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# EXCEL

## 2016 CORE

Certification Guide

Microsoft®

# Excel 2016

Core Certification Guide

## Lesson 1: Introducing Excel

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### Lesson Objectives

In this lesson you will be introduced to the Excel program, learn how it works, and understand how to move in the program, create a workbook, enter data into a worksheet, and work with files. Upon completion of this lesson, you should be able to:

- understand what an electronic spreadsheet is
  - understand what Excel is and what it can do
  - identify elements on the Excel screen
  - understand some basic terminology
  - use the Quick Access Toolbar
  - move around in Excel
  - use keyboard shortcuts
  - enter text, numbers, dates, and times
  - move around a worksheet
  - use the Backstage view to save, create new, open, and close a workbook
  - switch between workbooks
  - save in a previous version Excel format, and check for compatibility issues
  - manage files and folders
  - select cells
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# What is Excel?

Excel is an electronic spreadsheet program developed by Microsoft, originally for the Windows environment, but is now available for the Apple Mac or any computer with a web browser. A powerful tool for analyzing and presenting information, Excel actually consists of three programs in one:

**Spreadsheet** – Entering and analyzing numeric data in applications such as financial forecasting and statistical problems. Excel performs math calculations so quickly that they appear to be simultaneous. Excel uses the term worksheet in place of spreadsheet.

**Graphics** – Creating charts to represent numeric data.

**Database** – Compiling and sorting lists of data.

Some of Excel's advantages are:

- It is relatively easy to learn. All Microsoft Office Suite programs, such as Word, Excel, and PowerPoint, operate similarly. Many of the skills you learn in one program carry over to others.
- It enables data to be exchanged easily between the different Office programs. For example, you can create a chart in Excel and insert it into a document you are writing using Word.
- Excel can produce output of print-shop quality using features such as the spelling checker and other tools that enhance your work and provide it with a professional look.
- Excel has a large selection of mathematical, financial, statistical, and database functions. It includes 14 basic chart types and each of the commonly-used chart types have four or more subtypes. There are also some tools for forecasting or analysis, and a function helper.
- Worksheets can be grouped together in a single file rather than separate files. In Excel, these files are called workbooks. Inside a workbook, there are several ways to manage the multiple worksheets such as renaming worksheet tabs.
- Excel uses AutoFill to fill selected cells with data that follows from the information in the first of the selected cells. For example, if you select four cells, and the first cell contains Qtr 1, AutoFill will fill in the next three cells with Qtr 2, Qtr 3, and Qtr 4.
- By default, edits occur directly in the cell. This includes formatting portions of text and making font changes. Alternatively, you can perform edits in the Formula bar.

Although Excel is a very large program, it is enjoyable to learn and use. Most people find it takes them less time to become competent and productive with Excel than they initially anticipated. For the purpose of this courseware, we will assume that you are using Excel on a Windows computer.

