale to Fit* group contains options for adjusting the scaling of the spreadsheet on the printed page. When possible, use the commands in these groups to apply page settings. Table 7 lists and describes the commands in the Page Setup group.

TABLE 7 Page Setup Commands

Command	Description
Margins	Displays a menu to select predefined margin settings. The default margins are 1.9 cm (0.75") top and bottom and 1.78 cm (0.7") left and right. You will often change these margin settings to balance the worksheet data better on the printed page. If you need different margins, select Custom Margins.
Orientation	Displays orientation options. The default page orientation is portrait, which is appropriate for worksheets that contain more rows than columns. Select landscape orientation when worksheets contain more columns than can fit in portrait orientation. For example, the OKOS worksheet might appear better balanced in landscape orientation because it has eight columns.
Size	Displays a list of standard paper sizes. The default size is 21.59 cm x 27.94 cm (8.5" x 11"). If you have a different paper size, such as legal paper, select it from the list.
Print Area	Displays a list to set or clear the print area. When you have very large worksheets, you might want to print only a portion of that worksheet. To do so, select the range you want to print, click Print Area in the Page Setup group, and then select Set Print Area. When you use the Print commands, only the range you specified will be printed. To clear the print area, click Print Area and select Clear Print Area.
Breaks	Displays a list to insert or remove page breaks.
Background	Enables you to select an image to appear as the background behind the worksheet data when viewed onscreen (backgrounds do not appear when the worksheet is printed).
Print Titles	Enables you to select column headings and row labels to repeat on multiple-page printouts.

Specify Page Options

STEP 1

To apply several page setup options at once or to access options not found on the Ribbon, click the Page Setup Dialog Box Launcher. The Page Setup dialog box organizes options into four tabs: Page, Margins, Header/Footer, and Sheet. All tabs contain Print and Print Preview buttons. Figure 44 shows the Page tab.

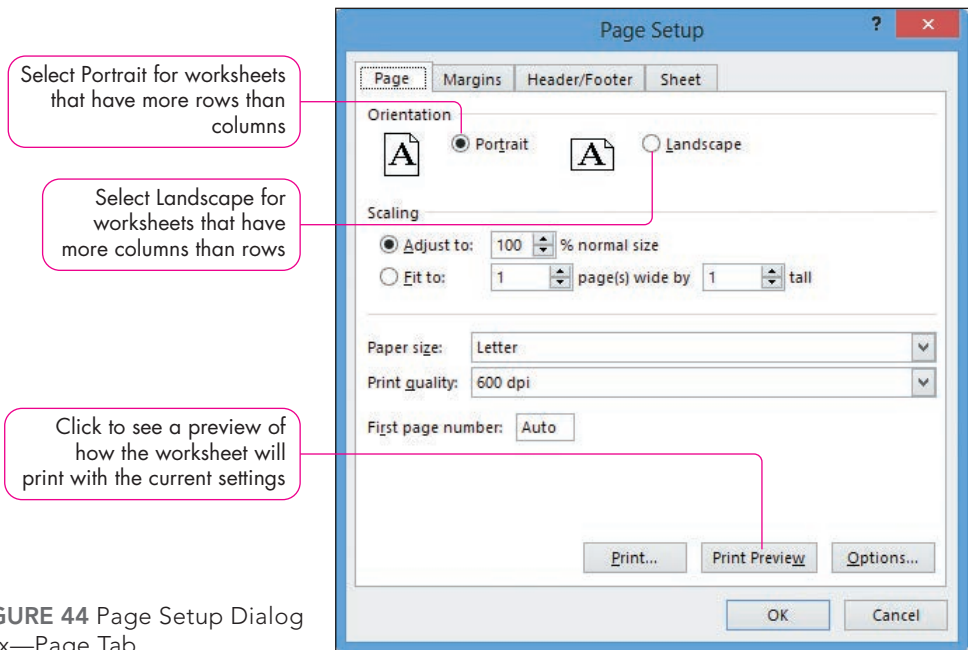


FIGURE 44 Page Setup Dialog Box—Page Tab

The Page tab contains options to select the orientation and paper size. In addition, it contains scaling options that are similar to the options in the *Scale to Fit* group on the Page Layout tab. You use scaling options to increase or decrease the size of characters on a printed page, similar to using a zoom setting on a photocopy machine. You can also use the *Fit to* option to force the data to print on a specified number of pages.

Set Margins Options

STEP 2

The Margins tab (see Figure 45) contains options for setting the specific margins. In addition, it contains options to centre the worksheet data horizontally or vertically on the page. To balance worksheet data equally between the left and right margins, Excel users often centre the page horizontally.

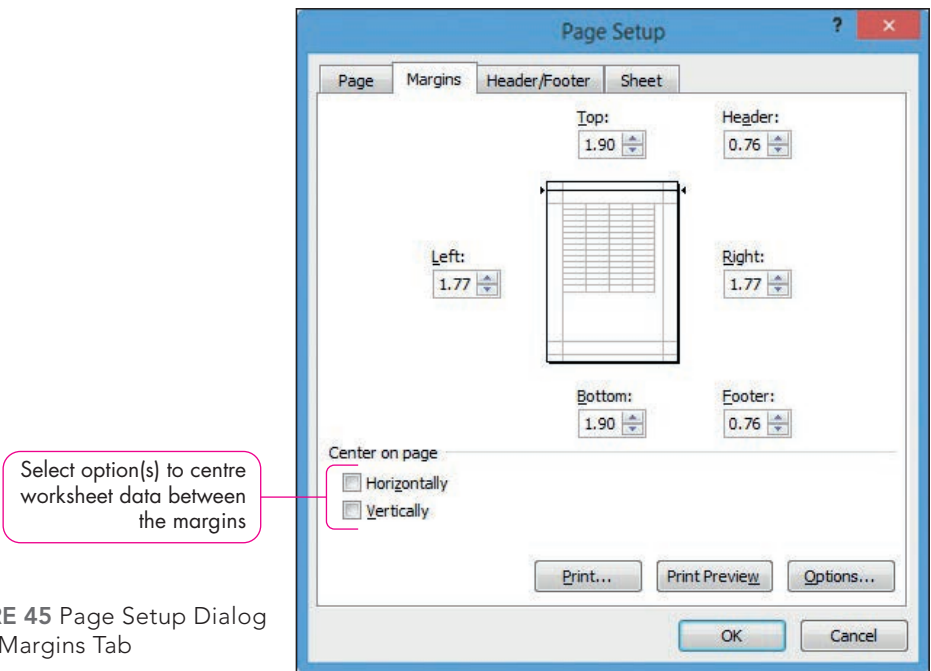


FIGURE 45 Page Setup Dialog Box—Margins Tab



Excel figures in this Canadian edition reflect metric units of measurement, and metric equivalents have been added to all instructions. To choose metric as a preference:

- In Windows 8:
1. Move the mouse pointer to the upper-right corner of the screen, click **Settings**, then **Control Panel**.
 2. Under **Clock, Language, and Region**, click **Add a language**.
 3. Double-click **English**.
 4. Double-click **English (Canada)**.
 5. Click **English (Canada)** and then click **Move up** until it is at the top.
- In Windows 7:
1. Click the **Start** button and then select **Control Panel**.
 2. Click **Clock, Language, and Region**.
 3. Under **Region and Language**, click **Change date, time or number formats**.
 4. Pull down the **Format** menu and select **English (Canada)**.
 5. Click the **OK** button.

Create Headers and Footers

STEP 3

The Header/Footer tab (see Figure 46) lets you create a header and/or footer that appears at the top and/or bottom of every printed page. Click the arrows to choose from several preformatted entries, or, alternatively, you can click Custom Header or Custom Footer, insert text and other objects, and then click the appropriate formatting button to customize your headers and footers. You can use headers and footers to provide additional information about the worksheet. You can include your name, the date the worksheet was prepared, and page numbers, for example.

You can create different headers or footers on different pages, such as one header with the file name on odd-numbered pages and a header containing the date on even-numbered pages. Click the *Different odd and even pages* check box in the Page Setup dialog box (see Figure 46).

You might want the first page to have a different header or footer from the rest of the printed pages, or you might not want a header or footer to show up on the first page but want the header or footer to display on the remaining pages. Click the *Different first page* check box in the Page Setup dialog box to specify a different first page header or footer (see Figure 46).

