Microsoft® Excel Associate Certification Guide

CCI Learning®

I G N I T I N G   P O S S I B I L I T I E S

Microsoft® Excel Certification Guide

This course book is one in a series prepared by CCI Learning Solutions Inc. for use by learners and instructors in courses on how to use Microsoft Excel to produce simple and complex reports. CCI designed these materials to assist learners and instructors in making the learning process both effective and enjoyable.

The content, interface, and step-by-step instructions provided in this book are accurate as of the publication date. Microsoft Excel is regularly updated with new features, interface changes, and functionality enhancements. While every effort has been made to ensure accuracy, some differences may occur due to software updates released after this book's publication.

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Course Description

Master the essential Excel skills required to earn the Microsoft Office Specialist: Excel Associate Certification and demonstrate proficiency in creating and managing workbooks, applying formulas and functions, and visualizing data with charts and tables.

This course provides comprehensive, hands-on instruction in key Excel functionalities, ensuring you develop the skills to confidently work with worksheets, manipulate data, apply advanced formatting, and perform calculations. You will gain expertise in importing data, managing named ranges, formatting tables, and applying conditional formatting to analyze and present data effectively.

Beyond spreadsheet fundamentals, you will explore customizing workspaces, preparing workbooks for collaboration, and managing charts, allowing you to produce professional-grade reports, financial statements, and performance analytics.

Whether you are seeking certification, career advancement, or improved Excel proficiency, this course will prepare you for success.

Suggested Course Length: 23-41 Hours

Course Series

This guide is part of CCI's Microsoft series.

Course Requirements

There are no pre-requisites for this course.

Course Objectives

This course book teaches the skills you will need to successfully complete the Microsoft Excel Certification Exam (MO-210) offered by Certiport. These skill sets are introduced using multiple types of exercises and review materials.

After completing this course, you will understand the following:

- Manage Workbooks & Worksheets: Import, navigate, and format workbooks with named ranges, hyperlinks, and custom views.
- Data Management & Formatting: Organize and manipulate data using sorting, filtering, Auto Fill, and number formatting.
- Tables & Structured Data: Create, format, and modify Excel tables, including total rows and conditional formatting.
- Advanced Formulas & Functions: Utilize essential functions such as AVERAGE(), IF(), UNIQUE(), and structured references.
- Text & Data Transformation: Modify and format text using CONCAT(), MID(), LEFT(), RIGHT(), and case functions.
- Charts & Data Visualization: Create and modify charts, apply styles, and switch between rows and columns for meaningful insights.
- Collaboration & Workbook Preparation: Configure print settings, manage comments, and ensure accessibility with alternative text.

By mastering these tools, you will be fully prepared to earn your Microsoft Excel Associate Certification and gain a recognized credential that validates your Excel expertise for career growth in business, finance, data analysis, and beyond!

Download Learner Files

To complete the exercises in this course, you will need the provided exercise files. Follow these steps to download them.

1. Launch your browser and navigate to the Student Data Files page on CCI Learning's website, located at http://www.ccilearning.com/data.

2. Enter: **3283** in the Courseware # field, then select **Find Data**.

   Note: Depending on the browser you are using, the ZIP file may be automatically saved in your Downloads folder, or you may be prompted to open or save the file.

3. Right-click the **ZIP file**, then select **Extract All** to display the Extract Compressed (Zipped) Folders dialog box.

4. Use the **Browse** button to navigate to the desired location to save your documents.

Course Design

This course book was developed for instructor-led training and will assist you during class. Together with comprehensive instructional text and objectives checklists, this course book provides a glossary of course-specific terms. This course book is organized in the following manner:

📖 **Microsoft Excel**
🗐 Table of Contents
🗐 Unit
🗐 Lessons
📄 Lesson Objectives
📄 Lesson Topics
📄 Unit Key Terms
🗐 Appendices
📄 Course Book Mapping
📄 Key Terms
📄 Index
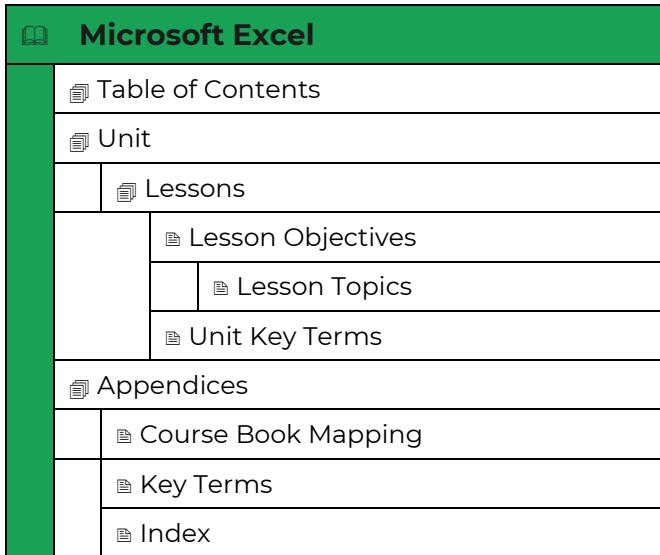
You will find this course book to be a valuable resource for reviewing exercises and applying the skills you have learned. After each lesson, navigate to the learning platform or student files to practice new skills and review the material. These questions are provided as a study resource only and in no way guarantee a passing score on a certification exam.

Conventions and Graphics

The following conventions are used in CCI learning materials.

Key Terms – Vocabulary terms that are presented in the narrative appear in ***bold italic*** font style.

Procedures – Procedures and commands you are instructed to activate are indicated in **bold** font style.

Technical Notes point out exceptions or special circumstances that you may find when working through a particular process or may indicate there is another method to complete the task.

Assessment Alerts – These alerts will let you know when to access the Learner Workbook to practice a skill or to complete lesson or unit assessments.

Learn Task 💡	Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖	Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Unit Assessment 📋	Access the Learner Workbook to complete the Objective Assessment and Create Project.

Assessment Alerts – These alerts indicate differences in features and instructions between the desktop and online versions of the application.

Online App Alert 🖥	Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Desktop Only Alert ✏	The following feature is exclusively available in the desktop version.

Unit 1: Getting to Know Excel

Unit Objectives

In this unit, you will learn about and work in Excel. You will add and edit different types of data, work with worksheets and workbooks, work with lists and fill options, and change views. You will also learn how to set up a workbook for printing, including checking for accessibility, protecting sensitive information, and inspecting for hidden content. Upon successful completion of this unit, you should understand the following:

☐   Work with Excel

☐   Construct Cell Data

☐   Work with Workbooks

Lesson 1: Work with Excel

Lesson Objectives

In this lesson, you will be introduced to the Microsoft Excel application, identify the components of the Excel environment, and learn how to move around within the application. You will also learn to customize the Quick Access Toolbar and Ribbon, create and save workbooks, and work with files. Upon completion of this lesson, you should be able to understand the following:

☐   Startup and Application Window

☐   Worksheet Window

☐   Ribbon

☐   Customize the Quick Access Toolbar

☐   Access Workbook Properties

☐   Check for Issues

☐   Create a New Workbook

☐   Save a Workbook

☐   Manage Worksheets

☐   Move or Copy Worksheets

Startup and Application Window

When Excel starts, the startup screen appears from which you can open a workbook, start a new blank workbook, or create a new workbook based on a template.
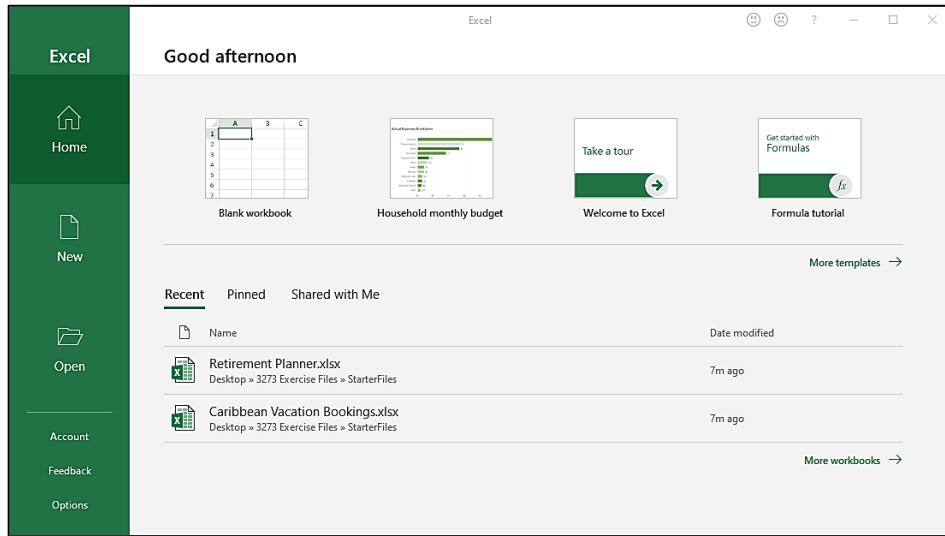
Your workspace in Excel is the Excel application window. It contains components including the Ribbon and the Quick Access Toolbar that you might be familiar with from working with other Office applications such as Microsoft Word.
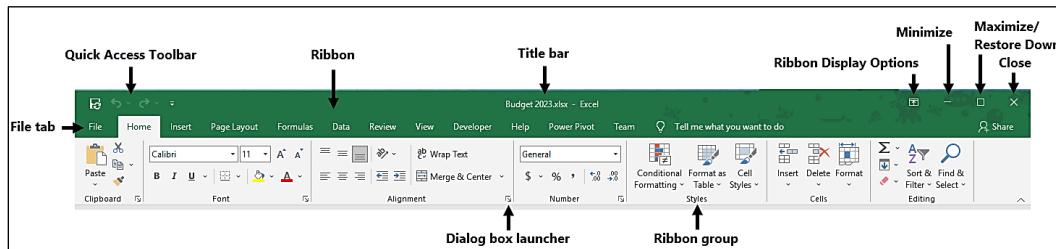
The table discusses components of the Excel window:

File tab	Select the File tab to open the Backstage view, from which you can select commands to manage files, including New, Open, Save As, and Print.
Ribbon	Each Ribbon tab contains buttons, menus, and other controls you use to perform certain actions in Excel.
Quick Access Toolbar (QAT)	Located above the Ribbon, the QAT provides quick and customizable access to frequently used commands.
Title bar	Located at the top of the screen, the title bar's main purpose is to display the open file's name.
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 (such as File, Home, and Insert) that provides access to commands used to complete a task.
Ribbon group	Each Ribbon tab contains groups of related commands. Some groups include a ***dialog box launcher*** button at the bottom right (⬛), which opens a dialog box or pane 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.

Learn Task 💡   **Access the Learner Workbook to complete the Learn Task for this skill.**

Worksheet Window
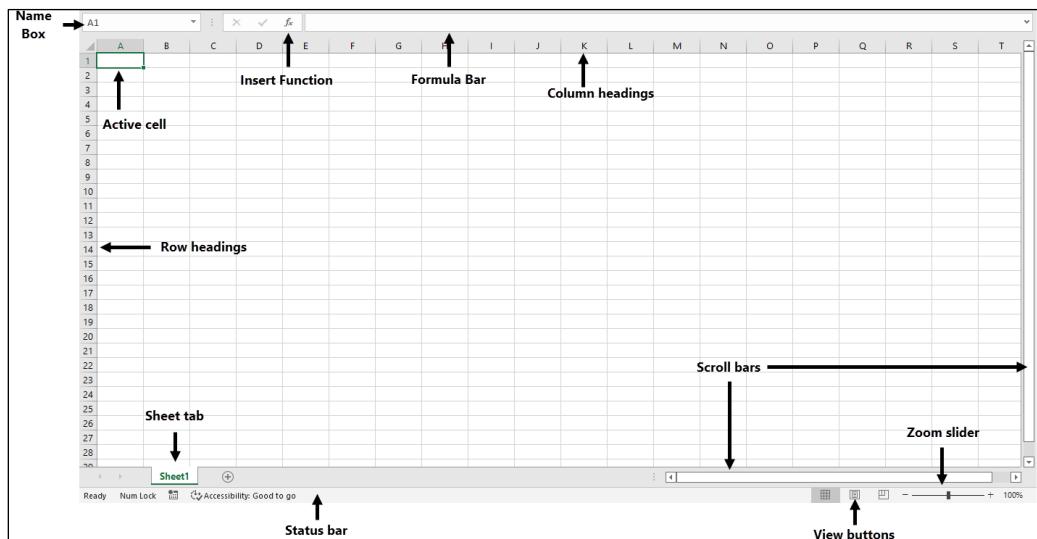
The table discusses the elements found in the worksheet window:

Name Box	Located beside the Formula bar, the Name box displays the cell address of 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.
Active cell	The selected cell. Entered values will be inserted into the ***active cell***.
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.

Sheet tab	The rectangular box at the bottom of a worksheet by which worksheets are accessed and identified.
Status bar	Displays the current cell mode, auto calculations, the View buttons, and the Zoom slider.
Scroll bars	Scrolls the spreadsheet to view content that is offscreen and not visible.
View buttons	These buttons change the on-screen views for the worksheet. The views are Normal, Page 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 drag the slider button to choose a particular zoom percentage.

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Ribbon

Online App Alert 🖥️ | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Use the **Ribbon** to find commands you require to complete a task.

Commands are arranged in **tabs** that appear on the Ribbon, and each tab's commands relate to a specific type of activity, such as inserting items, changing the view, or formatting text in the document.

To reduce screen clutter, **contextual tabs** appear only when they are applicable. For example, the Shape Format tab appears when a graphic object is selected.

Each tab on the Ribbon contains **groups** with similar commands. For example, the Home tab has a Clipboard group that contains commonly used commands like Copy and Paste.
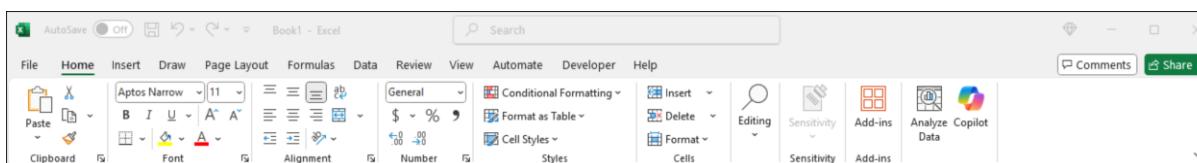
Some groups have a **gallery** with vertical scroll bars and a third button called the **More button** to access the expanded gallery.

To display only the Ribbon tabs and create more vertical space to work in, minimize the Ribbon with one of the following methods:

- Select the **Ribbon Display Options** (⬜) button at the upper right of the screen, then select **Show Tabs**

- Right-click (or access the context menu) anywhere on the Ribbon and then select **Collapse the Ribbon**

You can also hide the Ribbon, Quick Access Toolbar, and Status Bar. This maximizes the Excel window to give you more space to view the worksheet data.

- Select the **Ribbon Display Options** (⬜) button at the upper right of the screen, then select **Auto-hide Ribbon**

You can reset the Ribbon to its default which shows tabs and commands.

- Select the **Ribbon Display Options** (⬜) button at the upper right of the screen, then select **Show Tabs and Commands**

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To customize the ribbon display:

1. Select the Ribbon drop-down arrow in the bottom-right corner of the Ribbon
2. Under Show Ribbon, select from the following display options:

   Always show ribbon - Keeps all the tabs and commands on the ribbon visible all the time

   Show tabs only - Displays the tabs without their groups and commands

   Adjust Automatically - Hides the ribbon to maximize screen space when not in use, displays it only when you hover your cursor at the top of the screen
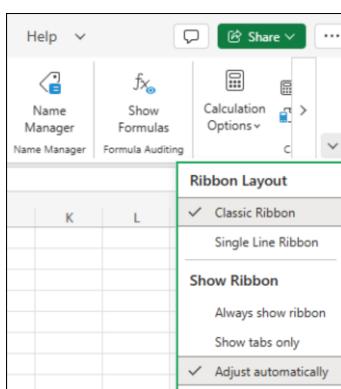
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Customize the Quick Access Toolbar

Desktop Only Alert ✏️ The following feature is exlcusively available in the desktop version.
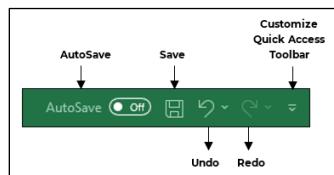
The Quick Access Toolbar (QAT) is located at the left of the title bar above the Ribbon. By default, it contains the AutoSave indicator and the Save, Undo, Redo, and Touch/Mouse Mode command buttons. Position the Quick Access Toolbar above or below the Ribbon using one of the following methods:

- Select **Customize Quick Access Toolbar** > **Show Below the Ribbon**

- Right-click the Ribbon and then select **Show Quick Access Toolbar Below the Ribbon**

If you frequently use certain Excel commands and features, add them to the QAT. Customize the QAT with one of the following methods:
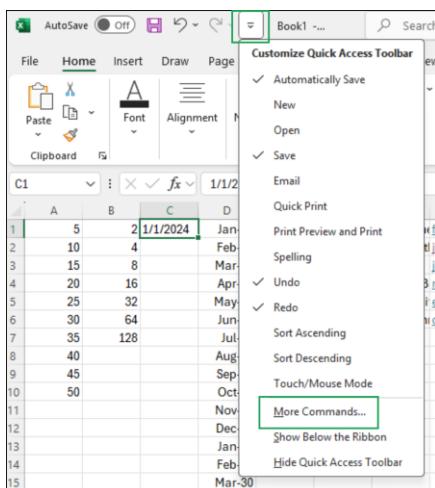
- Right-click any command in the Ribbon and select **Add to Quick Access Toolbar**

- Select **Customize Quick Access Toolbar** at the end of the QAT and select a command from the displayed list of commands

- Select **File** > **Options** > **Quick Access Toolbar** (or select **More Commands** from the QAT commands list), select a category from **Choose commands from**, select a command from the list on the left and select **Add**. Repeat this step for each command you want to add, and then select **OK**
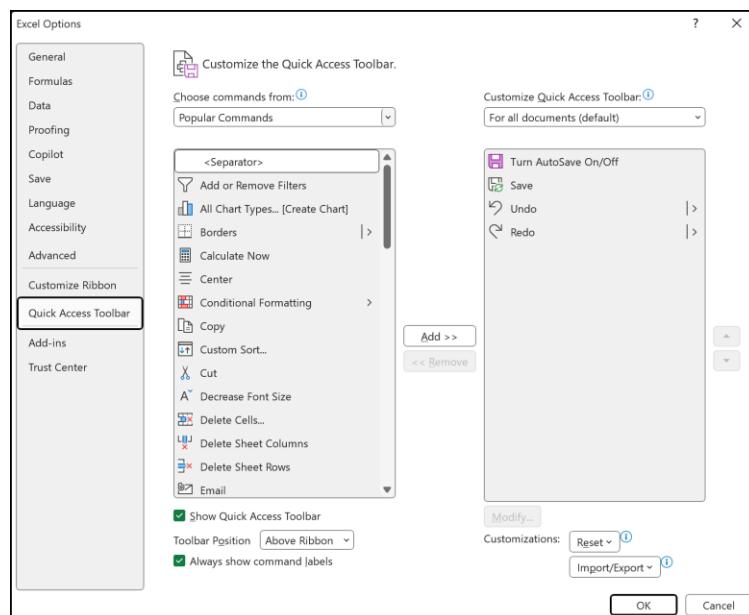
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Access Workbook Properties

Metadata is information about a file that's stored within the file. In Excel, metadata is called **Properties**. Some properties are generated automatically by Excel, such as the date and time the file was created and last modified, who created it, and the size of the file. You can add additional metadata such as a workbook Title or your company name.

Properties can be useful for sorting, organizing, and finding workbooks in Windows File Explorer. Some properties, such as the Title, are used to help people with disabilities understand more about the file.

To add or change properties:

- **File** tab > **Info**, and then enter the property values
- To access all properties, select the **Show All Properties** link at the end of the list of Properties
- To access Advanced Properties, select the **Properties** drop-down menu > **Advanced Properties**
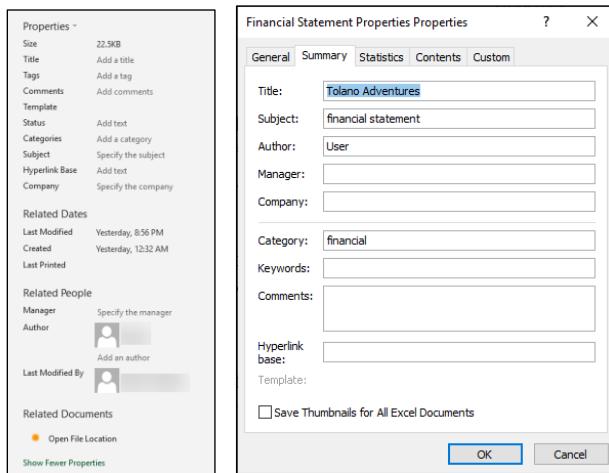
Microsoft 365 (Web) and Online

To view limited properties:

- Select **File** tab > **Info**
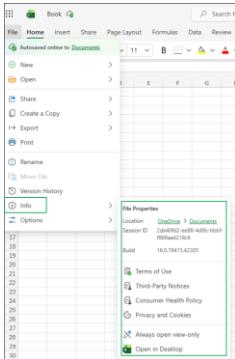
Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Check for Issues

Excel contains several tools you can use to inspect your workbook for issues such as hidden personal information or accessibility issues.

The **_Document Inspector_** is designed to find hidden or private information in a workbook and report it to you in a report. You can decide whether it's appropriate to leave or remove the data.

Some of these items include:

- Comments
- Metadata
- Personal Information
- Hidden data

To inspect a workbook, select **File** > **Check for Issues** > **Inspect Document**. The Document Inspector dialog box presents a list of items for which it can check. Leave selected only those items you want to include and select **Inspect**. The results of the inspection will appear.
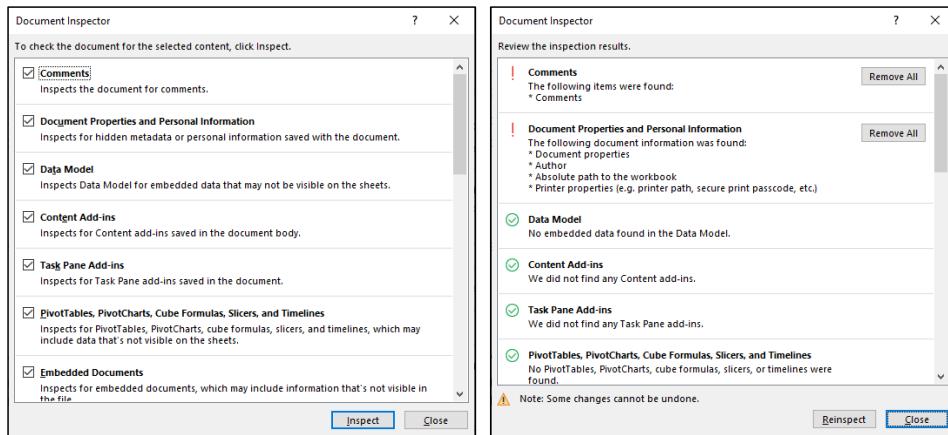
Review the results of the inspection. Select **Remove All** for the types of content you want Excel to remove from your workbook. Select **Reinspect** to check the workbook again or select **Close** to exit the Document Inspector dialog box.
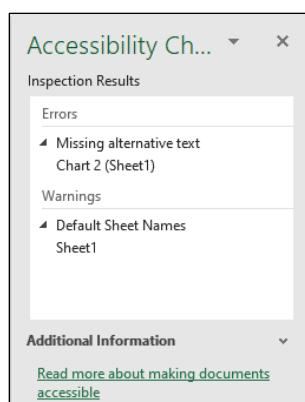
Use the **_Accessibility Checker_** to help ensure that users with disabilities can access the content in the workbook.

To use the Accessibility Checker, select the **Review** tab > **Check Accessibility**. The Accessibility Checker task pane will display the inspection results and suggest improvements that can be made.

Selecting an error item in the Accessibility Checker pane selects the item in the worksheet and displays information about how to remedy the issue.
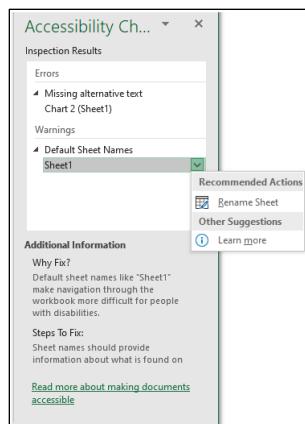
Select the drop-down arrow to the right of the item in the task pane and select one of the Recommended Actions.

Check Compatibility options is used to check for features not supported by earlier versions of Excel.

Like the Document Inspector, it returns a report which you use to determine if the document requires changes before saving to an earlier version of Excel or sharing with someone using an earlier version.

To check compatibility, select **File** > **Info** > **Check for Issues** > **Check Compatibility**.

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To use the Accessibility Checker:

- Select the **Review** tab > **Proofing** group > **Check Accessibility**
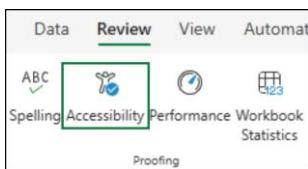
- The Accessibility Assistant pane appears to the right of the worksheet, listing possible errors and warnings.
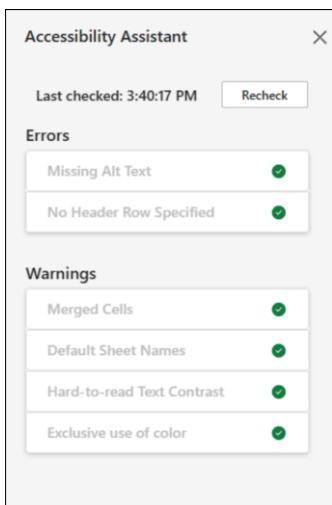
Note: The Document Inspector and Compatibility are not available online.

Access the Learner Workbook to complete the Learn Task for this skill.

Create a New Workbook

To create a new, blank workbook, select **File** > **New** > **Blank workbook**, or **CTRL+N**.
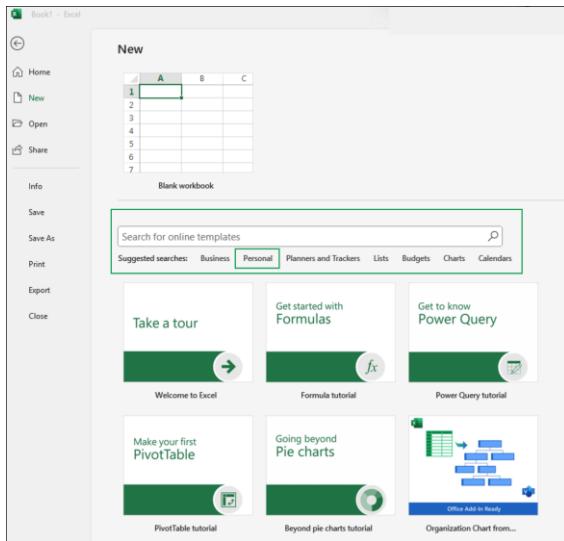
You can also create a workbook using a **_template_**, which is a type of workbook that typically contains data, formulas, and formatting, and makes a copy of itself for you to use. The New page displays some template examples.

To create a new workbook from a template, select **File** > **New**, select a template, and **Create**.

- If you don't locate a template you want to use, you can enter a search term in the **Search for online templates** field

- Excel templates that you create and save will appear if you select the **Personal** tab

Microsoft 365 (Web) and Online

To create a new, blank workbook:

- **App launcher** (grid icon in the top left corner) > **Excel** > **Create blank workbook** or **Upload a file**
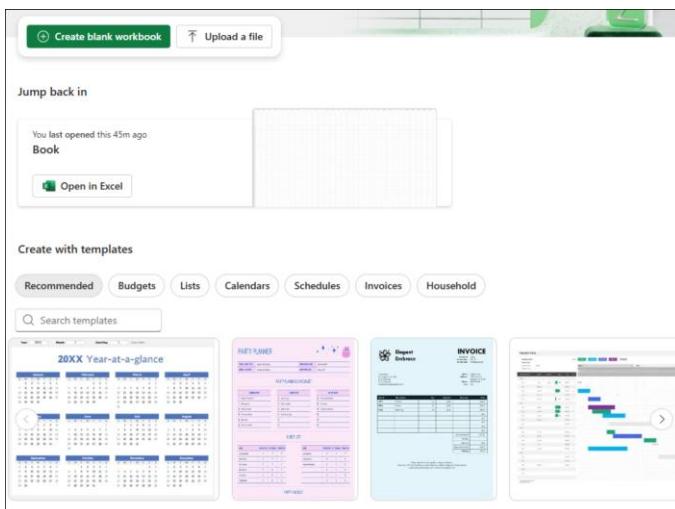
Save a Workbook

To save a new workbook, select **File** > **Save.**

The first time you save a new workbook, Excel displays the Backstage screen for you to select where to save the file. Select a folder from the list of folders recently used to enter the file name or file type.

Select **Browse** to display the Save As options so you can enter a file name, file type, and save location.
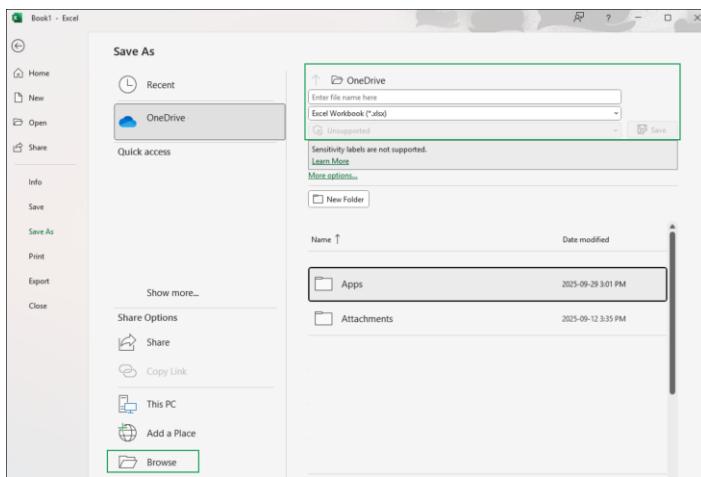
In the **Save As** dialog box, select **Save as type** and specify the file type, specify the file location, enter a file name without the extension, and then select **Save**.
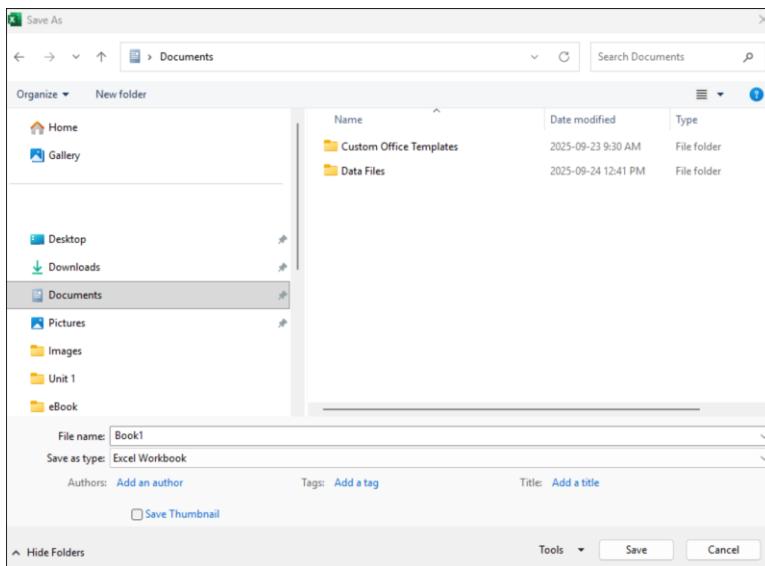
Note: The last four characters in the file name are the file *extension*. It indicates the type of Excel file it is (for example, *.xlsx* is a workbook and *.xlst* is a template). You don't need to type the extension – it's added automatically when you choose a file type.

To save changes to a workbook using the same file name, type, and location use one of the following options:

- Select **File** > **Save**

- On the Quick Access Toolbar, select **Save**

- **CTRL+S**

To make a copy of an existing file with a new name or change the file location or type:

- **File** > **Save As**, select **Save as type** and specify the file type, specify the file location, enter a file name without the extension, and then select **Save**

Microsoft 365 (Web) and Online

Workbooks are saved automatically in Microsoft 365 (Web) and Online. The file is saved to **OneDrive** and changes are automatically saved as you work.

To save a copy of the workbook:

1. **File** tab > **Create a Copy**
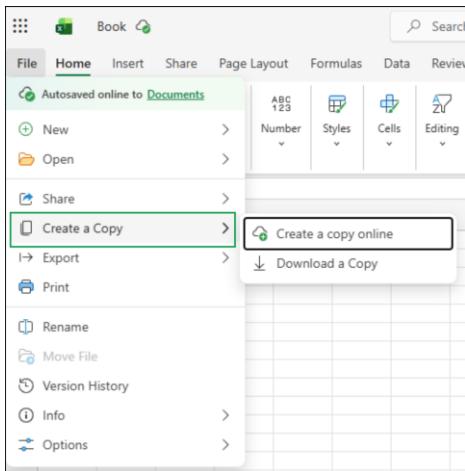
- Choose **Create a copy online** > modify the file name if needed and select the location > **Create a Copy**
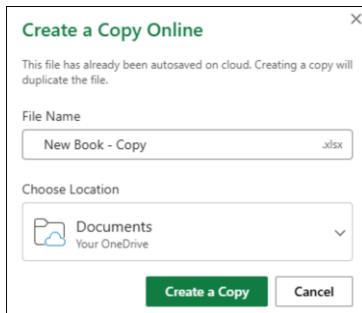
- When you select **Download a copy**, a copy of the workbook is saved directly to your computer

To change the workbook name:

- Select directly in the **File Name** field in the top-left section of the workspace

- **File** tab > **Rename** > change the name in the **File Name** field > **ENTER**
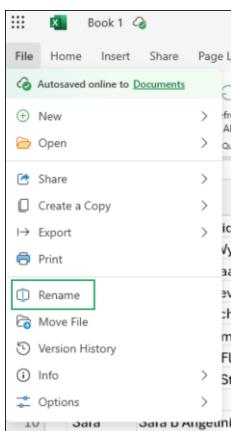
Manage Worksheets

To view a worksheet, select its worksheet tab.

To show worksheet tabs that aren't visible, use the tab scrolling buttons at the bottom left of each workbook's window. Alternatively, you can view more worksheet tabs by dragging the resize handle to the right which will decrease the width of the horizontal scroll bar.
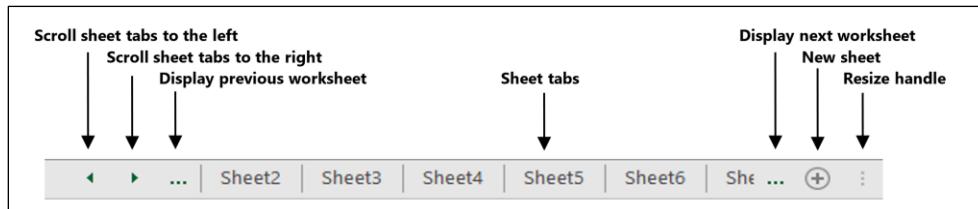
When you create a new workbook, Excel includes one worksheet by default. You can add more worksheets to a workbook. To insert a new blank worksheet into a workbook, use one of the following methods:

• Select the **Home** tab > **Cells** group > **Insert** > **Insert Sheet**. Excel will add the new worksheet to the left of the active worksheet

• Select the **New sheet** button ⊕ . Excel will add the new worksheet to the right of the active worksheet

When you no longer need a worksheet, you can remove it from the workbook by using one of the following methods:

• Right-click (or access the context menu) the sheet tab and select **Delete**

• Select the sheet tab and then select **Home** tab > **Cells** group > **Delete** > **Delete Sheet**

Before deleting a worksheet:

• Ensure no formulas elsewhere in the workbook depend on values in the worksheet.

• Save your workbook before deleting a worksheet because, once deleted, you cannot retrieve a worksheet with the Undo command.

By default, the first worksheet is named *Sheet1*, and every new worksheet added is given the next number. Rename worksheets to replace these default names *with* descriptive ones. To rename a worksheet, use one of the following methods:

- Double-click the existing worksheet tab and enter a new name

- Right-click (or access the context menu) the sheet tab and select **Rename**

- Select the sheet tab > **Home** tab > **Cells** group > **Format** > **Rename Sheet**.

Learn Task 💡	Access the Learner Workbook to complete the Learn Task for this skill.

Move or Copy Worksheets

Online App Alert 🖥	Steps for this topic differ in the Microsoft Office Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Change the sequence in which the worksheets appear in a workbook to help organize multi-worksheet workbooks. To move a worksheet within a workbook, use one of the following methods:

- Right-click (or access the context menu) the sheet tab and select **Move or Copy**, select a sheet in the **Before sheet** list, and then select **OK**

- Drag the sheet tab to the new location

To create a new worksheet based on an existing one, make a copy of a worksheet. To copy a worksheet within a workbook, use one of the following methods:

- Right-click (or access the context menu) the sheet tab and select **Move or Copy**, select a sheet in the **Before sheet** list, select the **Create a copy** checkbox, and then select **OK**

- **CTRL** and drag the sheet tab to the new location

Microsoft 365 (Web) and Online

To move a worksheet within a workbook:

- Drag the sheet tab to the new location

- Right-click the sheet tab > **Reorder... > Reorder selected sheet** window > **Before sheet**: select the desired sheet or **(move to end)**
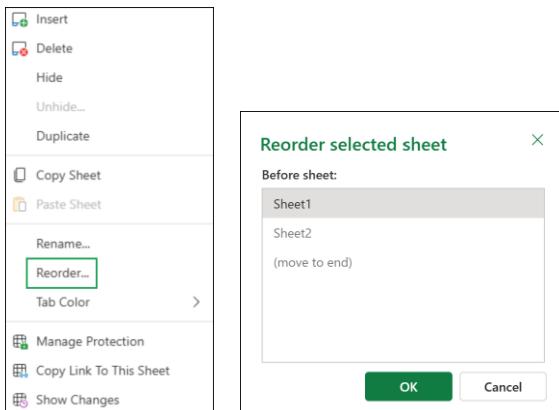
 To make a copy of a worksheet:

- Right-click the sheet tab and select **Duplicate**
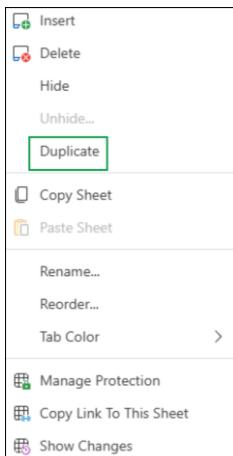
Insert
Delete
Hide
Unhide...
Duplicate

Copy Sheet
Paste Sheet

Rename...
Reorder...
Tab Color   >

Manage Protection
Copy Link To This Sheet
Show Changes

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖 | Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 2: Construct Cell Data

Lesson Objectives

In this lesson, you will learn about data types and how to enter data, how to move and copy it, and basic and advanced paste options. You will discover the Auto Fill tool and how to work with columns, rows, and cells. Upon completion of this lesson, you should understand the following:

☐ Types of Data

☐ Paste Special

☐ Advanced Paste Special Options

☐ Auto Fill

☐ Insert and Delete Columns

☐ Insert and Delete Rows

☐ Insert and Delete Cells

☐ Change Column Width

☐ Change Row Height

Types of Data

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

- **Numeric** – Numbers, date, or time values. By default, numeric values align to the right in a cell

- **Text** – Alphabetic and numeric characters and most printable symbols. If you enter a text value that is wider than the cell, it will flow into the adjacent cells if those cells are empty. By default, text aligns to the left in a cell

- **Formulas** – Formulas are composed of values, cell references, arithmetic operators, and special functions for calculating and displaying results. Each cell can have only one formula, for example, =A1*.15. When the active cell contains a formula. The formula will appear in the Formula bar, whereas the cell will display the result of the formula

Paste Special

To control components of what is pasted, use the Paste Options button, the Paste drop-down arrow, or the Paste Special dialog box.

To specify paste options when you paste, copy the data, select where you want to paste it, and then use one of the following options:

- **Home** tab > **Clipboard** group > **Paste drop-down** and select an option

- **Home** tab > **Clipboard** group > **Paste drop-down** > **Paste Special**, select options in the Paste Special dialog box

To access Paste Special options after pasting, select the **Paste Options** button at the bottom of the pasted range, point to the options in the shortcut menu to preview how the pasted item will appear, then select an option to apply it.
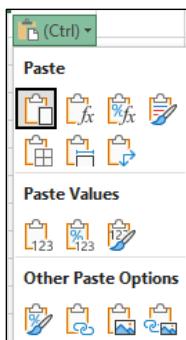
Use **Paste Values** to paste only values to remove formulas and formatting.

