

CCMIW502

ICT AT WORKPLACE

Use ICT at workplace

Competence

REQF Level: 3

Credits: 3

Sector: All

Sub- sector: All



Learning hours: 30

Module Note Issue date: September,2022

Purpose Statement

This course focuses on providing skills, experience and confidence for those learners who struggle to make the most of technology to demonstrate creative thinking, problem solving and knowledge construction. It focuses on completing workplace tasks, such as researching and creating documents with text, graphics and numerical information using commonly used tools such as: Microsoft Office – (Word, Excel) and the Internet

Learners gain ability to appropriately select and responsibly use ICT to be able to: Problem-solve, Communicate and collaborate, Locate, use and synthesize information found using technology and Develop skills necessary to function in this century.

Learning unit LU 1: Prepare document Layout

Learning Outcomes 1.1. Set up the document

Topic1: Paper size and layout

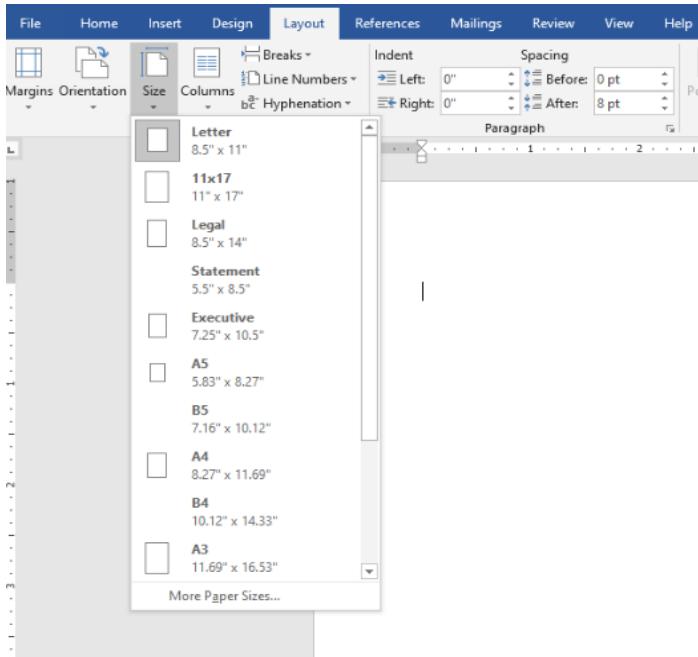
The paper size, color, and borders give the reader an overall sense of the document's theme and quality. Margins, the text layout, and perhaps a watermark sends further visual clues. Making the right choices about your document setup helps you send the right message to your readers.

1.1.Paper size

When you edit a document in Word, what you see on your computer screen looks almost exactly like the final printed page. To get that correct preview, Word needs to know some details about the paper you're using, like the page size and orientation. You have two different ways to change the page settings: using the Page Layout tab or the Page Setup dialog box

1.2.Changing Paper Size

If you want to quickly change the page size to a standard paper size like letter, legal, or tabloid, the Page Layout → Page Setup → Size menu is the way to go (Figure 4-1). With one quick click, you change your document's size. If there's text in your document, Word reshapes it to fit the page.



UP TO SPEED: OF MENUS AND BOXES

Word gives you two ways to set options: through ribbon menus and dialog boxes.

The Page Layout → Page Setup → Size menu, shown in Figure 4-1, lets you choose a standard paper size with one click.

1.2.1. Customizing paper size and source

If you can't find the paper size you need on the Size menu, then you need to customize your paper size, which you do in the Page Setup dialog box's Paper tab. Here are the steps:

1. Choose Page Layout → Page Setup → Size. At the bottom of the Size menu, click More Paper Sizes.

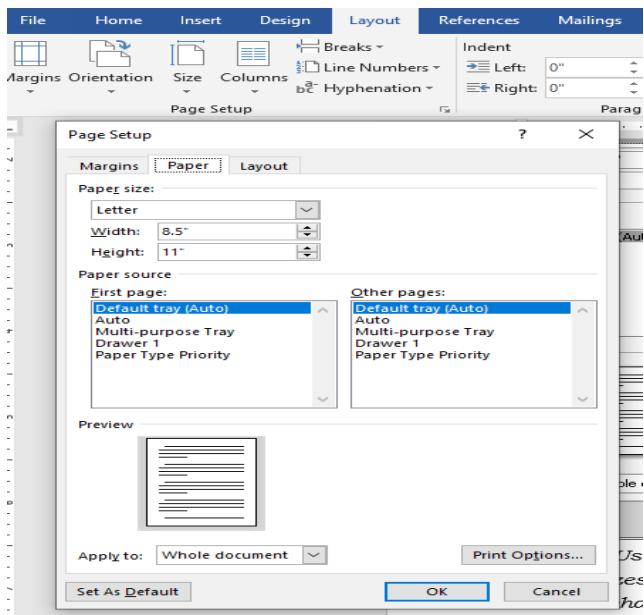
The Page Setup dialog box appears, with the Paper tab showing (Figure 4-2). Why the Paper tab? Because you opened the box using the More Paper Sizes button.

2. In the Width and Height boxes, enter the size of your custom paper.

The quickest way to change the Width and Height settings is to select the numbers in the boxes and type your new page dimensions.

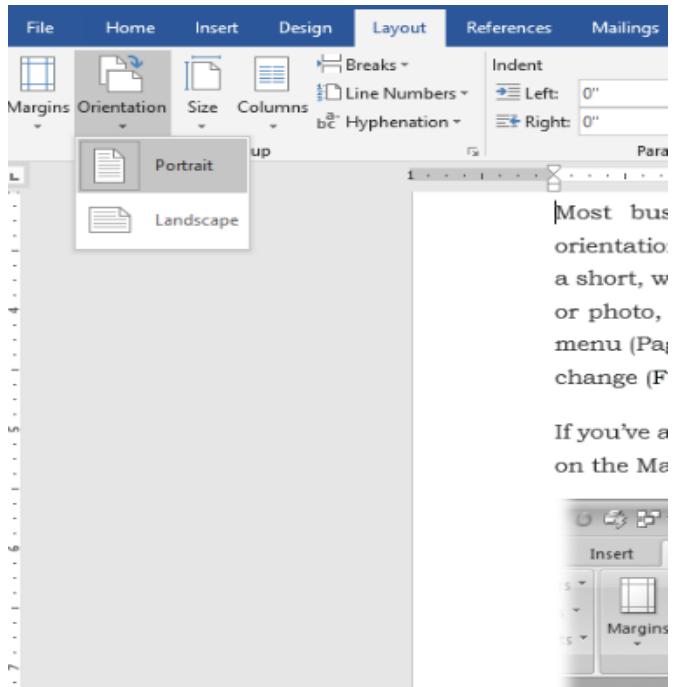
- Click OK at the bottom, to close the dialog box and make the changes.

The Page Setup box closes, and your custom-sized document shows in Word.



1.3.Paper orientation

Most business documents, school papers, and letters use a *portrait* page orientation, meaning the page is taller than it is wide. But sometimes you want a short, wide page—*landscape* page orientation—to accommodate a table, chart, or photo, or just for artistic effect. Whatever the reason, using the Orientation menu (Page Layout → Page Setup → Orientation) is the easiest way to make the change (Figure 4-3). Just click one of the two options: Portrait or Landscape.

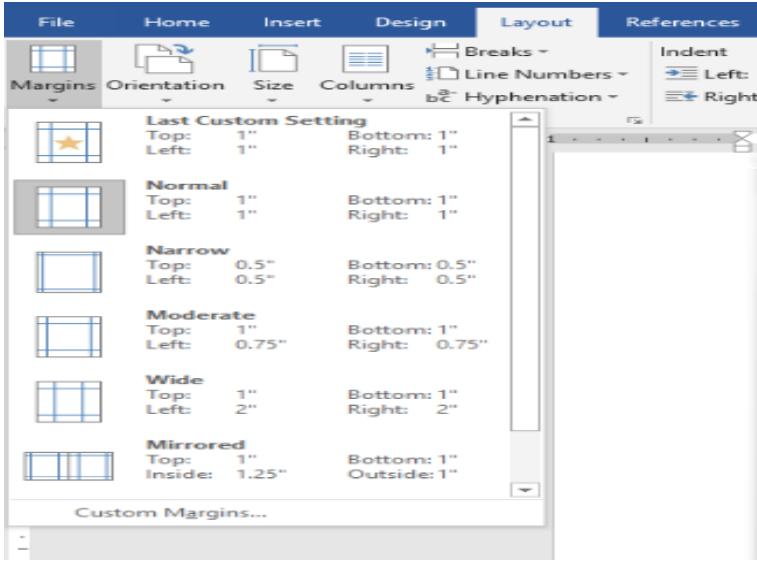


1.4. Margins

Page margins are more than just empty space. The right page margins make your document more readable. Generous page margins make text look inviting and give reviewers room for notes and comments.

1.4.1. Selecting Preset Margins

Word's Margins menu (Page Layout → Page Setup → Margins) gives you a way to quickly apply standard margins to your pages. The preset margins are a mixed bag of settings from a half inch to one and a quarter inches. For most documents, you can choose one of these preset margins and never look back.



For each of the preset margin options you see dimensions and an icon that hints at the look of the page:

- **Normal** gives you one inch on all sides of the page.
- **Narrow** margins work well with multicolumn documents, giving you a little more room for each column.
- **Moderate** margins with three-quarter inches left and right let you squeeze a few more words in each line.
- The **Wide** preset gives you more room for marginal notes when you're proofing a manuscript.

1.4.2. Setting Custom Margins

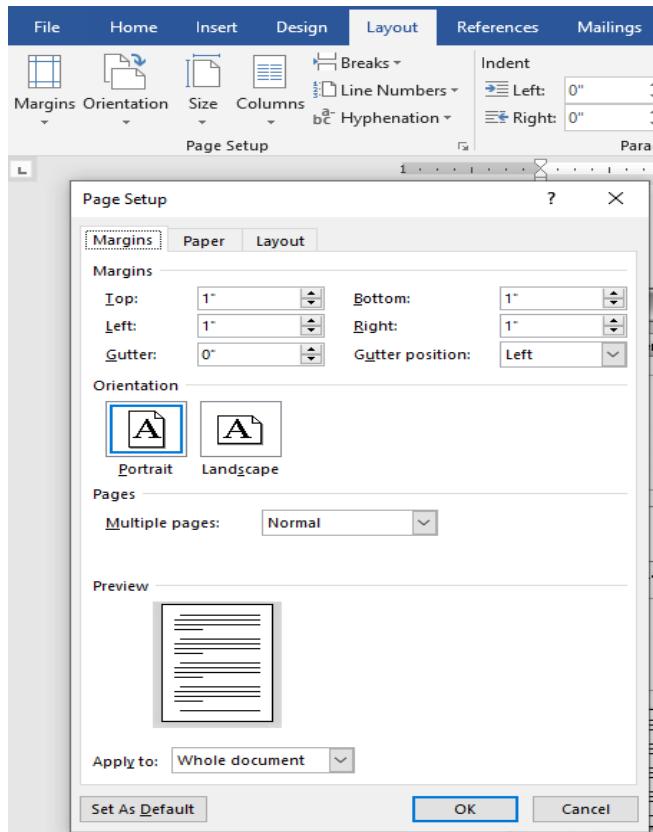
What if none of the preset margins on the menu suits your needs? Say your company's style guide insists on one-and-a-half-inch margins for all press releases. Here's how to customize your margins:

1. **Go to Page Layout → Page Setup → Margins → Custom Margins to open the Page Setup box to the Margins tab (Figure 4-5).**

The Page Setup box has three tabs at the top. The Margins tab is on the left.

2. At the top of the box, enter dimensions for top, bottom, left, and right margins. The boxes in the Margins section already contain your document's current settings.
3. Click OK to apply the changes to your document.

The Page Setup box closes and your document takes shape with the new margins.



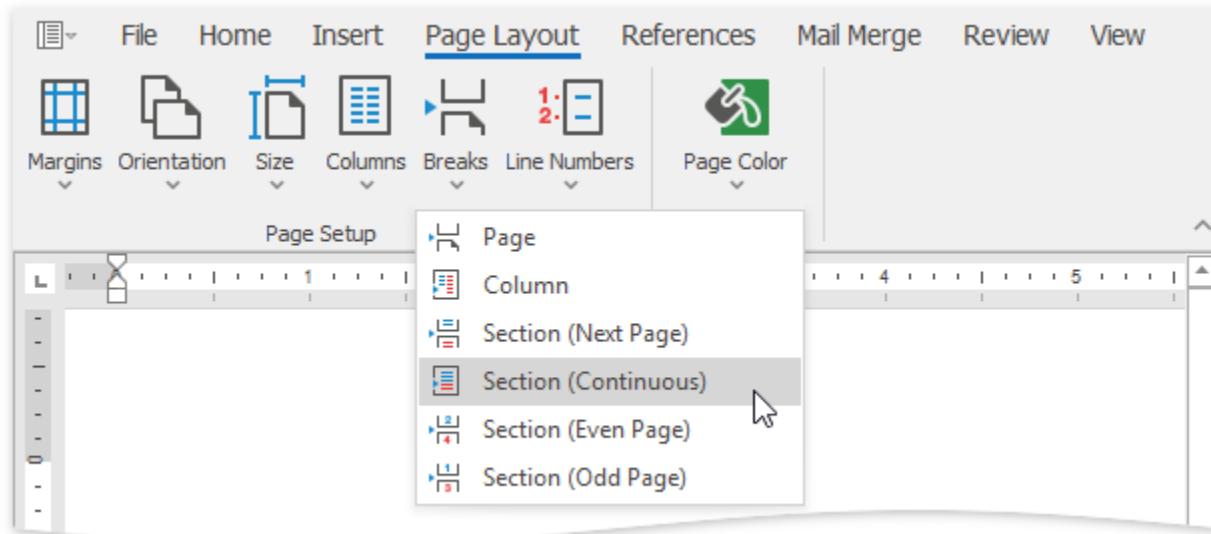
Topic2: Divide document into sections

You can divide your document into sections to specify parts of a document that have different page settings (page margins, page orientation, paper size), column layouts, line numbering and headers and footers.

Insert Section Breaks

To divide a document into sections, insert section breaks.

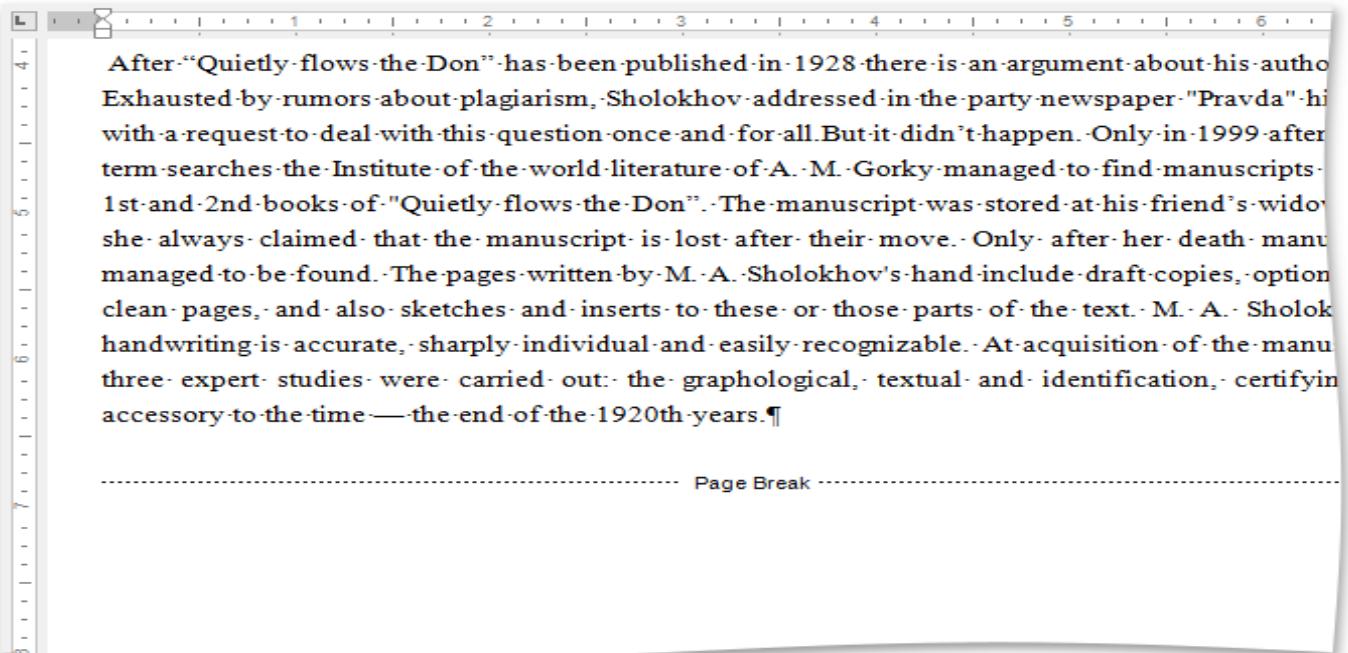
1. Click where you want to insert a section break within a document.
2. On the **Page Layout** tab, in the **Page Setup** group, click the **Breaks** button and select one of the following types of section breaks.



- **Column** - starts a new section on the next column on the page.
- **Next Page** - inserts a section break and starts a new section on the next page.
- **Continuous** - starts the new section on the same page.
- **Even Page** - inserts a section break and starts a new section on the next even-numbered page.
- **Odd Page** - inserts a section break and starts a new section on the next odd-numbered page.

To show the section break mark, press **CTRL+SHIFT+8** or on the **Home** tab, in the **Paragraph** group, click the **Show/Hide Paragraph** button.

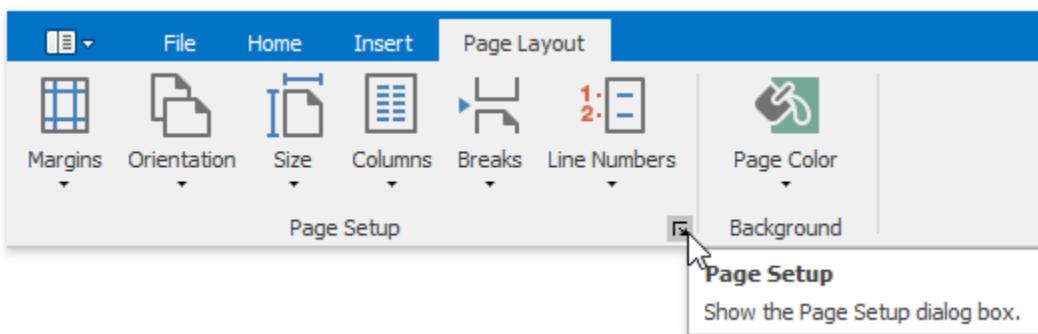
In a document, section breaks are marked as illustrated below.



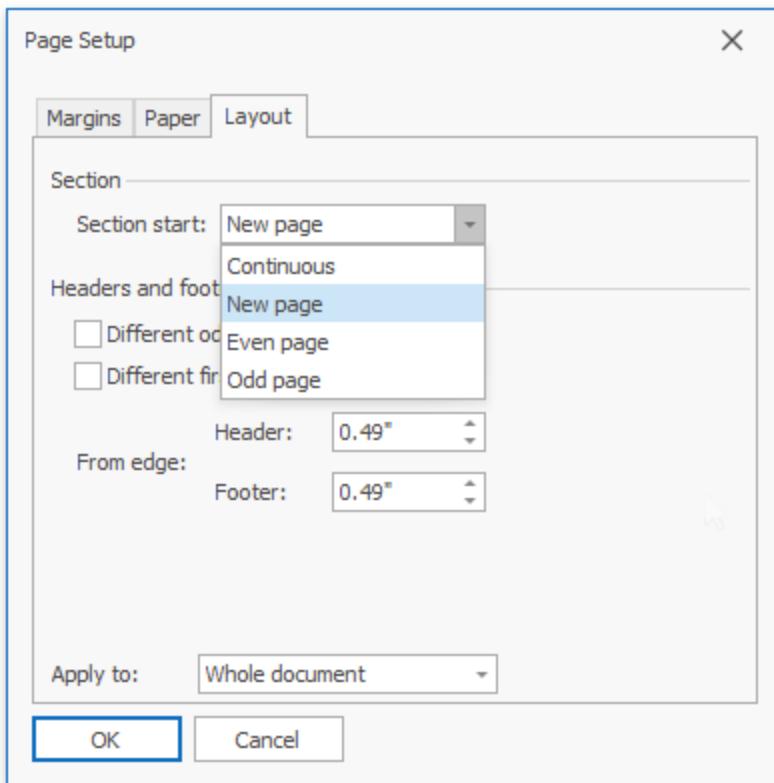
Change Section Break Type

You can change the type of the section break that has been inserted to start a section. To do this, follow the instructions below.

1. Click the section following the section break that you wish to change.
2. Invoke the **Page Setup** dialog by clicking the dialog box launcher.



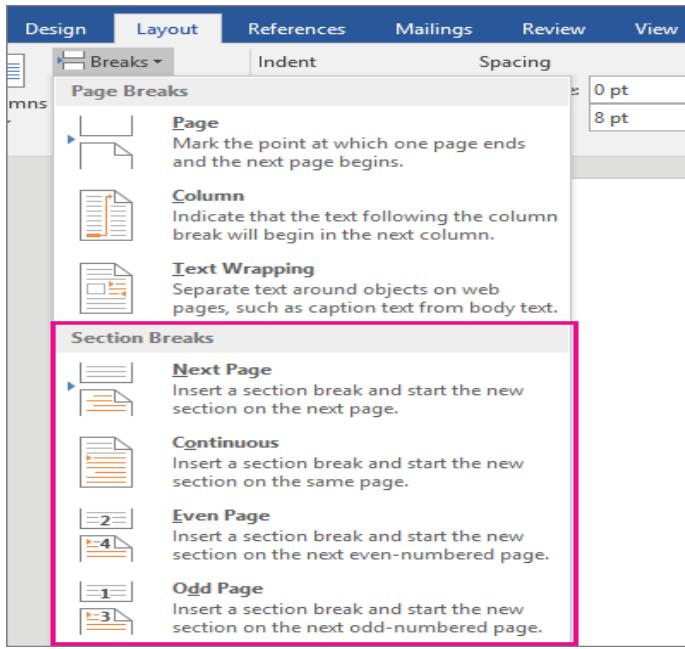
3. Change the **Section start** property on the **Layout** tab as required.



1.1. Section breaks

Use sections breaks to divide and format documents of all sizes. For example, you can break down sections into chapters, and add formatting such as columns, headers and footers, page borders, to each

1. Select where you want a new section to begin.
2. Go to **Layout > Breaks**.



3. Choose the type of section break you want:

- **Next Page** Section break starts the new section on the following page.



- **Continuous** Section break starts the new section on the same page. This type of section break is often used to change the number of columns without starting a new page.



- **Even Page** Section break starts a new section on the next even-numbered page.



- **Odd Page** Section break starts a new section on the next odd-numbered page.