## Starting Excel

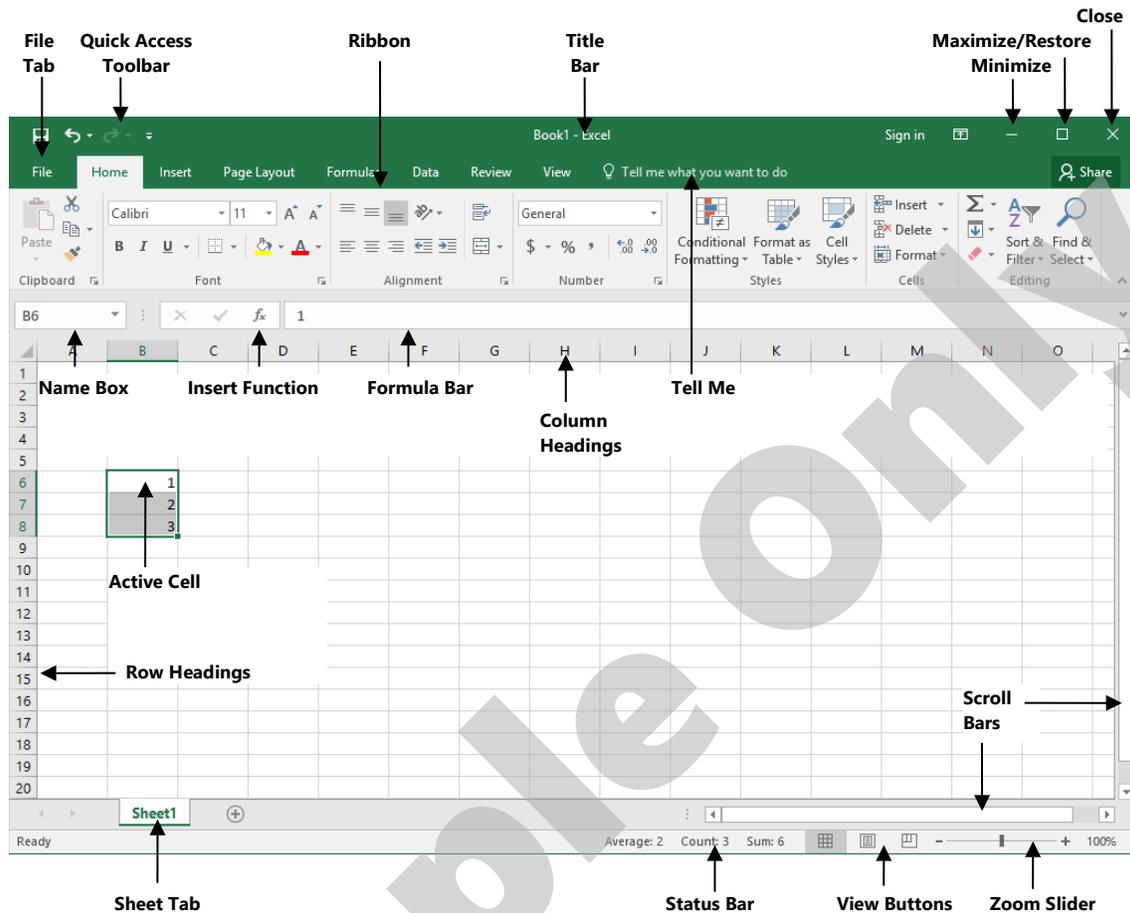
In Windows 10, there are several ways to start the Excel program:

- if it is present in the Start window, click or tap the Windows **Start** button, then select the **Excel 2016** tile from the Start window.
- click the Windows **Start** button, then select **All apps**, and then **Excel 2016**.
- in the taskbar, click or tap the **Excel 2016 Quick Launch** icon.



# Looking at the Screen

When Excel starts, a new workbook opens and the screen displays as follows:



**File Tab** – Click this tab to open the Backstage view from which you can select commands to manage files, such as create, save, open, print, export or change Excel options. A panel at the left displays commands that may include tabs with a set of sub-commands to manage the file.

**Quick Access Toolbar** – Located above the Ribbon, this provides quick access to frequently used commands. You can customize the toolbar to contain commands you use regularly.

**Title Bar** – Located at the top of the screen, the title bar indicates the contents of the window (for example, *Book1, Department Budget*). It may also show the text *[Compatibility Mode]* if the workbook you are using has been saved to be compatible with a previous version of Excel. If more than one window is open on the screen, the one with a title bar that has a darker color or intensity is the active window.

**Minimize, Maximize, Restore Down, Close** – Located in the upper right-hand corner of the window, these buttons enable you to minimize (–) the application window to a button on the taskbar, maximize (□) the program to full screen, restore (◻) the window to its original size, or close (✕) the application window.

**Ribbon** – A collection of tabs (for example, File, Home, Insert, Page Layout) provides quick access to commands you need to complete a task. Each Ribbon tab relates to a type of activity such as inserting objects in a worksheet, or modifying the format of data in a worksheet. In the example above, the Home tab is currently selected, and all of the icons and options for that Ribbon tab are displayed.

**Ribbon Group** – Each Ribbon tab contains groups of related commands to edit, format, or enhance items in your documents. Some groups have a Dialog box launcher button at the bottom right, which displays a dialog box or window with more commands and options.

**Ribbon Display Options** – Controls whether to hide or display the Ribbon with the tabs or with both tabs and command buttons.

**Name Box** – Located on the left below the Ribbon, this displays the cell address of the active cell. For example, if the Name Box displays A21, this indicates that A21 (the cell at the intersection of column A and row 21) is the active cell. In the example on the previous page, three cells are selected. Cell B6 is the upper left-most cell of that cell range and therefore its cell address is displayed in the Name Box to designate it as the active cell.