To paste only values, select the range, select the location to paste, then select **Home** tab > **Clipboard** group > **Paste drop down** > **Values**.

The pasted content has only values and no formatting.

Use **Transpose** to rotate copied data when pasting, so the column data is pasted as a row, and row data is pasted as a column.

To transpose a paste, select the range, select the location to paste, **Home** tab > **Clipboard** group > **Paste** drop-down arrow > **Transpose**.

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To use paste special options:

- **Home** tab > **Clipboard** group > **Paste** drop-down arrow > **Paste Special**
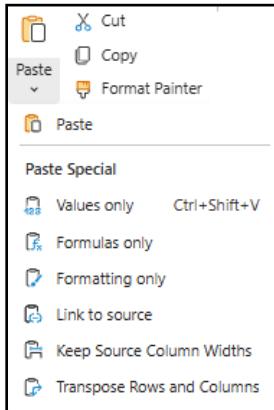
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Advanced Paste Special Options

Desktop Only Alert ✏️ | The following feature is exclusively available in the desktop version.

More Paste Special options are available in the Paste Special dialog box.

Select the **Home** tab > **Clipboard** group > **Paste** drop-down arrow > **Paste Special**, select an option, and select **OK**.
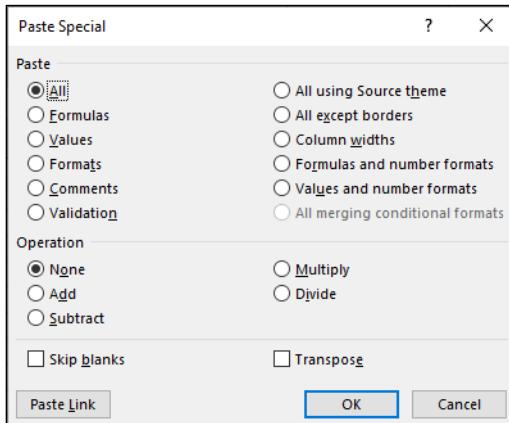
- **Paste** - Specifies what components of the data in the Clipboard are pasted to the target cells
- **Operation** - Specifies the operation that combines the target cells and data pasted into the target cells
- **Skip blanks** - Avoids overwriting any existing data in the target cells if there is no copied data to be put into that cell
- **Transpose** - Rotates the data, so copied data as a column will be pasted as a row, and vice-versa

When you use Paste Special and Add Operation, the values in the clipboard are added to the values already in the paste location range.

To use the Paste Special Operation option, copy the range of cells, select the cell where you want to paste them, and then use **Home** tab > **Clipboard** group > **Paste drop-down** > **Paste Special**, select the Operation option (**Add**, **Subtract**, **Multiply**, or **Divide**), and select **OK**.

Use the Column width option to paste a range of data and include the column widths of the original, copied data. Copy the range of cells, select the cell where you want to paste them, and then use **Home** tab > **Clipboard** group > **Paste drop-down** > **Paste Special**, choose the **Column widths**, and select **OK**.

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Auto Fill

Online App Alert | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Auto fill is a useful feature that allows you to quickly copy data or extend a data series (like dates, numbers, or formulas) across adjacent cells.

To use Autofill, enter data in a cell (for example, "January" or "1") and in the following cell. Select both cells, then move your cursor to the bottom-right corner of the cell until it becomes a small black cross (this is the *fill handle*). Select and drag the fill handle across the cells where you want to apply Autofill.

Excel will automatically fill the cells based on the pattern it detects (e.g., increasing numbers, continuing months, copying formulas). If Excel does not detect a pattern, it will copy the original cell value across the selected cells.

After releasing the fill handle, a small icon appears near the filled cells. Select the drop-down arrow to choose one of the following options:

- **Copy Cells** – Repeats the original value

- **Fill Series** – Continues a pattern (e.g., 1, 2, 3…)

- **Fill Formatting Only** – Applies formatting without changing values

- **Fill Without Formatting** – Copies values but ignores formatting

- **Flash Fill** – Automatically fills based on detected patterns (e.g., splitting names or formatting phone numbers)
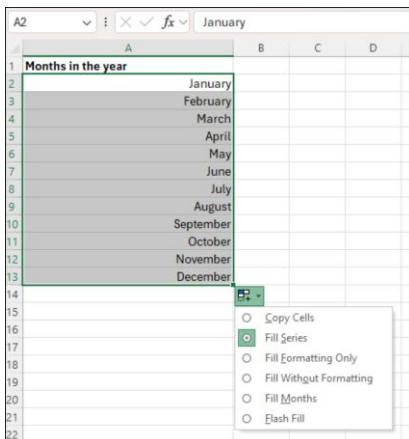
Microsoft 365 (Web) and Online

To use the Auto fill feature:

Follow the same steps that you would use in the desktop app, and select the **Auto fill** menu drop-down arrow, then select the **Copy Cells**, **Fill Series** or **Flash Fill** option.
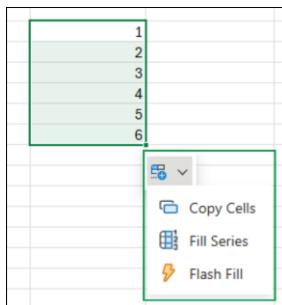
Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Insert and Delete Columns

Online App Alert 🖥️ | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

You can insert new columns in an Excel worksheet anywhere, even between columns containing data. New columns are inserted to the left of the cell (or column).

To insert a column, do one of the following:

- Select a cell or column, **Home** tab > **Cells** group > **Insert** arrow > **Insert Sheet Columns**
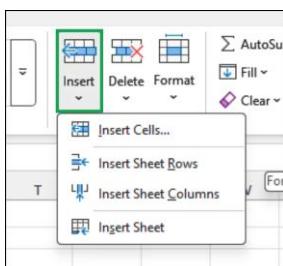
- Select the column heading to the right of the location where the new column will be, and **Home** tab > **Cells** group > **Insert**

- Right-click (or access the context menu) a cell in the column and select **Insert**
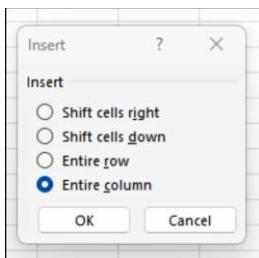
When you insert multiple columns, the same number of columns you selected will be inserted to the left of the selected columns.

To insert multiple columns, select the same number of columns to the right of where you want the new columns to appear, and then do one of the following:

- **Home** tab > **Cells** group > **Insert** drop-down arrow > **Insert Sheet Columns** (or **Insert**)

- Right-click the selected column headings and select **Insert**

Before you delete one or more columns, verify that the columns do not contain any valuable data in a portion of the worksheet that is not visible on the screen.

To delete one column, use one of the following:

- Select a cell in the column, **Home** tab > **Cells** group > **Delete** drop-down arrow > **Delete Sheet Columns**

- Right-click a cell in the column to be deleted, select **Delete** > **Entire column** > **OK**
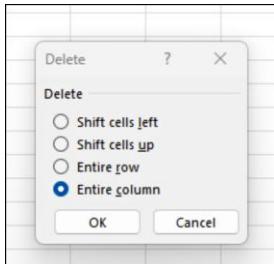
To delete multiple columns, select the column headings for the columns to be deleted, and then use one of the following:

- **Home** tab > **Cells** group > **Delete**

- Right-click (or access the context menu) the column heading(s) and select **Delete**

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To insert columns:

- Select a cell or column, **Home** tab > **Cells** group > **Insert** drop-down arrow > **Insert Columns to the Left**
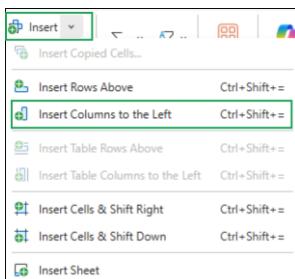
To insert multiple columns:

1. Select the same number of columns to the right of where you want the new columns to appear.

2. **Home** tab > **Cells** group > **Insert** drop-down arrow > **Insert Columns**.

To delete one column:

- Select a cell in the column, **Home** tab > **Cells** group > **Delete** drop-down arrow > **Delete Columns**
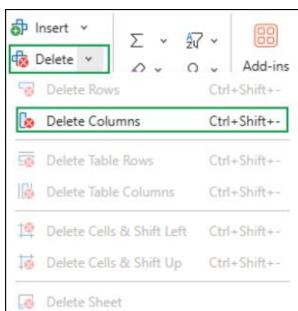
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Insert and Delete Rows

Online App Alert 🖥️   Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

You can insert new rows in an Excel worksheet anywhere, even between rows containing data. New rows are inserted directly above the cell or row you select before issuing the insert command.

To insert a row, do one of the following:

- **Home** tab > **Cells** group > **Insert** drop-down arrow > **Insert Sheet Rows**

- Select the row heading below the location where the new row is to be inserted, **Home** tab > **Cells** group > **Insert**

- Right-click (or access the context menu) a row heading and select **Insert**

To insert multiple rows, select the number of rows below where you want the new rows and then use the Insert command. The new inserted rows (the same number as the number of rows you selected) will appear above the two highlighted rows.

To insert multiple rows, select the rows below where you want the new rows to appear and then do one of the following:

- **Home** tab > **Cells** group > **Insert** drop-down arrow > **Insert Sheet Rows** (or **Insert**)

- Right-click (or access the context menu) the selected rows' headings and select **Insert**

Before you delete one or more rows, verify that the rows do not contain any valuable data in a portion of the worksheet that is not visible on the screen.

To delete one row:

- Select a cell in the row, then **Home** tab > **Cells** group > **Delete** drop-down arrow > **Delete Sheet Rows**

- Right-click (or access the context menu) a cell in the row to be deleted, **Delete** > **Entire row** > **OK**
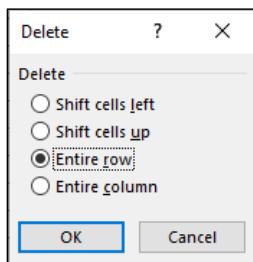
- Select the row heading(s) for the row(s) to be deleted, and then **Home** tab > **Cells** group > **Delete**.

- Select the row heading(s) for the row (s) to be deleted, and then right-click (or access the context menu) the row heading(s) and **Delete**

Microsoft 365 (Web) and Online

To insert a row:

- Select a cell or row, **Home** tab > **Cells** group > **Insert** drop-down arrow > **Insert Rows Above**
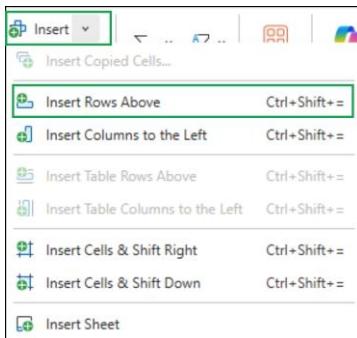
To insert multiple rows:

1. Select the same number of rows below where you want the new rows to appear.

2. **Home** tab > **Cells** group > **Insert** drop-down arrow > **Insert Rows Above**.

To delete a row:

- Select a cell or row, **Home** tab > **Cells** group > **Delete** drop-down arrow > **Delete Rows**
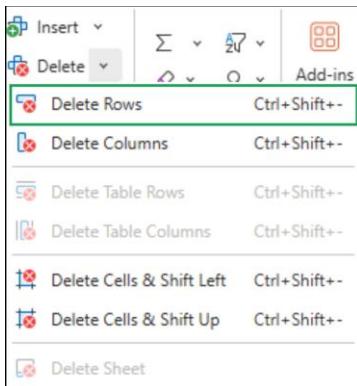
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Insert and Delete Cells

You can insert or delete one or several cells. Be cautious when inserting and deleting cells because rows or columns of data elsewhere might become misaligned. In this example, selecting Shift cells down causes the data in column A to become misaligned with the remainder of the data.

In the same example, selecting **Entire row** keeps the data in each row together.

To insert cells, select a cell or range of cells and then use one of the following options:

- **Home** tab > **Cells** group > **Insert** (Note that this option doesn't prompt you to choose whether to shift other cells to the right or down.)

- **Home** tab > **Cells** group > **Insert** drop-down arrow > **Insert** Cells > **Shift cells right** or **Shift cells down**

- Right-click the selected cells and select **Insert** > **Shift cells left** or **Shift cells up**

When you delete existing cells, Excel shifts the remaining cells over from the right or below to replace the deleted cell(s).

Warning! When you delete cells, any formulas that reference the cell(s) will display an error.

To delete cells, select a cell or range of cells and then use one of the following options:

- **Home** tab > **Cells** group > **Delete** (Note that this option doesn't prompt you to choose whether you want to shift other cells to the left or up.)

- **Home** tab > **Cells** group > **Delete** drop-down arrow > **Delete Cells** > **Shift cells left** or **Shift cells up**

- Right-click the selected cells and select **Insert** > **Shift cells left** or **Shift cells up**

Access the Learner Workbook to complete the Learn Task for this skill.

Change Column Width

The standard column width in a new worksheet may not be wide enough to accommodate your data. If the column is too narrow and the data is:

- **Text** -Excel will display the text by overflowing into adjacent (empty) cells. If those adjoining cells have entries, the text will be truncated

- **Numbers** - Excel uses several different rules to determine how to display a numeric value in a cell:

    - If you enter a numeric value slightly larger than the current column width, Excel automatically widens the width

    - If you enter a numeric value that is much larger than the current column width, Excel automatically changes the cell format to scientific notation

    - If you reduce the width of a column that contains numbers or dates and Excel can't display the number, a series of pound signs (######) will be displayed

	A	B	C	D
1	Popular Tours			
2		2022	2021	2020
3	Rock Climbi	####	15000	
4	Ice Climbing	####	20000	
5	Whale Watc	####	25000	
6	Hot Air Ballc	####	10000	
7	Heli Skiing	9600	7500	
8	Cycling (Citi	####	14800	
9	Haunted Sit	####	12500	
10		####	1E+05	

To change the width for a column manually use one of the following options:

- **Home** tab > **Cells** group > **Format** > **Column Width**
- Point at the vertical line on the right of the column heading for the column until the pointer changes to the ✛ symbol, and then drag to the desired width
- Right-click the column heading for the column to be adjusted, and select **Column Width**

Use ***AutoFit*** to change the column's width to fit the contents use one of the following options:

- Select the column or a cell in the column and select **Home** tab > **Cells** group > **Format** > **AutoFit Column Width**
- Or point at the vertical line on the right of the column heading for the column you want to adjust until the pointer changes to a ✛ (double-headed arrow) and then double-click.

To change the width of multiple columns, select the columns first and then use either of these two methods.

You can hide a column(s) in your worksheet for various reasons including printing considerations, hiding calculations or data that might confuse the reader, or to prevent other users from viewing the data or formulas in the column(s).

Identify hidden columns by the gaps in the column headers and double-line header divisions. Hidden columns remain hidden until you unhide them again. Excel will continue to correctly calculate any formulas in hidden cells, or formulas in visible cells that reference hidden cells.

To hide one or more columns, select the column heading(s) first and then use one of the following options:

- **Home** tab > **Cells** group > **Format** > **Hide & Unhide** > **Hide Columns**

- Right-click the selected columns and select **Hide**

- Drag the right edge of the column header(s) to the left until it is hidden

To unhide a row or column, select the column headings on both sides of the hidden column(s), and then use one of the following options:

- **Home** tab > **Cells** group > **Format** > **Hide & Unhide** > **Unhide Columns**

- Right-click the double line header division and select **Unhide**

- Drag the right edge of the hidden column header(s) to the right

Columns D to G hidden in worksheet

	A	B	C	H	I	J	K
1	Date	Lake Louise, AB	Whistler, BC	Aspen, CO	Breckenridge, CO	Crested Butte, CO	Durango, CO
2	1-Oct-22	10	10	5	10	1	11
3	2-Oct-22	4	0	9	3	7	12
4	3-Oct-22	2	1	11	13	8	5
5	4-Oct-22	9	5	12	13	13	10
6	5-Oct-22	9	8	6	3	13	2
7	6-Oct-22	7	7	1	4	9	7
8	7-Oct-22	5	13	14	10	9	8
9	8-Oct-22	4	10	10	6	2	2
10	9-Oct-22	13	6	15	0	11	8
11	10-Oct-22	9	5	10	6	8	7
12	11-Oct-22	13	1	4	7	14	8
13	12-Oct-22	4	9	1	12	14	6
14	13-Oct-22	1	4	10	2	13	12
15	14-Oct-22	5	14	3	8	4	9
16	15-Oct-22	4	14	12	6	7	1
17	16-Oct-22	1	12	9	0	14	5

Learn Task 💡   **Access the Learner Workbook to complete the Learn Task for this skill.**

Change Row Height

The standard row height in a new worksheet may not be wide enough to accommodate your data.

To adjust the height for a row, follow these steps:

- Select the row or a cell in the row and select **Home** tab > **Cells** group > **Format** > **Row Height**, enter a row height and select **OK**

- Point at the bottom of the row heading to be adjusted until the pointer changes to a ✛ symbol and then drag.

- Right-click the row heading for the row to be adjusted and select **Row Height**.

	A	B	C	D
1	**Popular Tours**			
2				
3		**2022**	**2021**	**2020**
4	Rock Climbing	12000	15000	
5	Ice Climbing	15000	20000	
6	Whale Watching	22000	25000	
7	Hot Air Ballooning	12000	10000	
8	Heli Skiing	9600	7500	
9	Cycling (Cities)	13500	14800	
10	Haunted Sites	22600	12500	
11		108722	106821	

AutoFit is a time-saving feature of Excel that will automatically adjust row height for you.

To change the row height to fit the contents:

- Select the column or a cell in the row and select **Home** tab > **Cells** group > **Format** > **AutoFit Row Height**

- Double-click the bottom of the row heading

You might want to hide one or more rows in your worksheet for reasons similar to why you would hide columns. Identify hidden rows by the gaps in the row or column headers and double-line row divisions.

Hidden rows will remain hidden until you unhide them again. Excel will continue to correctly calculate any formulas in hidden cells, or formulas in visible cells that reference hidden cells.

To hide one or more rows, select the row(s) first and then use one of the following options:

- **Home** tab > **Cells** group > **Format** > **Hide & Unhide** > **Hide Rows**

- Right-click (or access the context menu) the selected rows and select **Hide**

- Drag the bottom edge of the row upwards until it is hidden

To unhide a row, select the row headings on both sides of the hidden row(s) and then use one of the following options:

- **Home** tab > **Cells** group > **Format** > **Hide & Unhide** > **Unhide Rows**

- Right-click the double line header division and select **Unhide**

- Drag the bottom edge of the hidden row downwards

	A	B	C	D	E
1	Tolano Adventures				
2	Website Hits				
3					
4	Office	January	February	March	April
5	New York	8,125	5,947	5,420	5,647
7	Toronto	1,017	1,281	1,512	2,107
11	Seattle				4,876
12	Corporate	904	804	641	772
13	Total	28,925	25,996	26,149	34,286

Row 6 is hidden
Rows 8 to 10 are also hidden

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖 | Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 3: Work with Workbooks

Lesson Objectives

In this lesson, you will learn about working with Excel views and techniques to work efficiently with large worksheets. You'll also learn how to prepare your workbooks for printing by exploring Page Layout and Page Setup options, header and footers, and other print options. Upon completion of this lesson, you should understand the following:

☐ Window View Options

☐ Split View

☐ Workbook Views

☐ Freeze Panes

☐ Page Layout

☐ Page Setup

☐ Headers and Footers

☐ Print Options

Window View Options

Change how the worksheet is displayed by using the commands on the View tab of the Ribbon.
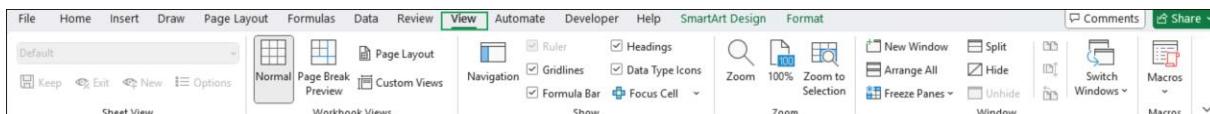
Commands in the Zoom group (Zoom, 100%, and Zoom to Selection) change the magnification percentage.
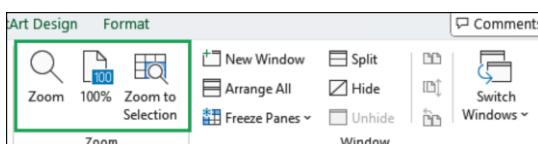
To change the zoom by choosing a percentage, select **View** tab > **Zoom** group > **Zoom**, then choose a **Magnification** option in the Zoom dialog box or enter a value in the **Custom** field.
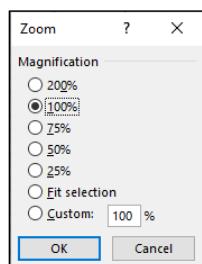
To change the zoom by fitting a selection, select a range of cells, **View** tab > **Zoom** group > **Zoom** > **Fit Selection**.

Commands in the Window group change the Excel window.
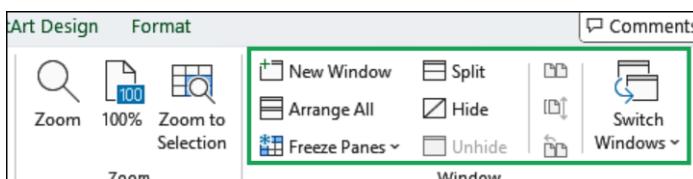
New Window	Opens a second window of the workbook.
Arrange All	Arranges all the Excel windows on the screen in one of four layouts.
Freeze Panes	Locks in place the rows above and the columns to the left of a selected cell.
Split	Splits the worksheet into two or four panes based on the cell pointer position.
Hide	Hides the active window from the screen.
Unhide	Displays a dialog box listing the windows you've hidden to unhide them.
View Side by Side	Places two open workbooks side by side, either vertically or horizontally.

Synchronous Scrolling	Scrolls through the worksheets in each pane simultaneously.
Reset Window Position	Resets the displayed worksheets to equal sizes.
Switch Windows	Lists the files currently open in Excel so you can bring a workbook to the front by selecting it.
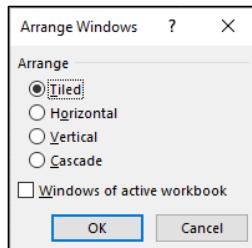
To use New Window to open another window of the active workbook, select **View** tab > **Window** group > **New Window**.

Use Arrange All to arrange additional windows on your screen, select **View** tab > **Window group** > **Arrange All** and then, in the Arrange Windows dialog box, select **Tiled**, **Horizontal**, **Vertical**, or **Cascade**.

Tiled – All windows are positioned next to each other	
Horizontal – Each window stretches across the entire width of the Excel application window	
Vertical – Each window stretches from the top to the bottom of the Excel screen	
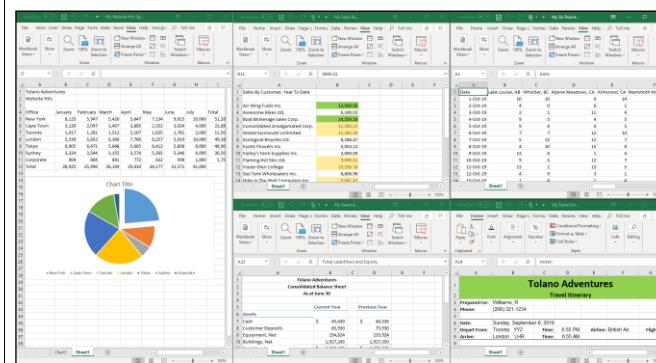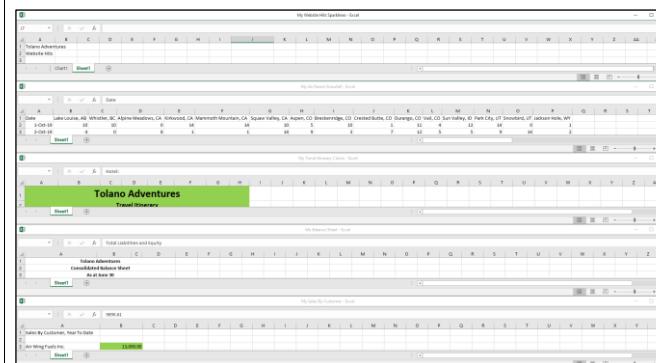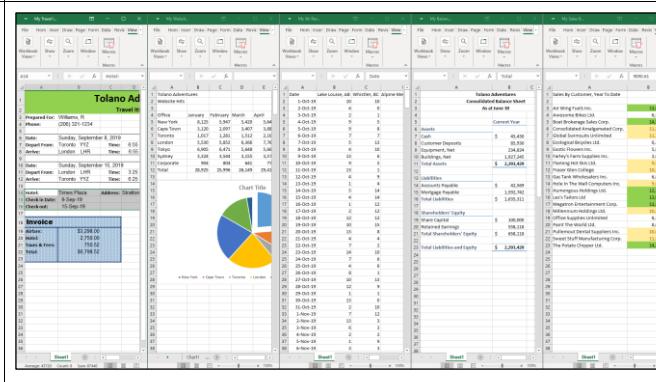
Cascade – Rearrange worksheets so that each one is on top of the next and slightly offset to give you a three-dimensional view of all open workbooks-	
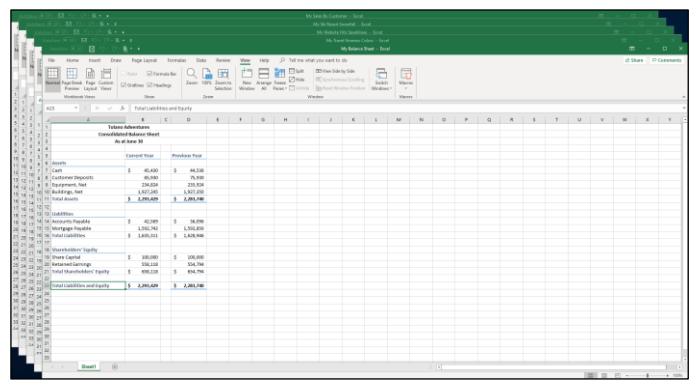
Microsoft 365 (Web) and Online

The View tab also offers view options in the Zoom and Open groups.
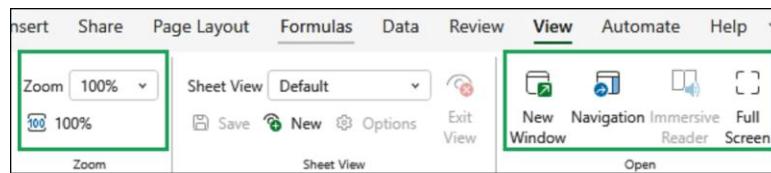
To use the Zoom feature:

- **View** tab > **Zoom** group > **Zoom** drop-down arrow, then choose a Magnification option. If you need to return to 100% zoom, select the **Zoom to 100%** button (the blue 100 next to 100%)

To open another window of the active workbook, select **View** tab > **Open** group > **New Window**.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Split View

Desktop Only Alert ✏️   The following feature is exclusively available in the desktop version.

Use the split feature to view and work in the current active worksheet using two or four window panes. You can move within each of the split panes to view and work in different parts of the worksheet. Each split pane has its own scrollbar.

The split will occur above and to the left of the active cell. You'll get two or four panes, depending on the active cell. The example is four panes with D7 as the active cell.

	A	B	C	D	E	F	G	H	I
1	Date	Lake Louise, AB	Whistler, BC	Alpine Meadows, CA	Kirkwood, CA	Mammoth Mountain, CA	Squaw Valley, CA	Aspen, CO	Breckenridge
2	1-Oct-19	10	10	0	14	14	10	5	
3	2-Oct-19	4	0	8	1	1	14	9	
4	3-Oct-19	2	1	11	4	13	13	11	
5	4-Oct-19	9	5	4	5	13	13	12	
6	5-Oct-19	9	8	4	3	2	11	6	
7	6-Oct-19	7	7	12	14	2	3	1	
8	7-Oct-19	5	13	12	7	12	3	14	
9	8-Oct-19	4	10	15	8	2	2	10	
10	9-Oct-19	13	6	1	4	6	15	15	
11	10-Oct-19	9	5	12	7	7	8	10	
12	11-Oct-19	13	1	13	5	7	3	4	
13	12-Oct-19	4	9	3	1	15	6	1	
14	13-Oct-19	1	4	1	4	1	1	10	
15	14-Oct-19	5	14	6	13	7	3	3	

To use Split:

- Select a cell in the worksheet, then on the **View** tab > **Window** group > **Split**. Alter the position of either the horizontal or vertical split bar by dragging it with your mouse

To remove both split bars, go to the **View** tab > **Window** group > **Split**.

- To remove the vertical split bar, drag it to the far left or far right of the worksheet
- To remove the horizontal split bar, drag it to the top or bottom of the worksheet
- Double-click either of the split bars

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Workbook Views

Desktop Only Alert ✏️ | The following feature is exclusively available in the desktop version.

You can use three views when working in Excel: Normal, Page Break Preview, and Page Layout.

Use the **View** buttons on the status bar to change the view at the bottom right of the screen.
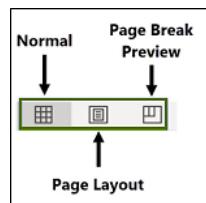
You can change the view in the **View** tab > **Workbook Views** group > and choose one of the following:

Normal – The default view uses this view for entering data and working with data. Only the worksheet rows, columns, and headers appear. The page break lines only appear if you activate a print-related feature such as inserting page breaks or seeing a print preview of the workbook.
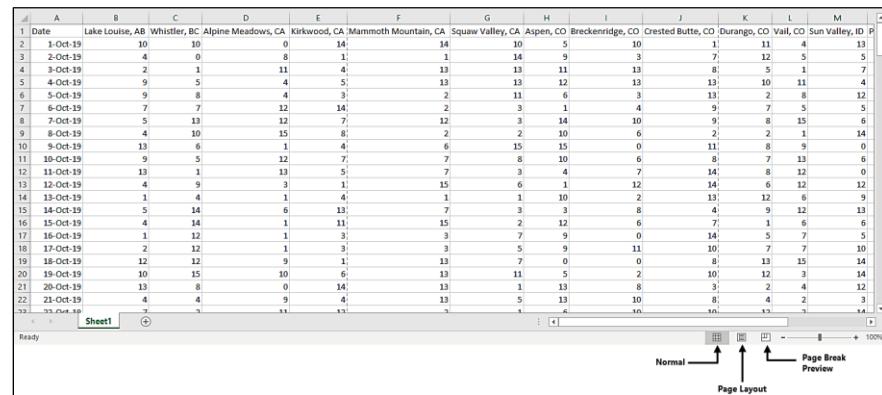
Page Break Preview – Use this view to manage and control vertical and horizontal page breaks, especially if your worksheet is long, wide, or both. Watermarks display on your worksheet to identify which rows and columns will appear on which pages, with the *page break* lines to mark the boundaries. Dotted lines are automatic page breaks; solid lines are manual. To move a page break in this view, drag it with your mouse.

Page Layout – Use this view to add header and footer information, change margins and layout, and adjust how the printed document will appear.

Custom Views – Allow you to save your current page layout settings with a name so that you can re-activate them later.

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Freeze Panes

Online App Alert 🖥️ | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

As your worksheet grows, it becomes difficult to view all the data on the screen at the same time. When you can't view row and column headings on the screen as you scroll down or across a large worksheet, use **Freeze Panes** to lock the top row(s) and/or left-most column(s). This will keep row and column titles visible while you scroll to a remote part of the worksheet.

Note: Excel does not allow you to use Freeze Panes and Split Panes at the same time.
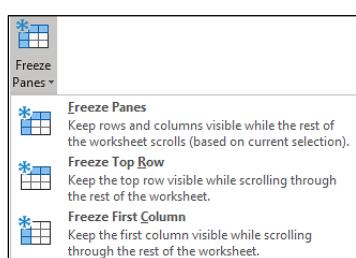
To use freeze panes, select **View** tab > **Window** group > **Freeze Panes** and then choose one of the following:

- **Freeze Panes** – The active cell serves as an anchor - all rows above and all columns to the left of the active cell remain in view until the feature is turned off. You may freeze more than one row or column in place. You can also freeze just the top row(s) or just the leftmost column(s).

- **Freeze Top Row** – Excel will freeze the row currently displayed at the top of the worksheet window

- **Freeze First Column** – Excel will freeze the column currently displayed at the far left of the worksheet window

To unfreeze panes, select **View** tab > **Window** group > **Freeze Panes** and then select **Unfreeze Panes**.

Microsoft 365 (Web) and Online

To use Freeze panes:

- Select the **View** tab > **Freeze** group > **Freeze Panes**
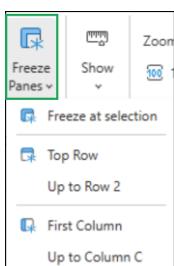
The following menu options are available:

- **Freeze at selection** – The active cell serves as an anchor, all rows above and all columns to the left of the active cell remain in view until the feature is turned off

- **Top Row** – Excel will freeze the row currently displayed at the top of the worksheet window

- **Up to Row** – Excel will freeze all rows above the selected cell

- **First Column** –Excel will freeze the column currently displayed at the far left of the worksheet window

- **Up to Column** – Excel will freeze all columns to the left of the selected cell

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Page Layout

Online App Alert 🖼 | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

The Page Layout tab contains three groups you can use to adjust the layout and print settings for your worksheet: **Page Setup**, **Scale to Fit**, and **Sheet Options**.
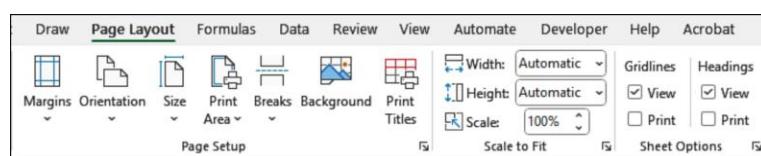
The Page Setup group on the Page Layout tab includes the following options:
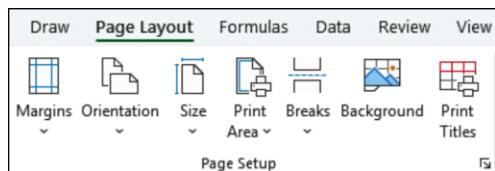
- **Margins** – The amount of white space (measured in inches) from the edge of the page
- **Orientation** – Portrait (vertical) or Landscape (horizontal)
- **Size** – The size of paper to use for printing

- **Print Area** – After selecting a group of cells, select **Print Area** > **Set Print Area** to specify to print only the range defined as the print area. To clear the print area, select **Print Area** > **Clear Print Area**
- **Breaks** – Manually insert page breaks
- **Background** – Insert a picture as a background for the worksheet
- **Print Titles** – Specify rows and/or columns that appear at the top/left of every page of printed output

Microsoft 365 (Web) and Online
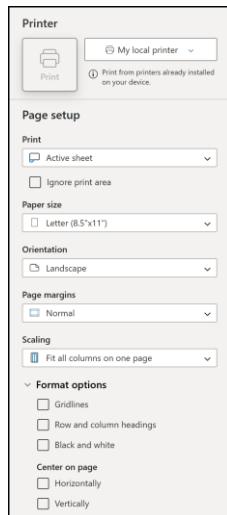
To access Page Setup options:

- **Page Layout** tab > **Page Setup** group > **Page Setup**, to adjust the layout and print settings for your worksheet

The Page Setup button includes the following menu options:

- Printer selection
- Print area
- Paper size
- Orientation
- Page margins
- Scaling

Format and Center on Page options

When you want to exit the Page Setup view, select **← Back to workbook** in the top-left corner of the sheet.

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Page Setup

Online App Alert 🖥 | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Use the Page Setup dialog box to access all the commands found on the Page Layout tab as well as additional page formatting options that aren't available in the Ribbon.

To open the Page Setup dialog box:

- **File** tab > **Print** > **Page Setup**
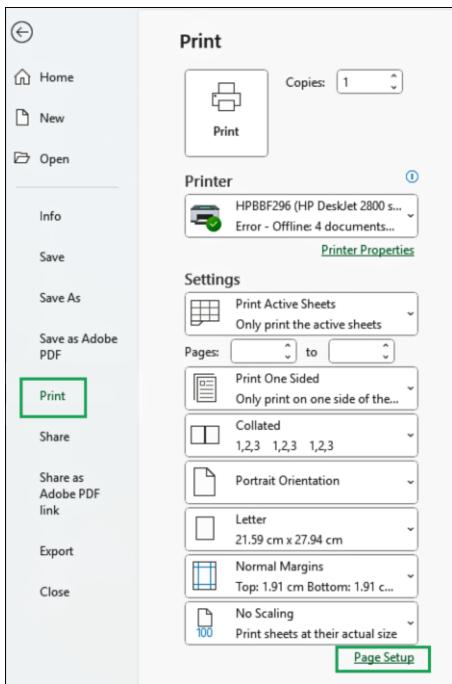
- **Page Layout** tab > **Page Setup** group > Page **Setup** dialog box launcher (⬦)

Some commands are only accessible in the Page tab, such as:

- **Scaling** – Specifies a percentage to magnify or shrink the size of the worksheet proportionally. Use the Fit option to fit the worksheet into the specified number of pages

- **Print quality** – Determines the density, or quality, of the print

- **First page number** – Specifies the starting page number for the printed worksheet
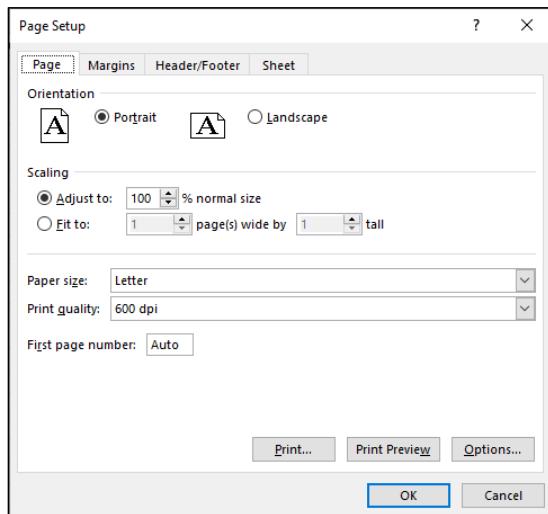
Use the **Margins** tab to specify the following print parameters:

- The amount of white space to leave on each side of the page

- The distance between the Header and Footer and the top/bottom edge of the page

- Whether to center the worksheet on the page horizontally or vertically, or both
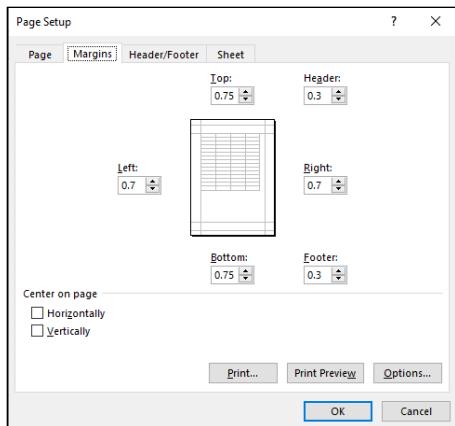
The **Sheet** tab of the Page Setup dialog box includes the following features:

- **Print area** – Specifies a range of cells as the print area

- **Print titles** – Specifies rows or columns (or both) to print on every page of the printed output

- **Print** – Select options in this section if you want them to appear on the printed pages

- **Page order** – By default, Excel prints down the rows, and then across the columns
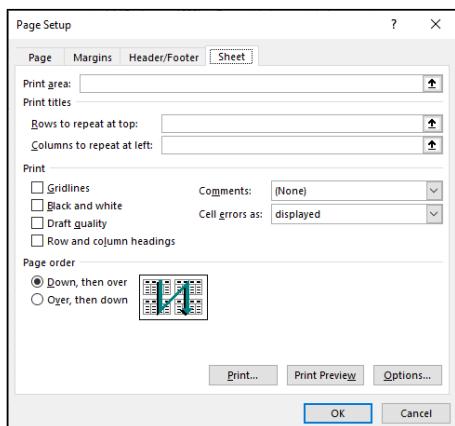
Additional tools to modify the worksheet are found on the Ribbon. In the **Page Layout** tab > **Page Setup** group, choose from the following commands:

- **Margins** – Choose from preset margin settings

- **Size** – Select from various page, envelope or index card sizes

In the **Page Layout** tab > **Scale to Fit** group, choose from the following options:

- Use the **Width** and **Height** options to calculate the correct scale value to fit the worksheet into the specified number of pages vertically and horizontally

- The **Scale** option enables you to magnify or shrink the size of the worksheet proportionally on the page for printing
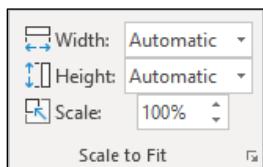
In the **Page Layout** tab > **Sheet Options** group, select the following:

- **Gridlines** - Displays or prints non-printing lines around each cell
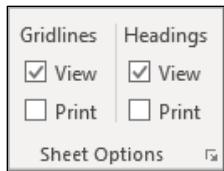
- **Headings** - Displays or prints column (A, B, C) and row (1, 2, 3) headings

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To adjust Print area, Paper Size, Orientation, Page margins, Scaling, Format options and center on page in the Printer task pane, choose one of the following to open the Printer pane:

- **File** tab > **Print**

- **Page Layout** tab > **Page Setup**
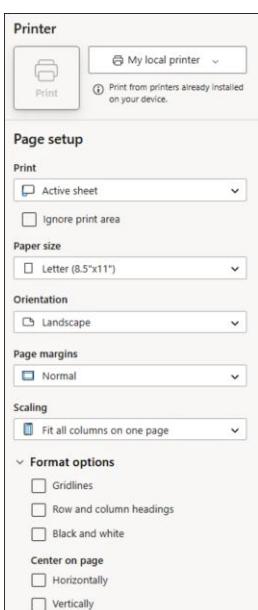
Access the Learner Workbook to complete the Learn Task for this skill.