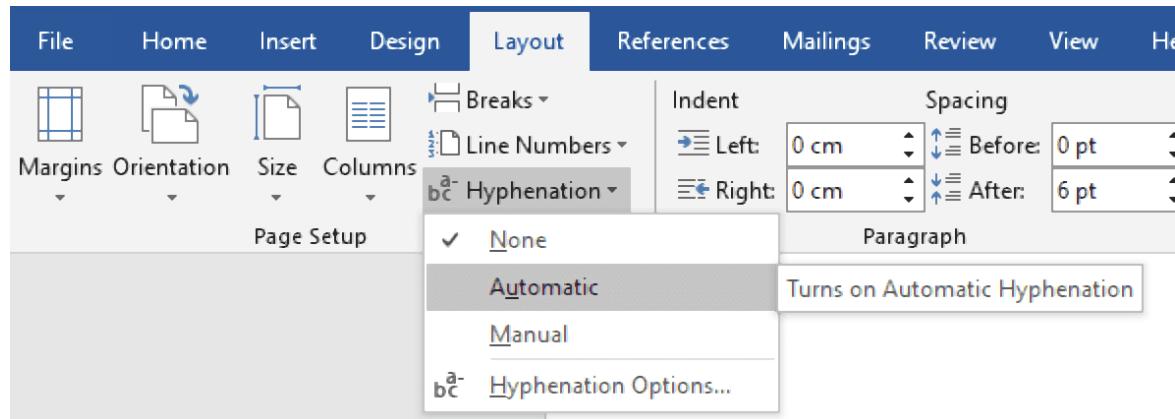


1.2. Hyphenation

One way around this would be to edit the text. But if you don't want to change what you've written, you can switch on the hyphenation in Microsoft Word. This will add hyphens between syllables in longer words at the end of lines, fixing the problem caused by justifying the text:

On a Windows machine, to switch on automatic hyphenation:

1. Go to the Layout tab on the main ribbon.
2. In the Page Setup section, click Hyphenation.
3. Select Automatic from the dropdown menu.



Topic3: Advanced formatting

1.1. Font/color/effects

Change the font color You can change the color of text in your Word document.

Select the text that you want to change. On the Home tab, in the Font group, choose the arrow next to Font Color, and then select a color.



You can also use the formatting options on the Mini toolbar to quickly format text. The Mini toolbar appears automatically when you select text.



Add an effect to text Select the text that you want to add an effect to.

On the Home tab, in the Font group, click Text Effect.



Click the effect that you want. For more choices, point to Outline, Shadow, Reflection, or Glow, and then click the effect that you want to add.

1.2. Border and shading

Applying Borders and Shades

Borders and shading are used in Word Documents when we want some text/paragraph to grab the attention of the viewers, making it the First Impression. In **MS Word** we can apply the Borders and Shading to the written text, paragraph, etc. to make them look good and appealing like they pop out of the page.

1.2.1. Applying Borders

The **border** as the name suggests provides an outer/inner lining on the selected text/paragraph. A Border is a good alternative to the Fonts Styles such as *Bold, Italics, and Underline* and grabs much attention quickly without hardcore techniques.

In *MS Word* there are multiple types of borders which are as follows:

- **Bottom Border**– Border at the bottom of the Paragraph.
- **Top Border**– Border at the top of the Paragraph.
- **Left Border**– Border on the left side of the Paragraph.
- **Right Border**– Border on the right side of the Paragraph.
- **No Border**– Removes all the borders.
- **All Borders**– Border on all sides of the Paragraph.
- **Outside Borders**– Border outside the Paragraph.
- **Inside Borders**– Border inside the Paragraph.
- **Inside Horizontal Border**– Horizontal borders on both sides inside the Paragraph.
- **Inside Vertical Border**– Vertical borders on both sides inside the Paragraph.

1.2.1.1. Steps to Apply

Step 1: Select the text/Paragraph to apply Border.

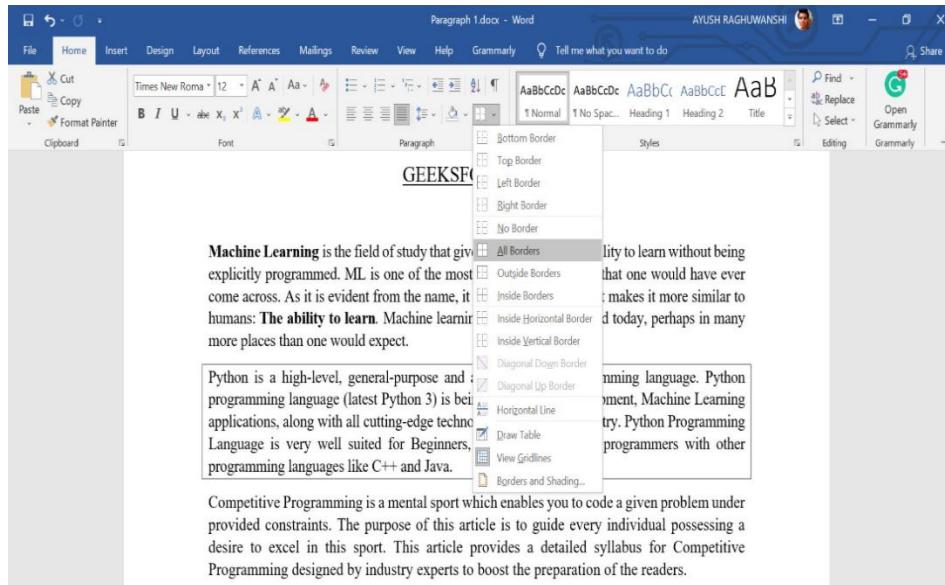
GEEKSFORGEEKS

Machine Learning is the field of study that gives computers the capability to learn without being explicitly programmed. ML is one of the most exciting technologies that one would have ever come across. As it is evident from the name, it gives the computer that makes it more similar to humans: **The ability to learn**. Machine learning is actively being used today, perhaps in many more places than one would expect.

Python is a high-level, general-purpose and a very popular programming language. Python programming language (latest Python 3) is being used in web development, Machine Learning applications, along with all cutting-edge technology in Software Industry. Python Programming Language is very well suited for Beginners, also for experienced programmers with other programming languages like C++ and Java.

Competitive Programming is a mental sport which enables you to code a given problem under provided constraints. The purpose of this article is to guide every individual possessing a desire to excel in this sport. This article provides a detailed syllabus for Competitive Programming designed by industry experts to boost the preparation of the readers.

Step 2: Now, go to the Borders tab in the Paragraph menu under the Home bar.



Step 3: Select the border of your choice.

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1.2.2. Applying Shades

Another way of grabbing the attention of the viewers more likely is by using the **Shading** feature in the Word Document. It is similar to highlighting the text/Paragraph.

In **MS Word** there are multiple colors available in the Shading tab, which you can apply to your text or paragraph like: *red, blue, black*, etc.

1.2.2.1. Steps to Apply

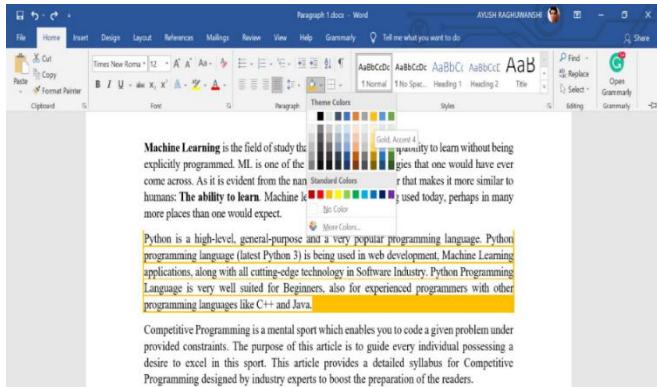
Step 1: Select the text to apply the Shading.

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Step 2: Now, go to the **Shading** tab in the **Paragraph** menu under the **Home** bar.



Step 3: Select the Shading Color of your choice.

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1.3. Format painter

Use the **Format Painter** on the **Home** tab to quickly apply the same formatting, such as color, font style and size, and border style, to multiple pieces of text or graphics. The format painter lets you copy all of the formatting from one object and apply it to another one – think of it as copying and pasting for formatting.

1. Select the text or graphic that has the formatting that you want to copy.
2. On the **Home** tab, click **Format Painter**.



The pointer changes to a paintbrush icon.

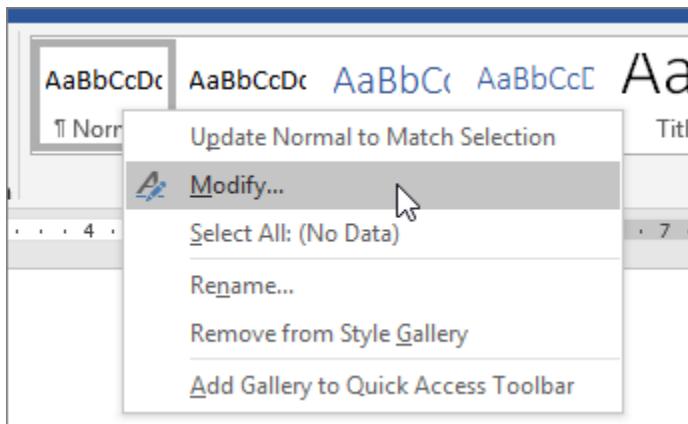
3. Use the brush to paint over a selection of text or graphics to apply the formatting. This only works once. To change the format of multiple selections in your document, you must first double-click **Format Painter**.
4. To stop formatting, press ESC.

1.4. Indenting paragraph

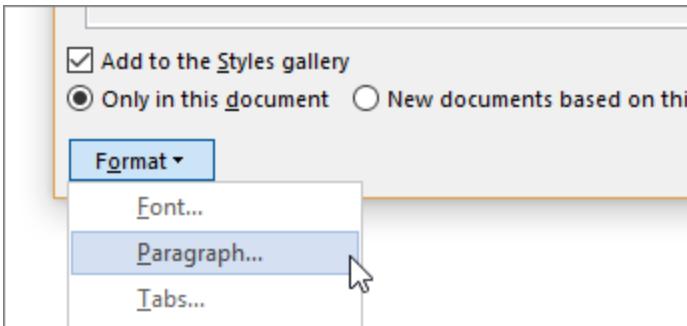
To indent the first line of a paragraph, put your cursor at the beginning of the paragraph and press the Tab key. When you press Enter to start the next paragraph, its first line will be indented.

If you always want first-line indentation, modify the Normal style:

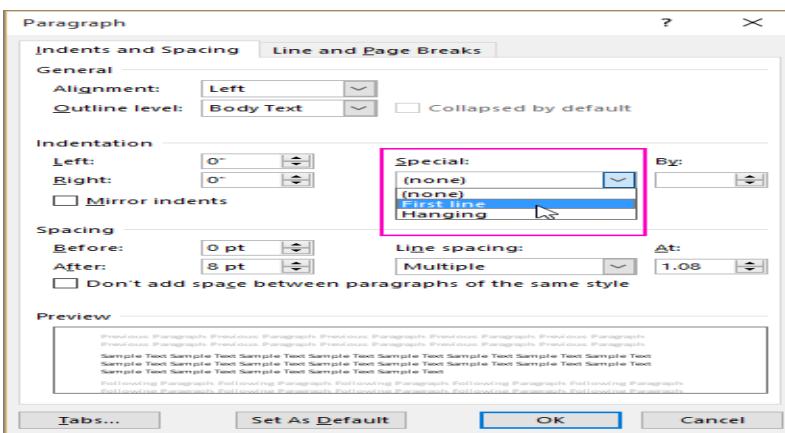
1. Put the cursor anywhere in the paragraph.
2. On the **Home** tab, right-click the **Normal** style, and choose **Modify**.



3. Select **Format**, and then choose **Paragraph**.



4. On the **Indents and Spacing** tab, under **Indentation**, select **First line**.

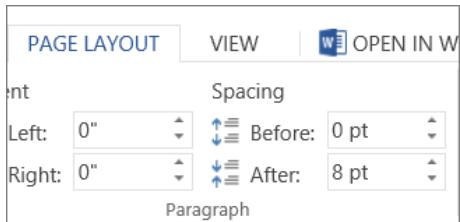


5. Select **OK**.
6. Select **OK** again.

spacing paragraph

To change the spacing between selected paragraphs, use the spacing options on the **Page Layout** tab:

1. Select the paragraphs you want to change.
2. Click the **Page Layout** tab, and under **Spacing**, in the **Before** and **After** boxes, click the up or down arrows to adjust the distance before or after each paragraph:



1.5. Line spacing

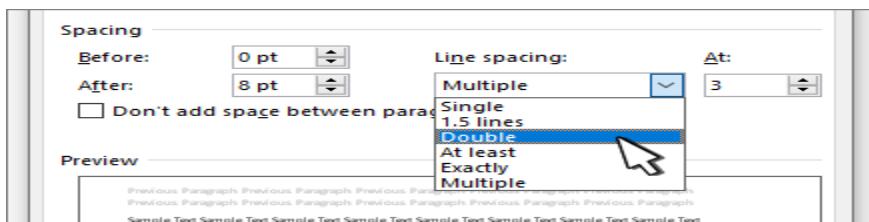
you can control the vertical space between the lines of text in your document by setting the line spacing. Or, you can change the vertical space between paragraphs in your document by setting the spacing before or spacing after paragraphs. You can also choose to keep lines of text together or keep paragraphs together on a page.

1. Go to **Design > Paragraph Spacing**.
2. Choose an option. To single space your document, select **No Paragraph Space**.

To return to the original settings later, go to **Design > Paragraph Spacing** and choose the option under **Style Set**. This may be **Default** or the name of style you're currently using.

Change the line spacing in a portion of the document

1. Select one or more paragraphs to update. Press **Ctrl + A** to select all.
2. Go to **Home > Line and Paragraph Spacing**
3. Select **Line Spacing Options** and choose an option in the **Line spacing** box.



4. Adjust the **Before** and **After** settings to change spacing between paragraphs.
5. Select **OK**.

Learning Outcomes 1.2. Work with pictures

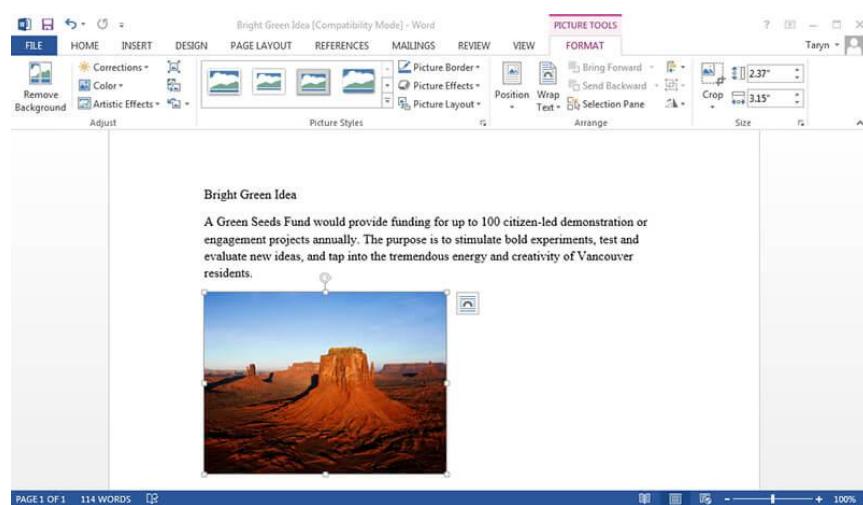
Topic1: Insert a picture

1.1. Change size of a picture

Using Microsoft® Word, you can resize not only pictures, but also text boxes, WordArt, and boxes. If you want, you can also remove unwanted portions of the picture by cropping it. Today, however, we will talk about how to resize a picture in Word.

Resizing a picture in Word is very easy. If you want to stretch, shrink, or simply change the size of the picture, follow these steps:

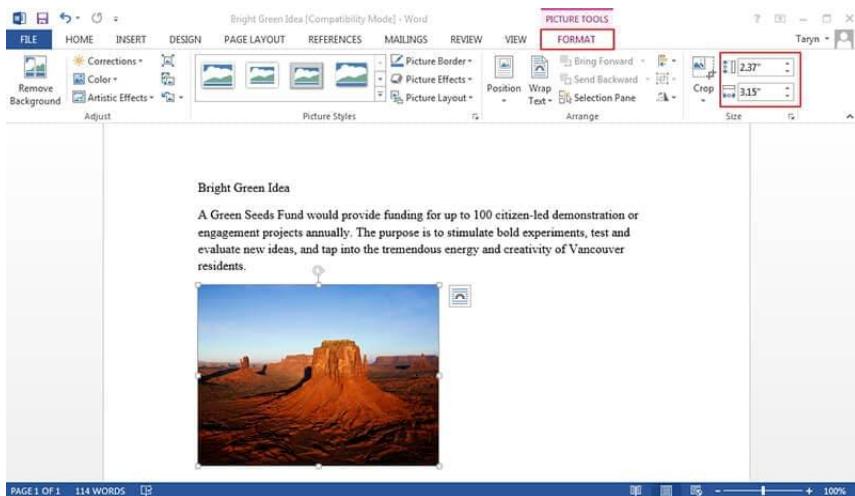
1. Click the picture, object, WordArt, or shape that you want to resize.
 2. Grab a sizing handle away from or toward the center to increase or decrease the size of the picture.
At the same time, press and hold Ctrl to keep the center in the same place while you are dragging the sizing handle.
 3. If you want to maintain the proportions, you can press and hold Shift while you are dragging the sizing handle away from or toward the center.
 4. If you want to keep the center in the same place and maintain proportions, you can press and hold both Ctrl and Shift while you are dragging the sizing handle.



It is important to note that resizing WordArt object will only resize the box in which the WordArt is. The actual WordArt text behaves just like any other text in Word. If you need to resize the text in WordArt, select the text and change the font size in the Home tab of the ribbon.

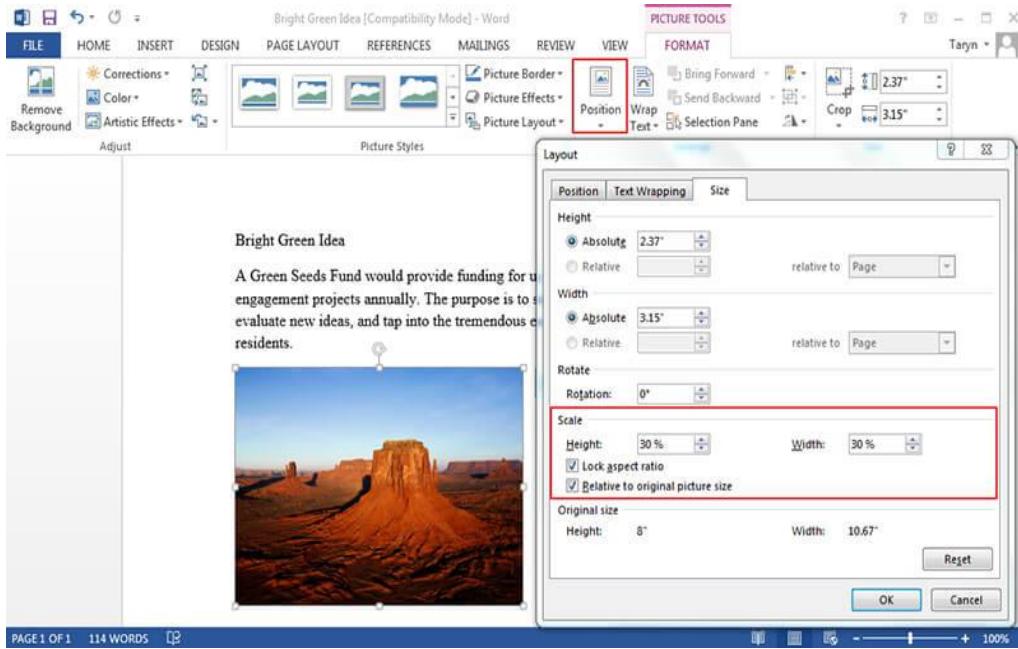
If you want to resize an image in Word to an exact height and width, follow these steps:

1. Click the picture that you want to resize.
2. In the "Picture Tools" tab, click the "Format" tab.
3. To resize a picture, enter the Picture Format tab, and then enter the measurements you want for Height and Width. If you are resizing a shape or object, go to the "Shape Format" and enter the measurements for "Height and Width."



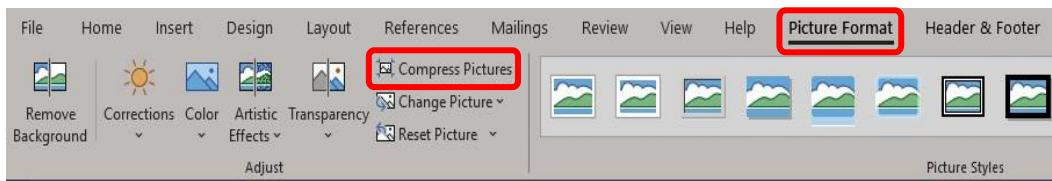
Another option for how to resize a picture in Word is using percentages. If you want to resize to an exact proportion using percentages, follow these steps:

1. Click the picture you want to resize.
2. Go to the Picture Format tab, and then click "Position" > "More Layout Options."
3. Click the "Size" tab, and then in the "Scale" section, make sure the "Lock Aspect Ratio" checkbox is clear. Now enter percentages for Height and Width.
4. Click "OK" when you are done with the percentages.

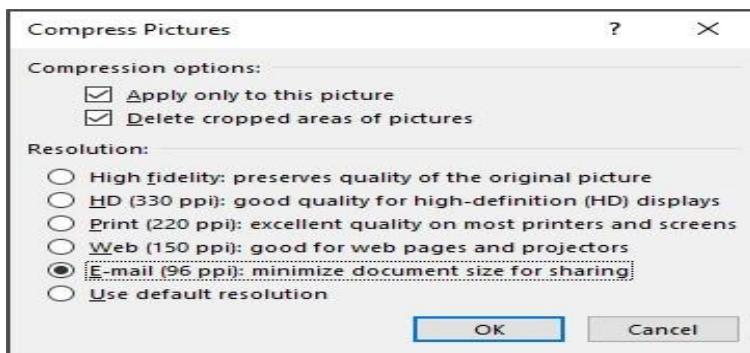


1.2. Compress a picture

1. Select the picture or pictures that you want to compress.
2. Under Picture Format, in the Adjust group, click Compress Pictures.



3. Select the compression you would like for the picture (the smaller the DPI, the smaller the size of the image).



4. Click OK to reduce the resolution.

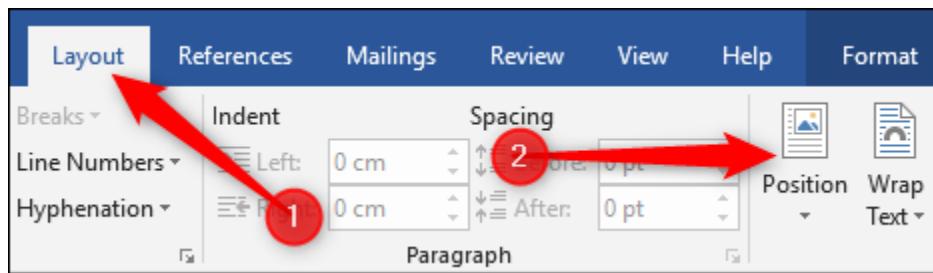
1.3. Position of picture

The positioning tools we'll be talking about apply to whatever type of text wrapping you're using, but the exact positioning you're able to perform will depend on what text wrapping you've chosen.