**Insert Function** – This tool opens a dialog box to help you choose and insert a built-in function.

**Formula Bar** – Located to the right of the Name Box, the Formula bar displays the contents of the active cell. Under certain circumstances, the Formula bar can be used to make entries into the worksheet.

**Tell Me** – This allows you to enter a description of what you are looking for. Unlike the simpler help feature in older versions of Excel, the Tell Me feature will display a customized menu of the commands that you are looking for. You can also choose the Smart Lookup option which will use the Microsoft Bing search pane to find related topics from the Internet in a task pane. The traditional help feature is also offered in the menu.

**Column Headings** – Sequential letters at the top of each column enable you to track columns.

**Row Headings** – Sequential numbers on the left side of each row enable you to track rows.

**Status Bar** – Displays the current cell mode, auto calculations, the View buttons, and the Zoom slider. You can customize the Status bar to display keyboard locks and other features.

**View Buttons** – These buttons change the on-screen views for the worksheet. The views are Normal, Print Layout, and Page Break Preview.

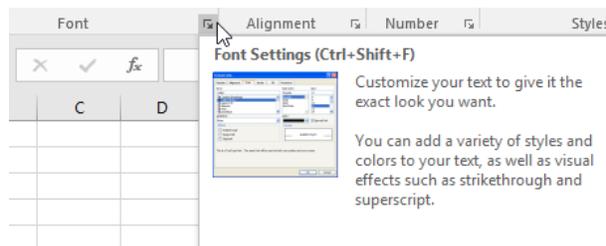
**Zoom Slider** – The buttons at either side of the slider allow you to increase or decrease the zoom by 10%, or you can drag the slider button to choose a particular zoom percentage. Excel displays the current zoom percentage in the Zoom level button, at the right of the View buttons. You can also click this button to set a custom or specific zoom percentage.

The previous screen shot displays various commonly used areas of the Excel screen. Because you can customize the screen's appearance, not all parts always appear. For instance, some people prefer to have the workbook displayed as a window on the screen, while others prefer to maximize the workbook. It is also possible to change the overall color scheme for the Excel window, as well as individual components within each worksheet.



ScreenTips help identify buttons or elements on the tabs of the Ribbon and the screen. To view a ScreenTip, position the mouse cursor on the item. A tip then displays the name of the button along with a description of the purpose of this item. For some items, a keyboard shortcut may also display as an alternative for activating this feature.

Many Ribbon Groups also have a dialog box launcher button. By hovering the mouse cursor over it, the Screen Tip will display a summary of its purpose, as demonstrated in this example:



A number of the elements shown in this section can be set to show or hide, as you prefer. In most cases, you can change your display options by clicking the **File** tab, clicking **Options**, and then clicking the **General** or **Advanced** categories.

## Understanding Basic Terminology

A worksheet is similar to an extremely large sheet of paper divided into rows and columns. In Excel, the rows are numbered from 1 to 1,048,576. Each of the 16,384 columns is named with a letter combination starting with A to Z, then AA to ZZ, then AAA to AZZ, up to column XFD.

**Workbook** – A single Excel file containing one or more worksheets (for example, Sheet1, Sheet2, Sheet3) is called a workbook. You can have more than one workbook open at any time but you can only work in one of them at any one time. The workbook that is currently open and on top of all other workbooks or other Windows programs is called the *active workbook*.

**Worksheet** – A worksheet is a two-dimensional arrangement of cells in rows and columns. When you use a workbook with multiple worksheets, you can only use one worksheet at any one time. The worksheet that is currently displayed is called the *active worksheet*.

**Cell** – Located at the intersection of every row and column, a cell holds a single value, label, or formula. It may also contain comments, formatting, and other related data. The cell where you are entering data or the current location of the cursor is called the *active cell*.

**Cell Address** – Excel has more than 17 billion ( $\times 10^9$ ) cells available per worksheet (1,048,576 rows  $\times$  16,384 columns). Each cell has its own distinct address (its point of column-by-row intersection) such as B6 (column B at row 6).