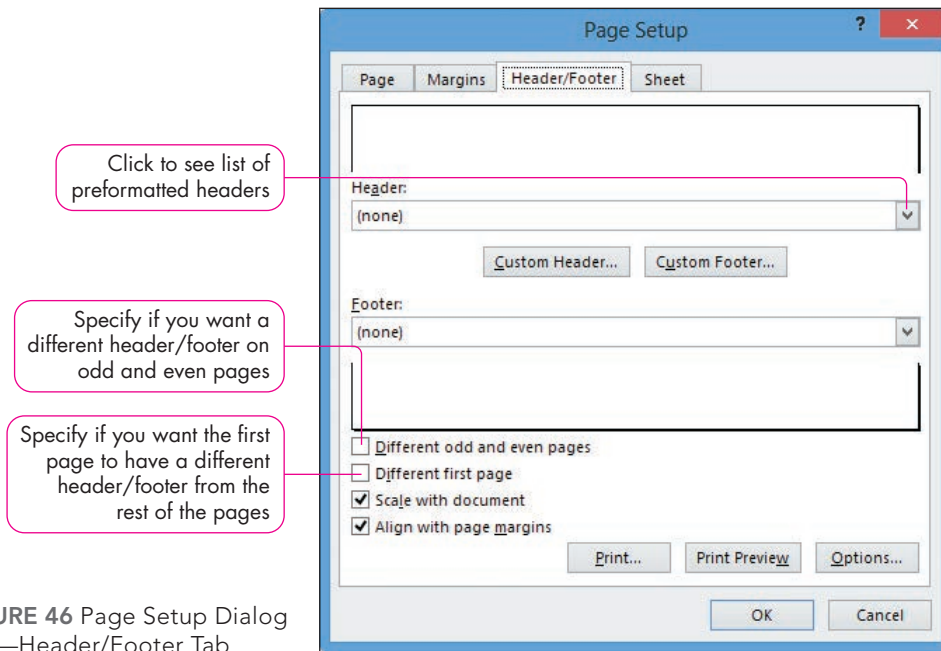


FIGURE 46 Page Setup Dialog Box—Header/Footer Tab

Instead of creating headers and footers using the Page Setup dialog box, you can click the Insert tab and click Header & Footer in the Text group. Excel displays the worksheet in **Page Layout view** with the insertion point in the centre area of the header. You can click inside the left, centre, or right section of a header or footer. When you do, Excel displays the Header & Footer Tools Design contextual tab (see Figure 47). You can enter text or insert data from the Header & Footer Elements group on the tab. Table 8 lists and describes the options in the Header & Footer Elements group. To get back to **Normal view**, click any cell in the worksheet and click Normal in the Workbook Views group on the View tab.

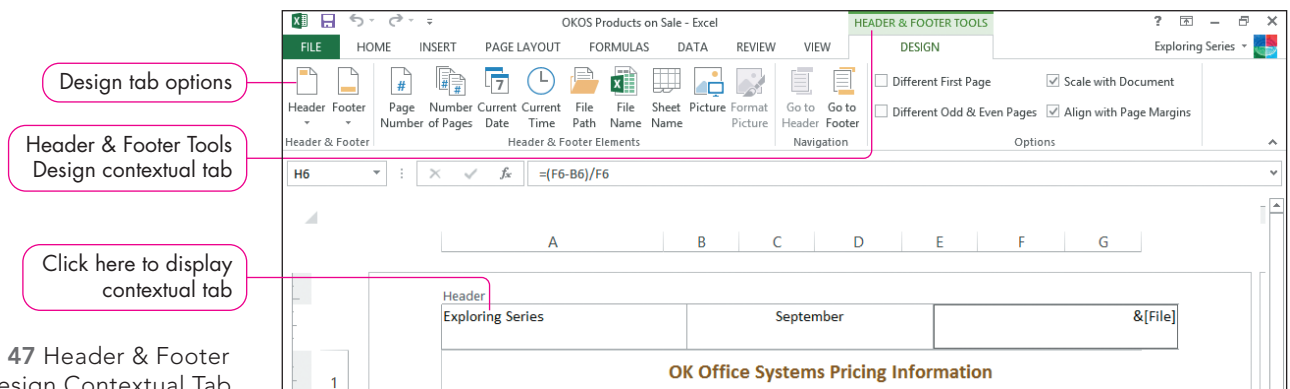


FIGURE 47 Header & Footer Tools Design Contextual Tab

TABLE 8 Header & Footer Elements Options

Option Name	Result
Page Number	Inserts the code &[Page] to display the current page number.
Number of Pages	Inserts the code &[Pages] to display the total number of pages that will print.
Current Date	Inserts the code &[Date] to display the current date, such as 5/19/2016. The date updates to the current date when you open or print the worksheet.
Current Time	Inserts the code &[Time] to display the current time, such as 5:15 PM. The time updates to the current time when you open or print the worksheet.
File Path	Inserts the code &[Path]&[File] to display the path and file name, such as C:\Documents\01h4Markup. This information changes if you save the workbook with a different name or in a different location.
File Name	Inserts the code &[File] to display the file name, such as 01h4Markup. This information changes if you save the workbook with a different name.
Sheet Name	Inserts the code &[Tab] to display the worksheet name, such as September. This information changes if you rename the worksheet.
Picture	Inserts the code &[Picture] to display and print an image as a background behind the data, not just the worksheet.
Format Picture	Enables you to adjust the brightness, contrast, and size of an image after you use the Picture option.

TIP View Tab

If you click the View tab and click Page Layout, Excel displays an area *Click to add header* at the top of the worksheet.

Select Sheet Options

STEP 5

The Sheet tab (see Figure 48) contains options for setting the print area, print titles, print options, and page order. Some of these options are also located in the Sheet Options group on the Page Layout tab on the Ribbon. By default, Excel displays gridlines onscreen to show you each cell's margins, but the gridlines do not print unless you specifically select the Gridlines check box in the Page Setup dialog box or the Print Gridlines check box in the Sheet Options group on the Page Layout tab. In addition, Excel displays row (1, 2, 3, etc.) and column (A, B, C, etc.) headings onscreen. However, these headings do not print unless you click the *Row and column headings* check box in the Page Setup dialog box or click the Print Headings check box in the Sheet Options group on the Page Layout tab.

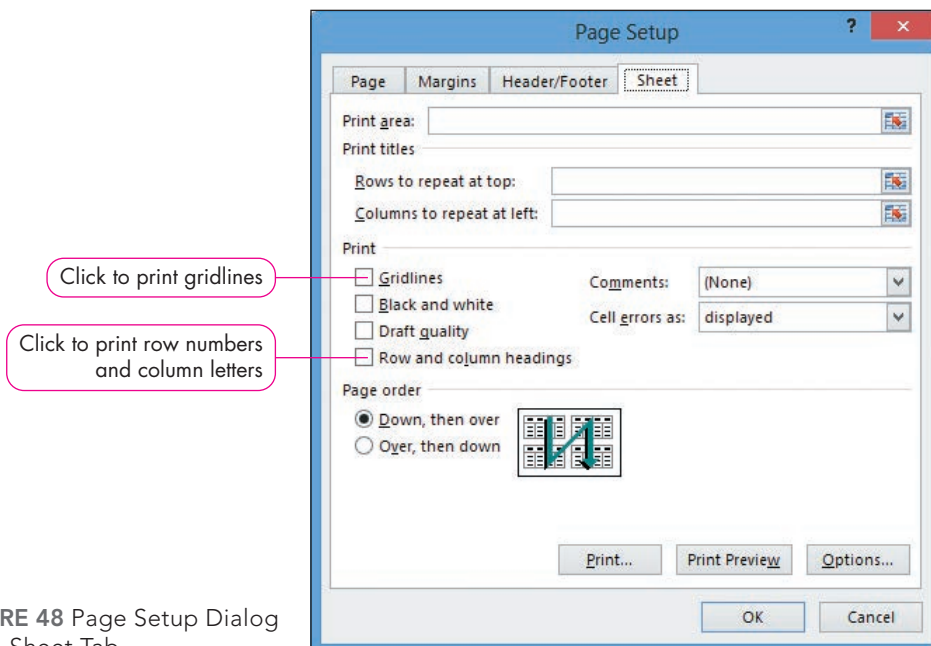


FIGURE 48 Page Setup Dialog Box—Sheet Tab



TIP Printing Gridlines and Headings

For most worksheets, you do not need to print gridlines and row/column headings. However, when you want to display and print cell formulas instead of formula results, you might want to print the gridlines and row/column headings. Doing so will help you analyze your formulas. The gridlines help you see the cell boundaries, and the headings help you identify what data are in each cell. At times, you might want to display gridlines to separate data on a regular printout to increase readability.

Previewing and Printing a Worksheet

STEP 4 >>

Before printing a worksheet, you should click the File tab and select Print. The Microsoft Office Backstage view displays print options and displays the worksheet in print preview mode. This mode helps you see in advance if the data are balanced on the page or if data will print on multiple pages.

You can specify the number of copies to print and which printer to use to print the worksheet. The first option in the Settings area enables you to specify what to print. The default option is Print Active Sheets. You can choose other options, such as Print Entire Workbook or Print Selection. You can also specify which pages to print. If you are connected to a printer capable of duplex printing, you can print on only one side or print on both sides. You can also collate, change the orientation, specify the paper size, adjust the margins, and adjust the scaling.

The bottom of the Print window indicates how many pages will print. If you do not like how the worksheet will print, click the Page Layout tab so that you can adjust margins, scaling, column widths, and so on until the worksheet data appear the way you want them to print.



