

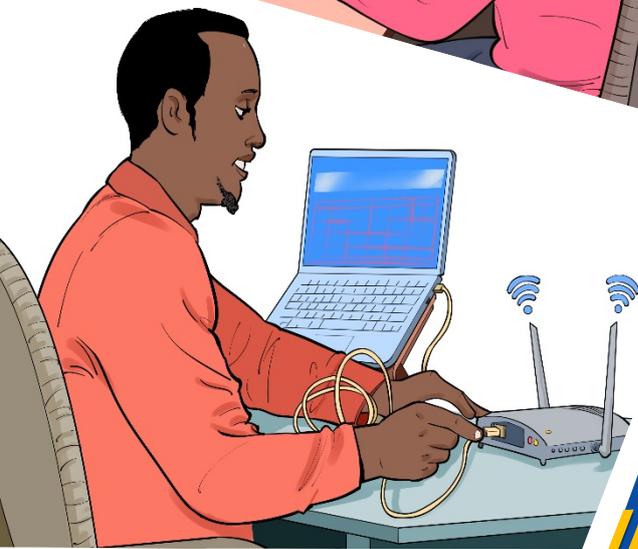
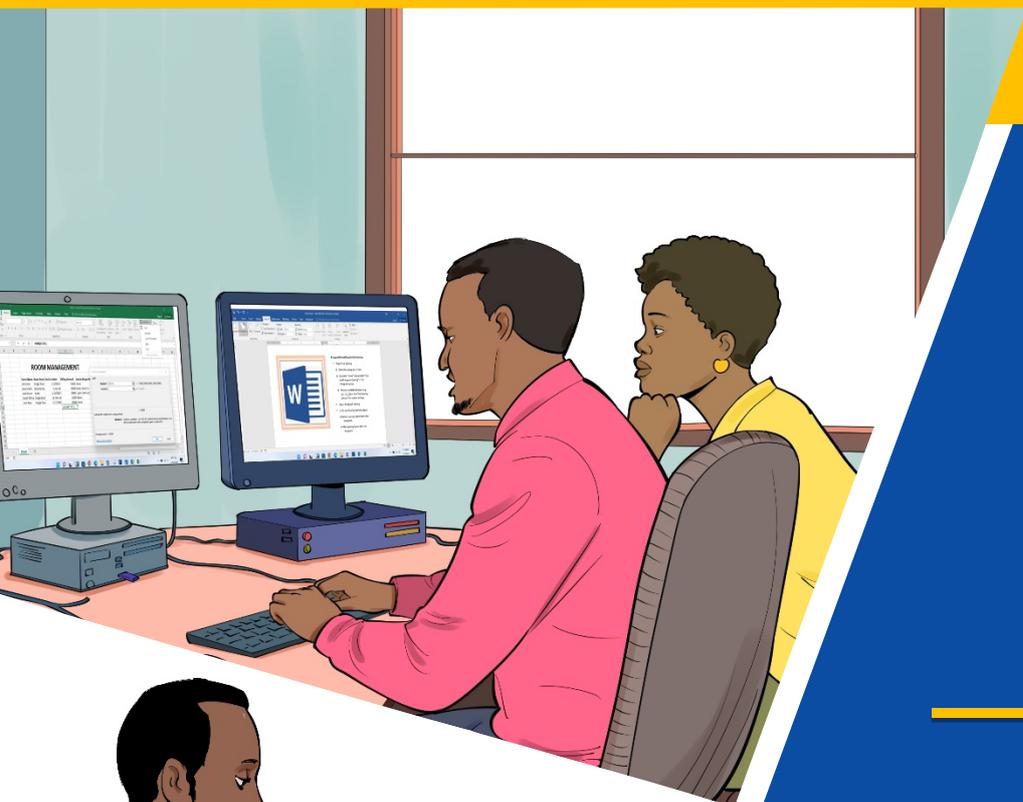


Republic of Rwanda
Ministry of Education



RTB | RWANDA
TVET BOARD

RQF LEVEL 5



ALL TRADES

CCMIW502

Information and
Communication
Technology (ICT)

TRAINEE'S MANUAL

April 2025



Republic of Rwanda
Ministry of Education



INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)



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LIST OF ABBREVIATIONS AND ACRONYMS

CBET:	Competence Base Education and Training
RQF:	Rwanda Qualification Framework
RTB:	Rwanda TVET Board
TVET:	Technical and Vocational Education and Training
TOC:	Table of content
ICT:	Information and Communication Technology
MS:	Microsoft
PAN:	Personal Area Network
LAN:	Local Area Network
MAN:	Metropolitan Area Network
WAN:	Wide Area Network
WLAN:	Wireless Local Area Network
SAN:	Storage Area Network
EPN:	Enterprise Private Network
VPN:	Virtual Private Network
ISP:	Internet Service Provider
NIC:	Network Interface Card

INTRODUCTION

This trainee's manual encompasses all necessary skills, knowledge and attitudes required to **Use ICT at workplace**. Students undertaking this module shall be exposed to practical activities that will develop and nurture their competences. The writing process of this training manual embraced competency-based education and training (CBET) philosophy by providing practical opportunities reflecting real life situations.

The trainee's manual is subdivided into units, each unit has got various topics. You will start with a self-assessment exercise to help you rate yourself on the level of skills, knowledge and attitudes about the unit.

A discovery activity is followed to help you discover what you already know about the unit.

After these activities, you will learn more about the topics by doing different activities by reading the required knowledge, techniques, steps, procedures and other requirements under the key facts section, you may also get assistance from the trainer. The activities in this training manual are prepared such that they give opportunities to students to work individually and in groups.

After going through all activities, you shall undertake progressive assessments known as formative and finally conclude with your self-reflection to identify your strengths, weaknesses and areas for improvement.

Do not forget to read the point to remember the section which provides the overall key points and takeaways of the unit.

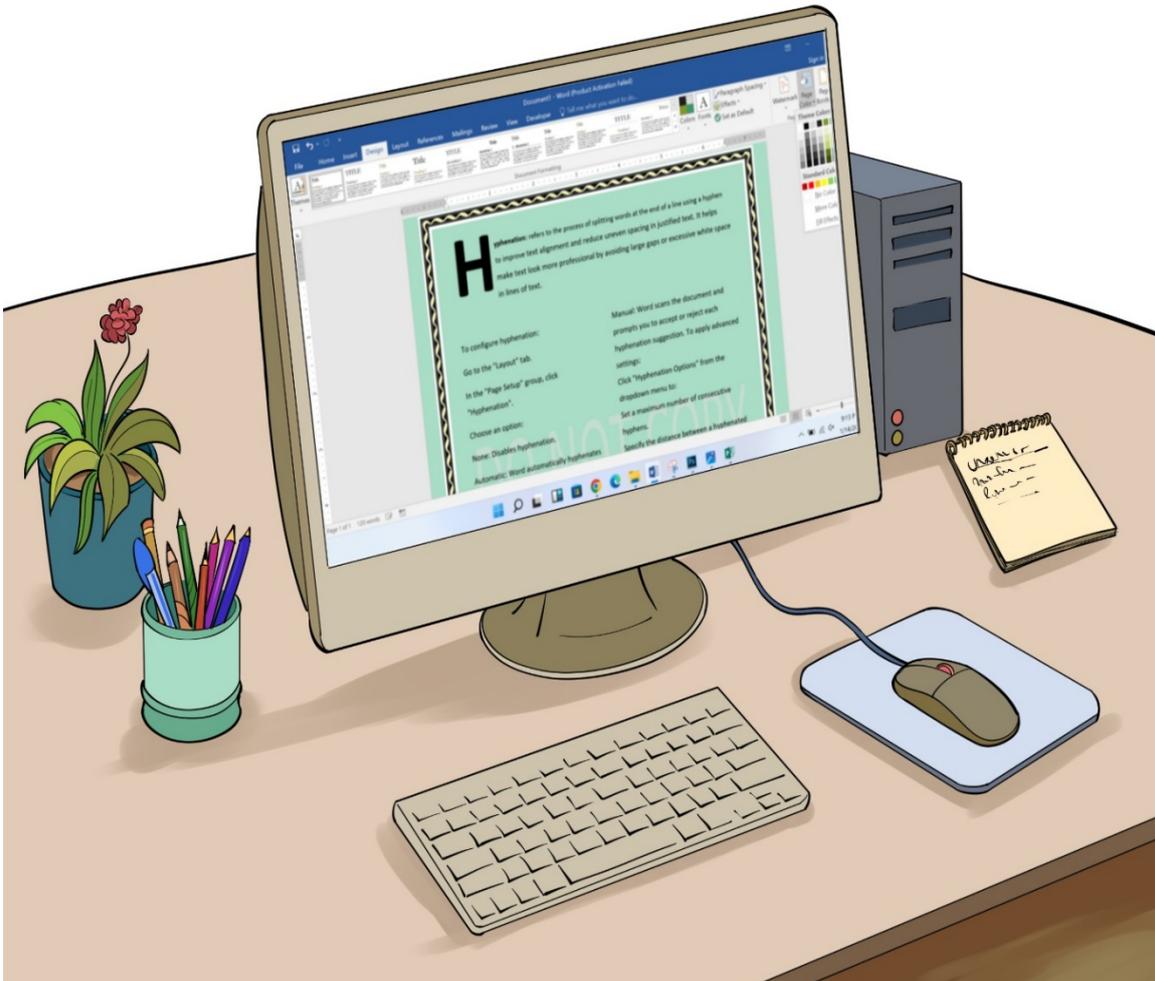
Module Units:

Unit 1: Prepare document layout

Unit 2: Apply basic computer operations

Unit 3: Manage data in MS Excel

UNIT 1: PREPARE DOCUMENT LAYOUT



Unit summary

This unit provides you with the knowledge, skills and attitudes required to prepare a word document layout. At the end of this unit, the learner will be able to setup a document layout, insert and manage images in a document, create and manage references in a document.

Self-Assessment: Unit 1

1. Observe the figure in Unit 1 and answer the following questions
 - a. What do you see in the illustration?
 - b. Name the components in the illustration?
 - c. What do you think this unit is about based on the illustration?
2. Fill in and complete the self-assessment table below to assess your level of knowledge, skills and attitudes under this unit.
 - a. There is no right or wrong way to answer this assessment. It is for your own reference and self-reflection on the knowledge, skills and attitudes acquisition during the learning process.
 - b. Think about yourself: do you think you have the knowledge, skills or attitudes to do the task? How well?
 - c. Read the statements across the top. Put a check in a column that best represents your level of knowledge, skills and attitudes.
 - d. At the end of this learning unit, you will assess yourself again.

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Describe page layout components					
Describe page background components					
Describe text formatting components					
Identify steps for inserting pictures					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Identify steps for editing pictures					
Identify steps for creating table of contents					
Define captions					
Identify steps for adding citations and bibliography					
Adjust page layout setting					
Apply page background					
Apply advanced text formatting					
Insert pictures					
Edit picture					
Create table of contents					
Add caption					
Add citations and bibliography.					
Pay attention to layout details.					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Maintain consistency in formatting styles.					
Develop innovative ideas for designs					
Be precise when applying tools					



Key Competencies:

Knowledge	Skills	Attitudes
1. Describe page layout components	1. Adjust page layout	1. Pay attention to layout details.
2. Describe page background components	2. Apply page background	2. Maintain consistency in formatting styles.
3. Describe text formatting components	3. Apply advanced text formatting	3. Develop innovative ideas for designs
4. Identify steps for inserting pictures	4. Insert pictures	4. Be precise when applying tools
5. Identify steps for editing pictures	5. Edit picture	

Knowledge	Skills	Attitudes
6. Identify steps for creating table of contents	6. Create table of contents	
7. Define captions	7. Add captions	
8. Identify steps for adding citations and bibliography	8. Add citations and bibliography.	



Discovery Activity

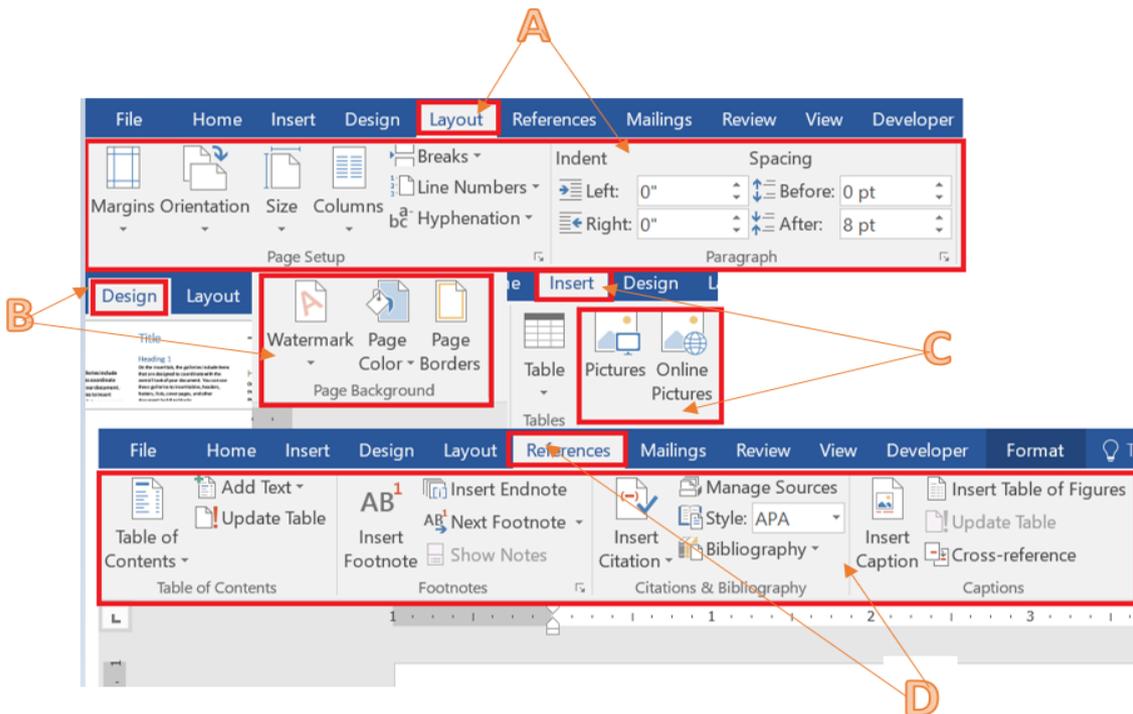


Figure 1: Menus and groups used in document setup



Task 1:

Observe clearly the above illustration and answer the questions below:

1. What do you see on the above illustration?
2. Describe each of the components in the rectangles in the figure above labeled A, B, C and D.

Topic 1.1: Set up a document layout



Activity 1: Problem Solving



Task 2:

Read carefully the following scenario and answer to the questions that follow

Scenario:

You are working at **XY** company and your immediate supervisor has requested you to prepare a professional report that must adhere to strict company guidelines as follows:

- a. Set the page margins to 1.5 inches on the left and 1 inch on the other sides.
 - b. Use A4 page size and set the orientation to landscape for one section and portrait for another using section breaks.
 - c. Add a watermark that says "Professional."
 - d. Set the page border to a single solid line in black.
 - e. Enable hyphenation for better word spacing throughout the document.
1. How can you adjust the page margins to meet requirement a).
 2. What are steps that can you take for achieving requirement b).
 3. Which menu in Microsoft word holds a watermark section?
 4. What is a page border?
 5. What can be the suitable background color for a professional report?
 6. Explain the term hyphenation.

Key Facts 1.1: Set up a document layout

- **Introduction to page setup**

- ✓ **Definition of key terms**

 **Page setup:** It refers to the process of configuring the layout and formatting settings for a document. It involves adjusting the paper size, margins, orientation, headers and footers, and other elements to ensure that the content appears correctly when printed or viewed on different devices.¹

¹ <https://www.lenovo.com/us/en/glossary/page-setup/?orgRef=https%253A%252F%252Fwww.google.com%252F>

 **Page margins:** refer to the empty space between a document's contents and the edges of the page. Word's default margins are 1inch on each side of the page, but you can easily change the margins to accommodate the user.²

It is used for defining the beginning and ending of the text lines.

 **Page border:** is a frame that appears outside the margins on each page in the document.³ It enables a document to look more appealing and is primarily for decorative purposes.

 **Watermark:** It is an element that appears behind text and is usually faint (semi-transparent). It is often text but may be an image.⁴

 **Section break:** Enables user to split a document into several sections, allowing to apply different formatting and layouts to each section independently.⁵

- **Setting up page margins**

Step 1: Select Layout from menu bar

Step 2: Click "**Margins**" and choose from the predefined options (e.g., Normal, Narrow, Wide).

Step 3: For custom margins, select "**Custom Margins**" at the bottom,

² https://uomustansiriyah.edu.iq/media/lectures/3/3_2020_11_13!09_11_04_PM.pdf

³ <https://www.geeksforgeeks.org/how-to-add-a-page-border-in-microsoft-word/>

⁴ <https://www.addbalance.com/usersguide/sections2007.htm#Watermarks>

⁵ <https://support.microsoft.com/en-us/office/insert-a-section-break-eef20fd8-e38c-4ba6-a027-e503bdf8375c>

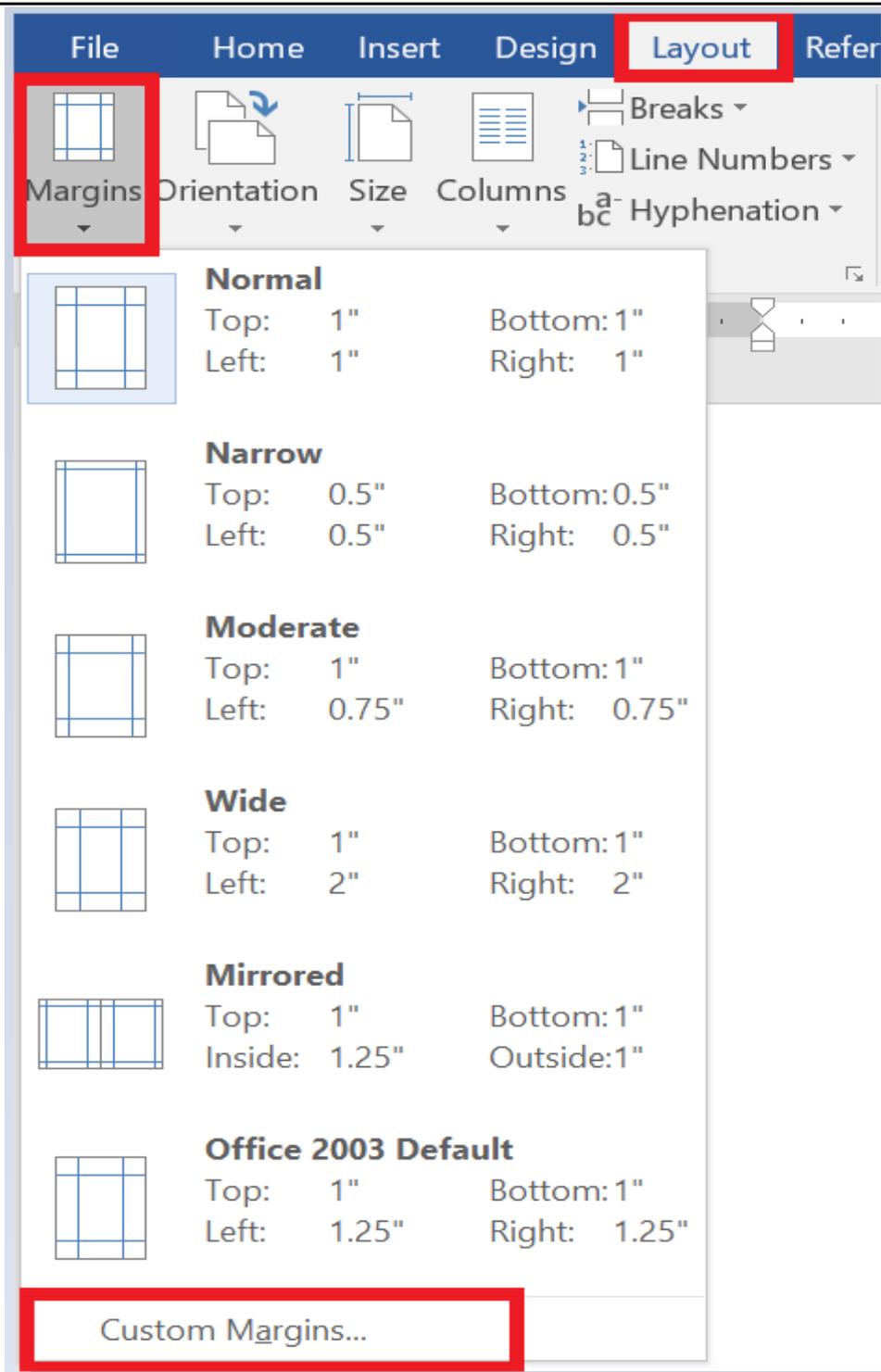


Figure 2: Setting up margins

Step 4: Use the next dialog box to adjust the margins,

Step 5: Adjust the values, and click "OK" as shown below.

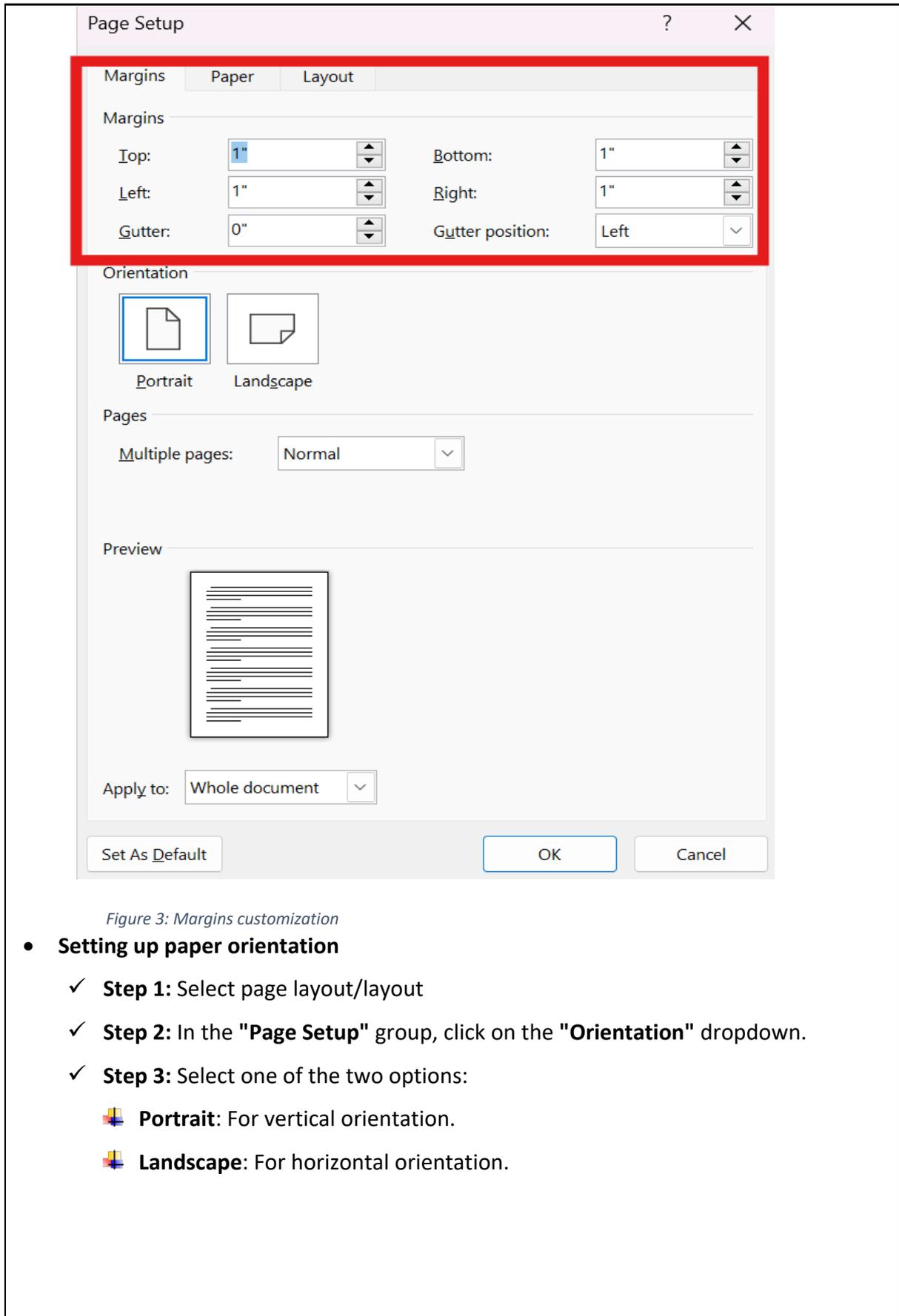


Figure 3: Margins customization

- **Setting up paper orientation**

- ✓ **Step 1:** Select page layout/layout
- ✓ **Step 2:** In the "Page Setup" group, click on the "Orientation" dropdown.
- ✓ **Step 3:** Select one of the two options:
 - 📄 **Portrait:** For vertical orientation.
 - 📄 **Landscape:** For horizontal orientation.

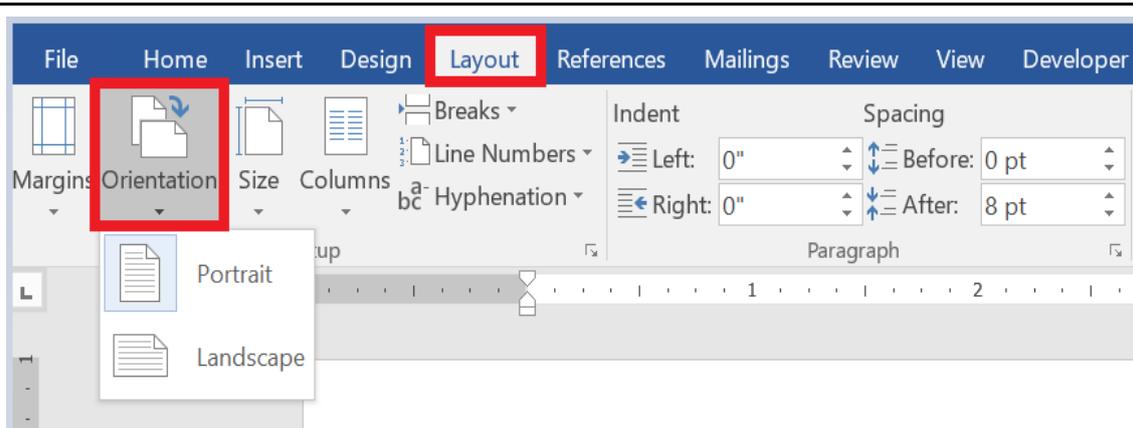


Figure 4: Setting up paper orientation

- **Setting up page size and columns**

- ✓ **To set up the Page Size:**

- ✚ **Step 1:** Go to the "Layout" tab on the Ribbon.
- ✚ **Step 2:** Click on "Size" in the **Page Setup** group.
- ✚ **Step 3:** Choose a predefined size (e.g., A4, Letter) or click "More Paper Sizes" at the bottom.
- ✚ **Step 4:** In the dialog box, set custom dimensions if needed.
- ✚ **Step 5:** Click "OK" to apply the changes.

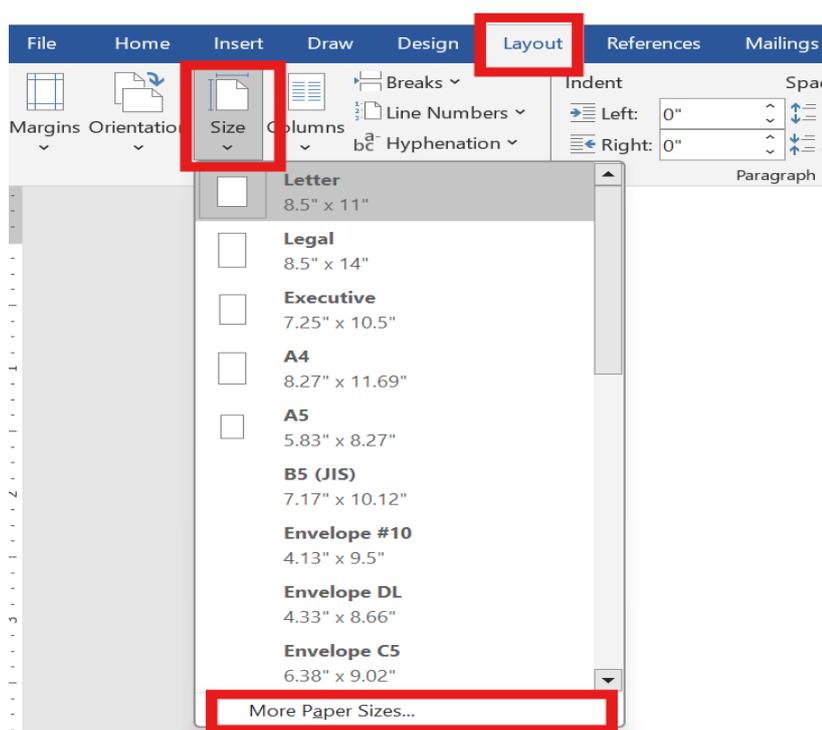


Figure 5: Setting up page size and columns

✓ **To adjust Columns:**

- ✚ **Step 1:** Place the cursor in the section where you want to set columns or select the text.
- ✚ **Step 2:** Go to the "**Layout**" tab on the Ribbon.
- ✚ **Step 3:** Click on "**Columns**" in the **Page Setup** group.
- ✚ **Step 4:** Choose the number of columns (e.g., One, Two, Three) or click "**More Columns**" for advanced options.
- ✚ **Step 5:** In the **Columns** dialog box, you can:
- ✚ **Step 6:** Set the number of columns.
- ✚ **Step 7:** Adjust the width and spacing between columns.
- ✚ **Step 8:** Add a line between columns by checking the "**Line between**" box.
- ✚ **Step 9:** Click "**OK**" to apply the changes.

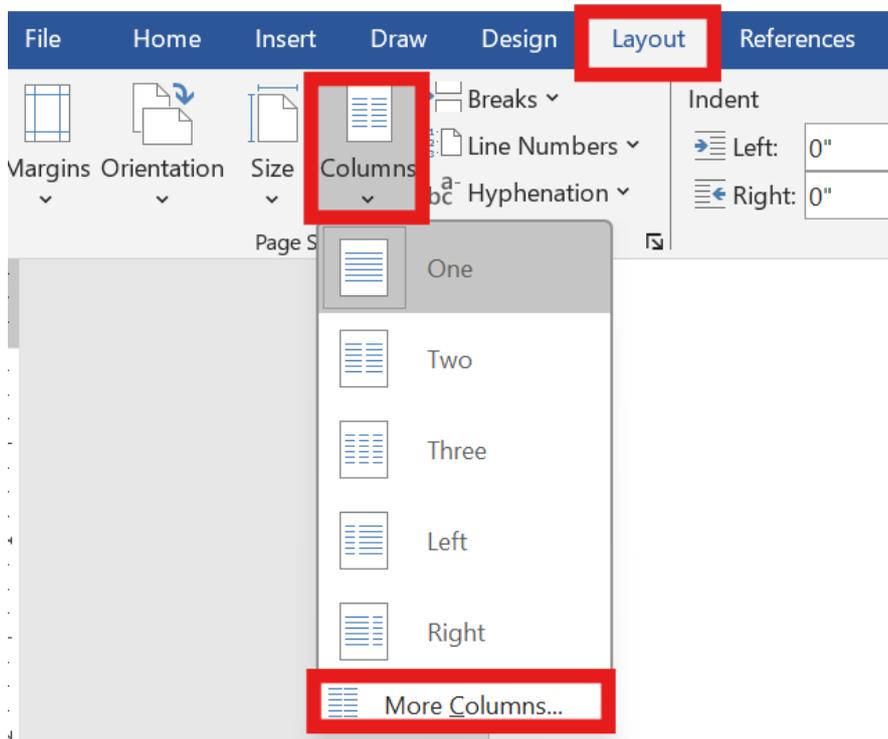


Figure 6: Adjusting columns

- **Set up section breaks**

- ✓ **Step 1:** Click on the "**Layout**" tab in the Ribbon.
- ✓ **Step 2:** Click "**Breaks**" to insert section breaks or page breaks for advanced layout options.

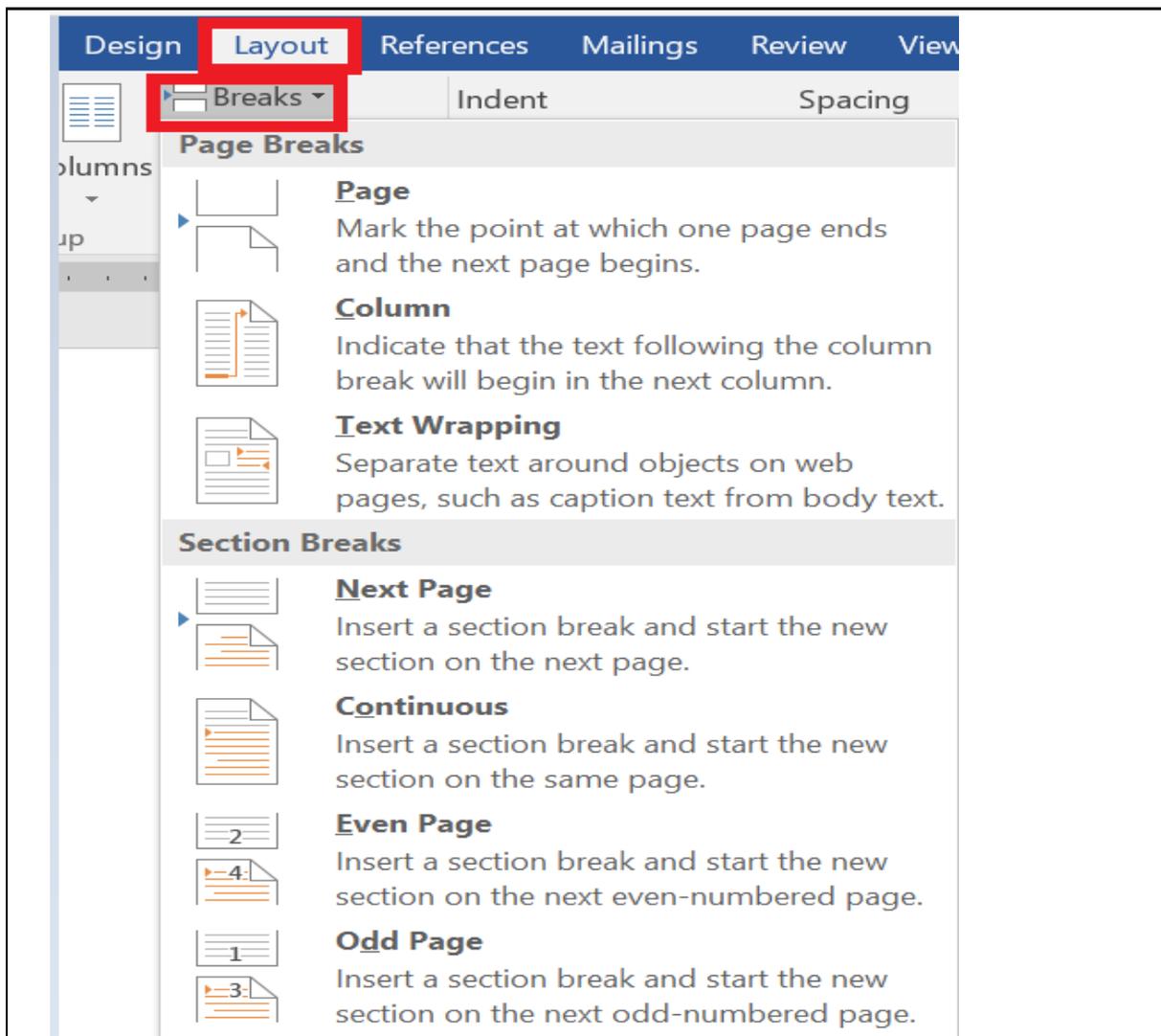


Figure 7: Setting up section breaks

- **Hyphenation:** refers to the process of splitting words at the end of a line using a hyphen (-) to improve text alignment and reduce uneven spacing in justified text.⁶ It helps make text look more professional by avoiding large gaps or excessive white space in lines of text.
 - ✓ **To configure hyphenation:**
 - Step 1:** Go to the "Layout" tab.
 - Step 2:** In the "Page Setup" group, click "Hyphenation".
 - Step 3:** Choose an option:

6

<https://www.lenovo.com/us/en/glossary/hyphenation/?orgRef=https%253A%252F%252Fwww.google.com%252F>

-  None: Disables hyphenation.
-  Automatic: Word automatically hyphenates text as needed.
-  Manual: Word scans the document and prompts you to accept or reject each hyphenation suggestion.

✓ **To apply advanced settings:**

Step 1: Click "Hyphenation Options" from the dropdown menu to:

Step 2: Set a maximum number of consecutive hyphens.

Step 3: Specify the distance between a hyphenated word and the margin.

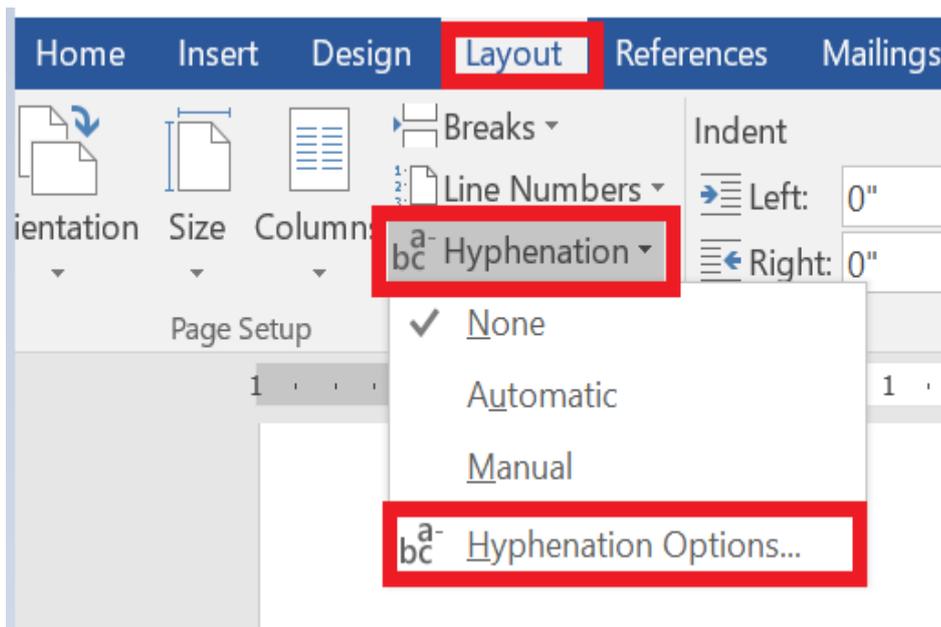


Figure 8: Hyphenation

- **Configuring page background**

In Microsoft Word, the page background is the color or image that appears behind the text on a page. To add a background to a page, you can change the page color, add a picture, or insert a watermark.⁷



Figure 9: Configuring page background

⁷ <https://www.teachucomp.com/change-the-page-background-in-word-instructions/>

✓ **To add a Watermark:**

Step 1: Go to the "Design" tab on the Ribbon.