**Sizing** – When the Excel window is not maximized, you can change its overall size and aspect ratio. By positioning the mouse over any of the four edges of the window, the mouse pointer will change to a double-headed arrow ( $\leftrightarrow$  or  $\updownarrow$ ). You can then click and drag the edge to change the width or height of the window. If you position the mouse over any of the four corners of the window, you will see a diagonal double-headed arrow (e.g.  $\nwarrow$ ), which will allow you to drag both adjacent edges at the same time.

## Mouse Symbols

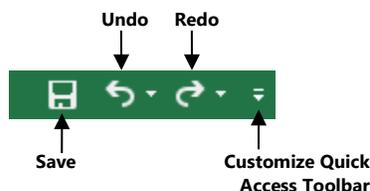
This section introduces some of the common mouse symbols and their purposes:

-  Select a cell or range of cells in the worksheet.
-  Move or copy selected cells by dragging and dropping.
-  Select items, command buttons, and menu options.
-  Size objects.
-  Edit text within the Formula bar or a cell.
-  Indicates the use of the AutoFill feature to copy the contents of cells.
-  Provides a guide for the top left and bottom right corners when creating objects.
-  Change the column width or row height.
-  Move the split bar between the window panes.
-  Select an entire row or entire column.

It is possible to use Excel with a touchscreen, however, you will find it is generally easier to use a mouse and keyboard.

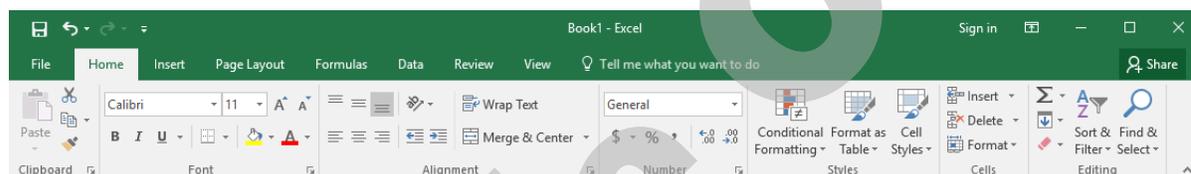
## Using the Quick Access Toolbar

The Quick Access Toolbar (also known as QAT) is located at the left of the title bar above the Ribbon and contains buttons for frequently used commands. By default, this toolbar contains the Save, Undo, Redo, and Customize Quick Access Toolbar buttons.



## Using the Ribbon

The Ribbon can help you quickly find commands you require to complete a task. Commands are grouped in tabs with each tab relating to a type of activity such as inserting items, changing the view, and formatting text in the document. You can customize the Ribbon to display commands you use frequently in a particular order, or to add or remove commands for a Ribbon tab.



To reduce screen clutter, contextual tabs appear only when they are applicable (for example, Chart Tools, Design, Add Chart Element).

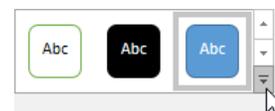


The active button is the one that appears in a different color or has an outline around it. Many of these deactivate when you click the same button or click another choice. For example, the Bold command can be applied to selected text by clicking that button. To turn off the boldface, click the same button again. If you want text to be larger, click the down arrow for the Size button and choose the required size. When you need to change the font size again, click the down arrow for Size and then select the new size.

When the Ribbon displays different choices (as shown in the Chart Styles list in the screen above), one item has a border around it to indicate it is active. To see how the text would appear with another style, point the mouse on one of the other items. Excel previews the effect that will take place if it is selected.

Each tab on the Ribbon contains groups with similar commands. For example, the Home tab has a group called Font that contains buttons for formatting text characters, and the Insert tab contains a group with different types of graphics or illustrations that can be inserted into a worksheet.

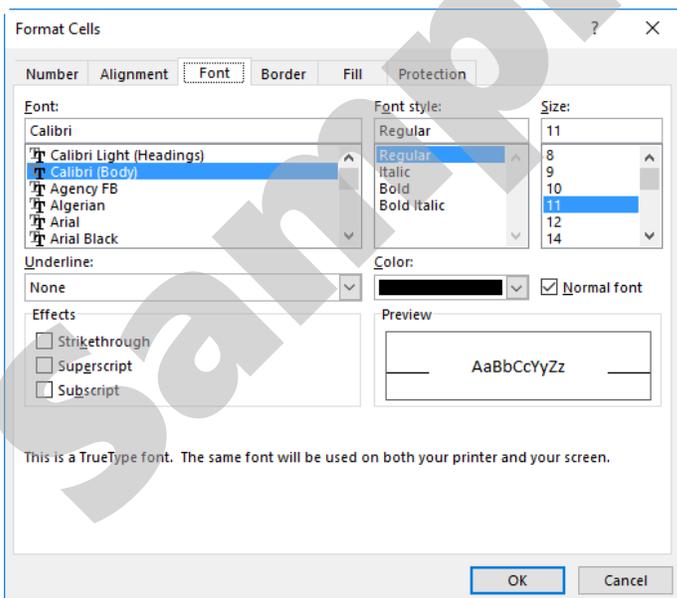
If a group shows a feature with a vertical scroll bar, it also has a button below the bottom scroll button, a triangle with a bar above it, which you can click to display the full list or gallery for that option.