1.3.1. Opening and Using the Position Menu

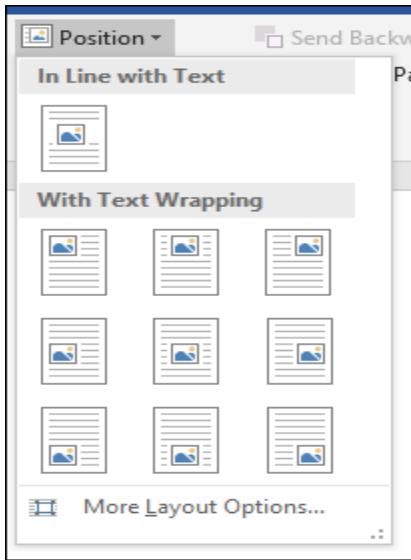
With that out of the way, let's talk about those positioning tools.

In your document, select the object with which you want to work, switch to the “Layout” menu, and then click the “Position” button. That button also appears on the “Format” menu of the Ribbon and works the same way.



Advertisement

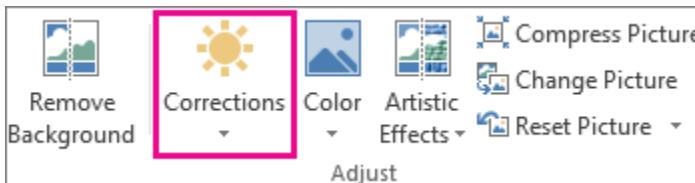
The Position drop-down menu is divided into two sections: “In Line With Text” and “With Text Wrapping.”



1.4.Increase the Contrast

Adjust the brightness, sharpness, or contrast

1. Click the picture that you want to change the brightness for.
2. Under **Picture Tools**, on the **Format** tab, in the **Adjust** group, click **Corrections**.



Depending on your screen size, the **Corrections** button may appear different.



If you do not see the **Format** or **Picture Tools** tabs, make sure that you have selected a picture.

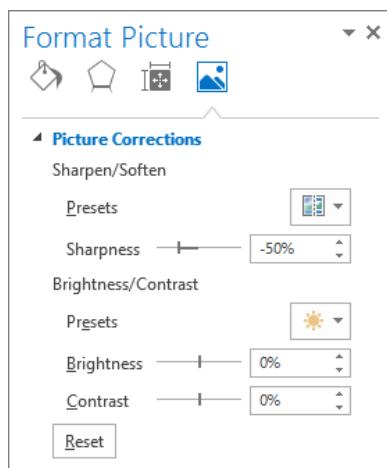
You may have to double-click the picture to select it and open the **Format** tab.

3. Do one or more of the following:
 - Under **Sharpen/Soften**, click the thumbnail that you want. Thumbnails on the left show more softness, and more sharpness on the right.

- Under **Brightness/Contrast**, click the thumbnail that you want. Thumbnails on the left show less brightness, and are brighter on the right. Thumbnails on the top show less contrast, and more contrast on the bottom.

Tip: When you point at an option in the Corrections gallery with your mouse, the picture on your slide changes to give you a preview of the effect of the option you're pointing at.

4. To fine tune any correction, click **Picture Corrections Options**, and then move the slider for **Sharpness**, **Brightness**, or **Contrast**, or enter a number in the box next to the slider.



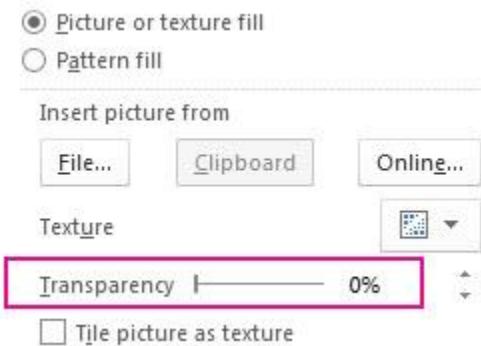
1.5. Use a Transparent Overlay

For other versions of Word, use this workaround.

1. Select **Insert > Shapes** and choose a shape.
2. Draw the shape in your document, making it the same proportions as the picture you're about to add to it.
3. Right-click the shape and select **Outline > No Outline**.
4. Right-click the shape again, and then select **Format Shape**.
5. In the **Format Shape** pane, select the **Fill icon** , and then select **Picture or texture fill**.



6. Select **File**, choose a picture, and then select the **Insert** button.
7. Move the **Transparency** slider in the **Format Shape** pane to adjust the picture.



1.6.Drop Shadow

To add a drop shadow to a text box, follow these steps:

1. Select the text box you want to format. Small selection handles should appear around the perimeter of the text box.
2. Click the Format tab of the ribbon. (This tab is only visible when you select a text box, as directed in step 1.)
3. Click on the Shadow tool in the Shape Effects group. Word displays a palette of available shadows.
4. Click on the shadow desired.

Topic2. Picture styles

1.1.Add an effect to a picture

1. Select the picture for which you want to add or change an effect.
2. Under **Picture Tools**, on the **Format** tab, in the **Picture Styles** group, click **Picture Effects**.
3. Rest your pointer on one of the **Picture Effects** options to see a menu of different ways to apply each effect. When you rest your pointer on one of the menu effects, the effect appears as a preview on the picture in your document.

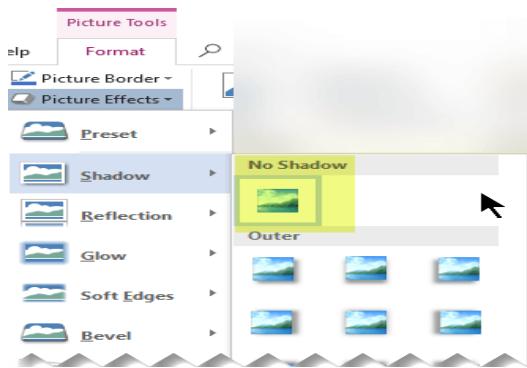


Remove an effect from a picture

Each category of picture effect has a **No <Effect Name>** option at the top of its menu. Select that option to turn off an effect that you don't want.

For example, to remove a shadow, point to **Picture Effects > Shadow > No Shadow**.

1. Select the picture for which you remove an effect.
2. Under **Picture Tools**, on the **Format** tab, in the **Picture Styles** group, select **Picture Effects**.
3. Select the **Picture Effects** category that you want to remove. In the menu that appears, the first option is **No <Effect Name>** (such as **No Shadow** or **No Reflection**). Select that option to remove that kind of effect from the picture.



1.2.Picture border

1.2.1. Add a border to a picture

The Picture Styles gallery offers many preset styles that make it easy for you to add a special sort of border with one click.

1. Choose the image that you want to add a border to.
2. On the **Picture Format** tab, in the Pictures Styles gallery, choose a style.

Tips:

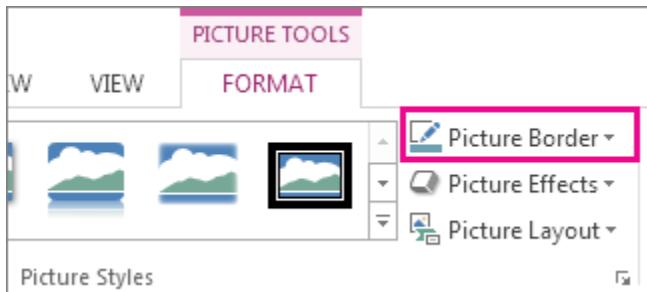
- Choose **More** to view additional styles in the gallery.



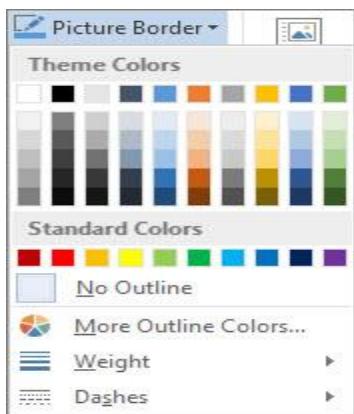
Customize your picture's border

1. Choose the image that you want to add a customized border to.

2. Go to **Picture Format > Picture Border**.



3. Choose a color.



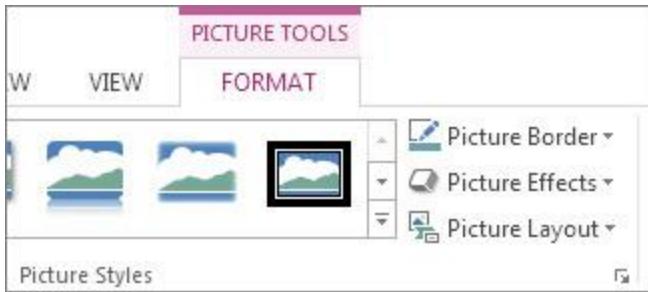
4. Choose one of the following:

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

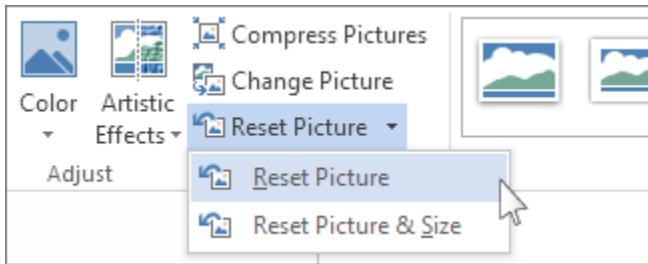
Remove a border from a picture

The way you remove a picture border depends on whether it's a picture style or a custom border.

1. Choose the picture you want to remove a border from.
2. Go to **Picture Format** and do one of the following:



- If the border is an outline, in the **Picture Border** list, choose **No Outline**.
- If the border is a style and you know which style it is, In the **Picture Effects** list, choose the style that's applied, then choose **No** (style). For example, to remove a shadow, select **Picture Effects > Shadow > No Shadow**.
- If you aren't sure what style is applied, you can reset the picture, but resetting also will remove any other changes you've made. In the **Adjust** group, choose **Reset**.



Remove a custom border

1. Choose the picture you want to remove a customer border from.
2. On the **Picture Format** tab, in the **Picture Border** list, choose **No Outline**.



1.3.Picture effects

1.3.1. Add an effect to a picture

1. Select the picture for which you want to add or change an effect.
1. Under **Picture Tools**, on the **Format** tab, in the **Picture Styles** group, click **Picture Effects**.
2. Rest your pointer on one of the **Picture Effects** options to see a menu of different ways to apply each effect. When you rest your pointer on one of the menu effects, the effect appears as a preview on the picture in your document.



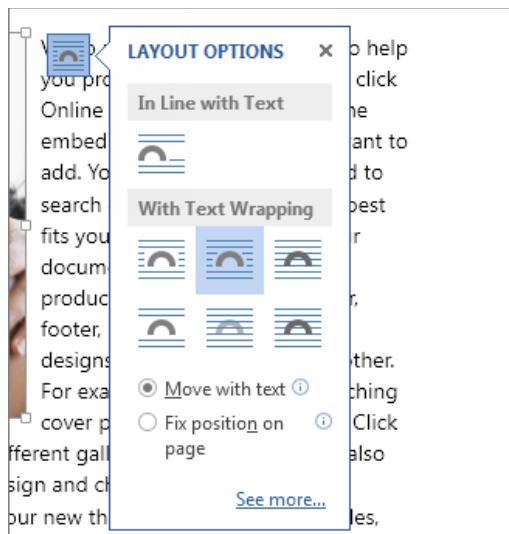
Notes:

- To customize the effect you're adding, click the **Options** selection at the bottom of each effect menu. For example, if you've opened the **Shadow** menu, click **Shadow Options** to make custom adjustments to the shadow effect.

If you do not see the **Picture Tools** or **Format** tabs, double-click the picture to make sure that you selected it.

1.4.Picture layout

- Select a picture.
- Select the **Layout Options** icon.
- Choose the layout options you want:



- To bring your picture in front of the text and set it so it stays at a certain spot on the page, select **In Front of Text** (under **With Text Wrapping**), and then select **Fix position on page**.
- To wrap text around the picture but have the picture move up or down as text is added or deleted, select **Square** (under **With Text Wrapping**), and then select **Move with text**.

For more information and examples of text wrapping, see Wrap text around pictures in Word

The picture is probably behind another object, like a block of text:

To select the picture, use the Selection pane:

1. Select **Home > Select > Selection Pane**.
2. In the **Selection** pane, select the picture.

To move a picture a tiny amount, select the picture, then hold down the Ctrl key and press an arrow key.

To move several objects at the same time, group them together:

1. Select the first object.
2. Hold down the Ctrl key and select the other objects.
3. Right-click one of the objects, point to **Group**, and then select **Group**.

For absolute control over the alignment and positioning of a picture, use the **Layout** box to set alignment relative to margins or columns, absolute position in inches, or relative position by percentage. This comes in handy when you want to place a picture a certain distance from something else, like a page margin.

1. Select the picture.
2. Select the **Layout Options** icon.
3. Select **See more**, and then make alignment and position adjustments on the **Position** tab.

If you can't select any of the position options on the **Position** tab, select the **Text Wrapping** tab, and then select any option *except* the **In line with text** option.

If you have more than one picture that you want to overlap on a page, you can enable this in the **Layout** box.

1. Select a picture.
2. Select the **Layout Options** icon.

3. Select **See more**.
4. On the **Position** tab, in the **Options** group at the bottom, select the **Allow overlap** check box.

Repeat for each picture for which you want to enable overlapping.

Topic3: Overlaying text on an image for readability and Wrap text around a picture

1.1.Wrap text around a picture

1. Select the picture.
2. Select **Layout Options**.



Learning Outcomes 1.3. Create references within the document Pagination

Topic1. Pagination

1.1.Page number and Footer

1. Select **Insert > Page Number**, and then choose the location and style you want.
2. If you don't want a page number to appear on the first page, select **Different First Page**.
3. If you want numbering to start with 1 on the second page, go to **Page Number > Format Page Numbers**, and set **Start at** to **0**.

- When you're done, select **Close Header and Footer** or press Esc

1.2.Header

- Go to **Insert > Header or Footer.**
- Choose the header style you want to use.
- Add or change text for the header or footer. For more info on things you can do with headers, see [Edit your existing headers and footers](#). To edit a header or footer that's been already created, double-click on it.
- To eliminate a header--like deleting it on the title page--select it and then check the **Different First Page** box.
- Select **Close Header and Footer** or press Esc to exit.

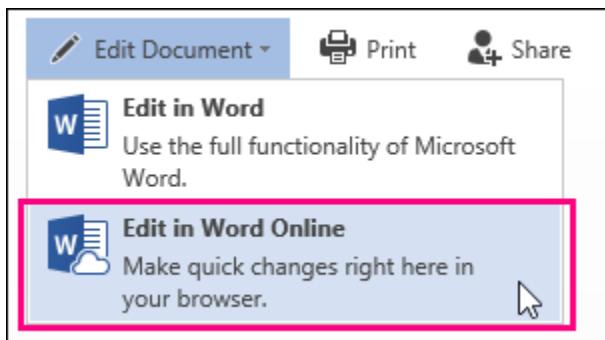
Topic2. Footnotes

1.1.Insert footnotes /endnotes

1.1.1. Add footnotes and endnotes

Use footnotes and endnotes to explain, comment on, or provide references to something in a document. Usually, footnotes appear at the bottom of the page, while endnotes come at the end of the document or section.

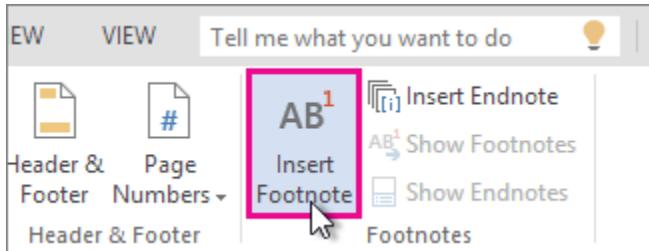
If you're in Reading View, switch to Editing View by clicking [Edit Document > Edit in Word](#) for the web.



1.2.Add a footnote

Click where you want to add the footnote.

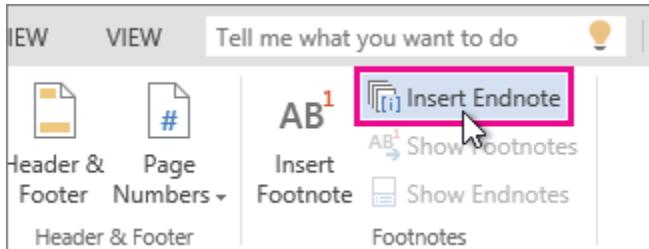
Click Insert > Insert Footnote.



Word inserts a reference mark in the text and adds the footnote mark at the bottom of the page.

1.3.Add an endnote

1. Click where you want to add the endnote.
2. Click **Insert > Insert Endnote**.



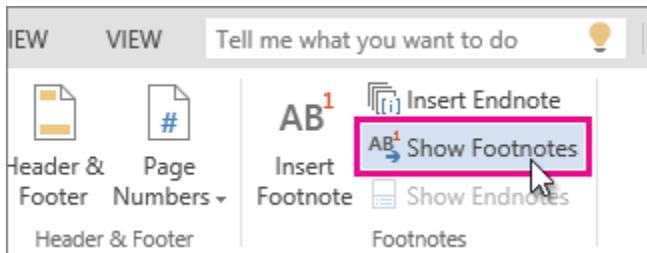
Word inserts a reference mark in the text and adds the endnote mark at the end of the document.

Type the endnote text.

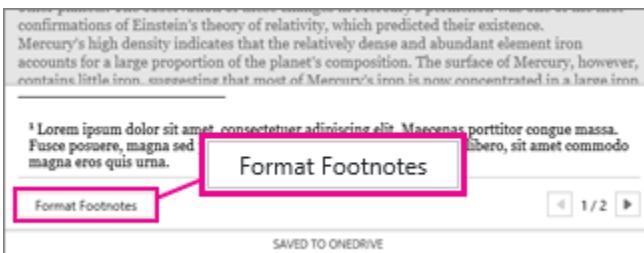
Customize your footnotes and endnotes

To customize a footnote or endnote:

1. Click the reference number or mark in the body of the text or click **Insert > Show Footnotes(for endnotes, click Insert > Show Endnotes)**.

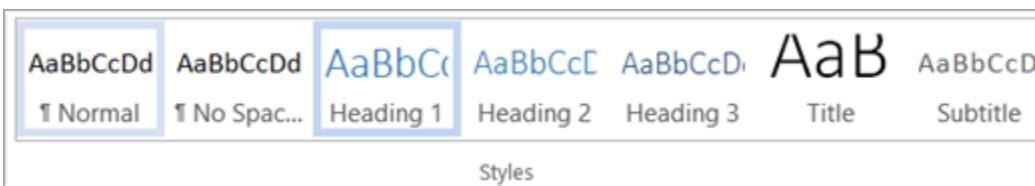


2. In the footnote/endnote view, click **Format Footnotes** or **Format Endnotes** to display the **Format Options** dialog, where you can change the size, font, and indentation of one or all of your footnotes or endnotes.



1.4. Set format

The styles covered in this article are located in the Styles gallery, a visual menu located on the **Home** tab. To apply a style, simply select the text you want to format, and then click the style you want in the Styles gallery. To learn more, see.

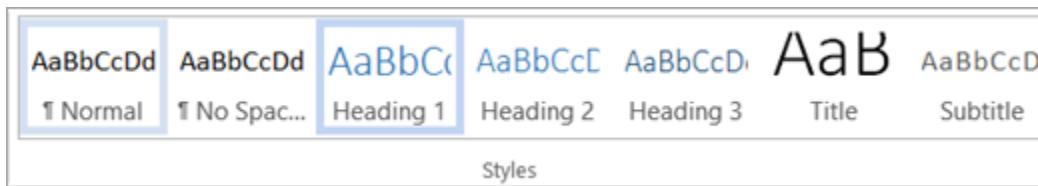


Modify a style by updating it to match formatting in your document

If you have text in your document that already has a style applied, you can change the formatting of that text and apply it to the style in the Styles gallery.

1. Select text in your document that has the style applied, such as Heading 1.

When you select text that has a style applied, that style is highlighted in the Styles gallery.



2. Format the selected text with the new attributes that you want.

For example, you might want to change the point size for the Heading 1 style from 16 points to 14 points.

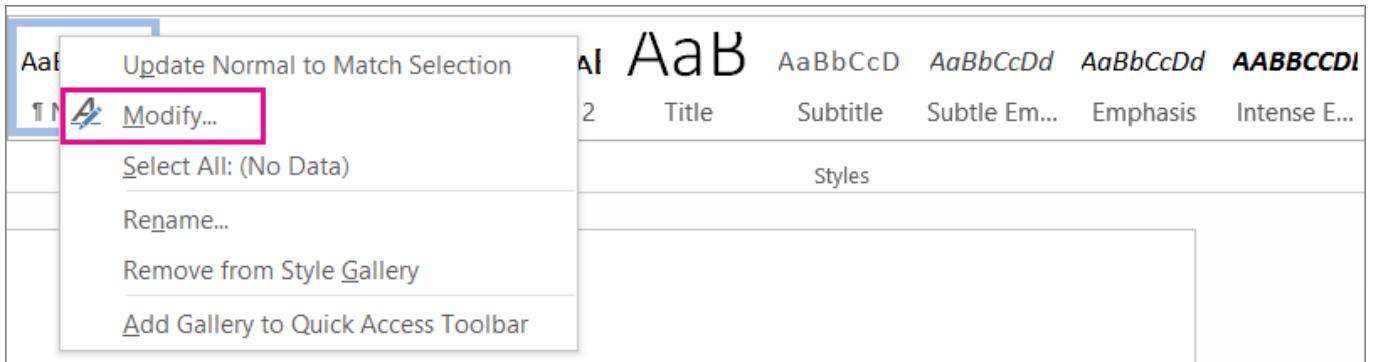
3. On the **Home** tab, in the **Styles** group, right-click the style that you want to change, and then click **Update [Style Name] to Match Selection**.

Note: All text with the style that you changed will automatically change to match the new style that you defined.