Step 2: Click on "Watermark" in the Page Background group.

Step 3: Choose one of the predefined watermarks (e.g., Confidential, Draft).

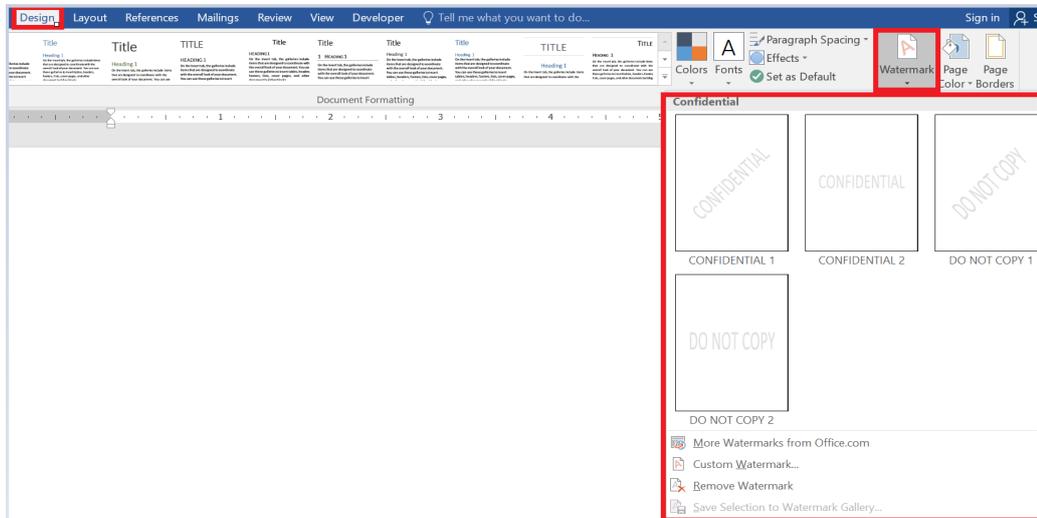


Figure 10: Adding a Watermark

✓ **To create a custom watermark:**

Step 1: Click "Custom Watermark".

Step 2: In the Printed Watermark dialog, you can either:

- ✚ Use a Picture Watermark (select an image from your computer). or
- ✚ Use a Text Watermark (type custom text, set font, size, color, and layout).

Step 3: Click OK to apply.

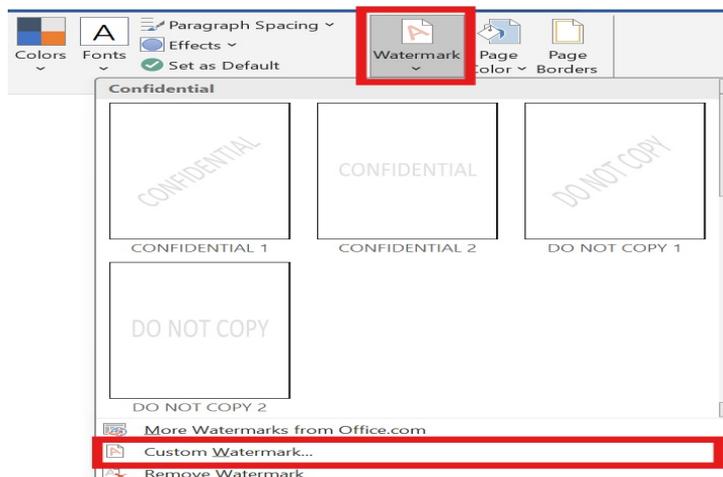


Figure 11: Creating a custom watermark

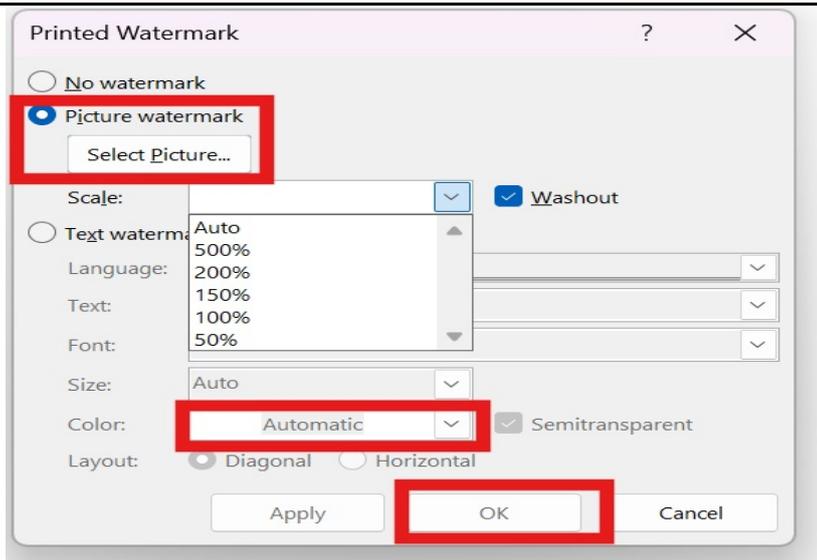


Figure 12: Adding a picture watermark

✓ **To set up a page color**

Step 1: Go to the "Design" tab on the Ribbon.

Step 2: Click on "Page Color" in the Page Background group.

Step 3: Choose a color from the palette or click "More Colors" to pick a custom color.

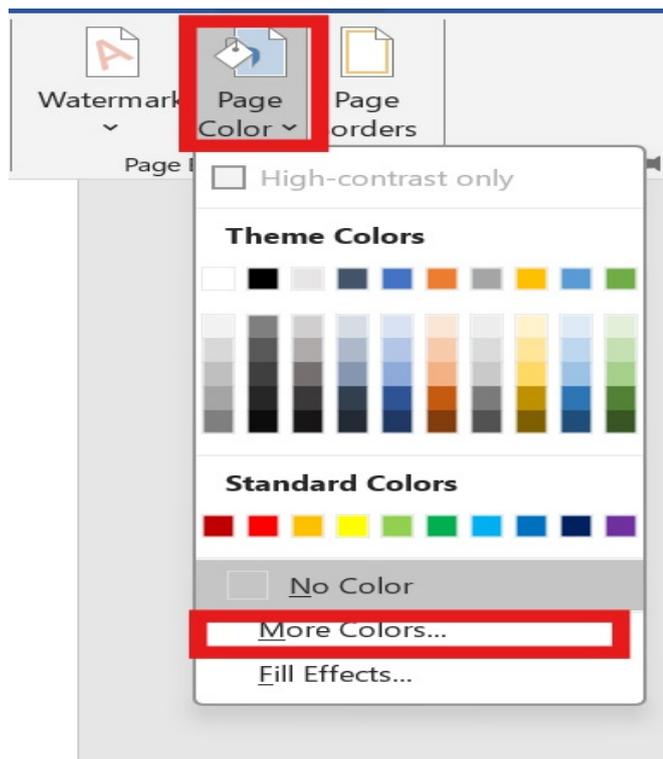


Figure 13: set up a page color

✓ **To apply effects:**

Step 1: Select "Fill Effects" to add gradients, textures, or patterns.

Step 2: Configure your preferences

Step 3: Click "OK" The color change will not print by default unless you enable background printing in the print settings.

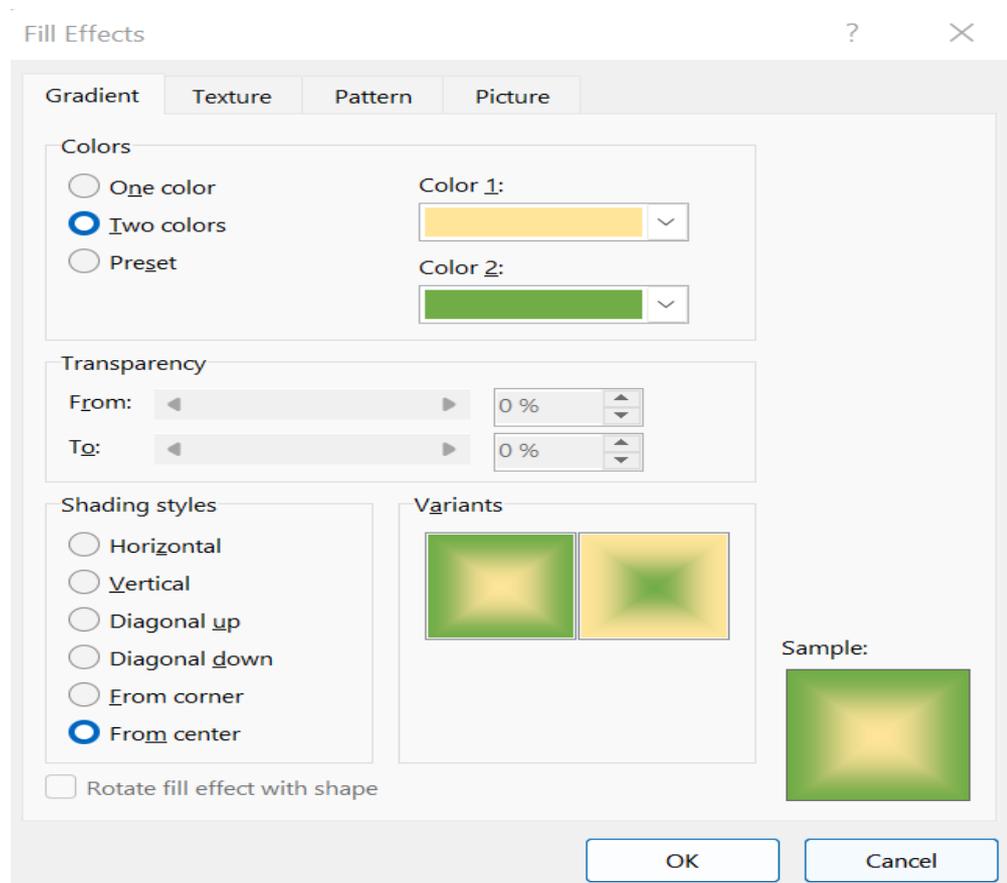


Figure 14: Applying effects

- **Setting up page borders**

Step 1: Go to the "Design" tab on the Ribbon.

Step 2: Click on "Page Borders" in the Page Background group. In the Borders and Shading dialog box:

Step 3: Go to the "Page Border" tab.

Step 4: Choose a border style (Box, Shadow, 3-D, Custom).

Step 5: Select a line style, color, and width from the options.

Step 6: To use an art border, select a design from the Art dropdown.

Step 7: Under Apply to, choose whether the border applies to the whole document or specific sections.

Step 8: Click OK to apply.

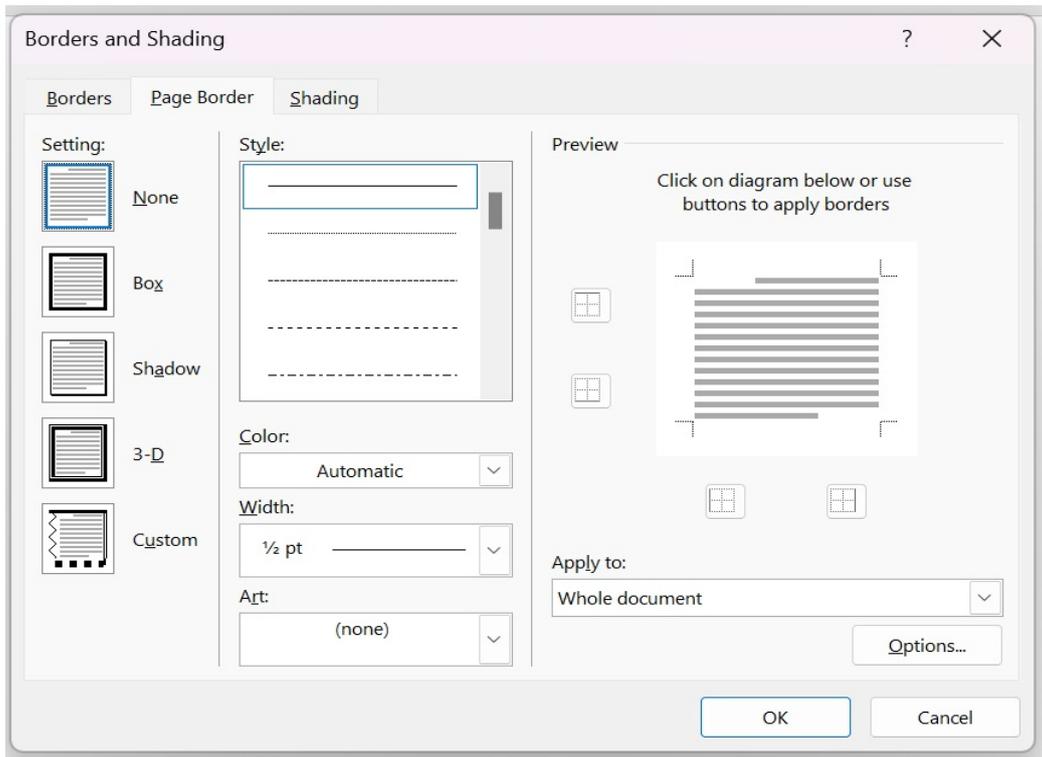


Figure 15: Setting up page borders

- **Applying advanced page formatting**

- ✓ **To change font style and size:**

Step 1: Select the text you want to format.

Step 2: Go to the "Home" tab on the Ribbon.

Step 3: In the "Font group", select a font style and size.

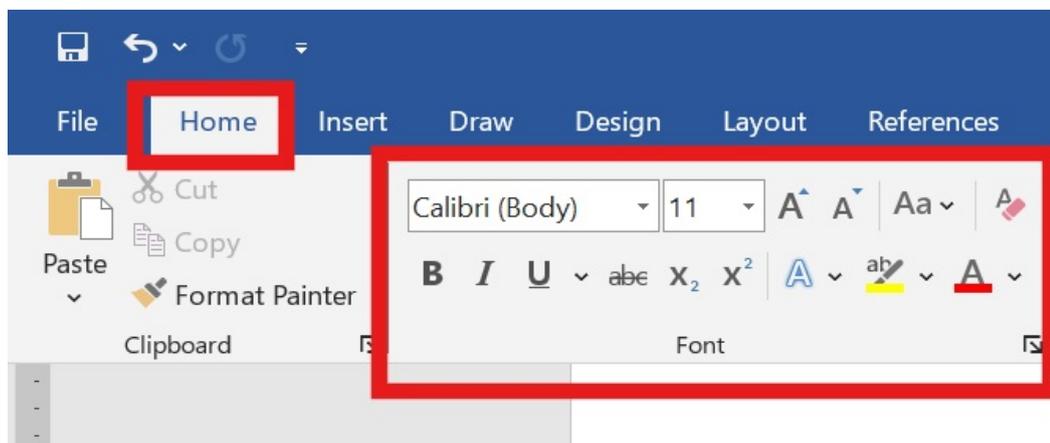


Figure 16: change font style and size

✓ **To change font color:**

Step 1: Click on the "Font Color" icon (a capital "A" with a color bar).

Step 2: Choose a color from the palette or click "More Colors" for a custom color.

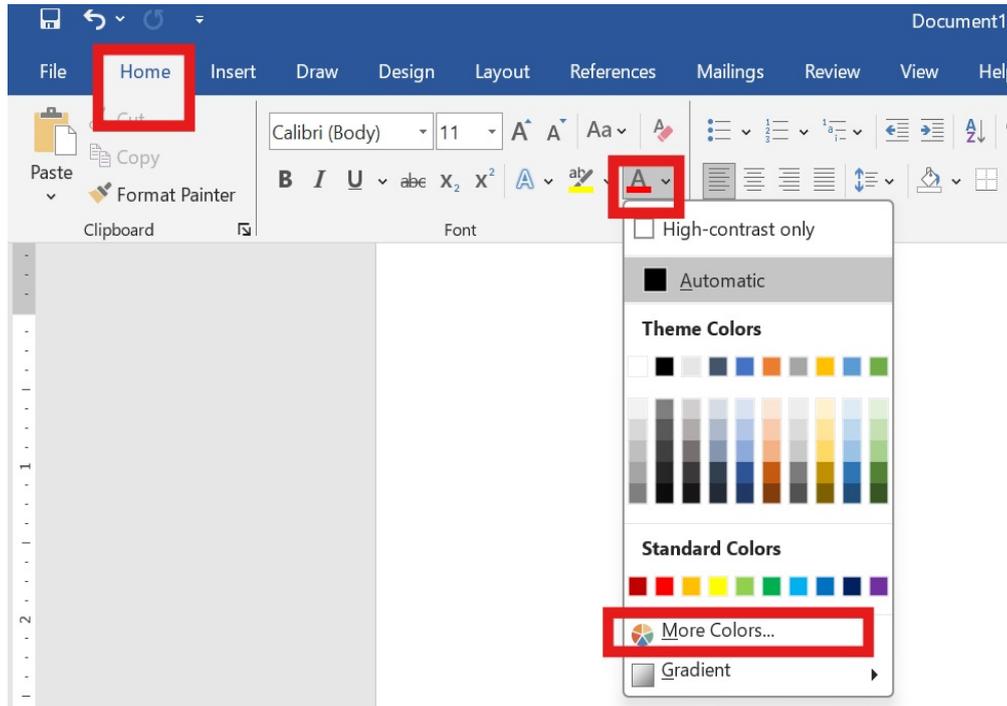


Figure 17: Changing font color

✓ **To add effects:**

Step 1: Click the small arrow in the bottom-right corner of the "Font group" to open the "Font dialog box".

Step 2: Under the **Text Effects** tab, add effects like shadow, outline, reflection, or glow.

Step 3: Click **OK** to apply.

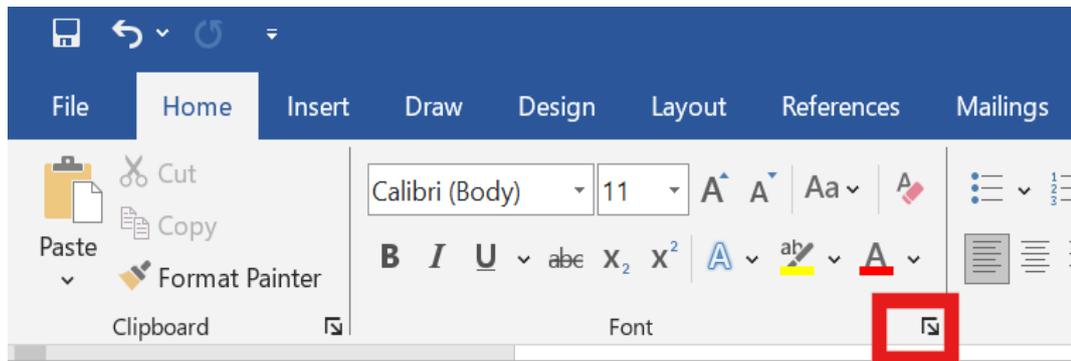


Figure 18: Adding effects to text

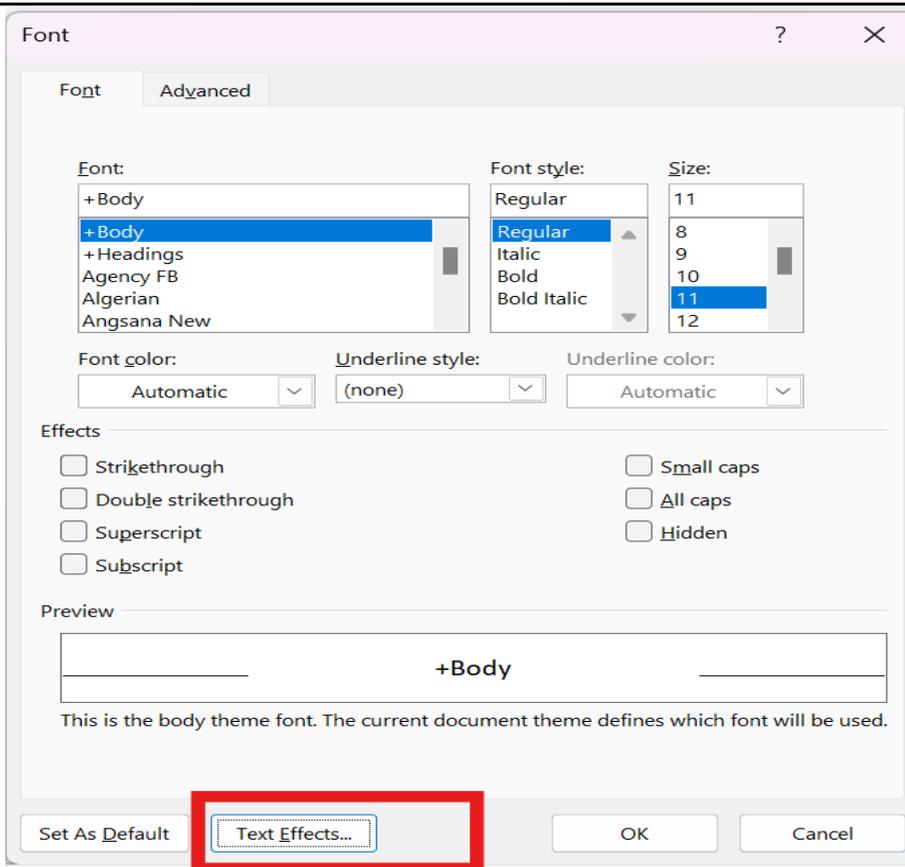


Figure 19: Applying text effects

- **Border and Shading:**

- ✓ **To add a border:**

Step 1: Select the text or paragraph.

Step 2: Go to the "Home" tab

Step 3: Click the "Borders" dropdown in the Paragraph group.

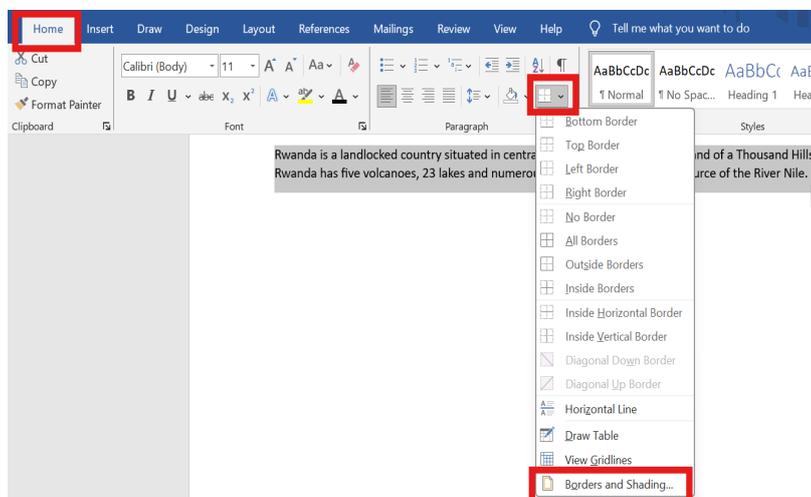


Figure 20: Borders and shading

Step 4: Choose a border style (e.g., top, bottom, or full border).

Step 5: For advanced options, click "**Borders and Shading**" at the bottom of the dropdown.

Step 6: click **OK** to apply

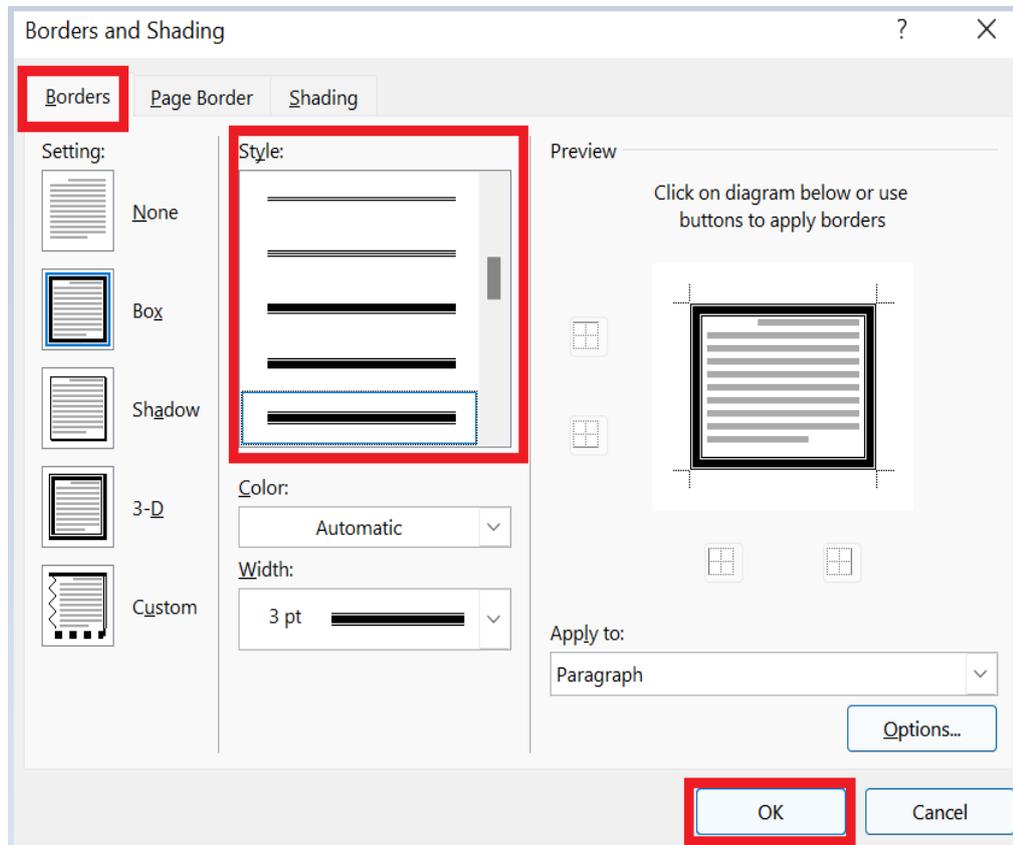


Figure 21: Applying borders

✓ **To apply shading:**

Step 1: In the **Borders and Shading** dialog box, go to the **Shading** tab.

Step 2: Choose a fill color and, optionally, a pattern.

Step 3: Click **OK** to apply.

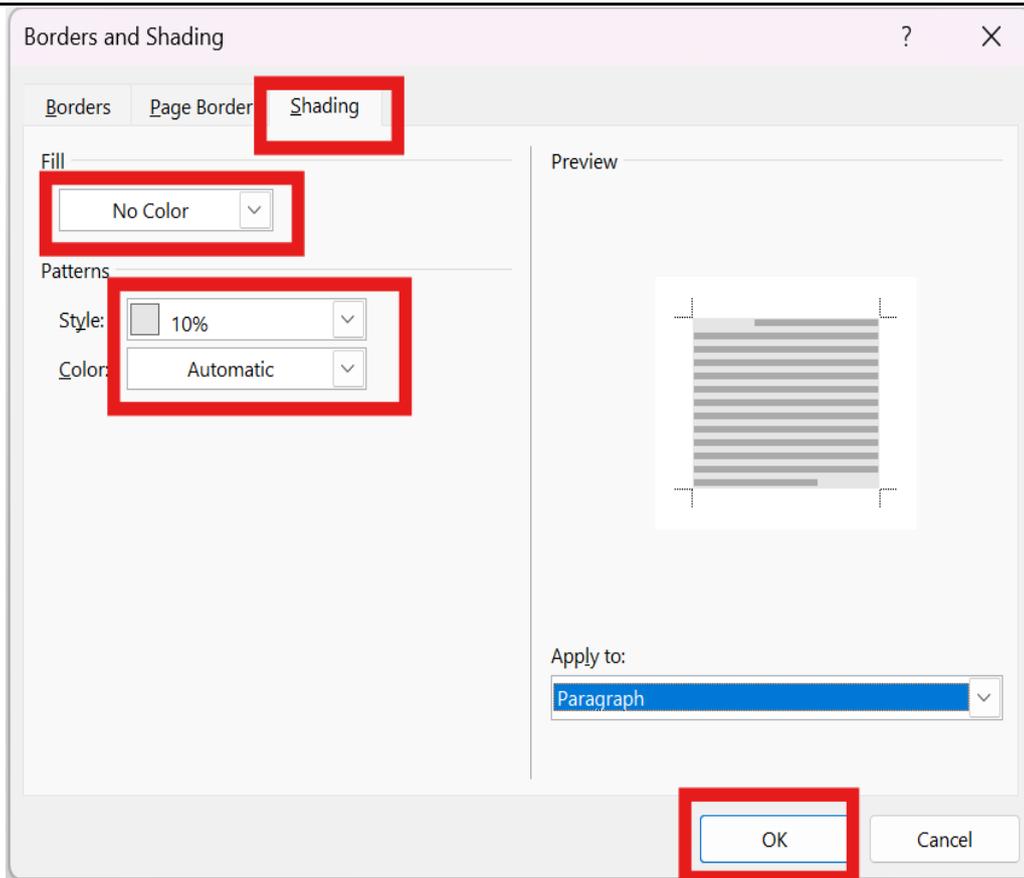


Figure 22: Applying shading

- **Indenting Paragraph:**

- ✓ Quick indentation:

Step 1: Place the cursor in the paragraph.

Step 2: Use the **Increase Indent** or **Decrease Indent** buttons in the **Paragraph** group on the **Home** tab.

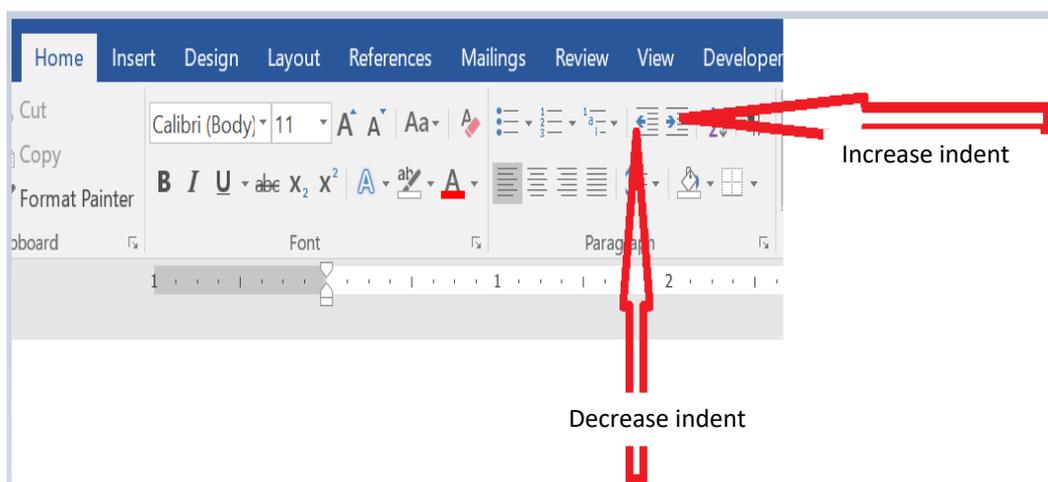


Figure 23: quick indentation

✓ **Custom Indentation:**

Step 1: Right-click the paragraph and select **Paragraph**.

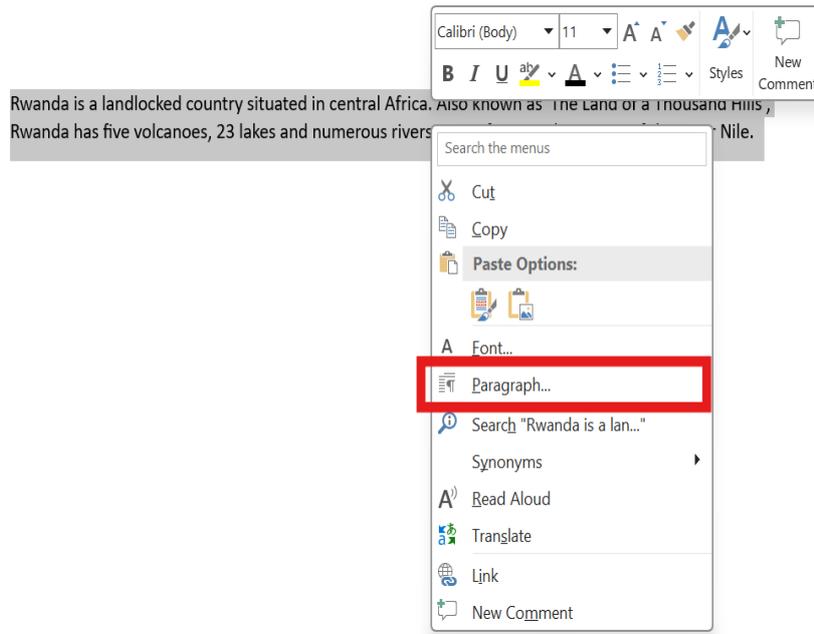


Figure 24: Custom indentation

Step 2: In the **Paragraph** dialog box, under **Indentation**, Set the **Left** or **Right** indent values.

Step 3: Use the **Special** dropdown to apply a **First Line** or **Hanging Indent**.

Step 4: Click **OK** to apply.

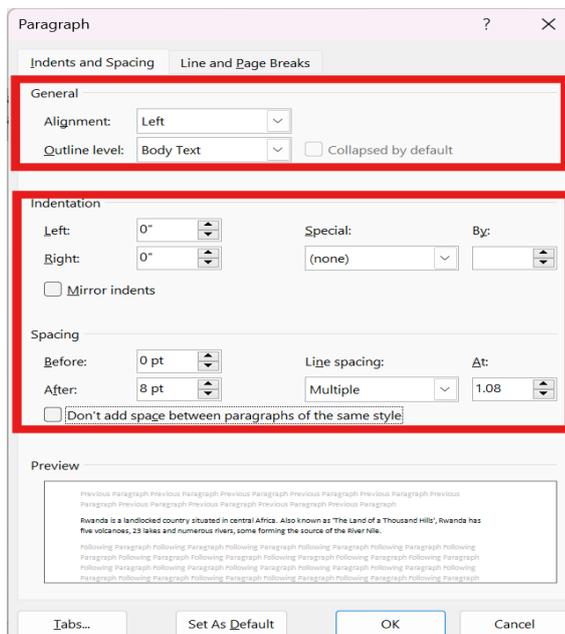


Figure 25: Setting indent values

- **Paragraph formatting and Line Spacing**

- ✓ Adjust Line Spacing:

Step 1: Select the paragraph or text.

Step 2: Go to the "Home" tab and click "Line and Paragraph Spacing" in the Paragraph group.

Step 3: Choose a predefined option (e.g., 1.0, 1.5, 2.0) or click "Line Spacing Options" for custom settings.

- ✓ Adjust Paragraph Spacing:

Step 1: In the Line Spacing Options, adjust:

 Before spacing: Space before the paragraph.

 After spacing: Space after the paragraph.

Step 2: Click OK to apply.

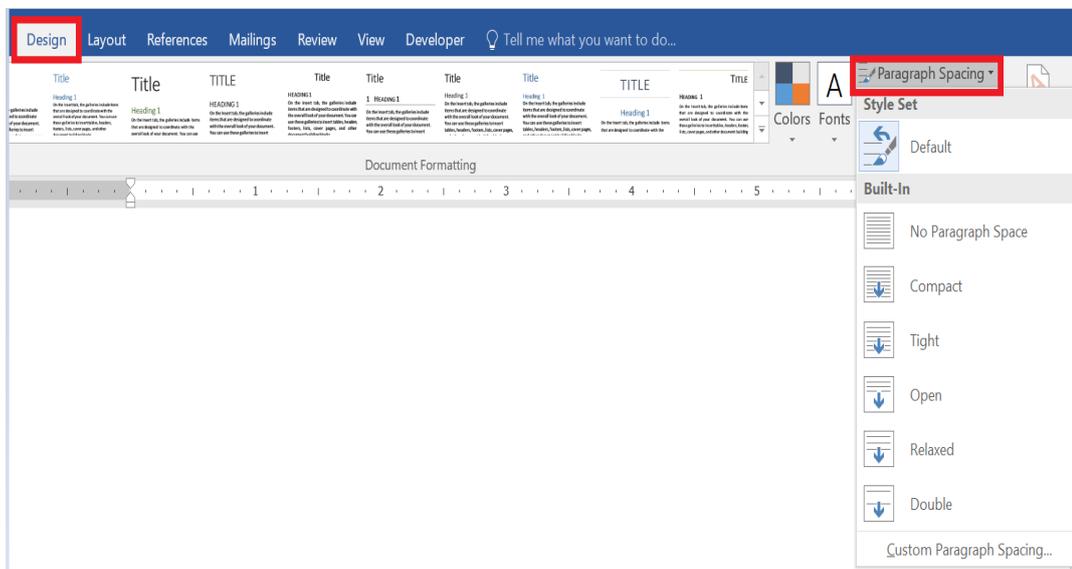


Figure 26: Paragraph spacing



Activity 2: Guided Practice



Task 3:

Referring to the performed scenario in task 2 and after having knowledge on page setup, Perform the following task:

Create a professional newsletter in Microsoft Word for your company's quarterly updates. Start by setting 1-inch margins and switching to a landscape orientation for a broader layout. Use the Letter size (8.5 x 11 inches) and divide the page into three columns. Insert section breaks as needed and enable automatic hyphenation for clean line breaks. Add a "Confidential" watermark and select a light gray page color to enhance the background. Frame the content with a simple line border. For advanced text formatting, use a decorative font with a dark blue color and shadow effect for the title. Highlight key sections with a bordered box and light-yellow shading. Indent paragraphs by 0.5 inches and set line spacing to 1.5 with 10 pt spacing after each paragraph for readability.