TIP Printing Multiple Worksheets

To print more than one worksheet at a time, select the sheets you want to print. To select adjacent sheets, click the first sheet tab, press and hold Shift, and then click the last sheet tab. To select nonadjacent sheets, press and hold Ctrl as you click each sheet tab. When you display the Print options in the Microsoft Office Backstage view, Print Active Sheets is one of the default settings. If you want to print all of the worksheets within the workbook, change the setting to Print Entire Workbook.

Quick Concepts



1. What helps determine whether you use portrait or landscape orientation for a worksheet?
2. Why would you select a *Center on page* option if you have already set the margins?
3. List at least five elements you can insert in a header or footer.
4. Why would you want to print gridlines and row and column headings?

Hands-On Exercises



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6 Page Setup and Printing

You are ready to complete the OKOS worksheet. Before printing the worksheet for your supervisor, you want to make sure the data will appear professional when printed. You will adjust some page setup options to put the finishing touches on the worksheet.

Skills covered: Set Page Orientation • Set Margin Options • Create a Header • View in Print Preview and Print • Adjust Scaling and Set Sheet Options

STEP 1 >> SET PAGE ORIENTATION

Because the worksheet has several columns, you decide to print it in landscape orientation.

- a. Open *e01h5Markup_LastFirst* if you closed it at the end of Hands-On Exercise 5 and save it as **e01h6Markup_LastFirst**, changing *h5* to *h6*.
- b. Click the **PAGE LAYOUT** tab.
- c. Click **Orientation** in the Page Setup group.
- d. Select **Landscape** from the list. Save the workbook.

If you print the worksheet, the data will print in landscape orientation.

STEP 2 >> SET MARGIN OPTIONS

You want to set a 1" (2.54 cm) top margin and centre the data between the left and right margins.

- a. Click **Margins** in the Page Setup group on the **PAGE LAYOUT** tab.
As you review the list of options, you notice the list does not contain an option to centre the worksheet data horizontally.
- b. Select **Custom Margins**.
The Page Setup dialog box opens with the Margins tab options displayed.
- c. Click the **Top spin arrow** to display **1**.
You set a 1" (2.54 cm) top margin. For the OKOS worksheet, you do not need to change the left and right margins because you will centre the worksheet data horizontally between the original margins.
- d. Click the **Horizontally check box** in the *Center on page* section and click **OK**. Save the workbook.

The worksheet data are centred between the left and right margins.



Page Setup Dialog Box

You can click the Page Setup Dialog Box Launcher in the Page Setup group to quickly display the Page Setup dialog box. From there, you can click the Margins tab and set the desired margins.

STEP 3 >> CREATE A HEADER

To document the worksheet, you want to include your name, the current date, and the worksheet tab name in a header. Refer to Figure 49 as you complete Step 3.

The screenshot shows the Excel interface with the **HEADER & FOOTER TOOLS** ribbon selected. The ribbon has two tabs: **Header** and **Footer**. The **Header** tab is active, showing the **Header & Footer Elements** group with options for **Page Number**, **Current Date**, **Current Time**, **File Path**, **File Name**, **Sheet Name**, **Picture**, and **Format Picture**. The **Header** section of the worksheet contains three cells: 'Student Name', 'September', and '&[Date]'. The worksheet below the header shows a table titled 'OK Office Systems Pricing Information' with the following data:

Product	Cost	Markup Rate	Retail Price	Percent Off	Sale Price	Profit Amount	Profit Margin
Electronics							
Computer System	\$ 475.50	50.0%	\$ 713.25	15%	\$ 606.26	\$ 130.76	21.6%
Color Laser Printer	\$ 457.70	75.5%	\$ 803.26	20%	\$ 642.61	\$ 184.91	28.8%
28" Monitor	\$ 195.00	83.5%	\$ 357.83	10%	\$ 322.04	\$ 127.04	39.4%
Furniture							
Desk Chair	\$ 75.00	100.0%	\$ 150.00	25%	\$ 112.50	\$ 37.50	33.3%
Solid Oak Computer Desk	\$ 700.00	185.7%	\$ 1,999.90	30%	\$ 1,399.93	\$ 699.93	50.0%
Executive Desk Chair	\$ 200.00	100.0%	\$ 400.00	25%	\$ 300.00	\$ 100.00	33.3%

Annotations on the left side of the screenshot indicate the following steps:

- Step a: Insert tab
- Step b: Type your name here
- Step c: Sheet name or code displays
- Step d: Click to insert date code in header
- Step d: Date code
- Step e: Normal view

FIGURE 49 Header

- Click the **INSERT** tab and click **Header & Footer** in the Text group.
Excel displays the **DESIGN** tab and the worksheet displays in Page Layout view, which displays the header area, margin space, and ruler. The insertion point blinks inside the centre section of the header.
- Click in the left section of the header and type your name.
- Click in the centre section of the header and click **Sheet Name** in the Header & Footer Elements group on the **DESIGN** tab.
Excel inserts the code `&[Tab]`. This code displays the name of the worksheet. If you change the worksheet tab name, the header will reflect the new sheet name.
- Click in the right section of the header and click **Current Date** in the Header & Footer Elements group on the **DESIGN** tab.
Excel inserts the code `&[Date]`. This code displays the current date based on the computer clock when you print the worksheet. If you want a specific date to appear regardless of the date you open or print the worksheet, you would have to type that date manually. When you click in a different header section, the codes, such as `&[Tab]`, display the actual tab name instead of the code.
- Click in any cell in the worksheet, click **Normal** on the status bar, and then save the workbook.
Normal view displays the worksheet, but does not display the header or margins.

STEP 4 >> VIEW IN PRINT PREVIEW AND PRINT

Before printing the worksheet, you should preview it. Doing so helps you detect margin problems and other issues, such as a single row or column of data flowing onto a new page. Refer to Figure 50 as you complete Step 4.

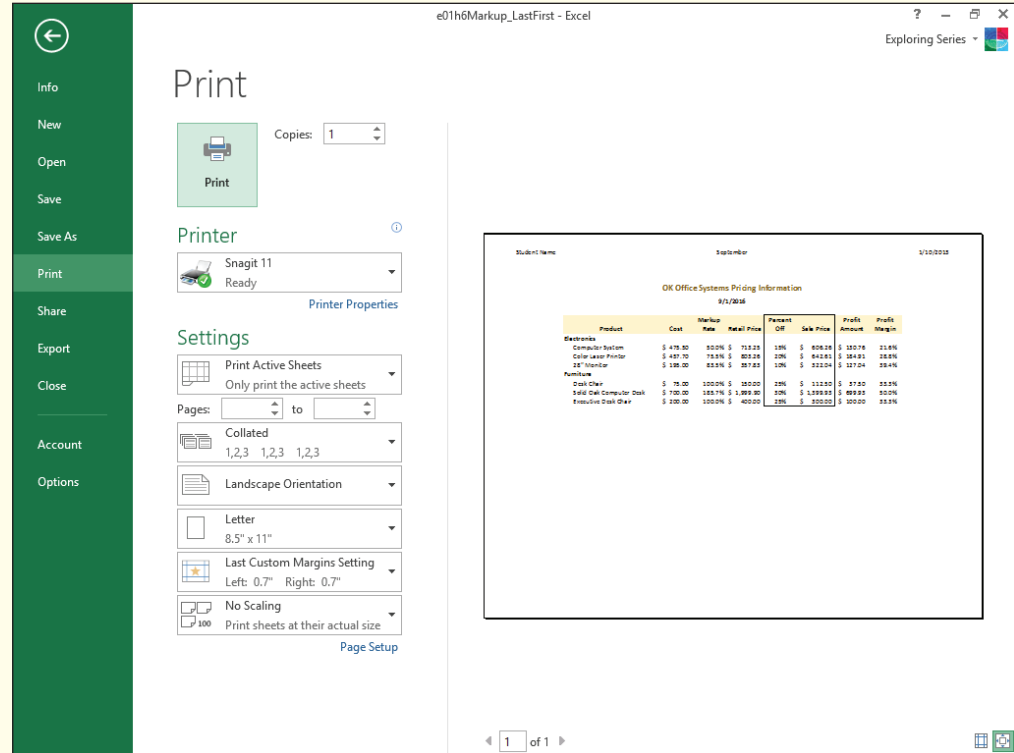


FIGURE 50 Worksheet in Print Preview

- Click the **FILE** tab and click **Print**.

The Microsoft Office Backstage view displays print options and a preview of the worksheet.

- Verify the Printer box displays the printer that you want to use to print your worksheet.
- Click **Print** to print the worksheet and save the workbook.

Check your printed worksheet to make sure the data are formatted correctly. After you click Print, the HOME tab displays. If you decide not to print at this time, click the **Back arrow** to display the Ribbon again.

STEP 5 >> ADJUST SCALING AND SET SHEET OPTIONS

You want to print a copy of the worksheet formulas to check the logic of the formulas. You need to display the formulas, select options to print gridlines and headings, and then decrease the scaling so that the data print on one page. Refer to Figure 51 as you complete Step 5.