Headers and Footers

Desktop Only Alert 🖊 The following feature is exclusively available in the desktop version.

Headers and *footers* appear at the top and bottom of every printed page, respectively. Headers and footers apply only to the active or selected worksheet(s). Create or modify a worksheet header or footer using the Page Setup dialog box or the Print Layout view.

To create a header and/or footer with the Page Setup dialog box, select the worksheet(s), **Page Layout** tab > **Page Setup** group > Page Setup dialog box launcher. In the **Header & Footer** tab, choose a preset from the **Header** and **Footer** drop-down menus, set additional formatting by selecting the checkboxes, and then select **OK**.
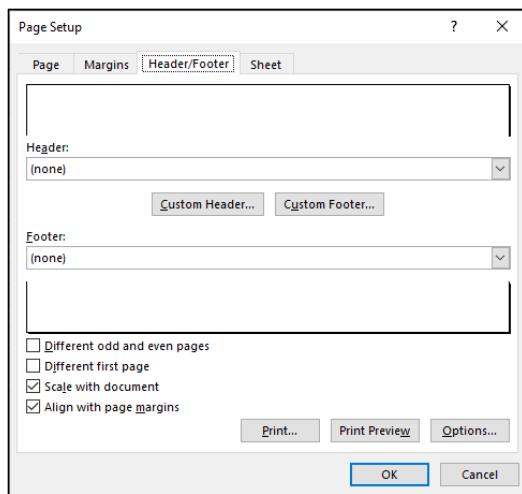
For additional options, select **Custom Header** or **Custom Footer**. Enter header or footer information into the three sections (Left, Center, and Right) or use the command buttons to enter a code such as &[Page] to display the page number, and then select **OK**.
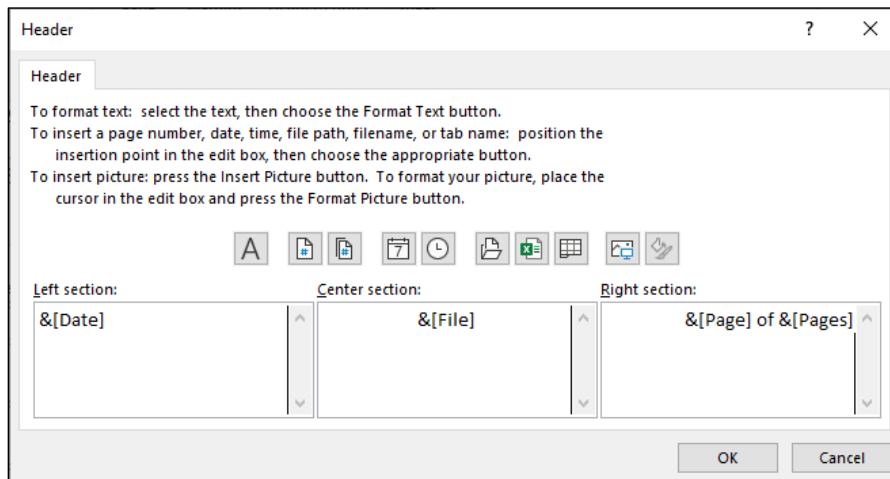
The command buttons listed on the Header and Footer dialog box are:

- **Format Text** – Changes the appearance of text
- **Page Number** – Current page number
- **Number of Pages** – Total number of pages
- **Date** – Inserts today's date
- **Time** – Inserts the current time
- **File Path** – Current file name and path displayed
- **File Name** – Name of the file
- **Sheet Name** – Name of the current sheet
- **Picture** – Inserts an image
- **Format Picture** – Changes the appearance of a picture

To add or modify a header or footer:

- **Insert** tab > **Text** group > **Header & Footer**
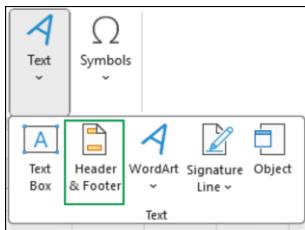
- **View** tab > **Workbook Views** group > **Page Layout** > insert your cursor in the left, middle, or right box for the Header or Footer. Then enter text or use the command buttons in the **Header & Footer** tab
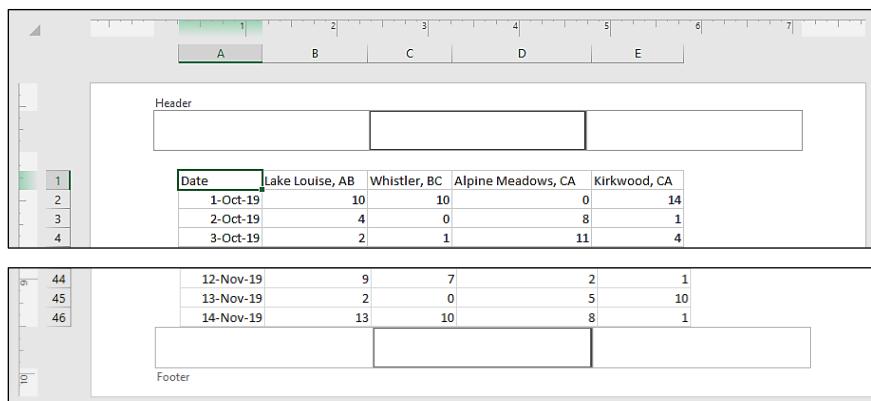
In the **Header & Footer** group, select the drop-down arrows to display preset options to apply to the header or footer.
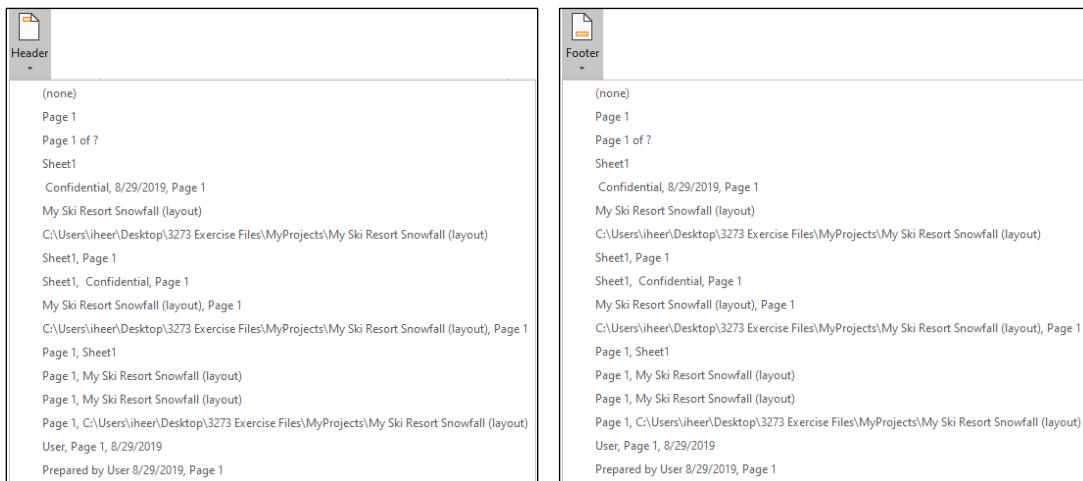
Alternatively, choose one of the commands available in the **Header & Footer Elements** group.
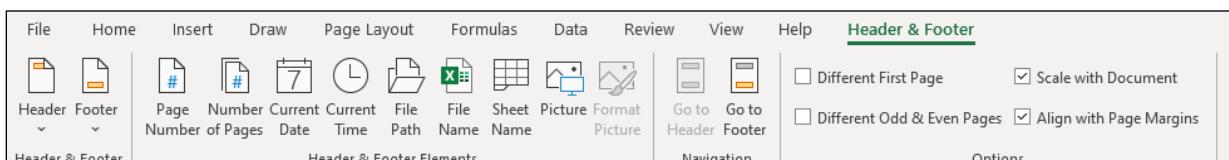
Learn Task 💡 **Access the Learner Workbook to complete the Learn Task for this skill.**

Print Options

Set *Print Titles* to designate specific data rows or data columns (or both) to print on every page of the printed output.

To set print titles in the Page Setup dialog box:

- **Page Layout** tab > **Page Setup** group > in the **Print Titles** section select the collapse button (⬆️) for the **Rows to repeat at top** field to shrink the dialog box, and then in the worksheet, select the row header(s) for the row(s) (they must be contiguous rows) you want to use as titles and **ENTER**

- Repeat this process for columns to repeat at the left
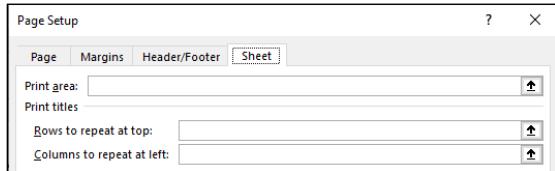
- Specify a range of cells as the Print Area so only that range will print by default

To specify a range of cells as a print area:

- Select the cell range in the worksheet, then **Page Layout** tab > **Page Setup** group > **Print Area** > **Set Print Area**

Alternatively, to select a range of cells to print:

- Select the range of cells on the worksheet, then **File** > **Print**, and then under Settings, **Print Active Sheets** > **Print Selection**

The Print page in Backstage view contains options for printing including Print Area, Orientation, Page Size, Margins, and Scaling. The Print Area drop-down menu includes Print Active Sheets, Print Entire Workbook, Print Selection, and Ignore (previously set) Print Area.
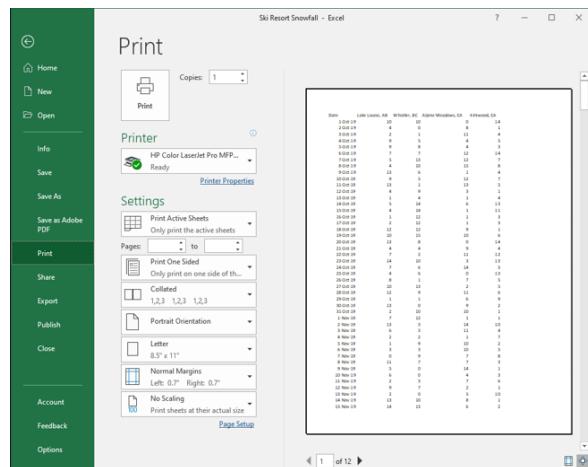
The Backstage view Print Settings allows you to select one of four options for printing:

- **Print Active Sheets** – Prints the current active worksheet (or multiple selected sheets)

- **Print Entire Workbook** – Prints all worksheets in the entire workbook
- **Print Selection** – Prints the currently selected range of cells in the current active worksheet
- **Ignore Print Area** – Ignores any previously set print areas

To print more than one worksheet, but not the entire workbook:

- Hold **CTRL** (or **SHIFT** if the sheets are contiguous), select all the worksheets you want to print, then, **File** tab > **Print**, ensure **Print Active Sheets** is selected, and select **Print**

Microsoft 365 (Web) and Online

To modify print options, go to the **File** tab > **Print**.

In the Print Preview window, select from the following options:

- **Print** - Choose to print the Active sheet(s), the Entire workbook, or the Current selection
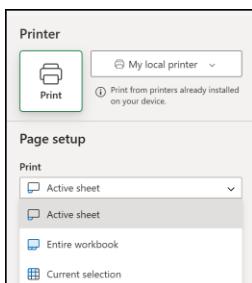
- Format **Options** - Select to include the Gridlines, Row and Column headings or to print in Black and white
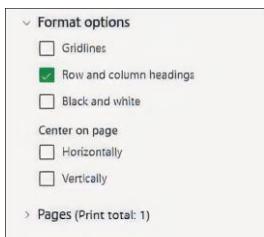
To specify a range of cells as a print area:

- Select the cell range that you would like to print, then on the **Page Layout** tab > **Page Setup** group > **Print Area** drop-down arrow, select to **Set Print Area**, **Clear Print Area** or **Add Print Area**
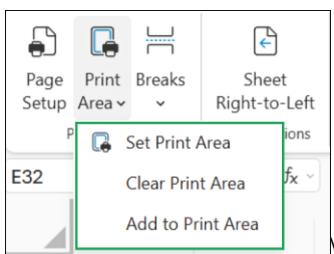
Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖 | Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Unit Assessment 🗒️ | Access the Learner Workbook to complete the Objective Assessment and Create Project.

Unit 1 Key Terms

Term	Definition
Accessibility Checker	A tool used to find issues that might make it difficult for users with disabilities to access the content in the workbook.
Active Cell	The cell where you are entering data.
Auto Fill	Use to copy data or continue sequential patterns in entered data.
AutoFit	Change a row's height or column's width to fit the contents.
Column Headings	Sequential letters at the top of each column enable you to identify columns.
Contextual Tab	Tabs that appear only when they are applicable.
Custom Views	Allows you to save your current page layout settings with a name so that you can re-activate them later.
Document Inspector	A tool used to find hidden or private information in a workbook and report it to you in a report.
Extension	The last four characters in the file name that indicate the type of Excel file it is.
File Tab	Select the File tab to open the Backstage view.
Footers	Footers appear at the bottom of every printed page.
Formula Bar	Displays the contents of the active cell and can be used to add or edit data.
Formulas	Formulas are composed of values, cell references, arithmetic operators, and special functions for calculating and displaying results.
Freeze Panes	Locks in place the rows above and the columns to the left of a selected cell.
Gallery	Type of menu in the ribbon that displays multiple formatting options.
Headers	Appear at the top of every printed page.
Insert Function	Opens a dialog box to help you choose and insert a built-in function.
Metadata	Information about a file that's stored within the file.
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.
More Button	Button that opens a gallery.
Name Box	Displays the cell address of the active cell.
Normal View	The default view used for entering data and working with data.
Numeric	Numbers, date, or time values, aligns to the right by default.
Page Break Preview view	Used to manage and control vertical and horizontal page breaks.

Page Layout	A tab on the Ribbon where you find controls and settings for printing.
Page Layout View	Use to add header and footer information, change margins and layout, and adjust how the printed document will appear.
Paste Special	Paste options to control components of what is pasted.
Print Titles	Specifies rows or columns (or both) to print on every page of the printed output.
Properties	Metadata in Excel, some that's generated automatically by Excel (such as the date and time the file was created and last modified, who created it, and the size of the file), and some you add (such as a workbook Title or your company name).
Quick Access Toolbar (QAT)	Located above the Ribbon, the QAT provides quick and customizable access to frequently used commands.
Ribbon	A collection of tabs (such as File, Home, and Insert) that provides quick access to commands used to complete a task. Each Ribbon tab relates to a type of activity.
Ribbon Display Options	Button to control what displays on the ribbon: Auto-hide, Tabs, Tabs, or Tabs and Commands.
Ribbon Group	Each Ribbon tab contains groups of related commands to edit, format, or enhance items in your documents. Some groups include a dialog box launcher button at the bottom right which opens a dialog box or pane with more commands and options.
Ribbon Tab	Commands are arranged in tabs that appear on the Ribbon, and each tab's commands relate to a specific type of activity.
Row Headings	Sequential numbers on the left side of each row enable you to identify rows.
Scroll Bars	Scrolls the spreadsheet to view content that is offscreen and not visible.
Sheet Tab	The rectangular box at the bottom of a worksheet by which the worksheet is accessed and identified.
Split	Splits the worksheet into two or four panes based on the cell pointer position.
Status Bar	Displays the current cell mode, auto calculations, the View buttons, and the Zoom slider.
Template	A type of workbook that typically contains data, formulas, and formatting, and makes a copy of itself for you to use.
Text	Alphabetic and numeric characters and most printable symbols, aligns to the left by default.
Title Bar	Located at the top of the screen, the title bar indicates the contents of the window.
View Buttons	Change the on-screen views for the worksheet: Normal, Page Layout, and Page Break Preview.
Zoom Slider	Drag the slider button to choose a particular zoom percentage or use the buttons at either side of the slider.

Unit 2: Formatting Worksheets

Unit Objectives

In this unit, you will be able to effectively format worksheets, create and utilize named ranges, implement tables, and utilize sort and filter functions to organize and analyze data in Microsoft Excel. Upon successful completion of this unit, you should understand the following:

☐ Format Worksheets

☐ Named Ranges

☐ Tables

☐ Sort and Filter

Lesson 1: Format Worksheets

Lesson Objectives

In this lesson, you will use a variety of methods to format cells in a worksheet. Upon completion of this lesson, you should be able to understand the following:

- ☐ Format Data
- ☐ Format Numbers
- ☐ Format Dates
- ☐ Format Times
- ☐ Format Decimals
- ☐ Cell Alignment, Indent and Orientation
- ☐ Wrap Text
- ☐ Merge Cells
- ☐ Format Font
- ☐ Format Borders
- ☐ Format Cells
- ☐ Cell Styles
- ☐ Format Grouped Worksheets
- ☐ Conditional Formatting
- ☐ Remove Conditional Formatting
- ☐ Format Painter
- ☐ Clear Cell Contents and Formatting

Format Data

How you present your worksheet is almost as important as the data it contains. ***Formatting*** is all about changing the appearance of the data. You are using the various features of Excel to draw attention to parts of the worksheet, or to make the data presented easier to understand. When you change the format of a cell, you do not alter its underlying value.

You should note the following important points:

- You can format a cell, or a range of cells, either before or after you enter the data. You can even format an entire row or column at one time.

- A cell remains formatted even after you clear the contents of the cell, unless you also clear the format or reformat the cell. When you enter new data in the cell, Excel displays the data in the existing format.

- When you paste or fill a cell from another cell, by default you copy the format and the contents of the originating cell. This feature enables you to save time, provided you apply the formatting before copying.

Some of the formatting features to change the appearance of your document include different fonts or sizes, bold and italic styles, borders around a cell or group of cells, and shading of cells. You will find the most used formatting features displayed on the Home tab as well as on the Mini toolbar.

To format a cell, select the cell, and then use one of the following methods:

- **Home** tab > **Font**, **Alignment** or **Number** groups > select the appropriate button

- Right-click and choose the appropriate formatting from the Mini toolbar

- **Home** tab > **Font**, **Alignment** or **Number** group > select the dialog box launcher
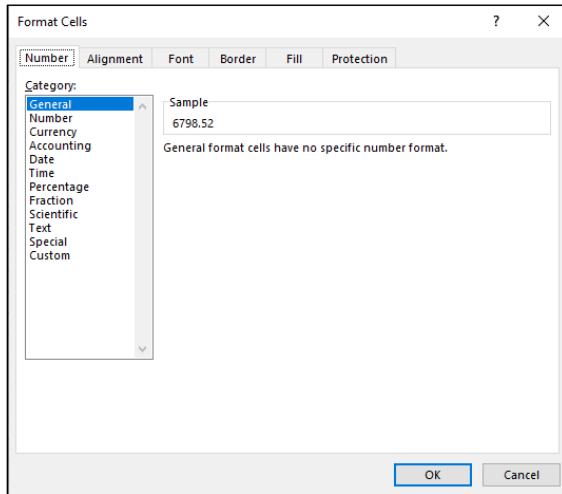
Microsoft 365 (Web) and Online

In Excel Online, you can format cells using the Ribbon or mini toolbar which activates the Format pane.

- **Home** tab > **Font**, **Alignment** or **Number** groups > select the appropriate button

- Right-click and choose the appropriate formatting from the Mini toolbar

- **Home** tab > **Cells** group > **Format** drop-down arrow > **Format Cells**
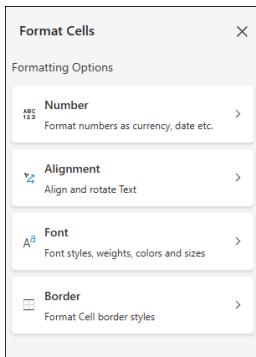
Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Format Numbers

Online App Alert 🖥 | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

The most common type of formatting in a worksheet is number formatting. Excel provides many built-in formats so numbers can be displayed in ways that make them easier to read and understand. Even though the appearance of a number may change, the underlying value in the cell stays the same. For example, the actual value might be 6798.52, but depending on the format, Excel could show it as 6,798.52, $6,798.52, or (6,799).

To format numbers:

- Select the cell/s which contain the numbers you want to format, then on the **Home** tab > **Number** group > Number Format dialog box launcher > **Number**

Options in the Number category include:

- **Decimal places** - Choose how many digits appear after the decimal (default is 2). If the number doesn't have enough digits, Excel fills with zeroes

- **Comma separator** - Adds commas for thousands (example: 6,798.52)

- **Negative numbers** - Display in red, with a minus sign, or in parentheses
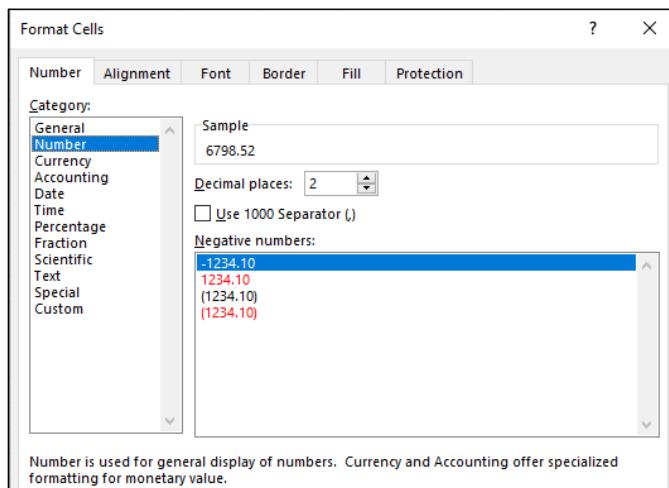
The Currency format is similar to the Number format, but it automatically includes a currency symbol (such as $) and shows the comma separator for thousands.

To apply the Currency format:

- Select the cell/s which contain the numbers you want to format, then on the **Home** tab > **Number** group > Number Format dialog box launcher > **Currency**

Options in the Currency category include:

- **Decimal places** – Choose how many digits appear after the decimal

- **Currency symbol** – Select from $, €, £, or other symbols

- **Negative numbers** – Display in red, with a minus sign, or in parentheses

The Accounting format is also used for monetary values, but it looks slightly different from the Currency format.

To apply the Accounting format:

- Select the cell/s which contain the numbers you want to format, then on the **Home** tab > **Number** group > Number Format dialog box launcher > **Accounting**

In Accounting formatted cells:

- Decimal points line up vertically, making columns of numbers easier to compare

- The currency symbol is aligned to the far left of the cell

- Negative numbers are always shown in parentheses (this cannot be changed)

Microsoft 365 (Web) and Online

To apply formatting in the online apps, go to the **Home** tab > **Number** group > **Number Format** drop-down arrow > **More Numbers Formats**... In the All formatting options task pane, choose your category and formatting options.

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Format Dates

Online App Alert 🖥️ | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

The Date format displays numbers as calendar dates. The way a date appears depends on your computer's regional settings:

- In the United States, the default format is m/d/yyyy (for example, 3/14/2025).

- In the United Kingdom, the default format is dd/mm/yyyy (for example, 14/03/2025).

To format dates:

- Select the cell/s which contain the numbers you want to format, then on the **Home** tab > **Number** group > Number Format dialog box launcher > **Number** tab > **Date**

  ▪ **Type** - Choose your desired format from the list

  ▪ **Locale (location)** - Choose your language/region

Note that the asterisk (*) indicates that this format changes with the computer's region setting, as described at the bottom of the dialog box.

Microsoft 365 (Web) and Online

To format dates:

- **Home** tab > **Number** group > **Number Format** drop-down arrow > **More Number Formats...** > **Number** tab > **Date**
  - **Type** - Choose your desired format from the list
  - **Locale (location)** - Choose your language/region
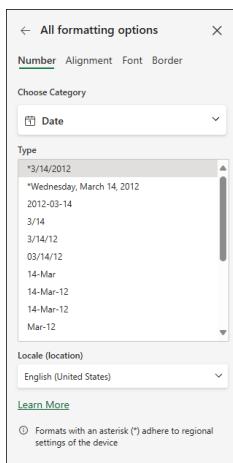
Access the Learner Workbook to complete the Learn Task for this skill.

Format Times

Online App Alert — Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

The Time format displays numbers as time values. Excel will automatically apply a time format based on how you enter the value (for example, 9:30 AM or 21:30). You can then choose a different style from the Time category.
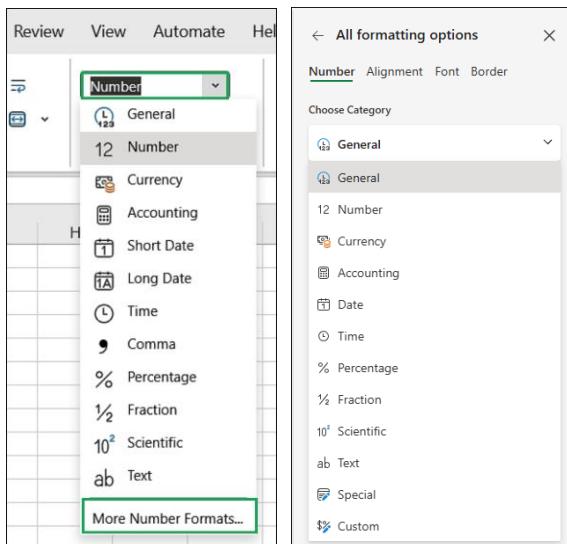
To format times:

- Select the cell/s which contain the numbers you want to format, then on the **Home** tab > **Number** group > Number Format dialog box launcher > **Number** tab > **Time**
  - **Type** - Choose your desired format from the list
  - **Locale (location)** - Choose your language/region
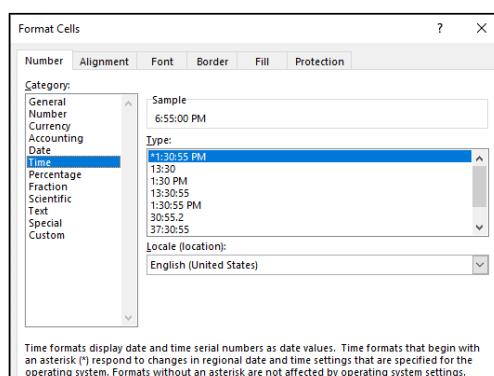
Microsoft 365 (Web) and Online

To format times:

- **Home** tab > **Number** group > **Number Format** drop-down arrow > **More Number Formats…** > **Number** tab > **Time**
    - **Type** - Choose your desired format from the list
    - **Locale (location)** - Choose your language/region
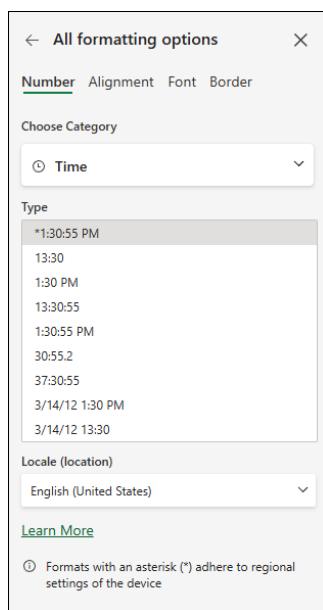
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Format Decimals

Online App Alert 🖥️   Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Percentage – Excel always shows percentage values as 100 times the number value of a cell. For example, if a cell value is 0.1234, the cell value will appear as 12.34%. This format shows a percentage sign at the right side of the cell. You can also specify the number of decimal places (the default is 2).

Fraction – The Fraction format converts decimal digits to fractional values based on the fraction type that you select. For example, if .25 is the value in the cell, Fraction will change it to ¼. You can specify the number of digits or fraction format under Type.

Scientific – You will usually use this format in scientific applications for very large and very small numbers. Excel shows only one digit to the left of the decimal point and you control the number of significant digits by specifying the number of decimal places.

To format decimals, choose one of the following:

- **Home** tab > **Number** group > Number Format dialog box launcher > **Number** tab > Select from one of the following categories: **Percentage**, **Fraction** or **Scientific**. Enter your desired decimal places in the **Decimal places** field
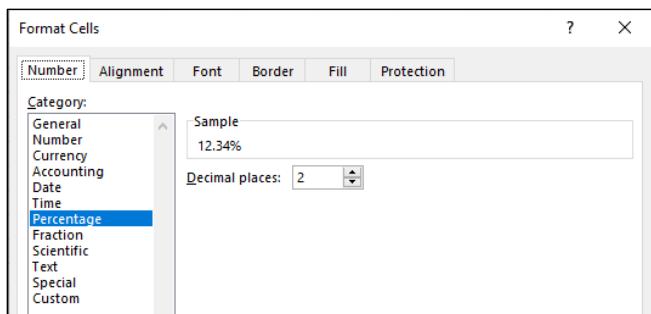
- **Home** tab > **Number** group > Select the **Increase Decimal** or **Decrease Decimal** buttons
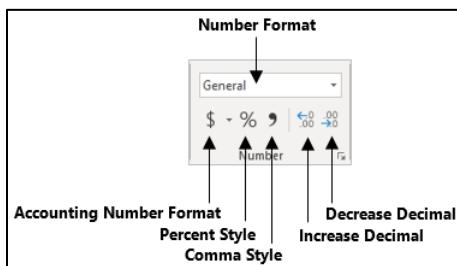
Microsoft 365 (Web) and Online

To format decimals, choose one of the following:

- **Home** tab > **Number** group > **Number Format** drop-down arrow > **More Number Formats…** > **Number** tab. Select from one of the following categories: **Percentage**, **Fraction** or **Scientific**. Enter your desired decimal places in the **Decimal places** field
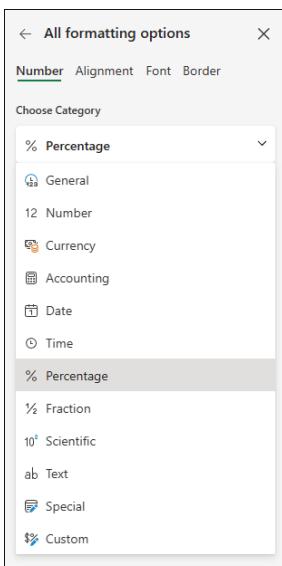
- **Home** tab > **Number** group > Select the **Increase Decimal** or **Decrease Decimal** buttons
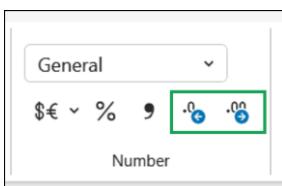
Access the Learner Workbook to complete the Learn Task for this skill.

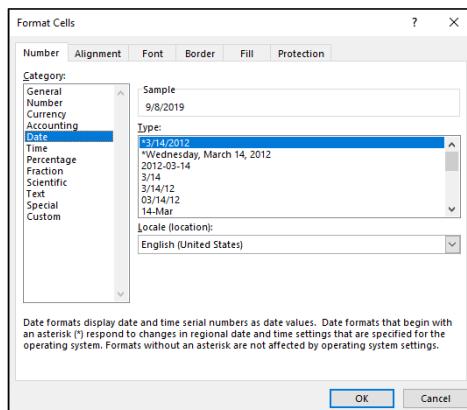# Cell Alignment, Indent and Orientation

Online App Alert 🖥️ Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Alignment refers to how data is positioned within a cell. In Excel, you can align content both horizontally (left, center, right) and vertically (top, middle, bottom).

By default, Excel applies General alignment to new values:

- Numbers and dates are aligned to the right
- Text is aligned to the left

Here is some text - it is left-aligned by default
123
8-Dec-23
Top of cell alignment
Middle of cell alignment
Bottom of cell alignment

You can also *indent* text within a cell. For example:

- Country names might use normal alignment
- State or province names might be indented once
- City names might be indented twice

	A
1	Country: Canada
2	Province: British Columbia
3	City: Vancouver
4	City: Victoria
5	Province: Alberta
6	City: Calgary
7	City: Edmonton
8	Country: United States
9	State: Washington
10	City: Everett
11	City: Seattle
12	State: California
13	City: Los Angeles
14	City: San Francisco

To change alignment:

- Select the cell/s which contain the numbers you want to format, then on the **Home** tab > **Alignment** group

Options include:

- **Horizontal alignment** – Left, Center, Right, or Justify
- **Vertical alignment** – Top, Middle, or Bottom
- **Indent** – Increase or decrease indent levels within the cell
- **Orientation** – Change the text direction (for example, rotate text vertically or diagonally)
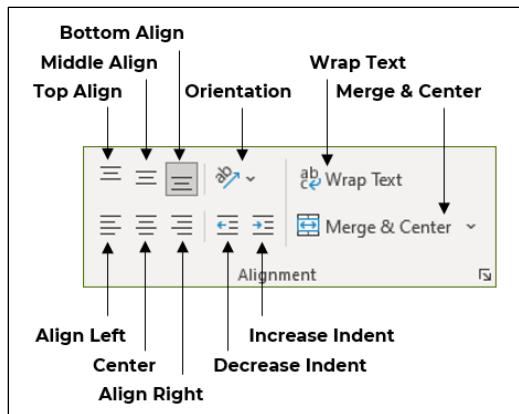
The Orientation button allows you to change the direction of the text in a cell. This is useful for labels, headings, or when you want to save space on the worksheet.

To change orientation:

- Select the cell/s which contain the numbers you want to format, then on the **Home** tab > **Alignment** group > **Orientation**

Options include:

- **Angle Counterclockwise** – Rotates text upward to the left
- **Angle Clockwise** – Rotates text upward to the right
- **Vertical Text** – Displays letters stacked vertically, one below the other
- **Rotate Text Up** – Rotates text 90° upward
- **Rotate Text Down** – Rotates text 90° downward
- **Format Cell Alignment** – Opens the Format Cells dialog box for more detailed control
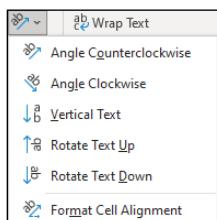
For more detailed options, go to the **Home** tab > **Alignment** group > Alignment Settings dialog box launcher > **Alignment** tab.
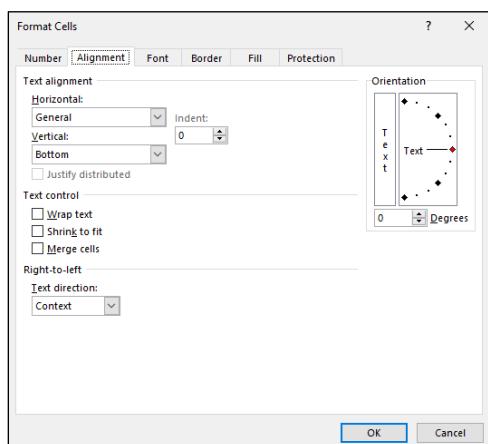
Microsoft 365 (Web) and Online

The most common orientation options are the same as the desktop version and can be found on the **Home** tab > **Alignment** group.

Additional Alignment options are available when accessing the All formatting options task pane via the **Home** tab > **Number** group > **Number Format** drop-down arrow > **More Number Formats...** > **Alignment** tab.
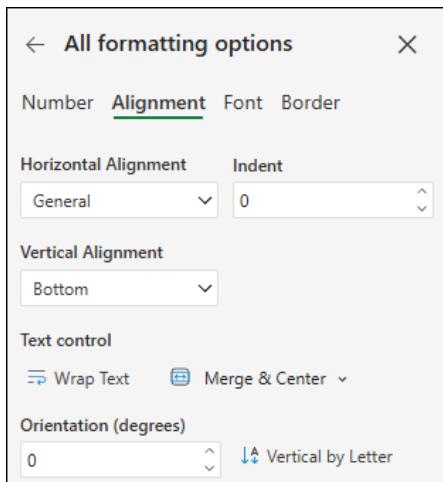
Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Wrap Text

Excel allows you to enter very long text in a cell -up to 32,767 characters. By default, if the text is longer than the cell width, it will spill over into the empty cells to the right. A way to circumvent this is to *wrap text* so that it stays within the borders of the cell.

To wrap text:

- Select the cell/s which contain the text you want to wrap, then on the **Home** tab > **Alignment** group > **Wrap Text**

When Wrap Text is turned on:

- Excel adjusts the row height automatically to fit the text

- In some cases, you may need to adjust the row height manually

- Turning Wrap Text off reverts the text to a single line
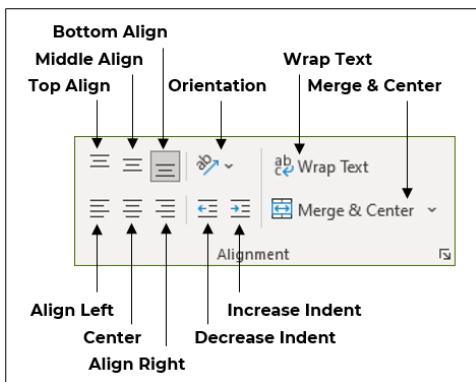
Another option is to shrink the text so it fits on one line inside the cell.

To apply Shrink to Fit:

- Select the cell/s which contain the text you want to shrink, then on the **Home** tab > **Alignment** group > Alignment Settings dialog box launcher > **Alignment** tab > **Text Control** > **Shrink to Fit**
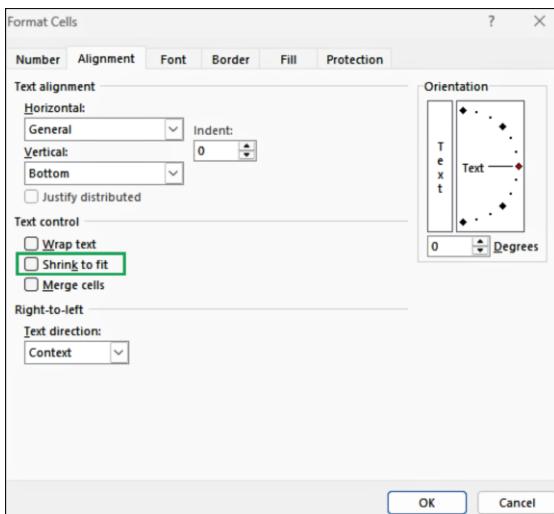
When Shrink to Fit is turned on:

- Excel automatically reduces the font size until the text fits within the cell width

- Best used for short text that slightly overflows the cell

- Not recommended for very long text, as the font may become too small to read

Note: Shrink to Fit is only available in the desktop version of Excel.

Merge Cells

Merging cells combines two or more cells into one larger cell. This is often used for labels that cover a group of cells.

As illustrated in the example below, January to March can be labeled as Quarter 1 by merging the cells above them and April to June can be labeled as Quarter 2 in the same way. When you merge cells, Excel removes the dividing lines between them and treats the group as a single cell.