Activity 3: Application



Task 4:

From what you have learnt from key facts 1.1, perform the following task

The X company need to create an invitation card to an event. Create an invitation card for a “hotel opening event” in Microsoft Word using page Layout, Page Background, and Advanced Formatting features. Set 1-inch margins, use portrait orientation, and select A5 page size. Organize content in columns with section breaks and enable hyphenation for neat text alignment. Add a personalized watermark, choose a light blue accent color, and apply an art decorative border. Style the text with a bold, Arial font, use text effects for emphasis, and apply shading to highlight important details. Finally, adjust indentation, paragraph, and line spacing of 1.5 to ensure readability and professionalism.

Topic 1.2: Insert and manage images in a document



Activity 1: Problem Solving



Task 5:

Read the following scenario and answer the questions that follow

Keza is preparing an invitation for a school event. She has been assigned to include a picture of the school logo, but it's too large to fit neatly at the top. To enhance the invitation's visual appeal, she adjusts the brightness and contrast of a group photo, positions the image in the center, and wraps the event details around it. She also adds a border and a shadow effect to the picture. Finally, she slightly rotates a decorative image to add a playful touch, completing a professional and engaging invitation design.

1. What do you understand by resizing an image, adjusting its brightness and contrast?
2. How can you modify the position of an image in Microsoft Word?
3. Where can you locate the option to wrap text around an image?

Key Facts 1.2: Insert and manage images in a document

- **Introduction**

Images can be added to Word documents and then formatted in various ways. The **picture tools** in MS Word make it easy to incorporate images into your documents and **modify these images** in innovative ways. This topic shows how to insert a picture, change the picture style and shape, add a border, and crop and compress pictures.

- ✓ **Inserting and modifying pictures**



- To insert a picture:**

- Step 1:** Place your **insertion point** where you want the image to appear.

- Step 2:** Select the **Insert** tab.

- Step 3:** Click the **Picture** command in the **Illustrations** group.

- Step 4:** The Insert Picture dialog box appears.

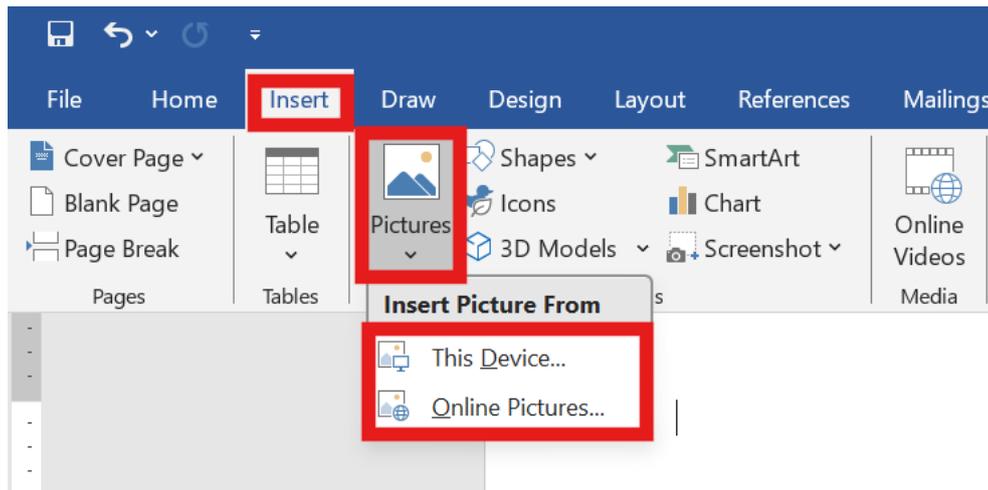


Figure 27: Inserting a picture

Step 5: Select the image file on your computer.

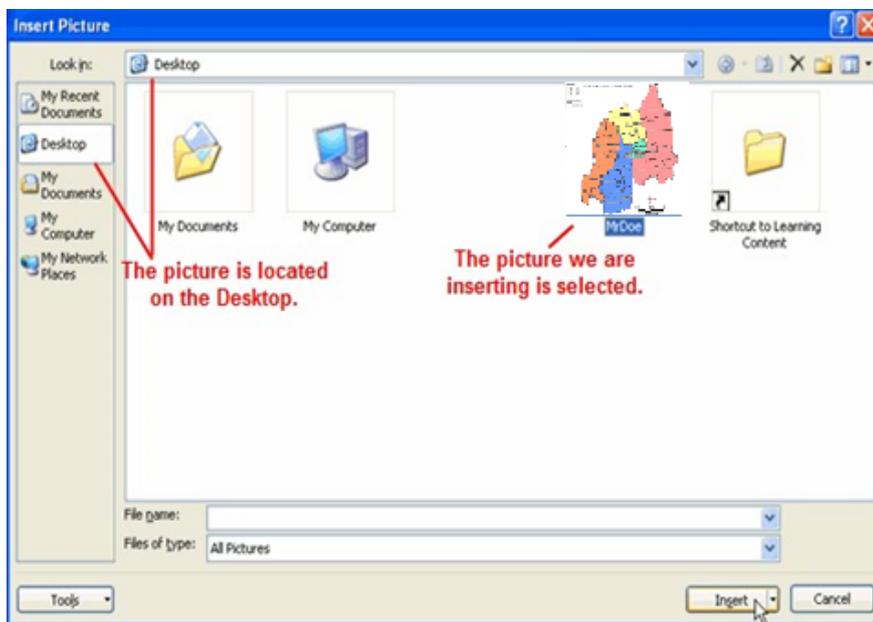


Figure 28: Finding image location

 **To wrap text around an image:**

Step 1: Select the image.

Step 2: Select the **Picture Tools Format** tab.

Step 3: Click the **Text Wrapping** command in the Arrange group

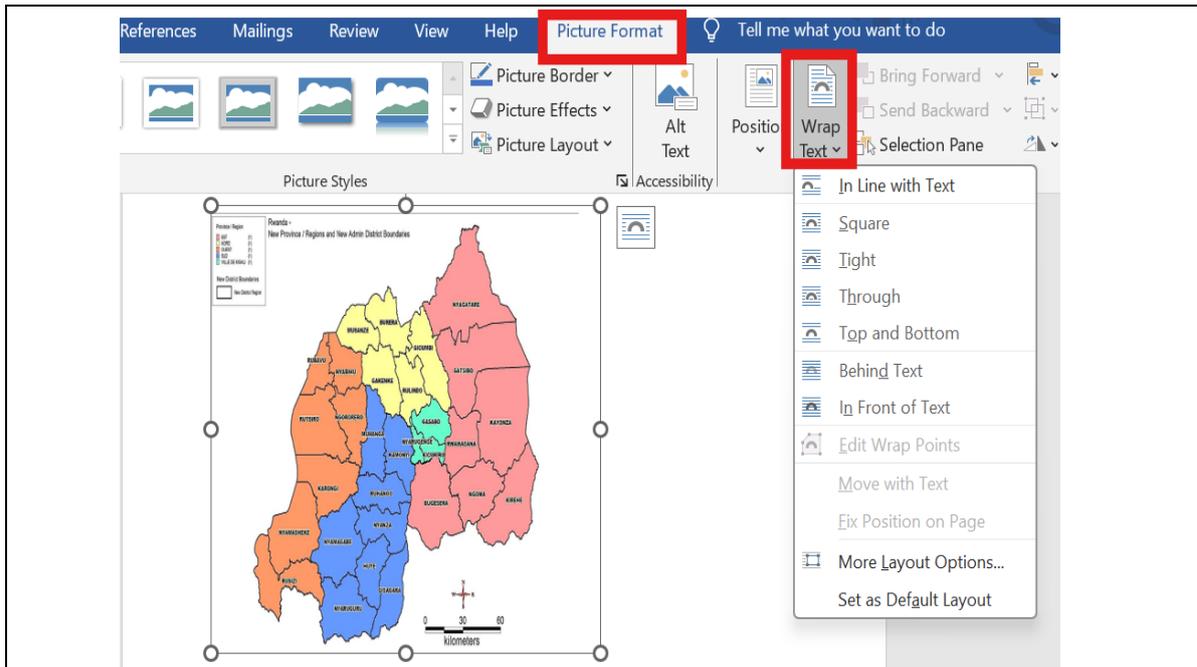


Figure 29: wrapping text around an image

If you can't get your text to wrap the way you want, click the **Text Wrapping** command and select **More Layout Options** from the menu. You can make more precise changes in the Advanced Layout dialog box that appears.

 **To crop an image:**

Step 1: Select the image.

Step 2: Select the **Format** tab.

Step 3: Click the **Crop** command. The black cropping handles appear.

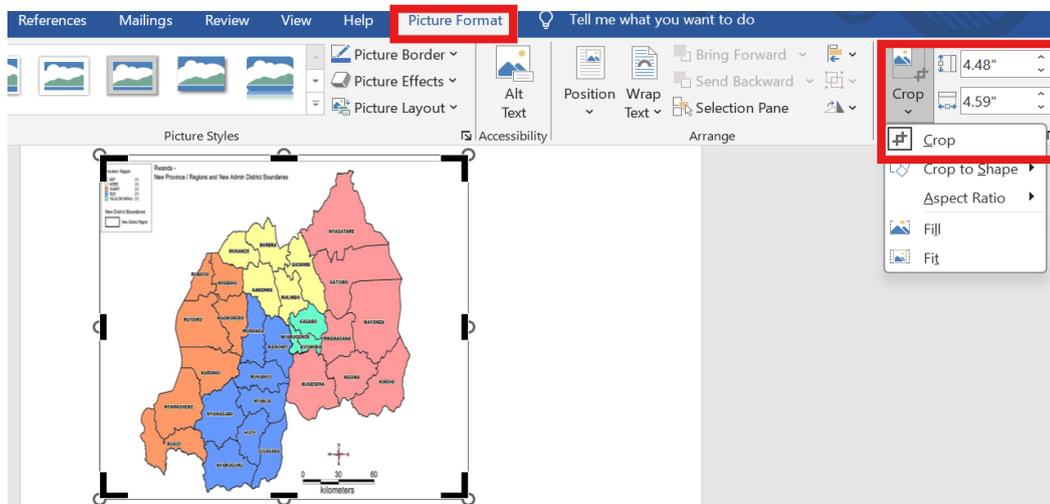


Figure 30: Cropping an image

Step 4: Left-click and move a **handle** to crop an image.

Step 5: Click the **Crop** command to deselect the crop tool.

Step 6: Corner handles will crop the image proportionally.

 **To compress a picture:**

Step 1: Select the picture.

Step 2: Select the **Format** tab.

Step 3: Click the **Compress Pictures** command in the Adjust group. A dialog box appears.

Step 4: Click the **Options** button to access the **Compression Setting** dialog box.

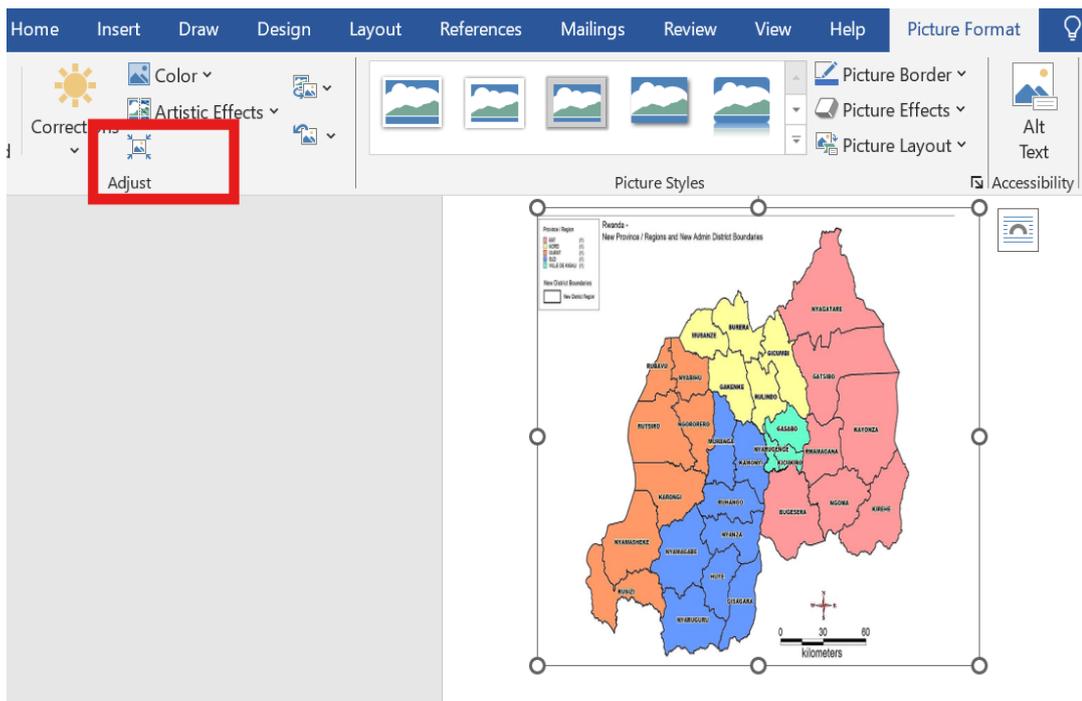


Figure 31: Accessing Compression Setting dialog box

Step 5: Choose the target output.

Step 6: Change any of the default picture settings you want.

Step 7: Click **OK** in the Compression Settings dialog box.

Step 8: Click **OK** in the Compress Pictures dialog box.

- High contrast increases the difference, making light areas lighter and dark areas darker, which can add depth and dimension.
- Low contrast reduces the difference, creating a softer and more muted appearance, often reducing the sharpness of the image.

Step 1: Click on the inserted image to select it. A new tab called **Picture Format** (or **Format**) will appear on the Ribbon.

Step 2: With the image selected, go to the **Picture Format** tab.

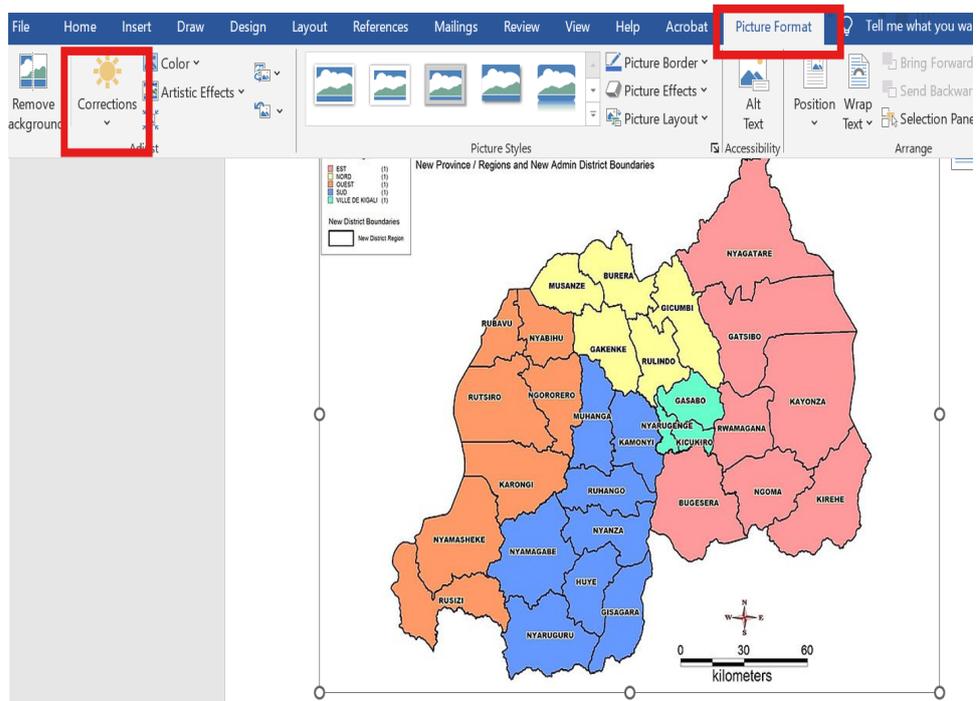


Figure 33: Access the Correction Tools

Step 3: Click on **Corrections** in the **Adjust** group. A drop-down menu will appear with preset options for brightness and contrast.

Step 4: Hover over each option to see a preview of how it will affect the image.

Step 5: Click on the desired option to apply the changes.

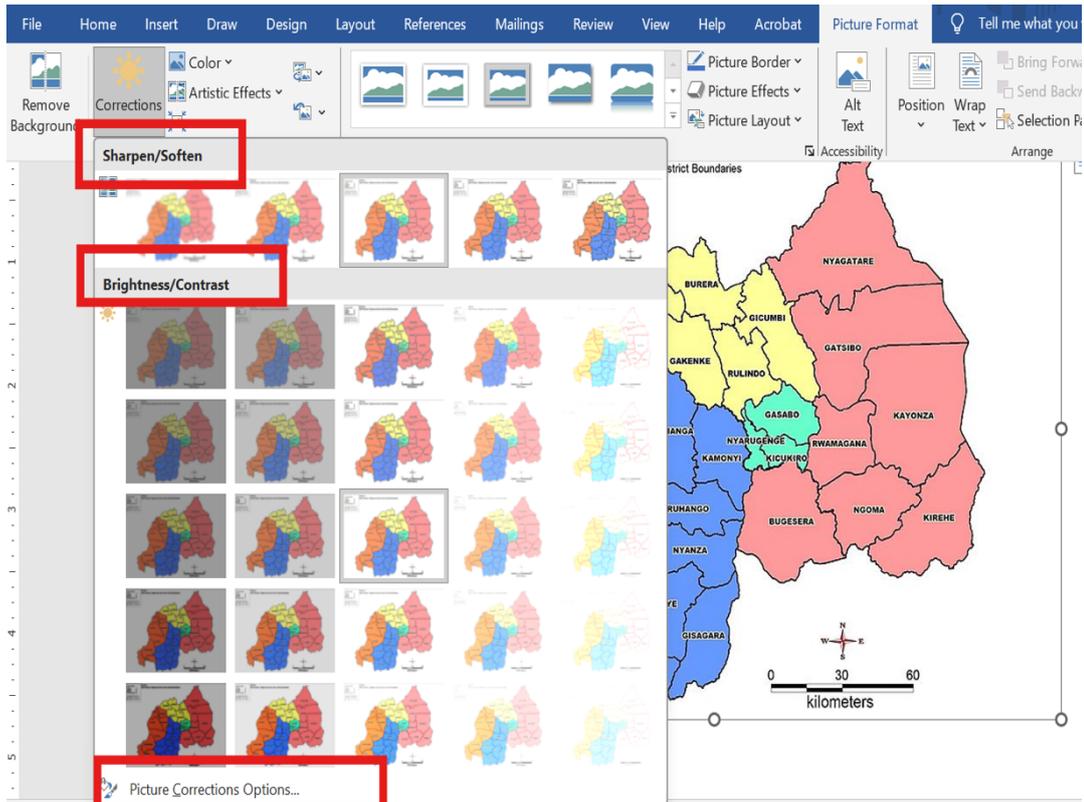


Figure 34: Adjust Brightness and Contrast

Fine-Tune the Adjustments (Optional)

- If the preset options do not meet your needs, click on **Picture Corrections Options** at the bottom of the Corrections menu.
- In the **Format Picture** pane that opens on the right, adjust the **Brightness** and **Contrast** sliders manually for precise control.
- Review the changes on your document.
- If necessary, continue to adjust the settings until the image looks as desired.

To apply **Picture styles**

Step 1: Place your cursor where you want to insert the image.

Step 2: Go to the **"Insert"** tab on the Ribbon.

Step 3: Click **"Pictures"** in the **Illustrations** group and choose a picture from your device or online sources.

Step 4: Once the picture is inserted, click on it to select it.

Step 5: After selecting the image, go to the **"Picture Format"** tab (this tab appears once the picture is selected).

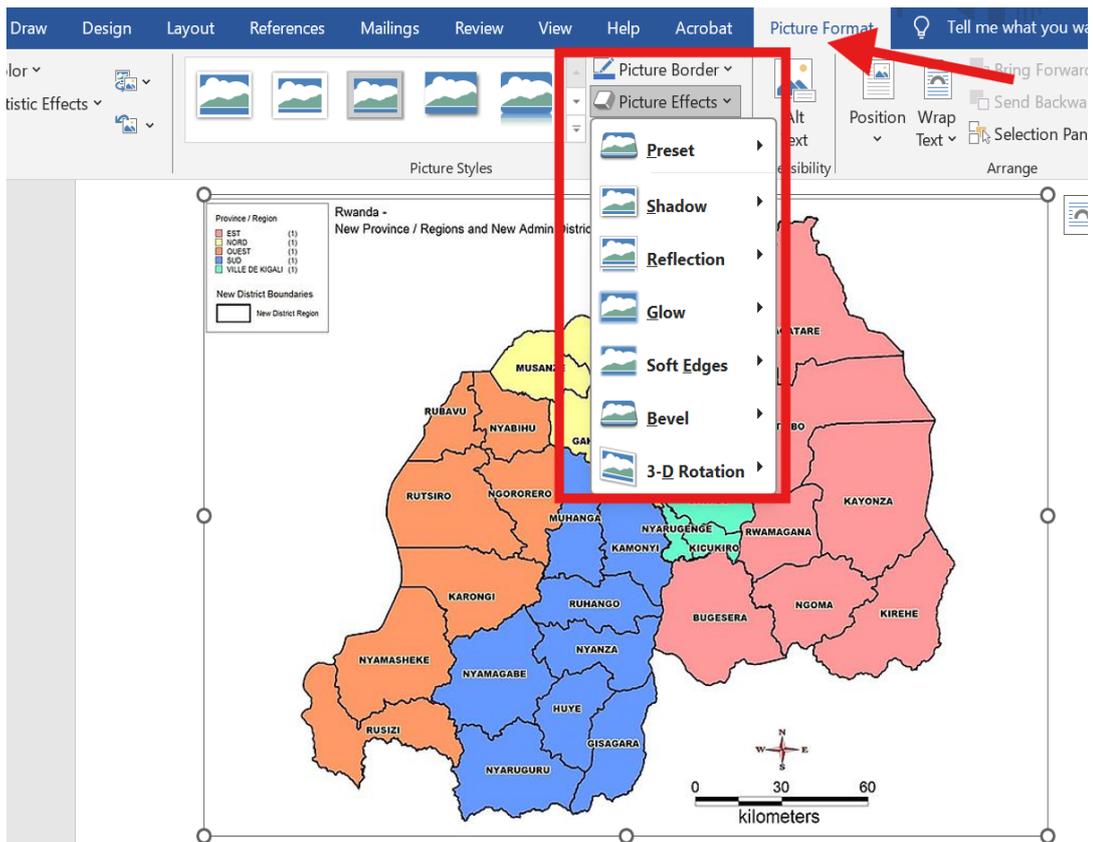


Figure 36: Picture Effects

 To change the **Picture Border**

Step 1: Select the image that you want to add a customized border to.

Step 2: On the **Picture Format** tab, select **Picture Border**.

Step 3: Choose a color.

Step 4: Under **Picture Border**, you can also choose from the following options, as needed:

- In the **Weight** list, choose a border width.
- In the **Dashes** list, choose a line style.

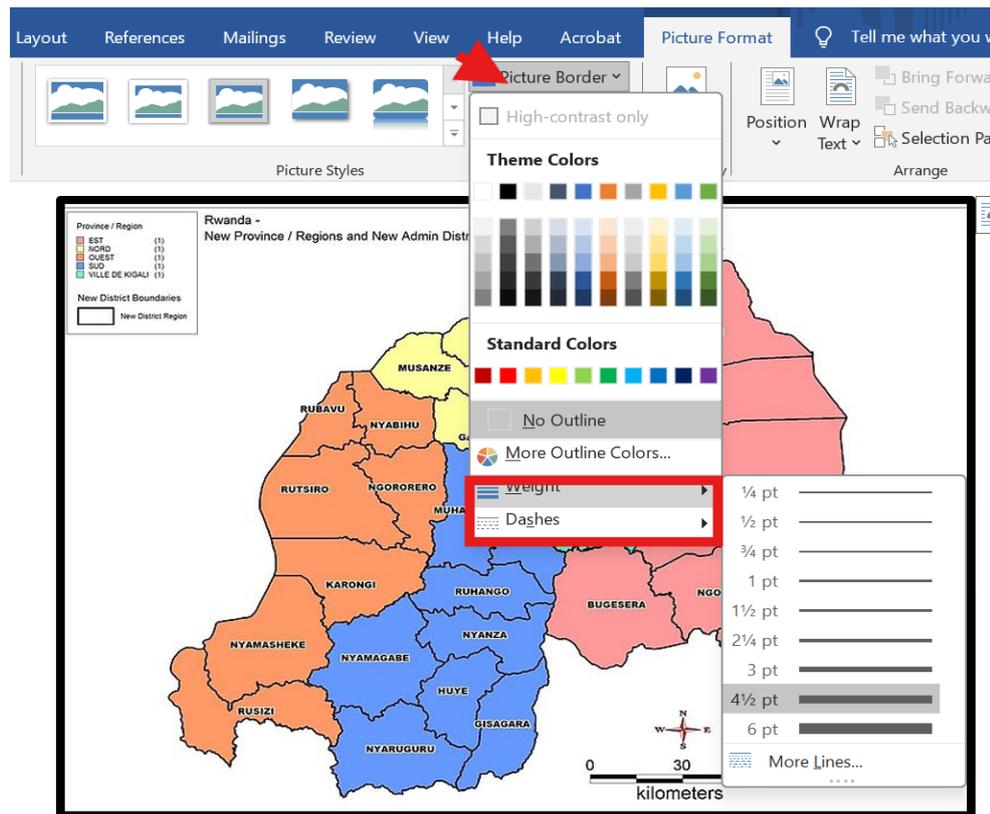


Figure 37: change the Picture Border

 To apply **Picture Layout**.

Step 1: Select the picture, then access the "Picture Format" tab

Step 2: Under format, Select the Picture Layout. A dropdown list appears with several layout options

Step 3: Choose the layout option you want

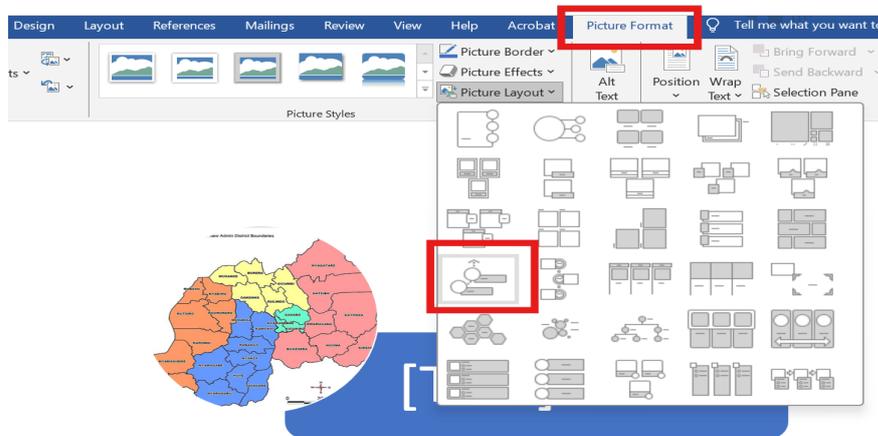


Figure 38: change the Picture Border

Adjust the Picture Size:

You can resize the picture by clicking and dragging its corners, or by setting exact dimensions in the **Size** group under the **Picture Format** tab.

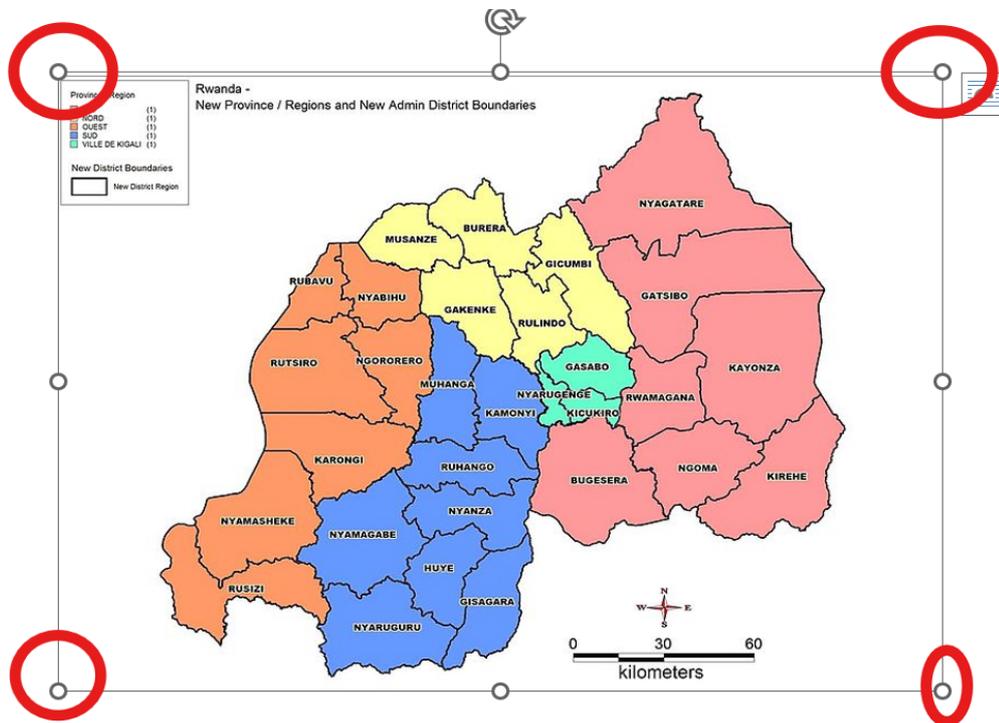


Figure 39: Adjust the Picture Size

- **Arrange picture**

In Microsoft Word, Picture Arrangements refer to how images are positioned, aligned, and formatted within a document. Word provides several options for arranging pictures to ensure they fit well with the text and other elements.

- ✓ **Picture Positioning and Layout Options**

Step 1: Select the picture you want to position

Step 2: Go to the Picture Format tab “**Format**”

Step 3: Select Position

Step 4: Choose the type of positioning you want

Step 5: To make advanced layout adjustments, select More Layout Options

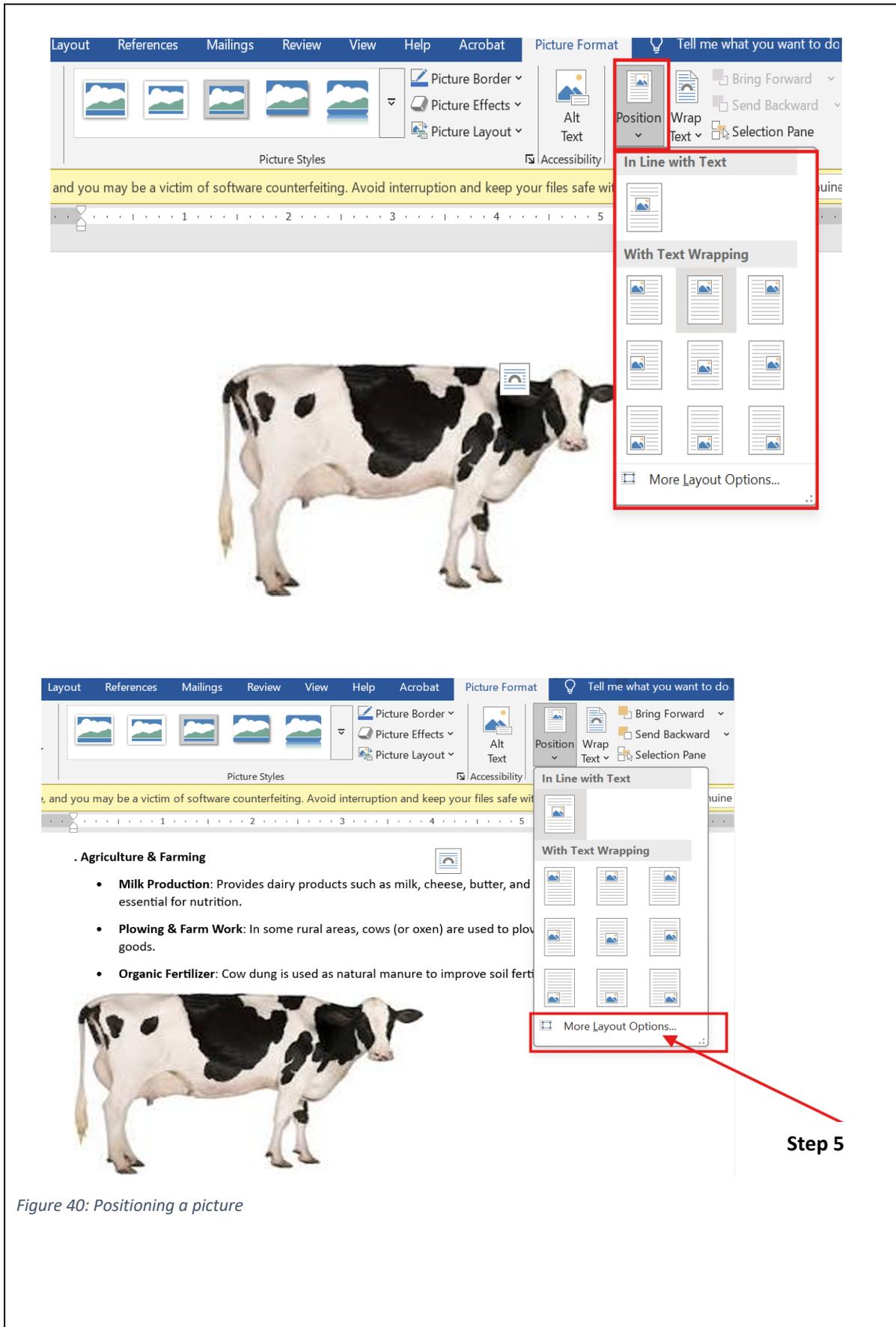


Figure 40: Positioning a picture

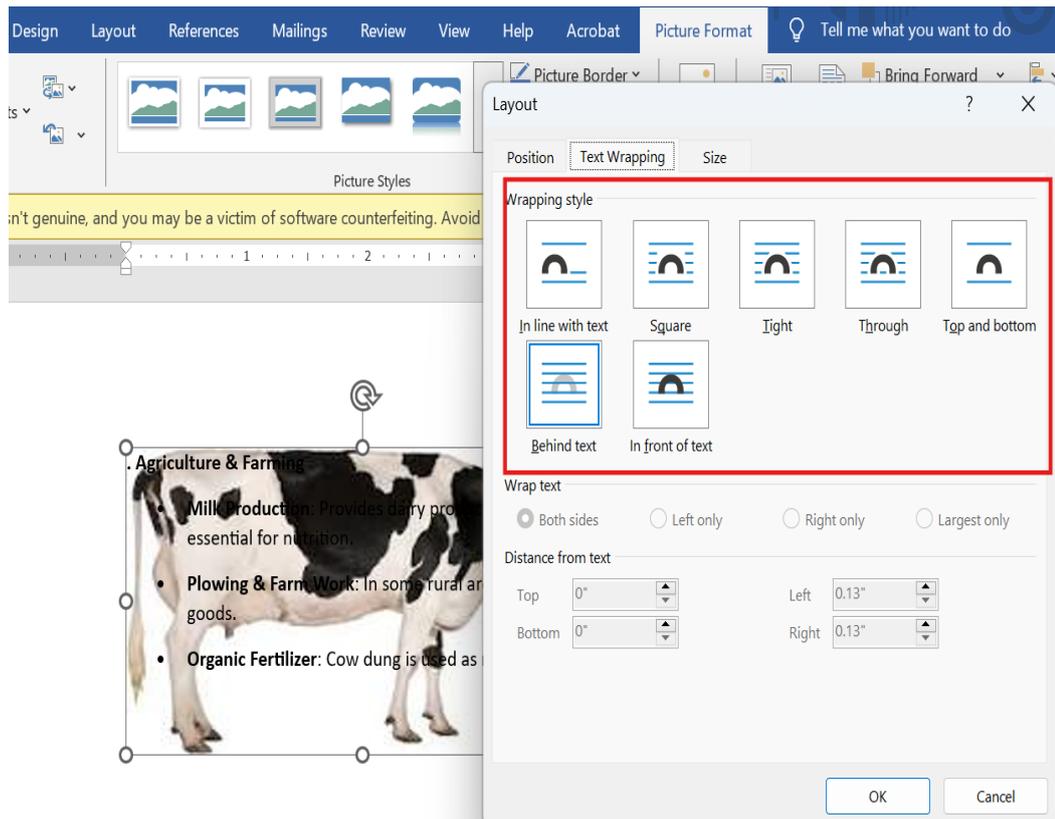


Figure 41: Wrapping text around a picture

✓ **Wrap text around a picture**

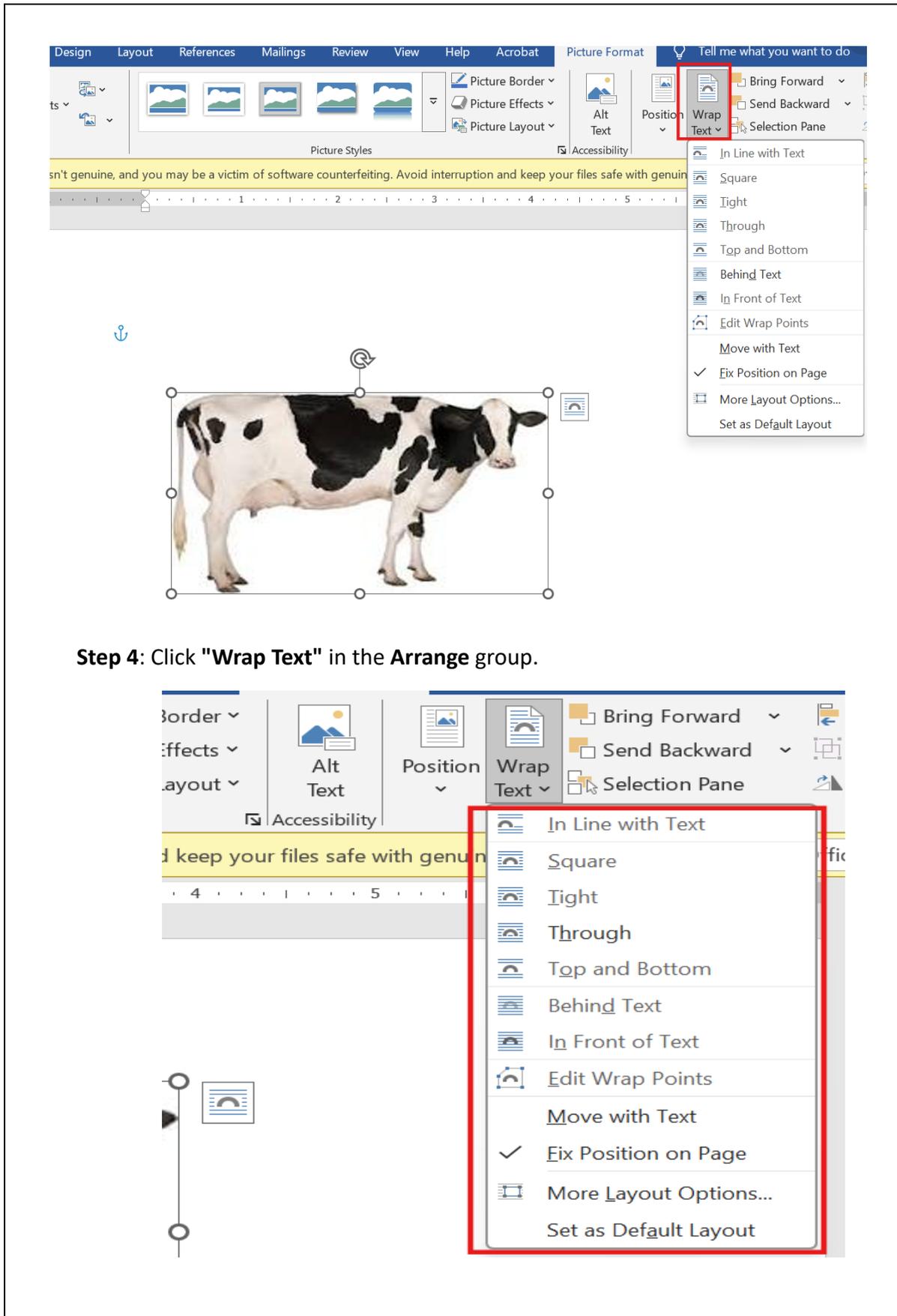
Wrapping text around a picture in **Microsoft Word** helps position the image within the text. Here's how to do it:

🗨️ **Method 1: Using the "Wrap Text" Option**

Step 1: Insert a Picture. Go to **Insert > Pictures** > Select an image from your computer.