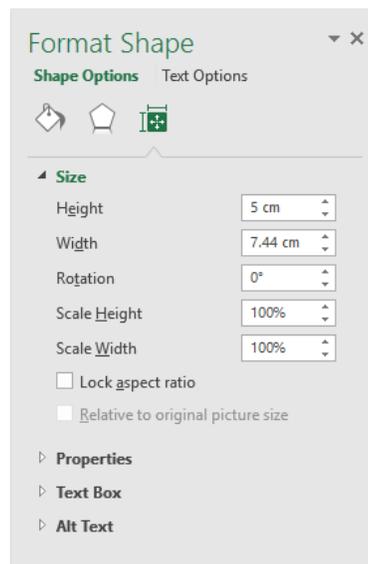
This is the More button and, when clicked, it displays a gallery with more options, as seen below. As you point the mouse cursor at an option, Excel displays a Live Preview for how the selected item will appear if you apply this feature. You can turn off this feature in Excel Options.



Click the  dialog box launcher button at the lower right of a group to show the corresponding dialog box with more options for this feature. In some cases, a task pane may appear at the left or right side of the screen instead of a dialog box. The dialog box launcher button displays the name of the dialog box or task pane window that will appear when clicked.



Dialog Box



Task Pane

Within the dialog box, you can select items from the lists, use the arrow for a list box to display more choices for that list, or click a command to turn the feature on or off. It may display a preview of the changes.

A dialog box displays the various options that you can select to perform a change to a worksheet or cells within a worksheet. Once you click OK to perform the change, the dialog box closes. A task pane is similar to a dialog box because it is used to make changes to parts of the worksheet, except that it remains open until you close it. An example of a task pane is the Office Clipboard which collects and displays the items selected when the Cut or Copy command is used.

If you want to show more lines on the screen or you do not want to display the Ribbon, you can minimize it. To minimize the Ribbon, use one of the following methods:

- point at the  button at the upper right of the screen, then click **Show Tabs**, or
- right-click anywhere on the Ribbon and then click **Collapse the Ribbon**, or
- double-click on any Ribbon tab, or
- press CTRL+F1.

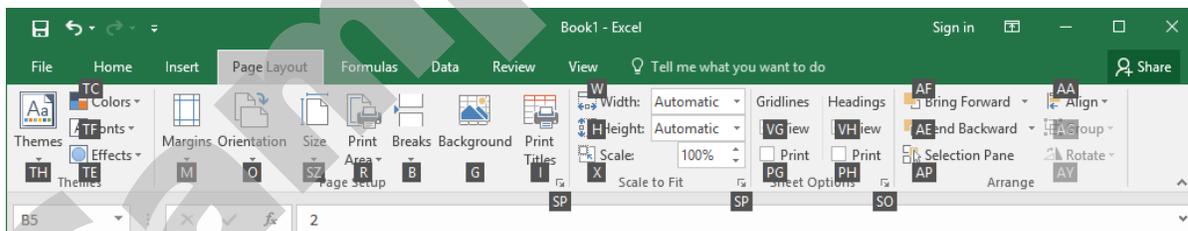
## Using the Keyboard

You can also access commands in Excel using the keyboard. Some users consider the keyboard to be a faster method for accessing commands. There is also the benefit of consistency between Windows programs, in that many keyboard shortcuts are the same in all Windows programs such as pressing CTRL+C to copy, CTRL+S to save, or CTRL+P to print.

To access the Ribbon using the keyboard, press ALT or F10 to display the keyboard buttons for the commands in the Ribbon.