◢	A	B	C	D	E	F	G
1	Sales Office	Quarter 1			Quarter 2		
2		Jan	Feb	Mar	Apr	May	Jun
3	New York	$ 7,395	$ 8,525	$ 5,805	$ 7,022	$ 8,787	$ 7,936

To merge cells and center text:

- Select the cells, then on the **Home** tab > **Alignment** group > **Merge & Center** to merge the selected cells (horizontally or vertically) and center the text across the merged cell
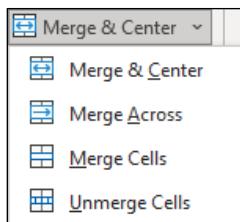
Alternatively, select the drop-down arrow next to **Merge & Center** for more choices:

- **Merge Across** – Merges cells in each selected row but retains original text alignment. Does not merge vertically

- **Merge Cells** – Merges the selected cells without centering the text

- **Unmerge Cells** – Splits merged cells back into their original separate cells

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Format Font

A *font* is the style of text used in your worksheet. Changing the font affects the appearance of text, numbers, and dates without altering the underlying values. Fonts can make your worksheet easier to read or help highlight important information.

The most used font options are available directly on the Ribbon in the **Home** tab > **Font** group.

Font formatting options include:

- **Font** – Choose the typeface (e.g., Calibri, Arial)

- **Font Size** – Increase or decrease the size of the text

- **Bold** – Make text heavier for emphasis

- **Italics** – Slant text for emphasis

- **Underline** – Add a single or double underline

- **Font Color** – Change the color of text
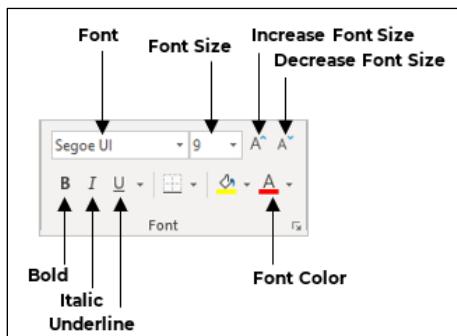
For additional settings, go to the **Home** tab > **Font** group > Font Settings dialog box launcher. This opens the Format Cells dialog box with the Font tab selected. Here, you can access more advanced formatting commands such as:

- **Strikethrough** – Draw a line through text

- **Superscript / Subscript** – Raise or lower text (useful for math or chemical formulas)

- **Special effects** – Combine styles such as bold, italic, and underline
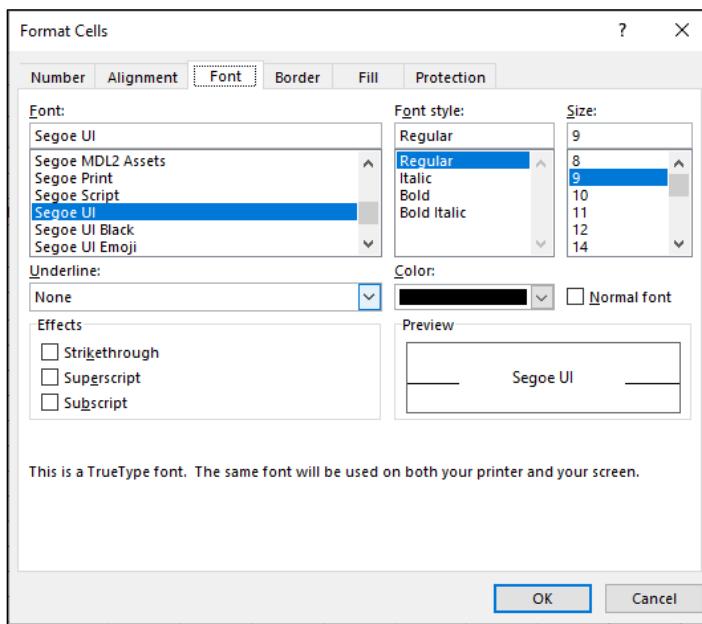
The most common formatting menu options are discussed in the table below:

Font	This refers to the typeface of the text characters Excel displays. A set of characters in the same typeface is a font.
Font style	Most fonts can be formatted bold, italicized, or both.
Size	Size refers to the height of a character, with a proportionate width. Most of the fonts are scalable. That is, they have a variety of sizes. A point is equal to a seventy-second of an inch. Thus, twelve-point type is twelve seventy-seconds of an inch high, or 1/6th of an inch high.
Underline	You can select various underline styles such as single, double, single accounting, or double accounting.
Color	You can select and change the color of the characters.
Effects	You can use special character effects, such as Strikethrough, Superscript and Subscript.

As you select different options in this dialog box, the Preview box shows sample text with the options displayed.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Format Borders

Online App Alert 🖼️ **Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.**

Borders are lines you can add around cells or ranges of cells to separate groups of data. Borders improve readability, especially in worksheets with a large volume of numbers.

The border feature allows you to:

- Draw lines on any or all four sides of a cell

- Choose line thickness, style, and color

- Add diagonal lines within a cell if needed

To modify borders, select the cell/s, then on the **Home** tab > **Font** group > **Borders** drop-down arrow. Select from the preset options or customize and draw borders. To access further options, select the **More Borders** command to open the Format Cells dialog box.
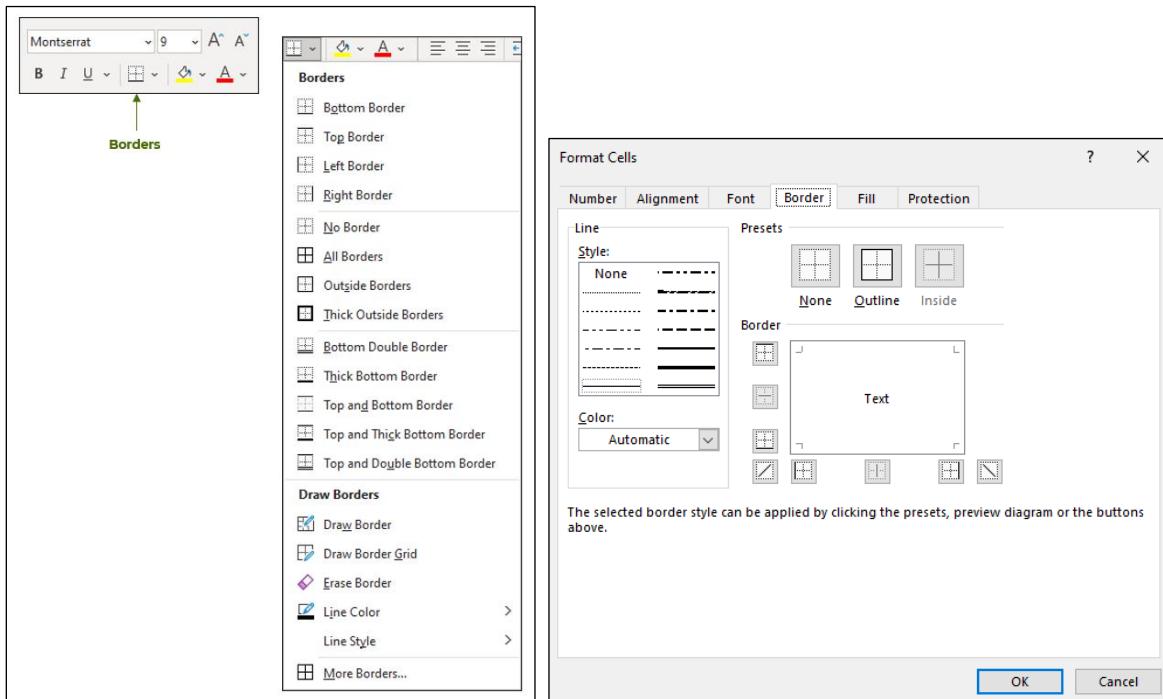
Border options are discussed in the table below:

Line	Choose a line style or color for the border(s). If you want different lines or colors for specific borders, you must select the style or color and then select in the Border area for the appropriate border.
Presets	Remove all borders, apply borders on all four outside edges or apply borders on all inside edges for the selected cell or range of cells using the three preset configuration settings.
Border	Use the buttons to apply or remove borders on specific edges of the selected cell or range of cells. The graphics within each button help you view which borders you are applying or removing.

Microsoft 365 (Web) and Online

To access additional border options, go to the **Home** tab > **Font** group > **Border** drop-down menu > **More Border Styles** > **Border** tab in the **All formatting options** pane.
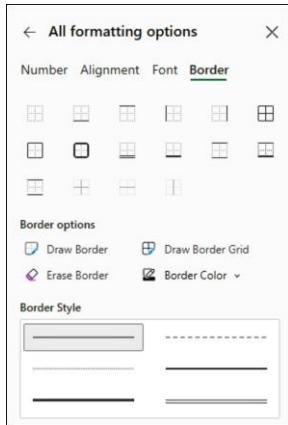
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Format Cells

Online App Alert 🖥️   Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

You can fill cells or ranges of cells with background colors to make your worksheet more visually appealing. Colors and patterns can:

- Highlight important areas such as totals rows
- Differentiate headings from data
- Draw attention to specific values

To use the Fill Color command:

- Select the cell or range you want modify, then on the **Home** tab > **Font** group > **Fill Color**

Key points to remember:

- By default, cells have No Fill
- The Fill Color button will display the most recently used color until a new color is selected
- Use the Fill Color drop-down arrow to display the color palette, which includes the No Fill option
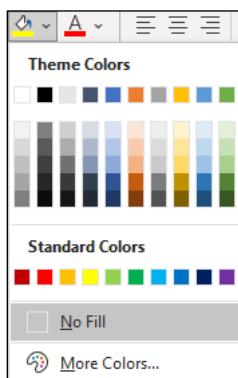
To access all fill settings, use one of the following methods:

- Select the cell or range > **Home** tab > **Cells** group > **Format** drop-down arrow > **Format Cells…** > **Fill** tab

- **Home** tab > **Font** group > Font Settings dialog box launcher > **Fill** tab
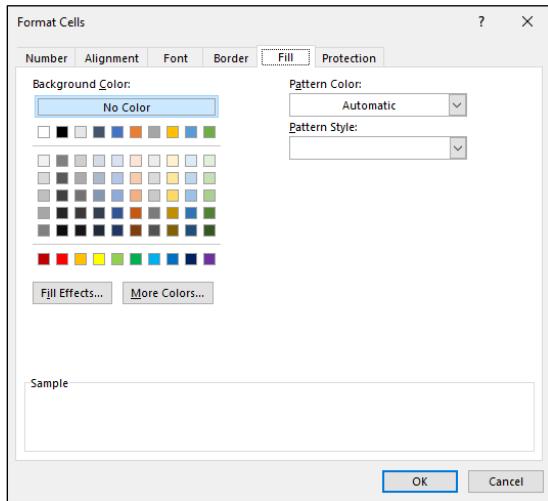
The Fill tab has four features:

- **Background color** – Choose from a large variety of colors to fill the cell as background for the characters

- **Pattern Color** – This is the color of the pattern when a Pattern Style is chosen. Nothing appears if only a Pattern Color is chosen with no Pattern Style

- **Pattern Style** – A variety of lines or dot patterns from which to choose
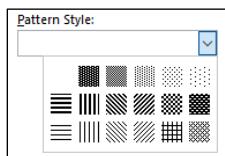
- **Fill Effects** – A variety of ways to provide shading between two colors in each cell
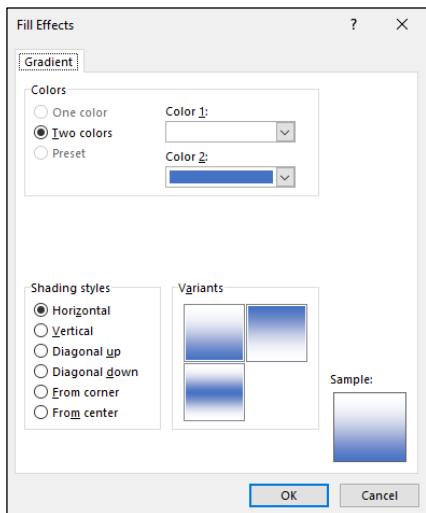
Patterns and background colors are distinctly different features. You can use either or both of them at the same time. Fill effects cannot be used with patterns or background colors.

Microsoft 365 (Web) and Online

Although Patterns and Fill Effects are not available in the online apps, cell backgrounds can be modified on the **Home** tab > **Font** group > **Fill Color** drop-down arrow. The online options include an Eyedropper tool, which is used to sample any color from an image or screen, ideal for matching existing hues precisely.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Cell Styles

Cell Styles in Excel are used to apply consistent formatting across a worksheet. A style is a preset group of formatting settings - such as font, size, color, borders, and fill. Similar to styles in Microsoft Word, when you apply a style to a cell, Excel automatically updates its appearance. If the style is modified later, Excel will update all cells using that style. This makes it straightforward to maintain a consistent appearance throughout the workbook with minimal effort.

Excel provides a set of prebuilt styles (also called **Quick Styles**). These include headings, titles, totals, input cells, and other preset designs.

To apply a cell style:

Select the cell or range, then on the **Home** tab > **Styles** group > **Cell Styles**. From here, you can select from the style gallery and apply it to the selected cells.
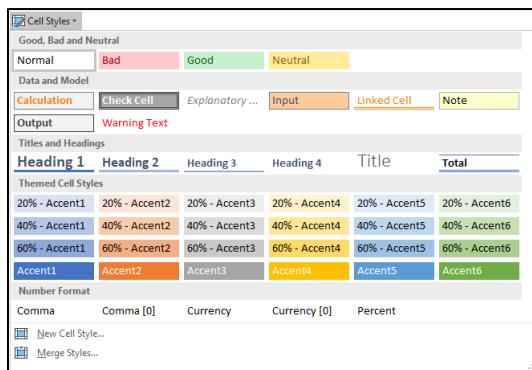
To view which style is applied to a cell:

- Select the cell > **Home** tab > **Styles** group > **Cell Styles**. The applied style will be highlighted with a border

- If no style has been applied, the Normal style will be highlighted

---

Note: You must check each cell individually to view its style.

Styles make formatting consistent, but there are a few important restrictions to keep in mind:

- Workbook-specific – Styles are saved within each workbook. They cannot be stored in a template file. To reuse custom styles, you must copy the original workbook, remove unnecessary data, and re-enter the new data

- Global changes – If you modify a style, Excel updates all cells using that style in every worksheet of the workbook

- Theme-based – Styles are linked to the current workbook theme. If the theme changes (or its formatting is updated), the style changes too

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Format Grouped Worksheets

Desktop Only Alert ✏️ | The following feature is exclusively available in the desktop version.

In Excel, you can format multiple worksheets at the same time by grouping them. By applying changes like fonts, borders, or new rows to the group, you ensure a consistent layout across your entire workbook in a single step.

Formatting features that can be applied across grouped worksheets:

- Font styles – Bold, italic, font type, and size changes

- Borders and shading – Apply consistent cell borders or background fills

- Alignment – Center text, wrap text, or adjust indentation

- Number formats – Apply Currency, Percentage, Date or other formats

To group worksheets, use one of the following methods:

- Select the first sheet tab + **SHIFT** > select the last sheet tab

- Select and hold **CTRL** > select non-adjacent sheet tabs

Apply formatting as usual using the **Home** tab > **Font**, **Alignment** or **Number** groups.

To ungroup worksheets:

- Right-click a grouped sheet tab > select **Ungroup Sheets**

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Conditional Formatting

Conditional formatting is a powerful tool you can use to display the data in cells one way for some values, but another way for others, without the additional effort of manually changing the formatting each time you modify data or add new data to a worksheet.

The Ribbon offers several choices for setting up conditional formats.

Highlight Cell Rules	Use this option to highlight cell values based on their relation to specific values you enter.
Top/Bottom Rules	Use this option to activate the conditional formatting on the top or bottom ranking cells in a range.
Data Bars	You can use conditional formatting to embed a bar chart into a selected range of cells based on the value in each cell.
Color Scales	Use this type of conditional formatting to show the relative value of each cell to each other cell using color gradients.
Icon Sets	You can use this type of conditional formatting to highlight values using icons.

To apply conditional formatting:

- Select the range that you want to apply formatting to, then on the **Home** tab > **Styles** group > **Conditional formatting** drop-down arrow
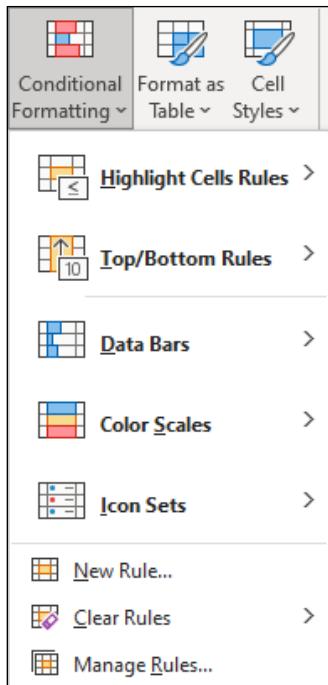
Formatting options include only the font styles (regular, bold, italics, or bold and italics), font colors, number formats, borders, and background fill colors and patterns. You may not choose different font names or font sizes in a conditional format.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Remove Conditional Formatting

You can remove conditional formatting when it is no longer needed. This can be done for specific cells or for the entire worksheet.

To clear conditional formatting:

- **Home** tab > **Styles** group > **Conditional Formatting** drop-down arrow > **Clear Rules**

Options include:

- **Clear Rules from Selected Cells** – Removes conditional formatting only from the highlighted range. Other cells in the original range keep their rules

- **Clear Rules from Entire Sheet** – Removes all conditional formatting from every cell in the worksheet
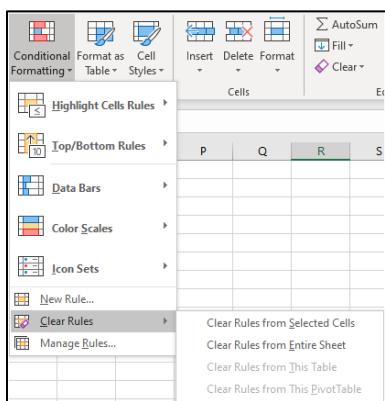
If you clear formatting only from selected cells, Excel will continue to apply the rule to the remaining cells. Example: If you are using a Top 10% rule, removing formatting from some cells may cause different values to enter the "Top 10%" category. Clearing the entire sheet ensures that no conditional formatting remains anywhere in the worksheet.

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Format Painter

After formatting a cell or range, you may want to duplicate the formatting elsewhere in the worksheet. Excel's ***Format Painter*** tool allows you to copy formatting from one area to another.
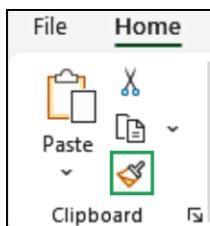
Use the Format Painter:

1. Select the cell or range of cells with the formatting you want to copy, then on the **Home** tab > **Clipboard** group > **Format Painter** (the pointer will resemble a paintbrush).

2. Select the target cell to apply the formatting. The Format Painter turns off automatically after one use.

To apply the Format Painter to multiple target cells:

1. Select the cell or range of cells with the formatting you want to copy, then on the **Home** tab > **Clipboard** group > Double-click the **Format Painter** button to keep the tool active

2. Continue selecting additional target cells to apply the formatting.

3. When finished, turn off the Format Painter by selecting the button again or using the **ESC** key.

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Clear Cell Contents and Formatting

The Clear feature allows you to remove cell contents or specific components (such as formatting or comments) without deleting the actual cells. This means the structure of your worksheet remains intact.

To access the Clear options:

- **Home** tab > **Editing** group > **Clear** drop-down arrow

After selecting a cell or range and then selecting the Clear arrow, you can choose from different options:

Clear All	Remove all data, cell formats, hyperlinks, and comments from the selected cell(s).
Clear Format	Remove only the formatting and hyperlinks from the selected cell(s) while the data and comments remain unchanged. The cell formatting reverts to the default settings.
Clear Contents	Remove only the data and hyperlinks from the selected cell(s). Because the cell formatting is unchanged, any new data entered the same cells afterward uses that formatting again.
Clear Comments and Notes	Remove only the comments part of the selected cell(s).
Clear Hyperlinks	Convert any hyperlinks in the selected cell(s) to text. When selected, the Clear Hyperlinks icon ( ) appears next to the cell, allowing you to clear only the hyperlink or the hyperlink and its formatting. The topic of hyperlinks will be covered in more detail in a later lesson.
Remove Hyperlinks	Remove both the hyperlink and hyperlink automatic formatting.

In contrast to the Clear feature, the **DELETE** command removes the selected cells, rows, or columns entirely from the worksheet. The surrounding cells then shift to fill the empty space.

⊿	A	B	C	D	E
1	**Popular Tours**				
2		2021	2020	2019	2018
3	Rock Climbing	250	200	150	225
4	Ice Climbing	175	150	100	125
5	Whale Watching	350	250	100	260
6					
7	Heli Skiing	95	85	70	125
8	Cycling (Cities)	75	70	65	110
9	Haunted Sites	150	62	35	0

Cells deleted using Clear Contents

⊿	A	B	C	D	E
1	**Popular Tours**				
2		2021	2020	2019	2018
3	Rock Climbing	250	200	150	225
4	Ice Climbing	175	150	100	125
5	Whale Watching	350	250	100	260
6	Heli Skiing	95	85	70	125
7	Cycling (Cities)	75	70	65	110
8	Haunted Sites	150	62	35	0

Cells deleted using Shift Cells Up in Delete Cells dialog box

Learn Task 💡

Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖

Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 2: Named Ranges

Lesson Objectives

In this lesson, you will use a variety of methods to format cells in a worksheet. Upon completion of this lesson, you should be able to:

☐   Create Named Ranges

☐   Go to Named Range

☐   Use Named Ranges

☐   Modify and Delete Named Ranges

Create Named Ranges

As worksheets grow larger, it can become difficult to keep track of all the cells. To make navigation and formulas easier to understand, you can assign a meaningful name to a cell or **range of cells**.

- A **named range** helps users quickly identify the purpose of the data
- Named ranges appear in the **Name Box**, located to the left of the formula bar
- The name is displayed only when the entire range is selected

Using named ranges not only improves readability but also makes formulas straightforward to enter and understand. For example, a formula that references Sales_Q1 is much clearer than one referencing B2:B10.

To define a range with a name, select the range and then use one of the following methods:

- **Home** tab > **Name Box** > enter your desired text
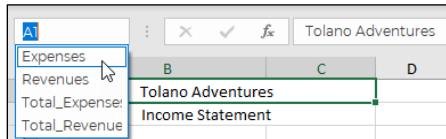
- **Formulas** tab > **Defined Names** group > **Define Name** > in the New Name dialog box > **Name:** enter your desired text > **OK**
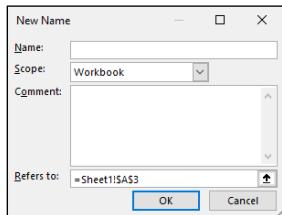
In addition to creating individual names, Excel allows you to create multiple named ranges at once by using the row or column headings already in your worksheet. This is useful when your data table has clear labels, such as months or names.

To create multiple named ranges:

- Select the range of cells, including the row and/or column headings you want to use as names, then on the **Formulas** tab > **Defined Names** group > **Create from Selection**

In the Create Names from Selection dialog box, choose where the headings are located (Top row, Left column, Bottom row, Right column). Excel will then automatically assign names to each row or column of data using those headings.
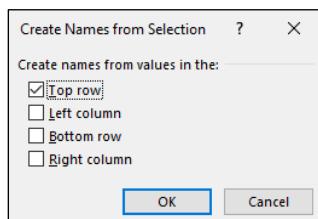
Microsoft 365 (Web) and Online

To define a range with a name, use one of the following methods:

- Select the range and navigate to the **Home** tab > **Name Box** > enter the range name and select **ENTER**

- Or go to the **Formulas** tab > **Name Manager** group > **Name Manager**
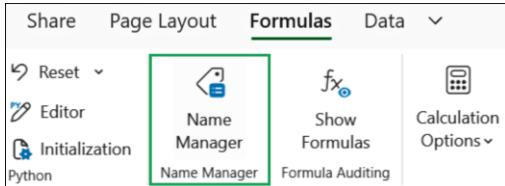
- The Name Manager pane will open. If it is the first named range of the worksheet, select **Define Name…**
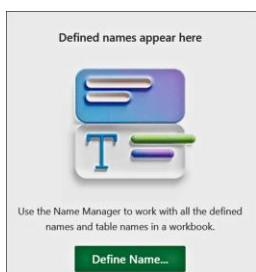
- In the **Name** field, enter a reference name for the range

- In the **Refers To** field, enter the cell range or select the cells in the worksheet

- Select **Save** to create the named range

The new range will now be visible in the Name Manager pane. To add another range, select the **+ New** button in the Name Manager.
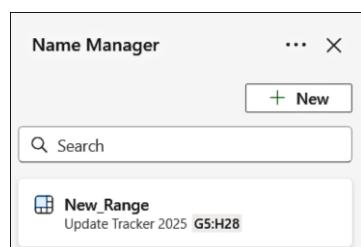
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Go To Named Range

Online App Alert 📷 | **Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.**

Moving from cell to cell in a worksheet is very straightforward because the process is the same as with other Windows programs. You can select a cell that appears on the screen by selecting it. If you need to scroll to sections of the worksheet that are currently off the screen, use the scroll buttons.

In Excel, you can use the method of jumping to a specific cell (if you know exactly what the cell address is) by using the **Go To** feature.

With very large worksheets, the Go To feature helps you to navigate more precisely. To display the Go To dialog box, use one of the following methods:

- **Home** tab > **Editing** group > **Find & Select** drop-down arrow > **Go to...**
- Select **CTRL+G**

Select **Special...** to navigate to precise features in the worksheet, such as Notes, Formulas, Conditional formats or Precedents to name a few.
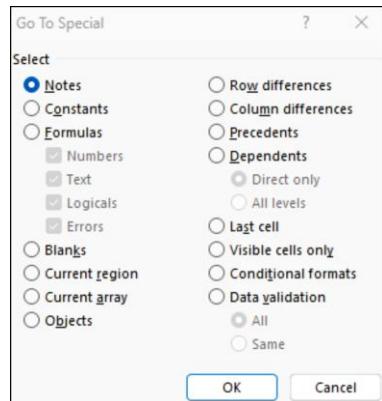
Alternatively, you can use the **Name Box** located to the left of the formula bar to select a named range of cells or to jump to a specific worksheet cell.
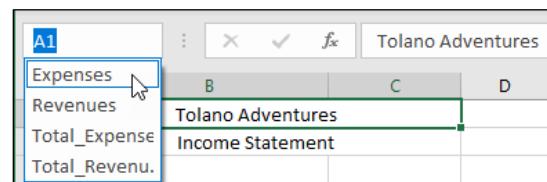
Microsoft 365 (Web) and Online

The Go To dialog box in the online apps has limited functionality compared to the desktop version.

To open the Go To dialog box:

- **Home** tab > **Editing** group > **Find & Select** drop-down arrow > **Go To**
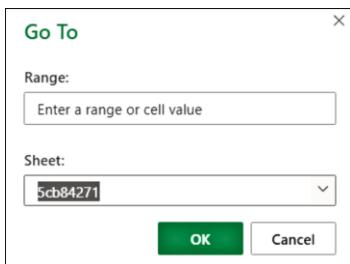
Access the Learner Workbook to complete the Learn Task for this skill.

Use Named Ranges

Online App Alert — Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Range names not only make spreadsheets straightforward to read but also help reduce errors. Once you define a name for a cell or a range of cells, you can use that name in formulas instead of cell references.

For example:

- Formula with cell references: =C7–C18

- Formula with a range name: =Expenses

If you mistype a cell reference (e.g., =C7–C81), Excel will not warn you - it will calculate using the incorrect cells. However, if you mistype a range name, Excel will not find a match and will display an error, helping prevent unnoticed mistakes.

Insert a range name in a formula with one of the following methods:

- Select a cell and begin entering a formula. Place the cursor where you want to insert the range name, then enter the first letter of the name and select it from the list that appears

- **Formulas** tab > **Defined Names** group > **Use in Formula** drop-down arrow and select the desired range name
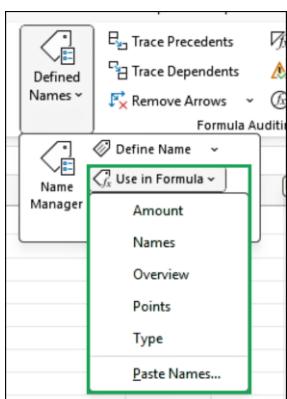
Range names are also helpful if the cell range changes later. For example: The range name *Expenses* refers to cells C10:C18. You extend the range to C10:C19. Because formulas use the range name *Expenses*, the update is automatic for every formula in the workbook. Without range names, you would need to manually update all formulas containing C10:C18, which increases the chance of errors.

Microsoft 365 (Web) and Online

To use a range name in the online apps, select a cell and begin entering a formula. Place the cursor where you want to insert the range name, then enter the first letter of the name and select it from the list that appears.
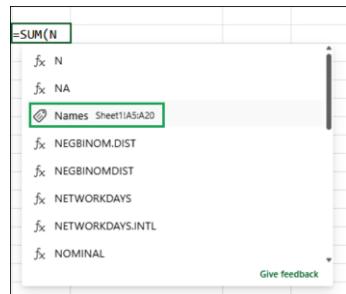
Learn Task — Access the Learner Workbook to complete the Learn Task for this skill.

Modify and Delete Named Ranges

Online App Alert — Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

You can use the **Name Manager** to modify and delete range names or change the cell range references.
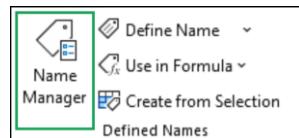
To edit or delete a named range:

- **Formulas** tab > **Defined Names group** > **Name Manager** > **Choose Edit…** or **Delete**
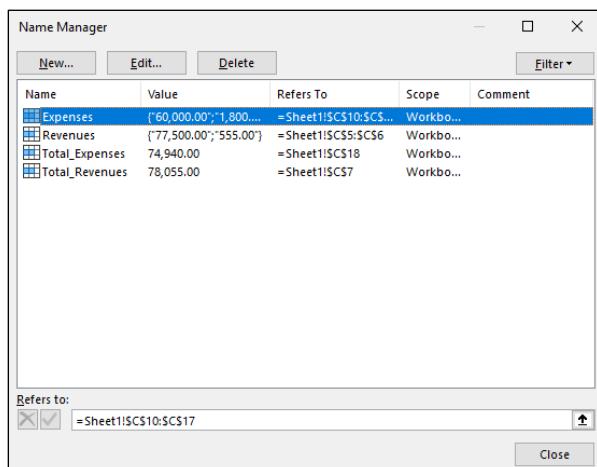
Be cautious when deleting named ranges. When you delete a named range, any formula that refers to this name no longer displays the correct value.

Microsoft 365 (Web) and Online

To open the Name Manager pane:

- **Formulas** tab > **Name Manager** group > **Name Manager** > Choose to **Edit** (pencil icon) or select **More Options** (three dots ...) to **Select...** or **Delete** the range
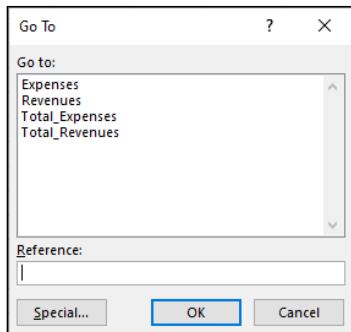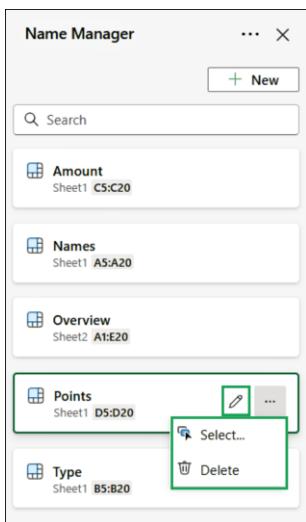

Learn Task 💡 Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖 Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 3: Tables

Lesson Objectives

In this lesson, you will use various methods to create and format tables in a worksheet. Upon completion of this lesson, you should be able to understand the following:

☐   Create a Table

☐   Name a Table

☐   Apply Table Styles

☐   Table Style Options

☐   Rows and Columns

☐   Total Rows

☐   Convert a Table to a Cell Range

Create a Table

Many worksheets consist of a rectangular block of data in which the rows and columns of data have a common structure and format. Excel offers you the ability to define this block as a **table**. When you define a block of data as a table, you can use a variety of table tools for selecting summary formulas, formatting, sorting, and filtering.

To create a table, the data must be contiguous. That is, there must not be any blank rows or columns in the range of cells. Also, the data must be arranged in row order, with an optional header at the top of each column and the data listed below.

To convert a selected range of cells containing data to a table, use one of the following methods:

- **Home** tab > **Styles** group > **Format as Table** drop-down arrow > choose a table style

- **Insert** tab > **Tables** group > **Table**

The Create Table dialog box appears. If the cells containing **headers** are included in the selection, be sure to select the **My table has headers** check box. Otherwise, default headers will be inserted at the top of the data.
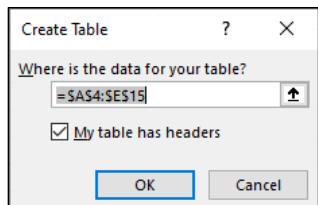
Learn Task | Access the Learner Workbook to complete the Learn Task for this skill.

Name a Table

When you create a table, Excel automatically assigns it a default name such as *Table1*, *Table2*, and so on. While these names work, it's much more straightforward to manage your workbook if you give your tables meaningful names.

To rename a table:

- Select the table > **Table Design** tab > **Properties** group > **Table Name**: enter the new name
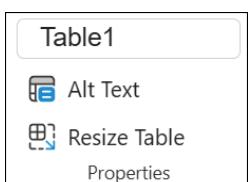
Once your table has a name, you can use that name in formulas. For example:

- =SUM(CallVolume) - Adds all the numeric values in the table named *CallVolume*

- =SUM(CallVolume[Sales Inquiries]) - Adds only the numbers in the *Sales Inquiries* column of the *CallVolume* table

This method of entering formulas is called a structured reference.

Structured references make formulas straightforward to read and reduce the possibility of errors. If you reference the entire table, Excel will include every type of data - numbers, dates, times, and even text - because it treats them as numeric values. This can lead to incorrect results.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Apply Table Styles

By default, the workbook's *theme* is applied to all tables in that workbook. A table style is a set of colors and formatting options that format the table appearance. For example: shading for rows, bold headers, or accent colors. You can change the style of an individual table at any time by choosing a different option from the Table Styles gallery on the Table Design tab.

To change the style of a table:

- Select the table > **Table Design** tab > **Table Styles** group > choose a style from the **Table Styles gallery** drop-down menu

If you don't want any style colors, you can remove them:

- Select the table > **Table Design** tab > **Table Styles** group > **Table Styles gallery** drop-down menu > **None** (top-left option)
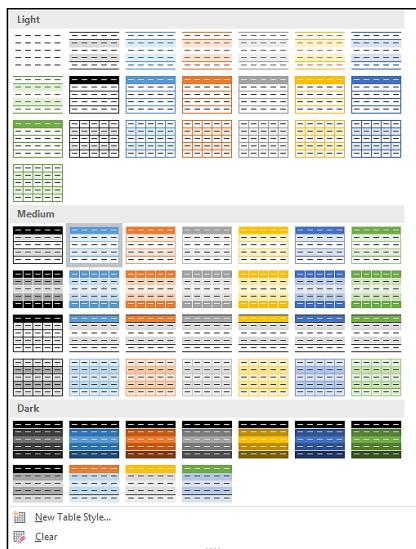
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Table Style Options

When you create a table, Excel automatically applies the current workbook theme and adds an **AutoFilter icon** (a drop-down arrow) next to each column heading. This icon lets you sort or filter the data in that column. Excel also adds the Table Design tab to the Ribbon, giving you more tools to manage your table.

The Table Styles group provides pre-designed styles you can apply to change the appearance of your table, such as header colors, shading, or accents. You can customize your table by turning options on or off in the Table Style Options group.

To access these options:

- Select the table > **Table Design** tab > **Table Style Options** group
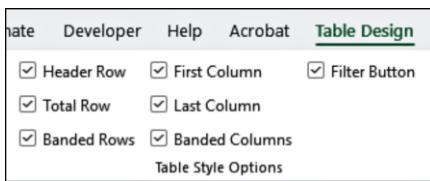
The available options are:

- **Header Row** - Shows or hides the header row (on by default)

- **Total Row** - Adds a total row at the bottom of the table. When activated, Excel automatically moves any data below the table down by one row

- **First Column / Last Column** - Boldfaces the first or last column (both off by default)

- **Banded Rows** - Shades alternating rows with two colors to make wide tables straightforward to read (on by default)

- **Banded Columns** - Shades alternating columns with two colors (off by default)

- **Filter Button** - Shows or hides the AutoFilter icons in the header row

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Rows and Columns

After a table is created, you can still add or remove rows and columns of data. Excel automatically expands or contracts the table to include these changes.
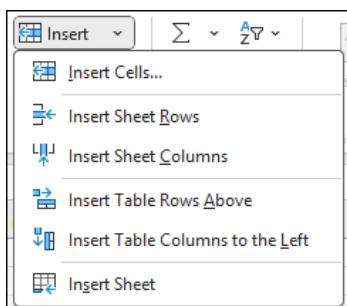
Add columns and rows automatically:

- **New Column** - Enter data in the first blank column to the right of the table. Excel will automatically extend the table to include it

- **New Row** - Enter data in the first blank row below the table. Excel will extend the table, unless the Total Row feature is activated

To insert rows and columns in the middle of a table:

- **Home** tab > **Cells** group > **Insert** drop-down arrow
    - Choose from the following options:
        - Insert Table Rows Above
        - Insert Table Rows Below
        - Insert Table Columns to the Left
        - Insert Table Columns to the Right

To delete rows and columns in the middle of a table:

- **Home** tab > **Cells** group > **Delete** drop-down arrow > choose to delete a row or column depending on which cell is active
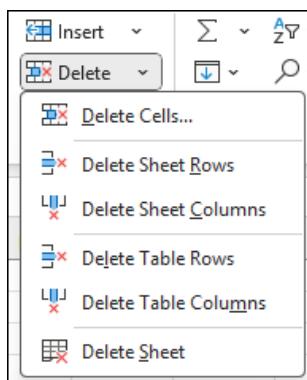
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Total Rows

The **Total Row** option in an Excel table lets you quickly calculate summaries, such as totals, averages, or counts. By default, Excel uses the SUBTOTAL function, which is useful because it can include or ignore hidden rows. You can also choose other functions such as AVERAGE, COUNT, MIN, or MAX.

To add a Total Row:

- Select any cell in the table > **Table Design** tab > **Table Style Options** group > check **Total Row**

	A	B	C	D	E
1	**Popular Tours**				
2	Column1	2021	2020	2019	2018
3	Rock Climbing	250	200	150	225
4	Ice Climbing	175	150	100	125
5	Whale Watching	350	250	100	260
6	Hot Air Ballooning	105	60	25	45
7	Heli Skiing	95	85	70	125
8	Cycling (Cities)	75	70	65	110
9	Haunted Sites	150	62	35	0
10	**Total**				890
11					

Each column in the Total Row can display a different calculation.

Select the drop-down arrow in the Total Row cell for the column > choose the function you want (for example, SUM, AVERAGE, MAX, etc.)

The example above illustrates:

• In cell B10, the SUM function can display the total revenue for 2021

• In cell C10, the MAX function can display the highest revenue generated in 2020

You can turn the Total Row off or back on at any time. Excel remembers the formulas you applied, so you don't have to re-enter them.

Learn Task — **Access the Learner Workbook to complete the Learn Task for this skill.**

Convert a Table to a Cell Range

If you no longer need your data in a table format, you can **convert** it back to a regular range of rows and columns. This removes the special table features but keeps your data and any formatting in place.