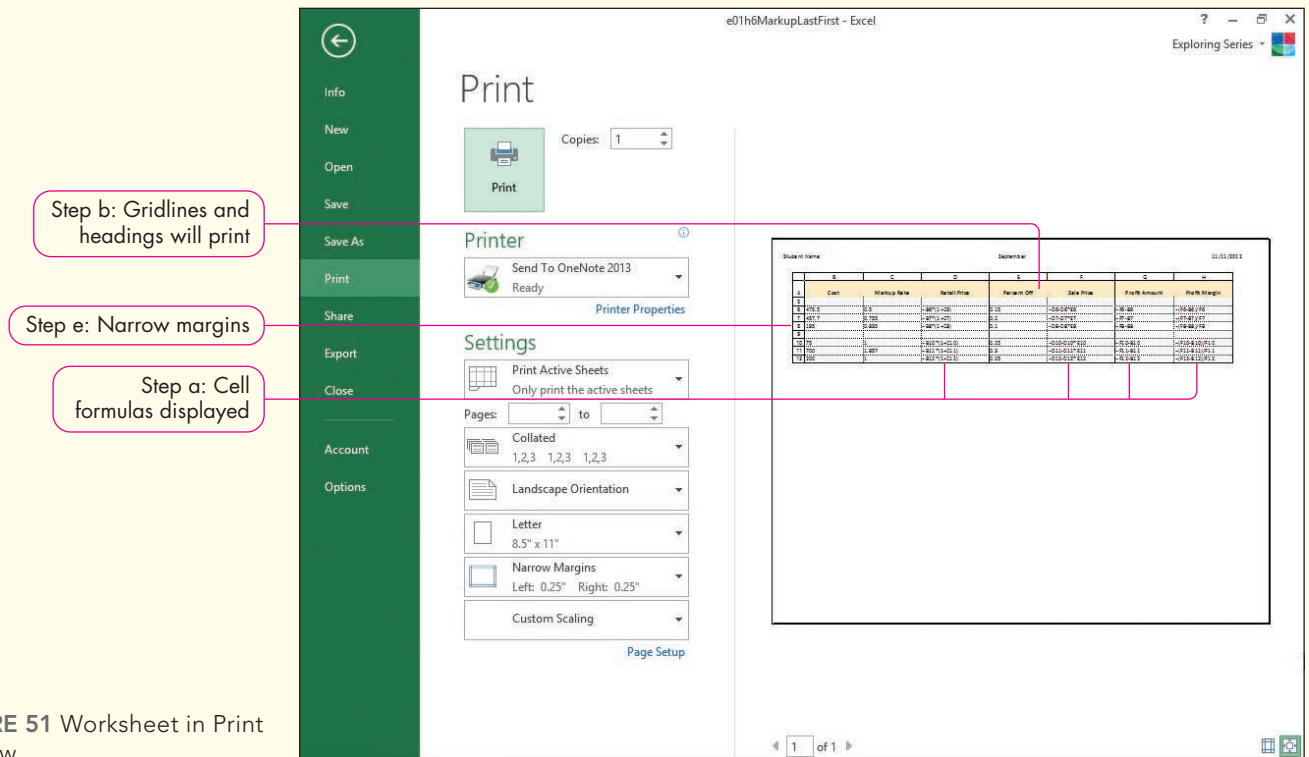


FIGURE 51 Worksheet in Print Preview

- a. Press **Ctrl+** to display cell formulas.
- b. Click the **PAGE LAYOUT** tab. Click the **Print Gridlines** check box in the Sheet Options group and click the **Print Headings** check box in the Sheet Options group.
Because you want to print cell formulas, it is helpful to display the gridlines and row and column headings on that printout.
- c. Click the **FILE** tab and click **Print**.
The bottom of the Print Preview displays 1 of 2, indicating the worksheet no longer prints on one page.
- d. Click **Next Page** (the right triangle at the bottom of the Microsoft Office Backstage view) to view the contents of the second page and click the **Back arrow** to display the Ribbon again.
- e. Click **Margins** in the Page Setup group and select **Narrow**.
- f. Select the **range B4:H12**, click **Print Area** in the Page Setup group, and then select **Set Print Area**.
- g. Click the **Scale spin arrow** in the *Scale to Fit* group on the **PAGE LAYOUT** tab until it displays **90%**.
If you want to verify that the worksheet will print on one page, display it in print preview.
- h. Save and close the workbook and submit based on your instructor's directions.
Check your printed worksheet to make sure the data are formatted correctly.

Chapter Objectives Review

After reading this chapter, you have accomplished the following objectives:

1. Explore the Excel window.

- A worksheet is a single spreadsheet containing data. A workbook is a collection of one or more related worksheets contained in a single file.
- Identify Excel window elements: The Name Box displays the name of the current cell. The Formula Bar displays the contents of the current cell. The active cell is the current cell. A sheet tab shows the name of the worksheet.
- Identify columns, rows, and cells: Columns have alphabetical headings, such as A, B, C. Rows have numbers, such as 1, 2, 3. A cell is the intersection of a column and row and is indicated like A5.
- Navigate in and among worksheets: Use the arrow keys to navigate within a sheet, or use the Go To command to go to a specific cell. Click a sheet tab to display the contents on another worksheet.

2. Enter and edit cell data.

- You should plan the worksheet design by stating the purpose, deciding what input values are needed, and then deciding what outputs are needed. Next, you enter and format data in a worksheet. Finally, you document, save, and then share a workbook.
- Enter text: Text may contain letters, numbers, symbols, and spaces. Text aligns at the left side of a cell.
- Enter values: Values are numbers that represent a quantity. Values align at the right side of a cell by default.
- Enter dates: Excel stores dates as serial numbers so that you can calculate the number of days between dates.
- Enter formulas: A formula is used to perform calculations. The formula results display in the cells.
- Edit and clear contents: You can clear the cell contents and/or formats.

3. Create formulas.

- Use cell references in formulas: Use references, such as =B5+B6, instead of values within formulas.
- Apply the order of precedence: The most commonly used operators are performed in this sequence: Exponentiation, Multiplication, Division, Addition, and Subtraction. Use parentheses to perform a lower operation first.
- Use semi-selection to create a formula: When building a formula, you can click a cell containing a value to enter that cell reference in the formula.

4. Use Auto Fill.

- Copy formulas with Auto Fill: To copy a formula down a column or across a row, double-click or drag the fill handle.
- Complete sequences with Auto Fill: Use Auto Fill to copy formulas, number patterns, month names, etc.

5. Display cell formulas.

- By default, the results of formulas appear in cells.
- You can display formulas by pressing Ctrl+`.

6. Manage worksheets.

- Rename a worksheet: The default worksheet tab name is Sheet1, but you can change the name to describe the contents of a worksheet.
- Change worksheet tab colour: You can apply different colours to the sheet tabs so they stand out.
- Insert and delete a worksheet: You can insert new worksheets to include related data within one workbook, or you can delete extra worksheets you do not need.
- Move or copy a worksheet: Drag a sheet tab to rearrange the worksheets. You can copy a worksheet within a workbook or to another workbook.

7. Manage columns and rows.

- Insert cells, columns, and rows: Insert a cell to move the remaining cells down or to the right. Insert a new column or row for data.
- Delete cells, columns, and rows: You can delete cells, columns, and rows you no longer need.
- Adjust column width: Double-click between the column headings to widen a column based on the longest item in that column, or drag the border between column headings to increase or decrease a column width.
- Adjust row height: Drag the border between row headings to increase or decrease the height of a row.
- Hide and unhide columns and rows: Hiding rows and columns protects confidential data from being displayed.

8. Select, move, copy, and paste data.

- Select a range: A range may be a single cell or a rectangular block of cells.
- Move a range to another location: After selecting a range, cut it from its location. Then make the top-left corner of the destination range the active cell and paste the range there.
- Copy and paste a range: After selecting a range, click Copy, click the top-left corner of the destination range, and then click Paste to make a copy of the original range.
- Use Paste Options and Paste Special: The Paste Special option enables you to specify how the data are pasted into the worksheet.
- Copy Excel data to other programs: You can copy Excel data and paste it in other programs, such as in Word or PowerPoint.

9. Apply alignment and font options.

- Merge and centre labels: Type a label in the left cell, select a range including the data you typed, and then click Merge & Center to merge cells and centre the label within the newly merged cell.
- Change horizontal and vertical cell alignment: The default horizontal alignment depends on the data entered, and the default vertical alignment is Bottom Align.

- **Wrap text:** Use the Wrap Text option to present text on multiple lines in order to avoid having extra-wide columns.
- **Increase and decrease indent:** To indicate hierarchy of data or to offset a label you can increase or decrease how much the data are indented in a cell.
- **Apply borders and fill colours:** Borders and fill colours help improve readability of worksheets.

10. Apply number formats.

- The default number format is General, which does not apply any particular format to values. Apply appropriate formats to values to present the data with the correct symbols and decimal alignment. For example, Accounting Number Format is a common number format for monetary values.
- **Increase and decrease decimal places:** After applying a number format, you can increase or decrease the number of decimal places displayed.