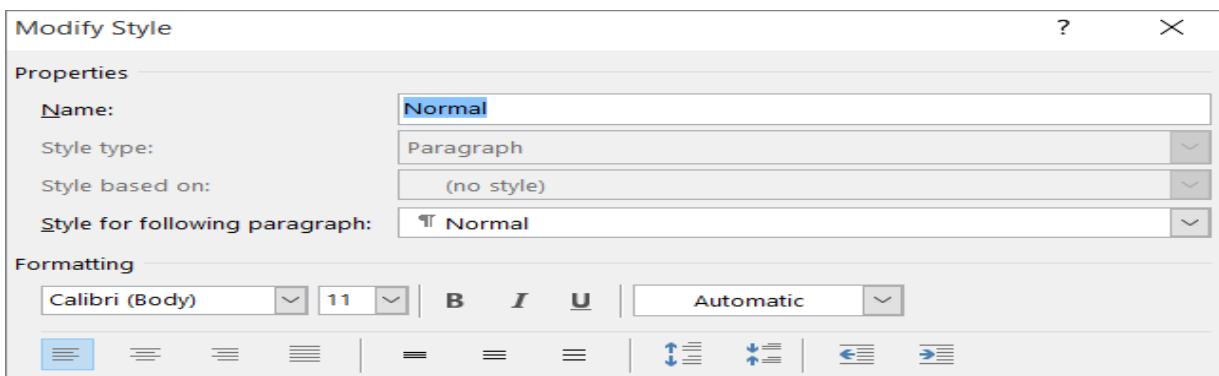
Modify a style manually in the Modify Style dialog box

You can modify a style directly in the Styles gallery, without using the text in your document.

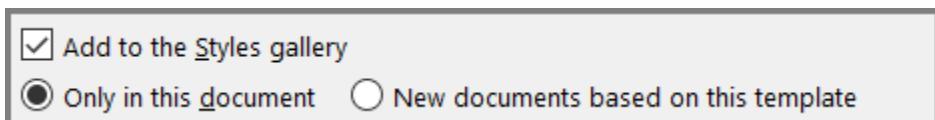
1. On the **Home** tab, right-click any style in the Styles gallery and click **Modify**.



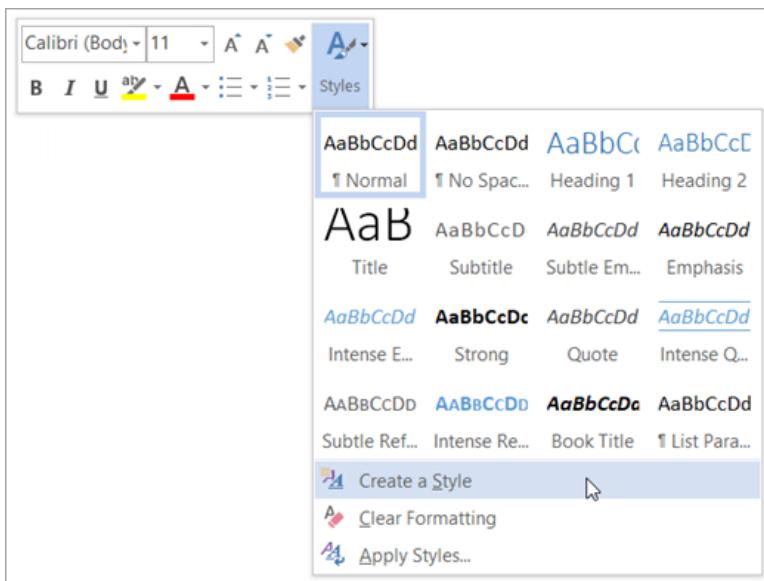
2. In the **Formatting** section, make any formatting changes you want, such as font style, size, or color, alignment, line spacing, or indentation.



3. Choose whether the style change applies to the current document or to all future documents.



1. Right-click the text on which you want to base a new style.
2. In the mini toolbar that appears, click **Styles**, and then click **Create a Style**.

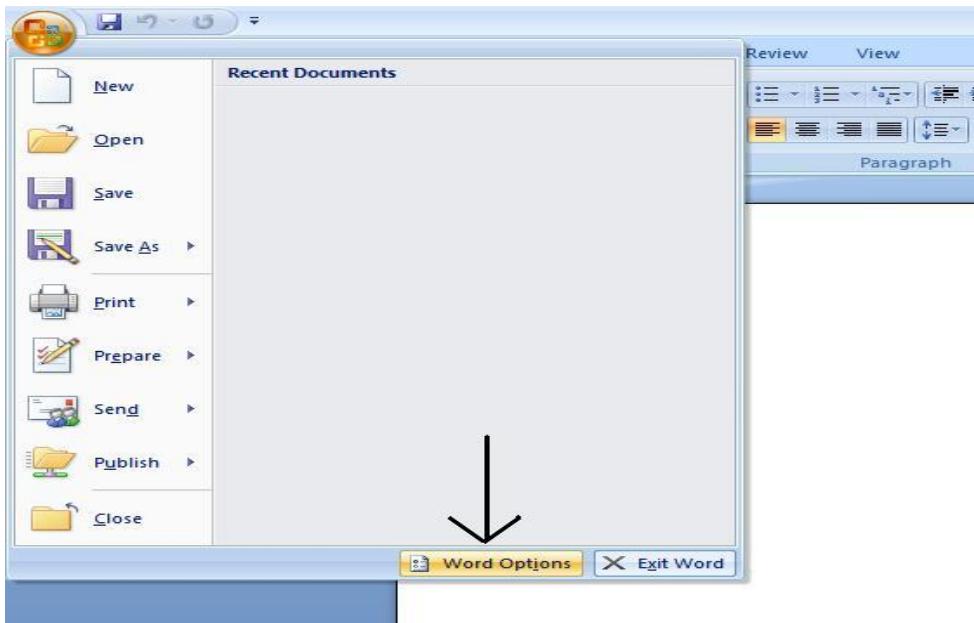


- In the **Create New Style from Formatting** dialog box, give your style a name and click **OK**.

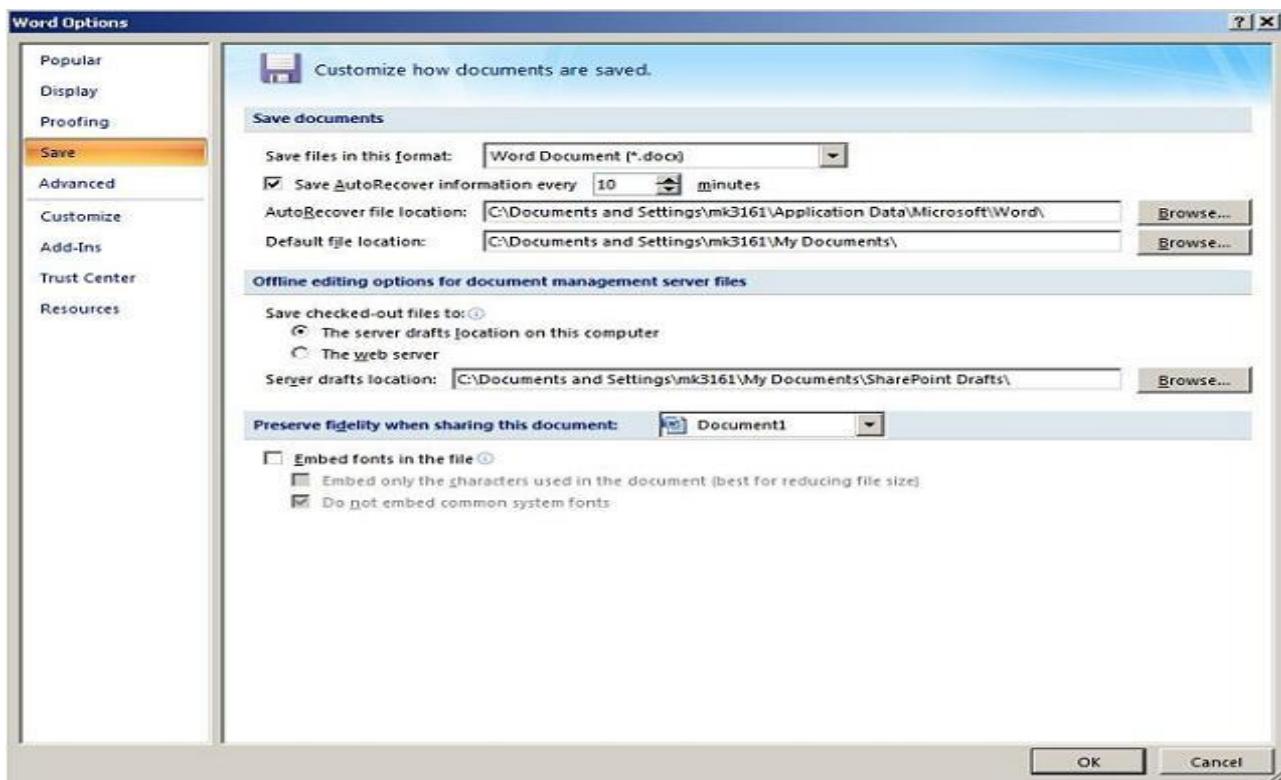
1.5. Choose location

- Click on the Office icon on the upper right of the window

Click on Word Options (or Excel Options, PowerPoint Options, etc.) at the bottom right of the dropdown menu.



- Navigate to the "Save" tab under Word Options.

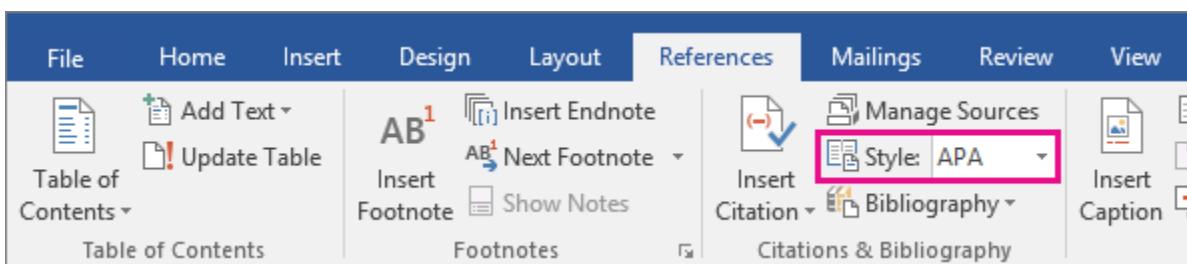


1. Click "Browse" next to Default file location, and navigate to the desired directory for saving files.
2. **Important: If you have a personal H: drive then it is highly recommended that you use this drive for the default save location.**

Topic3: Citations and Bibliography

1.1.Insert citation

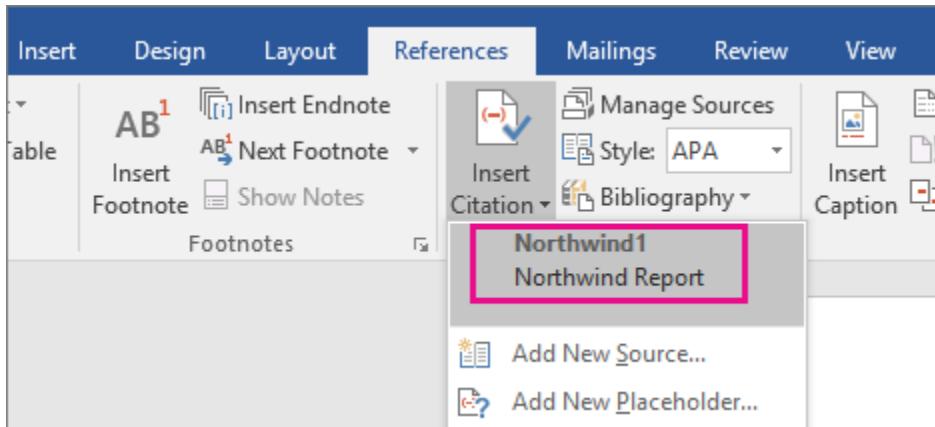
1. On the **References** tab, in the **Citations & Bibliography** group, click the arrow next to **Style** and click the style that you want to use for the citation and source. For example, social sciences documents usually use the MLA or APA styles for citations and sources.



2. Click at the end of the sentence or phrase that you want to cite.
3. On the **Reference** tab, click **Insert Citation** and then do one of the following:
 - To add the source information, click **Add New Source**, and then, in the **Create Source** dialog box, click the arrow next to **Type of Source**, and select the type of source you want to use (for example, a book section or a website).
 - To add a placeholder, so that you can create a citation and fill in the source information later, click **Add New Placeholder**. A question mark appears next to placeholder sources in Source Manager.
4. If you chose to add a source, enter the details for the source. To add more information about a source, click the **Show All Bibliography Fields** check box.
5. Click **OK** when finished. The source is added as a citation at the place you selected in your document.

1.2.Manage sources

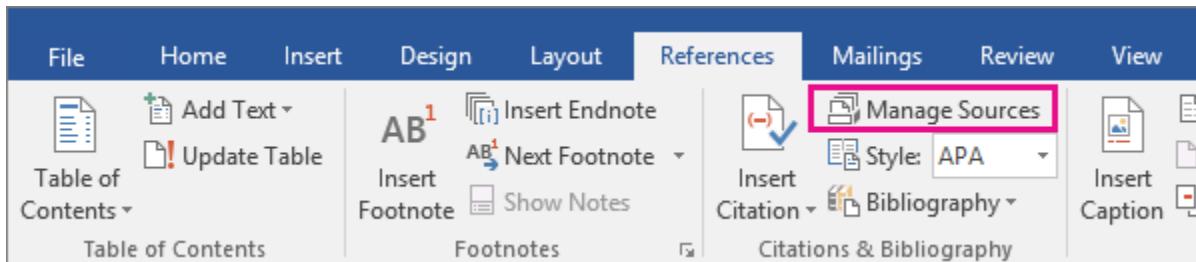
1. Click at the end of the sentence or phrase that you want to cite, and then on the **References** tab, in the **Citations & Bibliography** group, click **Insert Citations**.
2. From the list of citations under **Insert Citation**, select the citation you want to use.



Find a source

The list of sources that you use can become quite long. At times, you might need to search for a source that you cited in another document.

1. On the **References** tab, in the **Citations & Bibliography** group, click **Manage Sources**.



1.3.Bibliography/citation styles

1. Click where you want to insert a bibliography. Typically, they are at the end of a document.
2. On the **References** tab, in the **Citations & Bibliography** group, click **Bibliography**.

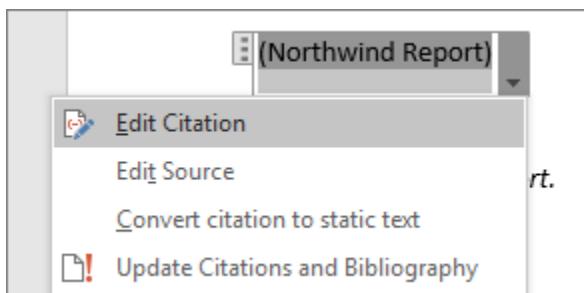
Similar to the Table of Contents builder in Word, you can select a predesigned bibliography format that includes a title, or you can just click **Insert Bibliography** to add the citation without a title.

If you want to learn more about using citation placeholders and editing sources, take a look at Create a bibliography. Or, if you want to export your bibliography sources to another computer, check out this post on the Microsoft Word blog.

APA 6th Edition citation style fix procedure.

APA style uses the author's name and publication date. If you have multiple citations from the same author, there is a known Word bug where the citation generator fills in the publication title when it's not supposed to.

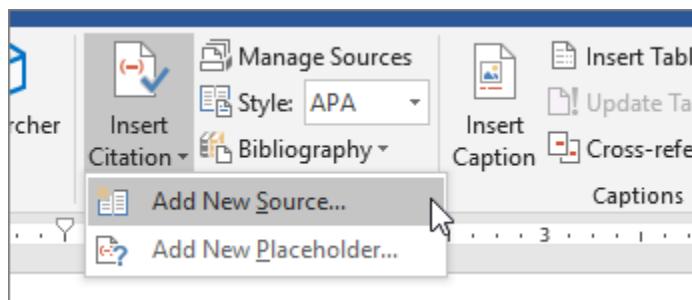
1. In the Word document, click the citation.
2. Click the down-arrow, and then click **Edit Citation**.



3. Click the **Title** checkbox, and then click **OK**.

1.4.Insert bibliography

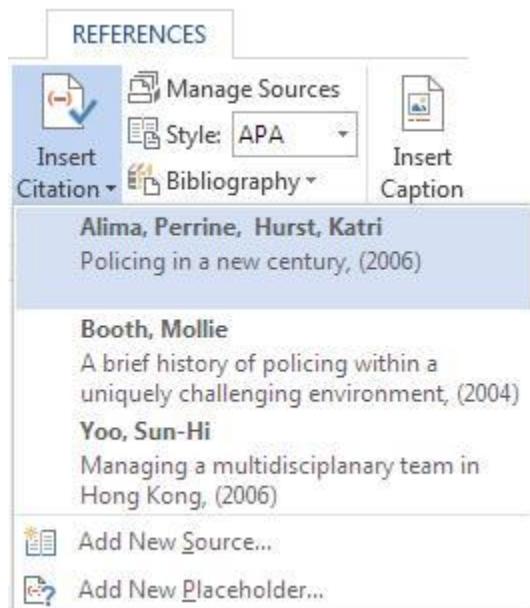
1. Put your cursor at the end of the text you want to cite.
2. Go to **References > Style**, and choose a citation style.
3. Select **Insert Citation**.



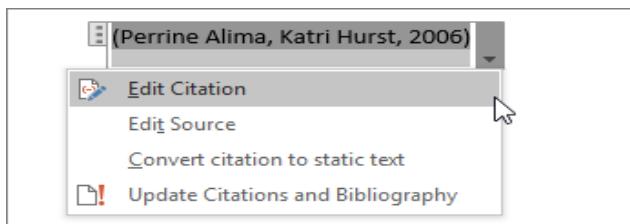
4. Choose **Add New Source** and fill out the information about your source.

Once you've added a source to your list, you can cite it again:

1. Put your cursor at the end of the text you want to cite.
2. Go to **References > Insert Citation**, and choose the source you are citing.



3. To add details, like page numbers if you're citing a book, select **Citation Options**, and then **Edit Citation**.



Create a bibliography

With cited sources in your document, you're ready to create a bibliography.

Put your cursor where you want the bibliography.

Go to **References > Bibliography**, and choose a format.

Topic3: Table of contents

1.1. Identify text styles (headings)

1.1.1. to add a heading style

1. Type the text you want into a Word document.
2. Select a sentence that you want to add a header to.
3. Select **Home > Styles** (or press Alt+H, then L), and then select the heading you want, such as the **Heading 1** button.

1.2. Insert hyperlink

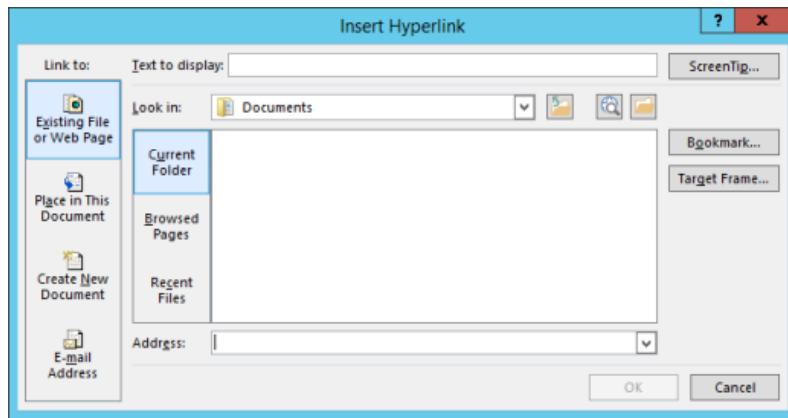
1. Select the text or picture that you want to display as a hyperlink.
2. Press Ctrl+K.

You can also right-click the text or picture and click **Link** on the shortcut menu.

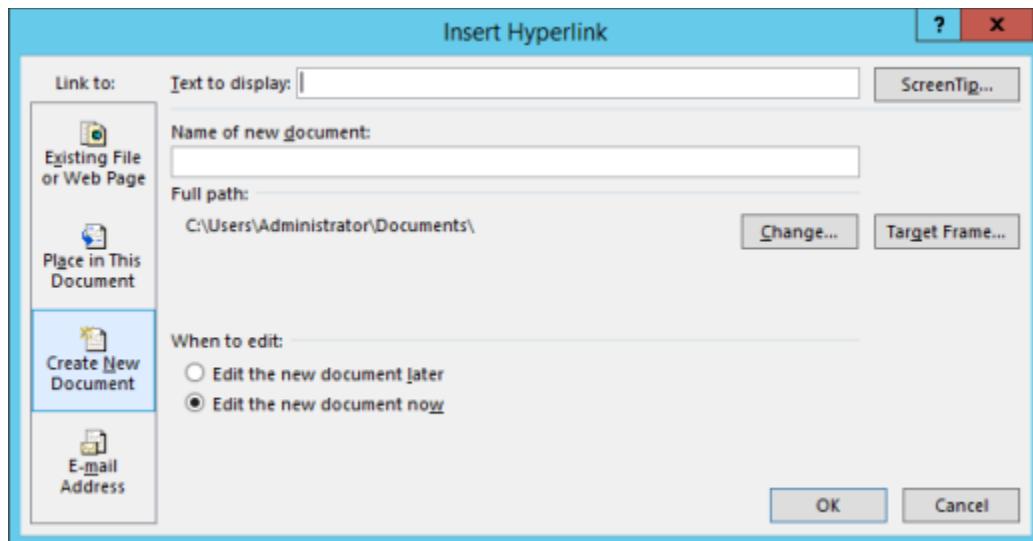
3. In the **Insert Hyperlink** box, type or paste your link in the **Address** box.

You can add a hyperlink to a file on your computer, or to a new file that you want to create on your computer.

1. Select the text or picture that you want to display as a hyperlink.
2. Press Ctrl+K.
3. Under **Link to**, do one of the following:
 - To link to an existing file, click **Existing File or Web Page** under **Link to**, and then find the file in the **Look in** list or the **Current Folder** list.



- To create a new, blank file and link to it, click **Create New Document** under **Link to**, type a name for the new file, and either use the location shown under **Full path** or browse to a different save location by clicking **Change**.

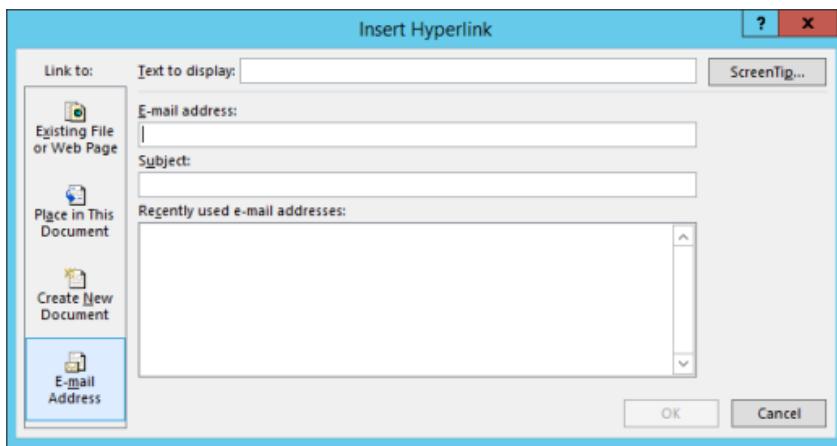


1. Select the text or picture that you want to display as a hyperlink.

2. Press Ctrl+K.

You can also right-click the text or picture and click **Link** on the shortcut menu.