Convert a table to a range:

• Select any cell in the table > **Table Design** tab > **Tools** group > **Convert to Range**
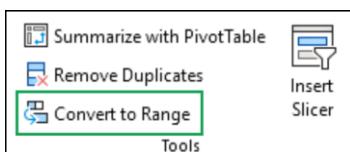
Excel will display a message box asking you to confirm. Select **Yes** to continue.
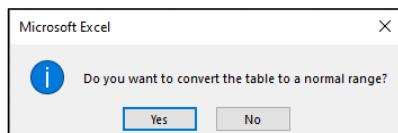
As illustrated in the example below, the worksheet will appear the same, but column headers no longer display the AutoFilter icons (drop-down arrows). The Table Design tab is also removed from the Ribbon.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Tolano Adventures												
2	AirKm Points Awarded												
3													
4	Passenger Na	Type	Amount	Points	Bonus Pts	Column		Passenger Name	Type	Amount	Points	Bonus Pts Column1	
5	Chan, A	Personal	968.48					Chan, A	Personal	968.48			
6	Chan, H	Personal	968.48					Chan, H	Personal	968.48			
7	Cox, T	Corporate	315.58					Cox, T	Corporate	315.58			
8	Cox, W	Personal	315.58					Cox, W	Personal	315.58			
9	Dali, P	Corporate	548.27					Dali, P	Corporate	548.27			
10	Dali, S	Personal	548.27					Dali, S	Personal	548.27			
11	Koehn, J	Personal	370.82					Koehn, J	Personal	370.82			
12	Koehn, P	Personal	370.82					Koehn, P	Personal	370.82			
13	Moore, M	Personal	366.03					Moore, M	Personal	366.03			
14	Noire, N	Personal	464.78					Noire, N	Personal	464.78			
15	Singh, G	Corporate	835.69					Singh, G	Corporate	835.69			
16	Smith, A	Corporate	528.28					Smith, A	Corporate	528.28			
17	Smith, B	Corporate	492.44					Smith, B	Corporate	492.44			
18	Smith, T	Personal	528.28					Smith, T	Personal	528.28			
19	Williams, M	Personal	441.44					Williams, M	Personal	441.44			
20	Wong, K	Personal	578.28					Wong, K	Personal	578.28			
21	Total		540.095			0		Total		540.095			0
22													

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖   Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 4: Sort and Filter

Lesson Objectives

In this lesson, you will use various methods to sort and filter data in a worksheet. Upon completion of this lesson, you should be able to understand the following:

☐   Multi-Level Sort

☐   Custom Lists

☐   Filter Data

Multi-Level Sort

Sometimes sorting by only one column is not enough. For example, in a customer list, several people may share the same last name. In this case, you can sort by two columns - first by Last Name, then by First Name - to organize the list correctly.

To sort by multiple columns, choose one of the following methods to open the Sort dialog box:

- **Home** tab > **Editing** group > **Sort & Filter** drop-down arrow > **Custom Sort**

- **Data** tab > **Sort & Filter** group > **Sort**

In the Sort dialog box, you can:

- Select the first column to sort by (e.g., Airline)

- Add a second column (e.g., flight)

- Continue adding levels if needed (e.g., Destination)

- Choose the order for each column (A to Z, Z to A, Smallest to Largest, etc.)

The settings in the Sort dialog box determine how the data is to be sorted:

Add Level, Delete Level, Copy Level	Add, delete or copy columns (or rows) in this dialog box to be used as sort keys.
Move up/Move down	Change the selected sort level higher or lower in the sorting sequence.
Options	Access a dialog box that allows you to sort top to bottom or left to right and choose whether to treat the data as case-sensitive.
My data has headers	Tells Excel to treat the first row (or column) of cells as labels or titles for the data below (or to the right).
Column/Row	Identifies the column or row to be used for sorting. The sequence of these columns or rows specifies the sorting level.
Sort On	Include *Cell Values* (cell data), *Cell Color*, *Font Color*, or *Conditional Formatting Icon*. These options identify what to use in the cells for sorting.

Order	This option indicates whether to sort the data in ascending (*A to Z, Smallest to Largest, Oldest to Newest*) or descending (*Z to A, Largest to Smallest, Newest to Oldest*) order.
Sort by	This is the primary sort key: the first column or row Excel will use to sort the data.
Then by	These are optional columns or rows for sorting if multiple rows have the same primary sort key. You can select up to 64 columns or rows as sort levels.

Note: You can sort data in any range of cells even if they are not constructed as a table.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Custom Lists

Desktop Only Alert ✏   The following feature is exclusively available in the desktop version.

Built-in custom lists allow you to sort data by days of the week or months. Excel also has the option to create custom sorts. This is useful when you have data that doesn't sort well alphabetically such as small, medium, large or first, second, third.

To sort data by a custom list:

1.   Select the columns to sort > **Data** tab > **Sort & Filter** group > **Sort**.

2.   In the Sort dialog box > **Sort by** drop-down arrow > choose the column to sort.

3.   **Order** drop-down arrow > **Custom List**.

4.   Select the list you want to use, then select **OK**.
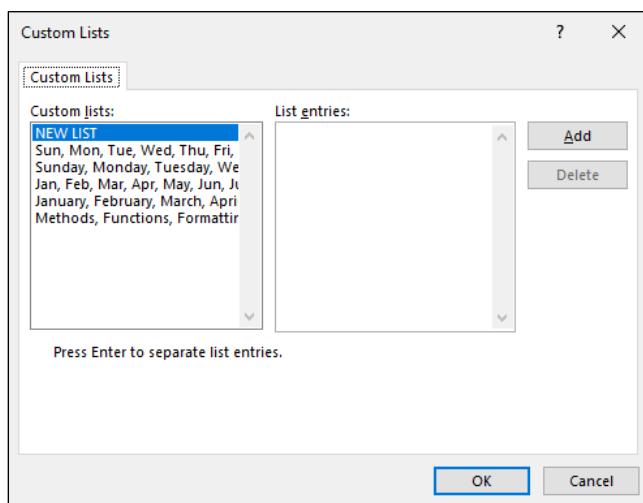
To create your own custom list:

1.   In Custom lists: select **NEW LIST**.

2.   In List entries: enter the list data separated by a comma, then select **OK**
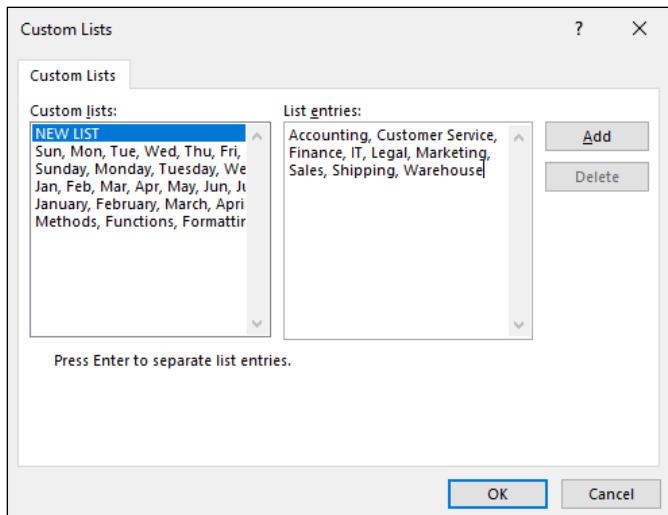
Filter Data

Another way to locate information in a large worksheet is to use a **filter**. Filtering allows you to hide rows you don't need and display only the rows that meet your criteria. The **AutoFilter** displays only the rows that match your selected conditions. All other rows remain hidden until you change the filter criteria or turn the filter off.

You can filter data using the AutoFilter icons (drop-down arrows) that appear on the right side of each column heading:

- If the data is formatted as a table, AutoFilter icons are turned on automatically

- If the data is not a table, you can activate filters manually:

  - **Home** tab > **Editing** group > **Sort & Filter** drop-down arrow > **Filter**
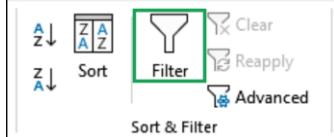
  - **Data** tab > **Sort & Filter** group > **Filter**
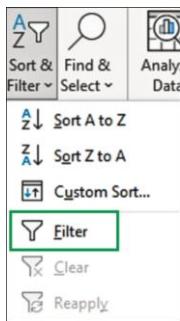
Once activated, select the AutoFilter icon on a column heading to:

- Filter values that meet specific criteria (e.g., show only "Canada" from a Country column)

- Sort the column in ascending or descending order

- Filter by color if the column contains formatted cells

	A	B	C	D
1	Airline	Flight #	Destination	Departure Time
2	Aer Lingus	104	Dublin (DUB)	5:45 PM
3	Aer Lingus	108	Dublin (DUB)	9:50 PM
4	Aer Lingus	110	Shannon (SNN)	6:30 PM
5	Aeroflot	316	Moscow (SVO)	7:00 PM
6	AeroMexico	5610	Albany, NY (ALB)	7:00 PM
7	AeroMexico	5904	Barcelona (BCN)	5:35 PM
8	AeroMexico	5762	Buffalo, NY (BUF)	9:00 PM
9	AeroMexico	5783	Burlington, VT (BTV)	9:00 PM
10	AeroMexico	405	Mexico City (MEX)	9:00 AM
11	AeroMexico	5279	Mexico City (MEX)	9:05 AM
12	AeroMexico	403	Mexico City (MEX)	5:50 PM
13	AeroMexico	5388	Norfolk, VA (ORF)	7:30 PM
14	AeroMexico	5776	Philadelphia, PA (PHL)	7:30 PM
15	AeroMexico	5760	Richmond, VA (RIC)	6:35 PM
16	AeroMexico	5722	Rochester, NY (ROC)	8:30 PM
17	AeroMexico	5878	Rome (FCO)	5:30 PM
18	AeroMexico	9411	Rome (FCO)	9:45 PM
19	AeroMexico	5251	Syracuse, NY (SYR)	8:30 PM
20	AeroMexico	5797	Toronto (YYZ)	8:00 PM
21	AeroMexico	5725	Washington, DC (DCA)	8:30 PM
22	Air Berlin	7451	Dusseldorf (DUS)	5:45 PM
23	Air China	982	Beijing (PEK)	4:50 PM

Excel provides selection criteria that are specific to columns containing text, numbers or dates, such as the following:

Numbers – Evaluate numeric data in the selected column using any of the following:

- A comparison operator such as equals, greater than, or less than

- The top 10 values

- All rows above or below the average of all values in the column

- A custom filter that allows you to select more complex criteria

Equals…

Does Not Equal…

Greater Than…

Greater Than Or Equal To…

Less Than…

Less Than Or Equal To…

Between…

Top 10…

Above Average

Below Average
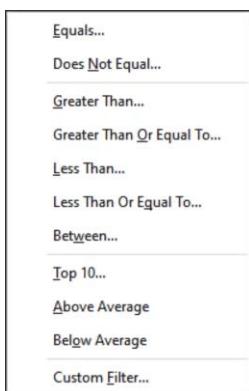
Custom Filter…

Text – Evaluate text data in the selected column using any of the following:

- A comparison operator such as equals, greater than, or less than

- Begins or ends with a snippet of text

- Contains or does not contain a snippet of text

- A custom filter that allows you to select more complex criteria

Equals…

Does Not Equal…

Begins With…

Ends With…

Contains…

Does Not Contain…

Custom Filter…
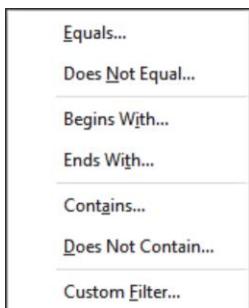
Dates – Evaluate date-type data using a wide variety of criteria such as:

- Before, After, Between

- Tomorrow, Today, and Yesterday

- Next Week, Next Month, Next Year
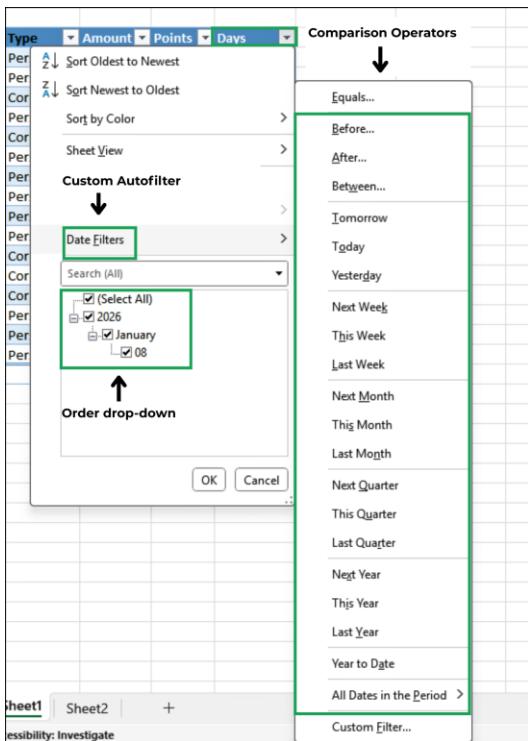
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖   Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Unit Assessment 🏆   Access the Learner Workbook to complete the Objective Assessment and Create Project.

Unit 2 Key Terms

Term	Definition
Alignment	Refers to the position or placement of data within the cell; you can align the cell contents horizontally or vertically.
AutoFilter	Finds and displays the rows where the value in the selected column meets your specified criteria.
AutoFilter Icon	An arrow that appears next to each column title and can be used to apply various options.
Banding	Use different color shades for alternating rows.
Borders	The line type or style that can be applied to one or more cells.
Built-in Custom Lists	Sort data by specific order such as weekdays or months.
Cell Styles	A grouping of specific format settings for a cell.
Clear	Use to remove the contents (or certain components that you choose) from the cell or a range of cells.
Conditional Formatting	A tool to use to display the data in cells one way for some values but another way for others.
Convert a Table	Choose to return to a regular set of rows and columns without the table definition.
Custom AutoFilter	Allows you to specify exactly how you want to filter the data.
Fill Color	A feature that enables you to apply a background color to the selected cell(s).
Fill Patterns	A feature where you can apply a pattern style to the background of the selected cell(s).
Filter	Hide rows of data you are not interested in viewing.
Font	Refers to the typeface of the text characters, such as Times New Roman, Calibri, Century Block, Helvetica, etc.
Format Cells Dialog Box	A dialog box you can activate to select various formatting options for a selected cell(s). This dialog box contains various tabs to address different types of formatting.
Format Painter	A tool that enables you to copy the cell formatting from one area on the worksheet to another.
Formatting	Change the appearance of the data using various features to draw attention to parts of the worksheet, or to make the data presented clearer to understand.
Go To Feature	A quicker method of jumping to a specific cell or object.
Indented	Contents in a cell are positioned at least one character from the left edge of the cell to create an indented appearance.
Merging Cells	A feature commonly used on text labels to identify a group of cells together.

Name Manager	A dialog box where you can modify and delete range names, or change the cell range references.
Named Ranges	Add a meaningful name for a cell or range of cells for users to understand the purpose of the cells.
Orientation	A button that allows you to change the direction of the characters in a cell in various ways.
Quick Styles	A set of prebuilt styles provided in Excel to apply a common type of formatting for specific data, such as Headings or currency numbers.
Shrink to Fit	An option that shrinks the font size to fit the cell.
Structured Reference	Reference individual columns within the table by adding the column title within square brackets.
Table	A rectangular block of data in which the rows and columns of data have a common structure and format.
Theme	A set of pre-defined formats that can be applied to a worksheet for a consistent formatted layout and color.
Total Row	An option you can turn on or off for a table where you can select a built-in function such as sum or average.
Wrap Text	Force the text content in a cell to stay within the left and right boundaries of the cell, increasing the height of that row to accommodate the full length of the text.

Unit 3: Formulas and Functions

Unit Objectives

In this unit, you will learn how to use different types of formulas, including functions for calculations, working with text, and dealing with dates and times. Upon successful completion of this unit, you should understand the following:

☐   Formulas

☐   Functions

☐   Text Functions

Lesson 1: Formulas

Lesson Objectives

In this lesson, you will learn about formulas, what they are, how they work, and how to insert basic formulas and use built-in functions to perform calculations in a workbook. Upon completion of this lesson, you should be able to understand the following:

- ☐ Simple Formulas
- ☐ Edit a Formula
- ☐ Identify Cell Reference
- ☐ Cell Reference
- ☐ Mixed Cell Reference
- ☐ Ranges and Tables
- ☐ Display Formulas
- ☐ Copy or Move a Formula

Simple Formulas

In Excel, every worksheet cell can use a formula. A formula is simply a calculation involving any combination of values, **cell references**, and/or **built-in functions**. To access a built-in function, you would select the **Insert Function icon** in the formula bar. Use the Insert Function dialog box to assist you in creating the correct formula.
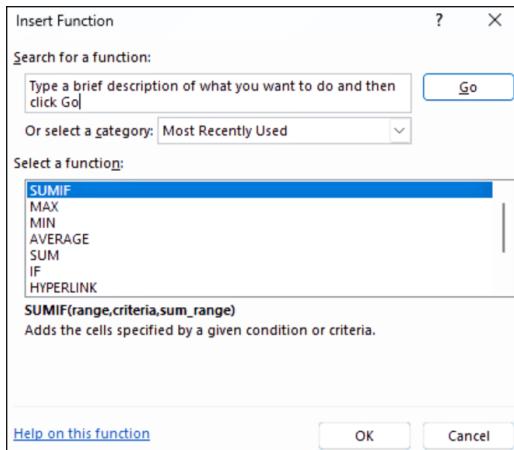
Suppose you have a worksheet with some formulas:

The formulas used in this worksheet are described in the example below:

Cell	Formula/Value	Description
A1	10	A constant value – numeric in this case. Every workbook with formulas will usually have at least one constant value.
B1	=A1	References the current value in cell A1. No changes or calculations are done to the value in cell A1, other than copy it over. If the value in cell A1 is changed, cell B1 will automatically display the new value.
C1	=A1*8	References the value in cell A1 and multiplies it by eight.
D1	=C1/5	References the value in cell C1 and divides it by five. Digits to the right of the decimal point will also be displayed if necessary. Note that if the value in cell A1 changes, then the value in cell C1 will change, which will cause the value in this cell to change in a cascading effect.
E1	=SUM(A1:D1)	References a built-in function called SUM (also known as **AutoSum**) to calculate the sum total of all cells in the range from A1 to D1. Note that if the value in cell A1 changes, then the values in cells B1, C1, and D1 will also change at the same time, which will cause the value in this cell to change as well.

Let's change the value in cell A1. All the formulas are automatically recalculated, and the worksheet will now appear:

The table illustrates a comparison of how these numbers were calculated using the previous value (10) and the new value (11) entered in cell A1:

Cell	Formula	Old Value	New Value
A1		10	11
B1	=A1	10	11
C1	=A1*8	80 (=10 x 8)	88 (=11 x 8)
D1	=C1/5	16 (=80 ÷ 5)	17.6 (=88 ÷ 5)
E1	=SUM(A1:D1)	116 (=10 + 10 + 80 + 16)	127.6 (=11 + 11 + 88 + 17.6)

This example demonstrates that by using formulas, you can have the computer do the calculations quickly. You changed the value in only one cell. Excel knows which sequence to perform all the calculations, ensuring that all the results are correct.

Excel does not display the formula you enter into a cell in the worksheet, only the result of the formula.

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Edit a Formula

When a formula is entered into a cell, it will also appear in the formula bar.
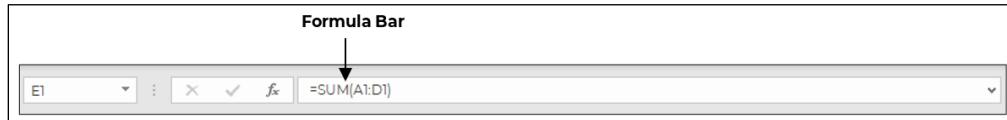
To edit a formula, you will select the cell that contains the formula you want to edit. Then choose one of the three methods:

- Edit the formula directly in the Formula Bar by selecting in the formula bar to activate the formula

- Double-click the cell that contains the formula and then you can edit the formula right in the selected cell

- Select **F2** on your keyboard and you can edit the formula right in the selected cell.

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Identify Cell Reference

Efficiency in Excel often comes down to how cell addresses behave when they are moved or copied. Depending on the goal, Excel can either shift the data source automatically or lock onto a specific point.

By default, Excel uses ***relative cell address***. This means the formula acts as a set of directions relative to its current position (e.g., "add the three cells directly above this one"). When a relative formula is copied to a new column or row, Excel automatically adjusts the cell references to match the new location.

For example:

- If a formula in Column A adds up three rows, copying that formula to Column B results in Excel automatically adding the three rows in Column B instead

- This is perfect for budgets or schedules where the same math needs to be repeated across different months or categories

There are instances where a formula needs to point to one specific cell, regardless of where the formula is copied. This is known as an **absolute cell address**. It creates a fixed reference point that never shifts.

To transform a relative address into an absolute one, a dollar sign ($) is placed before the column letter and the row number.

In the example below, cell F1 is referenced as part of a formula in cell C3. Excel will lock onto cell F1, regardless of where the formula is moved or copied to. This is an essential feature when referencing a single constant value, such as a tax rate, a goal, or a specific date, that applies to many different calculations.

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Cell Reference

In Excel, you don't have to limit your math to single numbers. You can link individual cells or even large blocks of data to a single formula. A **cell reference** acts as a pointer to data located elsewhere. Once an equal sign (=) is active, a reference can be added by:

- Entering the cell reference (or cell address) directly (like A1)

- Selecting or dragging across a group of cells

A cell range is a rectangular block of cells treated as a single group. To define a range, Excel uses a colon (:) to connect the top-left corner to the bottom-right corner. Ranges can be a single row, a single column, or a large "block" covering multiple rows and columns.

Consider the following example of a range: **<Starting Cell> : <Ending Cell>** (or C11:E18)

Ranges are designed to work within **functions** or arrays - for example =SUM(C11:E18). A range cannot be used with basic operators on its own. The formula =F9+C11:E18 will result in an error in Excel.

The **cell range** can be one-dimensional with all cells in the same row or column, two-dimensional with multiple rows and columns, or three-dimensional, spanning more than one worksheet. Cell range addresses can also include entire rows or columns.

Formula	What it calculates
=SUM(B:B)	Every value in column B.
=SUM(B:C)	Every value in both column B and column C.
=SUM(3:3)	Every value located in row 3.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Mixed Cell Reference

Cell addresses do not have to have both absolute column and row references. You can have **mixed cell references**. This allows one part of the cell address to move freely while the other part stays fixed. The column reference can be absolute and the row reference relative (for example, $E5). If a formula including this reference is copied to a new location, only the column reference ($E) is constant, and the row reference is adjusted for the new location.

Conversely, if you copy a formula including a cell reference with an absolute row reference and a relative column reference (for example, E$5) to a new location, Excel will adjust only the column reference for the new location. This adds flexibility for creating cell formulas, which will become increasingly important as your worksheets become more complex.

A general strategy is if you intend to copy the formula to other cells in the same row and keep the column reference locked, place the $ in front of the column letter. If you intend to copy the formula to other cells in the same column and keep the row reference locked, place the $ in front of the row number.

Manually entering dollar signs can be slow and prone to errors. Excel provides a dedicated keyboard shortcut - the **F4** key - to cycle through reference types instantly.

How to use the shortcut:

- During entry - While you are entering a formula and have just selected a cell address (like A1), select **F4**

- Editing later - If a formula is already finished, double-click the cell to edit it. Place your cursor inside the cell address you want to change and select **F4**

Each time you select the **F4** key, Excel rotates the "lock" (the dollar sign) through four different states. Understanding this cycle helps you reach the correct reference type with just a few taps.

Number of selections	Result	Reference Type	What is locked?
1	A1	Absolute	Both the column and the row.
2	A$1	Mixed	Only the row.
3	$A1	Mixed	Only the column.
4	A1	Relative	Removes the absolute reference. Nothing is locked (default).

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Ranges and Tables

When you insert data into Excel, it starts as a range. A **cell range** is a group of selected cells in a rectangular block, for example, from the top-left to the bottom-right of your selection.

Suppose you select cells from A4 to E15. This is called a range, and it would be entered as: A4:E15.

At this stage the range has no table features, it's just static data. When you convert a range to a table, Excel adds features such as calculated rows and columns, sorting and filtering, banded rows, etc.

To convert a range into a table, select the range and use one of the following methods:

- **Insert** tab > **Table** group > **Table**

- **CTRL + T**

Assume you convert the above range (A4:E15) into a table and name it "Tolano Adventures". Now Excel recognizes this as a dynamic, named table with enhanced functionality.

An Excel table is a structured, dynamic range of cells that is pre-formatted and given a unique name. It includes built-in features such as filtering, sorting, automatic expansion as new data is added, and support for structured references. Excel tables help organize and analyze data more efficiently by making formulas straightforward to read and data more manageable.

Structured references (or **table references**) are a flexible alternative to traditional cell addresses. They allow you to refer to specific parts of an Excel table, such as entire tables, columns, or individual rows, using table and column names instead of cell coordinates. Consider the example: the table is named TolanoAdventures. To reference the Complaints column in the table, enter it as: =SUM(TolanoAdventures[Complaints]) instead of using =SUM(E4:E15)

Structured references adjust automatically when data grows and make formulas straightforward to understand and maintain.

Display Formulas

By default, Excel cells display the result of a calculation. However, when troubleshooting or reviewing a project, it is often necessary to view the actual formulas across the entire worksheet at once. Instead of selecting each individual cell to view its contents in the Formula Bar, you can toggle the entire worksheet to display the formulas using the Show Formulas tool. This replaces the calculated answers with the raw instructions used to create them.

To toggle on the Show Formulas view:

- **Formulas** tab > **Formula Auditing** group > **Show Formulas**
- **CTRL** + ` (grave accent)

Copy or Move a Formula

It is important to know the difference between copying a formula and moving a formula.

- When you copy a formula, the relative reference will allow the formula to adjust for each new row and/or column.

- When you move a formula, the relative reference within the cell will not change, regardless of whether it has a relative or absolute reference.

You can copy formulas into additional cells by using the copy/paste tools or by dragging the Autofill handle. When you copy formulas, relative references will be put in place to ensure the formulas adjust for each row and column, unless you include absolute or mixed references before you copy the formula.

Copy a formula using copy and paste:

1. Select the cell with the formula that you want to copy then, the **Home** tab > **Clipboard** group > **Copy** or select **CTRL+C**.

2. Select the cell you want to copy the formula and the formatting to, then on the **Home** tab > **Clipboard** group > **Paste** or select **CTRL+V**.

Note: To paste ONLY the formula, in the **Home** tab > **Clipboard** group > **Paste** drop-down arrow > **Paste Special** > **Formulas**. To paste ONLY the value, in the **Home** tab > **Clipboard** group > **Paste** drop-down arrow > **Paste Special** > **Values**.

Use AutoFill to copy a formula:

1. Select the cell with the formula that you want to copy into adjacent cells.

2. Select and hold the fill handle that appears in the bottom-right corner of the cells and drag the fill handle over the adjacent cells you want to copy the formula into.

3. To change how you want to fill the selection, select the small AutoFill Options icon and choose the relevant option.

If you don't notice the fill handle, it might be hidden. To display it, go to the **File** tab > **Options** > **Advanced**. Under Editing Options, check the **Enable fill handle and cell drag-and-drop box**.
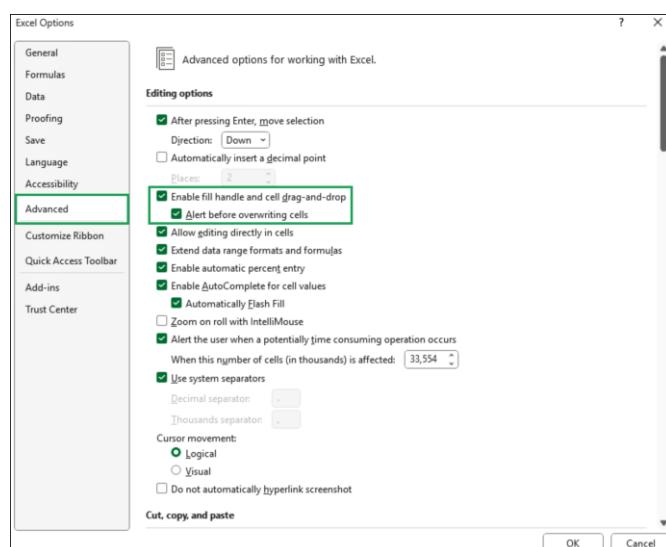
You can move formulas into a different cell by using cut and paste or by dragging the border of the cell into a new location (available in the desktop version only). When you move formulas, the cell references will not change, regardless of the type of cell reference used.

Move a formula using cut and paste:

1. Select the cell with the formula that you want to move, then on the **Home** tab > **Clipboard** group > **Cut** or select **CTRL+X**.

2. Select the cell you want to move the formula and the formatting into, then on the **Home** tab, > **Clipboard** group > **Paste** or select **CTRL+V**.

Move a formula by drag and drop (available in the desktop version only):

• Select the cell with the formula that you want to move to a different location, then select and hold on the border of the cell and drag it to the cell you want to move the formula into

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Assessments 📖 | Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 2: Functions

Lesson Objectives

In this lesson, you will learn about functions. How can you use them to create a family budget or to track profit and loss for a small business? How can I make sure they are accurate? Upon completion of this lesson, you should be able to use and understand the following:

☐ Insert Function

☐ Random Numbers

☐ Sequence

☐ Unique

☐ IF Function

Insert Function

Excel has a very large number of functions available; memorizing the syntax of every function is an impossible task. To make it easier to use functions, Excel provides a special tool called **Insert Function** ☐ left of the formula bar.

To access the Insert Function dialog box, use one of the following methods:

- Select **Insert Function** (ƒx) to the left of the Formula bar

- **Home** tab > **Editing** group > **AutoSum** drop-down arrow > **More Functions**

- **Formulas** tab > **Function Library** group > **Insert Function**

You can also access a list of functions by entering "=" (to indicate to Excel that you are entering a formula) and then entering the first few characters of the function that you want to enter. Excel displays a drop-down list of all functions that begin with these characters.
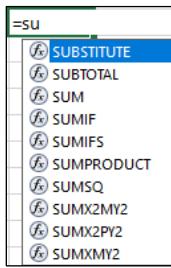
The Insert Function dialog box displays all functions grouped by most recently used or by categories previously discussed. If you do not know the name of the function you want to use, but you do know what you want to accomplish, you can enter a brief description of what you want to do and the Insert Function feature will recommend a function for you (This feature can only be accessed in the desktop version.).
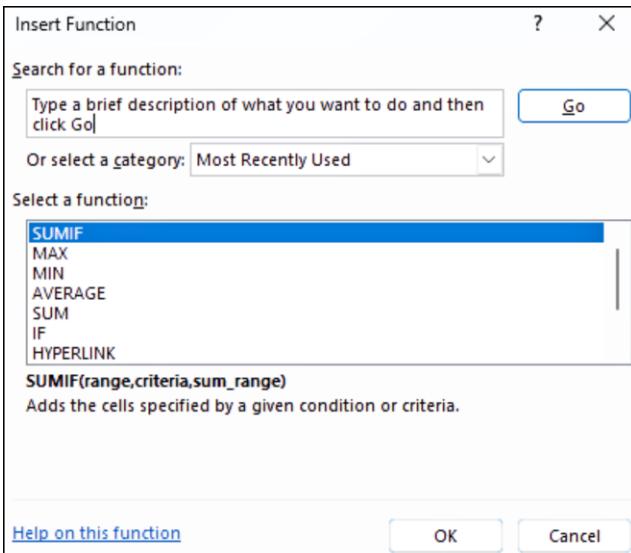
After you select a function, Excel displays the Function Arguments dialog box to help you enter all the required function arguments. Helpful features of this dialog box include the following:

- Each argument is listed and the required arguments are highlighted in bold. If the function you're using allows a variable number of arguments, the dialog box displays additional argument boxes as necessary

- When the cursor is in one of the argument text boxes, the relevant help information displays in the lower part of the dialog box

- If you select or enter data values or cell references into the argument boxes, Excel previews the data to the right of that argument box. In the following example screen, the data values being considered are {45;24;57;49;36}

- If enough arguments have been entered, Excel also displays the results in the lower part of the dialog box. In this example screen, the calculated sum for the selected cell range is 211
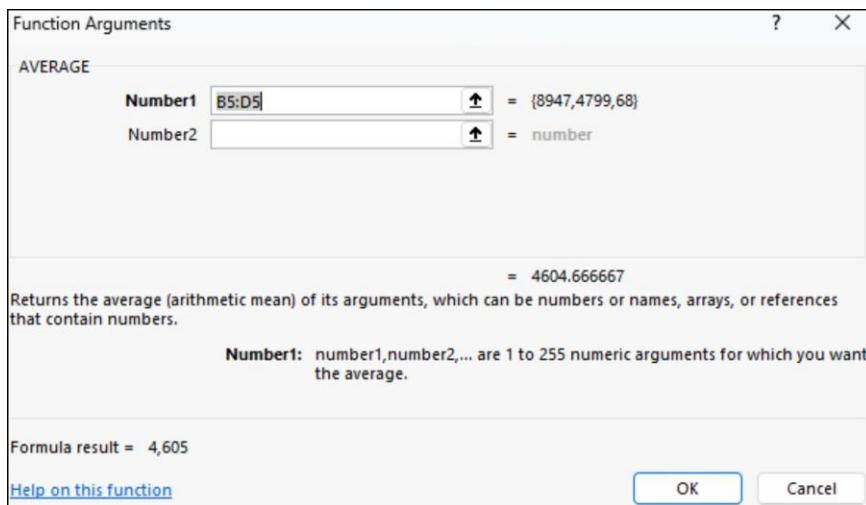
Many of the arguments in a function permit you to select a cell or range of cells containing the values to be used. For example, consider the following three functions:

=SUM(45,24,57,49,36)

=SUM(C1,C2,C3,C4,C5)

=SUM(C1:C5)

If cell C1 contains the value 45, C2 contains 24, and so on, all three of these functions will result in the displayed value of 211.

You can enter a value or cell range into the appropriate boxes within the Function Arguments dialog box, or you can select a cell or cell range directly in the worksheet. In some situations, such as if you are using a device with a very small screen, the Function Arguments dialog box may block your view of the cell range. If you select the **Collapse** button (⬆) located to the right of the argument text box, the Function Arguments dialog box shrinks temporarily.
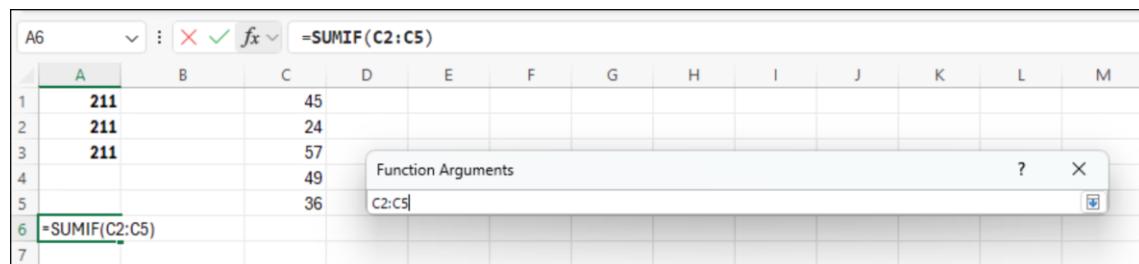
Once you have selected your cell range, select **ENTER** or select the **Restore** (⬇) button located at the right side of the text box. The Function Arguments dialog box restores to its full size.

Function Name	Description
=AVERAGE	Calculates the arithmetic mean average of the numbers in the specified range (sum total of the cell range, divided by the total of the number of cells containing a number).
=MIN	Finds and displays the lowest numeric value in the specified range.
=MAX	Finds and displays the largest numeric value in the specified range.

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Random Numbers

The RAND function generates random decimal numbers between 0 and 1, making it a versatile tool for various data modelling and simulation tasks. It's particularly useful for generating probabilities, percentages, or random fractions for statistical analysis. For example, you can use it to simulate random probabilities, create weighting factors for data models, or produce test values for formulas. Because it generates continuous random decimals, it's useful for situations where you need more precise or detailed randomness.

Function: **=RAND()**

If you would like to randomly select a random number between specific numbers, you could include those numbers in the function.

Function: **=RAND()*upper limit**

Function: **=RAND() * (upper limit – lower limit) + lower limit**

Function	Description	Possible Result
=RAND()	A random number greater than or equal to 0 and less than 1.	0.982912
=RAND()*100	A random number greater than or equal to 0 and less than 100.	32.91643
=RAND() * (10-1)+1	A random number greater than or equal to 1 and less than 10.	9.090773

The RANDBETWEEN function is used to generate random numbers between two specified values. It's useful for simulations, test data creation, and random sampling. For instance, you can use it to simulate dice rolls in gaming scenarios, assign random employee IDs for mock databases, or create random test scores for analysis. Its ability to generate dynamic random numbers between specified limits is particularly useful for data modeling, statistical sampling, and testing formulas or functions.

Function: **=RANDBETWEEN(lower limit, upper limit)**

Function	Description	Possible Result
=RANDBETWEEN(1, 100)	This will generate a random number between 1 and 100.	11
=RANDBETWEEN(10, 50)	This will generate a random number between 10 and 50.	49

The key difference between RAND and RANDBETWEEN is that RAND generates random decimal numbers between 0 and 1, while RANDBETWEEN generates whole numbers within a specified range.

Feature	RAND	RANDBETWEEN
Purpose	Generates a random decimal number between) and 1.	Generates a random whole number between two specified values.
Input Parameters	No parameters required.	Requires two arguments: bottom (lower limit) and top (upper limit).
Output	Produces decimal numbers like .4532 or .9847.	Produces integers like 12, 78, or 100.
Use Case	Useful for generating probabilities, percentages, or random fractions.	Useful for generating random whole numbers within a defined range, such as test scores or IDs.

Both the RAND and RANDBETWEEN functions are dynamic, meaning the random numbers they generate will update each time the worksheet recalculates, such as when you press **F9** or make changes to the sheet. If you want to keep the generated numbers static for either function, you can copy the cells containing the formulas and use **Home** tab > **Clipboard** group > **Paste Special** > **Values** to replace the formulas with their current output. This ensures the values remain fixed and do not change with further recalculations.

Note: F9 is the "Calculate Now" key in Excel. When you select it, Excel forces the worksheet to recalculate all the formulas immediately.

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Sequence

The SEQUENCE function generates an array of sequential numbers, offering flexibility for various data organization and modeling tasks. It's particularly useful for creating ordered datasets, dynamic ranges, and patterns automatically, eliminating the need for manual entry. For instance, you can use it to create numbered lists, generate unique IDs, or structure grids for tables. Its ability to produce sequences with customizable rows, columns, starting values, and increments makes it ideal for applications like scheduling, financial modeling, or inventory tracking.

Function**: =SEQUENCE(rows, columns, start, step)**

- rows: The number of rows for the sequence

- columns: (optional) The number of columns for the sequence. Default is 1

- start: (optional) The starting number of the sequence. Default is 1
- step: (optional) The increment for the sequence. Default is 1

Function	Description	Result
=SEQUENCE(5,1)	Generates a vertical list of five sequential numbers starting from 1. This is useful for numbering rows in a dataset automatically.	1 2 3 4 5
=SEQUENCE(3,4,10,5)	Generates a 3-row by 4-column array of numbers, starting at 10 and increasing by 5. This could be useful for structured numbering in tables or scheduling tasks.	10 15 20 25 30 35 40 45
=SEQUENCE(2,3,100,-10)	Generates a 2-row by 3-column array of numbers, starting at 100 and decreasing by 10. This can be useful for countdowns, reverse ordering, or financial projections.	100 90 80 70 60 50

Learn Task 💡 **Access the Learner Workbook to complete the Learn Task for this skill.**

Unique

The UNIQUE function is designed to extract unique values from a range of data, eliminating duplicates. This function is particularly useful for data analysis, reporting, and cleaning datasets by identifying distinct entries. Whether working with a list of customer names, product IDs, or survey responses, the UNIQUE function ensures streamlined and organized data.

Function: **=UNIQUE(array, [by_col], [exactly_once])**

- array: The range or array from which to return unique values
- by_col (optional): A logical value indicating whether to compare values by columns (TRUE) or by rows (FALSE, default)
- exactly_once (optional): A logical value indicating whether to return all unique values (FALSE, default) or only those that appear exactly once (TRUE)

Scenario	Function	Result
You have a list of names in column A (A1:A10), and some are repeated.	**=UNIQUE(A1:A10)**	A vertical list of unique names extracted from column A.
A dataset where each row represents a product entry, and you need to identify unique rows.	**=UNIQUE(A1:D10, FALSE)**	A filtered table where each row is unique.
You want to find values that appear only once in a dataset.	**=UNIQUE(A1:A10, FALSE, TRUE)**	A list of values that appear exactly once in column A.

Learn Task 💡 **Access the Learner Workbook to complete the Learn Task for this skill.**

IF Function

In Excel, the ability to perform different calculations based on changing values is one of the most powerful and useful features of spreadsheets. The primary function used for this is the IF function. This function tests for a condition and performs one of two different calculations based on the result of the test. The result should always evaluate to either TRUE or FALSE. In other words, either the condition being tested is TRUE or it is FALSE. This automatic evaluation provides "on the fly" conditional worksheet calculations.