Step 2: Select the Picture. Click on the image to activate the **Picture Format** tab.

Step 3: Open "Wrap Text" Options



Step 5: Choose a wrapping style:

- In Line with Text – The image behaves like text (default).
- Square – Text wraps around the edges of the image.
- Tight – Text wraps closely around the picture shape.
- Through – Text flows through transparent areas of the image.
- Top and Bottom – Text appears above and below the image.
- Behind Text – The image is placed behind the text (like a watermark).
- In Front of Text – The image covers the text.

Step 6: Move and Adjust the Image

- Drag the image to the desired position.
- Resize the image if needed by dragging its corners.

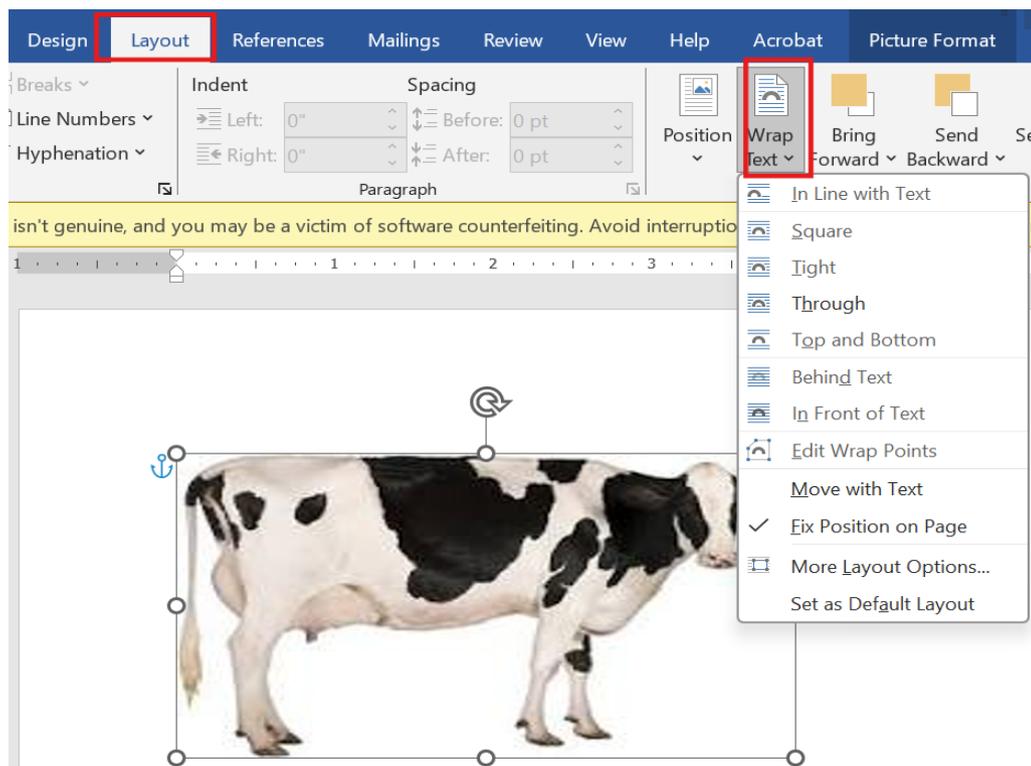
 **Method 2: Using the Layout Options Button**

Step 1: Insert and Select the Picture.

Step 2: Click on the "Layout Options" Button

- A small icon (square with lines) appears next to the image.

Step 3: Choose a Wrap Text Style



- Select a wrapping style (Square, Tight, Top and Bottom, etc.).

Step 4: Click "Fix Position on Page" or "Move with Text"

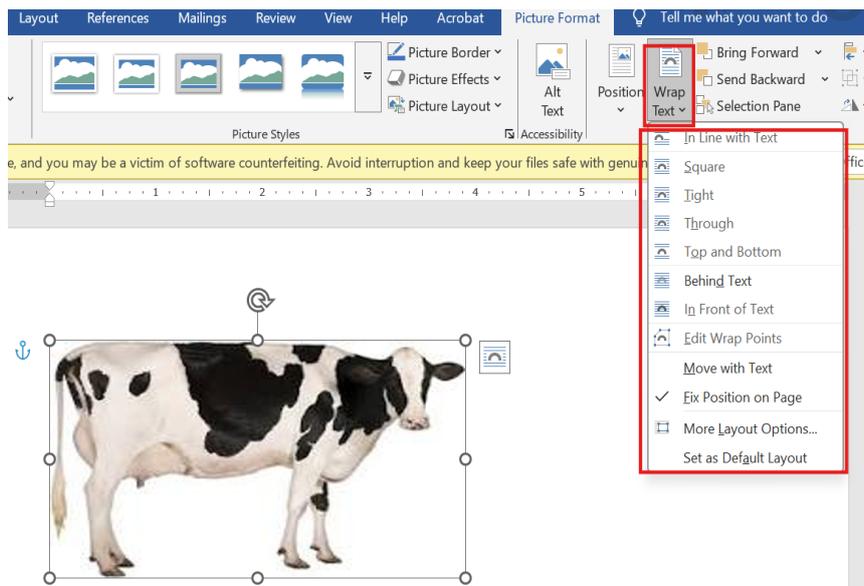
- Move with Text – The image moves when text is added or removed.
- Fix Position on Page – The image stays in one location.

✓ **To adjust text distance from the picture:**

- 📌 Go to **Wrap Text > More Layout Options > Text Wrapping** tab.
- 📌 Adjust **"Distance from text"** settings.

✓ **To fine-tune positioning:**

- 📌 Go to **Position > Choose a preset alignment** (e.g., center, left, right).



✓ **Rotate a picture**

Rotating a picture in **Microsoft Word** is simple. You can rotate it at different angles or flip it horizontally/vertically.

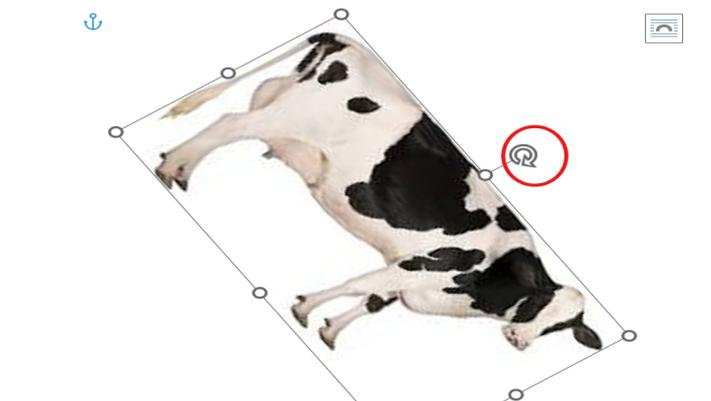


Figure 42: Rotating Picture

Method 1: Using the Rotate Handle

Step1: Insert a Picture: Go to **Insert > Pictures** and select an image.

Step2: Select the Picture: Click on the image to activate the **Picture Format** tab.

Step 3: Rotate the Picture Manually:

- Click and hold the **rotate handle** (a circular arrow at the top of the image).
- Drag it left or right to rotate the image to the desired angle.

Method 2: Using the Rotate Option

Step 1: Select the Picture.

Step 2: Go to the "**Picture Format**" Tab.

Step 3: Click on "**Rotate**" in the Arrange Group.

Step 4: Choose from these options:

- Rotate Right 90° – Turns the image 90 degrees clockwise.
- Rotate Left 90° – Turns the image 90 degrees counterclockwise.
- Flip Vertical – Flips the image upside down.
- Flip Horizontal – Creates a mirror image.
- More Rotation Options – Opens a dialog box where you can enter a specific rotation angle.

Method 3: Using More Rotation Options

Step 1: Select the Picture.

Step 2: Go to "Picture Format" > Click "Rotate" > Select "More Rotation Options".

Step 3: In the **Layout** dialog box, under **Size**, enter a precise **rotation angle** (e.g., 45° or -30°).

Step5: Click **OK** to apply the changes.



Activity 2: Guided Practice



Task 6:

Read carefully and perform the following task

Design a promotional announcement of X driving school in Microsoft Word, start by inserting a car picture and adjusting its size. Compress the picture to optimize the document and enhance it by increasing the contrast. Apply a picture style by adding a border and using effects like shadows or reflections. Arrange the image with Picture Layout for a professional touch. Position the picture using pre-defined placements and wrap text around it with options like Tight or Square. Finally, rotate the picture as needed to fit the design.



Activity 3: Application



Task 7:

Read carefully and perform the following task

Create a poster card for a special event using Microsoft Word. Start by inserting images that showcase key highlights of the event, such as featured activities, speakers, or attractions. Resize the images to fit neatly on the poster card, and adjust their brightness and contrast to make them vibrant and engaging. Add a decorative border and apply shadow effects to give the invitation a professional and appealing look. Use the text wrapping feature to arrange the images alongside descriptive text, ensuring a well-balanced and visually appealing layout. Include captions below each image to provide additional details, such as activity names or event times. Strategically position the images, placing the most captivating element at the center to draw attention. Once the layout is complete, review the invitation for a polished appearance and save it as " poster card " for printing or digital sharing.

Topic 1.3: Create and manage references in a document



Activity 1: Problem Solving



Task 8:

Read carefully the following scenario and answer to the questions that follow

As a trainee, imagine you're compiling an industrial attachment report. You've collected data from a variety of sources, including industry journals, online articles, and books. The challenge now is to organize your findings into a well-structured document, ensuring that each source is properly referenced. You'll need to insert citations as you write and create a references list at the end, finally you create a table of content. This will not only credit the original authors but also enhance the professionalism and credibility of your document.

1. What do you understand on table of contents?
2. What is a caption in a written document?
3. What a reference on a document?

Key Facts 1.3: Creation of references in a document

- **Create Table of Contents:**

Creating a Table of Contents (TOC) is the process of generating a structured list of the sections and sub-sections within a document, providing an overview and easy navigation for readers. It outlines the document's content and is typically placed at the beginning of the document.

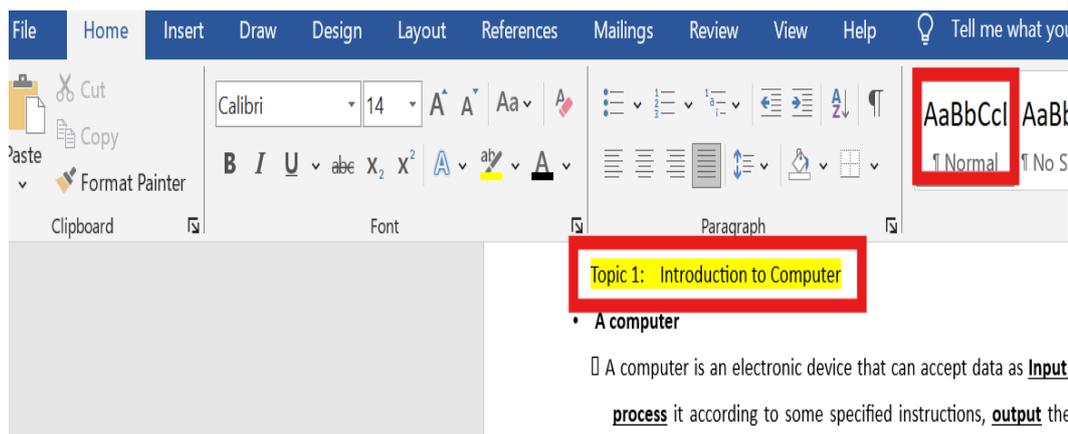
- ✓ **Apply Heading Styles:**

Step 1: First, you need to format the text you want to include in the Table of Contents (TOC). These are typically section titles or headings.

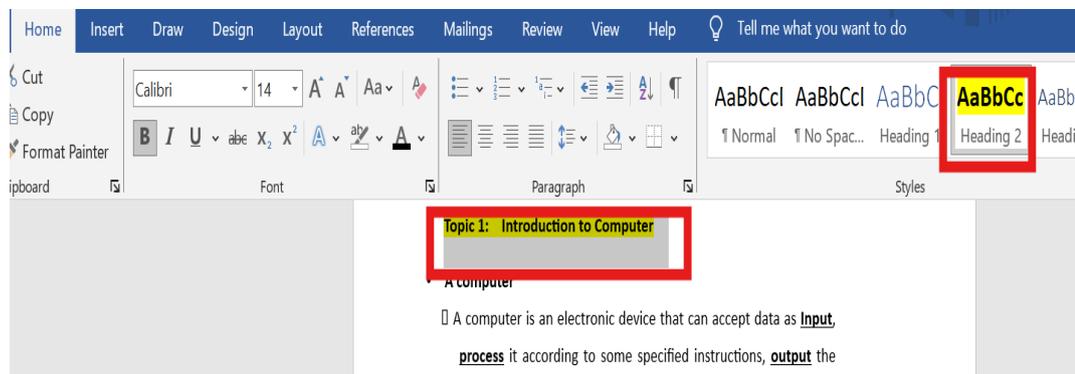


Figure 43: Applying Heading Styles

Step 2: Highlight the text you want to use as a heading.



Step 3: Go to the "Home" tab and apply a heading style from the Styles group (e.g., Heading 1 for main sections, Heading 2 for subsections).



- Do the same to other sections and subsections,
- To create custom headings, modify the style by right-clicking the heading style in the Styles Design group and selecting Modify.

- **Insert the table of contents**

Step 1: Place the cursor where you want the Table of Contents to appear (typically at the beginning of the document).

Step 2: Go to the "References" tab in the Ribbon.

Step 3: In the **Table of Contents** group, click "Table of Contents".

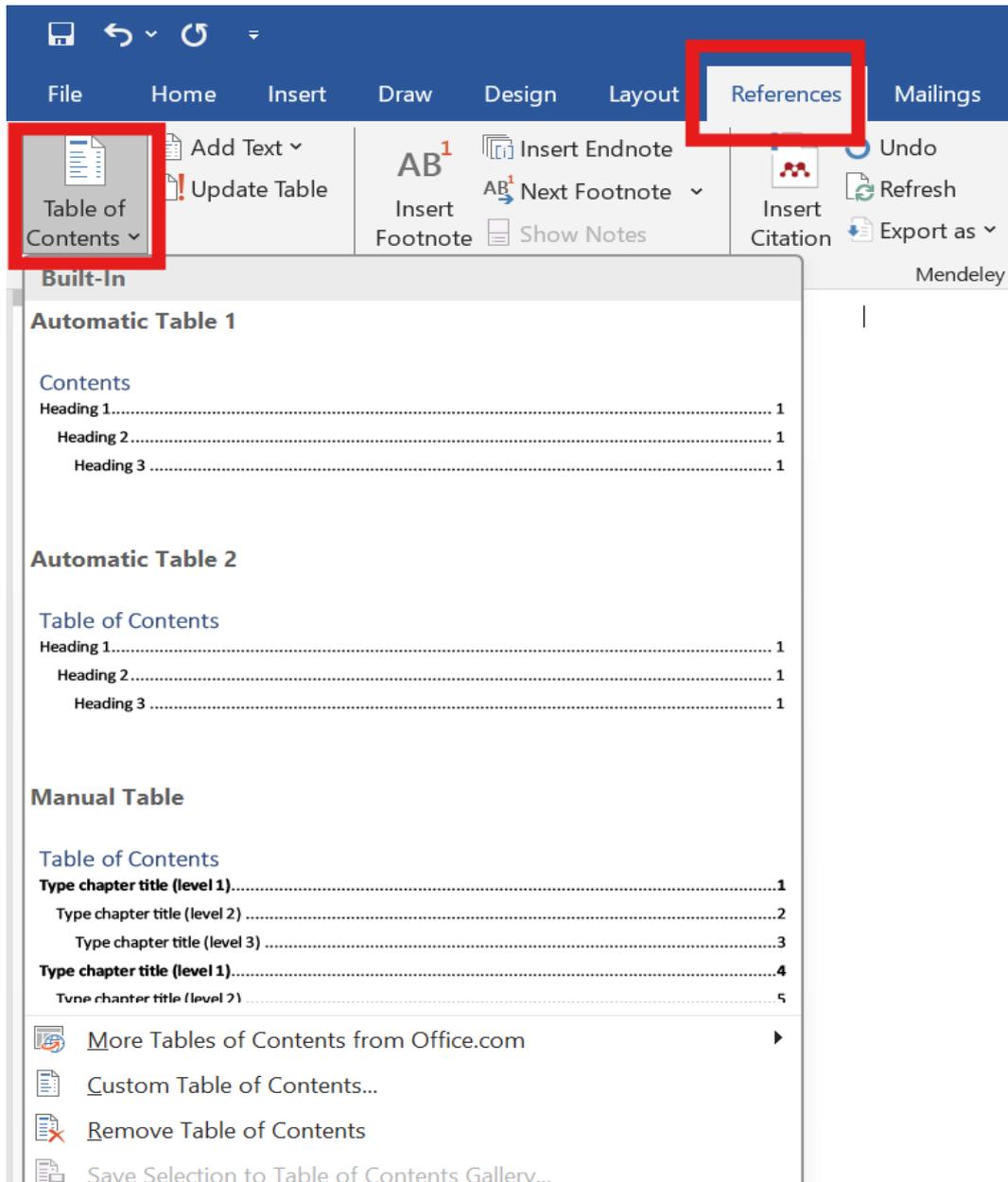
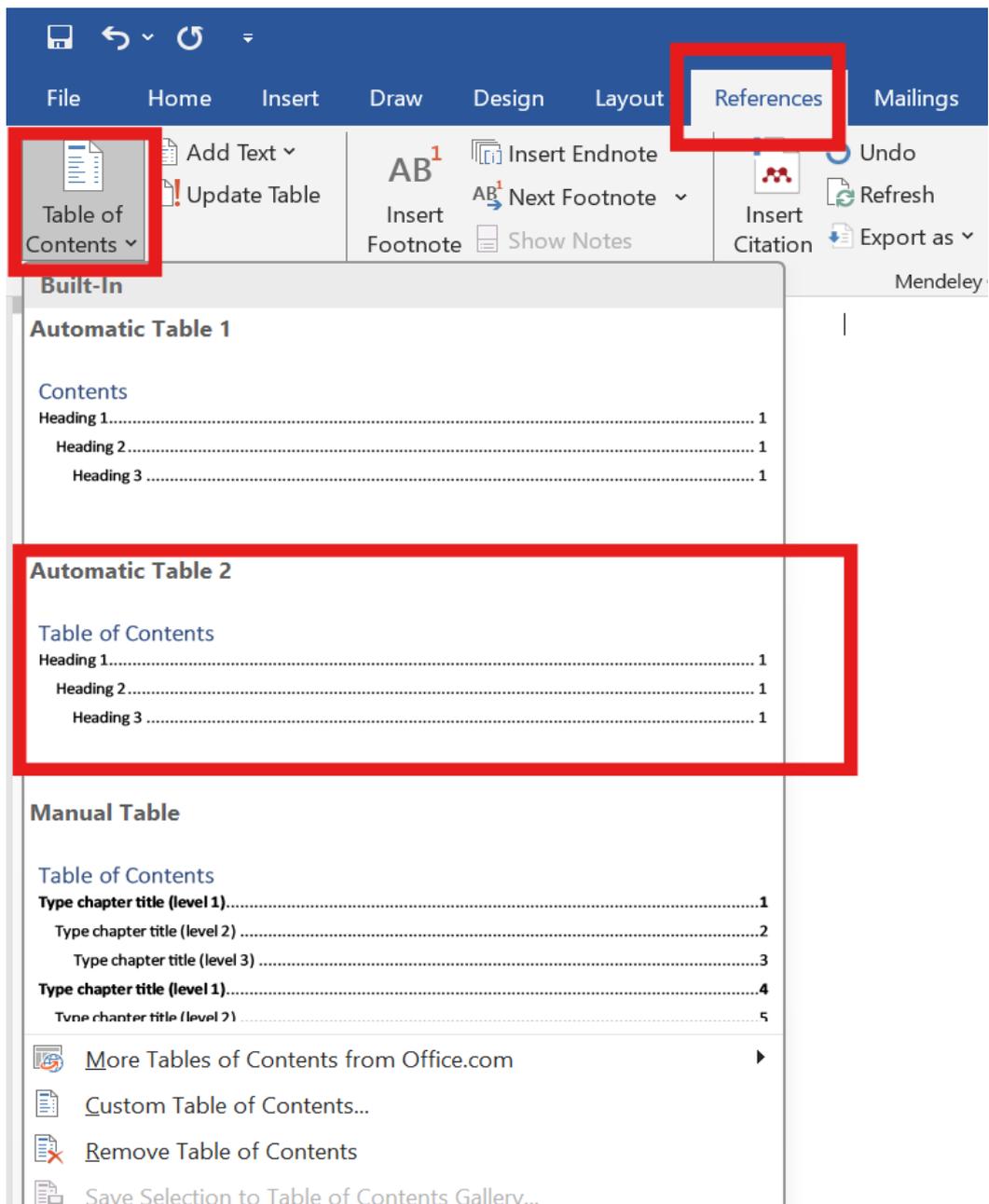


Figure 44: inserting table of contents

Step 4: Choose one of the predefined TOC styles, or click "**Custom Table of Contents**" to customize the format.



Step 5: Once you have made your selection, click on Automatic Table 1 or 2, this will automatically insert your Table of Contents based on your selection.

Step 6: To make formatting changes to your Table of Contents << Select Custom Table of Contents

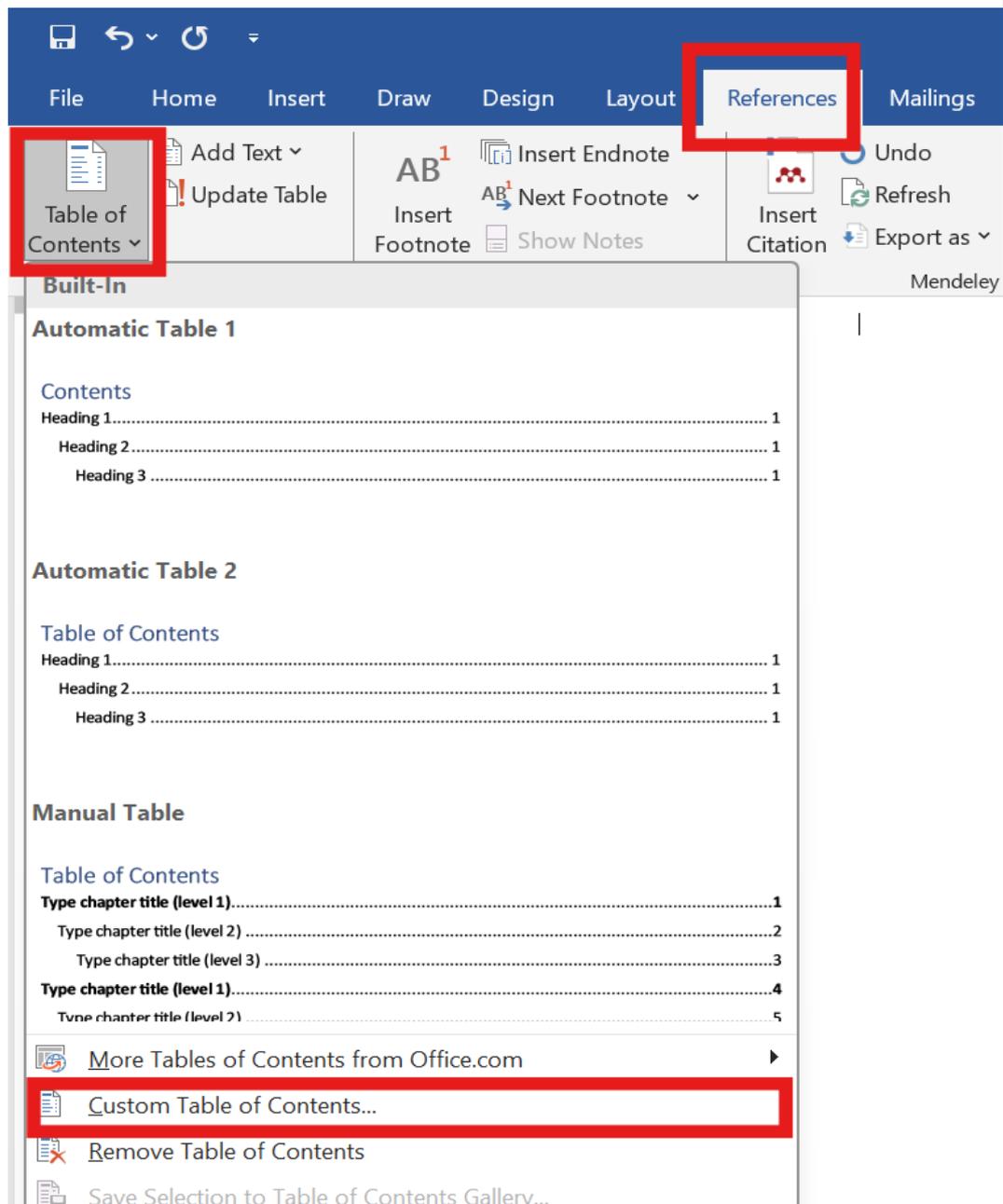
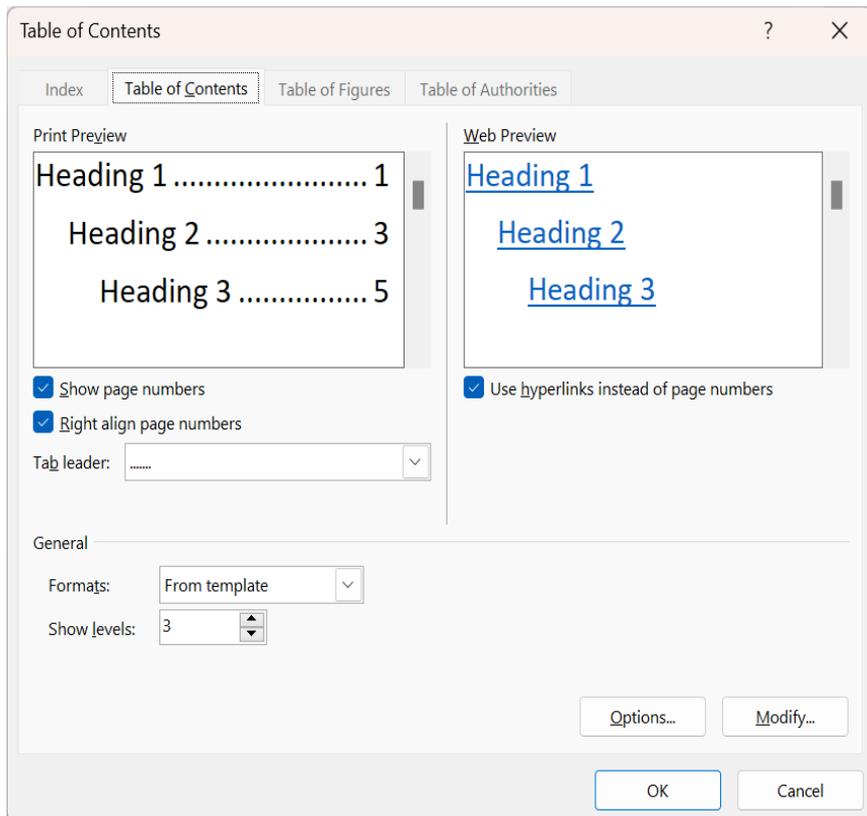
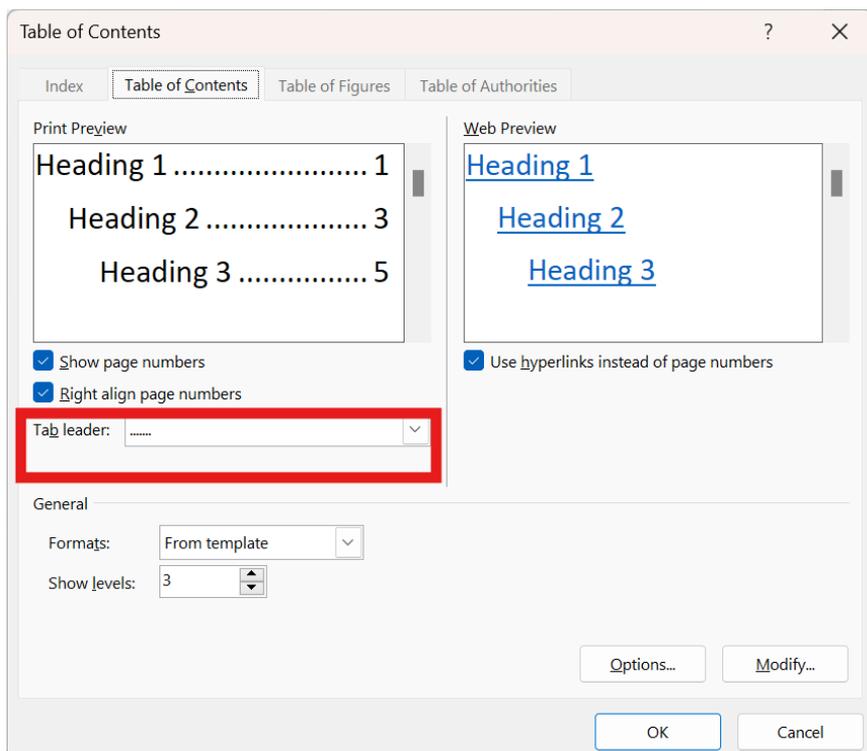


Figure 45: Customizing table of contents

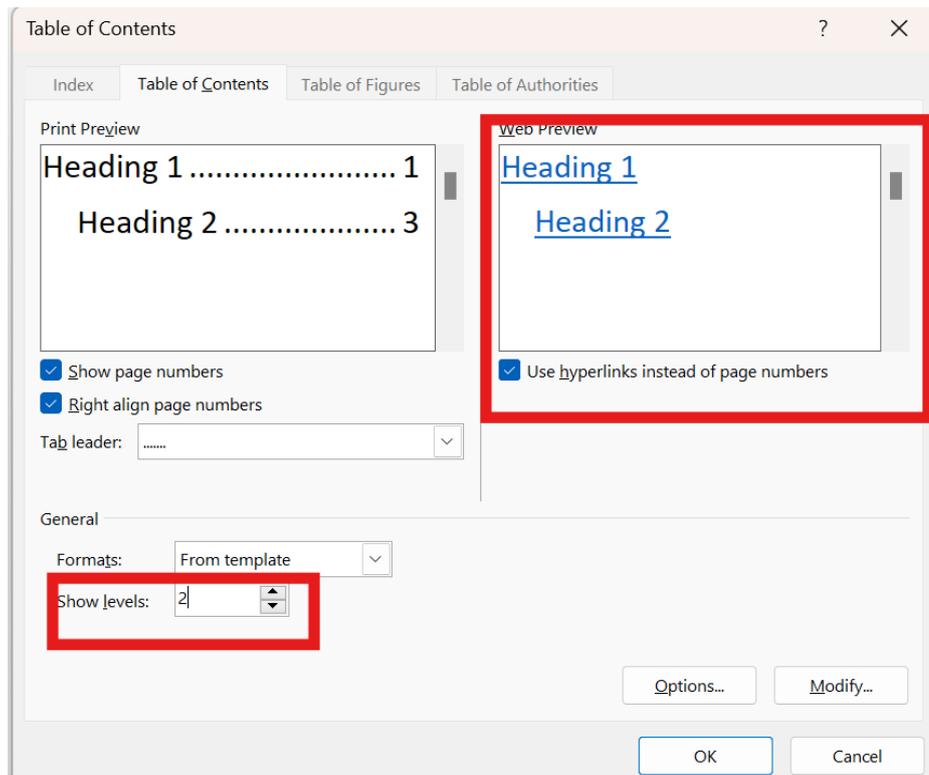
Step 7: Once you have selected the Custom Table of Contents, the following dialogue box will appear and you can make any formatting changes here.



Step 8: To change the Tab leader << select the box shown below;



Step 9: You can also increase or decrease the levels of the headings, as shown below;



- **Footnotes:**

A footnote is a reference, explanation, or comment placed at the bottom of a page in a document, typically used to provide additional information or cite sources without cluttering the main text. It allows readers to access more details or context without interrupting the flow of the content.⁸

- ✓ **Key features of a footnote:**

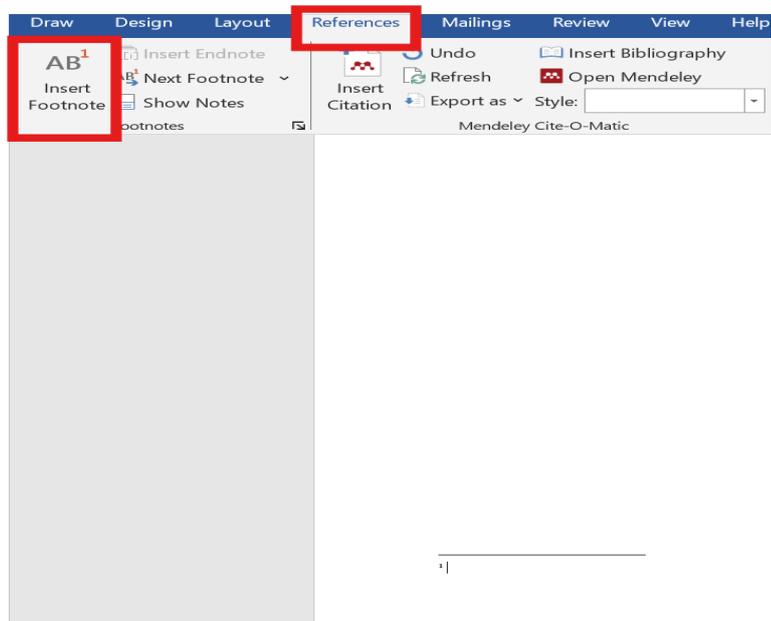
- **Superscript Number:** In the main text, a small superscript number is placed next to the relevant word or phrase that has a corresponding footnote. **For example:** *This is an important fact¹.*
- **Footnote Text:** At the bottom of the page, the footnote number is listed along with the additional information or citation, **for example:** *¹More details about this topic can be found in the study by Smith (2020).*
- **Source Citation:** Footnotes are commonly used for citing sources of information in academic or professional writing.

⁸ <https://www.merriam-webster.com/dictionary/footnote>

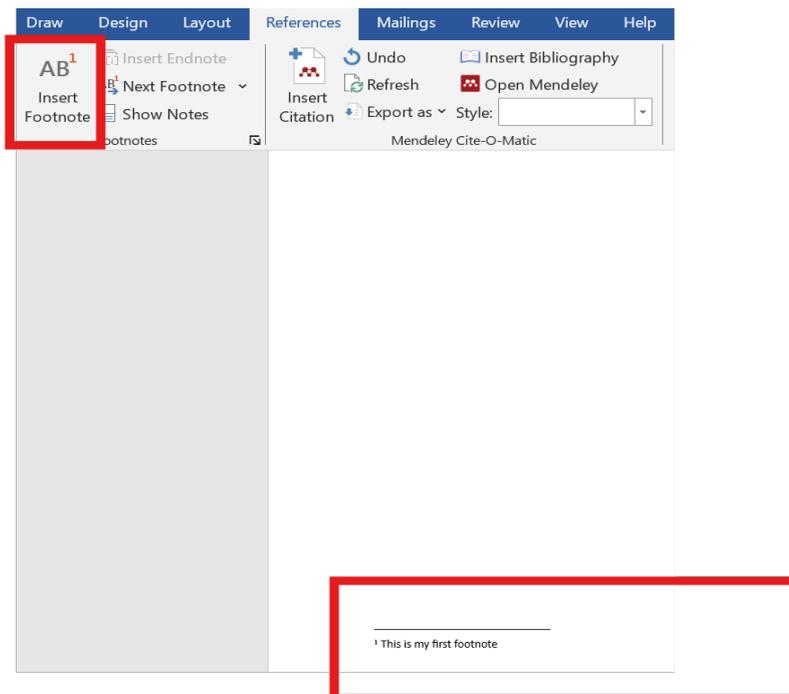
✓ **Steps for creating footnotes**

Step 1: Place the cursor where you want the footnote number to appear.

Step 2: Go to the "References" tab and click "Insert Footnote" in the Footnotes group.



Step 3: A footnote number will appear at the cursor position, and you will be automatically moved to the bottom of the page to add the footnote text.



Step 4: Word will automatically number the footnotes and adjust them if any new footnotes are added.