When you press the key for the appropriate feature, Excel displays the next set of keys you can use to select a command or feature. For example, pressing P displays the Page Layout tab.



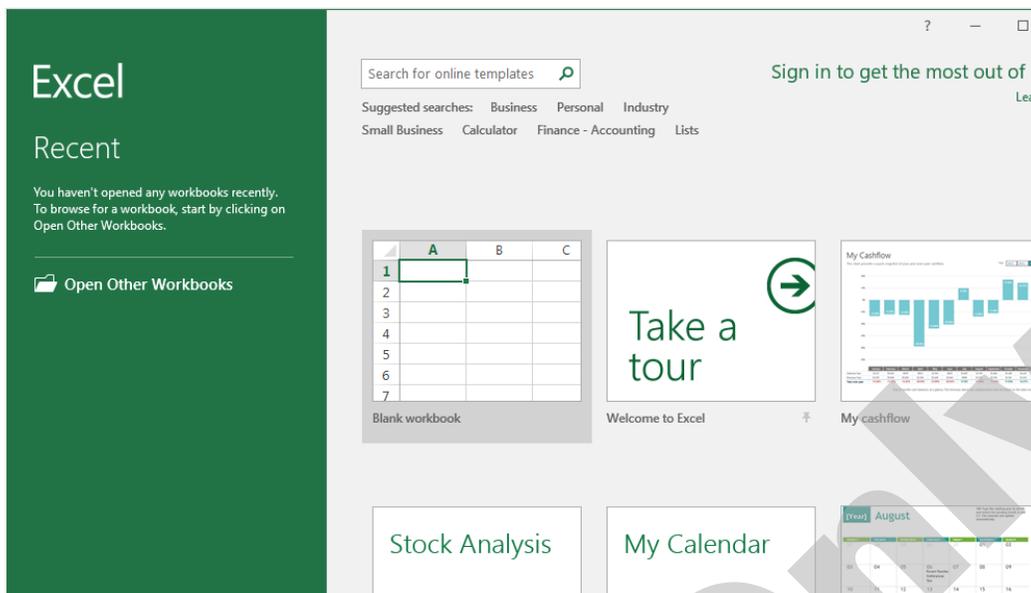
If the Ribbon command displays more options, then you can select from those available key options as well.

## Learn to use the Ribbon

This exercise demonstrates how to use various features on the Ribbon.

- 1 Start Microsoft Excel.

The Excel Startup screen is displayed. From here, you can choose to open an existing workbook or create a new one using a workbook template.



- 2 Click **Blank workbook** to create a new blank workbook.
- 3 Click the **File** tab to display the Backstage view.
- 4 Click the  (**Back**) button to return to the workbook.
- 5 Use the mouse pointer to point to the View tab.

Notice how the View tab changes color even though you have not clicked it.

## Entering Data in a Worksheet

If you design and build it in a logical manner, an Excel worksheet is a very powerful tool. The basic building block of every worksheet is entering data into the cells.

### Types of Data

You can make three main types of entries when you insert data into worksheet cells:

**Numeric** – Numeric data form the core of all worksheets. This type of data consists of number, date, or time values that you enter directly into a worksheet cell. By default, numeric values align to the right in a cell.

**Text** – Text data consist of alphabetic and numeric characters and most printable symbols. Text data are usually labels or titles used to describe and explain the data in adjoining cells. Text is seldom included in calculations, but Excel does include several functions that apply to text data. If you enter a text value that is wider than the cell, it will flow into the adjacent cells as long as those cells are empty. By default, text data align to the left in a cell.

**Formulas** – Formulas, which you enter in individual cells, are composed of values, cell references, arithmetic operators, and special functions for calculating and displaying result. These results may then become part of other formulas located in other cells. The ability to use formulas is what differentiates spreadsheets from word processing software like Microsoft Word.

## Entering Text

To enter data, move your pointer to the desired cell, click in it, and type the entry. If you make a typing error while still entering information in a cell, press the BACKSPACE key to erase your mistake. When you have finished entering data in a cell, press the ENTER key to move the cell pointer automatically to the next cell down. Alternatively, use your mouse to click another cell (or press any arrow key), which performs the same result of storing the data in that cell and moving the cell pointer to the new location.

The best way to begin any worksheet is to enter column and row titles that identify the purpose of the numeric data. When you enter titles for the worksheet, you are creating an outline of the relationships you will later represent mathematically.