11. Select page setup options.

- The Page Layout tab on the Ribbon contains options for setting margins, selecting orientation, specifying page size, selecting the print area, and applying other settings.

- **Specify page options:** Page options include orientation, paper size, and scaling.
- **Set margin options:** You can set the left, right, top, and bottom margins. In addition, you can centre worksheet data horizontally and vertically on a page.
- **Create headers and footers:** You can insert a header or footer to display documentation, such as your name, date, time, and worksheet tab name.
- **Select sheet options:** Sheet options control the print area, print titles, print options, and page order.

12. Preview and print a worksheet.

- Before printing a worksheet, you should display a preview to ensure the data will print correctly. The Print Preview helps you see if margins are correct or if isolated rows or columns will print on separate pages.
- After making appropriate adjustments, you can print the worksheet.

Key Terms Matching

Match the key terms with their definitions. Write the key term letter by the appropriate numbered definition.

- | | |
|-----------------|------------------------|
| a. Alignment | k. Order of precedence |
| b. Auto Fill | l. Output area |
| c. Cell | m. Range |
| d. Column width | n. Row height |
| e. Fill colour | o. Sheet tab |
| f. Fill handle | p. Text |
| g. Formula | q. Value |
| h. Formula Bar | r. Workbook |
| i. Input area | s. Worksheet |
| j. Name Box | t. Wrap text |

- _____ A spreadsheet that contains formulas, functions, values, text, and visual aids.
- _____ A file containing related worksheets.
- _____ A range of cells containing values for variables used in formulas.
- _____ A range of cells containing results based on manipulating the variables.
- _____ Identifies the address of the current cell.
- _____ Displays the content (text, value, date, or formula) in the active cell.
- _____ Displays the name of a worksheet within a workbook.
- _____ The intersection of a column and row.
- _____ Includes letters, numbers, symbols, and spaces.
- _____ A number that represents a quantity or an amount.
- _____ Rules that control the sequence in which Excel performs arithmetic operations.
- _____ Enables you to copy the contents of a cell or cell range or to continue a sequence by dragging the fill handle over an adjacent cell or range of cells.
- _____ A small green square at the bottom-right corner of a cell.
- _____ The horizontal measurement of a column.
- _____ The vertical measurement of a row.
- _____ A rectangular group of cells.
- _____ The position of data between the cell margins.
- _____ Formatting that enables a label to appear on multiple lines within the current cell.
- _____ The background colour appearing behind data in a cell.
- _____ A combination of cell references, operators, values, and/or functions used to perform a calculation.

Multiple Choice

1. What is the first step in planning an effective worksheet?
 - (a) Enter labels, values, and formulas.
 - (b) State the purpose of the worksheet.
 - (c) Identify the input and output areas.
 - (d) Decide how to format the worksheet data.
2. What Excel interface item displays the address of the current cell?
 - (a) Quick Access Toolbar
 - (b) Formula Bar
 - (c) Status bar
 - (d) Name Box
3. Given the formula $=B1*B2+B3/B4^2$ where B1 contains 3, B2 contains 4, B3 contains 32, and B4 contains 4, what is the result?
 - (a) 14
 - (b) 121
 - (c) 76
 - (d) 9216
4. Why would you press Ctrl+` in Excel?
 - (a) To display the print options
 - (b) To undo a mistake you made
 - (c) To display cell formulas
 - (d) To enable the AutoComplete feature
5. Which of the following is a nonadjacent range?
 - (a) C15:D30
 - (b) L15:L65
 - (c) A1:Z99
 - (d) A1:A10, D1:D10
6. If you want to balance a title over several columns, what do you do?
 - (a) Enter the data in the cell that is about midway across the spreadsheet.
 - (b) Merge and centre the data over all columns.
 - (c) Use the Increase Indent command until the title looks balanced.
 - (d) Click Center to centre the title horizontally over several columns.
7. Which of the following characteristics is not applicable to the Accounting Number Format?
 - (a) Dollar sign immediately on the left side of the value
 - (b) Commas to separate thousands
 - (c) Two decimal places
 - (d) Zero values displayed as hyphens
8. You selected and copied worksheet data containing formulas. However, you want the pasted copy to contain the current formula results rather than formulas. What do you do?
 - (a) Click Paste in the Clipboard group on the Home tab.
 - (b) Click the Paste arrow in the Clipboard group and select Formulas.
 - (c) Click the Paste arrow in the Clipboard group and select Values & Source Formatting.
 - (d) Display the Paste Special dialog box and select *Formulas and number formats*.
9. Assume that the data on a worksheet consume a whole printed page and a couple of columns on a second page. You can do all of the following except what to force the data to print all on one page?
 - (a) Decrease the Scale value.
 - (b) Increase the left and right margins.
 - (c) Decrease column widths if possible.
 - (d) Select a smaller range as the print area.
10. What should you do if you see a column of pound signs (###) instead of values or results of formulas?
 - (a) Increase the zoom percentage.
 - (b) Delete the column.
 - (c) Adjust the row height.
 - (d) Increase the column width.

Practice Exercises

1 Mathematics Review

You want to brush up on your math skills to test your logic by creating formulas in Excel. You realize that you should avoid values in formulas most of the time. Therefore, you created an input area that contains values you will use in your formulas. To test your knowledge of formulas, you will create an output area that will contain a variety of formulas using cell references from the input area. You also need to include a formatted title, the date prepared, and your name. After creating and verifying formula results, you will change input values and observe changes in the formula results. You want to display cell formulas, so you will create a picture copy of the formulas view. This exercise follows the same set of skills as used in Hands-On Exercises 1–4 and 6 in the chapter. Refer to Figure 52 as you complete this exercise.

	A	B	C	D	E
1	Excel Formulas and Order of Precedence				
2	Date Created:	42614		Student Name	
3					
4	Input Area:			Output Area:	
5	First Value	2		Sum of 1st and 2nd values	=B5+B6
6	Second Value	4		Difference between 4th and 1st values	=B8-B5
7	Third Value	6		Product of 2nd and 3rd values	=B6*B7
8	Fourth Value	8		Quotient of 3rd and 1st values	=B7/B5
9				2nd value to the power of 3rd value	=B6^B7
10				1st value added to product of 2nd and 4th values and difference between sum and 3rd value	=B5+B6*B8-B7
11				Product of sum of 1st and 2nd and difference between 4th and 3rd values	=(B5+B6)*(B8-B7)
12				Product of 1st and 2nd added to product of 3rd and 4th values	=(B5*B6)+(B7*B8)

FIGURE 52 Formula Practice

- Open *e01p1Math* and save it as **e01p1Math_LastFirst**.
- Type the current date in **cell B2** in this format: 9/1/2016. Type your first and last names in **cell D2**.
- Adjust the column widths by doing the following:
 - Click in any cell in column A and click **Format** in the Cells group.
 - Select **Column Width**, type **12.57** in the **Column width box**, and then click **OK**.
 - Click in any cell in column B and set the width to **11**.
 - Click in any cell in column D and set the width to **35.57**.
- Select the **range A1:E1**, click **Merge & Center** in the Alignment group, click **Bold**, and then apply **14 pt font size**.
- Select the **range B5:B8** and click **Center** in the Alignment group.
- Select the **range D10:D12** and click **Wrap Text** in the Alignment group.
- Enter the following formulas in column E:
 - Click **cell E5**. Type **=B5+B6** and press **Enter**. Excel adds the value stored in cell B5 (1) to the value stored in cell B6 (2). The result (3) appears in cell E5, as described in cell D5.
 - Enter appropriate formulas in **cells E6:E8**, pressing **Enter** after entering each formula. Subtract to calculate a difference, multiply to calculate a product, and divide to calculate a quotient.
 - Type **=B6^B7** in **cell E9** and press **Enter**. Calculate the answer: $2*2*2 = 8$.
 - Enter **=B5+B6*B8-B7** in **cell E10** and press **Enter**. Calculate the answer: $2^4 = 8$; $1+8 = 9$; $9-3 = 6$. Multiplication occurs first, followed by addition, and finally subtraction.
 - Enter **=(B5+B6)*(B8-B7)** in **cell E11** and press **Enter**. Calculate the answer: $1+2 = 3$; $4-3 = 1$; $3*1 = 3$. This formula is almost identical to the previous formula; however, calculations in parentheses occur before the multiplication.
 - Enter **=B5*B6+B7*B8** in **cell E12** and press **Enter**. Calculate the answer: $1*2 = 2$; $3*4 = 12$; $2+12 = 14$.