Function: **=IF(logical test,value if true,value if false)**

- **Logical Test** – Specify what the IF statement will evaluate. The result should always be binary; it should always result in either True or False

- **Value if True** – If the Logical Test is found to be true, then the result of the IF function will be whatever is in this section of the formula

- **Value if False** – If the Logical Test is found to be false, then the result of the IF function will be whatever is in this section of the formula

The Logical Test section of the function often uses comparison operators that will help you obtain the desired result. Qualifiers are punctuation marks used to identify or define different types of data. For example, text used in a formula requires double quotation marks (") as qualifiers.
Some of the comparison operators you can use are:

Logical Operators	Definition
=	Equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
<>	Not equal to

The Value if True/False sections can contain a text string, values or even other functions. In fact, you can nest or embed up to 64 IF functions within one IF function. An example of a nested IF function would appear as follows:

=IF(A1=10, "text A",IF(A1=20, "text B", "text C"))

In this example, Excel will display the following values when the conditions are met:

If A1 contains	Then this will display
10	text A
20	text B
Any other value	text C

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖   Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 3: Text Functions

Lesson Objectives

In this lesson, you will learn about text functions. The objective of the text functions in Excel is to convert numbers into text strings which will change how they appear in your spreadsheet. Upon completion of this lesson, you should be able to use and understand the following:

☐ Right, Left, Mid

☐ Upper, Lower, Proper

☐ Len

☐ Trim

☐ Combine Text

Right, Left, Mid

Excel offers text functions to extract specific parts of a text string, making it more convenient to work with structured data such as IDs, codes, and descriptions. The RIGHT, LEFT, and MID functions are particularly useful for isolating and analyzing substrings within a larger text string.

RIGHT Function:

- Purpose: Extracts a specified number of characters from the end (right) of a text string.
- Syntax: **=RIGHT(text, num_chars)**
  - text: The text or cell reference containing the text to extract from.
  - num_chars *(optional)*: The number of characters to extract. Default is 1.

	A	B
	Product IDs	Formula
2	PRO987	=RIGHT(A2,4)
3	ITEM587	=RIGHT(A3,4)
4	CODE523	=RIGHT(A4,4)
5	PROD5588	=RIGHT(A5,4)
6	ITEM3344	=RIGHT(A6,4)
7	CODE5566	=RIGHT(A7,4)
8	PROD7788	=RIGHT(A8,4)
9	ITEM9900	=RIGHT(A9,4)
10	CODE1234	=RIGHT(A10,4)
11	PROD5678	=RIGHT(A11,4)

B10 ... =RIGHT(A10,4)

LEFT Function:

- Purpose: Extracts a specified number of characters from the beginning (left) of a text string.
- Syntax: **=LEFT(text, num_chars)**
  - text: The text or cell reference containing the text to extract from.
  - num_chars *(optional)*: The number of characters to extract. Default is 1.

	A	B
1	Customer Names	Formula
2	Mr. Elvis	=LEFT(A2,3)
3	Mrs. Alpha	=LEFT(A3,3)
4	Dr. J. Louisa	=LEFT(A4,3)
5	Ms. Humberg	=LEFT(A5,3)
6	Mr. Daniel Craig	=LEFT(A6,3)
7	Mrs. Minon Alberto	=LEFT(A7,3)
8	Dr. Angela Isoaacs	=LEFT(A8,3)
9	Ms. Okina Zao	=LEFT(A9,3)
10	Mr. Flavia Benenzi	=LEFT(A10,3)
11	Dr. Katya Winslow	=LEFT(A11,3)

SUMIF ... =LEFT(A2,3)

MID Function:

- Purpose: Extracts a substring from the middle of a text string, starting at a specified position.
- Syntax: **=MID(text, start_num, num_chars)**
  - text: The text or cell reference containing the text to extract from.
  - start_num: The position of the first character to extract.

▪ num_chars: The number of characters to extract.

Function	Description	Example	Result
=RIGHT(A1, 3)	Extracts the last three characters from the text in cell A1.	If A1 contains "Product123"	123
=LEFT(B1, 5)	Extracts the first five characters from the text in cell B1.	If B1 contains "Order45678"	Order
=MID(C1, 4, 3)	Extracts three characters starting from the fourth position in the text in cell C1.	If C1 contains "A1B2C3D4"	2C3

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Upper, Lower, Proper

Excel provides several text functions to help standardize the case of text data. The UPPER, LOWER, and PROPER functions allow you to manipulate text, making it more consistent and easier to work with. These functions are essential for cleaning up data imported from external sources or for formatting data for reporting and presentation.

UPPER Function:

• Purpose: Converts all text to uppercase.

• Syntax**: =UPPER(text)**

   ▪ text: The text or cell reference to convert to uppercase.

LOWER Function:

• Purpose: Converts all text to lowercase.

• Syntax: **=LOWER(text)**

   ▪ text: The text or cell reference to convert to lowercase.

PROPER Function:

• Purpose: Capitalizes the first letter of each word in a text string.

• Syntax: **=PROPER(text)**

   ▪ text: The text or cell reference to convert to proper case.

Function	Description	Example	Result
=UPPER(A1)	Converts all text in cell A1 to uppercase.	If A1 contains "hello world"	HELLO WORLD
=LOWER(B1)	Converts all text in cell B1 to lowercase.	If B1 contains "HELLO WORLD"	hello world
=PROPER(C1)	Capitalizes the first letter of each word in the text in cell C1.	If C1 contains "hello world"	Hello World

Learn Task 💡   **Access the Learner Workbook to complete the Learn Task for this skill.**

Len

The LEN function measures the length of text strings. It counts the total number of characters in a cell, including spaces, numbers, and special characters. This function is useful for tasks like data validation, cleaning text data, or ensuring consistent formatting.

LEN Function:
- Purpose: Counts the number of characters in a text string, including spaces, numbers, and special characters.

- Syntax: **=LEN(text)**
  - text: The text or cell reference to measure.

Function	Description	Example	Result
=LEN(A1)	Counts characters in the text in cell A1.	If A1 contains "Hello World"	11
=LEN("12345")	Counts characters in the given text string.	Counts the string "12345"	5
=LEN("Hello123")	Counts letters, numbers, and spaces.	Counts the string "Hello123"	8

Learn Task 💡   **Access the Learner Workbook to complete the Learn Task for this skill.**

Trim

The TRIM function is a powerful tool for cleaning up messy text by removing unnecessary spaces. It ensures that only single spaces remain between words and eliminates any leading or trailing spaces. This is especially helpful when working with data imported from external sources, where extra spaces can cause inconsistencies or errors in analysis.

TRIM Function:
- Purpose: Removes all extra spaces from a text string, leaving only single spaces between words.

- Syntax: **=TRIM(text)**
  - text: The text or cell reference to clean.

Function	Description	Example	Result
=TRIM(A1)	Removes extra spaces in the text in cell A1.	If A1 contains "Data Science"	Data Science
=TRIM(" Excel 2023 ")	Removes leading, trailing, and extra spaces.	Removes the space before " Excel 2023 "	Excel 2023

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Combine Text

The TEXTJOIN and CONCAT combine multiple text strings into one. These functions simplify tasks like merging names, formatting data, or creating custom labels. While they serve similar purposes, they differ in how they handle delimiters and blank cells.

TEXTJOIN Function:

- Purpose: Combines multiple text strings into one, separated by a specified delimiter, while optionally ignoring blank cells.

- Syntax: **=TEXTJOIN(delimiter, ignore_empty, text1, [text2], …)**

  ▪ delimiter: The character(s) to separate each text item.

  ▪ ignore_empty: TRUE to ignore blank cells; FALSE to include them.

  ▪ text1, [text2], …: The text strings or ranges to join.

CONCAT Function:

- Purpose: Combines multiple text strings into one without a delimiter.

- Syntax: **=CONCAT(text1, [text2], …)**

  ▪ text1, [text2], …: The text strings or ranges to combine.

Function	Description	Example	Result
=TEXTJOIN(", ", TRUE, A1:A5)	Joins values in A1:A5 with a comma as the separator.	If A1:A5 contains "John", "Mary", "Alan"	John, Mary, Alan
=TEXTJOIN(" - ", FALSE, A1:A5)	Joins values in A1:A5, including blanks, with a dash.	If A1:A5 contains "Data", "", "Science"	Data - - Science
=CONCAT(A1, " ", B1)	Combines values in A1 and B1 with a space in between.	If A1 contains "John" and B1 contains "Doe"	John Doe
=CONCAT(A1:A5)	Combines all values in A1:A5 without separators.	If A1:A5 contains "Excel", "2023"	Excel2023

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖 | Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Unit Assessment 📋✓ | Access the Learner Workbook to complete the Objective Assessment and Create Project.

Unit 3 Key Terms

Term	Definition
Cell Range	A rectangular block of cells. You refer to a cell range by listing the addresses of two cells at opposite corners of the range, separated by a colon (:).
Cell Reference	The column and row coordinates which comprise a cell address. For example, the cell reference A1 indicates a cell at the intersection of column A and row 1.
Excel Table	A structured and pre-formatted dynamic range of cells that has its own name.
Function	A feature designed by Microsoft that enables you to quickly perform a calculation or formula using a specialized function.
Insert Function	The feature Excel provides to help you select the desired function to perform calculations.
Mixed Cell Reference	A cell address where either the column or row reference is absolute, and the other reference is relative.
Structured Reference or Table Reference	A special way for referencing tables and their parts that uses a combination of table and column names instead of cell addresses.

Unit 4: Inserting Elements

Unit Objectives

In this unit, you will develop proficiency in working with advanced data techniques, utilizing comments to enhance collaboration and documentation, creating user-friendly forms for data entry and manipulation, and incorporating graphics to enhance visual representation and communication of data. Upon successful completion of this unit, you should understand the following:

☐   Data

☐   Comments and Notes

☐   Graphics

Lesson 1: Data

Lesson Objectives

In this lesson, you will learn about Excel spreadsheet data. Data is information that is stored in Excel. Data stored in Excel is stored in cells within the worksheet that can be used in calculations, displayed in graphs, or sorted and filtered to find specific information. Upon completion of this lesson, you should be able to understand the following:

☐ Find and Replace Data

☐ Import Data from External Text Files

☐ Import Data from External CSV Files

☐ Import Data from Online Sources

☐ Export Excel Data as CSV

☐ Insert Hyperlinks

☐ Modify and Delete Hyperlinks

Find and Replace Data

The purpose of Excel spreadsheets is to organize a variety of data based on changes of inputs. By keeping the data organized you can effectively analyze the variation in outputs. This allows for ease in interpreting the data and it allows for quick sharing with others.
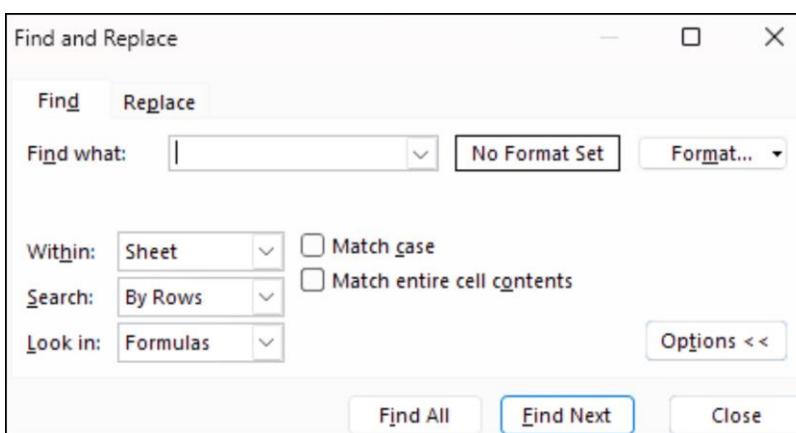
Sometimes you will need to locate specific information in Excel and it can be accomplished by using the Find feature. The find and replace feature will allow you to find specific information and then replace it with updated content by using a few entries. By default, the Find and Replace feature will locate a partial match, but you can make it search for an exact match by selecting the option "match entire cell contents" amongst other available options to refine the search.

You can search a worksheet for every occurrence of a value (text label or number), function name, or cell reference by using the Find feature. By default, the Find tool will search for the value in the Find what text box in every cell in the current worksheet. The search value can be as long or short as you need. Any cell that contains this value, even if it is only part of a longer value, will be selected.

To activate the Find feature, use one of the following methods:
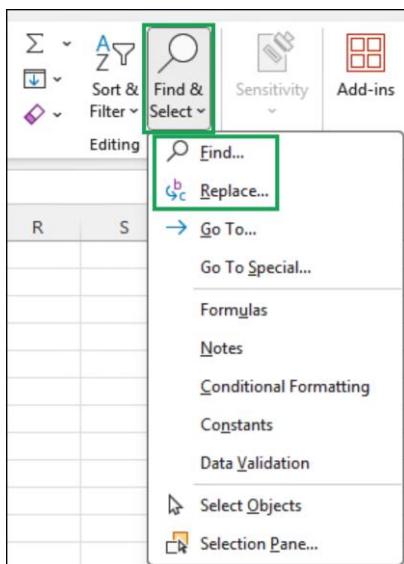
- **Home** tab > **Editing** group > **Find & Select** drop-down arrow > **Find...**
- Select **CTRL**+**F**
- Select the **Options** button in the Find and Replace dialog box to display all the options

Within	Search only within the current worksheet or the entire workbook.
Search	Indicate which direction to search: By Rows: Search from left to right across each row in the worksheet/workbook starting from the top row. By Columns: Search down each column starting from the left-most column.
Look in	Specify whether to view only the value (the result of a function rather than the formula or function text), the underlying formula, or any comment in each cell. The Formulas option is generally more flexible even if the cell contains just a value.
Match case	Specify whether to match the upper and lower case of alphabetic characters in the cell.
Match entire cell contents	Specify whether the cell must contain only the *Find what* value, or the cell may contain other text characters as well. This setting only applies when you are searching for text data.

You can also replace the search item with a new value, on an individual basis by using **Replace**, or for all cells at one time that contain the search item by using **Replace All**. The Replace function simplifies and speeds up the task of replacing one word or value with another. This automated process virtually eliminates any typing errors you would make if you had to do it manually.

To activate the Replace feature, use one of the following methods:

- **Home** tab > **Editing** group > **Find & Select** drop-down arrow > **Replace** > **Replace** tab
- Select **CTRL+H**
- If the Find dialog box is already open, select the **Replace** tab
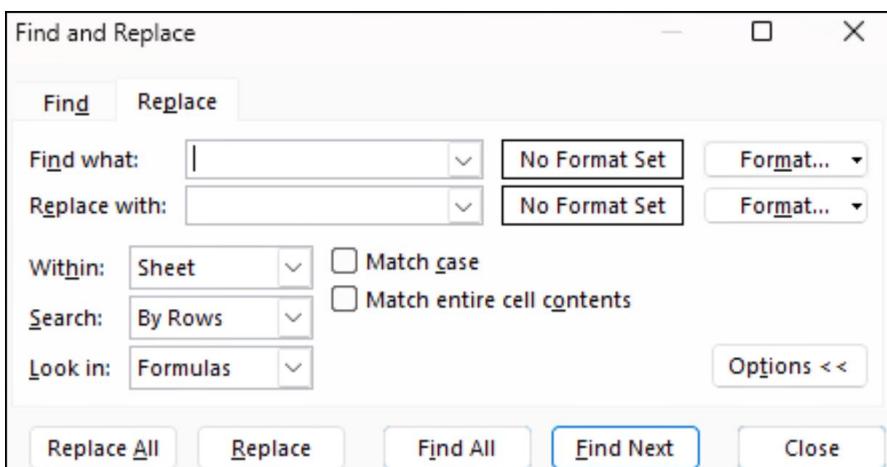
You may want to use **Replace** to check and verify that each replacement should be made. An alternative is to use the **Find** tab before using the replace function to search through the worksheet and verify that your search value and options have been set correctly. Once you are certain that your search value and options are correct, you can proceed with using **Replace All**. If you replace a cell value by mistake, you can use the **Undo** command.

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Import Data from External Text Files

Most businesses use various specialized computer applications for their operations. The challenge has always been to move data from one application to another without having to manually re-enter the data. Almost all these applications can **export** data into files, and the text data file format is the most used.

Excel uses the Office Open XML format to store its own workbook data. However, many other applications do not support this format. Fortunately, Excel has built-in capabilities for importing and exporting data conveniently.

In Excel, on the Data tab, the commands in the Get & Transform group comprise a powerful set of tools that make it possible to connect to data from various sources, "clean up" or transform the data into the form you need and **import** it into Excel.

On the **Data** tab > **Get & Transform Data** group > select one of the options to import external data:
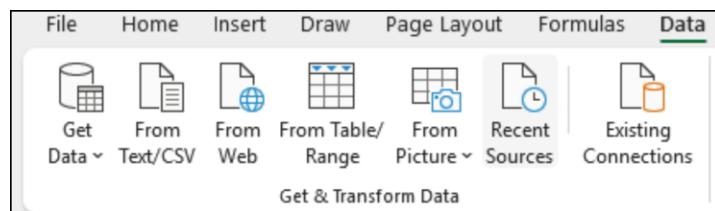

- **From Text/CSV** – Imports data from a file containing numeric and alphabetic data in text format, in which the values are separated from each other by a tab, space, comma, or some other character

- **From Web** – Imports data that is displayed in specific locations of a Web page

- **From Table/Range** – Imports data from a selected Excel table or named range

- **From Picture** – Imports a picture from a file or from the Clipboard

- **Recent Sources** – Imports data from a recently-opened source file

- **Existing Connections** – Imports data using an existing data connection that was previously created for this workbook, this computer, or your network.

- The **Get Data** drop-down menu displays further options for importing data:

  - **From File** – Imports data from a selected Workbook, Text/CSV, XML, or JSON file. You can also navigate to a folder or SharePoint location to specify the file you want to import

  - **From Database** – Imports data from a selected database file. You can select from among SQL Server, Microsoft Access, Analysis Services, SQL Server Analysis Services, Oracle, IBM DB2, MySQL, PostgreSQL, Sybase, Teradata, and SAP HANA database types

  - **From Azure** – Imports data from a file stored in Microsoft Azure. Azure is a cloud-computing service created by Microsoft in which developers can build, test, install, and manage applications and services through Microsoft data centers. You can select files from SQL Database, SQL Data Warehouse, HDInsight, Blob Storage, Table Storage, and Data Lake Store services

- **From Fabric & Power Platform** - Imports data directly from sources such as Power BI datasets, Dataverse, and Fabric warehouses

- **From Online Services** – Imports data from files stored in various online services such as SharePoint, Microsoft Exchange, Dynamics 365, Facebook, Salesforce Objects, and Salesforce Reports

- **From Other Sources** – Imports data from files that come from various sources, some of which you can access directly using the options in the Get & Transform Data group. You can select data from sources such as a Table/Range, the Web, Microsoft Query, SharePoint List, OData Feed, Hadoop File, Active Directory, Microsoft Exchange, ODBC, OLEDB, and Blank Query
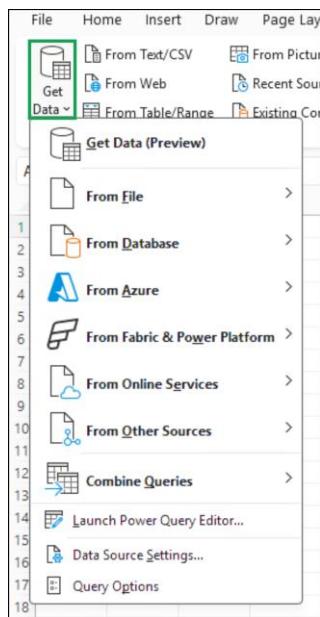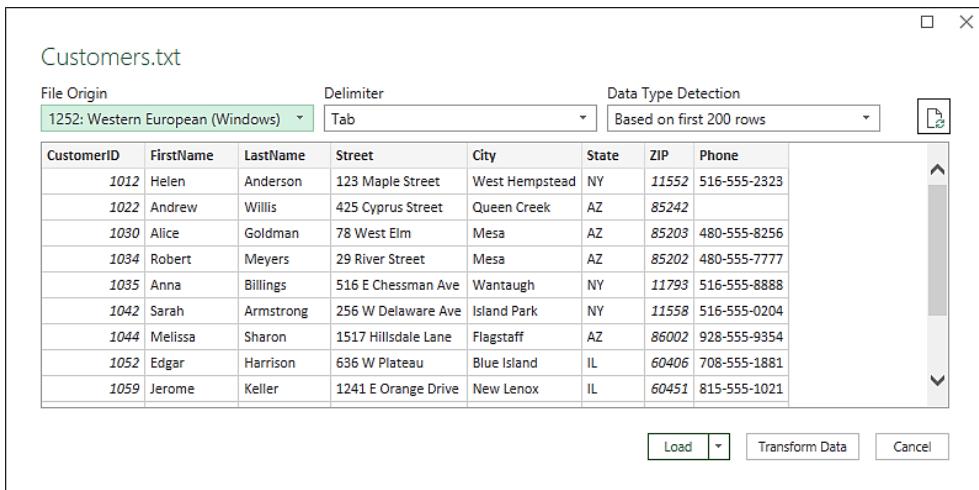

To import a Text/CSV file:

- **Data** tab > **Get & Transform Data** group > **From Text/CSV** to open the Import Data dialog box > Browse and select the file > **Import**
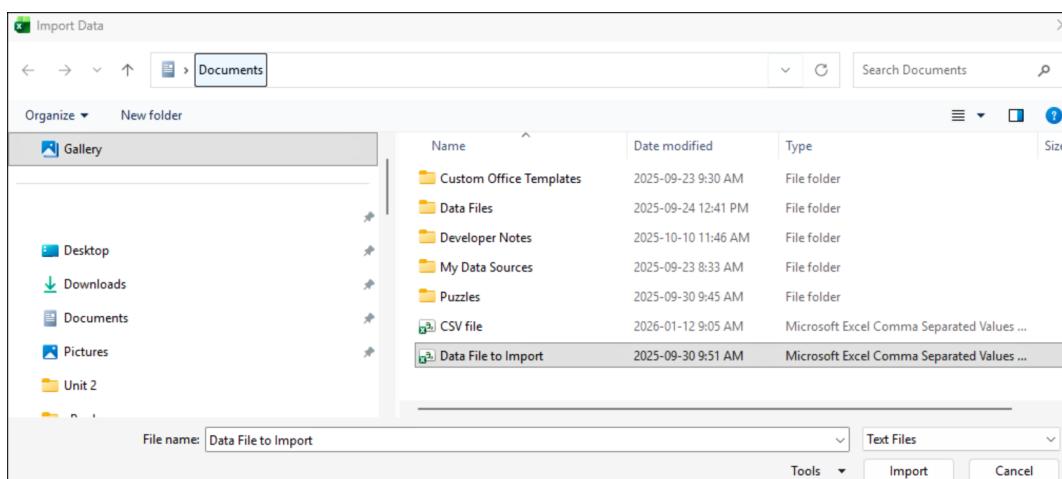
- The contents of the file will display in a preview window illustrating the overall structure of the data. Select **Load** or **Transform Data** to import it into the workbook

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The table below describes the options in the preview window.

| Field	Description
File Origin	Select an option to specify the character set used to create the data in the text file. In most cases, you can accept the default setting.
Delimiter	Select an option to specify the character used to separate each field of text in the text file. Excel attempts to detect each instance of the delimiter in the text file to determine the value that should appear in each column in the worksheet. Any printable character can be used as a delimiter. You can select from among the Colon, Comma, Equals sign, Semicolon, Space, Tab, Custom, and Fixed Width delimiters. Select Custom if you need to specify a delimiter that is not part of the default list, such as the quote or double-quote character. Select Fixed Width if the values are vertically aligned in columns (possibly with no gaps between the columns), and blank spaces are used where necessary to align the data.
Data Type Detection	Select an option to specify the number of rows in the text file that Excel uses to interpret the type of data contained in the text file.
(Preview)	Select this button to preview the imported data based on options you select in the File Origin, Delimiter, and Data Type Detection drop-down lists. You should always preview the data to ensure it will display correctly in Excel.
Load	Select this button to load the imported data. You can select the arrow on the right side of the Load button and select the Load To command to specify how to view the imported data in your workbook, such as whether you want to place the data in the existing worksheet or in a new worksheet, and which worksheet cell to use as the starting point for the imported data. Selecting the Load command in the drop-down menu is the same as selecting the Load button, which will import the data as a table into a new worksheet starting in cell A1.
Transform Data (Edit)	Select this button to display the Query Editor, in which you can determine how the data will appear in the worksheet. For example, you can transpose the columns and rows, filter the data, sort the data, and so on. Depending on your version of Excel, this button may appear as "Edit".

When you have successfully imported the data, the Queries & Connections task pane opens. Within this task pane you can observe how many rows of data were imported.

Microsoft 365 (Web) and Online

Import data:

- On the **Data** tab > **Get & Transform Data** group > select one of the options to import external data:

  - From Table/Range

  - From Picture

  - Data from Power BI
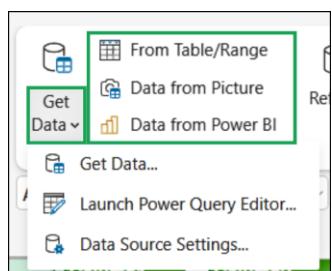
- Select the **Get Data** drop-down arrow > **Get Data** > in the Power Query dialog box, select **New** and choose from multiple options

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Import Data from External CSV Files

Online App Alert 🖼	Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

A CSV file is where the data is separated by commas, and it doesn't contain any specialized formatting. Sometimes you will need to import CSV data into an Excel file to transform the data or to analyze it.

A **CSV (Comma Separated Values)** file contains data in text form, just like a text file with the filename extension of .TXT. But because CSV files must follow a set of rules in how the data is laid out inside the file, Excel is able to open CSV files directly. It almost treats CSV files like Excel workbooks.

The example illustrates how Windows displays this type of file in File Explorer.

Notice that the icon to the left of the Global Swimsuits file name is similar to the icons of Excel workbooks, but it is not the same. Also, the file type is Microsoft Excel Comma Separated Values File.

In the example below, the file is opened in Notepad:

A CSV file is a text file with commas used as a delimiter to separate the values between columns. The numbers have commas inside, so the double-quote character (") is used as the text qualifier around each number.

When you open a CSV file in Excel, Excel displays the values in columnar format using the comma delimiter to determine which values appear in which columns. Excel also displays a notification below the Ribbon indicating that Excel features might be lost if you save the workbook in the CSV file format instead of saving it as an Excel workbook.
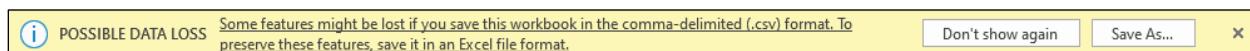
To import a CSV file into a workbook:

1. **Data** tab > **Get & Transform Data** group > **From Text/CSV**.

2. Browse your computer, select the file you want to import and > **Import**.
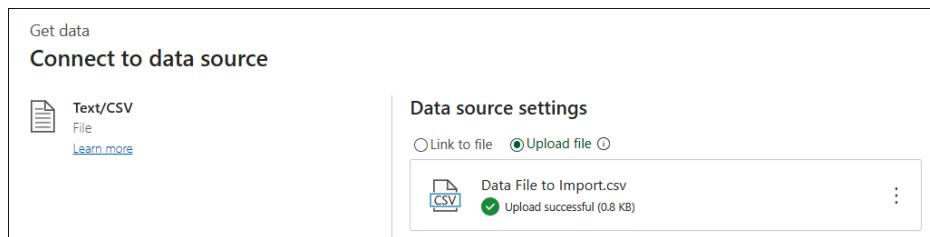
Microsoft 365 (Web) and Online

To import a CSV file into a workbook:

1. **Data** tab > **Get & Transform Data** group > **Get Data** drop-down menu > **Get Data...** > **New** > **Text/CSV**.

   - **Link to file** – Browse OneDrive for the desired file > **Next**

   - **Upload file** - Browse your computer, select the file you want to import > **Open** > **Next**

2. Modify or transform your data in the Power Query dialog box before loading it into the file (options may be limited in the online app version).
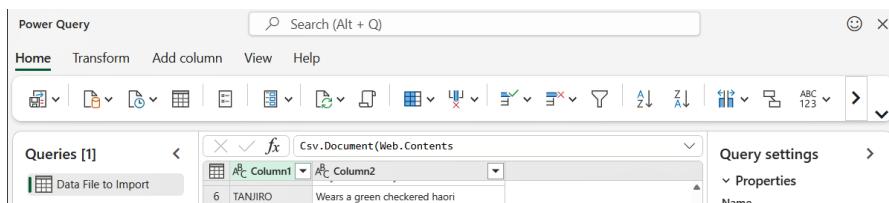
Import Data from Online Sources

The ability to import data from online sources into Excel is an essential skill for organizing, analyzing, and sharing information efficiently. Excel offers tools that allow users to connect to various data sources, such as web pages, and bring external data directly into their workbooks. This process streamlines data integration and ensures accuracy in analysis.

Web pages often contain structured data tables that can be imported directly into Excel using its Web connector feature.

Import data from a web page:

1. **Data** tab > **Get & Transform Data** group > **From Web**.

2. Enter the URL of the web page containing the data you wish to import > **OK** to initiate the connection.

   - Ensure the URL leads to a page with well-structured data tables for better results
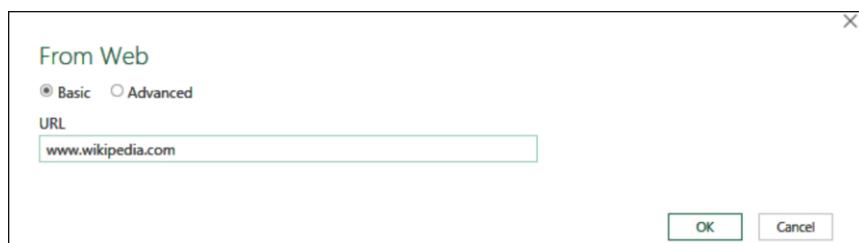
3. If it is the first time you are accessing content from the web, in the Access Web content window, select which user profile to access the website with. Choose from Anonymous, Windows, Basic, Web API or Organizational account. Input your credentials and select **Connect**.

4. In the Navigator pane, review the list of tables detected on the web page under Display Options. Select a table and preview its data in the Table View tab or Web View tab.
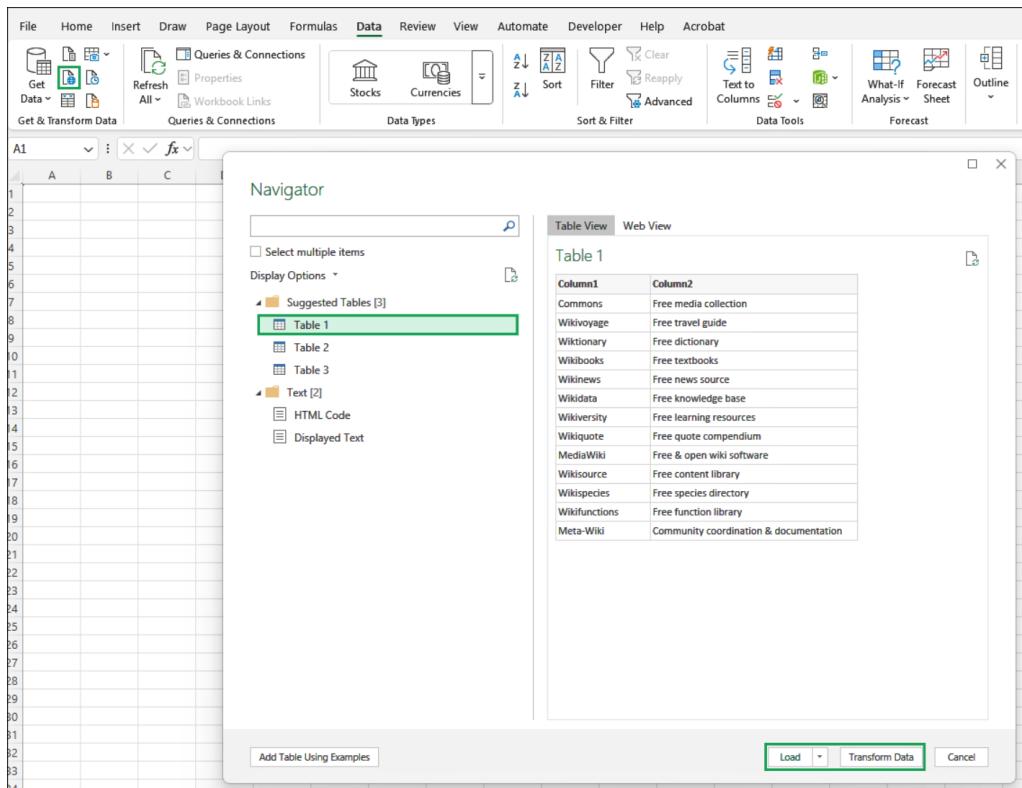
5. On the **Load** drop-down menu, choose **Load to…** open the Import data dialog box. Choose which format and location to import the table to.
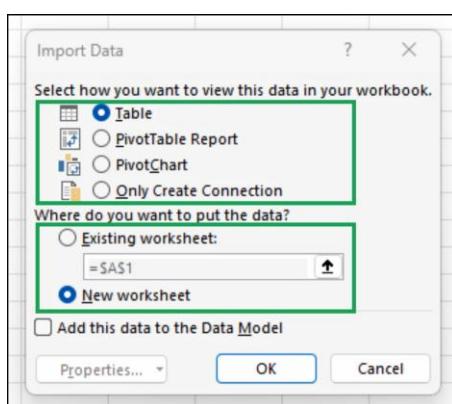
6. Or select **Transform Data** to clean and shape the data with the **Power Query Editor** before importing it into the workbook.

- **Home tab** – Manage loading, refreshing, and query properties; choose, remove, or reorder columns and rows; merge or append queries; group or replace values, create a new query or manage connections and credentials

- **Transform tab** – Modify, transpose or extract data values and data types; split or group columns; and reshape table structures

- **Add Column tab** – Create new calculated columns based on transformations or formulas

- **View tab** – Control panes and formula bar visibility, and enable column profiling and quality checks

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Export Excel Data as CSV

Online App Alert 🖥️ Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

Excel provides an easy-to-use method of exporting data to other file formats, including the CSV format.

To save a workbook as a .csv file:

- **File** tab > **Save As** > Save as type drop-down menu > choose **CSV UTF-8 (Comma delimited) (*.csv)** > **Save**

Note that CSV files contain only text data. This means that when saving a workbook in the CSV format, Excel will discard anything that is not pure data. For instance, the result of a formula illustrated in the cell would be exported, but not the formula itself. Also, charts and other graphics would be deleted. Therefore, your CSV workbook should not use Excel features such as formulas, cell formatting, charts, and multiple worksheets.

If you try to save a workbook that uses these features as a CSV file, Excel will display a notification below the Ribbon to remind you that some features may be lost.

Microsoft 365 (Web) and Online

To export a workbook as a .csv file:

- **File** tab > **Export** > **Download as CSV UTF-8** or **Download as a CSV**
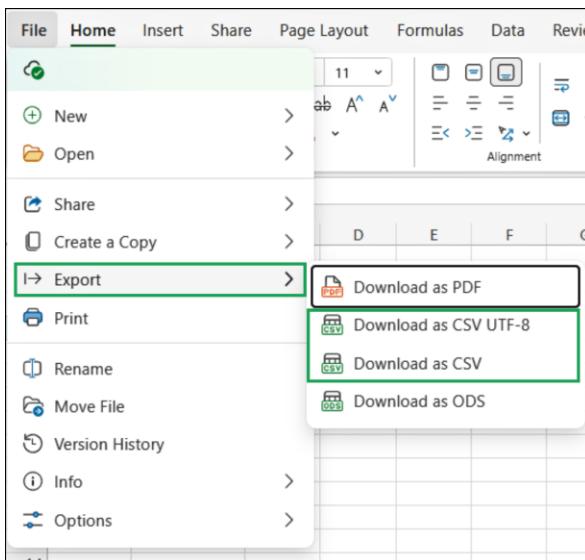
CSV UTF-8 (Comma delimited) - Also a plain text file with values separated by commas. Uses UTF-8 encoding, which is a universal standard. Supports all characters, such as accented letters, non-Latin scripts (Chinese, Hindi, Arabic, Cyrillic, etc.), and emojis.

CSV (Comma Separated Values) - A plain text file where values are separated by commas. Works fine for basic English letters and numbers., but it can break when you have special characters (é, ñ, ü, Chinese, Arabic, emojis, etc.) → they may show as **?** or weird symbols.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Insert Hyperlinks

A **hyperlink** is a clickable element in an electronic document that you can use to jump to or open another document. Hyperlinks were introduced with the internet to allow users to navigate from one web page to another whether the next web page was on the same website or another.

Over time, hyperlinks have evolved to link to any type of document in any location, not just on the internet. A hyperlink in an Excel workbook can be used to:

- Launch web pages from the Internet or the internal organizational intranet
- Open a workbook or document located on a computer (including your own) within your home or corporate network, or an online storage service such as OneDrive, SharePoint, or Dropbox
- Jump to another cell or named range in the same workbook
- Create a new workbook
- Launch the default email program (for example, Outlook), and create an email with a specific set of recipients and, optionally, a subject line

To insert a hyperlink, use one of the following methods:

- **Insert** tab > **Links** group > **Link**
- Right-click on a cell > **Link** > **Insert Link…**
- Select **CTRL+K**

The Insert Hyperlink dialog box allows you to insert one of four types of hyperlinks:

- **Existing File or Web Page** – Used to link to workbooks, files or documents stored on a local or networked hard drive, or websites on the intranet or the Internet.
- **Place in This Document** – Used to link to a cell or named range of cells in the current workbook either in the current worksheet or another worksheet.
- **Create New Document** – Used to create a new workbook using the name that you specify in the Name of new document text box and located in the folder specified under Full path.
- **E-mail Address** – Used to launch the email program (for example, Outlook) installed on the local computer and create a new email message using the email address and subject line specified in this dialog box. A mailto URL is a special type of URL used by email systems.
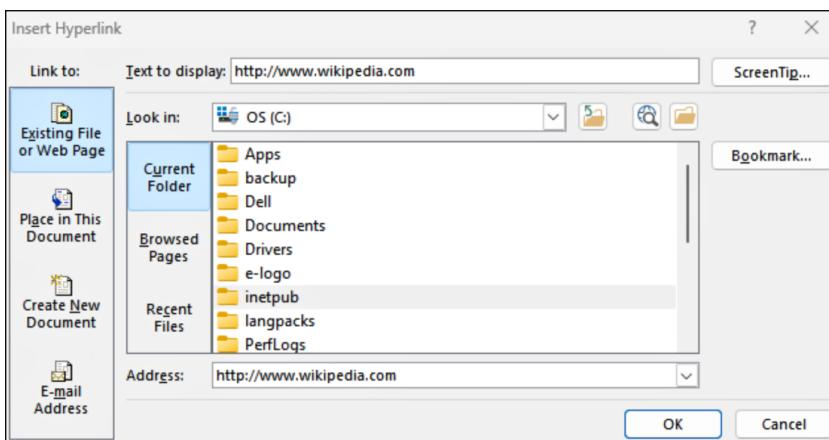
To quickly access recently used items in the dialog box:

- **Current Folder** – Search for other files in the folder currently in use

- **Browsed Pages** – Link to recently browsed pages. Before creating a hyperlink, you would likely have recently viewed a website. Instead of having to copy and paste the website information, possibly missing part of it, the information is already conveniently accessed under this option

- **Recent Files** – Files needed for a hyperlink would have likely been recently viewed

Modify and Delete Hyperlinks

If you move or rename a referenced document or range, you must change the hyperlink. You may also want to change the text displayed in the worksheet for the hyperlink or add a custom ScreenTip.
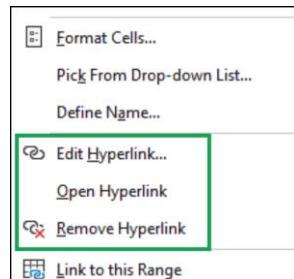
To modify a hyperlink in the worksheet, use one of the following methods:

- Right-click the hyperlink and then select **Edit Hyperlink**

- Move the cell pointer to the cell containing the link > **Insert** tab > **Links** group > **Link** to open the Edit Hyperlink dialog box. Make the necessary changes and select **OK**

Note: When you use the arrow keys on the keyboard to move the cell pointer from a nearby cell into a cell containing a hyperlink, the link is not activated. You can also select and hold **CTRL** while selecting the cell containing the hyperlink; or select and hold the left mouse button on the cell for a few seconds until the mouse pointer changes from a hand to a white cross, then release the mouse button and select **F2** to go into edit mode.