When typing information, notice that Excel displays the text in two places:

### Learn to enter text data

This exercise demonstrates how to enter text data into a worksheet cell, which will serve as a label or title for other cells containing numeric data.

- 1 In the blank workbook, click in cell **A2**.
- 2 Type: *Price Quote* and press ENTER.

Notice the current active cell is now A3. When you press ENTER, Excel completes the entry of data in the current cell, then moves the cell pointer to the next cell down.

- 3 Press ENTER twice to move down two rows.
- 4 In cell **A5**, type: *Airfare* and press ENTER.

## Entering Numbers

Numbers, such as those representing dollar and percentage values, are constant – that is, they do not change. They are typically used as part of calculations, with results appearing in other parts of the workbook.

By default, Excel aligns numeric values to the right side of a cell. They are displayed with no commas unless you enter them at the same time. Extraneous zeroes at the far left or right are not displayed, even if entered at the same time. You can format the values to your preference at a later time.

If you enter a value that contains a mixture of alphabetic and numeric digits (for example, T-1000), Excel treats the entire entry as text and aligns it to the left of the cell.

### Learn to enter numeric data

This exercise demonstrates how to enter numeric data into a worksheet cell.

- 1 In cell **B5** of the workbook, type: *450* and press ENTER.
- 2 In cell **B6**, type: *1,050* and press ENTER.
- 3 In cell **B7**, type: *225* and press ENTER.
- 4 In cell **B8**, type: *46.50* and press ENTER.

## Entering Dates and Times

Excel is also capable of handling date and time values. When entering dates, note the following:

- If you enter a full date value including the month, day, and year value, the date value will display as dd-mmm-yy by default.
- The date value does not have to be the full day, month, and year. It can be just the day and month (format is dd-mmm), or the month and year only (format is mmm-yy).

### Learn to work with dates

This exercise demonstrates the use of dates.

- 1 In cell **A3**, type: *As of:* and press TAB.
- 2 In cell **B3** type: *30 Jun* and press ENTER.

Notice that Excel puts the date in the default format and aligns it to the right.

- 3 In cell **D3** type: *Expires:* and press TAB.
- 4 In cell **E3** type: *Jul 15, 2016* and press ENTER.

## Working with Workbooks

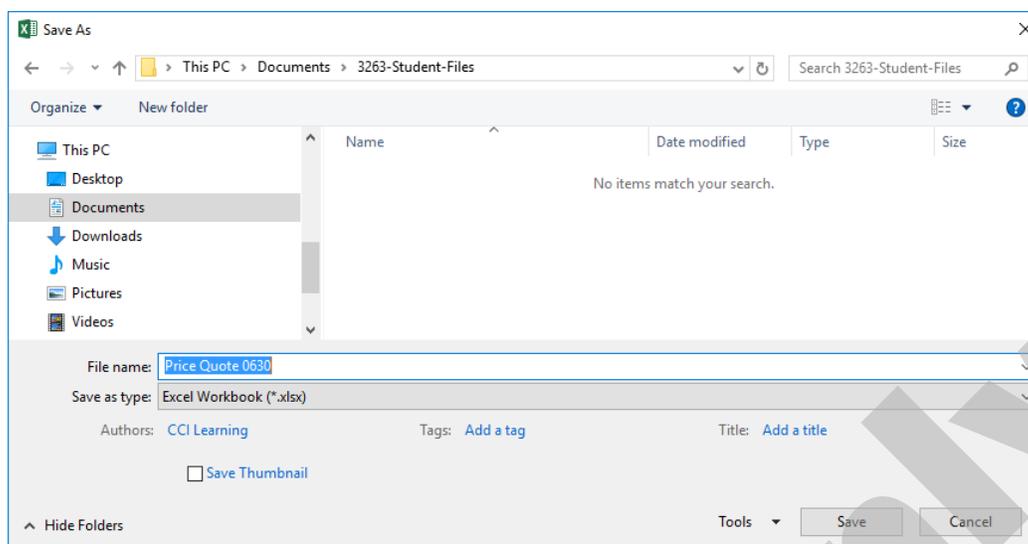
As you begin using workbooks, you need to consider how to organize your files for quick and easy access. This includes considerations such as how you name the file, where you save it, whether it needs to be saved as a specific file type, and whether you want to add or change the file properties to make it easier to find at a later date. The Save commands are located in the Backstage view via the File tab.