- **Citations and Bibliography**

Citations and **bibliography** are essential components of academic and professional writing, used to give credit to sources of information and ideas, and to allow readers to locate those sources for further research.

- ✓ **Citations:**

A citation is a reference within the body of your text that gives credit to the source of the information, idea, or quote you have used. It acknowledges the author or creator and allows readers to trace the original source.

- ✚ **In-text citations** are typically placed in parentheses or as footnotes, depending on the citation style.

- ✚ **Different citation styles** (e.g., APA, MLA, Chicago) have specific rules for how citations should appear.

Examples:

- **APA style: (Smith, 2020)**
- **MLA style: (Smith 45)**
- **Chicago style: (Smith 2020, 45)**

- ✓ **Bibliography:**

A bibliography is a complete list of all the sources you referenced or consulted while preparing your document. It is usually placed at the end of the document and provides full citation details for each source, allowing readers to find and explore those sources.⁹

The bibliography will typically include the author's name, title of the work, publisher, publication date, and other relevant details. A bibliography can be titled differently based on the citation style (e.g., "Works Cited" in MLA, "References" in APA).

⁹ <https://libguides.limestone.edu/c.php?g=545011&p=3736441>

✓ **Citations and Bibliography Work Together:**

 **Citations** are placed in the main body of your work (usually after a direct quote or paraphrased idea).

 **Bibliography** lists all the sources you cited, allowing readers to find the full reference information.

✓ **Steps for citation and bibliography**

Step 1: Go to the "**References**" tab and click on "**Insert Citation**" in the **Citations & Bibliography** group.

Step 2: Choose "**Add New Source**" to enter the source details (author, title, publisher, etc.).

Step 3: Once the source is added, you can insert the citation by clicking "**Insert Citation**" and selecting the source.

Step 4: To insert a bibliography, place the cursor where you want it to appear (usually at the end of the document).

Step 5: Click "**Bibliography**" in the **Citations & Bibliography** group and choose a predefined style for the bibliography.

• **Captions**

A **caption** is a brief description or title that accompanies an image, table, figure, chart, or any visual element in a document. Its purpose is to provide context, explanation, or additional information about the visual, helping readers understand its relevance to the content. Captions are usually placed directly below or beside the visual element they describe.¹⁰

✓ **Key Features of a Caption:**

 **Description:** A short, concise explanation or title that describes the visual element.

 **Numbering:** In many cases, captions are numbered (e.g., Figure 1, Table 2) to help readers reference them easily in the text.

¹⁰ <https://www.scribd.com/document/628007757/Dokumen-3>

 **Context:** The caption may include context such as the source of the image, the date it was created, or the significance of the visual in relation to the document's content.

Example:

- **Image caption** can be written as “Figure 1: Figure description”
- **Table caption:** can be written as “Table 1: Table description”

✓ **Important of Captions:**

 **Clarification:** Captions clarify what the reader is seeing and provide necessary context.

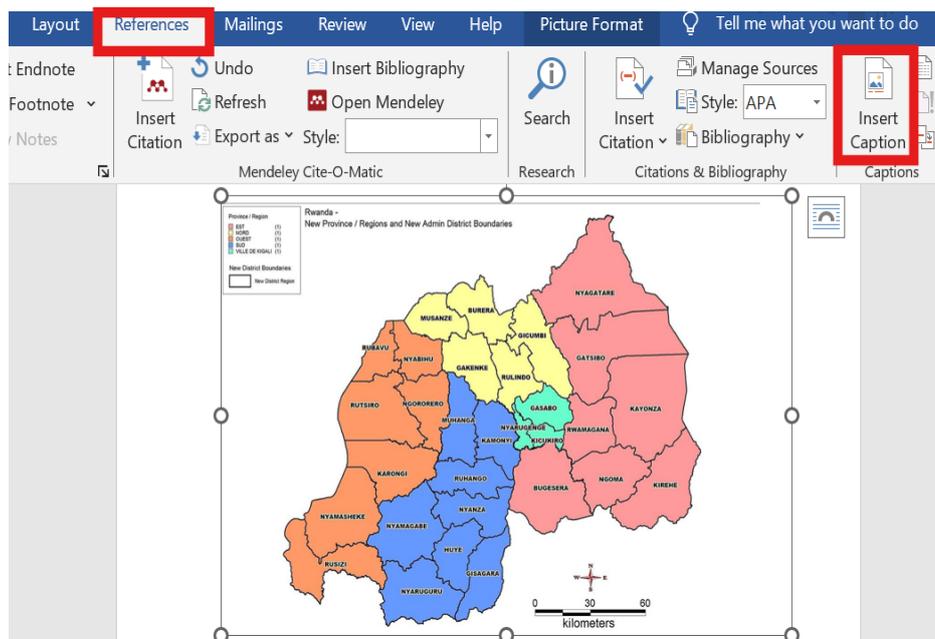
 **Professionalism:** They make documents look more polished and help maintain a smooth flow of information.

 **Reference:** Captions provide a way to reference the visual content in the main body of the document.

✓ **Steps to Insert a Captions**

Step 1: Click on the object (e.g., image, table, chart) you want to add a caption to.

Step 2: Go to the "References" tab and click "Insert Caption" in the Captions group



Step 3: In the **Caption** dialog box, type the caption text (e.g., "Figure 1: Map of Rwanda").

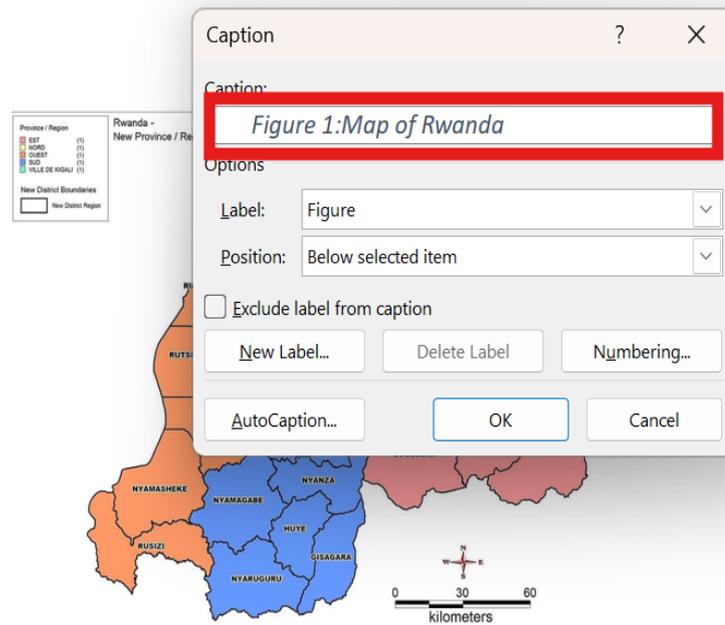
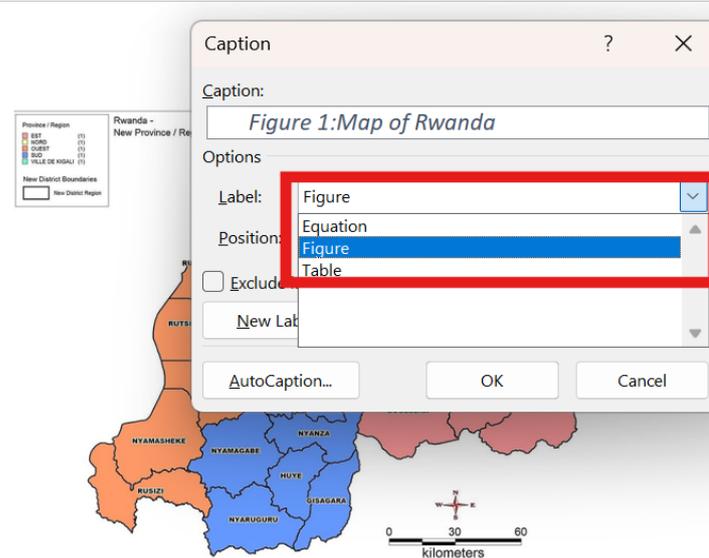


Figure 46: Inserting a picture

Step 4: Choose the label type (e.g., Figure, Table, Equation) or create a custom label.



Step 5: Click **OK** to insert the caption.

✓ **Insert Tables of Figures**

A **Table of Figures** is a list that displays all the figures (such as images, charts, graphs, or diagrams) included in a document, along with their corresponding page numbers. It provides an organized way for readers to locate and reference visual

elements in the document quickly. The Table of Figures is typically placed after the Table of Contents or before the main content.

✓ **Key Features of a Table of Figures:**

✚ **List of Figures:** It includes the title or caption of each figure used in the document.

✚ **Page Numbers:** Each entry in the table is accompanied by the page number where the figure appears.

✚ **Numbering:** Figures are usually numbered sequentially (e.g., Figure 1, Figure 2) to help readers easily find them.

✓ **Use of a Table of Figures:**

✚ **Navigation:** It helps readers quickly find and reference figures within the document.

✚ **Organization:** It enhances the document's structure, making it easier to read and navigate.

✚ **Professional Appearance:** Including a Table of Figures gives a polished and professional look to reports, theses, and other formal documents.

✓ **Steps for creating a table of figure**

Step 1: Place the cursor where you want the Table of Figures to appear.

Step 2: Go to the "References" tab and click "Insert Table of Figures" in the Captions group.

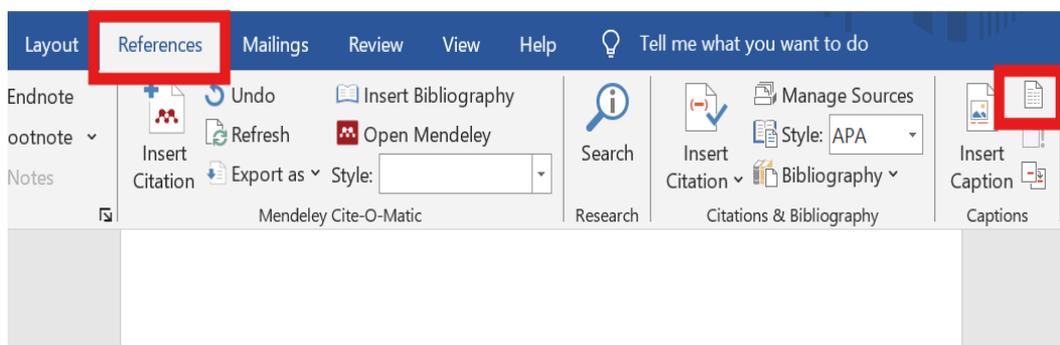


Figure 47: Insert table of figures

Step 3: In the **Table of Figures** dialog box, choose the format and settings (e.g., whether to include the label or page numbers).

Step 4: Click **OK** to insert the Table of Figures, which will list all the objects with captions in your document.



Activity 2: Guided Practice



Task 9:

Read carefully and perform the following task

Prepare a detailed final project report in Microsoft Word, which requires clear organization and accurate referencing. Start by adding a Table of Contents that updates automatically as you add headings. Insert Footnotes for additional information at the bottom of the page, and add Citations where necessary, compiling them into a Bibliography. Enhance your report by inserting Captions for tables, figures, or charts, and create a Table of Figures to list all captions. These steps will ensure a well-structured, properly cited final project report.



Activity 3: Application

 **Task 10:****Read carefully and perform the following task**

A trainee can complete their industrial attachment and prepare a report upon finishing. When preparing your industrial attachment report, document the experiences and skills gained during the program. The report should be well-organized and professionally formatted. Start by creating a Table of Contents with key sections like "Introduction," "Company Overview," "Training Experience," and "Conclusion." Use footnotes to provide additional details on specific concepts. Insert citations for the sources you reference and include a bibliography at the end. Add captions under images and charts that illustrate key processes and activities. Finally, create a Table of Figures to list all visuals, ensuring readers can easily locate them.

 **Formative Assessment****Multiple-Choice Questions (MCQs)**

- 1. Which feature is used to adjust the space between lines of text in a paragraph?**
 - a. Paragraph Indentation
 - b. Line Spacing
 - c. Page Margins
 - d. Font Effects
- 2. What is the default paper orientation in Microsoft Word?**
 - a. Landscape
 - b. Portrait
 - c. Square
 - d. Custom

3. How can you add captions to a picture in Microsoft Word?

- a. Using the "Insert Caption" option under the References tab
- b. By clicking on "Wrap Text"
- c. Under the Page Layout tab
- d. Using the Picture Styles menu

4. What is the purpose of compressing a picture in Word?

- a. To change its color
- b. To reduce file size
- c. To add effects
- d. To crop the image

5. Which tab contains the option to add page borders?

- a. Home
- b. Page Layout
- c. References
- d. Insert

True or False Questions

6. True/False

- a. Section breaks allow different formatting options within the same document. (True/False)
- b. Watermarks cannot be customized in Microsoft Word. (True/False)
- c. Indenting a paragraph alters the line spacing of the entire document. (True/False)

7. Fill in the Blanks

- d. The feature used to change the position of a picture is called _____.
- e. Page borders are found under the _____ tab in Word.
- f. Compressing a picture reduces its _____ size while maintaining visual quality.

Open Questions

8. Explain the significance of page margins, paper orientation, and page size in creating professional documents.
9. How do you add a watermark to a document? Provide examples of when watermarks are used.
10. Compare and contrast "Indenting a paragraph" and "Paragraph and line spacing" in document formatting.
11. Explain how to apply font effects and shading to text for emphasis.
12. What are the steps to compress a picture in Word? Why is this feature important?
13. Explain how to use "Wrap Text" to position a picture effectively in a document.
14. List and describe three types of picture effects that can be applied to images.
15. How do you create a table of contents in Microsoft Word? Mention any three benefits of using it.
16. Write the steps to insert footnotes and manage citations in a Word document.



Points to Remember

- Page Layout: Adjust margins, orientation, page size, and use section breaks for better document structure.
- Page Background: Enhance documents with watermarks, page colors, and borders for professional appeal.
- Advanced Formatting: Use fonts, colors, borders, shading, and spacing to improve text presentation and readability.
- Picture Handling: Insert and modify pictures by resizing, compressing, adjusting contrast, and applying styles.
- Picture Arrangement: Position images using text wrapping, alignment, and rotation to fit content seamlessly.
- References and Captions: Manage Table of contents, footnotes, citations, and captions to provide clear references and navigation.



Self-Reflection

1. Re-take the self-assessment you did at the beginning of the unit.
2. Read the statements across the top. Put a check in a column that best represents your level of knowledge, skills and attitudes.

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Describe page layout components					
Describe page background components					
Describe text formatting components					
Identify steps for inserting pictures					
Identify steps for editing pictures					
Identify steps for creating table of contents					

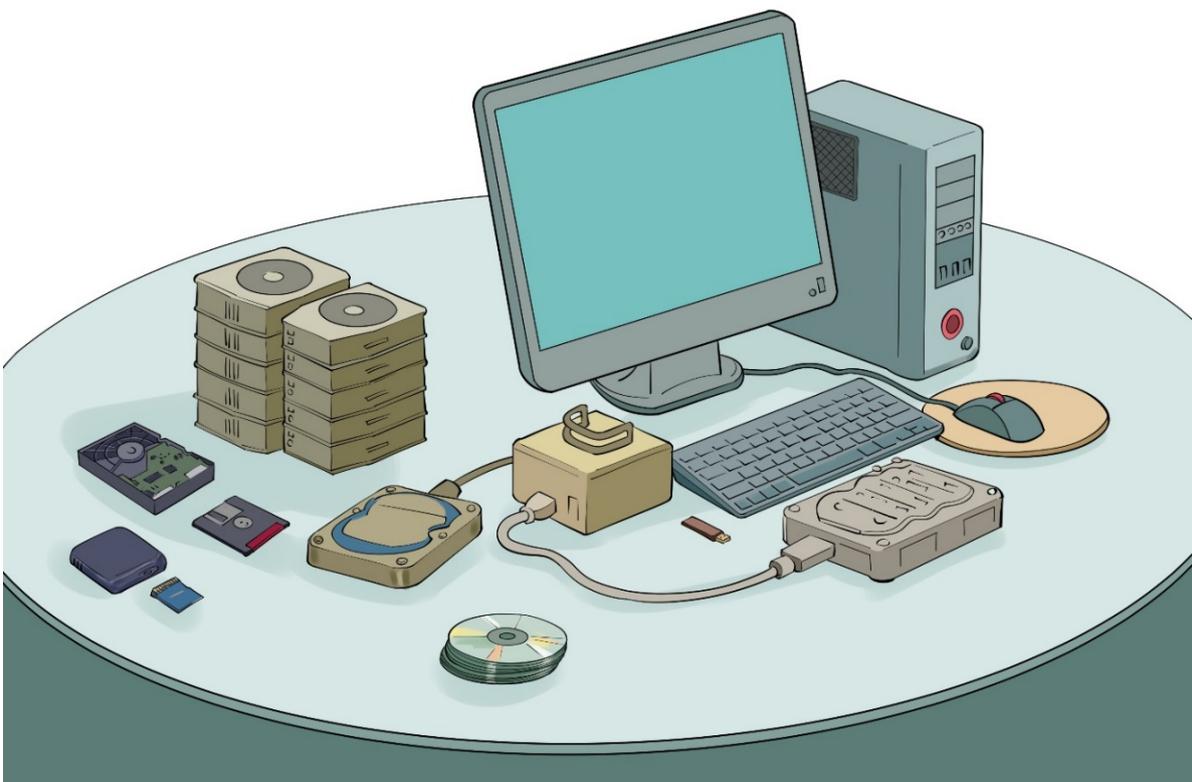
My experience	I do not	I know a	I have	I have a lot	I am
Knowledge, skills and attitudes	have any experience doing this.	little about this.	some experience doing this.	of experience with this.	confident in my ability to do this.
Define captions					
Identify steps for adding citations and bibliography					
Adjust page layout setting					
Apply page background					
Apply advanced text formatting					
Insert pictures					
Edit picture					
Create table of contents					
Add caption					
Add citations and bibliography.					
Pay attention to layout details.					

My experience	I do not	I know a	I have	I have a lot	I am
Knowledge, skills and attitudes	have any experience doing this.	little about this.	some experience doing this.	of experience with this.	confident in my ability to do this.
Maintain consistency in formatting styles.					
Develop innovative ideas for designs					
Be precise when applying tools					

3. Fill in the table above and share results with the trainer for further guidance.

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.
3.	3.	3.

UNIT 2: APPLY BASIC COMPUTER OPERATIONS



Unit summary

This unit provides you with the knowledge, skills and attitudes required to customize the computer features required to use ICT at work place. It covers Converting of data Files, use storage media and Connection of computer to the network topics.

Self-Assessment: Unit 2

1. Observe the figure in Unit 2 and answer the following questions
 - a. What do you see in the illustration?
 - b. Name the components in the illustration?
 - c. What do you think this unit is about based on the illustration?
2. Fill in and complete the self-assessment table below to assess your level of knowledge, skills and attitudes under this unit.
 - a. There is no right or wrong way to answer this assessment. It is for your own reference and self-reflection on the knowledge, skills and attitudes acquisition during the learning process.
 - b. Think about yourself: do you think you have the knowledge, skills or attitudes to do the task? How well?
 - c. Read the statements across the top. Put a check in a column that best represents your level of knowledge, skills and attitudes.
 - d. At the end of this learning unit, you will assess yourself again.

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Describe file conversion					
Identify file formats					
Identify storage media					
Define computer network					
Describe the ways to connect a					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
computer to the internet					
Identify the unity of storage media					
Convert a file from one format to another					
Use a storage media					
Format a storage media					
Connect computer to the internet					
Pay attention to file compatibility during conversion.					
Develop confidence in operating computers					
Have patience when troubleshooting issues.					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Provide secure network connections with proper configuration.					
Have caution when handling sensitive data.					



Key Competencies:

Knowledge	Skills	Attitudes
1. Describe file conversion	1. Identify the unity of storage media	1. Pay attention to file compatibility during conversion.
2. Identify file formats	2. Convert a file from one format to another	2. Develop confidence in operating computers.
3. Identify storage media	3. Use a storage media	3. Have patience when troubleshooting issues.
4. Define computer network	4. Format a storage media	4. Provide secure network connections with proper configuration.
5. Describe the ways to connect a computer to the internet	5. Connect computer to the internet	5. Have caution when handling sensitive data.



Discovery activity:



Figure 48:File formats:File formats



Task 11:

Observe clearly the above illustration and answer the questions 1 to 3:

1. What types of files can you see in the image?
2. What do the arrows in the middle of the image make you think about?
3. Have you ever needed to change one file type into another? Can you share an example?

Answer the following questions to:

4. What is the difference between a network and internet?
5. How does cloud storage differ from physical storage devices?
6. What are the different ways a computer can connect to the internet?

Topic 2.1: Convert files into different formats



Activity 1: Problem Solving



Task 12:

Read carefully the following scenario and answer to the questions that follow

You are working as a front desk trainee at a company. A client has emailed a document (in Word format) outlining special event requirements for a conference they are hosting. However, the event manager prefers all documents to be in PDF format for easier sharing and printing.

Your tasked to:

1. Convert the document into a PDF format using any available tool.
2. Save the converted PDF file with an appropriate name that includes the event date.

Key Facts 2.1: Convert files into different formats

- **Different File Formats and File Extensions**

- ✓ **Definition of key terms**

- **File Format:** A file format refers to the specific structure or encoding used to store information in a file. The format determines how the data is organized and displayed when accessed.¹¹

- **File extension:** Is a string of characters attached to a filename, usually preceded by a full stop and indicating the format of the file.¹²

- ✓ **Common File Formats and Extensions:**

- **Document Files:**

- **DOC, DOCX:** Microsoft Word documents, used for creating text documents with formatting.
- **PDF:** Portable Document Format, commonly used for sharing documents that maintain their formatting.

¹¹ https://en.wikipedia.org/wiki/File_format

¹² <https://www.geeksforgeeks.org/what-is-file-extension/>

- **TXT:** Plain text file with no formatting.

Spreadsheet Files:

- **XLS, XLSX:** Microsoft Excel files for organizing data in tables and performing calculations.
- **CSV:** Comma-Separated Values file, used for simple data storage in plain text.

Presentation Files:

- **PPT, PPTX:** Microsoft PowerPoint files used for creating slide-based presentations.

Image Files:

- **JPG/JPEG:** Compressed image format, widely used for photos.
- **PNG:** Lossless image format, supports transparency.
- **GIF:** Supports animated and static images.

Audio Files:

- **MP3:** Compressed audio format for music and audio recordings.
- **WAV:** High-quality, uncompressed audio format.

Video Files:

- **MP4:** Commonly used video format, supports high quality with compression.
- **AVI:** High-quality video format, typically larger file sizes.

Compressed Files:

- **ZIP:** Archive format for compressing multiple files.
- **RAR:** Similar to ZIP, often used for larger compressed archives.

- ✓ **Why File Extensions Matter:** File extensions (e.g., ".docx", ".pdf", ".jpg") help identify the type of file and determine which software can open it.

● **File Conversion**

✓ **Introduction**

File conversion refers to the process of changing a file from one format to another, making it compatible with different software or optimizing it for specific uses.¹³

¹³ <https://www.filestack.com/features/processing/file-conversion/>

✓ **File to PDF**

Step 1: Open the file (e.g., Word, Excel, or PowerPoint) in its respective application.

Step 2: Navigate to **File > Save As** or **Export**.

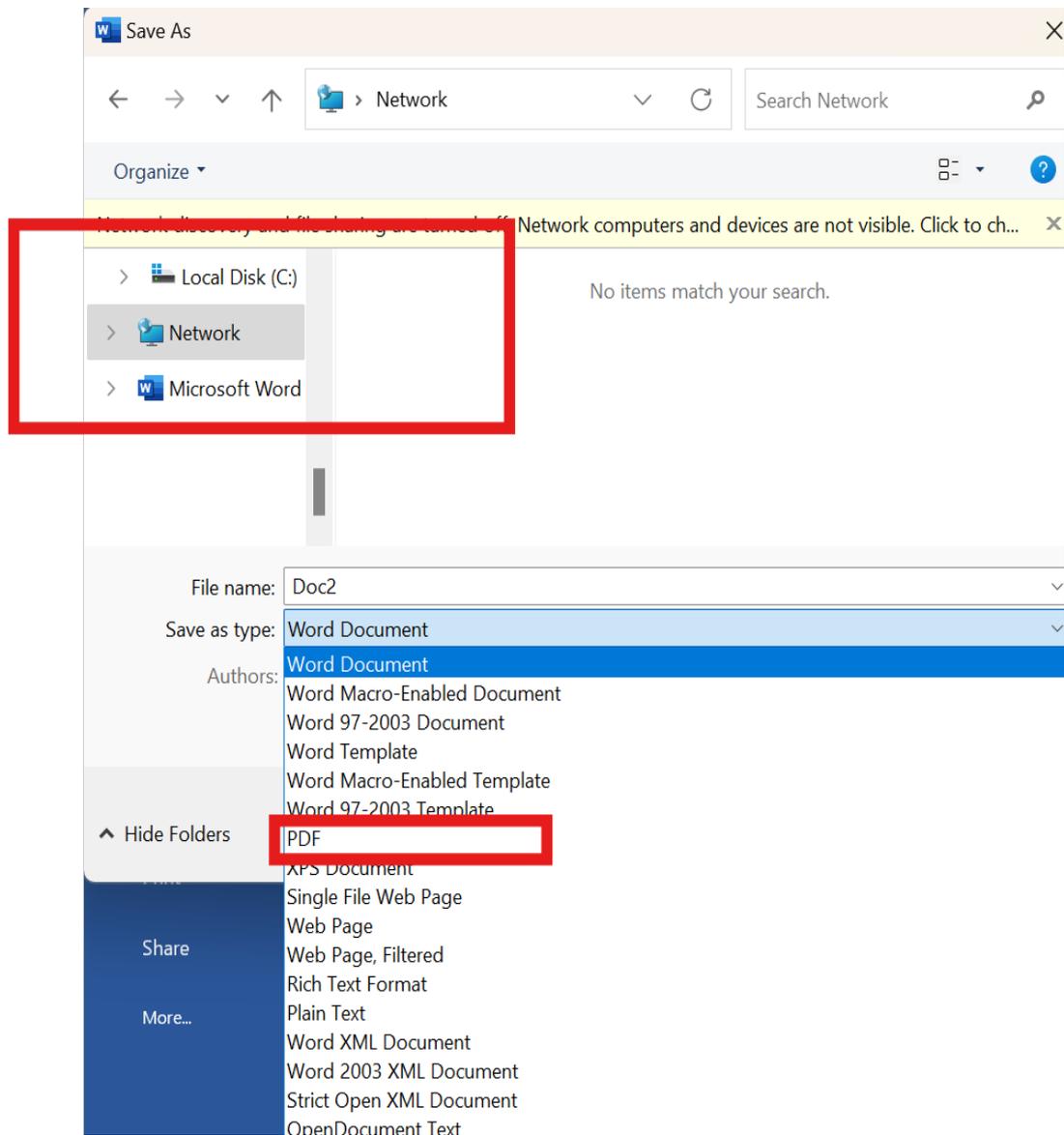


Figure 49: converting from file to PDF

Step 3: Select **PDF** as the desired file format from the dropdown menu.

Step 4: Choose the file location and click **Save**.

✓ **Benefits of file extension**

- ✚ Maintains formatting regardless of the device or software used.
- ✚ Ideal for sharing and printing.

✓ **PDF to Word, Excel, or PPT**

Step 1: Use an online converter (e.g., Adobe Acrobat, SmallPDF) or specialized software.

Step 2: Upload the PDF file to the converter tool.

Step 3: Choose the desired output format (Word, Excel, or PowerPoint).

Step 4: Download the converted file to your device.

• **File Compression**

✓ **Definition:**

 File compression is the process of reducing the size of a file or group of files by encoding data more efficiently.¹⁴

✓ **Importance of File Compression:**

 **Saves Storage Space:** Reduces the size of files, allowing more data to be stored.

 **Easier File Sharing:** Compressed files transfer faster via email or online platforms.

 **Convenience:** Combines multiple files into a single archive for organized storage.

✓ **Steps to Compress a File:**

 **On Windows:**

Step 1: Select the file(s) or folder(s) you want to compress.

Step 2: Right-click on desktop and choose **Send to > Compressed (zipped) folder**.

Step 3: A new compressed file with a .zip extension will appear.

¹⁴ <https://phoenixnap.com/glossary/file-compression>

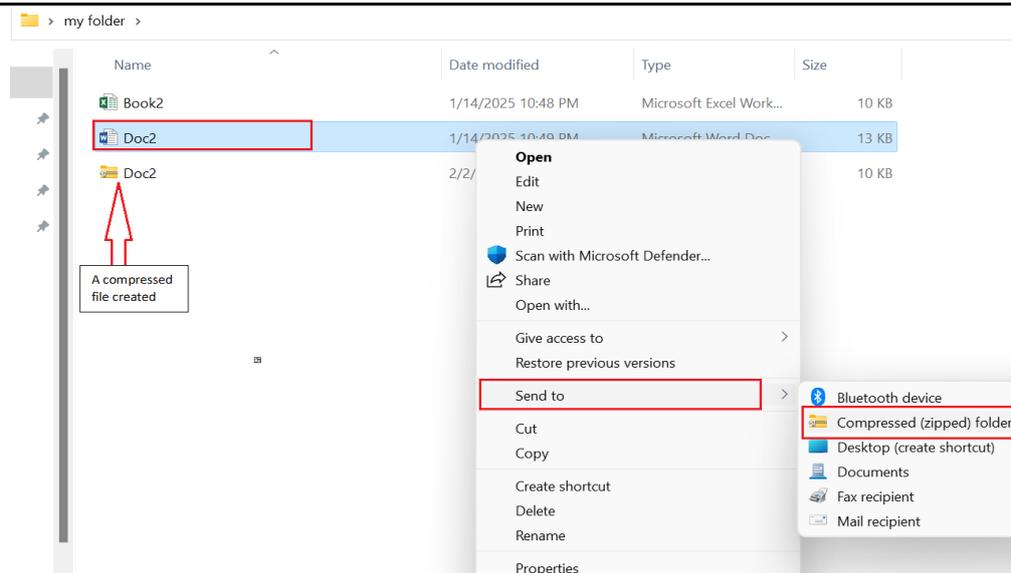


Figure 50: File compression

 **On Mac:**

Step 1: Select the file(s) or folder(s).

Step 2: Right-click and choose **Compress**.

Step 3: A new compressed file will appear with the extension .zip.

 **Using Software (e.g., WinRAR, 7-Zip):**

Step 1: Open the software and add files to the compression list.

Step 2: Choose the compression format (e.g., ZIP, RAR) and settings.

Step 3: Save the compressed archive.

✓ **Tips for Compression:**

 Use a strong password if the file contains sensitive data.

 Ensure recipients have software to extract the files.



Activity 2: Guided Practice



Task 13:

Referring to scenario in Task 2 and after having knowledge on File conversion, answer the question given below:

As a student at X TVET School, you are given a folder containing different files. Begin by identifying the various file formats and extensions, such as .docx, .pdf, .jpg, and .pptx, and associate each with the program that can open it (Word, Excel, or PowerPoint). Next, practice converting a file from its original format to PDF and vice versa, such as converting a Word document to a PDF, or a PDF to Word, Excel, or PowerPoint. Then, compress the files using a tool like 7-Zip to reduce file size for easier storage or sharing, then enumerates the steps of file compression.



Activity 3: Application



Task 14:

According to scenario in Task 2, perform the following task

You are one of the team of event coordination office. A corporate client has emailed you an Excel spreadsheet with the guest list and seating arrangements for an upcoming event. The event organizer has requested that the file be converted into a PDF for easier printing and sharing.

Your Tasked to:

1. Convert the file into a PDF format, ensuring that the layout remains clear and professional.
2. Save the PDF file with an appropriate name, such as **“Conference_GuestList_Seating.pdf”**.
3. Verify with the client that the file conversion meets their requirements.

Topic 2.2: Use of storage media



Activity 1: Problem Solving



Task 15:

Read the following scenario and answer the questions that follow

As an internee in Busy medical clinic, responsible for ensuring that patient records, appointment schedules, and billing information are always accessible. One day, the clinic's system crashes, and you discover that a storage device holding critical patient data has failed. You need to quickly find a solution to recover the lost data and prevent future issues.

1. How would you identify the storage media that crashed?
2. What are the steps would you take to format the storage media for reuse?

Key Facts 2.2: Use of storage media

- **Storage media capacity**

- ✓ **Definition:**

Storage media capacity refers to the maximum amount of data that a storage device or medium can hold. It is measured in specific units and varies depending on the type of media used.¹⁵

- ✓ **Units of data storage:** Data storage is measured using units based on bytes.

These units increase exponentially:

- ✚ **Bit (b):** The smallest unit of data.

- ✚ **Byte (B):** Equal to 8 bits.

- ✚ **Kilobyte (KB):** 1,024 bytes.

- ✚ **Megabyte (MB):** 1,024 KB.

- ✚ **Gigabyte (GB):** 1,024 MB.

- ✚ **Terabyte (TB):** 1,024 GB.

- ✚ **Petabyte (PB):** 1,024 TB.

¹⁵ <https://www.sciencedirect.com/topics/computer-science/storage-capacity>

 **Exabyte (EB):** 1,024 PB.

- **Different types of storage media**

Storage media are categorized based on how and where they are used. Two common types are offline and online storage.

- ✓ **Offline Storage:** Offline storage refers to devices or media that are not connected to the internet or a computer continuously. They are often used for backup or transport of data.

Examples:

 **USB Drives:** Portable and easy to use for file transfer.

 **External Hard Drives:** Larger capacity for backups and additional storage.

 **Optical Discs:** CDs, DVDs, and Blu-ray discs for storing data, music, or videos.

 **Memory Cards:** Used in cameras, phones, and other portable devices.

- ✓ **Online storage:** Online storage refers to data that is stored in the cloud or accessible via the internet. It offers convenience and scalability.

Examples:

 **Cloud Storage:** Services like Google Drive, Dropbox, and OneDrive.

 **Network-Attached Storage (NAS):** A dedicated server or device providing centralized, online data storage.

 **Web Hosting Servers:** For storing website data.

- ✓ **Comparison:**

 Offline storage is ideal for private, secure, and portable data storage.

 Online storage is best for accessibility, collaboration, and redundancy.

- **Storage Media Formatting**

- ✓ **Definition**

Storage formatting is the process of preparing a storage medium, such as a hard drive or USB drive, for initial use by setting up a file system. This process erases all existing data and creates a new structure for storing files.¹⁶

- ✓ **Types of File Systems:**

 **FAT32:** Compatible with most devices but limited to 4GB file sizes.

¹⁶ https://en.wikipedia.org/wiki/Disk_formatting

 **NTFS:** Common on Windows systems, supports large file sizes.¹⁷

 **exFAT:** Suitable for large files and compatible across platforms.

✓ **Steps to Format a Storage Medium:**

Step 1: Connect the storage device to a computer.

Step 2: Open the disk management tool (e.g., File Explorer in Windows or Disk Utility in Mac).

Step 3: Right-click on the storage device and select **Format**.

Step 4: Choose the desired file system and click **Start** or **OK**.

✓ **Erase Data:** Erasing data involves deleting files or formatting the storage medium.

There are two main methods:

 **Quick Format:** Deletes the file structure but leaves the data intact, making it recoverable.

 **Full Format:** Overwrites the storage medium, making data much harder to recover.

✓ **Why erase data?**

 To securely remove sensitive information.

 To prepare the device for reuse or sale.

 To troubleshoot errors caused by corrupted data.

✓ **Tips for Secure Data Erasure:**

 Use specialized software (e.g., DBAN, Eraser) to overwrite data securely.

 Avoid quick formats if sensitive data is involved.



Activity 2: Guided Practice



Task 16:

1. In the case of a storage failure, what methods would you use to recover lost data from an offline storage device?

¹⁷ <https://biztechmagazine.com/article/2021/08/file-storage-types-ntfs-vs-fat32-perfcon>

2. Why is it important to have a mix of both online and offline storage for a hotel's data management system?
3. What precautions should be taken when erasing data from a storage device to prevent unauthorized access?



Activity 3: Application



Task 17:

As a worker at a busy resort, and the guest booking and billing system slows down due to full storage. You must decide whether to delete old data or back it up to a new device. Some storage devices haven't been formatted in months, risking data corruption. It's essential to choose the right storage solution to ensure quick recovery and maintain data security.

1. Assess Storage Capacity and Prioritize Data Management
2. Implement Regular Backups and Format Storage Devices
3. Write the Data Recovery Procedures used.

Topic 2.3: Connection of computer to the network



Activity 1: Problem Solving



Task 18:

you're an internee at a hotel with departments like reservations, housekeeping, and catering, all relying on a network to access guest information and communicate. For a while, the internet goes down, disrupting services and causing chaos. To help resolve this, you need to understand networks like PAN for personal devices, LAN for internal connections, and WAN for linking branches in different cities. Your role involves assisting in ensuring a reliable and secure internet connection for staff and guests.

1. How would a Local Area Network (LAN) help improve communication and efficiency between different departments at the hotel?
2. What type of network (PAN, LAN, or WAN) would you use to ensure seamless communication between the hotel's main building and a remote branch in a different city? Why?
3. If the hotel's internet connection goes down, what impact might it have on both guest services and internal operations

Key Facts 2.3: Connection of computer to the network

- **Description of Computer Network**

- ✓ **Definition :**

A **computer network** is a system of interconnected computers and devices that communicate with each other to share resources such as data, software, and hardware. These networks can be wired or wireless and can vary in size and scope depending on their purpose and design.¹⁸

- ✓ **Features of a Computer Network**

- ✚ **Connectivity:** Computers and devices are linked to one another through cables or wireless signals.

- ✚ **Resource Sharing:** Networks allow for sharing of resources such as files, printers, and internet access.

- ✚ **Scalability:** Networks can be expanded by adding more devices or resources.

- ✚ **Data Transmission:** Networks allow for the transmission of data between devices in real-time.