- h. Edit a formula and the input values:
 - Click **cell E12** and click in the Formula Bar to edit the formula. Add parentheses as shown: $=\text{(B5*B6)}+\text{(B7*B8)}$ and click **Enter** to the left side of the Formula Bar. The answer is still 14. The parentheses do not affect order of precedence because multiplication occurred before the addition. The parentheses help improve the readability of the formula.
 - Type **2** in **cell B5**, **4** in **cell B6**, **6** in **cell B7**, and **8** in **cell B8**.
 - Double-check the results of the formulas using a calculator or your head. The new results in cells E5:E12 should be 6, 6, 24, 3, 4096, 28, 12, and 56, respectively.
- i. Double-click the **Sheet1 tab**, type **Results**, and then press **Enter**. Right-click the **Results tab**, select **Move or Copy**, click (**move to end**) in the *Before sheet* section, click the **Create a copy check box**, and then click **OK**. Double-click the **Results (2) tab**, type **Formulas**, and then press **Enter**.
- j. Click the **FORMULAS tab** and click **Show Formulas** in the Formula Auditing group. Double-click between the column A and column B headings to adjust the column A width. Double-click between the column B and column C headings to adjust the column B width. Set **24.0 width** for column D.
- k. Select the **range A1:E12**, click the **HOME tab**, click the **Copy arrow** in the Clipboard group, and then select **Copy as Picture**. In the Copy Picture dialog box, click **As shown on screen** and click **OK**.
- l. Press **Delete** to delete the selected worksheet data and click **Paste**.

TROUBLESHOOTING: If you do not delete the worksheet data, the pasted picture image will display over the data, creating a double effect.

- m. Make sure the Formulas worksheet is active, click the **PAGE LAYOUT tab**, and then do the following:
 - Click **Orientation** in the Page Setup group and select **Landscape**.
 - Click the **View Gridlines check box** in the Sheet Options group to deselect it. The worksheet gridlines are hidden, but the gridlines in the picture still display.
- n. Click the **FILE tab** and click **Print**. Verify that the worksheet will print on one page. Press **Esc** to close the Print Preview.
- o. Save and close the file, and submit based on your instructor's directions.

2 Calendar Formatting



You want to create a calendar for May 2016. The calendar will enable you to practise alignment settings, including centre, merge and centre, and indents. In addition, you will need to adjust column widths and increase row height to create cells large enough to enter important information, such as birthdays, in your calendar. You will create a formula and use Auto Fill to complete the days of the week and the days within each week. To improve the appearance of the calendar, you will add fill colours, font colours, borders, and clip art. This exercise follows the same set of skills as used in Hands-On Exercises 1–6 in the chapter. Refer to Figure 53 as you complete this exercise.

May 2016						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

FIGURE 53 May 2016 Calendar

- Click the **FILE** tab, select **New**, and then click **Blank workbook**. Save the workbook as **e01p2May2016_LastFirst**.
- Type **'May 2016** in cell **A1** and click **Enter** on the left side of the Formula Bar.

TROUBLESHOOTING: If you do not type the apostrophe before *May 2016*, the cell will display *May-16* instead of *May 2016*.

- Format the title:
 - Select the **range A1:G1** and click **Merge & Center** in the Alignment group.
 - Apply **48 pt font size**.
 - Click the **Fill Color** arrow and click **Green, Accent 6, Lighter 40%** in the *Theme Colors* section of the colour palette.
- Complete the days of the week:
 - Type **Sunday** in cell **A2** and click **Enter** on the left side of the Formula Bar.
 - Drag the **cell A2 fill handle** across the row through cell **G2** to use Auto Fill to complete the rest of the weekdays.
 - Click the **Fill Color** arrow and select **Green, Accent 6, Lighter 60%**. Click the **Font Color** arrow and click **Green, Accent 6, Darker 50%**. Apply **bold** and **14 pt font size**. Click **Middle Align** and click **Center** in the Alignment group.
- Complete the days of the month:
 - Type **1** in cell **A3** and press **Ctrl+Enter**. Drag the **cell A3 fill handle** across the row through cell **G3**. Click **Auto Fill Options** in the bottom-right corner of the filled data and select **Fill Series**.
 - Type **=A3+7** in cell **A4** and press **Ctrl+Enter**. Usually you avoid numbers in formulas, but the number of days in a week is always 7. Drag the **cell A4 fill handle** down through cell **A7** to get the date for each Sunday in May.
 - Keep the **range A4:A7** selected and drag the fill handle across through cell **G7**. Select the **range D7:G7** and press **Delete** to delete the extra days.
- Format the columns and rows:
 - Select **columns A:G**. Click **Format** in the Cells group, select **Column Width**, type **16** in the **Column width box**, and then click **OK**.
 - Select **row 2**. Click **Format** in the Cells group, select **Row Height**, type **54**, and then click **OK**.

- Select **rows 3:7**. Set an **80 row height**.
 - Select the **range A2:G7**. Click the **Borders arrow** in the Font group and select **All Borders**.
 - Select the **range A3:G7**. Click **Top Align** and **Align Left** in the Alignment group. Click **Increase Indent**. Bold the numbers and apply **12 pt font size**.
- g.** Double-click the **Sheet1 tab**, type **May**, and then press **Enter**.
- h.** Deselect the range and click the **PAGE LAYOUT tab**. Click **Orientation** in the Page Setup group and select **Landscape**.
- i.** Click the **INSERT tab** and click **Header & Footer** in the Text group. Click in the left side of the header and type your name. Click in the centre of the header and click **Sheet Name** in the Header & Footer Elements group on the DESIGN tab. Click in the right side of the header and click **File Name** in the Header & Footer Elements group on the DESIGN tab. Click in any cell in the workbook and click **Normal** on the status bar.
- j.** Save and close the file, and submit based on your instructor's directions.

3 Downtown Theatre

You are the assistant manager at Downtown Theatre, where touring Broadway plays and musicals are performed. You need to complete a spreadsheet to help you analyze ticket sales by seating chart for each performance. The spreadsheet will identify the seating sections, total seats in each section, and the number of seats sold for a performance. You will then calculate the percentage of seats sold and unsold. This exercise follows the same set of skills as used in Hands-On Exercises 1–6 in the chapter. Refer to Figure 54 as you complete this exercise.

	A	B	C	D	E
1	Downtown Theatre				
2	Ticket Sales by Seating Section				
3	3/31/2016				
4					
5	Section	Available Seats	Seats Sold	Percentage Sold	Percentage Unsold
6	Box Seats	25	12	48.0%	52.0%
7	Front Floor	120	114	95.0%	5.0%
8	Back Floor	132	108	81.8%	18.2%
9	Tier 1	40	40	100.0%	0.0%
10	Mezzanine	144	138	95.8%	4.2%
11	Balcony	106	84	79.2%	20.8%

FIGURE 54 Theatre Seating Data

- a.** Open *e01p3TicketSales* and save it as **e01p3TicketSales_LastFirst**.
- b.** Double-click the **Sheet1 tab**, type **Seating**, and then press **Enter**.
- c.** Type **3/31/2016** in cell **A3** and press **Enter**.
- d.** Adjust alignments and font attributes by doing the following from the Alignment and Font groups on the HOME tab:
- Select the **range A1:E1**, click **Merge & Center**, click **Bold**, click the **Font Size arrow**, and then select **16**.
 - Use the Merge & Center command to merge the **range A2:E2** and centre the subtitle.
 - Use the Merge & Center command to merge the **range A3:E3** and centre the date.
 - Select the **range A5:E5**, click **Wrap Text**, click **Center**, and then click **Bold** to format the column labels.
- e.** Right-click the **row 9 heading** and select **Insert** from the shortcut menu to insert a new row. Type the following data in the new row: **Back Floor, 132, 108**.