### Saving Workbooks

To be able to recall your work later, you must save your workbook before exiting Excel or turning off your computer. The saved file also provides an excellent fall-back option if you try something in your worksheet that does not work as you expected, and you are unable or unwilling to undertake all the necessary steps to correct the problem.

When naming a workbook, keep the following in mind:

- Workbook names must follow the same basic rules as naming files in Windows: a maximum of 255 characters (including the drive and folder path), and none of these characters: / \ : \* ? " < > |
- File names should be descriptive so that you can identify the contents quickly.
- Excel automatically assigns a .xlsx extension or file type at the end of the file name, so you need not do this. You only have to type in the name for the workbook.



## Learn to save workbooks

In this exercise, you will save the new workbook you have just created.

- 1 In the Quick Access Toolbar, click **Save**.

The Backstage view is displayed, and the Save As command is selected. Even though you clicked Save, Excel will automatically skip to Save As for any new workbook that was never previously saved. The Save command will save the current workbook to disk using the same workbook name and storage location. The Save As command is needed to ask you to assign the workbook name and storage location.

## Selecting Cells

The ability to select a range of cells is a fundamental skill in Excel. Prior to issuing a command or undertaking a procedure, you must indicate what part of the worksheet you wish to affect with the command. Range selection is the means to indicate this area.

A range selection can be as small as a single cell, or as large as the entire spreadsheet. Excel keeps the cell(s) highlighted until you change or remove the selection. Clicking a cell or using an arrow key will remove the selection.

In a worksheet, you can select:

- a single cell, that is, the active cell
- a single range, for example, a rectangular section of a worksheet containing two or more cells
- multiple ranges of cells

Excel displays the selected range by reversing the color of the cells. Within the selected range, one cell appears in a normal color. This is the active cell of the range.

## Learn to select cell ranges

This exercise demonstrates how to select ranges of cells using the mouse in a blank worksheet so you can quickly identify the ranges.

- 1 Create a new blank workbook if necessary.
- 2 Select a single cell by clicking cell **A9**.
- 3 Select a range of cells by holding the left mouse button down in cell **A9**, drag the mouse to cell **C5**, and then release the mouse button.
- 4 Select an entire column by clicking on the column **E** header at the top of the worksheet.
- 5 Select an entire row by clicking on the row **14** header on the left side of the worksheet.
- 6 Select the entire worksheet by clicking **Select All** in the top left corner of the worksheet (the gray triangle to the left of the column **A** header and above the row **1** header).

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## Lesson Summary

Now that you have completed this lesson, you should be able to:

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|--|---|
| <input checked="" type="checkbox"/> understand what an electronic spreadsheet is | <input checked="" type="checkbox"/> move around a worksheet   |
| <input checked="" type="checkbox"/> understand what Excel is and what it can do  | <input checked="" type="checkbox"/> use the Backstage view to save, create new, open, and close a workbook      |
| <input checked="" type="checkbox"/> identify elements on the Excel screen        | <input checked="" type="checkbox"/> switch between workbooks  |
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| <input checked="" type="checkbox"/> use the Quick Access Toolbar                 | <input checked="" type="checkbox"/> manage files and folders  |
| <input checked="" type="checkbox"/> move around in Excel                         | <input checked="" type="checkbox"/> select cells  |
| <input checked="" type="checkbox"/> use keyboard shortcuts                       |   |
| <input checked="" type="checkbox"/> enter text, numbers, dates and times         |   |

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## Review Questions

1. You should use an electronic spreadsheet if you want to:
  - a. Create a presentation for viewing at a kiosk.
  - b. Perform a large number of mathematical calculations and display charts and graphs.
  - c. Track extremely complex data relationships.
  - d. Create and print a full-color brochure for investment brokers.

2. What is the difference between a workbook and a worksheet?
  - a. A worksheet is a document created in Access, while a workbook is created in Excel.
  - b. A worksheet can contain numbers, text and formulas, whereas a workbook can contain only numbers.
  - c. A worksheet is a document divided into columns and rows, whereas a workbook is a single Excel file containing one or more worksheets.
  - d. A worksheet contains data for viewing onscreen only, whereas a workbook can be printed.

Sample Only