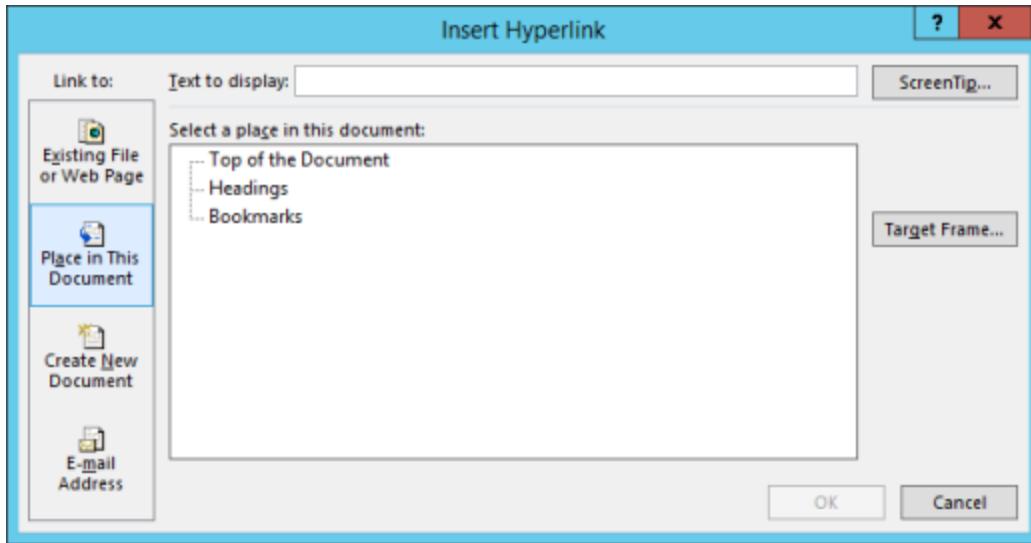
3. Under **Link to**, click **E-mail Address**.



4. Either type the email address that you want in the **E-mail address** box, or select an address in the **Recently used e-mail addresses** list.
5. In the **Subject** box, type the subject of the message.
 1. Select the text or picture that you want to display as a hyperlink.
 2. Press Ctrl+K.

You can also right-click the text or picture and click **Link** on the shortcut menu.

3. Under **Link to**, click **Place in This Document**.



4. In the list, select the heading (current document only), bookmark, slide, custom show, or cell reference that you want to link to.

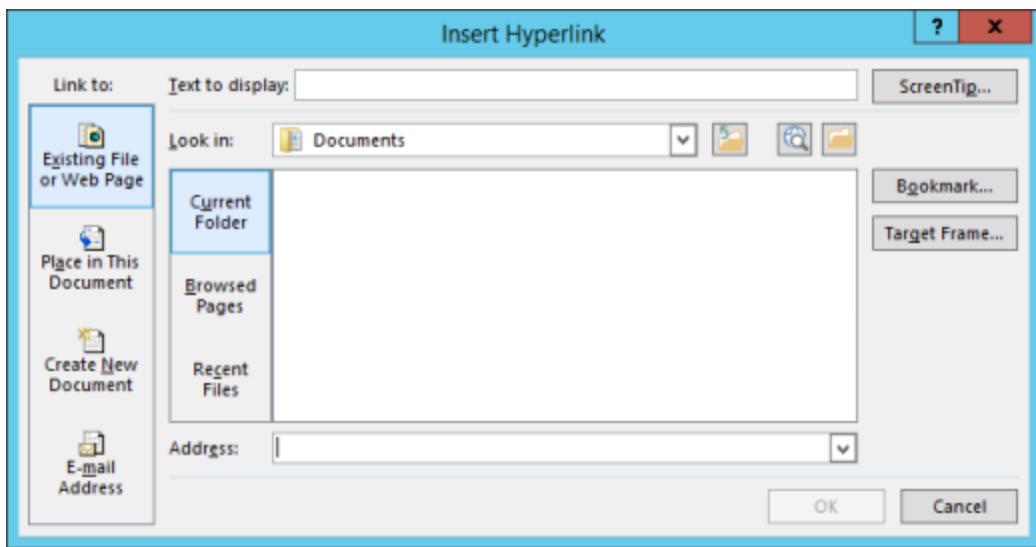
Optional: To customize the ScreenTip that appears when you rest the pointer over the hyperlink, click **ScreenTip** in the top-right corner of the **Insert Hyperlink** dialog box and enter the text you want.

Create a hyperlink to a location in another document

1. Select the text or picture that you want to display as a hyperlink.
2. Press Ctrl+K.

You can also right-click the text or picture and click **Link** on the shortcut menu.

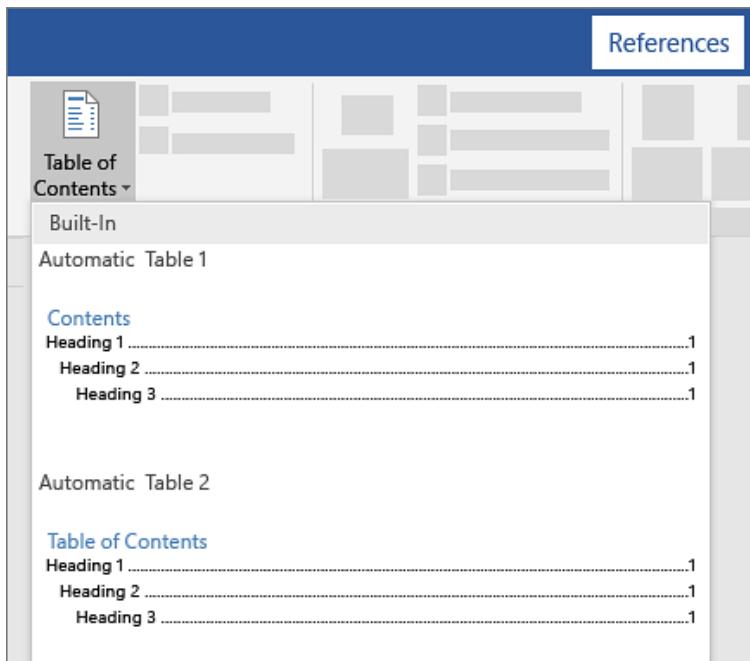
3. Under **Link to**, click **Existing File or Web Page**.



4. In the **Look in** box, click the down arrow, and find and select the file that you want to link to.
5. Click **Bookmark**, select the heading, bookmark, slide, custom show, or cell reference that you want, and then click **OK**.

1.3.Create the table of contents

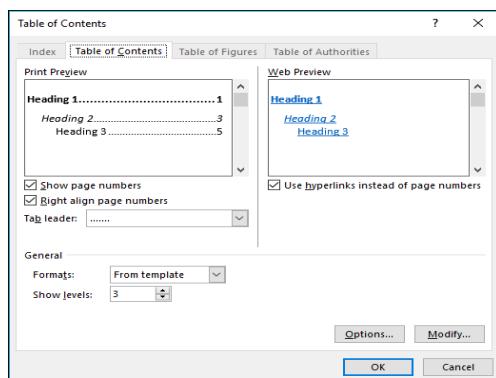
1. Put your cursor where you want to add the table of contents.
2. Go to **References > Table of Contents**. and choose an automatic style.



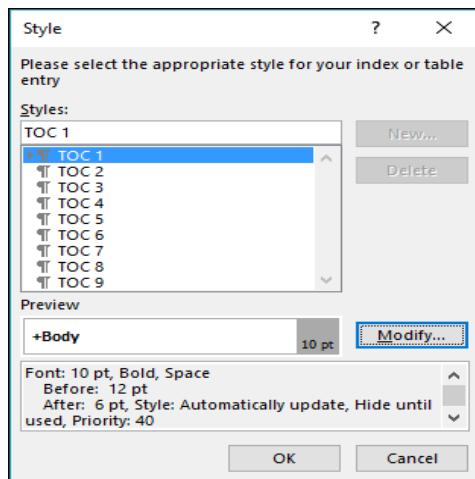
3. If you make changes to your document that affect the table of contents, update the table of contents by right-clicking the table of contents and choosing **Update Field**.

1.4. Customize table of contents

1. Go to **References > Table of Contents**.
2. Select **Custom table of contents**.
3. Use the settings to show, hide, and align page numbers, add or change the tab leader, set formats, and specify how many levels of headings to show. For more info, see Custom table of contents .
1. Go to **References > Table of Contents > Custom Table of Contents**.
2. Select **Modify**. If **Modify** is grayed out, change **Formats** to **from template**.



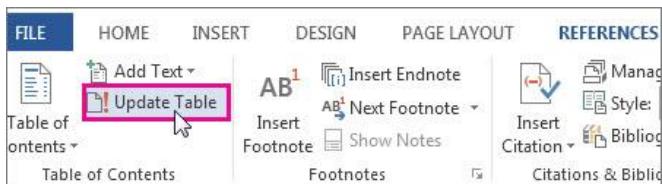
3. In the **Styles** list, click the level that you want to change and then click **Modify**.



4. In the **Modify Style** pane make your changes.
5. Select **OK** to save changes.

1.5.Update table of contents

1. Go to **References > Update Table**.



2. Select one of the following:
 - **Update page numbers only** This only updates the pages that the headings are on, and ignores any changes to the heading text.
 - **Update entire table** This will reflect any updates to the heading text, as well as any page changes.
3. Select **OK**.

1.6.Remove table of content

1. Go to **References > Table of Contents**.
2. Select **Remove Table of Contents**.

Learning unit LU 2: Apply basic computer operations

Learning Outcome 2.1: Convert Data Files

Topic1. Different file formats

1.1.Formats

is a **preestablished layout for data**. A computer program accepts data as input in a certain format, processes it, and provides it as output in the same or another format.

In a computer, a file extension, also called a file format, is **the layout of a file -- in terms of how the data within the file is organized**. A particular file format is often indicated as part of a file's name by a file name extension (suffix)

What are the 6 main types of file extensions?

1.2.Typical file Extension

6 Different Types of Files and How to Use Them

- JPEG (Joint Photographic Experts Group) ...
- PNG (Portable Network Graphics) ...
- GIF (Graphics Interchange Format) ...
- PDF (Portable Document Format) ...
- SVG (Scalable Vector Graphics) ...
- MP4 (Moving Picture Experts Group)

Topic2: File Conversion

1.1.Export of File Conversion

In a personal computer application, to export is **to convert a file into another format than the one it is currently in**. Once the file is exported to the desired format (specified in its file name suffix), it can be opened and worked on by an application that recognizes and uses this format.

1.1.1. Export File to pdf

PDF stands for "portable document format". Essentially, **the format is used when you need to save files that cannot be modified but still need to be easily shared and printed**.

Export almost any file as a PDF.

1. Launch Acrobat and select Tools from the menu bar.
2. Select Create PDF in the Tools view.
3. Choose the appropriate conversion type.

4. Drag and drop your files into the conversion window or locate them manually.
5. Start the conversion.
6. Save and rename your files, if necessary.

1.1.2. Export Pdf to word, excel and ppt (online conversion)

Use the Export PDF tool to convert PDF files into editable Microsoft Word or Microsoft Excel files.

Adobe tool performs OCR on PDF files that contain images, vector art, hidden text, or a combination of these elements. (For example, the tool performs OCR on PDF files created from scanned documents.) The tool also performs OCR on the text that it can't interpret because the text was encoded incorrectly in the source application.

Topic3: Compress file

1.1.Definition Compress file

A file reduced in size through the application of a compression algorithm, commonly performed to save disk space. The act of compressing a file makes it unreadable to most programs until the file is uncompressed

1.1.1. Types of Compression

There are two main types of file compression, lossless and lossy. Lossless compression algorithms search for long strings of code and have a method to replace them with shorter strings. Lossless compression can recreate the entire file exactly as it was. Lossy compression algorithms search through the code to find pieces that it can delete. While lossy compression can't be used on program files, it can be used on multimedia files, where there is often information in the files that human senses cannot detect.

1.2.Importance of Compress file

As you've seen, there are many benefits to using file compression. Here's a recap:

Increased computing efficiency

Compressed data permits users to back-up and store data faster, especially when dealing with larger files. *Note:* The **advantage of compressing digital video** is becoming more useful as video sales letters (VSLs) and personalized videos become more prevalent.

Quicker transfers

Not only does file compression enable you to move files around on a local device more efficiently, it also enables you to send large documents and data faster over the internet.

Improved file integrity

Uncompressed files can often become corrupt when sent over the web. Zipped files serve to preserve the integrity of your files and make sure your data goes uncorrupted.

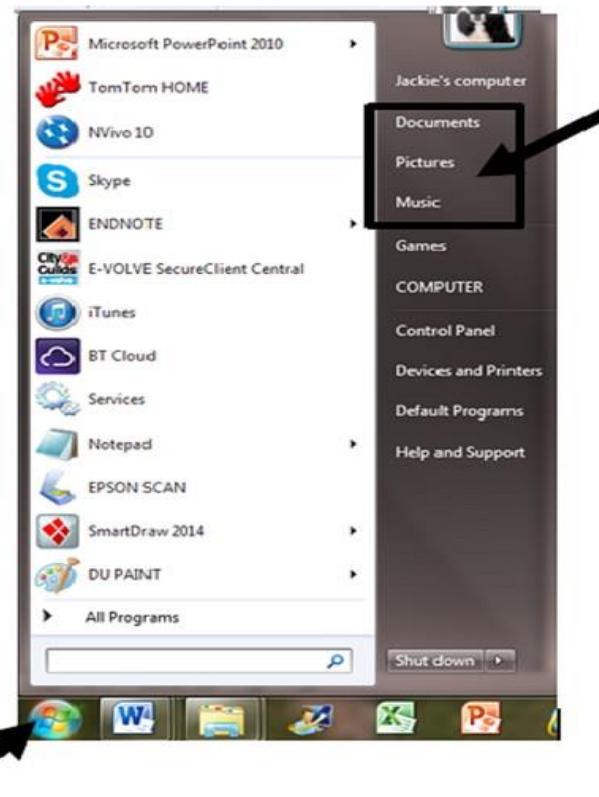
Email/webpage accessibility

It's easier to compress larger files when uploading them to a webpage or sending them via email. Also, as previously mentioned, the most common email systems restrict the size of attachments. So, compression offers a way to send multiple files collectively, instead of one by one.

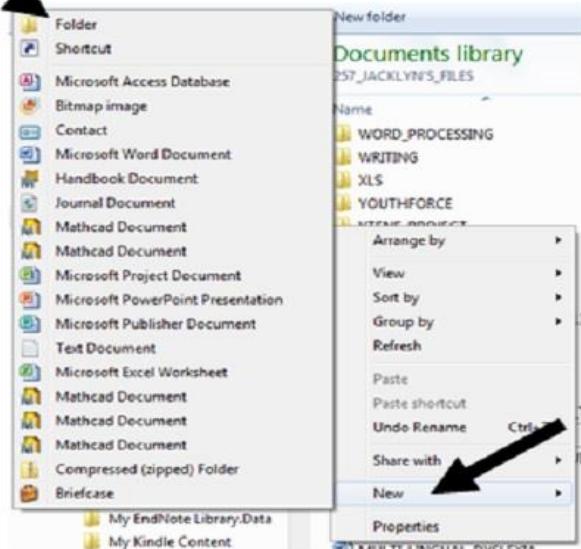
1.3. Steps of compress a file

step-by-step instructions to how to compress a file

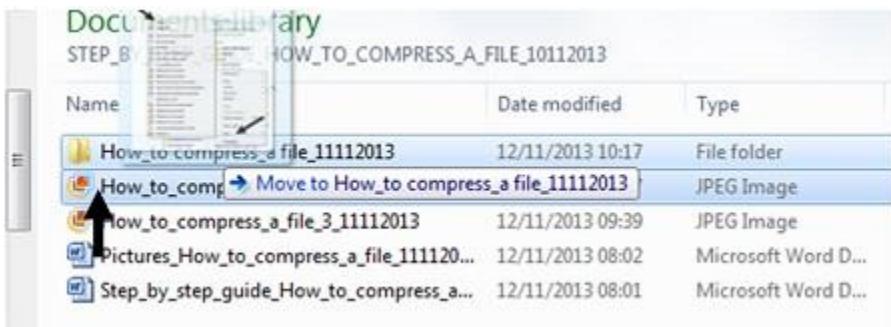
Step 1: Click the **Start** button in the bottom left-hand corner, and then click one of the library icons **Documents**, **Pictures** or **Music** to see any folders or files that have already been saved. Browse to find the file that you want to compress.



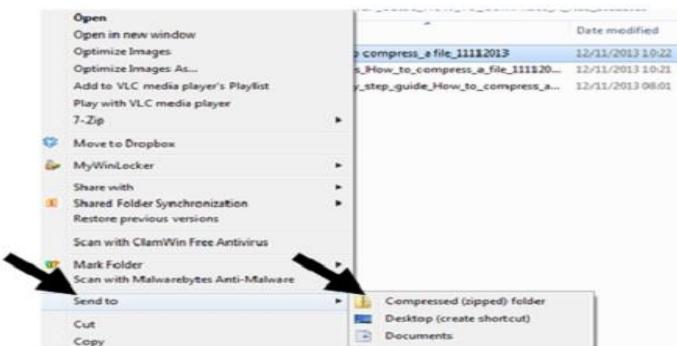
Step 2: If you wish to include two or more files and they are not already in a folder, you now need to put them into a folder. To create a new folder, right-click on the screen and scroll down to New and then to **Folder**.



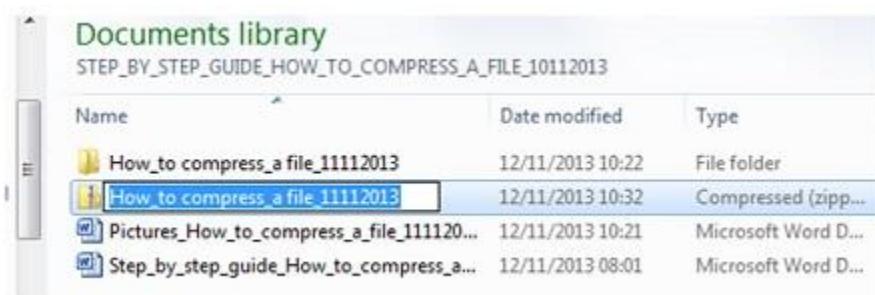
Type in the name of the folder in the space where the text is highlighted. Then simply click and drag the file(s) you want to compress into the new folder.



Step 3: When you are ready, right click on the file or folder that you want to compress. Select **Send to** from the menu which appears and select **Compressed (zipped) folder** from the list of options.



Step 4: This will create a compressed folder with the same name as your original folder and in the same location, to which your files will be copied. (Depending upon the size of your files, you might need to wait for this process to be completed. In this case a dialog box will appear to show you the progress of the compressing files.)



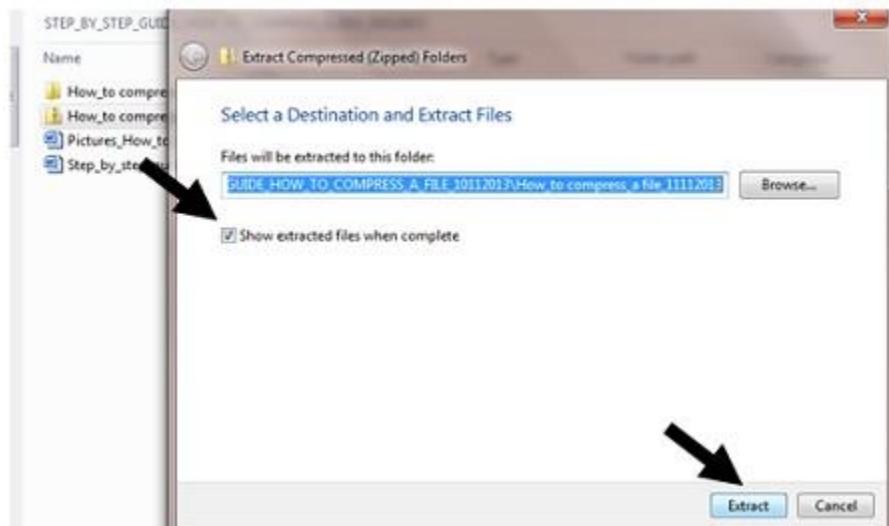
Your compressed file is then ready for storage or to send as an email attachment.

Follow these step-by-step instructions on how to uncompress a file

Step 1: Browse to find the file you wish to uncompress.

Step 2: Right click on the file.

Step 3: Select **Extract all...** from the menu which appears. This will open the 'Windows Extraction Wizard'. Select **Extract**. Make sure that the check box is ticked for show extracted files when complete. Your folder and its contents will be available to view and to edit.



Learning Outcome 2.2: Use of storage media

Topic.1. Storage media capacity

1.1.Definition Storage media

Storage media means any standalone or removable media device or card that can store Content including but not limited to flash-card, CD (including, without limitation, CD-R or CD-RW) or DVD (including, without limitation, DVD-RAM). Sample 1Sample 2. Storage media means punched cards, tapes, disks, diskettes, or drums.

1.2.Units of data storage

Decimal units such as **kilobyte (KB)**, **megabyte (MB)**, and **gigabyte (GB)** are commonly used to express the size of data. Binary units of measurement include kibibyte (KiB), mebibyte (MiB), and gibibyte (GiB).

Decimal units such as kilobyte (KB), megabyte (MB), and gigabyte (GB) are commonly used to express the size of data. Binary units of measurement include kibibyte (KiB), mebibyte (MiB), and gibibyte (GiB). Table 1 compares the names, symbols, and values of decimal and binary units.

Binary		Decimal			
Name	Symbol	Value (base 2)	Name	Symbol	Value (base 10)
kibibyte	KiB	2^{10}	kilobyte	KB	10^3
mebibyte	MiB	2^{20}	megabyte	MB	10^6
gibibyte	GiB	2^{30}	gigabyte	GB	10^9
tebibyte	TiB	2^{40}	terabyte	TB	10^{12}
pebibyte	PiB	2^{50}	petabyte	PB	10^{15}
exbibyte	EiB	2^{60}	exabyte	EB	10^{18}

Table 1. Comparison of binary and decimal units and values

Binary units of measurement express the size of data more accurately. When you compare the size of 100 KB to 100 KiB, the difference is relatively small, 2.35%. However, this difference grows as the size of the data values increases. When you compare the size of 100 TB to 100 TiB, the difference is 9.06%.

Topic2: Different types of storage (offline/On-line storage)

Offline storage is generally portable in nature and can be used on different computer systems. Common examples of offline storage include **floppy disks, compact disks and USB sticks**. Online data storage is a **virtual storage approach that allows users to use the Internet to store recorded data in a remote network**.

1.1.External/Removable Hard Drive

A computer hard drive that is mounted in a special plastic or metal cartridge, enabling it to be removed and inserted into other computers with similar removable bays. The picture is an example of a **removable hard drive** in a server rack.