When you no longer need the hyperlink, you can remove the reference. The text displayed for the hyperlink remains in the cell.

To delete a hyperlink in the worksheet, use one of the following methods:

- Right-click the link and then select **Remove Hyperlink**
- Move the cell pointer to the cell containing the link > **Insert** tab > **Links** group > **Link** > **Remove Link**

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖   Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 2: Comments and Notes

Lesson Objectives

In this lesson, you will learn about Excel comments and notes. Comments are utilized to add a note or to explain a function. Comments are a great way to collaborate and share thoughts. Excel allows you to use a great deal of flexibility while editing, deleting and showing/hiding comments within worksheets. Upon completion of this lesson, you should be able to understand the following:

- ☐ Create Comments
- ☐ Move Among Comments
- ☐ Reply to Comments
- ☐ Resolve and Delete Comments
- ☐ Notes

Create Comments

Comments are like "sticky" notes on a hard-copy document. You typically use them so that several users who are sharing a workbook can mark-up the spreadsheet with their various comments. Excel automatically adds the current user's name at the top of the comment text box. The final reviewer can then act on each comment and follow up with the author, if necessary.

You can use comments for many reasons. For example, to explain data or formulas, or to add reminders and notes. You can insert comments directly into the cells they reference and display them only when you want to view them. You can reply to comments or delete comments that are no longer needed.

To insert a comment into a worksheet, select the cell to which you want to add a comment:

- **Review** tab > **Comments** group > **New Comment**. A comment box will open
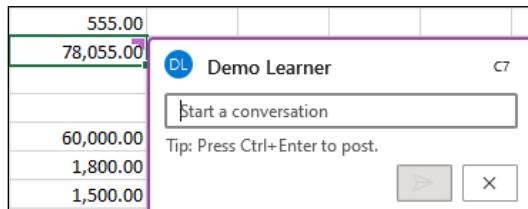
Notice that the comment box displays your name and the active cell (C7) in the title bar. Enter text in the ***Start a conversation*** (or @mention or comment*)* field and select the **Post** button in the bottom left corner of the comment box to create your comment.

Excel displays a purple marker in the top right corner of the commented cell to remind you that you have inserted a comment there. Otherwise, the comment would remain hidden until you position the mouse pointer over that cell.

To display comment(s) continuously:

- **Review** tab > **Comments** group > **Show Comments** to open the Comments task pane. Close the Comments task pane or select **Show Comments** again to hide the comments
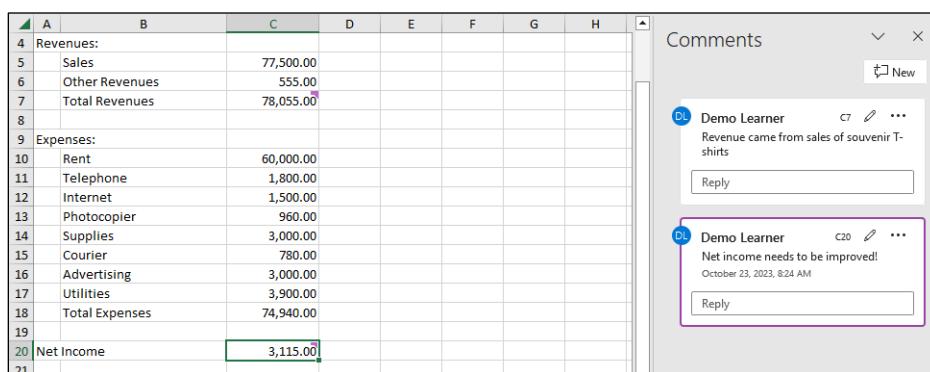
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Move Among Comments

When the Comments task pane is open, you can move from one comment to the next. When the Comments task pane is closed, you can move from comment to comment by selecting the **Review** tab > **Comments** group > **Previous Comment** and **Next Comment** button.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Reply to Comments

To reply to a comment, select the commented cell in the worksheet (or open the Comments task pane and select the comment). Enter your comment in the **Reply** field that appears below the original comment, and then select the **Post** button.
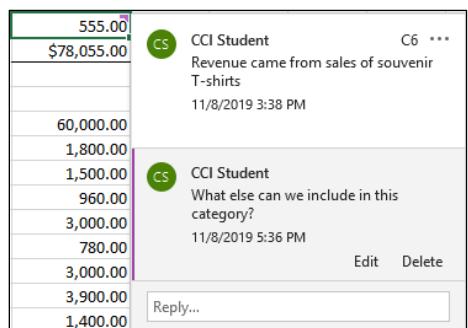
Notice the Edit and Delete options that appear in the lower right portion of the reply. Once you've selected the **Post** button to complete the comment, you can select the **Edit** option to change your reply or select the **Delete** option to delete it.

By replying to comments in this manner, you are creating a "conversation thread," which makes it straightforward to follow the flow of comments.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Resolve and Delete Comments

If a comment thread has been completed, then you can mark it as Resolved by selecting the ellipsis in the upper left corner and choosing **Resolve**. This means that the comment is still viewable, but no further additions can be added to the thread unless it is reopened.

To remove a comment or an entire comment thread, select the comment you want to delete then use one of the following methods:
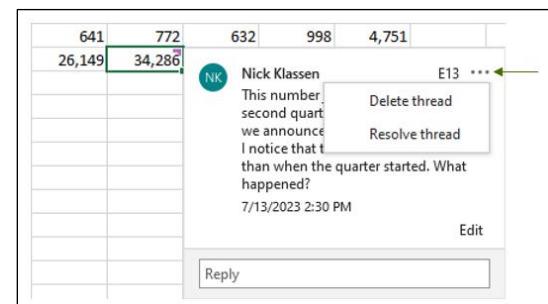
- **Review** tab > **Comments** group > **Delete**
- You can also remove comments or individual "reply" comments in a comment thread by selecting the ellipses and then selecting the **Delete** option

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Notes

Notes are intended for making annotations or reminders about data. They are not threaded like Comments and do not have a Reply field. They are primarily used for adding context or explanations to specific cells without the need for a discussion thread. A cell which includes a note will have a visible red triangle in the corner of the cell.
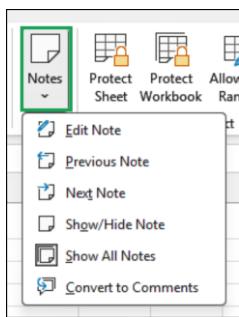
Add a note with one of the following methods:

- Right-click on the cell where you want to add a note > **New Note** > enter the text > move the cursor outside the note box to save it

- Select the cell you want to add a note to > **Review** tab > **Notes** group > **Notes** > **New Note**
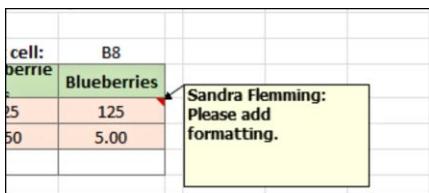
To view, modify or delete a note:

- Hover over the red triangle and select in the note to edit it

- **Review** tab > **Notes** group > **Notes** drop-down arrow > select a command for your purpose

Notes can be converted into comments using the **Review** tab > **Notes** group > **Notes** drop-down arrow > **Convert to Comments**.

Choosing between comments and notes:

- Use Comments when you need to have a discussion or seek feedback from others within the worksheet

- Use Notes for personal annotations or to provide additional information about the data that doesn't require a response

Comparing Comments and Notes:

Feature	Comments	Notes
Background	White background	Yellow background
Reply Capability	Allows replies in a threaded conversation	No reply capability
Keyboard Commands	**Ctrl+Enter** posts the comment	**ESC** exits the note; **Ctrl+Enter** adds a new line

Display	All comments appear in a pane alongside the data	Notes appear scattered across cells and are not consolidated into a pane
Text and Image Formatting	Does not support formatting or images	Supports rich text formatting and images
Resizing	Cannot resize comments	Notes can be resized
Name Customization	Cannot remove or change the author name	Allows removing or editing the author name

Learn Task 💡   **Access the Learner Workbook to complete the Learn Task for this skill.**

Assessments 📖   **Access the Learner Workbook to complete the Practice Exercise and Practice Questions.**

Lesson 3: Graphics

Lesson Objectives

In this lesson, you will learn about graphics in Excel. Upon completion of this lesson, you should be able to understand the following:

☐   Insert Illustrations

☐   Insert Symbols and Special Characters

☐   Insert Image

☐   Insert SmartArt

☐   Selection Pane

☐   Layer Objects

Insert Illustrations

Images can visually enhance data and are useful for illustrating examples and reinforcing concepts. Inserting an image in a worksheet is similar to inserting images in Word documents. When you insert an illustration in Excel, you can move it to any location and resize it as needed.
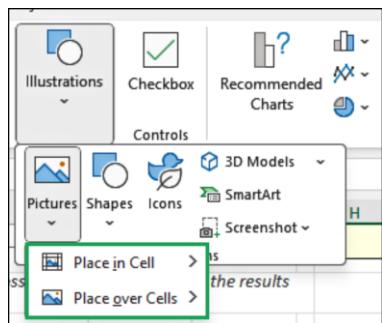
To insert a picture:

- **Insert** tab > **Illustrations** group > **Pictures** drop-down arrow > choose between **Place in Cell** or **Place over Cells** > select a location to browse for images

This Device	Navigates to the location where the picture file is stored on the computing device or a connected network.
Stock Images	Opens a window that displays a variety of stock or common types of images that can be inserted into the workbook.
Online Pictures	Opens a window to display various pictures that can obtained using the Creative Commons License from Microsoft's website. You can choose to insert a picture from one of the categories displayed in the window, or enter search criteria.
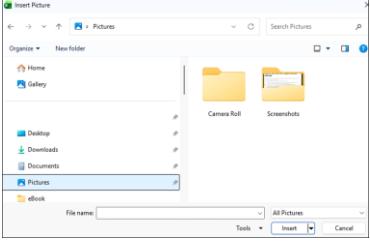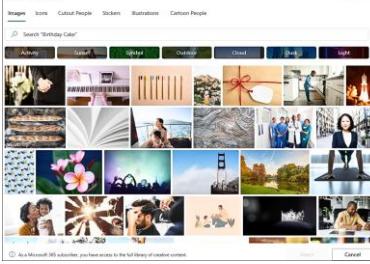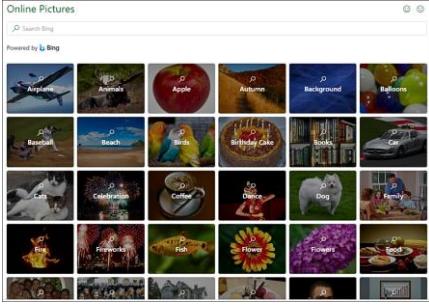
- When the picture has been placed in the desired location, go to the **Picture Format** tab to modify the style, size and formatting

- The picture can be placed in or over cells at any point by selecting the icon next to the image
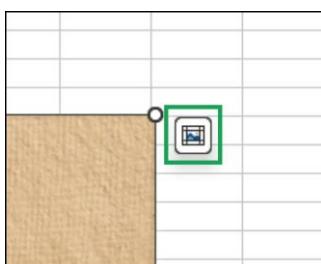
Instead of choosing to insert a picture, you could choose to insert shapes, icons, 3D Models, SmartArt or a Screenshot.

Insert Symbols and Special Characters

When you need a special character in a document, Word provides a quick method to find and insert the character. For example, if you need to insert a copyright © symbol or another currency symbol, Word provides a feature that contains many symbols that can be inserted in the worksheet.

To insert a special character, on the **Insert** tab > **Symbols** group > **Symbol**.
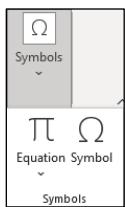
Select **Symbols** to display the Symbols tab of the Symbol dialog box.
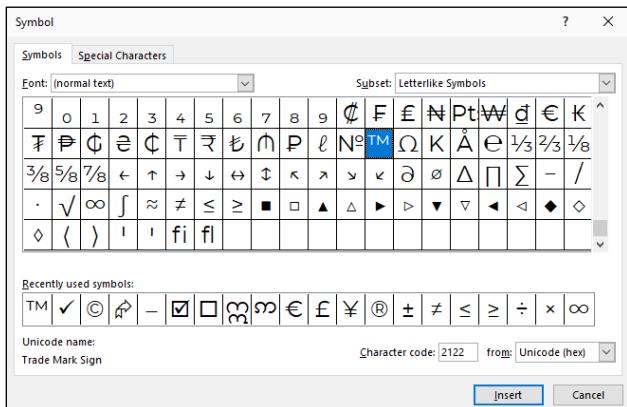
A grid of **symbols** then appears based on the font that is active. You can select the drop-down arrow from the Font field to choose another font such as Wingdings that contains different sets of symbols.

To add a symbol into the document, either scroll through the grid or use the recently used symbols list to find the symbol you want. Select the character and then **Insert**. You can also double-click the character to insert it. You can then search for other symbols or close this dialog box to return to the worksheet.

For special characters commonly used with text characters, select the **Special Characters** tab to display a list.
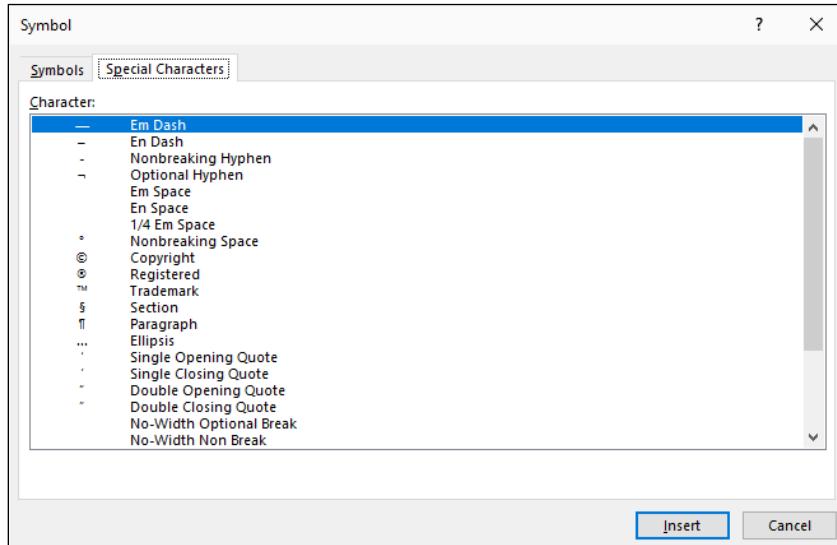
As with inserting symbols, select the special character you want and then **Insert**. Notice the shortcut keys. You can enter these special key combinations from the keyboard to automatically insert special characters into the document without using the Symbol dialog box.

Learn Task   Access the Learner Workbook to complete the Learn Task for this skill.

Insert Image

The IMAGE function inserts images into cells. The images become a part of the Excel document, which means you are able to move and resize cells, sort and even filter based on the images. Use this function to visually enhance data tables.

Syntax: **=IMAGE(source, [alt_text], [sizing], [height], [width])**

Example: =IMAGE("https://images.freeimages.com/clg/images/41/411718/cartoon-penguin-clip-art_f.jpg","Penguin")
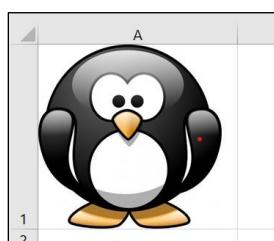
The IMAGE function takes the following arguments:

Field	Description
source	Required: The URL path, using an "https" protocol, of the image file. Supported file formats include BMP, JPG/JPEG, GIF, TIFF, PNG, ICO, and also WEBP (WEBP is unsupported on Web and Android).
alt_text	Optional: Alternative text that describes the image for accessibility.
sizing	Optional: Specifies the image dimensions. There are several acceptable values: 0 Fit the image in the cell and maintain its aspect ratio. 1 Fill the cell with the image and ignore its aspect ratio. 2 Maintain the original image size, which may exceed the cell boundary. 3 Customize the image size by using the height and width arguments.
height	Optional: The custom height of the image in pixels.
width	Optional: The custom width of the image in pixels.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Insert SmartArt

Desktop Only Alert ✏️   The following feature is exclusively available in the desktop version.

SmartArt allows you to create and customize diagrams to convey information with graphics instead of just text. Depending on how you want to portray the information, you can use the SmartArt feature to create a diagram such as an organization chart or to illustrate a list of procedures. A variety of types and styles of diagrams are available. You can also create diagrams manually using individual shapes.

 Insert a SmartArt object:

*   **Insert** tab > **Illustrations** group > **SmartArt** to open the Choose a SmartArt Graphic dialog box
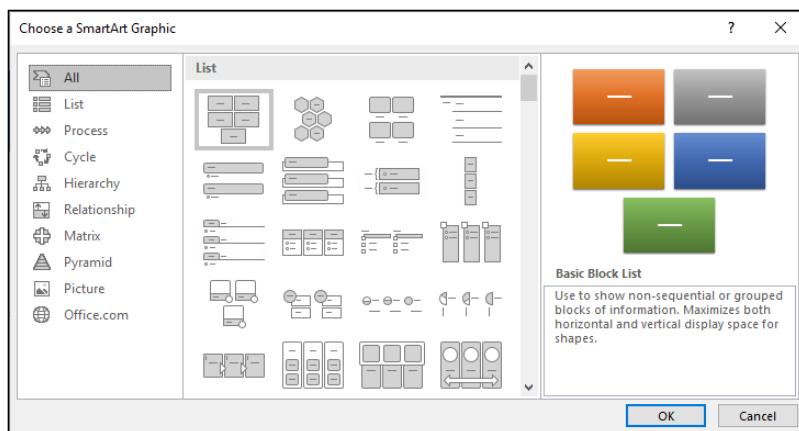
Select a category from the panel at the left if you want a specific type of diagram. View the table for a detailed description of each category. Otherwise, you can scroll through **All** graphics under **List** in the middle pane to select one of the SmartArt Graphic layouts from the gallery.

You will notice that some categories overlap or provide features with multiple components, so make sure to explore each option to notice which is right for your needs. On the very right side of the Graphic Dialog box, you will observe a preview of the selected SmartArt Graphic, its name, and a suggestion of how to use that specific graphic. Select **OK** to insert it into the document.

Category	Suggested Use	Options	Example
⊞ List	Use to illustrate non-sequential, sequential, grouped lists or blocks of information. Depending on the SmartArt List Graphic chosen, you can organize large amounts of data effectively, into categories,subcategories and more.		**Horizontal Bullet List** Use to show non-sequential or grouped lists of information. Works well with large amounts of text. All text has the same level of emphasis, and direction is not implied.
◀▶ Process	Use to illustrate a progression or sequential steps in a task, process, or workflow. Can be used to illustrate a series of events or a timeline information. Some of these processes display related or contrasting concepts.		**Upward Arrow** Use to show a progression or steps that trend upward in a task, process, or workflow. Each of the first five lines of Level 1 text corresponds to a point on the arrow. Works best with minimal text. Unused text does not appear, but remains available if you switch layouts.
⟳ Cycle	Use to represent a continuing sequence of stages, tasks, or events in a circular flow. Also use the SmartArt Cycle Graphic to illustrate the relationship to a central idea in a cycle or cyclic progression.		**Continuous Cycle** Use to represent a continuing sequence of stages, tasks, or events in a circular flow. Emphasizes the connection between all components. Works best with Level 1 text only.
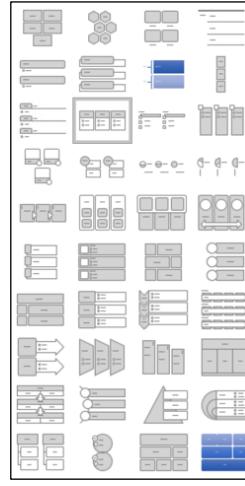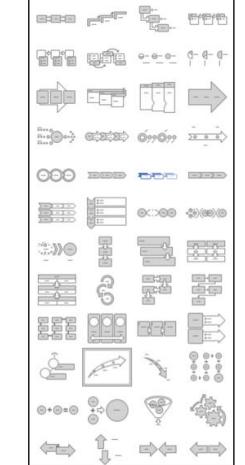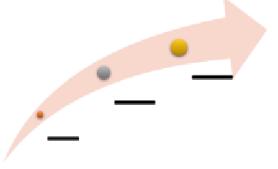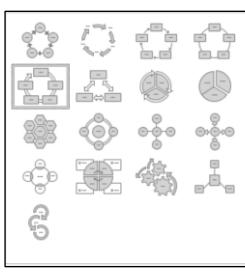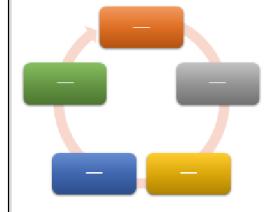
Category	Suggested Use	Options	Example
⊹ Hierarchy	Use this graph to illustrate the hierarchical relationships which can progress from top to bottom, side to side or grouped hierarchically. You may also use this Hierarchy when needed to report relationships in an organization or when making decision trees.		**Name and Title Organization Chart** Use to show hierarchical information or reporting relationships in an organization. To enter text in the title box, type directly in the smaller rectangular shape. The assistant shape and Org Chart hanging layouts are available with this layout.
⊞ Relationship	Use to compare or illustrate relationships between two or more ideas, illustrate the relationship to or from a central idea or illustrate contrasting or similar ideas. You may also use this to illustrate grouped or related information.		**Interconnected Rings** Use to show overlapping or interconnected ideas or concepts. The first seven lines of Level 1 text correspond with a circle. Unused text does not appear, but remains available if you switch layouts.
⊕ Matrix	Use to illustrate the dynamic relationship of components to a whole in quadrants. There may be an emphasis on how these pieces work together to form the whole.		**Basic Matrix** Use to show the relationship of components to a whole in quadrants. The first four lines of Level 1 text appear in the quadrants. Unused text does not appear, but remains available if you switch layouts.
⊿ Pyramid	Use to illustrate the proportional, hierarchical and/or interconnected relationships with the largest component on the top and narrowing down or vice versa.		**Inverted Pyramid** Use to show proportional, interconnected, or hierarchical relationships with the largest component on the top and narrowing down. Level 1 text appears in the pyramid segments and Level 2 text appears in shapes alongside each segment.
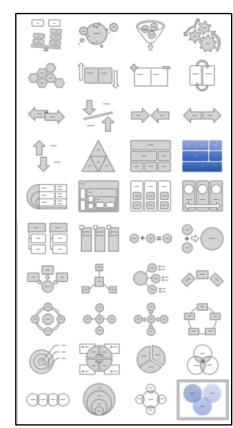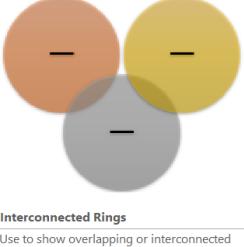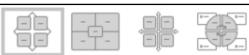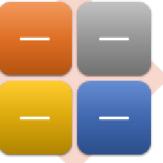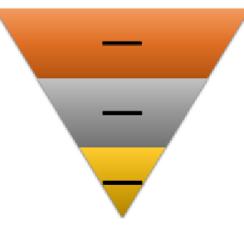
Category	Suggested Use	Options	Example
Picture	Use to illustrate or organize a group of pictures. You could use this option to highlight important parts in a picture, connect pictures together or add captions and text to pictures.		**Spiral Picture** Use to show a series of up to five pictures with corresponding Level 1 captions that spiral in to the center.
Office.com	For additional options.		**Converging Text** Use to show multiple steps or parts that merge into a whole. Limited to one Level 1 shape that contains text and a maximum of five Level 2 shapes.
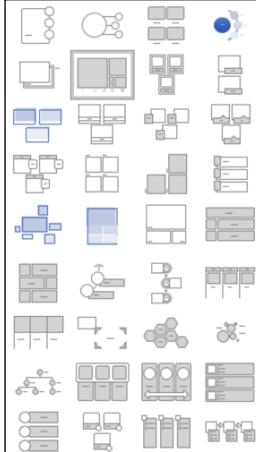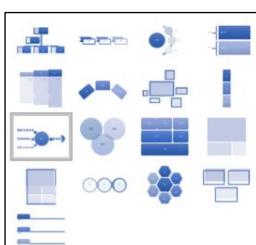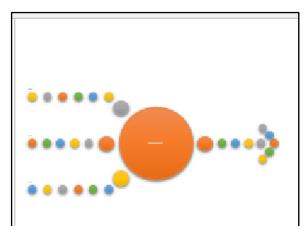
Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Selection Pane

Desktop Only Alert ✏ | The following feature is exclusively available in the desktop version.

When you have multiple objects or graphics in your document, the Selection Pane is a convenient way to navigate between each object without having to scroll through your entire document to find them.

To display the Selection Pane:

- **Home** tab > **Editing** group > **Find & Select** > **Selection Pane...** The pane lists any objects that exist in the current worksheet on that current page. This is true even if objects have been grouped

With the Selection pane open, you can move to an object within a group by selecting it in the list. If it isn't the one you want to change, you can select another object to have Excel select it on the screen for you. To help identify which object is being selected, you can double-click the name of the object and enter text to make it more descriptive. This can also be done with the Group names.
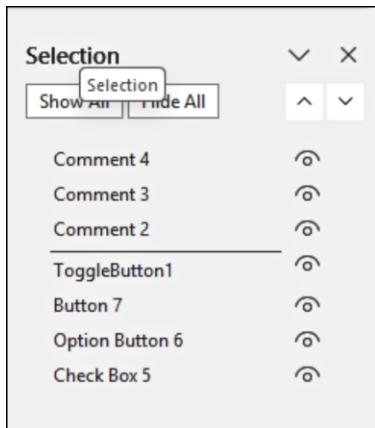
Layer Objects

You can arrange or *layer objects* to appear as if they are layered over top each other. You can add effects to the shapes to create a shadow or background type of effect. The two most common options to layer graphics objects are Bring Forward and Send Backward, both in the Arrange group. Make sure your object is a floating graphic before trying to layer objects.
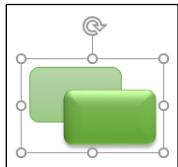
To bring an object forward, select the object and then on the **Shape Format** tab > **Arrange** group > **Bring Forward** drop-down arrow.
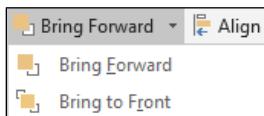
Bring Forward	Bring the selected object forward by one layer.
Bring to Front	Bring the selected object directly to the front of all objects.

Below is an example of bringing the yellow star to the front, so it is not being blocked by other shapes. The star is first selected, then Bring to Front is selected.
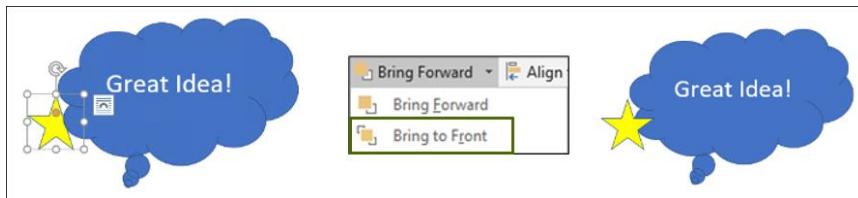
To send an object backward, select the object and then on the **Shape Format** tab > **Arrange** group > **Send Backward** drop-down arrow.
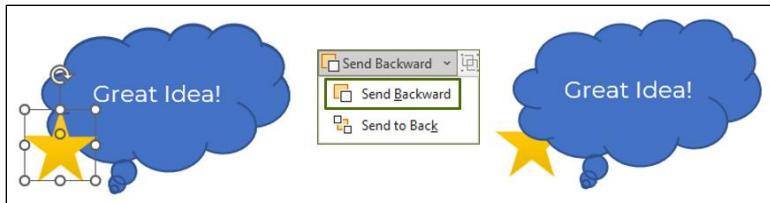
Send Backward	Send the selected object backward by one layer.
Send to Back	Send the selected object directly to the back of all objects.

Below is an example of sending the scroll shape to the back, so it is not blocking the arrow shape. The scroll is first selected, then Send to Back is selected.
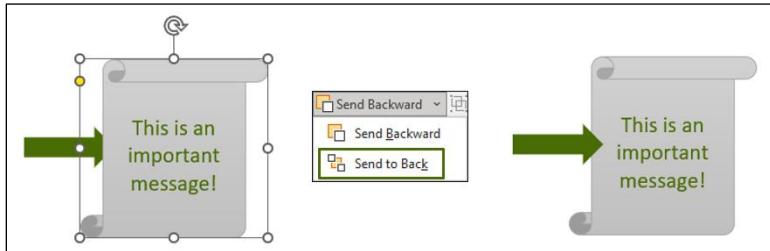
Note: Other objects such as pictures can be layered by using their corresponding Format tab. Select the object you want to layer and select the corresponding tab to modify the arrangement (using the Arrange group).

Objects will automatically float over the top of cells. If those cells have content already in them, they will be covered. If you want the content visible, you will need to move your object to another location. If you want text on top of the object, you will need to insert a text box.

Unit 4 Key Terms

Term	Definition
Comma Separated Value (CSV)	A comma-separated value (CSV) file allows data to be saved in a format that can be used with almost any spreadsheet program.
Comments	A way to add a note or explanation so that other users of the workbook can collaborate.
Export	When you export data, it is the removal and conversion of raw data from their existing format into a new pre-selected format that is required by the new application.
Hyperlink	A hyperlink is a shortcut to another location in the current workbook, opens a stored document, or opens a page on the internet.
Import	When you import, you bring in information from an outside source into Excel.
Layer Objects	Arrange objects to create a layer effect.
SmartArt	Create and modify specific types of diagrams such as organization charts, a matrix, or list processes.
Special Characters	Characters that do not fall under numeric or alphabetic characters. They include symbols like punctuation marks and characters that have a special functionality within Excel, such as the full colon (:) and double quotes (").
Symbols	Signs, characters, and alt codes that represent important information or enhance the representation of the data.

Unit 5: Advanced Excel Features

Unit Objectives

In this unit, you will create and effectively use various chart types, apply different chart elements and generate sparklines to visualize data in Excel. Upon successful completion of this unit, you should understand the following:

- ☐ Charts
- ☐ Chart Element Types
- ☐ Sparklines

Lesson 1: Charts

Lesson Objectives

In this lesson, you will learn about Excel charts. Charts are graphical representations of data that can be used to help communicate information effectively by visually displaying comparisons and trends. Upon completion of this lesson, you should be able to understand the following:

- ☐ Create Basic Chart
- ☐ Change Chart Types
- ☐ Move and Resize Charts
- ☐ Modify Chart Design
- ☐ Chart Layouts
- ☐ Add Alternative Text
- ☐ Create Chart Sheets
- ☐ Print Charts

Create Basic Chart

The chart function in Excel allows users to create a visual representation of their spreadsheet data. Although the process of creating the charts is somewhat automated, it allows the user to customize their chart as much or as little as desired.

A **chart** is a pictorial representation of the data you enter into a worksheet. Often, a chart can be a more descriptive way of representing your data. As a result, those viewing the information provided by your spreadsheets may find it more straightforward to examine and understand a chart rather than many rows and columns of numbers. A pictorial representation of the data will often help identify trends or patterns in the data.

The example displays a sample chart and a few commonly included chart elements.
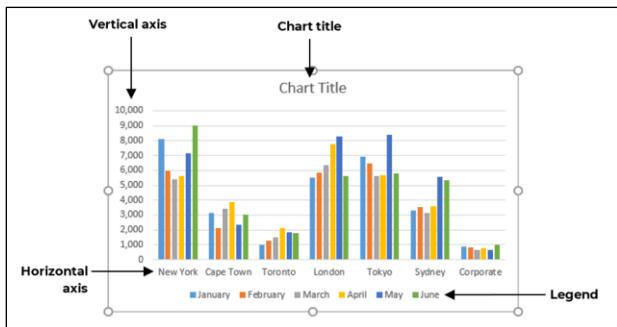
The chart's horizontal axis (also known as the **X axis**) is located at the bottom of the chart and the vertical axis (also known as the **Y axis**) is located at the left or right side of the chart. Labels can be applied to either or both axes. Excel will automatically include a **legend** with the chart to explain the meaning of each line in a line chart or column in a column chart.

Although you can remove the legend, it may be helpful to others to retain it if your chart has more than one data series. A data **series** is a row or column of numbers that are plotted on a chart. In the example the vertical axis displays the number, the horizontal axis displays the city, and the legend displays which color represents which month.

The charting feature is an extremely professional presentation tool and can incorporate fonts, patterns, symbols, graphics, and 3-D (three-dimensional) effects.
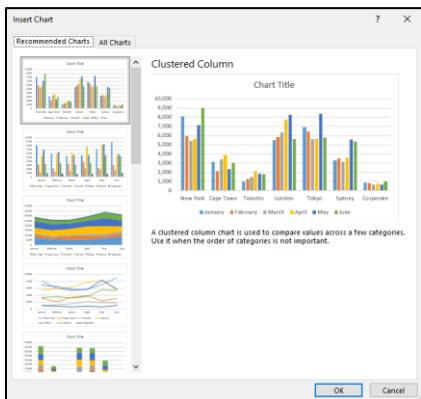
To insert a chart:

- Select the cell range, then in the **Charts** group > **Insert** tab > **Recommended Charts** tab to open the Insert Chart dialog box. A set of charts that are commonly used for the data you have selected is displayed

- If this set of charts does not meet your needs, the full set of chart types and layouts are available in the **All Charts** tab.
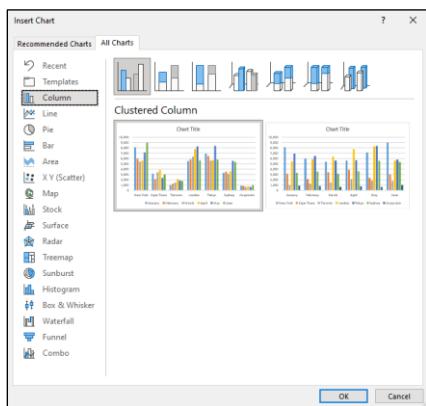
You can select the type of chart you want on the left side of the dialog box and select from among the different forms of the chart across the top of the dialog box. Available variations of the currently selected form appear in the preview area.

Alternatively, chart types can be selected directly from the **Insert** tab > **Charts** group on the Ribbon.
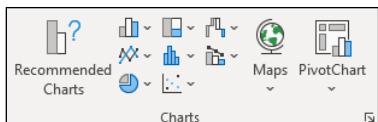
Once the chart appears in the worksheet, the Chart Design and Format tab appear on the Ribbon.

Microsoft 365 (Web) and Online

Selecting the **Recommended Charts** button opens the Recommended Charts pane which displays a preview of the chart. Scroll down to view further suggestions and select a preview chart to insert it into the worksheet.
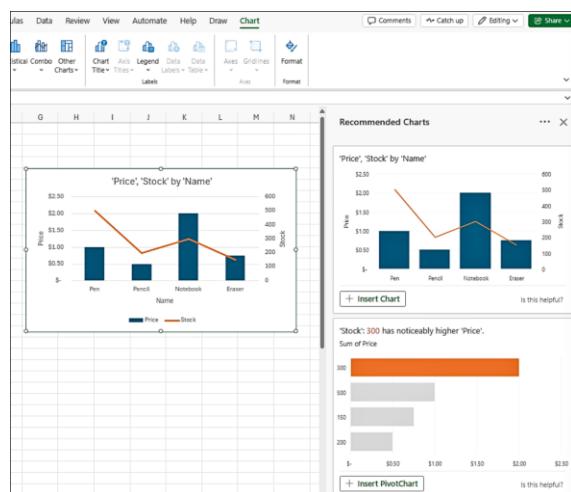
Learn Task   Access the Learner Workbook to complete the Learn Task for this skill.

Change Chart Types

Desktop Only Alert 🖉 | **The following feature is exclusively available in the desktop version.**

You can change the type of chart you have selected if the chart does not display the worksheet information in the way you would like.

The type of chart to use will depend on what you are trying to display. Line charts are better for displaying trends, column charts are better for displaying volume, and pie charts are better for displaying portions of a total.

Excel provides a variety of chart types and several subtypes within each major type. This section discusses the most commonly used chart types.

Column – Use to compare values over time or across categories. This is a vertical presentation of a bar chart.
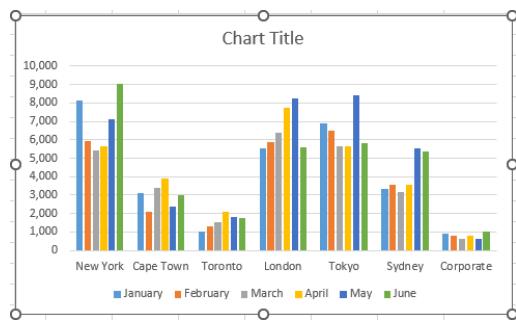
Line – Use to compare continuous trends for a series of data.
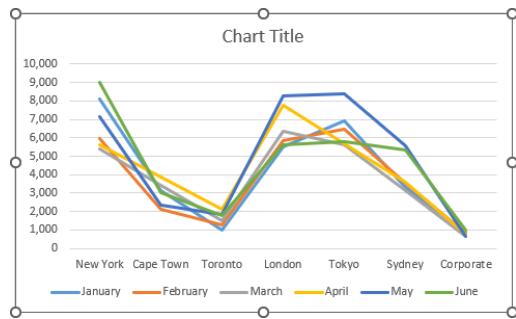
Pie – Use to compare the relative size of each portion that together make up the combined total.
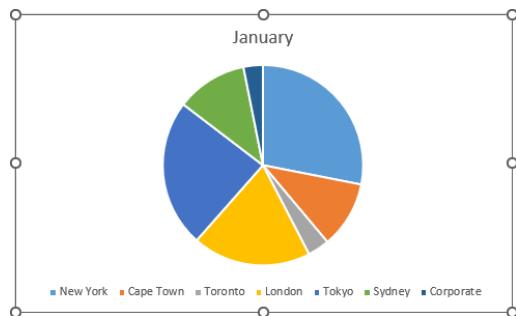
Bar – Use to compare values over time or categories. This is a horizontal presentation of a column chart.
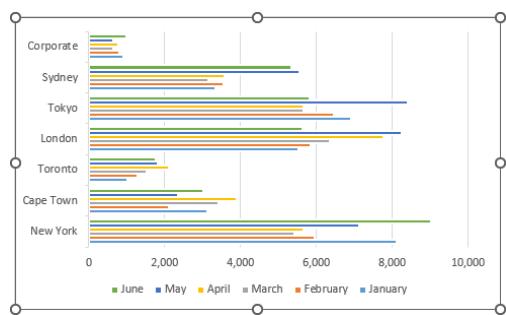
Note: Advanced chart types, including Area, XY, Map, Stock, Surface, Radar, Treemap, Sunburst, Histogram, Box & Whisker, Waterfall, Funnel, and Combo are discussed in the Excel Expert course.

Most of these chart types have both two-dimensional and three-dimensional choices. Three-dimensional charts can be more interesting but complicated to understand because they tend to appear more complex.

To change the chart type, select on the chart and use one of the following methods to open the Change Chart Type dialog box:

- **Chart Design** tab > **Type** group > **Change Chart Type**
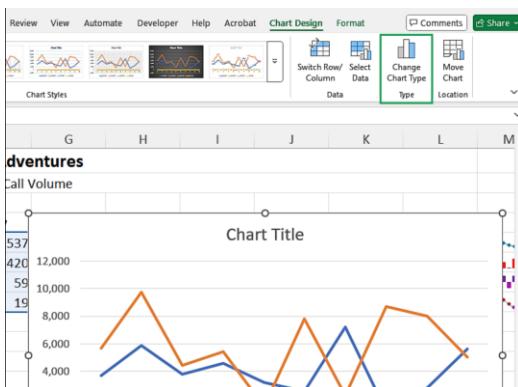
- Right-click in any blank area of the chart > **Change Chart Type...**
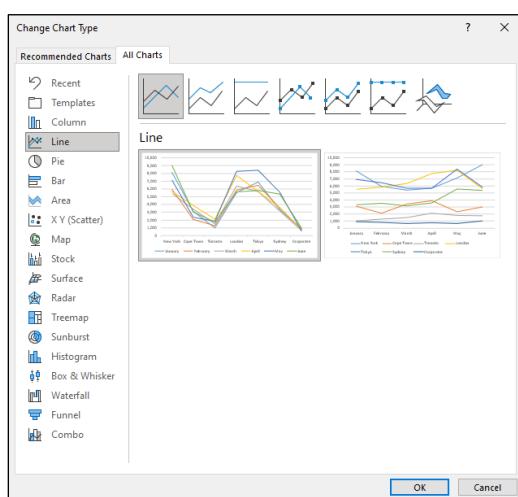
Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Move and Resize Charts

You can move charts to any location on a worksheet. Typically, you place a chart next to its source data so that users can view both at the same time. To move a chart around on a worksheet, use the mouse to drag it to its new location. While moving a chart, take care when placing the mouse pointer to ensure that you are not moving a single component within the chart by mistake. To move an entire chart, you must select on a blank area of the chart where no chart components are located.