- f. Move the Balcony row to be the last row by doing the following:
 - Click the **row 6 heading** and click **Cut** in the Clipboard group on the HOME tab.
 - Right-click the **row 12 heading** and select **Insert Cut Cells** from the menu.
- g. Adjust column widths by doing the following:
 - Double-click between the column A and column B headings.
 - Select **columns B and C headings** to select the columns, click **Format** in the Cells group, select **Column Width**, type **9** in the **Column width box**, and then click **OK**. Because columns B and C contain similar data, you set the same width for these columns.
 - Set the width of columns D and E to **12**.
- h. Select the **range B6:C11**, click **Align Right** in the Alignment group on the HOME tab, and then click **Increase Indent** twice in the Alignment group.
- i. Calculate and format the percentage of sold and unsold seats by doing the following:
 - Click **cell D6**. Type $=C6/B6$ and press **Tab** to enter the formula and make cell E6 the active cell. This formula divides the number of seats sold by the total number of Box Seats.
 - Type $=(B6-C6)/B6$ and click **Enter** on the left side of the Formula Bar to enter the formula and keep cell E6 the active cell. This formula must first subtract the number of sold seats from the available seats to calculate the number of unsold seats. The difference is divided by the total number of available seats to determine the percentage of unsold seats.
 - Select the **range D6:E6**, click **Percent Style** in the Number group on the HOME tab, and then click **Increase Decimal** in the Number group. Keep the range selected.
 - Double-click the **cell E6 fill handle** to copy the selected formulas down their respective columns. Keep the range selected.
 - Click **Align Right** in the Alignment group and click **Increase Indent** twice in the Alignment group. These actions will help centre the data below the column labels. Do not click Center; doing so will centre each value and cause the decimal points not to align. Deselect the range.
- j. Display and preserve a screenshot of the formulas by doing the following:
 - Click **New sheet**, double-click the **Sheet1 tab**, type **Formulas**, and then press **Enter**.
 - Click **Select All** in the top-left corner above the row headings and to the left of the column headings, click the **Fill Color arrow** in the Font group, and then click **White, Background 1**. Applying this fill colour will prevent the cell gridlines from bleeding through the screenshot you are about to embed.
 - Click the **Seating sheet tab**, click the **FORMULAS tab**, and then click **Show Formulas** in the Formula Auditing group to display cell formulas.
 - Click **cell A1** and drag down to **cell E11** to select the range of data. Click the **HOME tab**, click **Copy arrow** in the Clipboard group, select **Copy as Picture**, and then click **OK**.
 - Click the **Formulas sheet tab**, click **cell A1**, and then click **Paste**.
 - Click the **PAGE LAYOUT tab**, click **Orientation** in the Page Setup group, and then select **Landscape**.
 - Click the **Seating sheet tab**, click the **FORMULAS tab**, and then click **Show Formulas** in the Formula Auditing group to hide the cell formulas.
- k. Click **cell A1**. Click the **PAGE LAYOUT tab**, click **Margins** in the Page Setup group, and then select **Custom Margins**. Click the **Horizontally check box** and click **Print Preview**. Excel centres the data horizontally based on the widest item. Press **Esc** to leave the Print Preview mode.
- l. Click the **Page Setup Dialog Box Launcher**, click the **Header/Footer tab** in the Page Setup dialog box, click **Custom Footer**, type your name in the **Left section box**, click in the **Center section box**, click **Insert File Name**, click in the **Right section box**, click **Insert Sheet Name**, and then click **OK**. Click **OK**.
- m. Save and close the file, and submit based on your instructor's directions.

Mid-Level Exercises

1 Restaurant Receipt

FROM SCRATCH 

Matt, the owner of Matt's Sports Grill in Timmins, Ontario, asked you to help him create a receipt spreadsheet that he can use until his new system arrives. He wants an input area for the total food and beverage purchases, the harmonized sales tax (HST), and the tip rate. The formatted receipt should include the subtotal, tax, tip, and total amount for a customer. Refer to Figure 55 as you complete this exercise.

	A	B	C	D	E	F
1	Input Area			Matt's Sports Grill		
2	Food & Beverages	\$ 9.39		Timmins, Ontario		
3	Harmonized Sales Tax (HST)	13.0%				
4	Tip Rate	18.0%		Food & Beverages	\$ 9.39	
5				HST Amount	<u>1.22</u>	
6				Subtotal	\$ 10.61	
7				Tip Amount	<u>1.69</u>	
8				Total Bill	<u><u>\$ 12.30</u></u>	
9						
10				<i>Thank you for dining with us.</i>		
11						

FIGURE 55 Matt's Sports Grill Receipt

- Open a new Excel workbook, save it as **e01m1Receipt_LastFirst**, and then rename *Sheet1* as **Receipt**.
- Enter the four labels in the **range A1:A4** in the Input Area as shown in Figure 56. Type **9.39**, **.13**, and **.18** in the **range B2:B4**. Apply these formats to the Input Area:
 - Merge and centre the *Input Area* title over both columns. Apply bold and **Blue, Accent 1, Lighter 40% fill colour** to the title. Adjust the width of the first column.
 - Apply the **Accounting Number Format** and **Percent Style** format with the respective decimal places as shown in the **range B2:B4**.
- Enter the labels in the receipt area in column D. Use Format Painter to copy the formats of the title in **cells A1** and **D1**. Merge and centre the city and province in the **range D2:E2**. Change the width of column D to **17**. Indent the *Subtotal* and *Tip Amount* labels twice each. Apply bold to *Total Bill* and apply italic to *Thank you for dining with us*.
- Enter the following formulas for the receipt:
 - Food & Beverages:** Enter a formula that reads the value in the Input Area; do not retype the value in cell E4.
 - HST Amount:** Calculate the product of the food & beverages and the harmonized sales tax.
 - Subtotal:** Determine the formula needed.
 - Tip Amount:** Calculate the tip based on the pretax amount and the tip rate.
 - Total Bill:** Determine the formula needed.
- Apply **Accounting Number Format** to the *Food & Beverages*, *Subtotal*, and *Total Bill* values, if necessary. Apply **Comma Style** and underline to the *HST Amount* and *Tip Amount* values. Apply the **Double Underline style** to the *Total Bill* value.
- Set 3.81 cm (1.5") top margin and centre the data horizontally on the page.
- Insert a footer with your name on the left side, the sheet name code in the centre, and the file name code on the right side.
- Create a copy of the Receipt worksheet, move the new sheet to the end, and then rename the copied sheet **Formulas**. Display cell formulas on the Formulas worksheet, select **Landscape orientation**, and then select the options to print gridlines and headings. Adjust column widths so that the data will fit on one page.
- Open the Excel Options dialog box while displaying the Formulas worksheet. In the Advanced category, under *Display options for this worksheet*, select the **Show formulas in cells instead of their calculated results check box**. This option will make sure the active worksheet will display the formulas when you open the workbook again. The Receipt worksheet will continue showing the results.
- Save and close the file, and submit based on your instructor's directions.

DISCOVER 

2 Guest House Rental Rates

ANALYSIS CASE



You manage a beach guest house in Shediac, New Brunswick, containing three types of rental units. Prices are based on peak and off-peak times of the year. You need to calculate the maximum daily revenue for each rental type, assuming all units are rented. In addition, you need to calculate the discount rate for off-peak rental times. Finally, you will improve the appearance of the worksheet by applying font, alignment, and number formats.

- a. Open *e01m2Rentals* and save it as **e01m2Rentals_LastFirst**.
- b. Merge and centre *Peak Rentals* in the **range C4:D4**, over the two columns of peak rental data. Apply **Dark Red fill colour** and **White, Background 1 font colour**.
- c. Merge and centre *Off-Peak Rentals* in the **range E4:G4** over the three columns of off-peak rental data. Apply **Blue fill colour** and **White, Background 1 font colour**.
- d. Centre and wrap the headings on row 5. Adjust the width of columns D and E, if needed. Centre the data in the **range B6:B8**.
- e. Create and copy the following formulas:
 - Calculate the Peak Rentals Maximum Revenue by multiplying the number of units by the peak rental price per day.
 - Calculate the Off-Peak Rentals Maximum Revenue by multiplying the number of units by the off-peak rental price per day.
 - Calculate the Discount rate for the Off-Peak rental price per day. For example, using the peak and off-peak per day values, the studio apartment rents for 75% of its peak rental rate. However, you need to calculate and display the off-peak discount rate, which is .24975.
- f. Format the monetary values with **Accounting Number Format**. Format the Discount Rate formula results in **Percent Style** with one decimal place.
- g. Apply **Blue, Accent 1, Lighter 80% fill colour** to the **range E5:G8**.
- h. Select the **range C5:D8** and apply a custom colour with **Red 242, Green 220, and Blue 219**.
- ★ Answer the four questions below the worksheet data. If you change any values to answer the questions, change the values back to the original values.
- j. Set 2.54 cm (1") top, bottom, left, and right margins. Centre the data horizontally on the page.
- k. Insert a footer with your name on the left side, the sheet name code in the centre, and the file name code on the right side.
- l. Create a copy of the Rental Rates worksheet, place the new sheet to the right side of the original worksheet, and rename the new sheet **Formulas**. On the Formulas worksheet, select **Landscape orientation** and the options to print gridlines and headings. Delete the question and answer section on the Formulas sheet.

DISCOVER



- m. Open the Excel Options dialog box while displaying the Formulas worksheet. In the Advanced category, under *Display options for this worksheet*, select the **Show formulas in cells instead of their calculated results check box**. This option will make sure the active worksheet will display the formulas when you open the workbook again. The Rental Rates worksheet will continue showing the results. Adjust column widths so that the data will fit on one page.
- n. Save and close the file, and submit based on your instructor's directions.

DISCOVER



- m. Open the Excel Options dialog box while displaying the Formulas worksheet. In the Advanced category, under *Display options for this worksheet*, select the **Show formulas in cells instead of their calculated results check box**. This option will make sure the active worksheet will display the formulas when you open the workbook again. The Rental Rates worksheet will continue showing the results. Adjust column widths so that the data will fit on one page.
- n. Save and close the file, and submit based on your instructor's directions.

3 Real Estate Sales Report

You own a small real estate company in Fort McMurray, Alberta. You want to analyze sales for selected properties. Your assistant has prepared a spreadsheet with sales data. You need to calculate the number of days that the houses were on the market and their sales percentage of the list price. In one situation, the house was involved in a bidding war between two families that really wanted the house. Therefore, the sale price exceeded the list price.