1.2.Solid State Drive (SSD)

An external hard disk is just a hard disk drive (HDD) or solid-state drive (SSD) that needs to be connected to the computer rather than being inside the computer. External hard disks are sometimes referred to as portable hard drives or mobile hard drives.



Large capacity with small size

Mobile hard drives can provide considerable storage capacity. They are a more cost-effective mobile storage product. In the case that the large-capacity "flash drive" price is only initially accepted by the user; the mobile hard drive can provide the user with a larger storage capacity and a good convenience within a price range acceptable to the user.

External hard disks in the market provide 320GB, 500GB, 600G, 640GB, 900GB, 1000GB (1TB), 1.5TB, 2TB, 2.5TB, 3TB, 3.5TB, 4TB, etc., up to 12TB capacity

1.3.Network Attached Storage (NAS)

Instead of equipping your PC or Mac with a new, larger hard drive, the purchase of a Networked Attached Storage (NAS) is a smart alternative. Why? The network storage devices allow for the immediate deployment of storage space on the network

NAS systems also provide videos, music, pictures and other data centrally for all network-enabled devices such as smart-TVs. But that is not all: Many current NAS systems are also used as print, backup, and web servers and provide additional functions.

The differences in NAS systems

The prices for NAS systems start at around 150 euro and easily go beyond 1000 euro. The same as for cars, the price differences are usually down to the performance and the equipment:

- **Hard drive slots:** The price depends on the number of slots. In addition to the potentially higher storage capacity, several hard drive slots have a further plus point: Data security. Even when a NAS system uses particularly robust server hard disks, a hard disk can become faulty and suddenly all of the data saved on it is lost.
- **Performance:** A gigabit interface alone does not make a fast NAS. The higher the processor is clocked, the larger the memory and the higher the quality of the individual hard disks, the faster the NAS system. However, this also increases the price.
- **USB ports:** Via USB you can dock additional hard disk drives on the network storage. It is easy to expand the storage space. It is also possible to connect a printer which is then available to each computer on the network.
- **Safety:** The majority of NAS providers develop Linux-based operating systems for their own devices. For these operating systems, regular updates are developed, which are automatically executed and activated on the NAS depending on the setting.



1.4. USB Thumb Drive or Flash Drive

USB thumb drives, or pen drives, are small, portable data storage devices that use flash memory to store data meaning they can be erased and reprogrammed to be used again to store data. They are small electronic devices, basically with the shape of a human thumb, used to store and transfer electronic data from one computer to another through the USB port.

Flash drives are a higher performance option when compared to hard disk drives or compact disks with massive storage capacity ranging from 512GB to 1TB.



1.5. Optical Drive (CD/ DVD discs)

An Optical Drive refers to a computer system that allows users to use DVDs, CDs and Blu-ray optical drives. The Drive contains some lenses that project electromagnetic waves that are responsible for reading and writing data on optical discs. Optical drives are integral parts of electronics devices such as VCD players, CD players, Blu-ray players, DVD players, and certain video games consoles such as Microsoft Xbox one, Sony PlayStation 2, 3&4 and Nintendo Wii U.



1.7. Cloud Storage

Cloud storage is defined as a data deposit model in which digital information such as documents, photos, videos and other forms of media are stored on virtual or cloud servers hosted by third parties. It allows you to transfer data on an offsite storage system and access them whenever needed. This article delves into the basics of cloud storage.

1. Private cloud storage

Private cloud storage is also known as enterprise or internal cloud storage. Data is stored on the company or organization's intranet in this case. This data is protected by the company's own firewall.

2. Public cloud storage

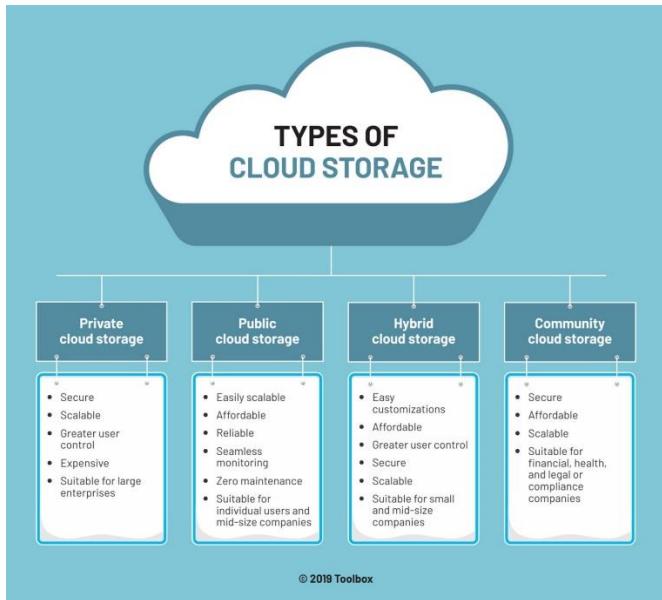
Public cloud storage requires few administrative controls and can be accessed online by the user and anyone else who the user authorizes.

3. Hybrid cloud storage

Hybrid cloud storage is a combination of private and public cloud storage.

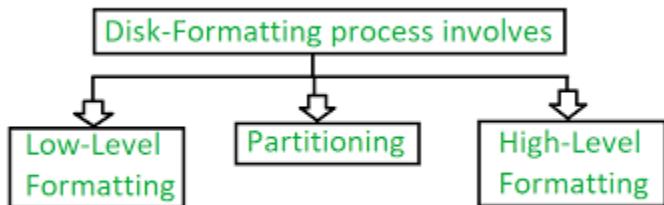
4. Community cloud storage

Community cloud storage is a variation of the private cloud storage model, which offers cloud solutions for specific businesses or communities.



Topic2: Disk formatting

Disk formatting is a process of configuring data storage device such as hard disk drive, solid-state drive, floppy disk, or USB flash drive for initial use.



1.1.Partitioning

A partition is a logical division of a hard disk that is treated as a separate unit by operating systems (OSes) and file systems. The OSes and file systems can manage information on each partition as if it were a distinct hard drive. This allows the drive to operate as several smaller sections to improve efficiency, although it reduces usable space on the hard disk because of additional overhead from multiple OSes.

A disk partition manager allows system administrators to create, resize, delete and manipulate partitions, while a partition table logs the location and size of the partition. Each partition appears

to the OS as a distinct logical disk, and the OS reads the partition table before any other part of the disk.

Once a partition is created, it is formatted with a file system such as:

- NTFS on Windows drives;
- FAT32 and exFAT for removable drives;
- HFS Plus (HFS+) on Mac computers; or
- Ext4 on Linux.

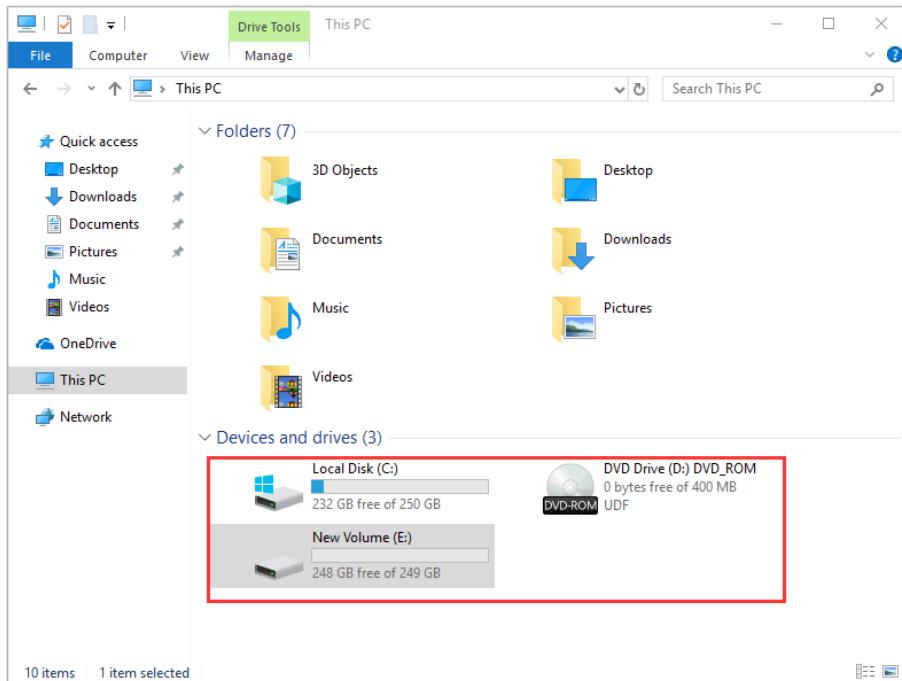
What is the purpose of partitioning?

Partitioning **allows the use of different filesystems to be installed for different kinds of files**. Separating user data from system data can prevent the system partition from becoming full and rendering the system unusable. Partitioning can also make backing up easier.

1.2.Disk part

What Is Disk Partitioning

Disk partitioning is one step of disk formatting. It is the process of dividing a disk into one or more regions, the so-called partitions. If a partition is created, the disk will store the information about the location and size of partitions in partition table that is usually located in the first sector of a disk. With the partition table, each partition can appear to the operating system as a logical disk and users can read and write data on disk. And each partition can be managed separately.



What's the Purpose of Partitioning a Hard Drive

Some users may ask why partition a hard drive. Actually, there are many advantages of disk partitioning as follows.

1. Use of New Hard Disk

A newly bought hard disk can't be used to save data unless users partition it. To be specific, users should initialize the disk (*MBR or GPT*) and create one or more partitions with capacity, file system, cluster size, drive letter, etc.

2. Ease of Windows Reinstallation

It's better to have two or more partitions in a computer. One partition is used as system partition to store operating system boot files that can boot Windows. The rest partitions can be used to store apps' installation packages and other personal files.

If you want to reinstall Windows someday, all you have to do is to format the system partition and reinstall the OS. The installed programs and personal files will stay where you left them.

3. Better Organization

Some users like to place their data into a certain place according data types. Partitions make it easier. You can create partitions for games, music, or other documents.

4. Easier Backup

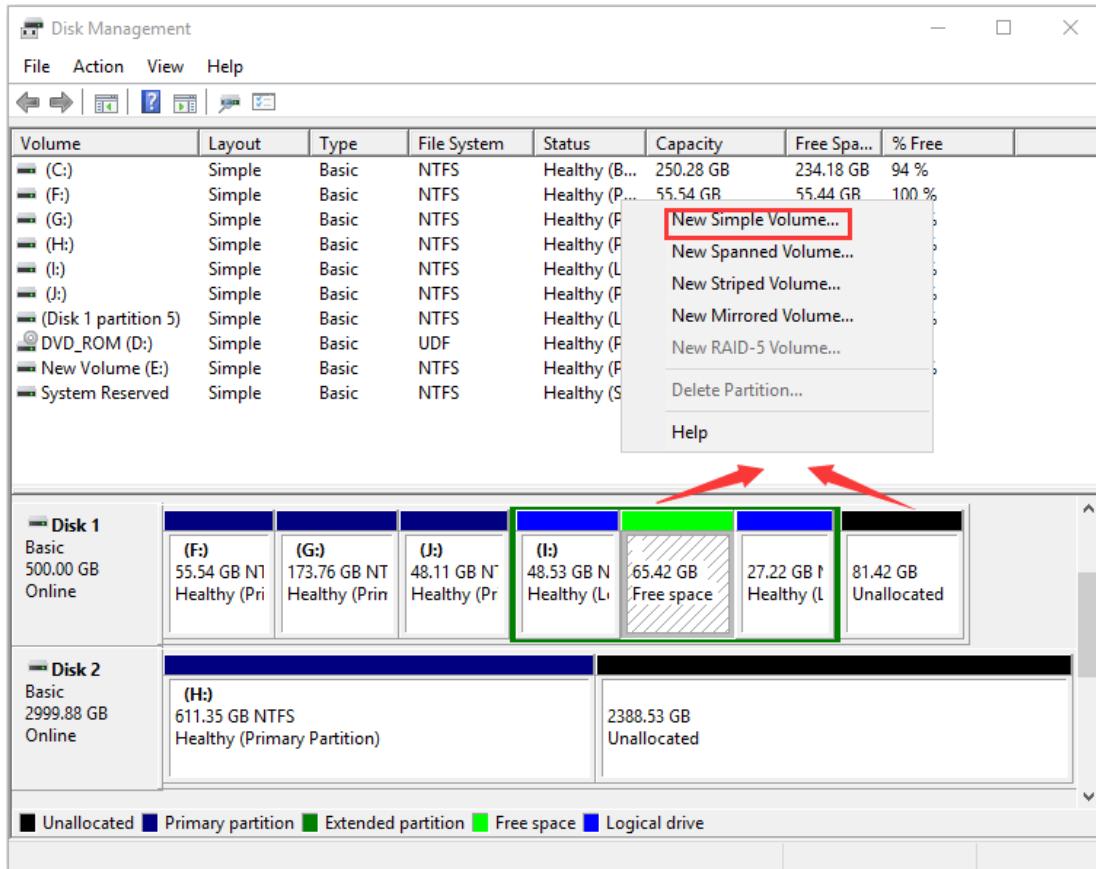
If you know on which partition the data you want to backup is stored, but you don't know the exact file path, you can back up the whole partition. Backing up partition is better than backing up whole hard drive or finding out the exact files in a huge number of files.

5. Simpler Data Recovery

If the data is deleted mistakenly, and you know where it is stored on, scanning a partition for data recovery is faster and more convenient than scanning the whole hard drive.

How to Partition a Hard Drive

Partitioning a hard drive needs partitioning tool. The simplest one is Windows Disk Management. You can press "windows + R" and then type "diskmgmt.msc" to call out it. And then, you can right click the free space or unallocated space to create partitions.



1.3. Erase data

Erase is a term that describes the process of removing or deleting data. In most situations, when data is deleted or erased from the hard drive, it's marked as deleted yet remains on the hard drive until it's overwritten by something else. Deleted files can be recovered from the hard drive because they are only marked as deleted.

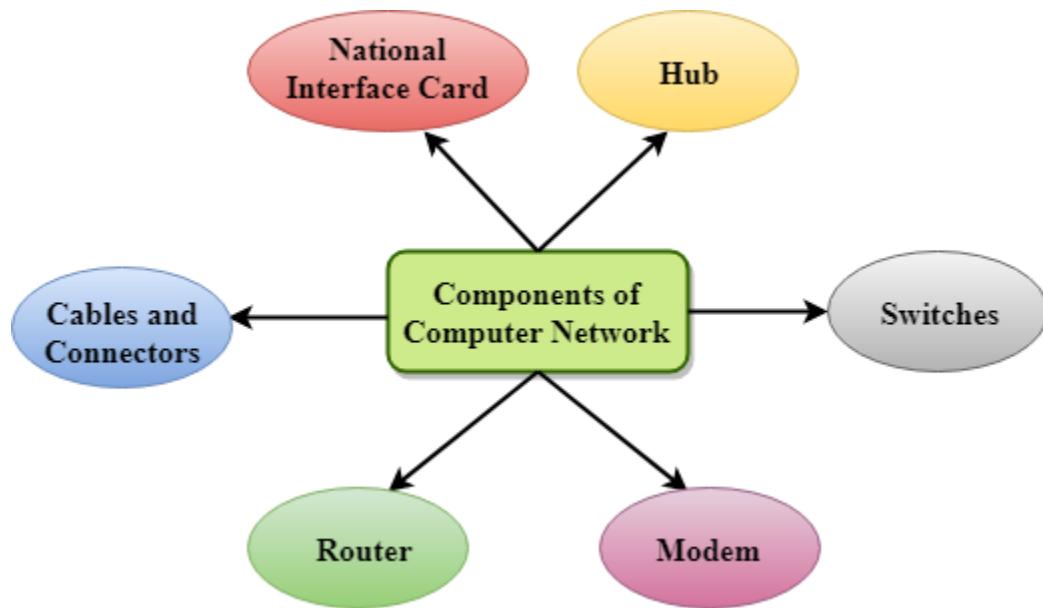
Learning Outcome 2.3: Connect computer to the network

Topic1: Introduction to computer network

What is a Computer Network?

- **Computer Network** is a group of computers connected with each other through wires, optical fibres or optical links so that various devices can interact with each other through a network.
- The aim of the computer network is the sharing of resources among various devices.
- In the case of computer network technology, there are several types of networks that vary from simple to complex level.

Components Of Computer Network:

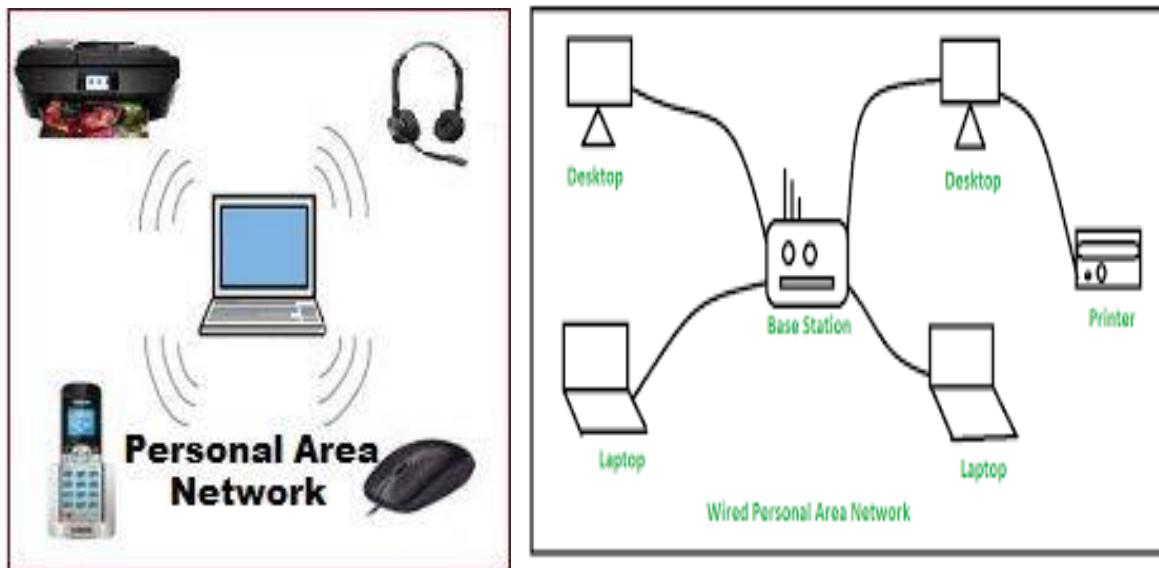


1.1.Computer Network Advantages and Disadvantages Comparison Table

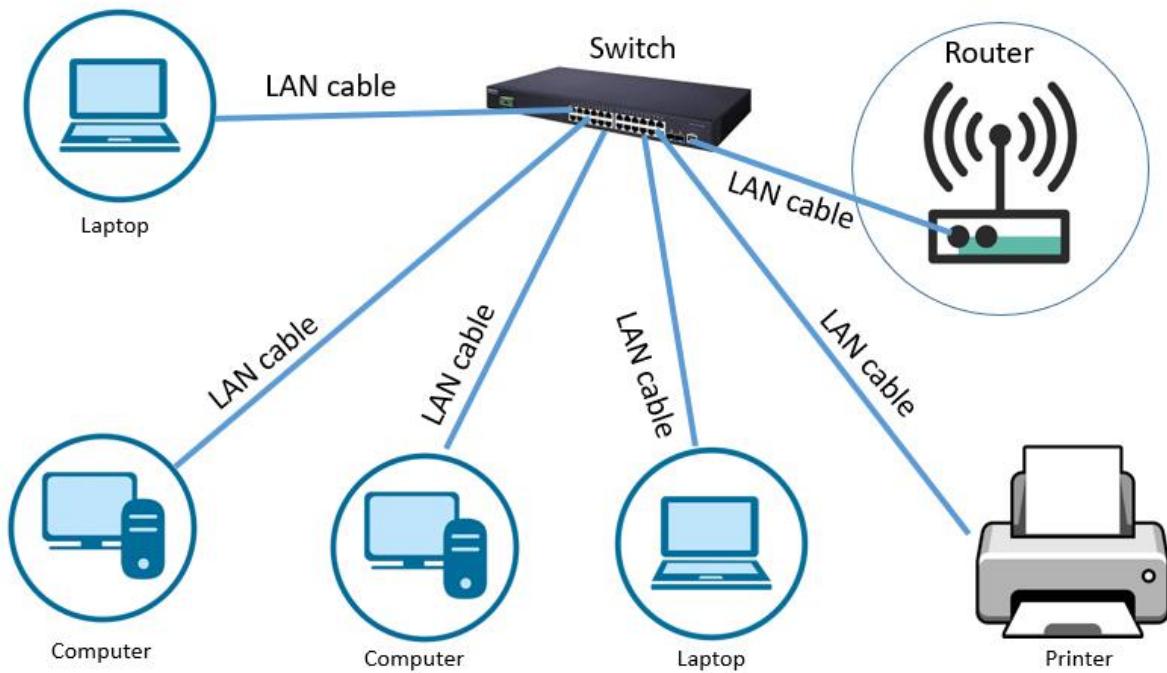
The basis of comparison	Advantages of computer networks	Disadvantages of computer networks
Price	Inexpensive	Expensive
Operating cost efficiency	Efficient	Inefficient
Storage capacity	Boosts storage capacity	Limited storage capacity
Security	Less secure	More Secure

1.2.Common types of networks based on size

A **personal area network (PAN)** is a computer network for interconnecting electronic devices within an individual person's workspace.^[1] A PAN provides data transmission among devices such as computers, smartphones, tablets and personal digital assistants. PANs can be used for communication among the personal devices themselves, or for connecting to a higher level network and the Internet where one master device takes up the role as gateway.

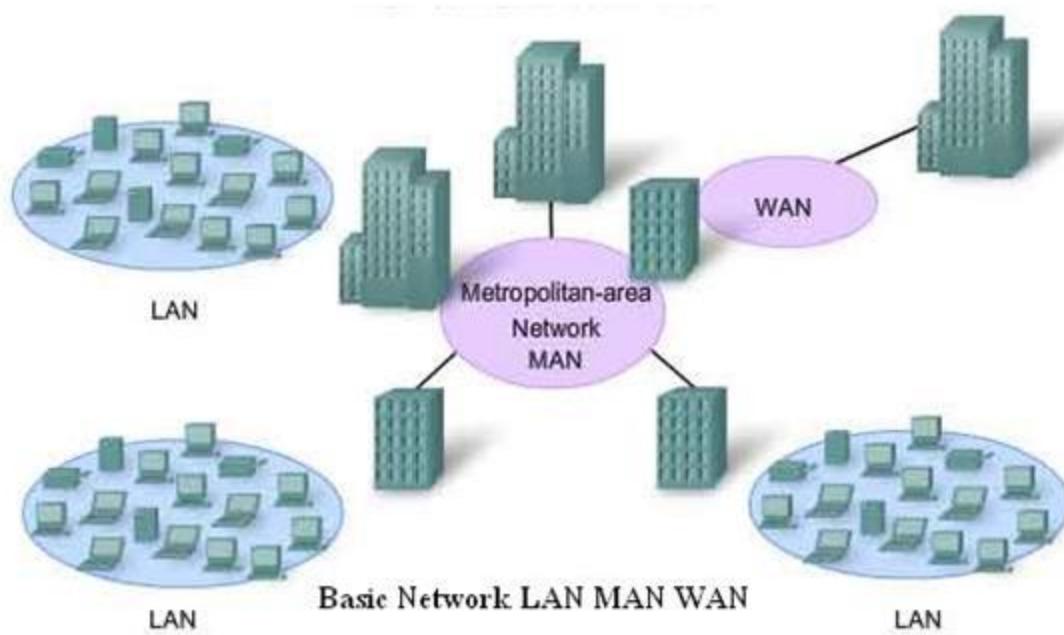


A local area network (LAN) is a collection of devices connected together in one physical location, such as a building, office, or home. A LAN can be small or large, ranging from a home network with one user to an enterprise network with thousands of users and devices in an office or school.