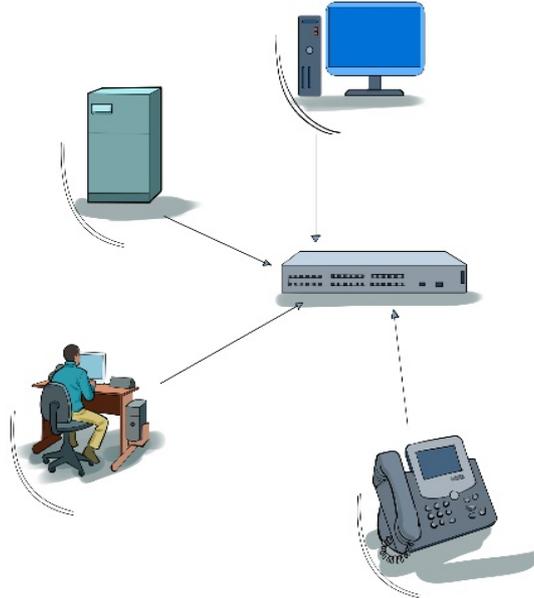
- ✓ **Advantages of a Computer Network**

- ✚ **Resource Sharing:** Users can share files, printers, and software, reducing the need for individual devices.

- ✚ **Centralized Data Management:** Easier data backup, security, and management from a central server.

¹⁸ <https://www.javatpoint.com/computer-network-tutorial>

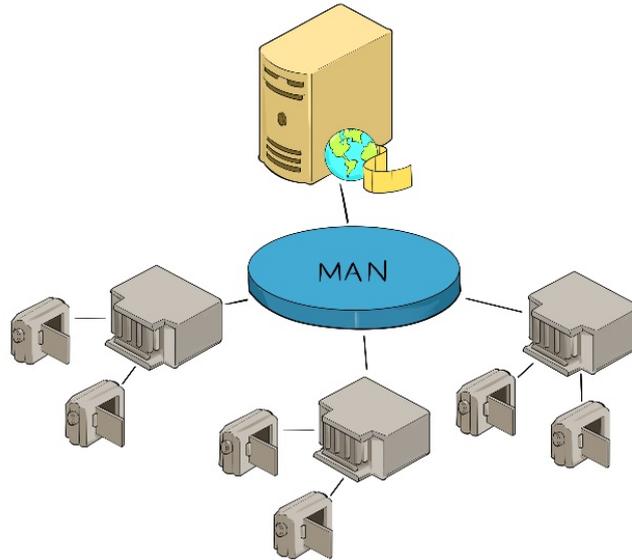
- ✚ **Communication:** Facilitates communication through email, instant messaging, and video conferencing.
- ✚ **Cost Efficiency:** Reduces hardware and software costs by sharing resources.
- ✓ **Disadvantages of a Computer Network**
 - ✚ **Security Risks:** Networks are vulnerable to cyberattacks, viruses, and unauthorized access.
 - ✚ **Complexity:** Managing and maintaining a network can be complicated, especially with a large number of devices.
 - ✚ **Dependence on Network Infrastructure:** If the network goes down, all connected devices lose access to shared resources.
 - ✚ **Costs:** Initial setup and ongoing maintenance can be expensive.
- **Common Types of Networks Based on Size**
 - ✓ **Personal Area Network (PAN)**
 - ✚ A small network designed for personal devices within a short range, typically up to 10 meters (30 feet). Devices like smartphones, tablets, laptops, and wearable tech can connect via Bluetooth or infrared.
 - ✚ **Example:** Connecting a smartphone to a wireless headset.
 - ✓ **Local Area Network (LAN)**
 - ✚ A network that connects computers and devices within a limited area, such as a home, office, or school. LANs typically use Ethernet cables or Wi-Fi for connections.
 - ✚ **Example:** An office network that links computers, printers, and a file server.



✓ **Metropolitan Area Network (MAN)**

✚ A network that spans a larger geographical area, such as a city or campus. MANs are often used by businesses or local governments to connect different LANs.

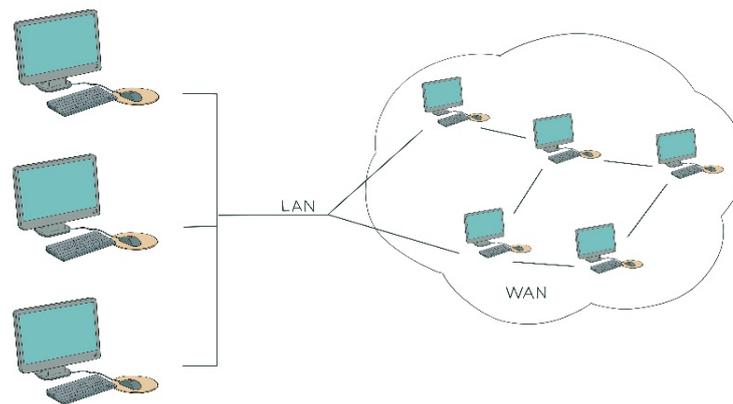
✚ **Example:** A university network connecting multiple buildings across a city.



✓ **Wide Area Network (WAN)**

✚ A network that covers a large geographical area, often connecting LANs or MANs across cities, countries, or even continents. The internet is the most well-known example of a WAN.

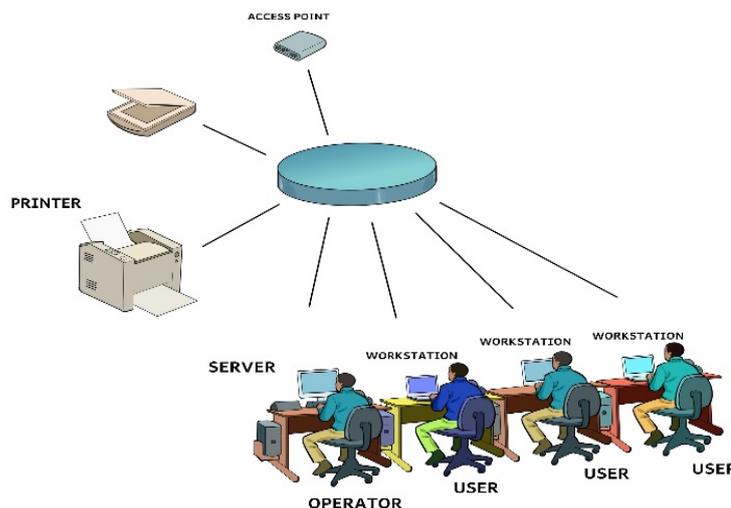
- ✚ **Example:** A multinational company with offices in different countries using a WAN to connect employees.



✓ **Wireless Local Area Network (WLAN)**

- ✚ A type of LAN that uses wireless technology, typically Wi-Fi, to connect devices without the need for physical cables.

- ✚ **Example:** A café providing Wi-Fi access to customers.



• **Common Types of Networks Based on Main Purpose**

✓ **Storage Area Network (SAN)**

- ✚ A specialized network designed to provide high-speed, reliable access to data storage devices. SANs are often used in data centers to manage large volumes of data.

- ✚ To optimize data storage and retrieval, reducing the load on other networks.

✓ **Enterprise Private Network (EPN)**

✚ A private network that connects the various branches of a company, allowing for secure and reliable communication across the organization.

✚ To enable internal communication and data exchange without using the public internet.

✓ **Virtual Private Network (VPN)**

✚ A secure, encrypted connection over the internet that allows remote users to access a private network. VPNs are commonly used for secure communication and protecting user data when using public networks.

✚ To provide secure access to a private network over the internet.

● **Connecting a Computer to the Internet**

✓ **Internet**

The **Internet** is a global network of interconnected computers and other devices that communicate using standardized protocols. It allows for the exchange of data and resources, facilitating various services like web browsing, email, file sharing, and online communication.¹⁹

✓ **Internet connection basics**

Before connecting a computer to the Internet, it's essential to understand the components involved:

✓ **Internet Service Provider (ISP):** A company that provides access to the Internet.

✓ **Modem:** A device that connects your local network to the ISP.

✓ **Router:** Distributes the Internet connection to multiple devices wirelessly or through wired connections.

✓ **Network Interface Card (NIC):** A hardware component in your computer that allows it to connect to a network.

● **Preparing for Connection**

✓ **Check Hardware Requirements:** Ensure the computer has a built-in NIC or a wireless adapter.

✓ **Internet Plan:** Subscribe to an ISP with a suitable plan for your needs.

¹⁹ <https://www.spiceworks.com/tech/networking/articles/what-is-the-internet/>

- ✓ **Modem and Router Setup:** Make sure the modem and router are properly set up and powered on.
- **Connecting via Wired (Ethernet) Connection**
 - Step 1: Physical Connection**
 - ✓ Connect one end of an Ethernet cable to the computer's Ethernet port and the other end to the router or modem.
 - Step 2: Configure Network Settings**
 - ✓ On **Windows:**
 -  Open "Settings" > "Network & Internet" > "Status."
 -  Select "Change adapter options" and double-click the Ethernet connection.
 -  Ensure "Obtain an IP address automatically" is selected under "Internet Protocol Version 4 (TCP/IPv4)."
 - ✓ On **Mac:**
 -  Open "System Preferences" > "Network."
 -  Select "Ethernet" and ensure "Configure IPv4" is set to "Using DHCP."
- **Connecting via Wireless (Wi-Fi) Connection**
 - Step 1: Enable Wi-Fi**
 - ✓ On **Windows:**
 -  Go to "Settings" > "Network & Internet" > "Wi-Fi."
 -  Ensure Wi-Fi is turned on.
 - ✓ On **Mac:**
 -  Click the Wi-Fi icon in the menu bar and select "Turn Wi-Fi On."
 - Step 2: Select a Network**
 - ✓ Choose your network from the list of available Wi-Fi networks.
 - ✓ Enter the network password if required.
- **Verifying the Connection**
 - ✓ **Check Internet Access**
 -  Open a web browser and navigate to a website to verify the connection.
 -  If the website loads, the connection is successful.
 - ✓ **Troubleshooting**

If there is no connection, check the following:

-  Ensure all cables are securely connected.
-  Restart the modem, router, and computer.
-  Check the network settings to ensure the correct network is selected and the IP settings are correct.
-  A traditional internet connection that is stationary, typically using broadband technologies such as DSL, fiber-optic, or cable. It is usually connected through a modem or router.
-  **Example:** Home or office internet connection using a Wi-Fi router or Ethernet cable.

✓ **Mobile Internet**

-  Internet access provided through mobile networks, typically via cellular data or portable hotspots. Mobile internet allows devices to connect to the internet on the go.
-  **Example:** Using a smartphone's mobile data or a portable hotspot device for internet access while traveling.



Activity 2: Guided Practice



Task 19:

Read carefully and perform the following task

You are tasked with setting up a network for a small company with 50 employees. The office needs secure file storage remote access for employees working from home, and seamless communication within the office. Based on your understanding of computer networks:

1. Illustrate a network blue print using SAN for the company's specific needs,
2. Explaining how that network type supports the business's operations
3. Describe security requirements for this network.



Activity 3: Application



Task 20:

Read carefully and perform the following task

The hotel requires a Wireless Local Area Network (WLAN) to connect its housekeeping and administrative staff efficiently. Four housekeeping computers will be positioned in different hotel sections to enable real-time room status updates. These computers will wirelessly connect to the reception computer, the central system for managing bookings. The administrative office computer will also join the network to oversee operations and generate reports. A centrally placed Wi-Fi router with a strong signal will ensure seamless communication, reducing cable dependency and enhancing device placement flexibility.

Set up this network.



Formative Assessment

Read and answer the following questions

- 1. Which of the following best defines a computer network?**
 - a. A group of connected printers
 - b. A system of interconnected computers that share resources
 - c. A computer without internet access
 - d. A set of computer programs installed on a device
- 2. Which type of network is best suited for connecting devices in a small office?**
 - a. WAN
 - b. LAN
 - c. MAN
 - d. WLAN
- 3. What does VPN stand for?**

- a. Virtual Protected Network
 - b. Virtual Private Network
 - c. Verified Public Network
 - d. Virtual Proxy Network
4. **Which of the following is a disadvantage of computer networks?**
- a. Enhanced communication
 - b. Centralized data management
 - c. Vulnerability to cyberattacks
 - d. Shared resources
6. **Which type of internet connection is mobile and allows connectivity on the go?**
- a. Fixed internet
 - b. Satellite internet
 - c. Fiber-optic internet
 - d. Mobile internet
7. A **LAN** connects devices within a _____.
- a. City
 - b. Limited area
 - c. Country
 - d. Multiple cities
8. A **WLAN** relies on _____ to connect devices
- a. Ethernet cables
 - b. Fiber-optic cables
 - c. Satellites
 - d. Wireless signals
9. Define a computer network and describe its main features.
10. Compare and contrast LAN and WAN, providing an example of where each might be used.
11. What are the key advantages and disadvantages of using a WLAN in a hotel setting?
12. Explain the importance of VPNs for secure communication in a business environment.
13. Describe the process of connecting a computer to the internet using both fixed and mobile internet.

14. Set up a basic WLAN on your laptop or mobile device, and test its ability to connect multiple devices simultaneously.
15. Create a diagram showing the connections between devices in a LAN for a small office with three computers and a shared printer.



Points to Remember

- Common file formats and their extensions, along with tools for converting files (e.g., files to PDF, PDF to Word/Excel/PPT).
- File compression (saving storage space) and the steps to compress files effectively.
- Types of storage media (offline vs. online), storage capacities (bytes, KB, MB, etc.)
- The types of networks based on size are PAN, LAN, WAN.
- The types of networks based on usage are SAN (data storage), EPN (private enterprise use), and VPN (secure remote access).
- Two types of internet are broadband and mobile internet options for connecting devices efficiently.



Self-Reflection

1. Re-take the self-assessment you did at the beginning of the unit.
2. Read the statements across the top. Put a check in a column that best represents your level of knowledge, skills and attitudes.

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Describe file conversion					

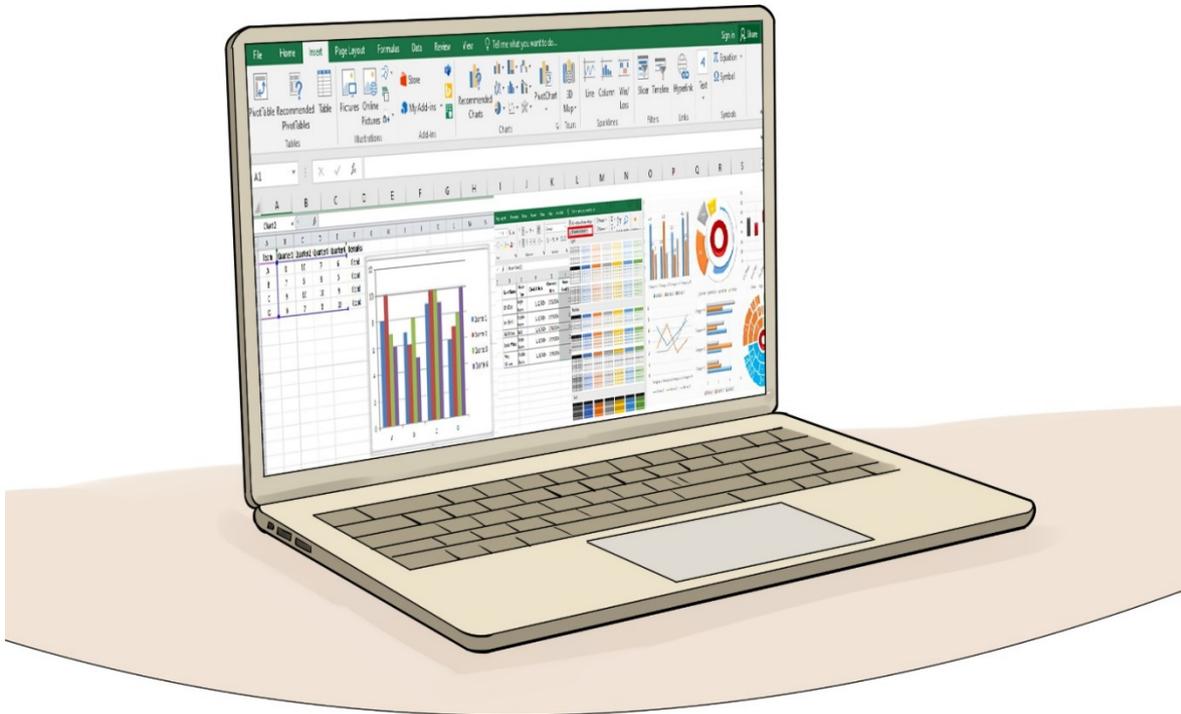
My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Identify file formats					
Identify storage media					
Define computer network					
Describe the ways to connect a computer to the internet					
Identify the unity of storage media					
Convert a file from one format to another					
Use a storage media					
Format a storage media					
Connect computer to the internet					
Pay attention to file compatibility during conversion.					
Develop confidence in operating computers					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Have patience when troubleshooting issues.					
Provide secure network connections with proper configuration.					
Have caution when handling sensitive data.					

3. Fill in the table above and share results with the trainer for further guidance.

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.
3.	3.	3.

UNIT 3: MANAGE DATA IN MS EXCEL



Unit summary

This unit provides you with the knowledge, skills and attitudes required to manage data in Microsoft Excel. It covers the Management of data types, Apply Excel functions, Data analysis and Application of data protection in MS Excel.

Self-Assessment: Unit 3

1. Observe the figure in Unit 1 and answer the following questions
 - a. What do you see in the illustration?
 - b. Name the components in the illustration?
 - c. What do you think this unit is about based on the illustration?
2. Fill in and complete the self-assessment table below to assess your level of knowledge, skills and attitudes under this unit.
 - a. There is no right or wrong way to answer this assessment. It is for your own reference and self-reflection on the knowledge, skills and attitudes acquisition during the learning process.
 - b. Think about yourself: do you think you have the knowledge, skills or attitudes to do the task? How well?
 - c. Read the statements across the top. Put a check in a column that best represents your level of knowledge, skills and attitudes.
 - d. At the end of this learning unit, you will assess yourself again.

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Explain the types of data in excel.					
Describe data protection principles					
Identify Excel functions					
Describe the ways to protect data in excel					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Identify data validation techniques					
Sort data					
Remove duplicates in dataset					
Perform data validation					
Apply Excel functions					
Check errors in data					
Manage large dataset					
Apply data protection principles.					
Implement data visualization					
Pay attention to appropriate data type usage.					
Have consistency in formatting and formulas.					
Pay attention to data accuracy.					
Be analytical when					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
interpreting results					
Provide clear visualizations using charts and tables					



Key Competencies:

Knowledge	Skills	Attitudes
1. Explain the types of data in excel.	1. Sort data	1. Pay attention to appropriate data type usage.
2. Describe data protection principles	2. Remove duplicates in dataset	2. Have consistency in formatting and formulas.
3. Identify Excel functions	3. Perform data validation	3. Pay attention to data accuracy.
4. Describe the ways to protect data in excel	4. Apply Excel functions	4. Be analytical when interpreting results
5. Identify data validation techniques	5. Check errors in data	5. Provide clear visualizations using charts and tables
	6. Manage large dataset	
	7. Apply data protection principles.	
	8. Implement data visualization	



Discovery activity:

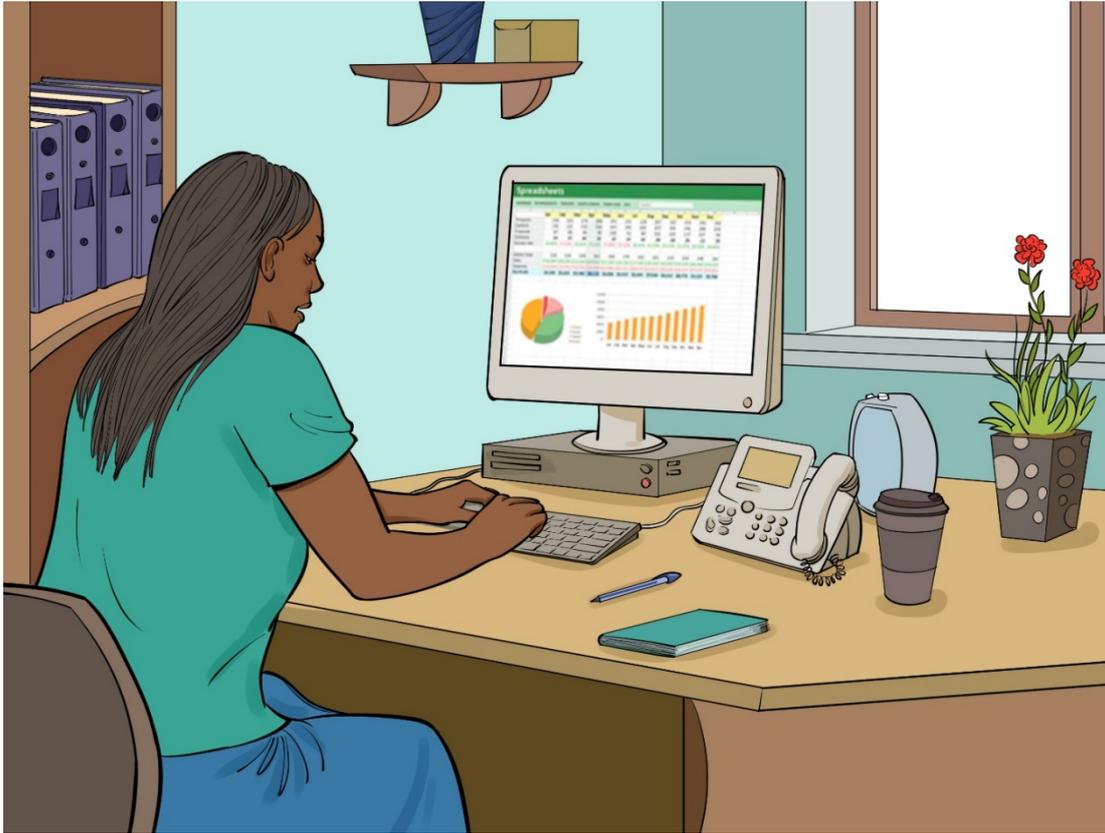


Figure 51: Data management tools in excel



Task 21:

Observe clearly the above illustration and answer the questions below:

1. What do you see on the above illustration?
2. What do you think the person in the picture is doing?
3. How might these help in managing data?
4. What type of visualization is shown in the Image?
5. Explain different ways of protecting data in Excel.

Topic 3.1: Management data types in MS Excel.



Activity 1: Problem Solving



Task 22:

Read the following scenario and answer the questions that follow

As an intern at X Garage, your role is to clean and organize a customer booking dataset by formatting, removing duplicates, and filling in missing values. You then group bookings by service type, calculate total revenue, and identify peak booking times using filters and sorting.

1. What are the different data types you can enter in Excel cells (e.g., text, numbers, dates), and how does Excel apply default formatting to each type?
2. How would you sort the guest booking data to organize check-in dates chronologically or group bookings by room type?
3. If you need to update inconsistent date formats in the dataset, how would you use the Find and Replace feature to standardize them?
4. How would you create data validation rules to ensure accurate guest names and room types, and which steps would you take to remove duplicate guest entries effectively?

Key Facts 3.1 Management data types in MS Excel.

- **Description of Data Types**

In Excel, a data type refers to the kind of value that a cell can contain. Excel supports several different types of data, and each type determines how the data is processed and manipulated in formulas and functions. Understanding the different data types is important for accurate data entry and analysis.

Data can be entered into cells in different types depending on the kind of information you're working with. Excel automatically recognizes these data types and applies certain default formats to them.

✓ Data types in excel

 **Text (String):** This data type consists of letters, numbers, or special characters that are treated as text and cannot be used in mathematical operations. Examples include names, addresses, and product descriptions. Excel left-aligns text by default.

Example: "John Doe", "Room A"

 **Number:** Numbers can be integers or decimals and are used in calculations. These are right-aligned by default in Excel.

Example: 100, 25.5

 **Date/Time:** This type is used for dates and times. Excel stores dates as serial numbers and formats them according to the default date format (e.g., MM/DD/YYYY). Time is treated similarly, often displayed in a 24-hour format.

Example: "01/01/2024", "12:30 PM"

 **Currency:** Numbers can be formatted as currency to represent financial values. This type will display the appropriate currency symbol (e.g., \$, €, £) based on the format you choose.

Example: "\$100", "€75.50"

 **Percentage:**

Percentages are stored as decimals and displayed with a "%" sign. For example, 0.5 will be displayed as 50%.

Example: "50%", "25%"

 **Boolean (True/False):** These represent logical values and are typically used in conditional statements or formulas. Excel recognizes TRUE and FALSE as specific data types.

Example: TRUE, FALSE

 **General:** The default type for Excel is "General," which allows Excel to interpret and display any data you enter, depending on context.

Example: A number can be treated as General and automatically formatted as numeric or text depending on how it's entered.

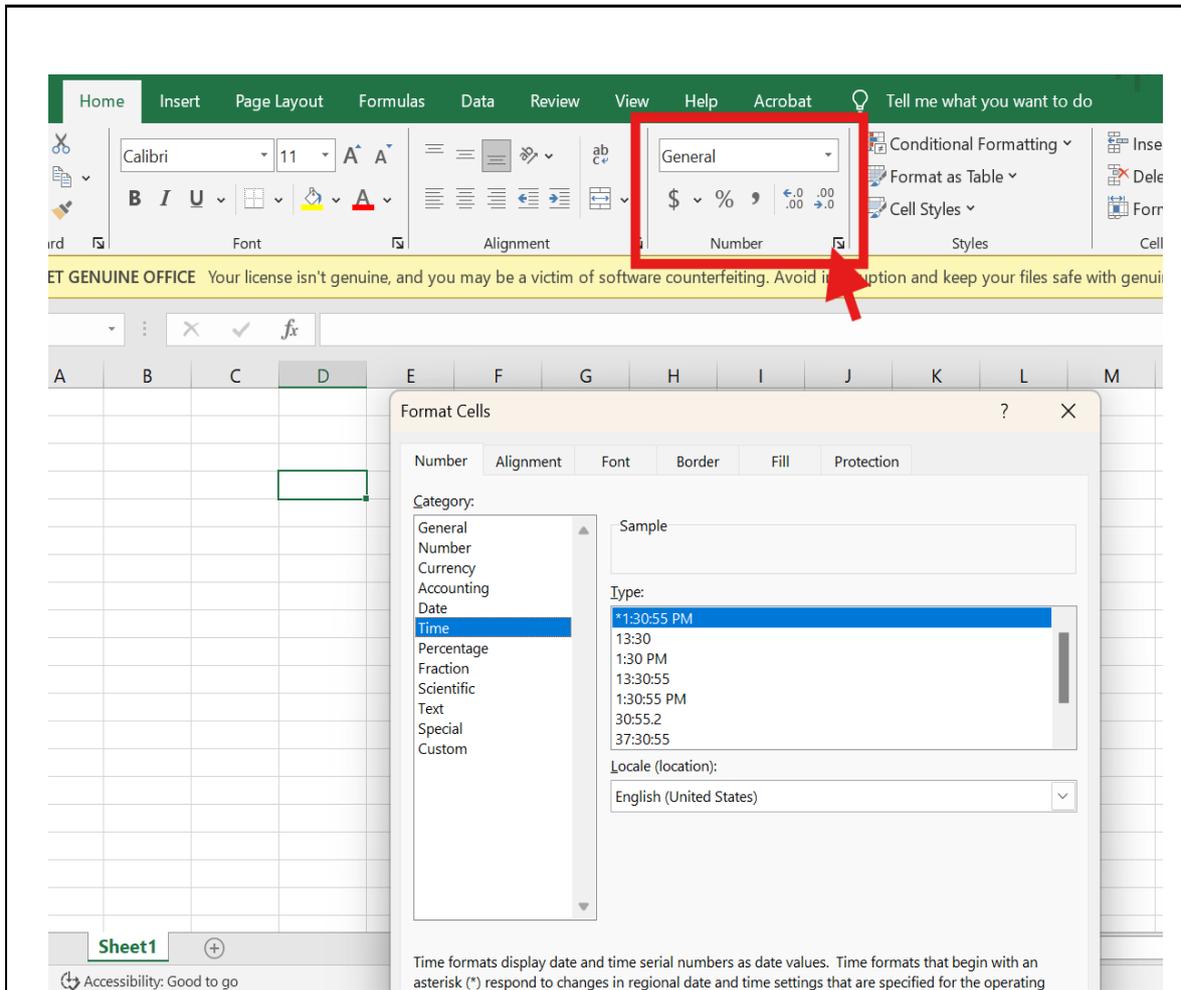


Figure 52: Excel datatypes

- **Entering Data Types in Cells and Their Default Formats**

- ✓ **Entering Data:**

- ✚ Simply type the data directly into a cell. Excel will automatically assign the correct data type based on the format of the input.

- ✚ Numbers and dates are right-aligned, text is left-aligned.

- ✚ If you enter "100" it will automatically be recognized as a number, while entering "January 1, 2024" will be recognized as a date.

- ✓ **Changing Data Formats:**

- ✚ If Excel does not assign the correct data type automatically, you can change the format by selecting the cell or range of cells.

- ✚ Right-click the selected range and click Format Cells.

- ✚ In the Format Cells dialog box, under the Number tab, you can choose the desired data type (e.g., Currency, Date, Percentage).
- ✚ Excel will update the data display based on the format you select without altering the actual data.

- **Sorting Data**

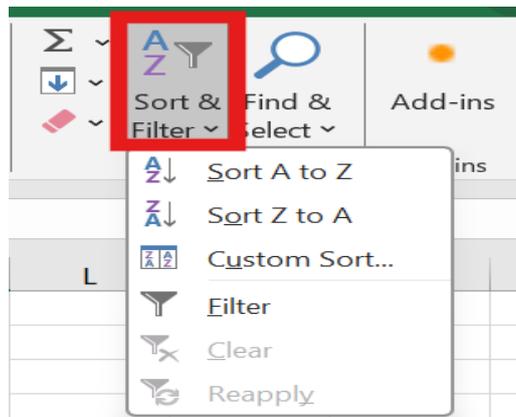
Sorting allows you to organize your data in a particular order for analysis. Here's how you can sort your data:

- ✓ **Simple Sorting (A to Z or Z to A):**

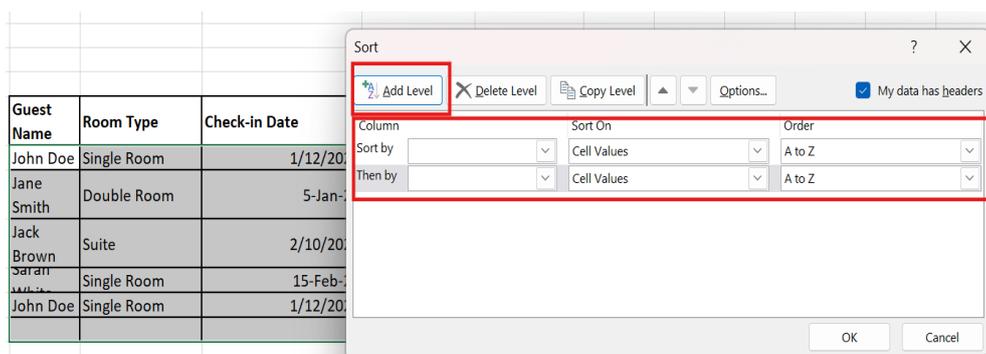
- ✚ Select the range of cells you want to sort.
- ✚ Go to the **Data** tab and click on **Sort**.
- ✚ In the **Sort** dialog box, select the column you want to sort by. Choose whether to sort in ascending (A to Z) or descending (Z to A) order.
- ✚ Click **OK**, and Excel will reorder the rows based on the selected column's data.

- ✓ **Sorting by Multiple Columns:**

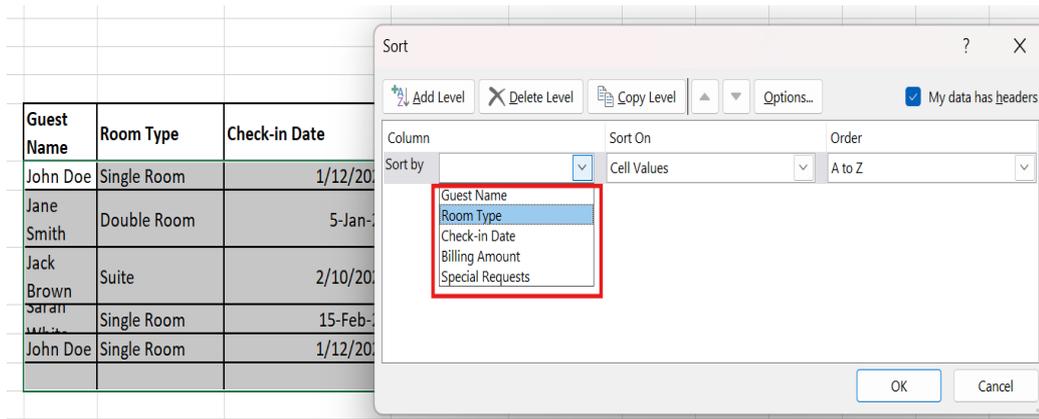
Step 1: Open the **Sort** dialog box by selecting **Sort** from the **Data** tab.



Step 2: Click **Add Level** to add another sorting rule.



Step 3: Select another column to sort by (for example, you might first sort by **Room Type** and then by **Check-in Date**).



Step 4: Click **OK**, and Excel will sort by both columns in the order you specified.

Guest Name	Room Type	Check-in Date	Billing Amount	Special Requests
Jane Smith	Double Room	5-Jan-24	200	Early Check-in
John Doe	Single Room	1/12/2024	150	None
Sarah White	Single Room	15-Feb-24	120	None
John Doe	Single Room	1/12/2024	150	None
Jack Brown	Suite	2/10/2024	300	Late Check-out

- **Finding and Replacing Cell Formats**

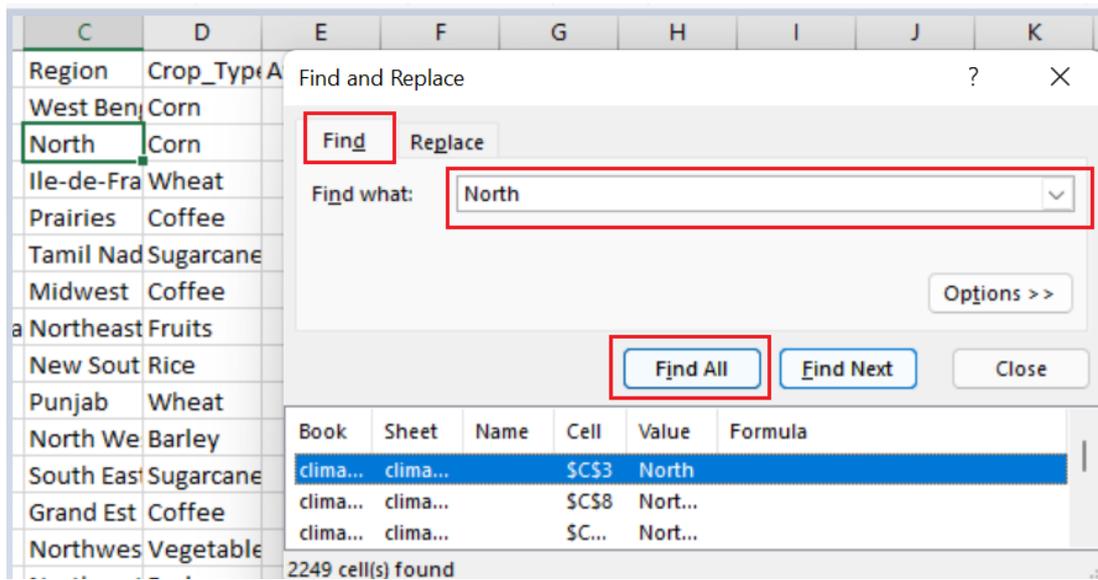
Sometimes, you might want to find specific data or replace it with new values or formats. Excel offers a Find and Replace tool that can search for specific data and replace it.

- ✓ **Finding Data:**

Step 1: Press **Ctrl + F** or go to **Home > Find & Select > Find**.

Step 2: In the **Find and Replace** dialog box, type the data you want to search for (e.g., a specific room type or value).

Step 3: Click **Find All** to display all instances of that data or **Find Next** to search one by one



✓ **Finding and Replacing:**

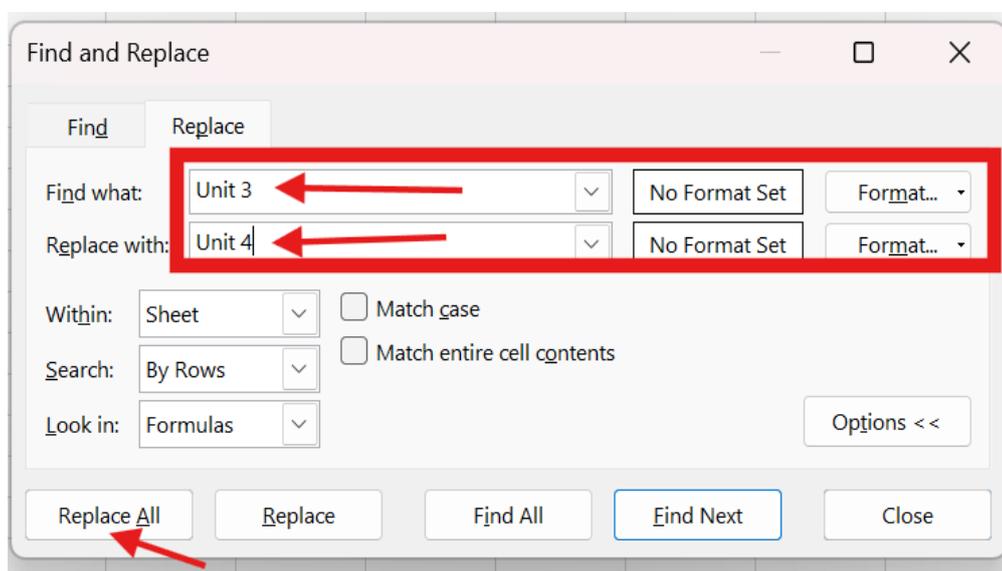
Step 1: Press Ctrl + F or go to Home > Find & Select > Replace.