- a. Open *e01m3Sales* and save it as **e01m3Sales_LastFirst**.
- b. Delete the row that has incomplete sales data. The owners took their house off the market.
- c. Calculate the number of days each house was on the market. Copy the formula down that column.
- d. Format prices with **Accounting Number Format** with zero decimal places.
- e. Calculate the sales price percentage of the list price. The second house was listed for \$500,250, but it sold for only \$400,125. Therefore, the sale percentage of the list price is 79.99%. Format the percentages with two decimal places.
- f. Wrap the headings on row 4.
- g. Insert a new column between the *Date Sold* and *List Price* columns. Move the *Days on Market* column to the new location. Apply **Align Right** and increase the indent on the days on market formula results. Then delete the empty column B.
- h. Edit the list date of the 41 Chestnut Circle house to be **4/22/2016**. Edit the list price of the house on Amsterdam Drive to be **\$355,000**.
- i. Select the property rows and set a **20 row height**. Adjust column widths as necessary.
- j. Select **Landscape orientation** and set the scaling to **130%**. Centre the data horizontally and vertically on the page.
- k. Insert a header with your name, the current date code, and the current time code.
- l. Save and close the file, and submit based on your instructor's directions.

4 Problem-Solving with Classmates

COLLABORATION CASE

Your instructor wants all students in the class to practise their problem-solving skills. Pair up with a classmate so that you can create errors in a workbook and then see how many errors your classmate can find in your worksheet and how many errors you can find in your classmate's worksheet.

- a. Create a folder named **Exploring** on your SkyDrive and give access to that drive to a classmate and your instructor.
- b. Open *e01h6Markup_LastFirst*, which you created in the Hands-On Exercises, and save it as **e01m4Markup_LastFirst**.
- c. Edit each main formula to have a deliberate error (such as a value or incorrect cell reference) in it and then copy the formulas down the columns.
- d. Save the workbook to your shared folder on your SkyDrive.
- e. Open the workbook your classmate saved on his or her SkyDrive and save the workbook with your name after theirs, such as *e01m4Markup_MulberyKeith_KrebsCynthia*.
- f. Find the errors in your classmate's workbook, insert comments to describe the errors, and then correct the errors.
- g. Save the workbook back to your classmate's SkyDrive and submit based on your instructor's directions.

Beyond the Classroom

Credit Card Rebate

RESEARCH
CASE 

FROM
SCRATCH 

You recently found out the Costco TrueEarnings® American Express credit card earns annual rebates on all purchases. You want to see how much rebate you would have received had you used this credit card for purchases in the past year. Use the Internet to research the percentage rebates for different categories. Plan the design of the spreadsheet. Enter the categories, rebate percentages, amount of money you spent in each category, and a formula to calculate the amount of rebate. Use the Excel Help feature to learn how to add several cells using a function instead of adding cells individually and how to apply a Double Accounting underline. Insert the appropriate function to total your categorical purchases and rebate amounts. Apply appropriate formatting and page setup options for readability. Underline the last monetary values for the last data row and apply the **Double Accounting underline style** to the totals. Insert a header. Save the workbook as **e01b2Rebate_LastFirst**. Close the workbook and submit based on your instructor's directions.

Net Proceeds from House Sale

DISASTER
RECOVERY 

Garrett Frazier is a real estate agent. He wants his clients to have a realistic expectation of how much money they will receive when they sell their houses. Sellers know they have to pay a commission to the agent and pay off their existing mortgages; however, many sellers forget to consider they might have to pay some of the buyer's closing costs, title insurance, and prorated property taxes. The realtor commission and estimated closing costs are based on the selling price and the respective rates. The estimated property taxes are prorated based on the annual property taxes and percentage of the year. For example, if a house sells three months into the year, the seller pays 25% of the property taxes. Garrett created a worksheet to enter values in an input area to calculate the estimated deductions at closing and calculate the estimated net proceeds the seller will receive. However, the worksheet contains errors. Open *e01b3Proceeds* and save it as **e01b3Proceeds_LastFirst**.

Use Help to learn how to insert comments into cells. As you identify the errors, insert comments in the respective cells to explain the errors. Correct the errors, including formatting errors. Apply **Landscape orientation, 115% scaling, 3.81 cm (1.5") top margin**, and centre horizontally. Insert your name on the left side of the header, the sheet name code in the centre, and the file name code on the right side. Save and close the workbook, and submit based on your instructor's directions.

Goal Setting

SOFT SKILLS
CASE 

FROM
SCRATCH 

After watching the Goal Setting video, start a new Excel workbook and save it as **e01b4Goals_LastFirst**. List three descriptive goals in column A relating to your schoolwork and degree completion. For example, maybe you usually study three hours a week for your algebra class, and you want to increase your study time by 20%. Enter *Algebra homework & study time (hours)* in column A, 3 in column B, the percentage change in column C, and create a formula that calculates the total goal in column D. Adjust column widths as needed.

Insert column labels above each column. Format the labels and values using information you learned earlier in the chapter. Merge and centre a title at the top of the worksheet. Use the Page Setup dialog box to centre the worksheet horizontally. Rename Sheet1 using the term, such as *Fall 2016*. Create a footer with your name on the left side, sheet name code in the centre, and file name code on the right side. Save and close the workbook, and submit based on your instructor's directions.

You manage a publishing company that publishes and sells books to bookstores in Austin. Your assistant prepared a standard six-month royalty statement for one author. You need to insert formulas, format the worksheets, and then prepare royalty statements for other authors.

Enter Data into the Worksheet

You need to format a title, enter the date indicating the end of the statement period, and delete a blank column. You also need to insert a row for the standard discount rate, a percentage that you discount the books from the retail price to sell to the bookstores.

- Open *e01c1Royalty* and save it as **e01c1Royalty_LastFirst**.
- Merge and centre the title over the **range A1:D1**.
- Type **6/30/2016** in **cell B3** and left-align the date.
- Delete the blank column between the Hardback and Paperback columns.
- Insert a new row between Retail Price and Price to Bookstore. Enter **Standard Discount Rate, 0.55**, and **0.5**. Format the two values as **Percent Style**.

Calculate Values

You need to insert formulas to perform necessary calculations.

- Enter the Percent Returned formula in **cell B10**. The percent returned indicates the percentage of books sold but returned to the publisher.
- Enter the Price to Bookstore formula in **cell B15**. This is the price at which you sell the books to the bookstore. It is based on the retail price and the standard discount. For example, if a book has a \$10 retail price and a 55% discount, you sell the book for \$4.50.
- Enter the Net Retail Sales formula in **cell B16**. The net retail sales is the revenue from the net units sold at the retail price. Gross units sold minus the returned units equals net units sold.
- Enter the Royalty to Author formula in **cell B20**. Royalties are based on net retail sales and the applicable royalty rate.
- Enter the Royalty per Book formula in **cell B21**. This amount is the author's earnings on every book sold but not returned.
- Copy the formulas to the Paperback column.

Format the Values

You are ready to format the values to improve readability.

- Apply **Comma Style** with zero decimal places to the **range B8:C9**.
- Apply **Percent Style** with one decimal place to the **range B10:C10** and **Percent Style** with two decimal places to the **range B19:C19**.
- Apply **Accounting Number Format** to all monetary values.

Format the Worksheet

You want to improve the appearance of the rest of the worksheet.

- Select the **range B6:C6**. Apply bold, right alignment, and **Purple font colour**.
- Click **cell A7**, apply **Purple font colour**, and then apply **Gray-25%, Background 2, Darker 10% fill colour**. Select the **range A7:C7** and select **Merge Across**.
- Use Format Painter to apply the formats from **cell A7** to **cells A12** and **A18**.
- Select the **ranges A8:A10, A13:A16, and A19:A21**. Indent the labels twice. Widen column A as needed.
- Select the **range A7:C10** (the *Units Sold* section) and apply the **Outside Borders** border style. Apply the same border style to the *Pricing* and *Royalty Information* sections.

Manage the Workbook

You will apply page setup options insert a footer, and, then duplicate the royalty statement worksheet to use as a model to prepare a royalty statement for another author.

- Select the margin setting to centre the data horizontally on the page. Insert a footer with your name on the left side, the sheet name code in the centre, and the file name code on the right side.
- Copy the Jacobs worksheet, move the new worksheet to the end, and then rename it **Lopez**.
- Change the Jacobs sheet tab to **Red**. Change the Lopez sheet tab to **Dark Blue**.
- Make these changes on the Lopez worksheet: **Lopez** (author), **5000** (hardback gross units), **14000** (paperback gross units), **400** (hardback returns), **1925** (paperback returns), **19.95** (hardback retail price), and **6.95** (paperback retail price).

Display Formulas and Print the Workbook

You want to print the formatted Jacobs worksheet to display the calculated results. To provide evidence of the formulas, you want to display and print cell formulas in the Lopez worksheet.

- Display the cell formulas for the Lopez worksheet.
- Select options to print the gridlines and headings.
- Change the Options setting to make sure the formulas display instead of cell results on this worksheet when you open it again.
- Adjust the column widths so that the formula printout will print on one page.
- Save and close the workbook, and submit based on your instructor's directions.