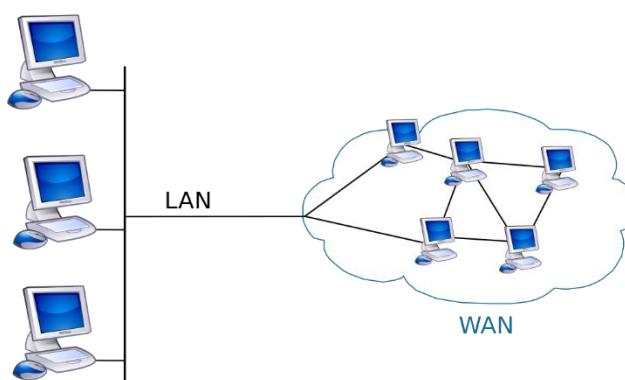
Local Area Network

A metropolitan area network (MAN) is a computer network that connects computers within a metropolitan area, which could be a single large city, multiple cities and towns, or any given large area with multiple buildings. A MAN is larger than a local area network (LAN) but smaller than a wide area network (WAN). MANs do not have to be in urban areas; the term "metropolitan" implies the size of the network, not the demographics of the area that it serves.



A wide area network (WAN) is a telecommunications network that extends over a large geographic area. Wide area networks are often established with leased telecommunication circuits.^[1]

Businesses, as well as schools and government entities, use wide area networks to relay data to staff, students, clients, buyers and suppliers from various locations around the world. In essence, this mode of telecommunication allows a business to effectively carry out its daily function regardless of location. The Internet may be considered a WAN.

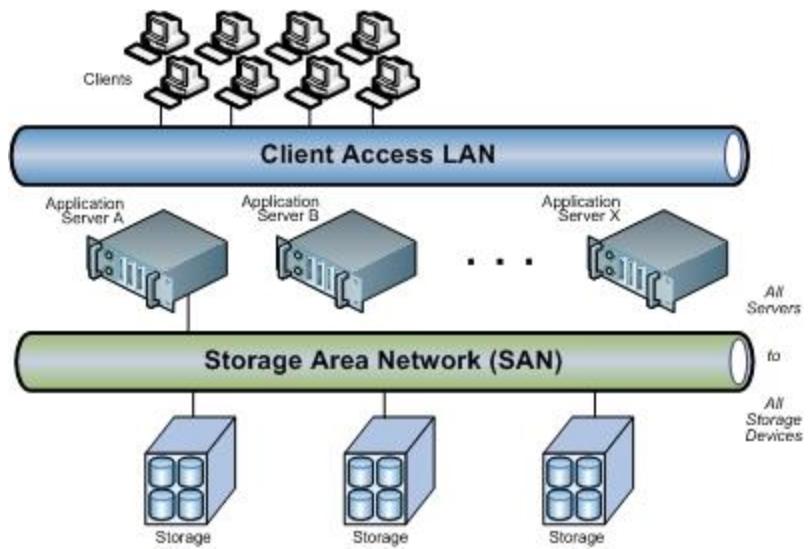


A wireless LAN is a wireless computer network that links two or more devices using wireless communication to form a local area network within a limited area such as a home, school, computer laboratory, campus, or office building.



1.3. Common types of networks based on main purpose

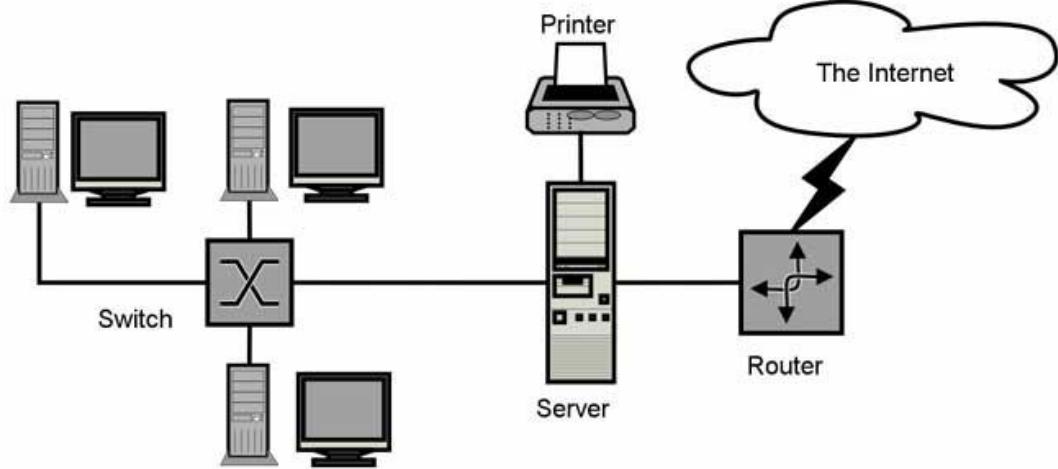
A storage area network (SAN) or storage network is a computer network which provides access to consolidated, block-level data storage. SANs are primarily used to access data storage devices, such as disk arrays and tape libraries from servers so that the devices appear to the operating system as direct-attached storage. A SAN typically is a dedicated network of storage devices not accessible through the local area network (LAN).



Enterprise private network (EPN)

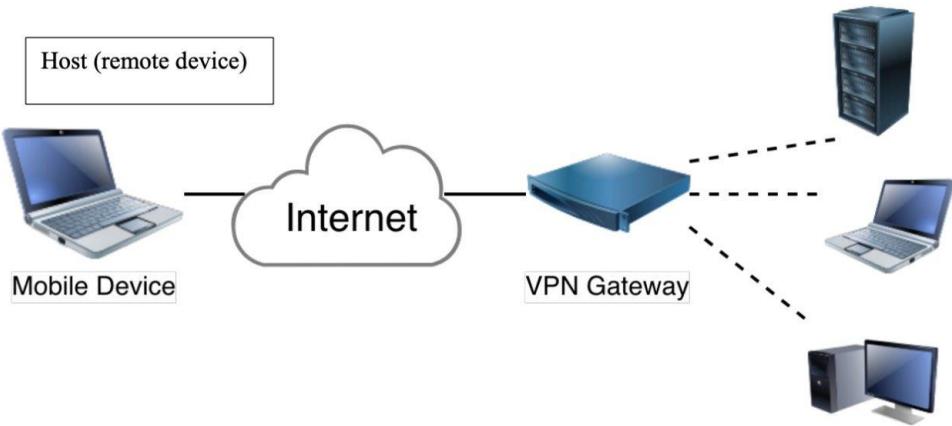
An enterprise private network is a computer network that helps enterprise companies with a number of disparate offices connect those offices to each in a secure way over a network. An enterprise private network is mainly set up to share computer resources.

The purpose of EPN is to have high-speed internet and data sharing within an organization. Companies can use Wi-Fi within their offices to share the internet and resources. Also, routers, switches, fiber optics, virtual devices, and modems are used in making this type of private network.



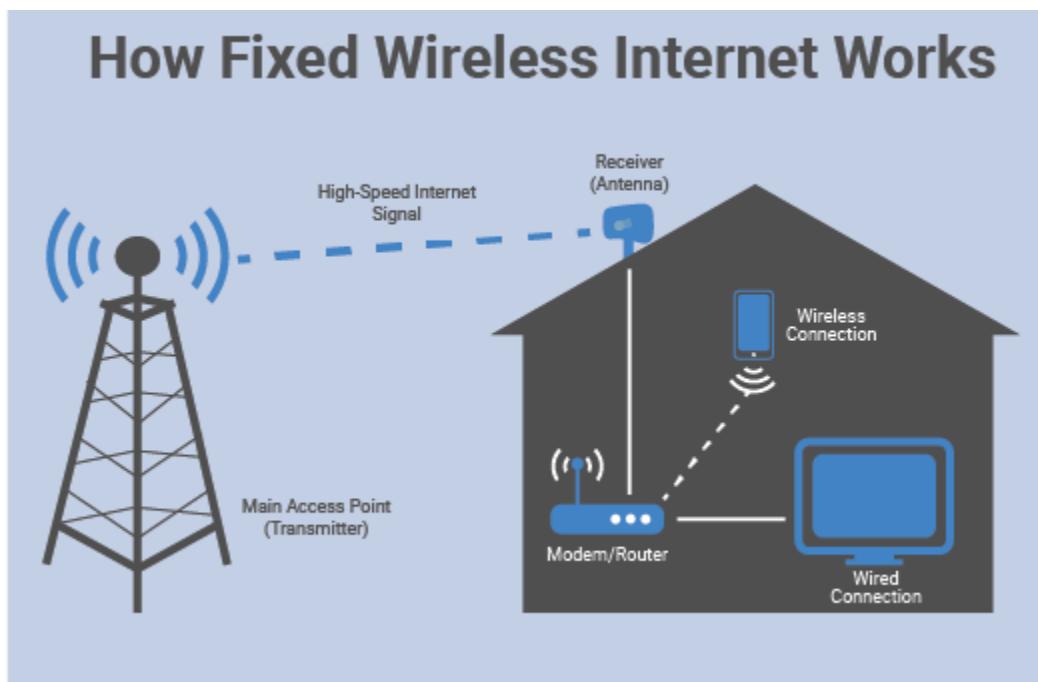
Enterprise Private Network

A **virtual private network (VPN)** extends a private network across a public network and enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network.^[1] The benefits of a VPN include increases in functionality, security, and management of the private network. It provides access to resources that are inaccessible on the public network and is typically used for remote workers. Encryption is common, although not an inherent part of a VPN connection



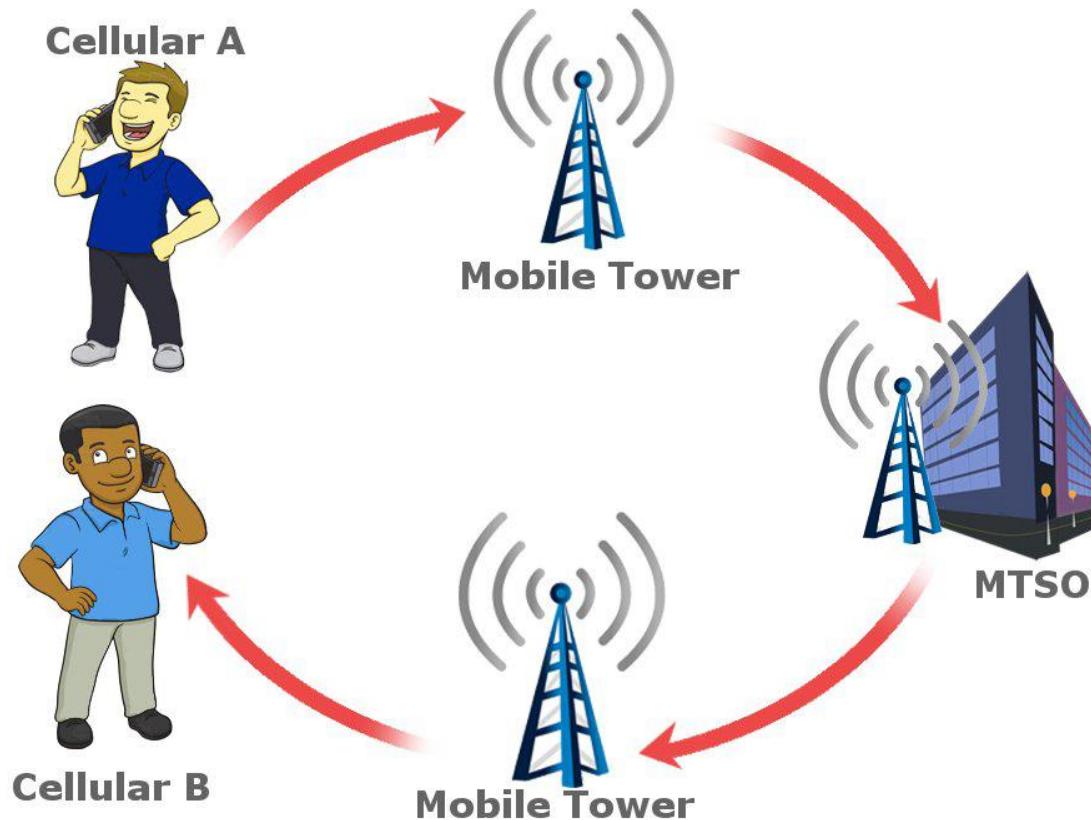
Topic 4: Connect computer to the internet

Fixed wireless internet is a high-speed, reliable internet service for rural and underserved areas. Internet is sent from the main access point (typically supplied with high-speed fiber-optic lines) to individual receivers installed at businesses, farms, and homes. Each receiver is typically within 10 miles and has a line of sight with the access point.



Mobile internet

Mobile Internet refers to **Internet access and mainly usage of Internet using a cellular telephone service provider or mobile wireless network**. It is wireless Internet access and usage that can easily change to next wireless Internet (radio) tower while mobile user with his/her device is moving across the service area



What is Mobile Network

Learning unit LU 3: Manage Data in MS Excel

Learning Outcome 3.1: Manage data types

Topic1: Description of data types

A data type, in programming, is a classification that specifies which type of value a variable has and what type of mathematical, relational or logical operations can be applied to it without causing an error.

1.1.Data type (integer, decimal, string, date)

Integer

The integer data type represents a positive whole number or its negative value. Examples of integers are 0, 1, 2, 3 and 4.

Float

The float data type represents a floating-point or decimal number. Examples of floats are 0.1243 and 12.245.

Some programming languages (or compilers for them) provide a built-in (primitive) or library decimal data type to represent non-repeating decimal fractions like **0.3** and **-1.17** without rounding, and to do arithmetic on them

The decimal data type is a machine-independent method that represents numbers of up to 32 significant digits, with valid values in the range $10^{-129} - 10^{+125}$. When you define a column with the DECIMAL (p) data type, it has a total of p (≤ 32) significant digits.

What is a string data type example?

A string is a data type used in programming, such as an integer and floating-point unit, but is used to represent text rather than numbers. It is comprised of a set of characters that can also contain spaces and numbers. For example, **the word "hamburger" and the phrase "I ate 3 hamburgers" are both strings**

Date and time data types

The DATE data type **stores the calendar date**. DATE data types require four bytes. A calendar date is stored internally as an integer value equal to the number of days since December 31, 1899. Because DATE values are stored as integers, you can use them in arithmetic expressions

Data type	Format	Range
Date	YYYY-MM-DD	0001-01-01 through 9999-12-31
smalldatetime	YYYY-MM-DD hh:mm:ss	1900-01-01 through 2079-06-06
datetime	YYYY-MM-DD hh:mm:ss[.nnn]	1753-01-01 through 9999-12-31
datetime2	YYYY-MM-DD hh:mm:ss[.nnnnnnn]	0001-01-01 00:00:00.0000000 through 9999-12-31 23:59:59.9999999

1.2.Length

The size is **typically about 32-bits or 4 bytes on a 16/ 32-bit compiler**. Yet, it varies depending on what compiler we are using. There is no specification of the data types sizes according to the C standard, except the character.

Signed int or int: -32,768 to +32767

Unsigned long int: 0 to +4,294,967,295

Unsigned int: 0 to 65535

Unsigned char: 0 to 255

Data Types and Sizes

Type Name	32-bit Size	64-bit Size
Short	2 bytes	2 bytes
Int	4 bytes	4 bytes
Long	4 bytes	8 bytes
long long	8 bytes	8 bytes

Topic2: Entering data types in cells and their default formats

The three types of data you can enter into a cell are **data, labels and formulas**. Data – values, usually numbers but can be letters or a combination of both. Labels – headings and descriptions to make the spreadsheet easier to understand. Formulas – calculations that update automatically

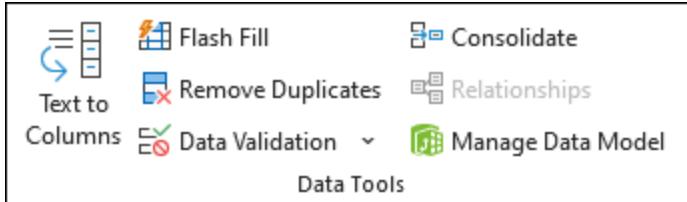
In Microsoft Excel, workbooks are saved as **Excel Workbooks (.xlsx)** by default. You can change the default file format to any other file format that is supported in Excel. For example, if you frequently create macros in a workbook, you may want to automatically save a new workbook as an Excel Macro-Enabled Workbook

Topic3: Create data validation rules

1.1. Setting, input message, error alert

Use data validation to restrict the type of data or the values that users enter into a cell. One of the most common data validation uses is to [create a drop-down list](#)

1. Select the cell(s) you want to create a rule for.
2. Select **Data >Data Validation**.



3. On the **Settings** tab, under **Allow**, select an option:
 - **Whole Number** - to restrict the cell to accept only whole numbers.
 - **Decimal** - to restrict the cell to accept only decimal numbers.
 - **List** - to pick data from the drop-down list.
 - **Date** - to restrict the cell to accept only date.
 - **Time** - to restrict the cell to accept only time.
 - **Text Length** - to restrict the length of the text.
 - **Custom** – for custom formula.
4. Under **Data**, select a condition.
5. Set the other required values based on what you chose for **Allow** and **Data**.
6. Select the **Input Message** tab and customize a message user will see when entering data.
7. Select the **Show input message when cell is selected** checkbox to display the message when the user selects or hovers over the selected cell(s).
8. Select the **Error Alert** tab to customize the error message and to choose a **Style**.
9. Select **OK**.

Learning Outcome 3.2: Apply Excel functions

Topic1: Formulas to perform calculations

All formula entries begin with an equal sign (=). For simple formulas, simply type the equal sign followed by the numeric values that you want to calculate and the math operators that you want to use — the plus sign (+) to add, the minus sign (-) to subtract, the asterisk (*) to multiply, and the forward slash (/) to divide. Then, press ENTER, and Excel instantly calculates and displays the result of the formula. For example, when you type **=12.99+16.99** in cell C5 and press ENTER, Excel calculates the result and displays 29.98 in that cell.

The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	
1		January	February
2	Entertainment		
3	Cable TV	52.98	63.25
4	Movies	7.98	11.97
5	CDs	16	29.98
6	Total		
7			

The formula $=12.99+16.99$ is being typed into cell C5. A callout bubble indicates: "The formula appears in the Formula Bar." Another callout bubble indicates: "Excel displays the formula result in the cell."

Use AutoSum

The easiest way to add a SUM formula to your worksheet is to use AutoSum. Select an empty cell directly above or below the range that you want to sum, and on the **Home** or **Formulas** tabs of the ribbon, click **AutoSum > Sum**. AutoSum will automatically sense the range to be summed and build the formula for you. This also works horizontally if you select a cell to the left or right of the range that you need to sum.

		Week 1	Week 2	Total
1	Name			
2	Bob	\$7,894	\$6,942	\$14,836
3	Rishna	\$4,897	\$9,375	\$14,272
4	Sue	\$7,835	\$2,845	\$10,680
5	Mo	\$9,584	\$6,458	\$16,042
6	Total		\$25,620	\$55,830

AutoSum vertically

	Name	Week 1	Week 2	Total
1				
2	Bob	\$7,894	\$6,942	\$14,836
3	Rishna	\$4,897	\$9,375	\$14,272
4	Sue	\$7,835	\$2,845	\$10,680
5	Mo	\$9,584	\$6,458	\$16,042
6	Total	=SUM(B2:B5)		\$55,830

In the figure above, the AutoSum feature is seen to automatically detect cells B2:B5 as the range to sum. All you need to do is press ENTER to confirm it. If you need to add/exclude more cells, you can hold the Shift Key + the arrow key of your choice until your selection matches what you want. Then press Enter to complete the task.

Intelligence function guide: the SUM (number1, [number2], ...) floating tag beneath the function is its Intelligence guide. If you click the SUM or function name, it will change to a blue hyperlink to the Help topic for that function. If you click the individual function elements, their representative pieces in the formula will be highlighted. In this case, only B2:B5 would be highlighted, since there is only one number reference in this formula. The Intelligence tag will appear for any function.

AutoSum horizontally

	A	B	C	D	E
1	Name	Week 1	Week 2	Total	
2	Bob	\$7,894	\$6,942	=SUM(B2:C2)	
3	Rishna	\$4,897	\$9,375	\$14,272	
4	Sue	\$7,835	\$2,845	\$10,680	
5	Mo	\$9,584	\$6,458	\$16,042	
6	Total	\$30,210	\$25,620	\$40,994	
7					

What can I use in a formula to mimic calculator keys?

Calculator key	Excel method	Description, example	Result
+ (Plus key)	+ (plus)	Use in a formula to add numbers. Example: =4+6+2	12

Calculator key	Excel method	Description, example	Result
- (Minus key)	- (minus)	Use in a formula to subtract numbers or to signify a negative number.	6
		Example: =18-12	-120
		Example: =24*-5 (24 times negative 5)	
x (Multiply key)	* (asterisk; also called "star")	Use in a formula to multiply numbers. Example: =8*3	24
÷ (Divide key)	/ (forward slash)	Use in a formula to divide one number by another. Example: =45/5	9
% (Percent key)	% (percent)	Use in a formula with * to multiply by a percent. Example: =15%*20	3
√ (square root)	SQRT (function)	Use the SQRT function in a formula to find the square root of a number. Example: =SQRT(64)	8
1/x (reciprocal)	=1/n	Use =1/n in a formula, where n is the number you want to divide 1 by. Example: =1/8	0.125

Topic2: Logical functions

Microsoft Excel provides 4 logical functions to work with the logical values. The functions are AND, OR, XOR and NOT. You use these functions when you want to carry out more than one comparison in your formula or test multiple conditions instead of just one. As well as logical operators, Excel logical functions return either TRUE or FALSE when their arguments are evaluated.

The following table provides a short summary of what each logical function does to help you choose the right formula for a specific task.