Step 2: In the **Find and Replace** dialog box, under find what; type the data you want to replace for

Step 3: Under replace with; type the data you want to use as a replacement

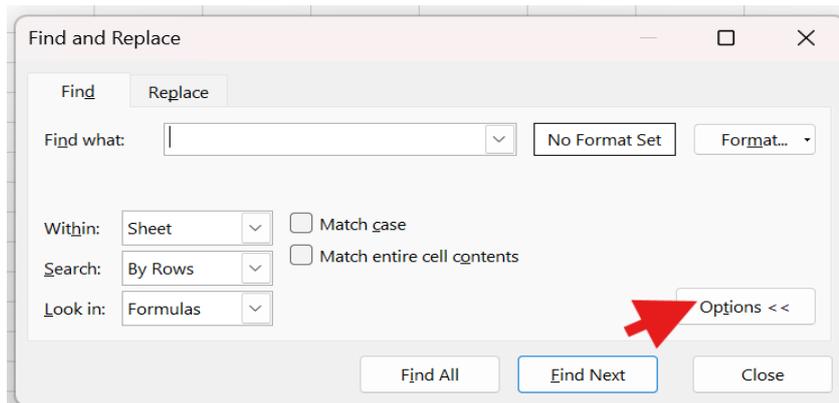
Step 4: Click **Find All** to display all instances of that data or **Find Next** to search one by one

Step 5: Click **Replace All** to replace all instances of that data or **Replace** to replace one by one

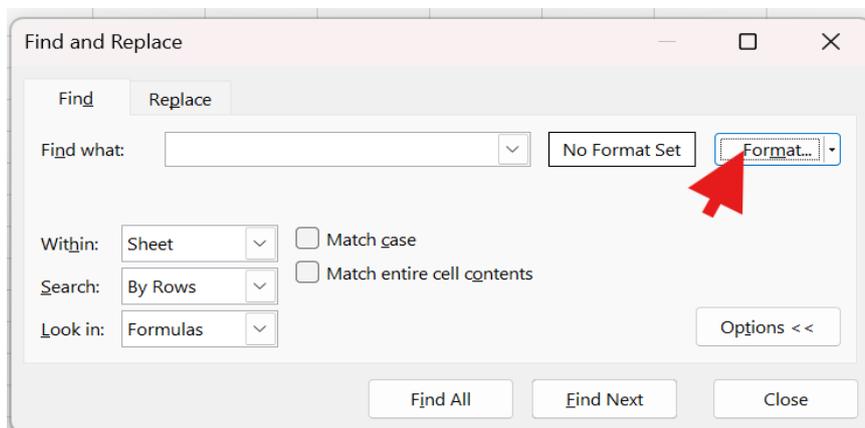


✓ **Formatting**

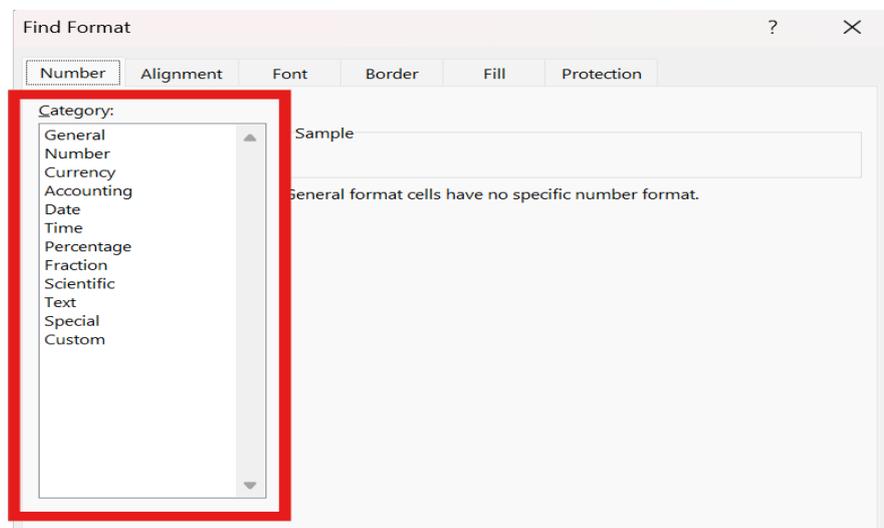
✚ In the **Find and Replace** dialog, click **Options** to expand the search options.



✚ Click **Format**, and choose the format you want to search for (e.g., a specific number format or cell color).



✚ After selecting the format, you can replace it by choosing a new format or value in the **Replace With** box.



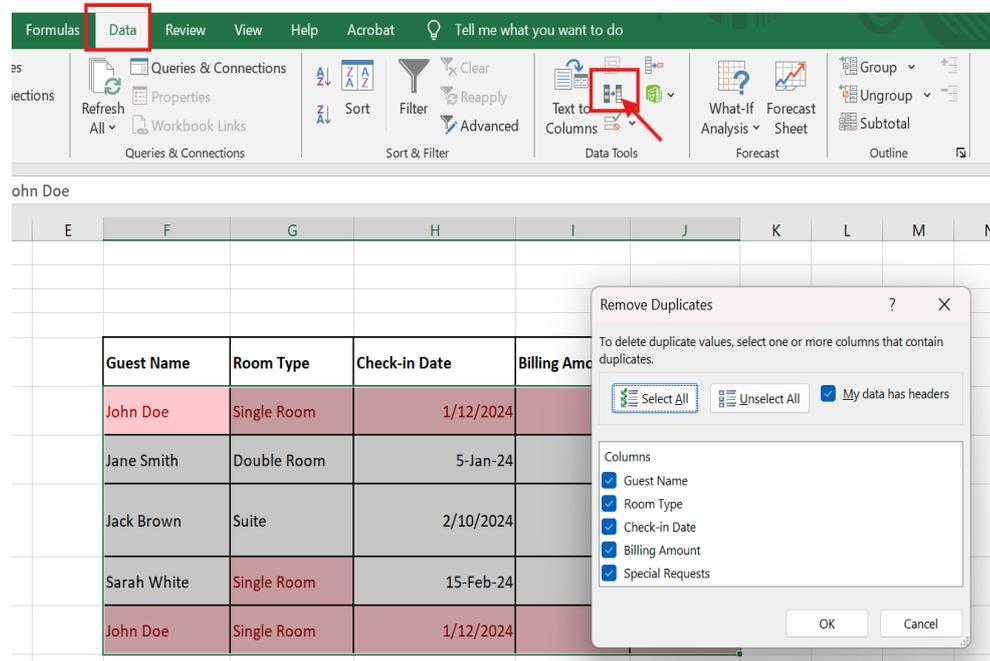
- **Removing duplicates**

Excel allows you to remove duplicate values quickly from your dataset.

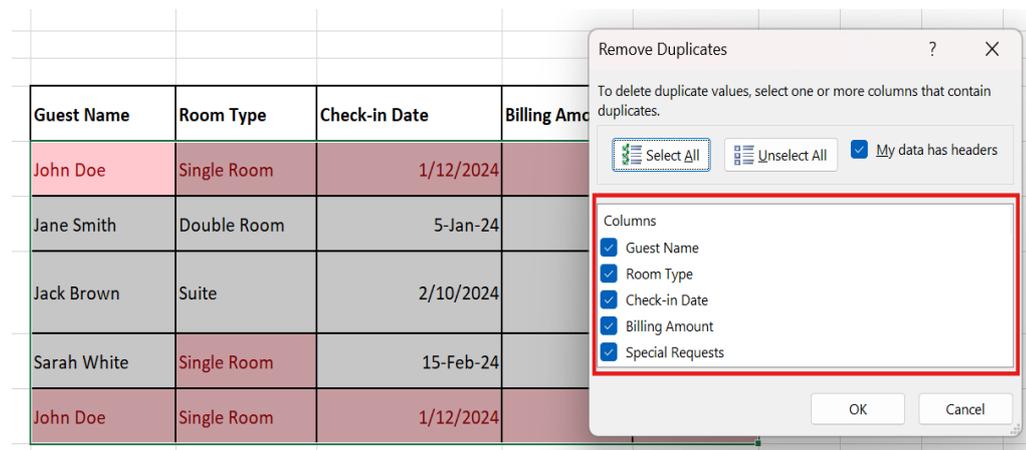
- ✓ **To Remove Duplicates:**

Step 1: Select the range of cells where you want to remove duplicates.

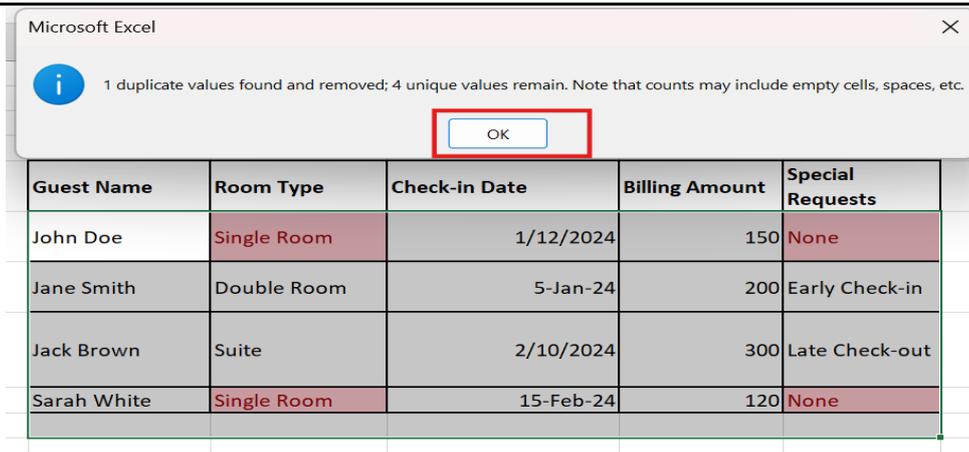
Step 2: Go to the **Data** tab and click **Remove Duplicates**.



Step 3: In the **Remove Duplicates** dialog box, check the boxes for the columns you want to check for duplicates (e.g., Guest Name, Room Type).



Step 4: Click **OK**, and Excel will remove any rows with duplicate values in the selected columns.



✓ **Why remove duplicates:**

Removing duplicates helps maintain the integrity of your data, ensuring that your analysis is not skewed by redundant information.

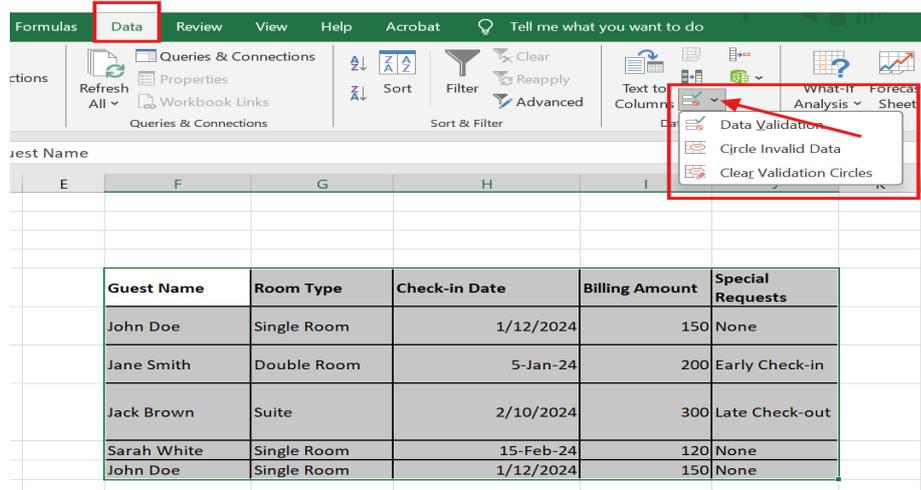
• **Creating data validation rules**

Data validation allows you to set restrictions on what data can be entered into a cell. This ensures that only valid data is entered, reducing errors.

✓ **To create data validation rules:**

Step 1: Select the cells where you want to apply validation (e.g., for room types or guest names).

Step 2: Go to the **Data** tab and click **Data Validation**.



Step 3: In the **Data Validation** dialog box, under the **Settings** tab, choose the type of validation (e.g., Whole number, List, Date).

Guest Name	Room Type	Check-in Date	Bill
John Doe	Single Room	1/12/2024	
Jane Smith	Double Room	5-Jan-24	
Jack Brown	Suite	2/10/2024	
Sarah White	Single Room	15-Feb-24	
John Doe	Single Room	1/12/2024	

Step 4: If you choose **List**, you can enter a set of valid options (e.g., “Single Room, Double Room, Suite”).

Guest Name	Room Type	Check-in Date	Billing Amo
John Doe	Single Room	1/12/2024	
Jane Smith	Double Room	5-Jan-24	
Jack Brown	Suite	2/10/2024	
Sarah White	Single Room	15-Feb-24	
John Doe	Single Room	1/12/2024	

Step 5: In the **Input Message** tab, you can set a message to guide the user (e.g., “Select a valid room type”).

Guest Name	Room Type	Check-in Date	Billing Amount
John Doe	Single Room	1/12/2024	150
Jane Smith	Double Room	5-Jan-24	200
Jack Brown	Suite	2/10/2024	300
Sarah White	Single Room	15-Feb-24	120
John Doe	Single Room	1/12/2024	150

Step 6: In the **Error Alert** tab, set a custom message to alert the user if invalid data is entered (e.g., “Invalid Room Type. Please choose from the list”).

The screenshot shows an Excel spreadsheet with the following data:

Guest Name	Room Type	Check-in Date	Billing Amount
John Doe	Single Room	1/12/2024	150
Jane Smith	Double Room	5-Jan-24	200
Jack Brown	Suite	2/10/2024	300
Sarah White	Single Room	15-Feb-24	120
John Doe	Single Room	1/12/2024	150

The Data Validation dialog box is open, showing an error message: "Type date here only". The dialog box has tabs for Settings, Input Message, and Error Alert. The Error Alert tab is selected, and the "Show error alert after invalid data is entered" checkbox is checked. The error message is displayed in a text box, and the OK button is highlighted with a red box.

✓ **Types of Validation Rules:**

- 🔗 Whole Number/Decimal: Only allows numbers.
- 🔗 Date/Time: Restricts entry to valid dates or times.
- 🔗 List: Restricts data to a predefined list (e.g., specific product names or room types).
- 🔗 Text Length: Limits the number of characters allowed.
- 🔗 Custom: Allows you to create a custom formula to validate the data.



Activity 2: Guided Practice



Task 23:

Retype the following table in MS Excel and answer to the following questions

Guest Name	Room Type	Check-in Date	Billing Amount	Special Requests
Jane Smith	Double Room	5-Jan-24	200	Early Check-in
John Doe	Single Room	1/12/2024	150	None
Sarah White	Single Room	15-Feb-24	120	None
John Doe	Single Room	1/12/2024	150	None
Jack Brown	Suite	2/10/2024	300	Late Check-out

1. Remove duplicate in the above table
2. Validate the column billing amount, where the entered amount will not be above 400



Activity 3: Application

 **Task 24:**

In the first worksheet, create a table with the following columns and answer to the following questions:

Guest Name	Room Type	Check-in Date	Billing Amount	Special Requests
John Doe	Single Room	01/12/2024	150	None
Jane Smith	Double Room	January 5, 2024	200	Early Check-in
Jack Brown	Suite	2024-02-10	300	Late Check-out
Sarah White	Single Room	15-Feb-2024	120	None
John Doe	Single Room	01/12/2024	150	None

1. Sort the table t by **Room Type** in alphabetical order and then by **Billing Amount** from highest to lowest? What steps would you take in Excel to achieve this?
2. Remove duplicate entries for **John Doe** in the table.
3. If you wanted to ensure that only specific room types (e.g., "Single Room", "Double Room", "Suite") can be entered into the **Room Type** column, how would you set up data validation for that column? What steps would you follow to restrict entries to these room types?

Topic 3.2: Application of Excel functions



Activity 1: Problem Solving



Task 25:

Read carefully the following scenario and answer to the questions that follow

You are working as an intern for a company that handles a large volume of customer bookings. Your task involves managing the booking data, analyzing revenue, checking for errors, and applying business rules using Excel. The company records details such as customer names, service type, booking dates, charges, and special requests. You need to create a report summarizing key data, including total revenue, average revenue, and ranking of charges or service rates.

1. What are the excel functions can you use to perform the above scenario
2. How to enable the error checking in Excel
3. How to make ranking and grading in Excel

Key facts 3.2: Application of Excel functions

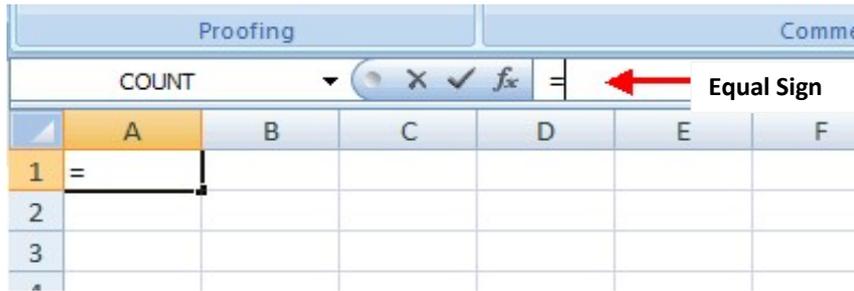
- **Introduction to excel functions**

An **Excel function** is a predefined formula in Microsoft Excel that performs specific calculations or operations on data. Functions are designed to simplify complex calculations by reducing the need for writing long or complex formulas manually. Excel functions can perform a wide range of tasks, from basic arithmetic to complex statistical, logical, and financial calculations.

- ✓ **Key Components of Excel Functions:**

-  **Function Name:** The name of the function that specifies the operation to perform (e.g., SUM, AVERAGE, IF).
-  **Arguments:** The values or references that the function uses to perform its calculation. These are enclosed in parentheses and can include numbers, text, cell references, or other functions.

A formula is a set of mathematical instructions that can be used in Excel to perform calculations. Formulas are started in the formula box with an = sign.



✓ There are many elements to and excel formula.

✚ **References:** The cell or range of cells that you want to use in your calculation

✚ **Operators:** Symbols (+, -, *, /, etc.) that specify the calculation to be performed

✚ **Constants:** Numbers or text values that do not change

✚ **Functions:** Predefined formulas in Excel

✓ To create a basic formula in Excel:

✚ Select the **cell** for the formula

✚ Type = (the equal sign) and the **formula**

✚ Click **Enter**

- **Sum Function**

The **SUM** function calculates the total of a series of numbers. In the context of hotel reservations, it helps calculate the **total room revenue**.

✓ To find the **total revenue** from the bookings, use the SUM function on the

Room Rate column:

Step 1: Click on cell **H5** (or any cell where you want the sum).

Step 2: Enter the formula: =SUM (H5:H9).

Step 3: Press **Enter**.

Step 4: The sum of the room rates will be displayed in cell **H10**.

✓ **Shortcut to Quickly Sum a Range:**

Step 1: Select the cells you want to sum

Step 2: Press **Alt + =** (equals sign). Excel will automatically insert the =SUM() formula and highlight the selected range.

Step 3: Press **Enter** to confirm.

- ✓ The following will add up the room rates for all five guests and give the total revenue from the bookings.

Step 1

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate(\$)	Special Requests
John Doe	Single Room	1/12/2024	1/15/2024	150	None
Jane Smith	Double Room	1/13/2024	1/17/2024	200	Early Check-in
Jack Brown	Suite	1/14/2024	1/18/2024	300	Late Check-out
Sarah White	Single Room	1/15/2024	1/17/2024	120	None
Mary Johnson	Double Room	1/16/2024	1/19/2024	180	None
				=SUM(H5:H9)	

Step 2

- **Average Function**

The **AVERAGE** function calculates the mean of a group of numbers. For hotel management, this helps find the **average room rate**.

- ✓ To find the **average room rate** across all reservations, use the AVERAGE function:

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate(\$)	Special Requests
John Doe	Single Room	1/12/2024	1/15/2024	150	None
Jane Smith	Double Room	1/13/2024	1/17/2024	200	Early Check-in
Jack Brown	Suite	1/14/2024	1/18/2024	300	Late Check-out
Sarah White	Single Room	1/15/2024	1/17/2024	120	None
Mary Johnson	Double Room	1/16/2024	1/19/2024	180	None
				=AVERAGE(H5:H9)	

Average function

- **Max Function**

The **MAX** function identifies the highest value in a range. For hotel management, this can help find the **highest room rate**.

Example: To find the **highest room rate** among the reservations:

The following will return the highest room rate from the table, which in this case is \$300.

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate(\$)	Special Requests
John Doe	Single Room	1/12/2024	1/15/2024	150	None
Jane Smith	Double Room	1/13/2024	1/17/2024	200	Early Check-in
Jack Brown	Suite	1/14/2024	1/18/2024	300	Late Check-out
Sarah White	Single Room	1/15/2024	1/17/2024	120	None
Mary Johnson	Double Room	1/16/2024	1/19/2024	180	None

- **Min Function**

The **MIN** function identifies the lowest value in a range. This can be used to find the **cheapest room rate**.

Example: To find the **lowest room rate**:

The following will return the lowest room rate, which in this case is \$120.

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate(\$)	Special Requests
John Doe	Single Room	1/12/2024	1/15/2024	150	None
Jane Smith	Double Room	1/13/2024	1/17/2024	200	Early Check-in
Jack Brown	Suite	1/14/2024	1/18/2024	300	Late Check-out
Sarah White	Single Room	1/15/2024	1/17/2024	120	None
Mary Johnson	Double Room	1/16/2024	1/19/2024	180	None

- **Count function**

The **COUNT** function counts the number of cells that contain numbers. This can be used to find how many guests have made reservations.

Example: To count how many bookings there are, use:

The following will return the number of reservations, which is 5 in this case.

	C	D	E	F	G	H	I
		Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate(\$)	Special Requests
		John Doe	Single Room	1/12/2024	1/15/2024	150	None
		Jane Smith	Double Room	1/13/2024	1/17/2024	200	Early Check-in
		Jack Brown	Suite	1/14/2024	1/18/2024	300	Late Check-out
		Sarah White	Single Room	1/15/2024	1/17/2024	120	None
		Mary Johnson	Double Room	1/16/2024	1/19/2024	180	None
						=COUNT(H5:H9)	

- **Rank and Grade Function**

To rank the guests based on their room rates, we can use the **RANK** function. Additionally, you can assign a **Grade** based on the rank.

Example: To find the rank of each reservation based on **Room Rate**, use:

✓ **Formula (in Column F):**

=RANK(H5, H\$5:H\$9, 0)

This formula ranks the room rates in descending order (highest room rate gets rank 1) as shown below.

	C	D	E	F	G	H	I
		Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate(\$)	Special Requests
		John Doe	Single Room	1/12/2024	1/15/2024	150	None
		Jane Smith	Double Room	1/13/2024	1/17/2024	200	Early Check-in
		Jack Brown	Suite	1/14/2024	1/18/2024	300	Late Check-out
		Sarah White	Single Room	1/15/2024	1/17/2024	120	None
		Mary Johnson	Double Room	1/16/2024	1/19/2024	180	None
						=RANK(H5,H\$5:H\$9,0)	

- **Error Checking in Excel**

- ✓ **Introduction**

Error Checking in Excel helps identify and resolve issues in your formulas or data. These errors may include:

- ✚ Dividing by zero (#DIV/0!)
- ✚ Referencing a missing value (#REF!)
- ✚ Using an invalid formula or data type (#VALUE!)
- ✚ Mistyped names in formulas (#NAME?)

- ✓ **Steps to use error checking:**

- ✚ **Select the Range to Check:** Highlight the range of cells where you suspect errors, or select the entire worksheet.

- ✚ **Use the Error Checking Tool:**

- Step 1:** Go to the **Formulas** tab on the Ribbon.

- Step 2:** Click **Error Checking** in the Formula Auditing group.

- Step 3:** Excel will highlight errors one by one, with suggestions for fixes.

- ✚ **Correct the Errors:** Follow the on-screen suggestions to resolve errors, or manually edit the formulas/data to fix the issues.

Common Errors and Fixes:

Error Code	Cause	Fix
#DIV/0!	Dividing by zero	Ensure the divisor is not zero or blank.
#REF!	Referencing a deleted cell or range	Update the formula with the correct reference.
#VALUE!	Using the wrong data type	Check for mismatched data (e.g., text in numeric fields).
#NAME?	Typo in a formula name or range	Correct the formula spelling or reference.

- ✓ **Use Conditional Formatting** to visually highlight errors:
 - ✚ Go to **Home > Conditional Formatting > New Rule**.
 - ✚ Choose **Format only cells that contain > Errors**.
 - ✚ Apply a format (e.g., red fill) to easily spot errors in your sheet.
- **Creating an Absolute Reference in Excel**
 - ✓ **Description**

An **absolute reference** ensures that a specific cell reference does not change when a formula is copied to another cell. This is achieved by adding dollar signs (\$) to the row and column parts of a cell reference.

 - ✚ **Example of an Absolute Reference:** \$A\$1
 - ✚ **Relative Reference:** A1 (changes when copied).
 - ✓ **Why Use Absolute References?**
 - ✚ To reference fixed values, such as tax rates, commission percentages, or constants.
 - ✚ To prevent errors in calculations when copying formulas across rows or columns.
 - ✓ **Steps to Create an Absolute Reference:**
 - ✚ **Write the Formula:** Start typing your formula, such as =A1*\$B\$1.
 - ✚ **Make a Reference Absolute:**
 - Click on the cell reference you want to lock (e.g., **B1**).
 - Press **F4** on your keyboard. This will automatically add dollar signs, converting B1 to \$B\$1.
 - ✓ **Copy the Formula:** Drag the formula to other cells. The absolute reference remains fixed while relative references adjust accordingly.
- **Using the IF Function**
 - ✓ **Description**

The **IF** function is useful for making logical decisions. In hotel management, it can be used to apply business rules, such as offering discounts to guests who pay above a certain amount.

Example:

✚ To check if a guest is eligible for a **discount** (if the room rate is above \$250), use the **IF** function.

✚ **Formula:**

=IF(H5>250, "Discount Eligible", "No Discount")

This will check if the room rate is greater than \$250. If true, the guest is marked as "Discount Eligible"; otherwise, the guest is marked as "No Discount".

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate(\$)	Special Requests	discount
John Doe	Single Room	1/12/2024	1/15/2024	150	None	no Discount
Jane Smith	Double Room	1/13/2024	1/17/2024	200	Early Check-in	Discount
Jack Brown	Suite	1/14/2024	1/18/2024	300	Late Check-out	Discount
Sarah White	Single Room	1/15/2024	1/17/2024	120	None	no Discount
Mary Johnson	Double Room	1/16/2024	1/19/2024	180	None	no Discount



Activity 2: Guided Practice



Task 26:

Read carefully the following scenario and answer to the questions that follow

- Given the following data in a column: 150, 200, 300, 120, 180, write the Excel formulas to calculate:
 - The total sum of the values.
 - The average of the values.
 - The highest (max) value.
 - The lowest (min) value.
 - The total count of the numbers.

2. A formula in your spreadsheet returns #DIV/0!.
 - a. What does this error mean?
 - b. How can you resolve this issue?
3. In a sales report, you have the tax rate fixed at 5% in cell B1. Write a formula to calculate the total price for a product in cell A2 with the price \$200, ensuring that the tax rate remains fixed as you copy the formula down the column.
4. A hotel manager wants to apply a discount for bookings where the room rate exceeds \$250. Write an Excel formula using the IF function to display "Discount" for room rates above \$250 and "No Discount" for rates equal to or below \$250.



Activity 3: Application



Task 27:

Read carefully the following scenario and answer to the questions that follow

You are a hotel receptionist analyzing booking data to prepare reports and make strategic decisions. Below is a new table of bookings:

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate	Special Requests
Alice Green	Single Room	01/20/2024	01/22/2024	180	None
Robert Brown	Suite	01/21/2024	01/25/2024	350	Late Check-out
Emma Davis	Double Room	01/22/2024	01/26/2024	220	Early Check-in
William Johnson	Single Room	01/23/2024	01/24/2024	120	None
Olivia Taylor	Double Room	01/24/2024	01/28/2024	200	None

Tasks:

Use the table to complete the following tasks in Excel.

1. Calculate the total revenue generated from room rates using the **SUM function**.
2. Find the **average room rate** using the **AVERAGE function**.
3. Identify the **highest (MAX)** and **lowest (MIN)** room rates.
4. Count the total number of bookings using the **COUNT function**.
5. Rank the room rates from highest to lowest using the **RANK function**, and assign a grade:
 - a. 300 and above: Grade A
 - b. 200–299: Grade B
 - c. Below 200: Grade C
6. Introduce an error by referencing a deleted cell in a formula. Use the **Error Checking tool** to identify and resolve the issue.
7. Create a formula to classify bookings as "**High Revenue**" if the room rate exceeds \$250, and "**Low Revenue**" if it is \$250 or less.

Topic 3.3: Perform data analysis and visualization in excel



Activity 1: Problem Solving



Task 28:

Read carefully the following scenario and answer to the questions that follow

You have recently joined a company as the Operator internee. On your first day, the General Manager assigns you a task to assist the team in improving their workflow. With the company experiencing significant growth, there is a need for more effective methods to analyze data, identify patterns, and present information in a professional manner. The manager shares a simple spreadsheet containing monthly sales and revenue data, but the data appears disorganized and lacks visual clarity. This makes it difficult for the team to interpret the information quickly and make informed decisions.

1. How can you create charts from the provided data to give it a clearer and more meaningful presentation?
2. How can you apply table styles and cell styles to organize and enhance the appearance of your work in Microsoft Excel?
3. Why is conditional formatting useful in Excel, and how can it be applied effectively?

Key Facts 3.3: Perform data analysis and visualization in excel

- **Introduction to data analysis**

Excel is a naturally powerful tool for data analysis that enables users to manipulate, analyze, and visualize large amounts of data quickly and easily with the help of built-in excel formulas for data analysis such as pivot tables, data tables, and various statistical functions.

- ✓ **Create Charts**

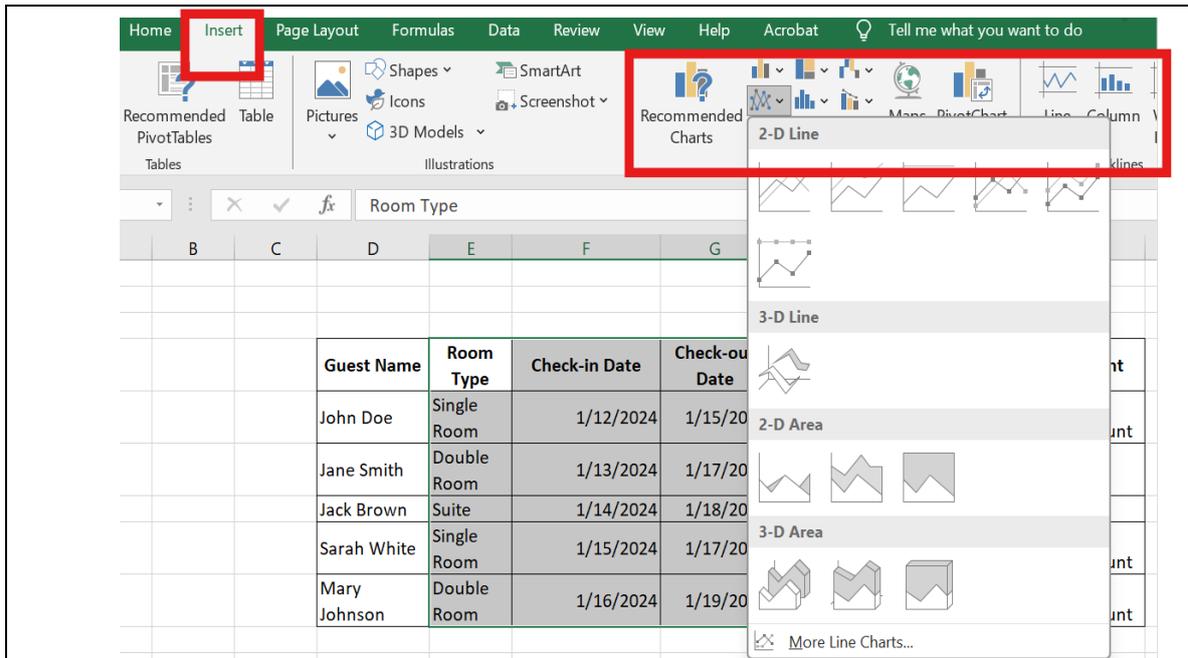
Charts allow you to visualize data, making it easier to understand patterns and trends.

- ✓ **Steps to Create a Chart in Excel:**

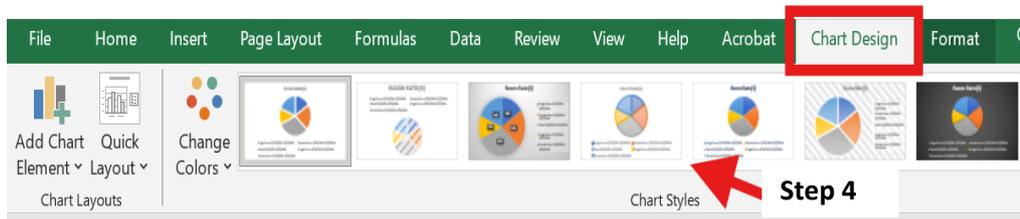
Step 1: Select the data you want to visualize, including headers.

Step 2: Go to the **Insert** tab on the ribbon.

Step 3: Choose a chart type from the **Charts** group (e.g., Bar Chart, Line Chart, Pie Chart).

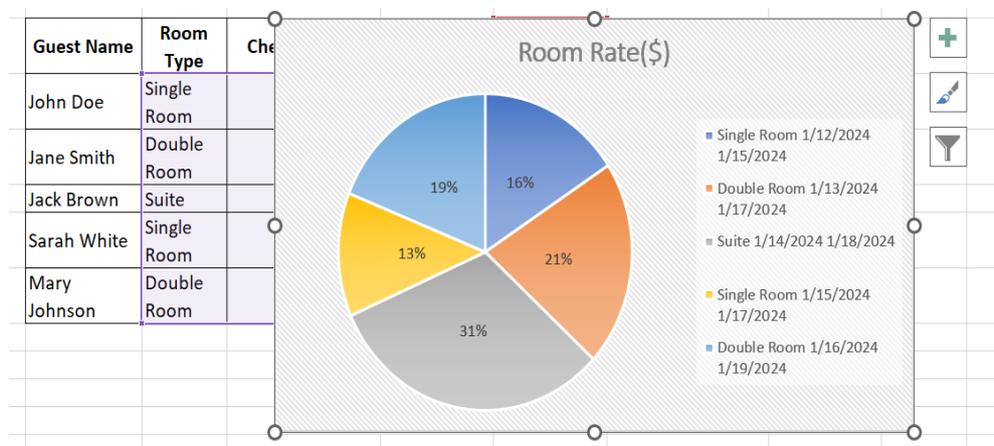


Step 4: Click the desired chart style to insert it into your worksheet.



Step 5: Customize the chart:

- Use the **Chart Tools** ribbon to add titles, legends, and data labels.
- Change colors and styles to match your presentation needs.



✓ **Tips for Choosing the Right Chart:**

- Use a **bar chart** for comparing categories.
- Use a **line chart** for showing trends over time.

🎨 Use a **pie chart** to show proportions.

- **Table Styles in microsoft Excel**

In **Microsoft Excel**, **Table Styles** are predefined formatting options that can be applied to Excel tables to improve their appearance and make them more readable. These styles allow users to quickly apply consistent formatting to tables, enhancing their visual presentation while also providing functional benefits.

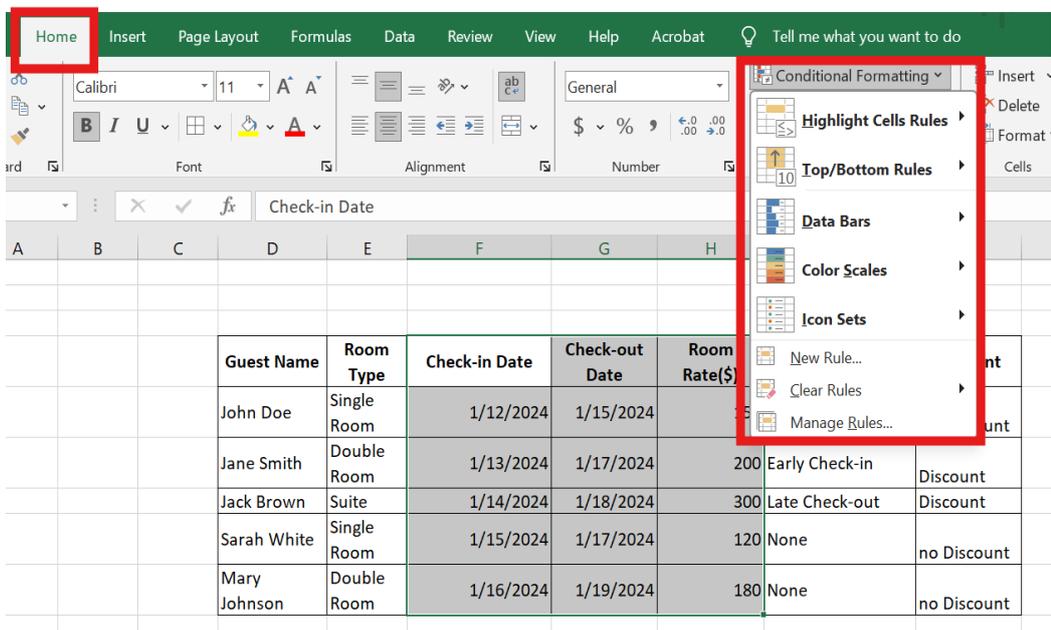
- ✓ **Conditional Formatting**

Conditional formatting highlights data based on specified conditions.

🎨 **Steps to Apply Conditional Formatting:**

Step 1: Select the range of cells to format.

Step 2: Go to the **Home** tab and click **Conditional Formatting** in the Styles group.



Step 3: Choose a rule (e.g., highlight cells greater than a specific value, create color scales).

Step 4: Adjust the formatting style (e.g., font color, fill color) and click **OK**.