You can also make charts larger or smaller or change their shape. To resize a chart, select and drag any of the resizing handles located around the border of the chart. Every chart has eight of these handles, four in the corners and four at mid-points between the corners. The mid-point handles are used to change either the width or the height of the chart. The corner handles can be used to make the chart larger or smaller in two directions at the same time by changing the width and height at the same time. Whenever you change the size or shape of a chart, the internal components will generally resize proportionately.

Resizing handles
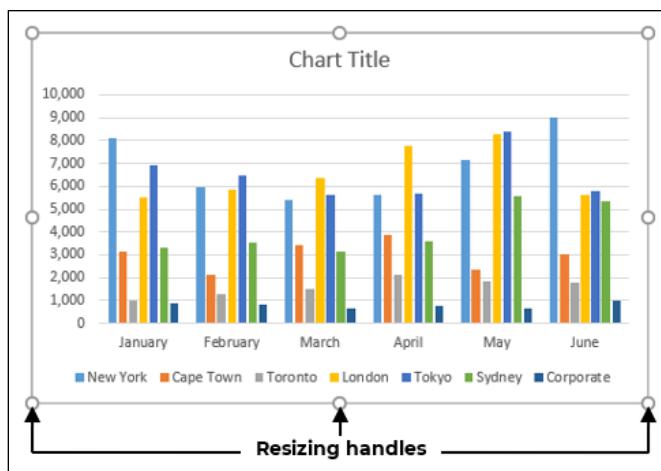
Learn Task 💡	Access the Learner Workbook to complete the Learn Task for this skill.

Modify Chart Design

Online App Alert 🖥	Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

You can modify and refine your chart using the **Chart Design** tab. Once the chart has been created, it can be altered at any time. The clearest method of altering the chart is to apply a predefined layout in the **Chart Styles** group or use the **Quick Layout** in the **Chart Layout** group. There are a variety of predefined layouts and styles that can be selected. Also, you can choose to customize a layout or style manually by modifying individual chart elements.

Microsoft 365 (Web) and Online

Selecting a chart in the online apps opens the Chart tab. To access the chart formatting options, select the **Format** button in the **Format** group to launch the Chart pane.

Access the Learner Workbook to complete the Learn Task for this skill.

Chart Layouts

Online App Alert 🖥️ | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

There are several options to change a chart layout.

Note: To utilize any of the following processes, you must have an existing chart.

To select a predefined chart layout:

1. Select the existing chart, then on the **Chart Design** tab > **Chart Layouts** group > **Quick Layout** drop-down arrow.

2. Hover over the available options to observe how it alters the chart elements then select the desired option.

To select a predefined chart style:

1. Select the chart, then on the **Chart Design** tab > **Chart Styles** group > **More** button to view all the available options.

2. Hover over the options to view how it alters the visual style of the chart, then select the desired option.

Note: The Chart styles will use the colors of the current document theme. To change the colors to a different document theme, select the **Change Colors** option in the **Chart Styles** group.

To change the layout of chart elements manually:

1. Select the chart or select the chart element that you want to change, then on the **Chart Design** tab > **Chart Layouts** group > **Add Chart Element** drop-down arrow.
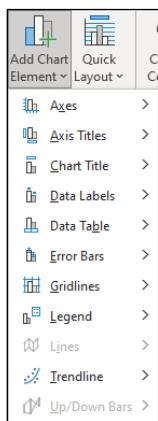
2. Hover over the options to view how the options modify the chart.

Microsoft 365 (Web) and Online

Although the online apps do not have Chart Layout or Quick Styles features, it is possible to add, remove or modify individual chart elements using the drop-down menus on the **Chart** tab > **Labels** group or **Axes** group.
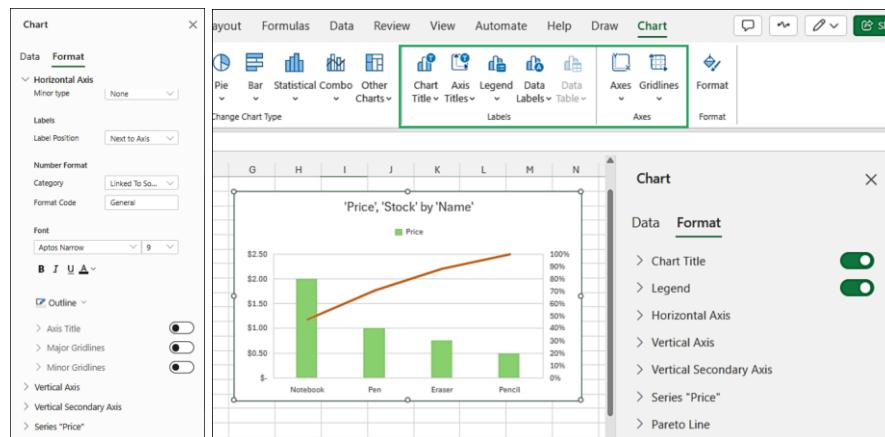
Alternatively, select the arrow next to an element type in the **Chart** pane > **Format** tab to display modification options.

Learn Task 💡   Access the Learner Workbook to complete the Learn Task for this skill.

Add Alternative Text
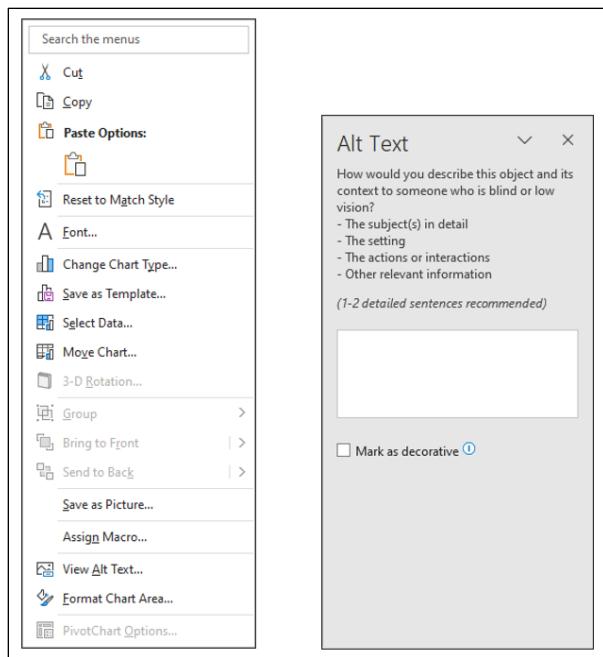
Alternative text (alt text) is descriptive text added to graphic objects (such as images, charts, shapes, and so on), which can be read by screen readers or other text-to-speech tools to help those who are visually impaired understand the purpose or meaning of the object.

By providing alt text for the graphic objects in your workbooks, you help ensure your workbooks are globally accessible.

Add alt text to a chart:

- Right-click the chart > **View Alt Text**
- **Format** tab > **Accessibility** group > **Alt Text**

In the Alt Text pane, enter a brief description of the chart (or its purpose) in the text box. Alternatively, select the **Mark as decorative** check box to specify that the object is not informative in nature

Note: The Mark as decorative check box is not available in the online apps, although Alt Text descriptions may be automatically generated by the app. Always ensure the description is accurate before closing the dialog box.

Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.
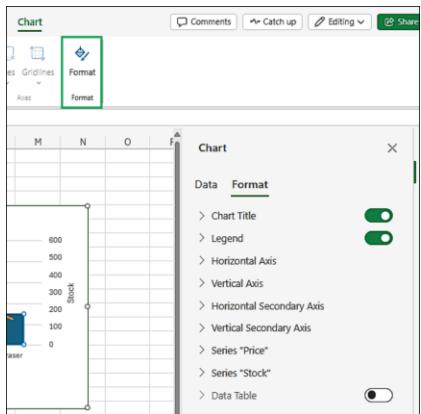
Create Chart Sheets

Online App Alert 🖥 | Steps for this topic differ in the Microsoft Apps version and appear after the desktop instructions. Certification focuses exclusively on the desktop features.

By default, Excel places a chart in the same worksheet where the source data is located. You can move this chart to its own chart sheet, back to its original worksheet, or to a different worksheet.

When you move a chart to its own chart sheet, the chart will automatically resize itself to fill the entire sheet.

To move a chart to its own sheet:

- Right-click on a blank area inside the chart > **Move Chart...** to open the Move Chart dialog box > **New sheet**. Name the sheet as you would any new sheet (or leave the default name) > **OK**
- **Chart Design** tab > **Location** group > **Move Chart** > **New sheet**. Name the sheet as you would any new sheet (or leave the default name) > **OK**
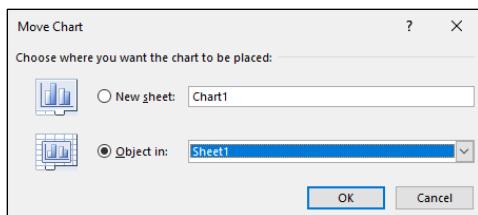
Microsoft 365 (Web) and Online

To move a chart to its own sheet:

1. Select the **+ New Sheet** icon on the Status Bar to create a new sheet > navigate back to the sheet where the chart is located.

2. Right-click the chart > **Move Chart...** to open the Move Chart dialog box > select the sheet to move the chart to > **OK**.
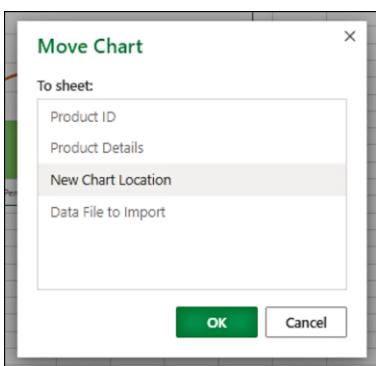
Learn Task — Access the Learner Workbook to complete the Learn Task for this skill.

Print Charts

Desktop Only Alert — The following feature is exclusively available in the desktop version.

You can print charts as part of a worksheet or on their own as individual chart sheet(s). Depending on the circumstances, each method has its own set of advantages.
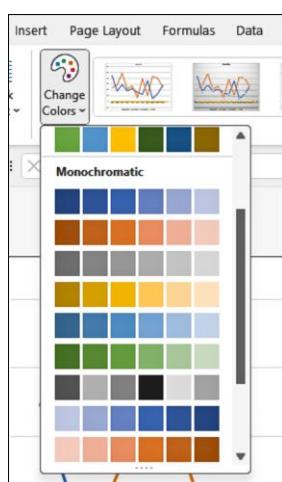
When you print a chart as part of a worksheet, you are printing a worksheet. In other words, any data or other charts that are on the worksheet will also be printed at the same time.

Therefore, you can change the appearance of the printout by rearranging the worksheet: the chart can be moved around with the data above, below, or next to it. You can also change the size of the chart and the formatting of the data.

If you select only the chart for printing, whether it is on a worksheet or in its own chart sheet, only that chart will be printed. Any data or other charts that may be on the same worksheet will not be included in the printout. The chart will automatically resize itself to the size of the page.

The color charts that Excel creates are interesting to view on the screen but may not translate well if printed with color ink. The chart colors will convert to various shades of gray which are difficult to distinguish from each other.

To ensure that you get the best results on paper:

- **Chart Design** tab > **Chart Styles** group > **Change Colors** drop-down arrow. Choose a Monochromatic (single-color) option to select a color palette that is more favorable to black and white printers

As an alternative to selecting a monochromatic color palette, you can manually select a different fill pattern of your choosing for each series. These fill patterns allow readers to quickly identify the series within each group.

To add fill patterns:

1. Double-click the column or bar you would like to fill, and the Format Data Series pane will appear.

2. Select the **Fill & Line** tab > **Fill** group > **Pattern fill**, and then select a pattern. This option works with other chart features such as pie slices and areas.
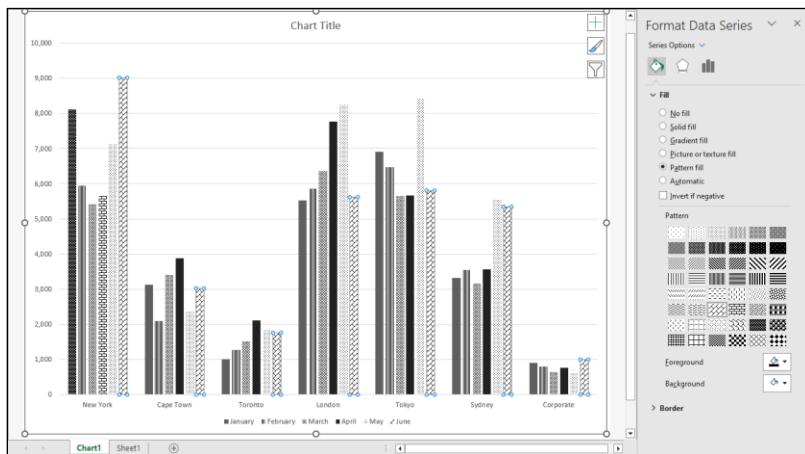
Learn Task 💡   **Access the Learner Workbook to complete the Learn Task for this skill.**

Assessments 📖   **Access the Learner Workbook to complete the Practice Exercise and Practice Questions.**

Lesson 2: Chart Element Types

Lesson Objectives

In this lesson, you will learn about Excel chart elements. Chart elements are used to add, modify, or format chart components. Upon completion of this lesson, you should be able to understand the following:

☐   Chart Elements

☐   New Data Series

☐   Switch Source Data

Chart Elements

Chart elements in Excel are items that make a complete chart. Some of the most used chart elements include chart titles, legends, gridlines, axis titles, data labels, and trendlines. Once your chart has been created, you can add or remove one or more chart elements according to your preferences. The Chart Elements menu appears when you select a chart.
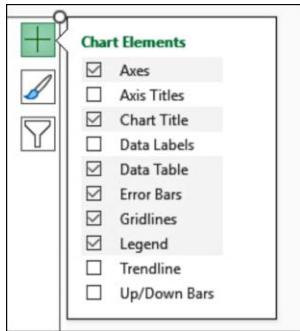
Chart elements are used to add, modify, or format chart components such as the chart title, data labels, legend, and horizontal or vertical axis. Although the Ribbon option is labeled as Add Chart Element, it can also be used to remove the element from the chart. The chart elements include:

Element	Description
Axes	Choose to have one of the axes as the primary one with a label while leaving the label off the other axis.
Axis Titles	Label what the group on an axis represents. For example, numbers may appear on the Y axis, but to make it clearer, you could label what those numbers represent, such as US dollars or population.
Chart Title	A chart title is useful to know what the chart represents.
Data Labels	Data labels give more details to the chart by providing the exact data. For example, if a bar on a column chart stops somewhere between 60 and 70, a data label can tell you that the number for this bar is exactly 64. This can provide much more detailed information on the chart, but caution is needed to avoid overwhelming the chart with so many details that it is hard to read.
Data Table	Similar to **data** labels, data tables provide more detailed information. If this detail is needed in the chart, but data labels are difficult to read, data tables are a good option to clearly display the details of the data in a table under the chart portion of the chart.
Error Bars	Used only in area, bar, column, line, and X Y charts, error bars display potential errors or an amount of uncertainty in statistical or scientific data.
Gridlines	Choose among different types of gridlines behind the chart. This can make it easier to approximate exactly where the information lines up with the axes.
Legend	Often there are more than just two categories of data. Two categories can be displayed on the axes while a third category can be represented with different colors. A legend can clarify what the colors represent.

Lines	Used in a line chart, a line starts at the highest point of the line on the chart and goes down lining up with each point along the horizontal axis.
Trendline	Trendlines can overlay a chart displaying a trend to help predict future data.
Up/Down Bars	Used on a line chart, bars appear at each point along the horizontal axis between the two lines. For example, if the lines represent projected sales versus actual sales, this is helpful to emphasize where the lines may be far apart versus close together. One option can display a difference in the bars when one line falls below the other versus above it.
Quick Layout	Used to select from one of several predefined chart layouts for the current chart type.
Change Colors	Used to select from one of several predefined color sets for the data points, lines, or bars.
Chart Styles	Used to select from one of several predefined chart visual styles.
Switch Row/Column	Used to exchange the data rows and columns as the data series for the chart. This is useful for providing a different focus for the data, such as grouping the data by month of sales versus location of sales. It emphasizes one aspect of the data over another.
Select Data	Used to select a different cell range for the chart. This is useful when you are adding data. For example, if your chart displays sales per month, and you finish a new month, you can add this data without deleting and creating a new chart. Just add the sales for the most recent month to the existing chart.
Change Chart Type	Used to change the chart to a different chart type.
Move Chart	Used to move the chart between a worksheet and a dedicated chart sheet.
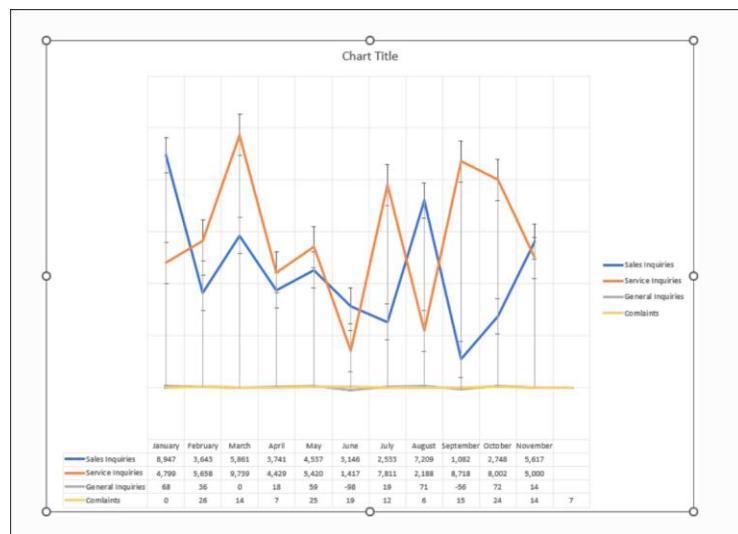
Learn Task 💡   **Access the Learner Workbook to complete the Learn Task for this skill.**

New Data Series

Desktop Only Alert 🖉 The following feature is exclusively available in the desktop version.

New data series or categories can be added to a worksheet at any time but the chart may not be automatically updated. You can add this new data to the chart to keep it current using any of the following methods: Copy the new data into the Clipboard > select the chart > Home tab > **Clipboard** group > **Paste Special** drop-down arrow > **Paste Special...** In the Paste Special dialog box, specify how you want the new data to be added and select **OK** to paste the data into the chart
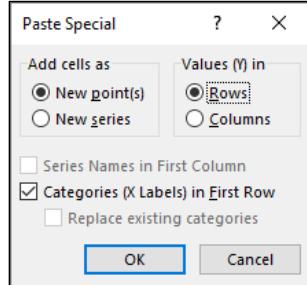
When the chart is selected, the data that coincides with the chart is also selected. When you point the mouse over a corner of these selected cells, a diagonal arrow appears. Then you can drag the boundary of the data range selection box on the worksheet to include the new data. The added data then appears in the chart. This is normally the quickest method but can be used only when the chart and the data are on the same worksheet

Learn Task 💡 Access the Learner Workbook to complete the Learn Task for this skill.

Switch Source Data

Desktop Only Alert 🖉 The following feature is exclusively available in the desktop version.

Switch Source Data allows you to change the cell range (data source) that a chart is based on, so the chart updates to reflect the new values.

To switch rows or columns:

• Select the chart > **Chart Design** tab > **Data** group > **Select Data** to display the Select Data Source dialog box > Switch Row/Column button
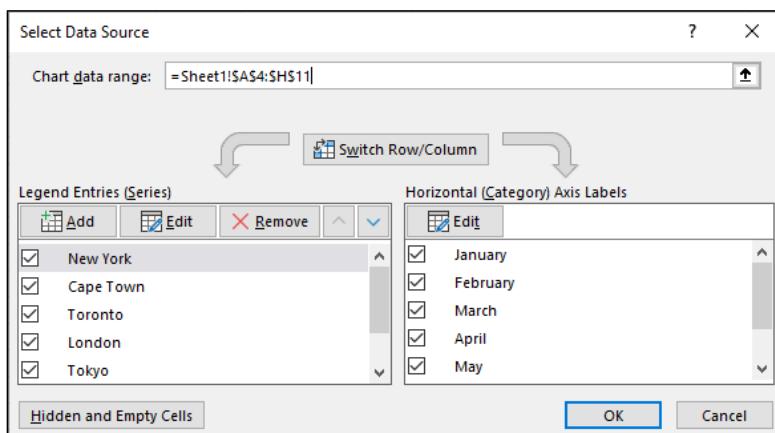
Learn Task 💡 Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖 Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Lesson 3: Sparklines

Lesson Objectives

In this lesson, you will learn about Excel sparklines. Sparklines are scaled-down versions of a chart that fit into a single cell. Sparklines will provide a visual description of the data. Place the sparkline next to its data for the greatest impact. Upon completion of this lesson, you should be able to understand the following:

☐   Insert Sparklines

☐   Customize Sparklines

Insert Sparklines

Desktop Only Alert 🖉 | The following feature is exclusively available in the desktop version.

Sparklines in Excel are miniature charts inside a worksheet cell. These tiny charts are without axes or coordinates. Sparklines highlight variations in data and are an excellent way to represent data without having to create large charts.

Similar to a regular chart, the sparkline displays a visual representation of each value in a horizontal or vertical range of cells. Because Excel displays the entire chart in a single cell, only the data points are illustrated without any additional components such as a legend, titles, or axis.
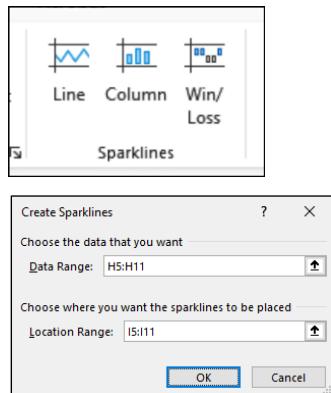
To insert a sparkline, on the **Insert** tab > **Sparklines** group > choose the type of sparkline you want to insert.

In the Create Sparklines dialog box, delete any cell references that appear in the Data Range text box, then select the data for which you want to create the sparklines. The selected data range appears in the Data Range text box. In the Location Range text box, delete any existing cell references and either enter or select the range where you want the sparklines to display.

Select **OK** to insert the sparklines.

There are three types of sparklines:

Line – Use this chart type to represent the values. The relative height of each point indicates the size of each value.	**Column** – Use this chart type also to represent the values. The relative height of each column indicates the size of each value.	**Win/Loss** – Use this chart type to indicate whether each value is positive (greater than zero) or negative (less than zero). Every bar is the same shape and size. However, positive values appear as higher bars and negative values appear as lower bars.

	C	D	E	F	G	H	I	J	K	L	M
1				**Tolano Adventures**							
2				Monthly Call Volume							
3											
4	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	
5	3,643	5,861	3,741	4,537	3,146	2,533	7,209	1,082	2,748	5,617	
6	5,658	9,739	4,429	5,420	1,417	7,811	2,188	8,718	8,002	5,000	
7	36	0	18	59	-98	19	71	-56	72	14	
8	14	7	25	19	12	6	15	24	14	7	
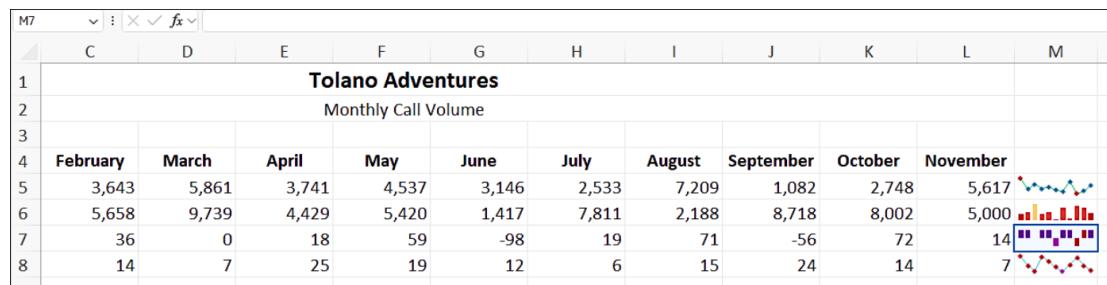
Sparkline charts have additional capabilities that you will not find in regular charts. The following are two examples of these capabilities. You can display data in a regular way with a sparkline chart at the same time in the same cells. You can activate markers in a sparkline chart such as high, low, first, last, and negative points. Without gridlines and axis markers, these markers help identify important points on the chart.
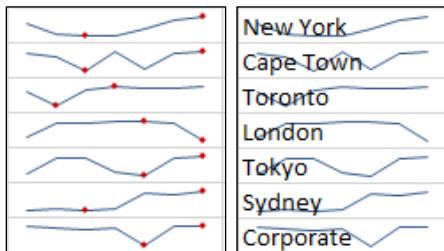
Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Customize Sparklines

Desktop Only Alert ✏️ | The following feature is exclusively available in the desktop version.

The Sparkline formatting tab includes a range of different settings and options to modify and customize sparkline charts.

- **Sparkline group** – Edit or change the data range and location or modify hidden cells

- **Type group** – Switch between Line, Column, or Win/Loss sparkline styles

- **Show group** – Highlight specific points such as High, Low, First, Last, or Negative values, and toggle markers

- **Style group** – Apply predefined color themes and visual styles and customize line/column and marker colors

- **Group group** – Group or ungroup sparklines, clear them from cells and control axis scaling, direction, and display options
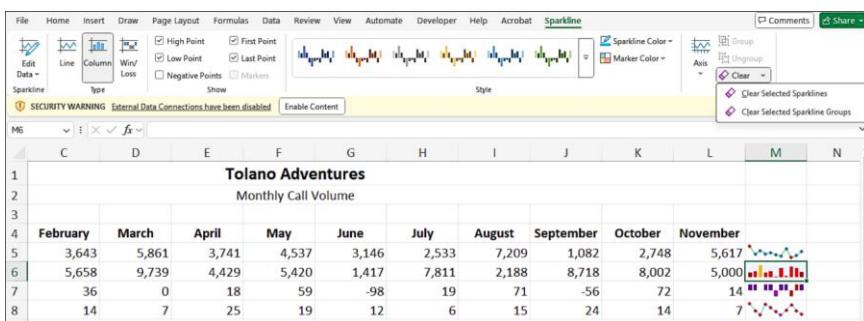
Learn Task 💡 | Access the Learner Workbook to complete the Learn Task for this skill.

Assessments 📖 | Access the Learner Workbook to complete the Practice Exercise and Practice Questions.

Unit Assessment 📝 | Access the Learner Workbook to complete the Objective Assessment and Create Project.

Unit 5 Key Terms

Term	Definition
Chart	A chart is a pictorial representation of the data you enter in a worksheet. Often, a chart can be a more descriptive way of representing your data.
Legend	Excel will automatically include a legend with the chart to explain the meaning of each line in a line chart or column in a column chart.
Series	A data series is a row or column of numbers that are plotted in a chart.
X Axis	The chart's horizontal axis is located at the bottom of the chart.
Y Axis	The chart's vertical axis is located on the left or right side of the chart.

Appendices

Appendix A
Course Book Mapping

Appendix B
Key Terms

Appendix C
Index

Appendix A: Course Book Mapping

Skills required for the Microsoft Excel Associate certification exam.:

		Objective Domain	Unit	Lesson
1		**Manage Worksheets and Workbooks**		
	1.1	**Import data into workbooks**		
		1.1.1 Import data from text files	4	1
		1.1.2 Import data from online sources	4	1
	1.2	**Navigate within workbooks**		
		1.2.1 Search for data within a workbook	4	1
		1.2.2 Navigate to named cells, ranges, or workbook elements	2	2
		1.2.3 Insert and remove hyperlinks	4	1
	1.3	**Format worksheets and workbooks**		
		1.3.1 Modify page setup	1	3
		1.3.2 Adjust row height and column width	1	2
		1.3.3 Customize headers and footers	1	3
	1.4	**Customize options and views**		
		1.4.1 Manage the Quick Access toolbar	1	1
		1.4.2 Display and modify worksheets in different views	1	3
		1.4.3 Freeze worksheet rows and columns	1	3
		1.4.4 Change window views	1	3
		1.4.5 Modify built-in workbook properties	1	1
		1.4.6 Display formulas	3	1
	1.5	**Prepare workbooks for collaboration and distribution**		
		1.5.1 Set a print area	1	3
		1.5.2 Save and export workbooks in alternative file formats	4	1
		1.5.3 Configure print settings	1	3
		1.5.4 Inspect workbooks and correct issues	1	1
		1.5.5 Manage comments and notes	4	2
2		**Manage Data Cells and Ranges**		
	2.1	**Manipulate data in worksheets**		
		2.1.1 Paste data by using special paste options	1	2
		2.1.2 Fill cells by using AutoFill	1	2
		2.1.3 Insert and delete multiple columns or rows	1	2
		2.1.4 Insert and delete cells	1	2
		2.1.5 Generate numeric data by using RANDBETWEEN() and SEQUENCE()	3	2
	2.2	**Format cells and ranges**		
		2.2.1 Merge and unmerge cells	2	1
		2.2.2 Modify cell alignment, orientation, and indentation	2	1

			Objective Domain	Unit	Lesson
		2.2.3	Format cells by using Format Painter	2	1
		2.2.4	Wrap text within cells	2	1
		2.2.5	Apply number formats	2	1
		2.2.6	Apply cell formats from the Format Cells dialog box	2	1
		2.2.7	Apply cell styles	2	1
		2.2.8	Clear cell formatting	2	1
		2.2.9	Format multiple worksheets by grouping	2	1
	2.3		**Define and reference named ranges**		
		2.3.1	Define a named range	2	2
		2.3.2	Referene a named range	2	3
	2.4		**Summarize data visually**		
		2.4.1	Insert Sparklines	5	3
		2.4.2	Apply built-in conditional formatting	2	1
		2.4.3	Remove conditional formatting	2	1
3			**Manage Tables and Table Data**		
	3.1		**Create and format tables**		
		3.1.1	Create Excel tables from cell ranges	2	3
		3.1.2	Apply table styles	2	3
		3.1.3	Convert tables to cell ranges	2	3
	3.2		**Modify tables**		
		3.2.1	Add or remove table rows and columns	2	3
		3.2.2	Configure table style options	2	3
		3.2.3	Insert and configure total rows	2	3
	3.3		**Filter and sort table data**		
		3.3.1	Filter records	2	4
		3.3.2	Sort data by multiple columns	2	4
4			**Perform Operations by using Formulas and Functions**		
	4.1		**Insert references**		
		4.1.1	Insert relative, absolute, and mixed references	3	1
		4.1.2	Use structured references in formulas	3	1
	4.2		**Calculate and transform data**		
		4.2.1	Perform calculations by using the AVERAGE(), MAX(), MIN(), and SUM() functions	3	2
		4.2.2	Count cells by using the COUNT(), COUNTA(), and COUNTBLANK() functions	3	1
		4.2.3	Perform conditional operations by using the IF() function	3	2
		4.2.4	Sort data by using the SORT() function	3	2
		4.2.5	Get unique values by using the UNIQUE() function	3	2
	4.3		**Format and modify text**		

Objective Domain				Unit	Lesson
		4.3.1	Format text by using RIGHT(), LEFT(), and MID() functions	3	3
		4.3.2	Format text by using UPPER(), LOWER(), and LEN() functions	3	3
		4.3.3	Format text by using the CONCAT() and TEXTJOIN() functions	3	3
		4.3.4	Get unique values by using the UNIQUE() function	3	2
5	**Manage Charts**				
	5.1	**Create charts**			
		5.1.1	Create charts	5	1
		5.1.2	Create chart sheets	5	1
	5.2	**Modify charts**			
		5.2.1	Add data series to charts	5	2
		5.2.2	Switch between rows and columns in source data	5	2
		5.2.3	Add and modify chart elements	5	2
	5.3	**Format charts**			
		5.3.1	Apply chart layouts	5	1
		5.3.2	Apply chart styles	5	1
		5.3.3	Add alternative text to charts for accessibility	5	1

Appendix B: Key Terms

Accessibility Checker
A tool used to find issues that might make it difficult for users with disabilities to access the content in the workbook.

Active Cell
The cell where you are entering data.

Alignment
Refers to the position or placement of data within the cell; you can align the cell contents horizontally or vertically.

Auto Fill
Use to copy data or continue sequential patterns in entered data.

AutoFilter
Finds and displays the rows where the value in the selected column meets your specified criteria.

AutoFilter Icon
An arrow that appears next to each column title and can be used to apply various options.

AutoFit
Change a row's height or column's width to fit the contents.

Banding
Use different color shades for alternating rows.

Borders
The line type or style that can be applied to one or more cells.

Built-in Custom Lists
Sort data by specific order such as weekdays or months.

Cell Range
A rectangular block of cells. You refer to a cell range by listing the addresses of two cells at opposite corners of the range, separated by a colon (:).

Cell Reference
The column and row coordinates which comprise a cell address. For example, the cell reference A1 indicates a cell at the intersection of column A and row 1.

Cell Styles
A grouping of specific format settings for a cell.

Chart
A chart is a pictorial representation of the data you enter in a worksheet. Often, a chart can be a more descriptive way of representing your data.

Clear
Use to remove the contents (or certain components that you choose) from the cell or a range of cells.

Column Headings
Sequential letters at the top of each column enable you to identify columns.

Comma Separated Value (CSV)
A comma-separated value (CSV) file allows data to be saved in a format that can be used with almost any spreadsheet program.

Comments
A way to add a note or explanation so that other users of the workbook can collaborate.

Conditional Formatting
A tool to use to display the data in cells one way for some values but another way for others.

Contextual Tab
Tabs that appear only when they are applicable.

Convert a Table
Choose to return to a regular set of rows and columns without the table definition.

Custom AutoFilter
Allows you to specify exactly how you want to filter the data.

Custom Views
Allows you to save your current page layout settings with a name so that you can re-activate them later.

Document Inspector
A tool used to find hidden or private information in a workbook and report it to you in a report.

Excel Table
A structured and pre-formatted dynamic range of cells that has its own name.

Export
When you export data, it is the removal and conversion of raw data from their existing format into a new pre-selected format that is required by the new application.

Extension
The last four characters in the file name that indicate the type of Excel file it is.

File Tab
Select the File tab to open the Backstage view.

Fill Color
A feature that enables you to apply a background color to the selected cell(s).

Fill Patterns
A feature where you can apply a pattern style to the background of the selected cell(s).

Filter
Hide rows of data you are not interested in viewing.

Font
Refers to the typeface of the text characters, such as Times New Roman, Calibri, Century Block, Helvetica, etc.

Footers
Footers appear at the bottom of every printed page.

Format Cells Dialog Box
A dialog box you can activate to select various formatting options for a selected cell(s). This dialog box contains various tabs to address different types of formatting.

Format Painter
A tool that enables you to copy the cell formatting from one area on the worksheet to another.

Formatting
Change the appearance of the data using various features to draw attention to parts of the worksheet, or to make the data presented clearer to understand.

Formula Bar
Displays the contents of the active cell and can be used to add or edit data.

Formulas
Formulas are composed of values, cell references, arithmetic operators, and special functions for calculating and displaying results.

Freeze Panes
Locks in place the rows above and the columns to the left of a selected cell.

Function
A feature designed by Microsoft that enables you to quickly perform a calculation or formula using a specialized function.

Gallery
Type of menu in the ribbon that displays multiple formatting options.

Go To Feature
A quicker method of jumping to a specific cell or object.

Headers
Appear at the top of every printed page.

Hyperlink
A hyperlink is a shortcut to another location in the current workbook, opens a stored document, or opens a page on the internet.

Import
When you import, you bring in information from an outside source into Excel.

Indented
Contents in a cell are positioned at least one character from the left edge of the cell to create an indented appearance.

Insert Function
Opens a dialog box to help you choose and insert a built-in function.

Insert Function
The feature Excel provides to help you select the desired function to perform calculations.

Layer Objects
Arrange objects to create a layer effect.

Legend
Excel will automatically include a legend with the chart to explain the meaning of each line in a line chart or column in a column chart.

Merging Cells
A feature commonly used on text labels to identify a group of cells together.

Metadata
Information about a file that's stored within the file.

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.

Mixed Cell Reference
A cell address where either the column or row reference is absolute, and the other reference is relative.

More Button
Button that opens a gallery.

Name Box
Displays the cell address of the active cell.

Name Manager
A dialog box where you can modify and delete range names, or change the cell range references.

Named Ranges
Add a meaningful name for a cell or range of cells for users to understand the purpose of the cells.

Normal View
The default view used for entering data and working with data.

Numeric
Numbers, date, or time values, aligns to the right by default.

Orientation
A button that allows you to change the direction of the characters in a cell in various ways.

Page Break Preview View
Used to manage and control vertical and horizontal page breaks.

Page Layout
A tab on the Ribbon where you find controls and settings for printing.

Page Layout View
Use to add header and footer information, change margins and layout, and adjust how the printed document will appear.

Paste Special
Paste options to control components of what is pasted.

Print Titles
Specifies rows or columns (or both) to print on every page of the printed output.

Properties
Metadata in Excel, some that's generated automatically by Excel (such as the date and time the file was created and last modified, who created it, and the size of the file), and some you add.

Quick Access Toolbar (QAT)
Located above the Ribbon, the QAT provides quick and customizable access to frequently used commands.

Quick Styles
A set of prebuilt styles provided in Excel to apply a common type of formatting for specific data, such as Headings or currency numbers.

Ribbon
A collection of tabs (such as File, Home, and Insert) that provides quick access to commands used to complete a task. Each Ribbon tab relates to a type of activity.

Ribbon Display Options
Button to control what displays on the ribbon: Auto-hide, Tabs, Tabs, or Tabs and Commands.

Ribbon Group
Each Ribbon tab contains groups of related commands to edit, format, or enhance items in your documents. Some groups include a dialog box launcher button at the bottom right which opens a dialog box or pane with more commands and options.

Ribbon Tab
Commands are arranged in tabs that appear on the Ribbon, and each tab's commands relate to a specific type of activity.

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

Scroll Bars
Scrolls the spreadsheet to view content that is offscreen and not visible.

Series
A data series is a row or column of numbers that are plotted in a chart.

Sheet Tab
The rectangular box at the bottom of a worksheet by which the worksheet is accessed and identified.

Shrink to Fit
An option that shrinks the font size to fit the cell.

SmartArt
Create and modify specific types of diagrams such as organization charts, a matrix, or list processes.

Special Characters
Characters that do not fall under numeric or alphabetic characters. They include symbols like punctuation marks and characters that have a special functionality within Excel, such as the full colon (:) and double quotes (").

Split
Splits the worksheet into two or four panes based on the cell pointer position.

Status Bar
Displays the current cell mode, auto calculations, the View buttons, and the Zoom slider.

Structured Reference
Reference individual columns within the table by adding the column title within square brackets.

Structured Reference or Table Reference
A special way for referencing tables and their parts that uses a combination of table and column names instead of cell addresses.

Symbols
Signs, characters, and alt codes that represent important information or enhance the representation of the data.

Table
A rectangular block of data in which the rows and columns of data have a common structure and format.

Template
A type of workbook that typically contains data, formulas, and formatting, and makes a copy of itself for you to use.

Text
Alphabetic and numeric characters and most printable symbols, aligns to the left by default.

Theme
A set of pre-defined formats that can be applied to a worksheet for a consistent formatted layout and color.

Title Bar
Located at the top of the screen, the title bar indicates the contents of the window.

Total Row
An option you can turn on or off for a table where you can select a built-in function such as sum or average.

View Buttons
Change the on-screen views for the worksheet: Normal, Page Layout, and Page Break Preview.

Wrap Text
Force the text content in a cell to stay within the left and right boundaries of the cell, increasing the height of that row to accommodate the full length of the text.

X Axis
The chart's horizontal axis is located at the bottom of the chart.

Y Axis
The chart's vertical axis is located on the left or right side of the chart.

Zoom Slider
Drag the slider button to choose a particular zoom percentage or use the buttons at either side of the slider.

Appendix C: Index