Font		Alignment		Number		Styles		Cells	
Room Rate(\$)									
C	D	E	F	G	H	I	J		
	Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate(\$)	Special Requests	discount		
	John Doe	Single Room	1/12/2024	1/15/2024	150	None	no Discount		
	Jane Smith	Double Room	1/13/2024	1/17/2024	200	Early Check-in	Discount		
	Jack Brown	Suite	1/14/2024	1/18/2024	300	Late Check-out	Discount		
	Sarah White	Single Room					no Discount		
	Mary Johnson	Double Room					no Discount		

Greater Than ? X

Format cells that are GREATER THAN:

210 with Light Red Fill with Dark Red Text

OK Cancel

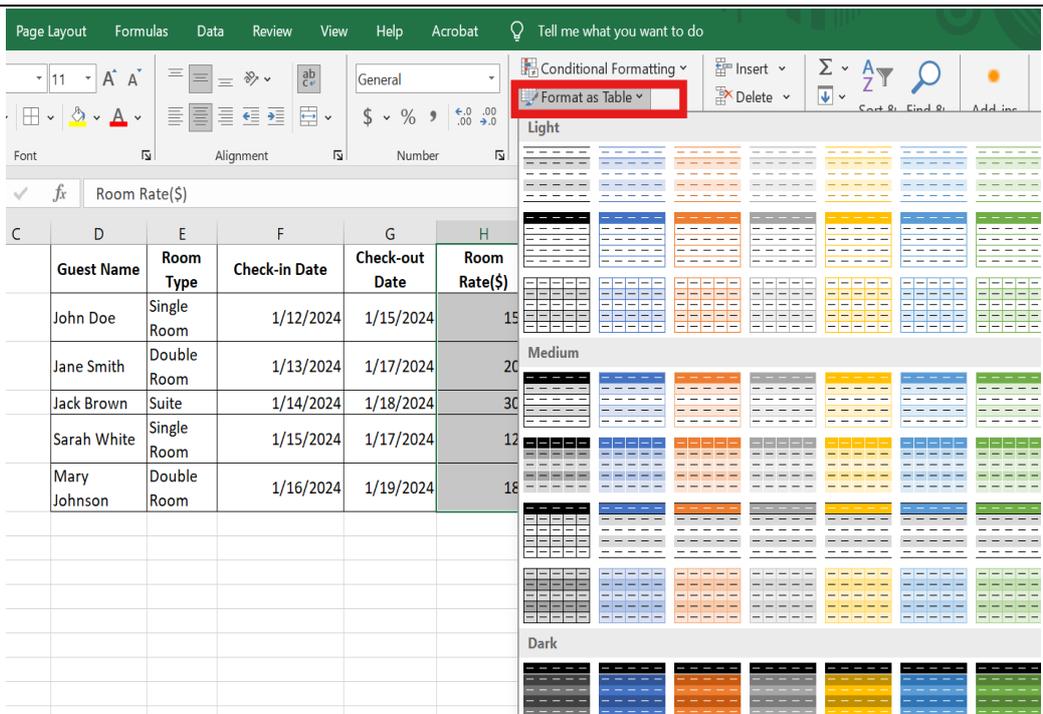
✓ **Format as Table**

"**Format as Table**" in **Microsoft Excel** is a feature that converts a selected range of cells into a structured table with predefined formatting and enhanced functionality. This feature not only improves the visual appearance of the data but also provides several functional benefits that help manage and analyze data more efficiently.

🛠️ **Steps to Format a Table:**

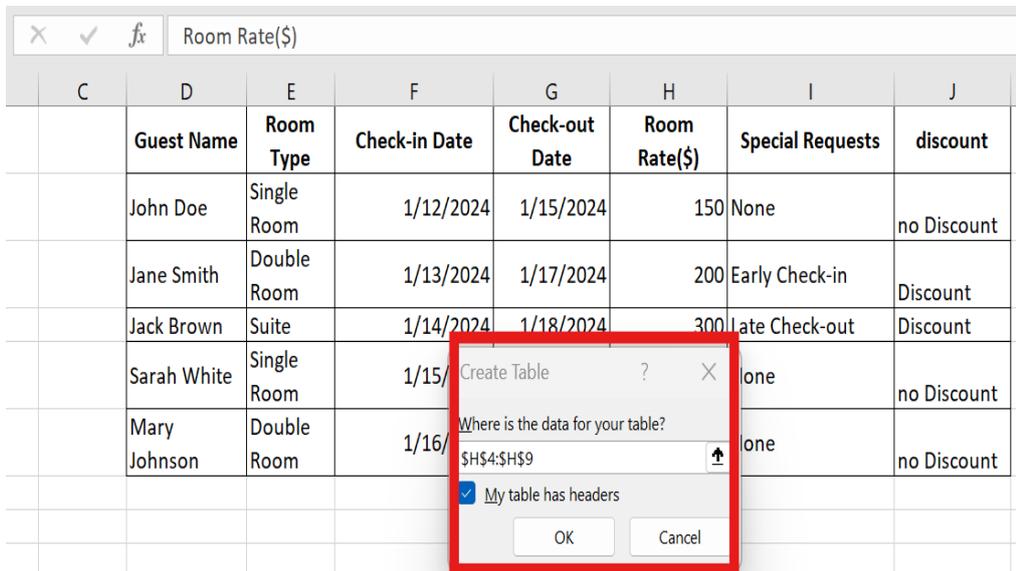
Step 1: Select your data range.

Step 2: Go to the **Home** tab and click **Format as Table** in the Styles group.

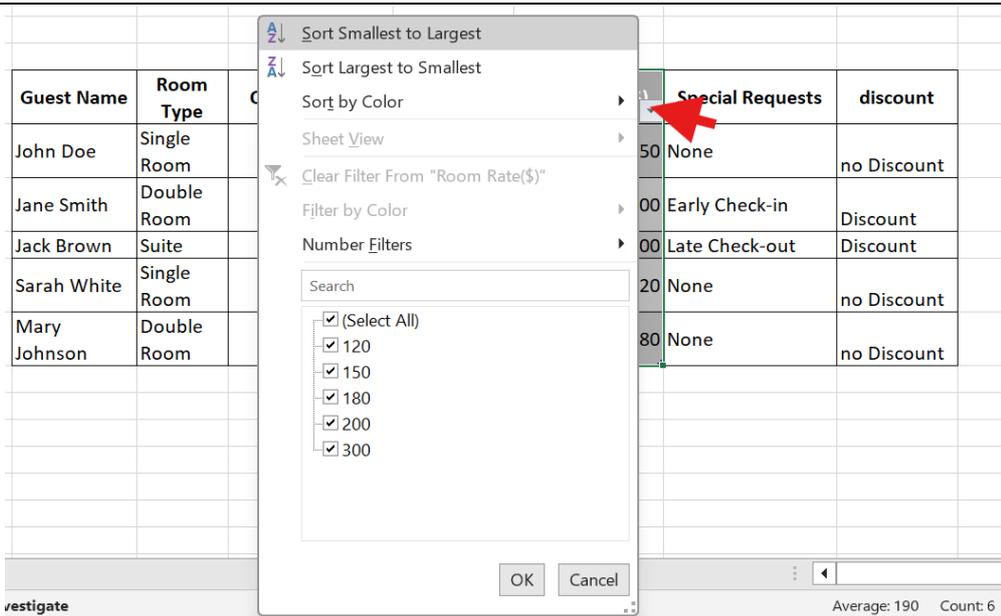


Step 3: Choose a table style (e.g., light, medium, or dark themes).

Step 4: Check the box for **My table has headers** if applicable, and click **OK**.



Step 5: Use the dropdown arrows in the headers to sort and filter data easily.



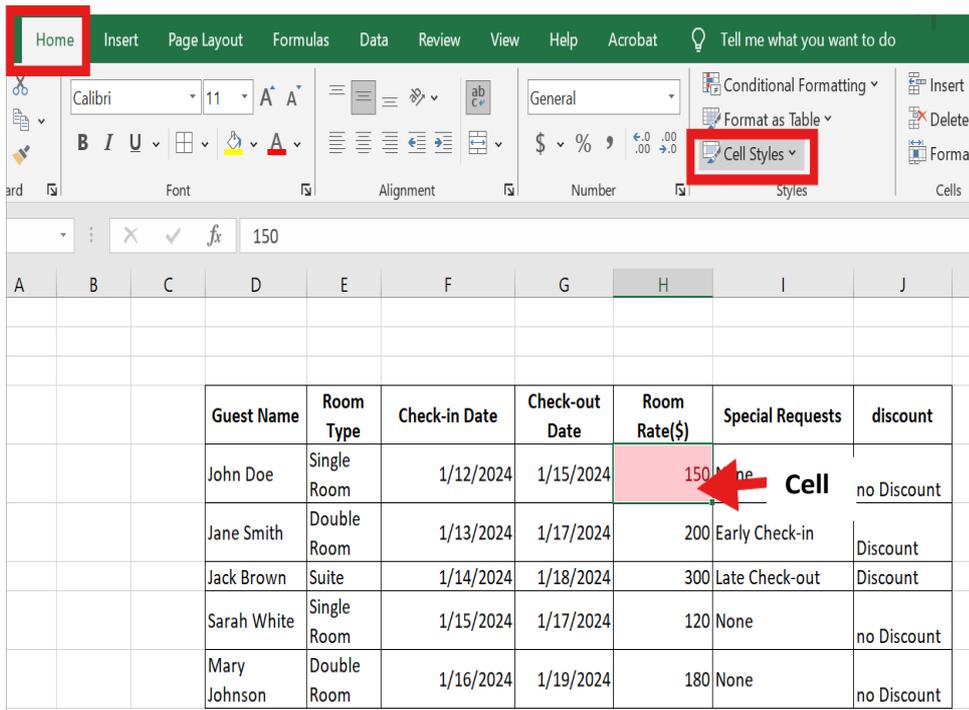
✓ **Cell Styles In Microsoft Excel**

Cell styles provide predefined formatting options to improve the appearance of specific cells.

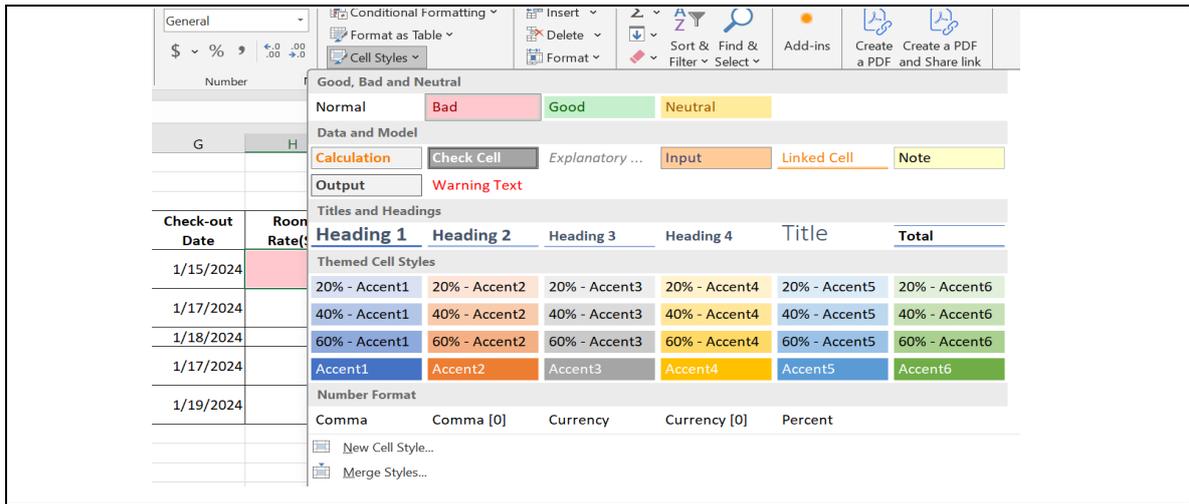
🛠 **Steps to Apply Cell Styles:**

Step 1: Select the cell or range you want to format.

Step 2: Go to the **Home** tab and click **Cell Styles** in the Styles group.



Step 3: Choose a style (e.g., heading, title, accent).



Activity 2: Guided Practice



Task 29:

Retype the following data in Ms Excell and answer the following questions:

	A	B	C
1	Favourite Cheeses Data		
2			
3	Cheese Type	Number of People	
4	Brie		9
5	Cheddar		23
6	Cheshire		7
7	Dairylea		9
8	Lancashire		8
9	Other		7
10	Red Leicester		14
11	Stilton		11
12	Wensleydale		12
13			

1. Design a pie chart of the above data
2. Design a bar chart of the above data



Activity 3: Application



Task 30:

Read carefully the following scenario and answer to the questions that follow

You are working as a *x hotel*, and your task is to analyze the hotel's booking data to help the management team understand trends in guest bookings. The hotel management wants to make better decisions about room pricing and availability based on guest bookings and revenue patterns.

The resort has provided you with the following data for the last five days:

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate (\$)
John Doe	Single Room	01/12/2024	01/15/2024	150
Jane Smith	Double Room	01/13/2024	01/17/2024	200
Jack Brown	Suite	01/14/2024	01/18/2024	300
Sarah White	Single Room	01/15/2024	01/17/2024	120
Mary Johnson	Double Room	01/16/2024	01/19/2024	180

Your Task:

1. Create a chart to visualize the *Room Rate* for each room type. Consider what type of chart will best show differences in the pricing.
2. Format the data into a table, applying a style to improve its appearance. Use **cell styles** to emphasize headers and other important cells.
3. Use **conditional formatting** to highlight the highest and lowest room rates.

Topic 3.4 Application of data protection techniques in excel



Activity 1: Problem Solving



Task 31:

Read carefully the following scenario and answer to the questions that follow

Imagine you are working at a company, and your job is to ensure that sensitive data stored in Excel is secure. The company handles personal information, including names, contact details, and financial data, which must be protected from unauthorized access. The management team has asked you to make sure that the Excel worksheets containing this data are secure and that only authorized personnel can make changes. You need to apply data protection measures to ensure the safety and privacy of sensitive information.

You are tasked to:

1. How can you lock specific cells containing critical formulas or sensitive data, like credit card numbers, to prevent them from being altered?
2. How can you make your worksheet uneditable by unauthorized users?
3. How can you protect the entire workbook with a password to ensure that only authorized users can access or make changes to the file

Key Facts 3.4: Application of data protection techniques in excel

- **Data Protection Principles**

- ✓ **Description**

Data protection refers to practices that ensure sensitive and personal data is stored, processed, and shared securely. In the context of Excel, data protection is vital for maintaining confidentiality, integrity, and availability of the data²⁰.

- ✓ **Below are the core principles of data protection:**

- ✓ **Confidentiality:** Only authorized users should have access to sensitive data.

- ✓ **Integrity:** The data should be accurate and safeguarded from unauthorized changes or corruption.

²⁰ <https://corporatefinanceinstitute.com/resources/financial-modeling/protecting-excel-data/>

📌 **Availability:** Authorized users should be able to access the data whenever needed, without disruption.

📌 **Accountability:** Users must be accountable for their actions when accessing or modifying data.

- **Ways of Protecting Excel Data**

- ✓ **Introduction**

Microsoft Excel provides several features that allow users to secure their files, worksheets, and cells.

- ✓ Below are key methods of protecting Excel data.

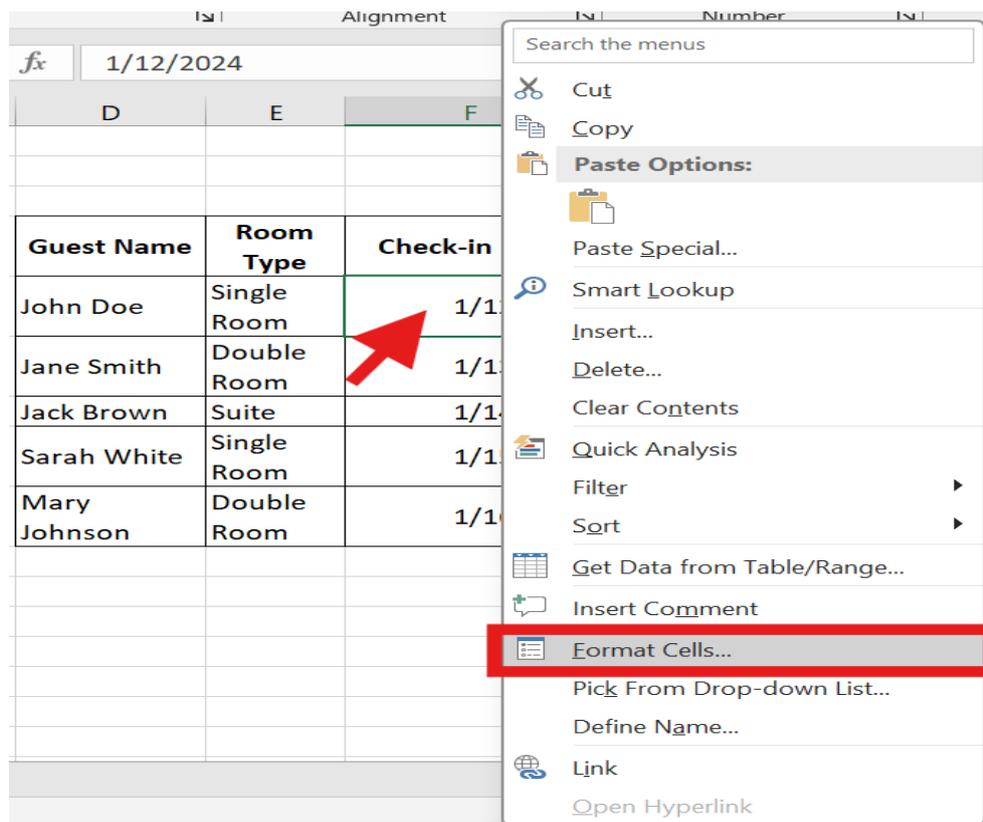
- 📌 **Protect a Cell**

In Excel, you can protect specific cells to prevent users from making changes to certain parts of your data, such as formulas or confidential information.

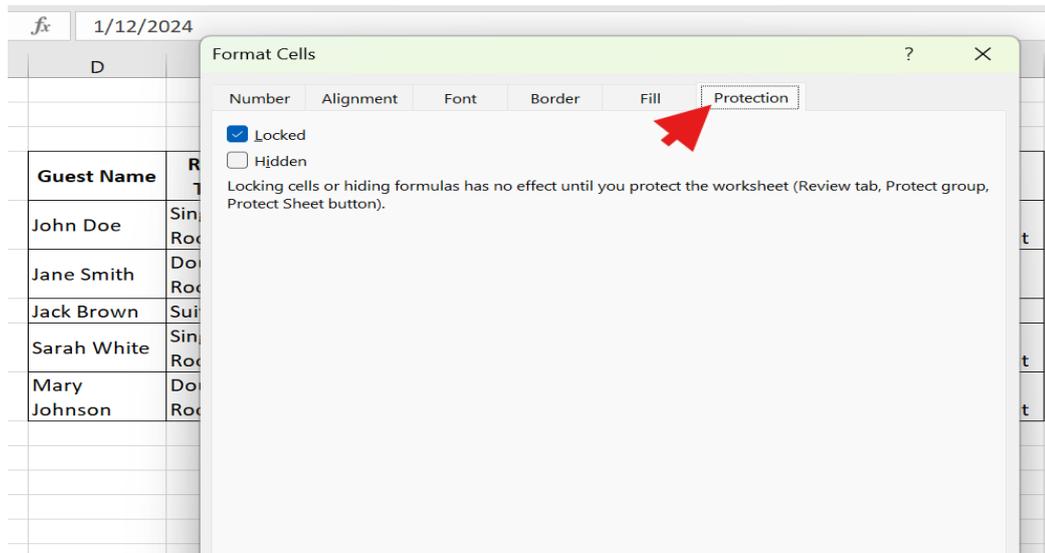
- **Steps to Protect a Cell:**

Step 1: Select the cells you want to protect. By default, all cells in an Excel worksheet are locked.

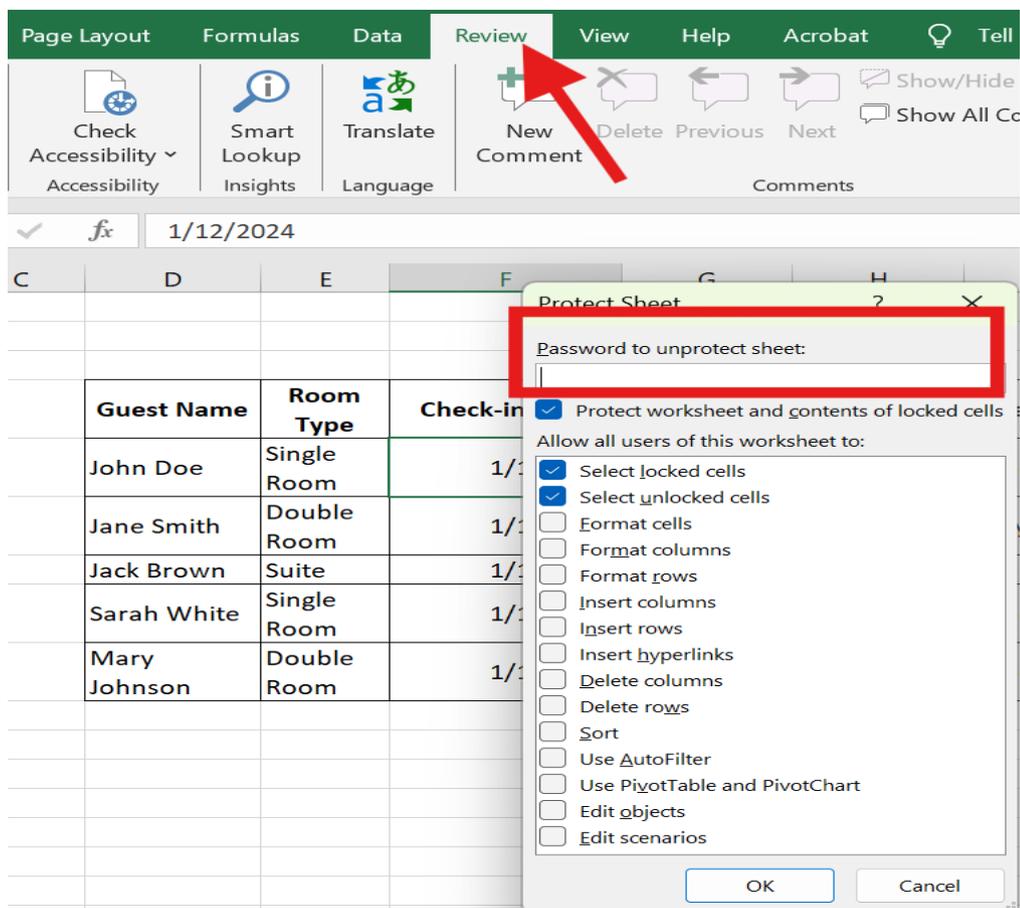
Step 2: Right-click the selected cells, and choose **Format Cells**.



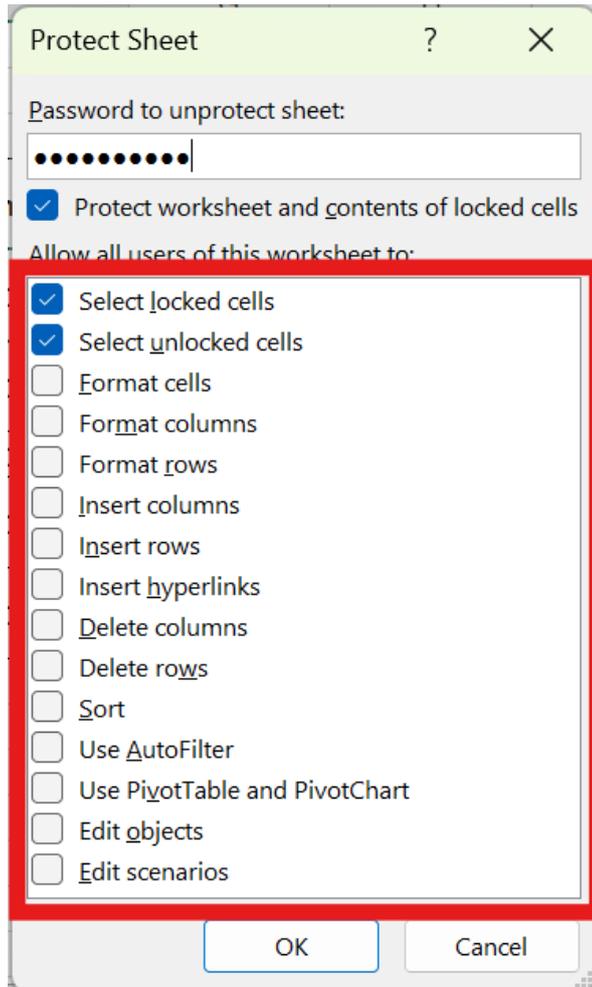
Step 3: Go to the **Protection** tab and uncheck **Locked** (this will unlock the cells you want to remain editable).



Step 4: Select the **Review** tab, then click **Protect Sheet**.



Step 5: Set a password (optional), and click **OK**. This will lock the cells that were set to "locked" while leaving others editable.



✓ **Protect a Worksheet**

Protecting a worksheet ensures that no one can make changes to the structure or content, unless they have permission.

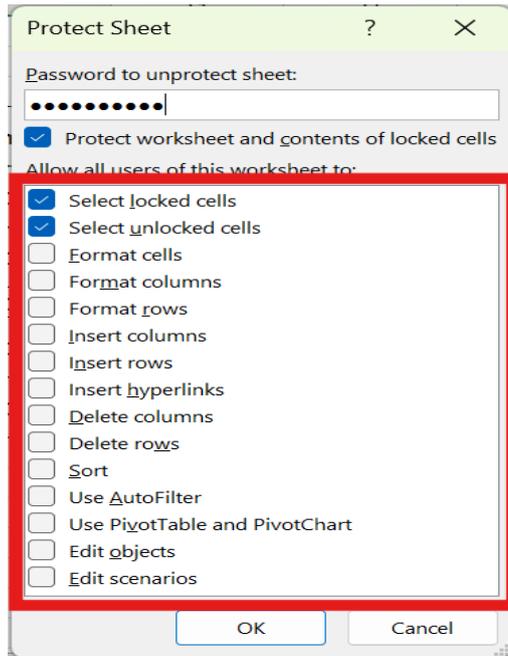
✓ **Steps to Protect a Worksheet:**

Step 1: Go to the **Review** tab in the ribbon.

Step 2: Click **Protect Sheet**.

Step 3: Enter a password (optional) that will be required to unprotect the sheet.

Step 4: You can choose to allow users to perform specific actions (such as selecting locked cells or formatting).



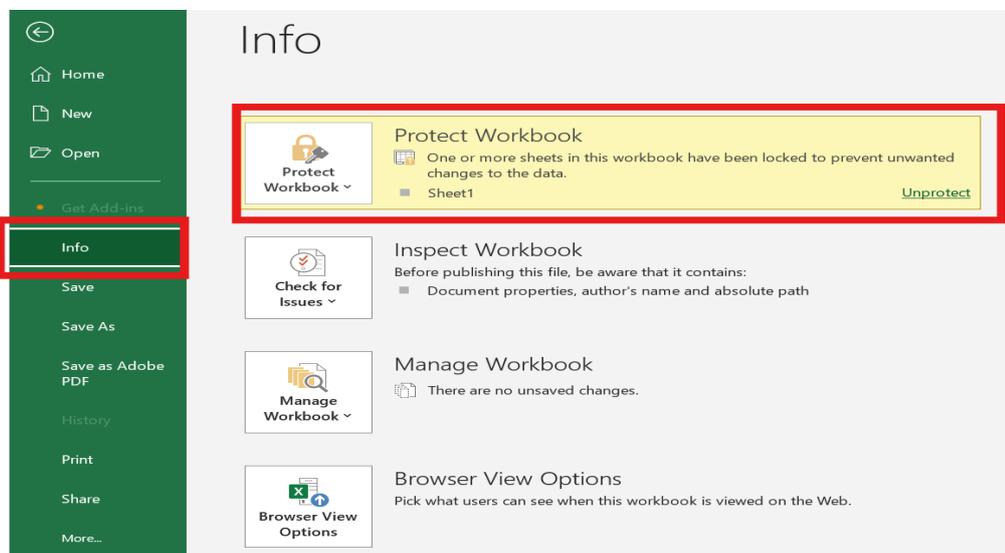
Step 5: Click **OK** to apply protection.

This feature will prevent unauthorized users from modifying cell contents, adding or deleting rows/columns, and changing formulas.

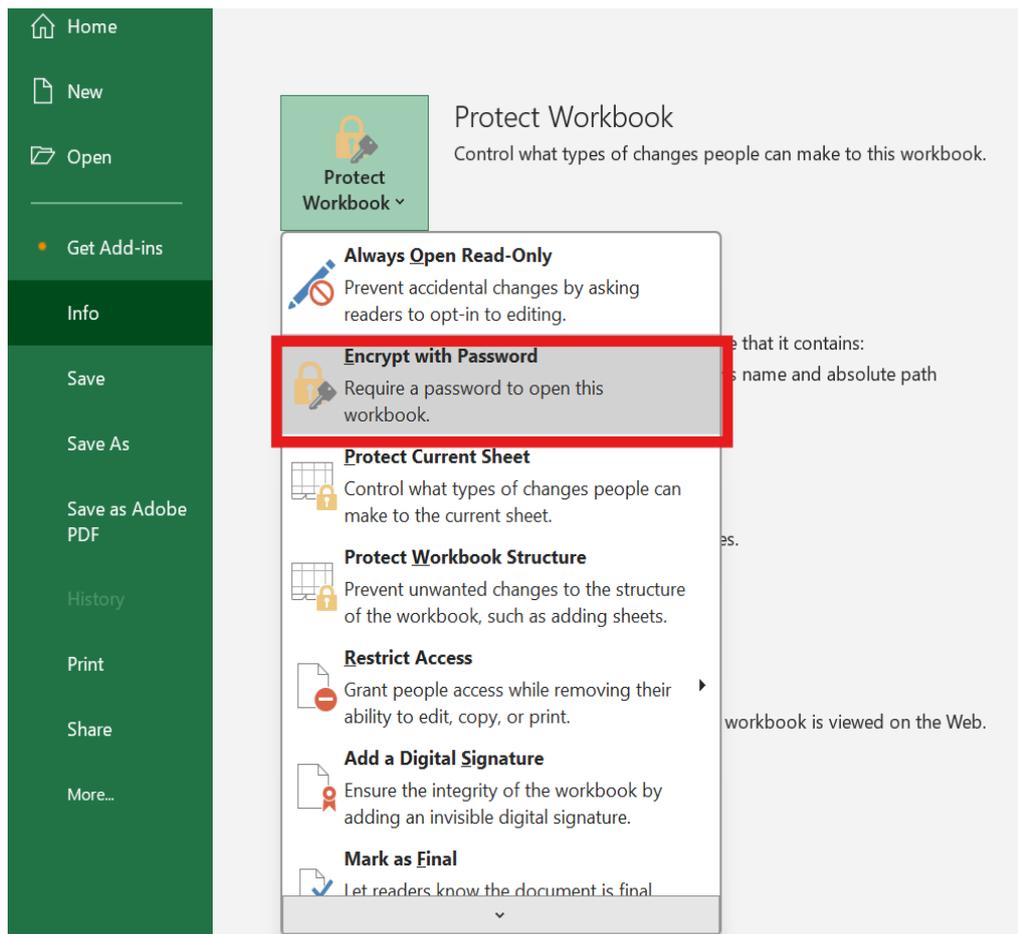
✓ **Protect a Workbook**

Protecting a workbook secures the entire file by requiring a password to open or modify it. This is ideal for securing confidential data stored within the entire workbook.

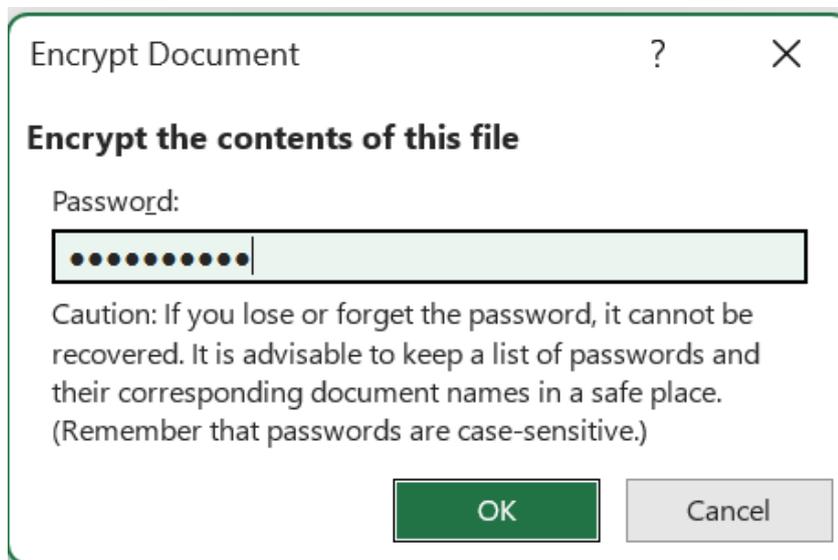
✓ **Steps to Protect a Workbook: Step 1:** Click **File** in the ribbon, then select **Info**.



Step 2: Click Protect Workbook, and choose Encrypt with Password.



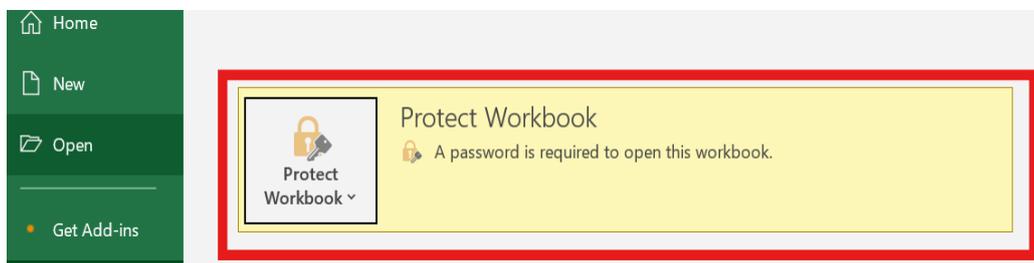
Step 3: Enter a password to protect the workbook, then click OK.



Step 4: Re-enter the password to confirm, and click **OK** again.



Once a password is set, users will need to provide the password to open or make changes to the workbook.



✓ Why Data Protection is Important in Excel

- Confidentiality:** Protection ensures that sensitive information, such as financial data or personal details, remains confidential and accessible only to authorized individuals.
- Accuracy:** By locking cells or worksheets, you can prevent unintentional modifications to critical formulas or data.
- Accountability:** Tracking changes and requiring passwords for access ensures that users are held accountable for their actions.
- Compliance:** Many industries, especially finance, healthcare, and hospitality, require data protection to meet legal and regulatory standards, such as GDPR or HIPAA.



Activity 2: Guided Practice



Task 32:

Retype the following table and answer to the following question:

Guest Name	Room Type	Check-in Date	Billing Amount	Special Requests
Jane Smith	Double Room	5-Jan-24	200	Early Check-in
John Doe	Single Room	1/12/2024	150	None
Sarah White	Single Room	15-Feb-24	120	None
John Doe	Single Room	1/12/2024	150	None
Jack Brown	Suite	2/10/2024	300	Late Check-out

1. Protect the worksheet of the table



Activity 3: Application



Task 33:

Read carefully the following scenario and answer to the questions that follow

You are working as a data manager at a large hotel chain, where you handle sensitive guest information such as personal details, booking history, and payment information stored in Excel. The management team has tasked you with ensuring that the guest data remains secure and accessible only to authorized personnel.

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate	Payment Information	Special Requests
John Doe	Single Room	01/12/2024	01/15/2024	150	-1234--5678	None

Guest Name	Room Type	Check-in Date	Check-out Date	Room Rate	Payment Information	Special Requests
Jane Smith	Double Room	01/13/2024	01/17/2024	200	-5678--9101	Early Check-in
Jack Brown	Suite	01/14/2024	01/18/2024	300	-1111--2222	Late Check-out
Sarah White	Single Room	01/15/2024	01/17/2024	120	-3333--4444	None
Mary Johnson	Double Room	01/16/2024	01/19/2024	180	-5555--6666	None

In this table, **Payment Information** is sensitive data that needs to be protected. You can apply the protection steps to ensure the **Room Rate**, **Payment Information**, and any other confidential data are safeguarded.

Task:

1. Retype the above table in Excel
2. Protect the work book



Formative Assessment

Read and answer the following questions

1. **Which of the following is the default format for a cell when data is entered in Excel?**
 - a. Text
 - b. General
 - c. Number
 - d. Currency
2. **Which Excel function is used to find the largest value in a range of cells?**
 - a. SUM
 - b. MAX
 - c. COUNT
 - d. AVERAGE
3. **What is the purpose of using data validation rules in Excel?**
 - a. To format the data automatically
 - b. To prevent incorrect data entry
 - c. To sort the data in ascending order
 - d. To find and replace data
4. **What type of data format is typically used for displaying monetary values in Excel?**
 - a. Currency
 - b. Date
 - c. Number
 - d. Text
5. **How can you protect an entire workbook in Excel?**
 - a. By locking specific cells
 - b. By encrypting it with a password
 - c. By using conditional formatting
 - d. By formatting as a table

6. **Which function would you use to calculate the total sum of a range of numbers in Excel?**
 - a. AVERAGE
 - b. COUNT
 - c. SUM
 - d. MIN
7. Explain how data types in Excel can affect how you enter and format data in cells. Provide examples of different data types and their default formats.
8. Describe the process of protecting a worksheet in Excel. What are the steps to lock cells, and how does this help in preventing unauthorized changes to sensitive data?
9. How do you create a chart in Excel, and why is it important to use charts for visualizing data? Provide an example of a situation where using a chart would be beneficial.



Points to Remember

- Data protection principles ensure confidentiality, integrity, availability, and accountability of sensitive data.
- Protect a cell by locking specific cells to prevent unauthorized changes to sensitive data.
- Protect a worksheet to prevent modifications to the structure or content by unauthorized users.
- Protect a workbook by applying a password to restrict access and prevent unauthorized changes to the entire file.
- These protections maintain data security, ensuring only authorized users can access or modify sensitive information.



Self-Reflection

1. Re-take the self-assessment you did at the beginning of the unit.
2. Read the statements across the top. Put a check in a column that best represents your level of knowledge, skills and attitudes.

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Explain the types of data in excel.					
Describe data protection principles					
Identify Excel functions					
Describe the ways to protect data in excel					
Identify data validation techniques					
Sort data					
Remove duplicates in dataset					
Perform data validation					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
Apply Excel functions					
Check errors in data					
Manage large dataset					
Apply data protection principles.					
Implement data visualization					
Pay attention to appropriate data type usage.					
Have consistency in formatting and formulas.					
Pay attention to data accuracy.					
Be analytical when interpreting results					
Provide clear visualizations					

My experience	I do not have any experience doing this.	I know a little about this.	I have some experience doing this.	I have a lot of experience with this.	I am confident in my ability to do this.
Knowledge, skills and attitudes					
using charts and tables					

3. Fill in the table above and share results with the trainer for further guidance.

Areas of strength	Areas for improvement	Actions to be taken to improve
1.	1.	1.
2.	2.	2.
3.	3.	3.

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