Function	Description	Formula Example	Formula Description
AND	Returns TRUE if all of the arguments evaluate to TRUE.	=AND(A2>=10, B2<5)	The formula returns TRUE if a value in cell A2 is greater than or equal to 10, and a value in B2 is less than 5, FALSE otherwise.
OR	Returns TRUE if any argument evaluates to TRUE.	=OR(A2>=10, B2<5)	The formula returns TRUE if A2 is greater than or equal to 10 or B2 is less than 5, or both conditions are met. If neither of the conditions it met, the formula returns FALSE.

Function	Description	Formula Example	Formula Description
XOR	Returns a logical Exclusive Or of all arguments.	=XOR(A2>=10, B2<5)	The formula returns TRUE if either A2 is greater than or equal to 10 or B2 is less than 5. If neither of the conditions is met or both conditions are met, the formula returns FALSE.
NOT	Returns the reversed logical value of its argument. I.e. If the argument is FALSE, then TRUE is returned and vice versa.	=NOT(A2>=10)	The formula returns FALSE if a value in cell A1 is greater than or equal to 10; TRUE otherwise.

1.1. AND

Using the AND function in Excel

The AND function is the most popular member of the logic functions family. It comes in handy when you have to test several conditions and make sure that all of them are met. Technically, the AND function tests the conditions you specify and returns TRUE if all of the conditions evaluate to TRUE, FALSE otherwise.

The syntax for the Excel AND function is as follows:

AND(logical1, [logical2], ...)

Formula	Description
<code>=AND(A2="Bananas", B2>C2)</code>	Returns TRUE if A2 contains "Bananas" and B2 is greater than C2, FALSE otherwise.
<code>=AND(B2>20, B2=C2)</code>	Returns TRUE if B2 is greater than 20 and B2 is equal to C2, FALSE otherwise.
<code>=AND(A2="Bananas", B2>=30, B2>C2)</code>	Returns TRUE if A2 contains "Bananas", B2 is greater than or equal to 30 and B2 is greater than C2, FALSE otherwise.

	A	B	C	D	E	F
1	Product	In Stock	Sold	Formula 1	Formula 2	Formula 3
2				<code>=AND(A2="Bananas", B2>C1)</code>	<code>=AND(B2>20, B2=C2)</code>	<code>=AND(A2="Bananas", B2>=30, B2>C2)</code>
3	Bananas	30	20	TRUE	FALSE	TRUE
4	Oranges	40	40	FALSE	TRUE	FALSE
5	Bananas	20	20	FALSE	FALSE	FALSE
6	Oranges	40	10	FALSE	FALSE	FALSE

Excel AND function - common uses

By itself, the Excel AND function is not very exciting and has narrow usefulness. But in combination with other Excel functions, AND can significantly extend the capabilities of your worksheets.

One of the most common uses of the Excel AND function is found in the logical_test argument of the IF function to test several conditions instead of just one. For example, you can nest any of the AND functions above inside the IF function and get a result similar to this:

```
=IF(AND(A2="Bananas", B2>C2), "Good", "Bad")
```

The screenshot shows the Microsoft Excel interface. The formula bar at the top contains the formula `=IF(AND(A2="Bananas", B2>C2), "Good", "Bad")`. Below the formula bar is a table with four columns: Product, In Stock, Sold, and IF formula. The table has five rows of data. Row 2 shows "Bananas" with 30 in stock and 20 sold, labeled "Good". Row 3 shows "Oranges" with 40 in stock and 40 sold, labeled "Bad". Row 4 shows "Bananas" with 20 in stock and 20 sold, labeled "Bad". Row 5 shows "Oranges" with 40 in stock and 10 sold, labeled "Bad". An orange arrow points from the formula bar down to the table.

	A	B	C	D
1	Product	In Stock	Sold	IF formula
2	Bananas	30	20	Good
3	Oranges	40	40	Bad
4	Bananas	20	20	Bad
5	Oranges	40	10	Bad

1.2.OR

Using the OR function in Excel

As well as AND, the Excel OR function is a basic logical function that is used to compare two values or statements. The difference is that the OR function returns TRUE if at least one of the arguments evaluates to TRUE, and returns FALSE if all arguments are FALSE. The OR function is available in all versions of Excel 2016 - 2000.

The syntax of the Excel OR function is very similar to AND:

```
OR(logical1, [logical2], ...)
```

Where logical is something you want to test that can be either TRUE or FALSE. The first logical argument is required, additional conditions (up to 255 in modern Excel versions) are optional.

And now, let's write down a few formulas for you to get a feel how the OR function in Excel works.

Formula	Description
<code>=OR(A2="Bananas", A2="Oranges")</code>	Returns TRUE if A2 contains "Bananas" or "Oranges", FALSE otherwise.
<code>=OR(B2>=40, C2>=20)</code>	Returns TRUE if B2 is greater than or equal to 40 or C2 is greater than or equal to 20, FALSE otherwise.
<code>=OR(B2="", C2="")</code>	Returns TRUE if either B2 or C2 is blank or both, FALSE otherwise.

	A	B	C	D	E	F
1	Product	In Stock	Sold	Formula 1	Formula 2	Formula 3
2				<code>=OR(A2="Bananas", A2="Oranges")</code>	<code>=OR(B2>=40, C2>=20)</code>	<code>=OR(B2="", C2 "")</code>
3	Bananas	30	10	TRUE	FALSE	FALSE
4	Oranges		20	TRUE	TRUE	TRUE
5	Cherries	20		FALSE	FALSE	TRUE
6	Oranges	30	10	TRUE	FALSE	FALSE
7	Cherries			FALSE	FALSE	TRUE

As well as Excel AND function, OR is widely used to expand the usefulness of other Excel functions that perform logical tests, e.g. the IF function. Here are just a couple of examples:

IF function with nested OR

`=IF(OR(B2>30, C2>20), "Good", "Bad")`

1.3.XOR

Using the XOR function in Excel

In Excel 2013, Microsoft introduced the XOR function, which is a logical **Exclusive OR** function. This term is definitely familiar to those of you who have some knowledge of any programming language or computer science in general. For those who don't, the concept of 'Exclusive Or' may be a bit difficult to grasp at first, but hopefully the below explanation illustrated with formula examples will help.

The syntax of the XOR function is identical to OR's :

XOR(logical1, [logical2],...)

The first logical statement (Logical 1) is required, additional logical values are optional. You can test up to 254 conditions in one formula, and these can be logical values, arrays, or references that evaluate to either TRUE or FALSE.

In the simplest version, an XOR formula contains just 2 logical statements and returns:

- TRUE if either argument evaluates to TRUE.
- FALSE if both arguments are TRUE or neither is TRUE.

This might be easier to understand from the formula examples:

Formula	Result	Description
=XOR(1>0, 2<1)	TRUE	Returns TRUE because the 1st argument is TRUE and the 2 nd argument is FALSE.
=XOR(1<0, 2<1)	FALSE	Returns FALSE because both arguments are FALSE.
=XOR(1>0, 2>1)	FALSE	Returns FALSE because both arguments are TRUE.

When more logical statements are added, the XOR function in Excel results in:

- TRUE if an odd number of the arguments evaluate to TRUE;
- FALSE if the total number of TRUE statements is even, or if all statements are FALSE.

The screenshot below illustrates the point:

	A	B	C	D	E	F
1	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
2	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE
3	FALSE	FALSE	TRUE	TRUE	TRUE	TRUE
4	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE
5	FALSE	FALSE	FALSE	FALSE	TRUE	TRUE
6	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE

If you are not sure how the Excel XOR function can be applied to a real-life scenario, consider the following example. Suppose you have a table of contestants and their results for the first 2 games. You want to know which of the players shall play the 3rd game based on the following conditions:

- Contestants who won Game 1 and Game 2 advance to the next round automatically and don't have to play Game 3.
- Contestants who lost both first games are knocked out and don't play Game 3 either.
- Contestants who won either Game 1 or Game 2 shall play Game 3 to determine who goes into the next round and who doesn't.

A simple XOR formula works exactly as we want:

=XOR(B2="Won", C2="Won")

	A	B	C	D
1	Contestant	Game 1	Game 2	Play Game 3?
2	Andrew	Won	Won	FALSE
3	Billy	Won	Lost	TRUE
4	Erik	Lost	Won	TRUE
5	Josh	Lost	Lost	FALSE

And if you nest this XOR function into the logical test of the IF formula, you will get even more sensible results:

```
=IF(XOR(B2="Won", C2="Won"), "Yes", "No")
```

A	B	C	D	E
1	Contestant	Game 1	Game 2	Play Game 3?
2	Andrew	Won	Won	No
3	Billy	Won	Lost	Yes
4	Erik	Lost	Won	Yes
5	Josh	Lost	Lost	No

1.4.NOT

Using the NOT function in Excel

The NOT function is one of the simplest Excel functions in terms of syntax:

```
NOT(logical)
```

You use the NOT function in Excel to reverse a value of its argument. In other words, if logical evaluates to FALSE, the NOT function returns TRUE and vice versa. For example, both of the below formulas return FALSE:

```
=NOT(TRUE)
```

```
=NOT(2*2=4)
```

Why would one want to get such ridiculous results? In some cases, you might be more interested to know when a certain condition isn't met than when it is. For example, when reviewing a list of attire, you may want to exclude some color that does not suit you. I'm not particularly fond of black, so I go ahead with this formula:

=NOT(C2="black")

	A	B	C	D	E
1	Item	Description	Color	Price	Any color but black
2	113456	Coat	White	\$980	TRUE
3	113457	Coat	Black	\$1,090	FALSE
4	113458	Jacket	Brown	\$780	TRUE
5	113459	Fur coat	White	\$1,000	TRUE
6	113460	Fur coat	Ivory	\$1,035	TRUE
7	113461	Jacket	Black	\$760	FALSE
8	113462	Coat	White	\$800	TRUE

As usual, in Microsoft Excel there is more than one way to do something, and you can achieve the same result by using the [Not equal to](#) operator: =C2<>"black".

If you want to test several conditions in a single formula, you can use NOT in conjunctions with the AND or OR function. For example, if you wanted to exclude black and white colors, the formula would go like:

=NOT(OR(C2="black", C2="white"))

And if you'd rather not have a black coat, while a black jacket or a back fur coat may be considered, you should use NOT in combination with the Excel AND function:

=NOT(AND(C2="black", B2="coat"))

Another common use of the NOT function in Excel is to reverse the behavior of some other function. For instance, you can combine NOT and ISBLANK functions to create the ISNOTBLANK formula that Microsoft Excel lacks.

As you know, the formula =ISBLANK(A2) returns TRUE of if the cell A2 is blank. The NOT function can reverse this result to FALSE: =NOT(ISBLANK(A2))

And then, you can take a step further and create a nested IF statement with the NOT / ISBLANK functions for a real-life task:

=IF(NOT(ISBLANK(C2)), C2*0.15, "No bonus :(")

	A	B	C	D	E
1	Salesman	Primary sales	Extra sales	Bonus	
2	Andrew	\$1,860	\$169	\$25	
3	Billy	\$910	\$145	\$22	
4	Erik	\$1,020		No bonus :(
5	Josh	\$1,070	\$185	\$28	
6	Mike	\$1,100		No bonus :(
7	Steve	\$1,020	\$180	\$27	

1.5.IF function

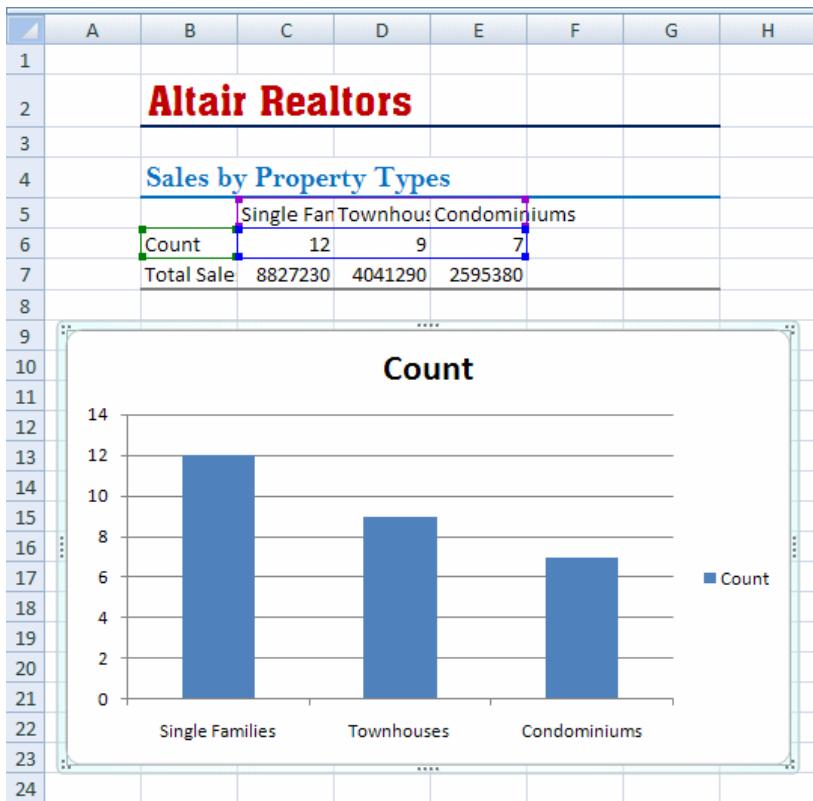
Learning Outcome 3.3: Analyze data

Topic1: Charts

1.1.Definition

A chart is a technique of displaying data using pictures and graphical representations instead of numbers or simple words. It works by drawing figures that would represent numbers, adding colors and shapes to the information presented

1. Open the Altair Realtors1.xlsx workbook
2. Click the Sales by Types tab and select Cells B5:E6
3. On the Ribbon, click Insert
4. In the Chart section, click the Column button. In the menu that appears, click the very first option on the top-left side: Clustered Column



5. Save the workbook

1.2.Importance

Excel charts allow spreadsheet administrators to create visualizations of data sets. By highlighting a set of data within an Excel spreadsheet and feeding it into the charting tool, users can create various types of charts in which the data is displayed in a graphical way.

Automation of Chart Creation

The Excel application automates the process of generating charts from existing data sets.

Customization of Charts in Excel

The chart function in Excel enables users to strike a balance between automation and customization.

Integration into Existing Sheets

If a business or other organization is using spreadsheet data managed within Excel, using the chart function within Excel aids integration of the data.

1.3.Types of charts Line and column chart Pie chart Miniature graphs bar

You will learn about the various types of charts in Excel, from **column charts, bar charts, line charts, and pie charts to stacked area charts**. For a description of each chart type, select an option from the following drop-down list.

Column chart

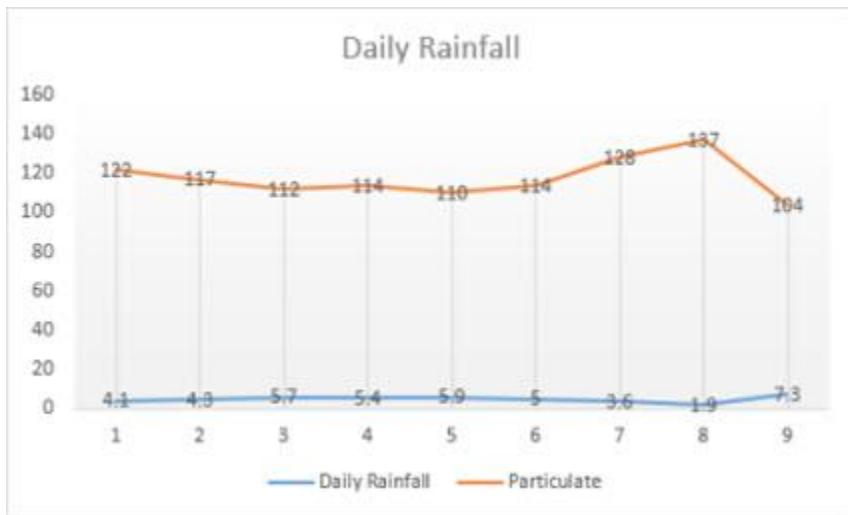
Data that's arranged in columns or rows on a worksheet can be plotted in a column chart. A column chart typically displays categories along the horizontal (category) axis and values along the vertical (value) axis, as shown in this chart:



Line chart

Data that's arranged in columns or rows on a worksheet can be plotted in a line chart. In a line chart, category data is distributed evenly along the horizontal axis, and all value data is distributed evenly along the vertical axis. Line charts can show continuous data over time on an evenly scaled

axis, so they're ideal for showing trends in data at equal intervals, like months, quarters, or fiscal years.



Bar chart

Data that's arranged in columns or rows on a worksheet can be plotted in a bar chart. Bar charts illustrate comparisons among individual items. In a bar chart, the categories are typically organized along the vertical axis, and the values along the horizontal axis.



Pie and doughnut charts

Data that's arranged in one column or row on a worksheet can be plotted in a pie chart. Pie charts show the size of items in one data series, proportional to the sum of the items. The data points in a pie chart are shown as a percentage of the whole pie.



1.4. Steps of creating chart

Creating Charts with Insert Chart

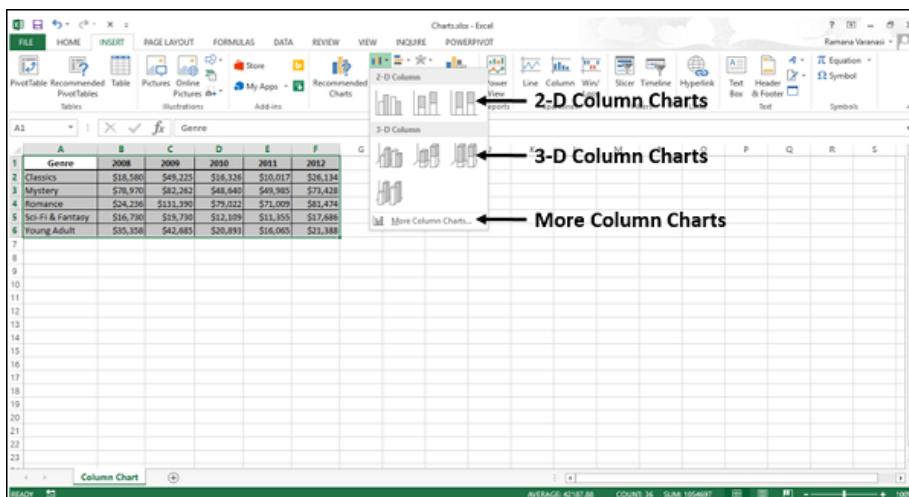
To create charts using the Insert Chart tab, follow the steps given below.

Step 1 – Select the data.

Step 2 – Click the Insert tab on the Ribbon.

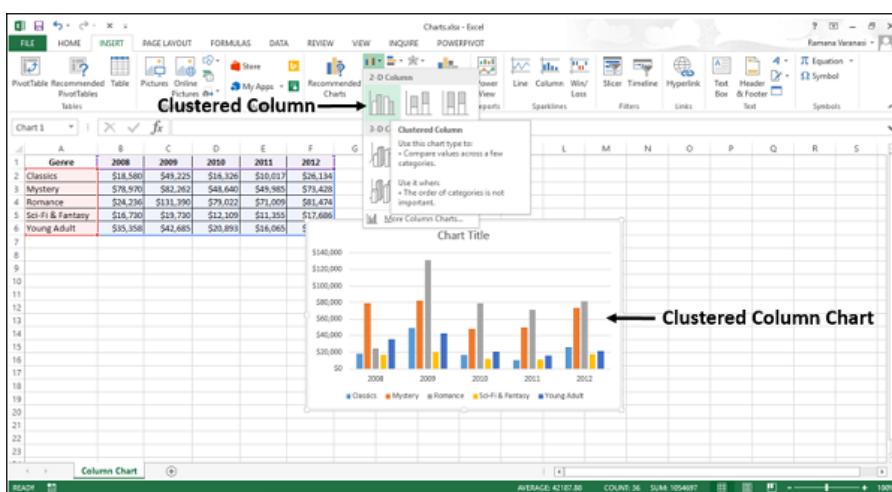
Step 3 – Click the Insert Column Chart on the Ribbon.

Age Group	Order Total	Order Count	Avg Order	Total Items
Classics	\$18,580	545,225	\$33,657	26,134
Mystery	\$78,970	842,242	\$94,640	49,965
Romance	\$52,390	529,424	\$100,000	51,439
Sci Fi & Fantasy	\$14,750	514,710	\$28,339	51,395
Young Adult	\$53,350	542,685	\$20,893	51,065

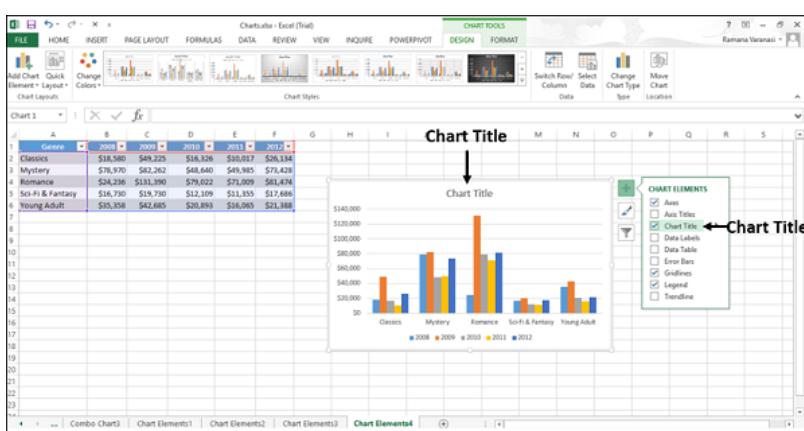


Step 4 – Move through the Column Chart options to see the previews.

Step 5 – Click **Clustered Column**. The chart will be displayed in your worksheet.



Step 6 – Give a meaningful title to the chart by editing **Chart Title**.



Creating Charts with Recommended Charts

You can use the **Recommended Charts** option if –

- You want to create a chart quickly.
- You are not sure of the chart type that suits your data.
- If the chart type you selected is not working with your data.

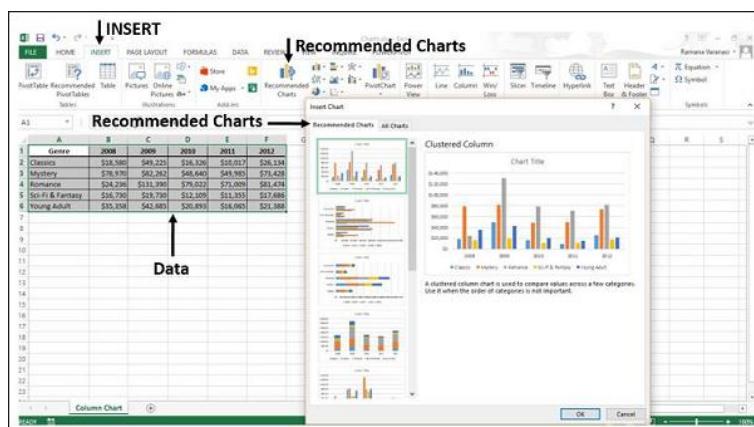
To use the option Recommended Charts, follow the steps given below –

Step 1 – Select the data.

Step 2 – Click the **Insert** tab on the Ribbon.

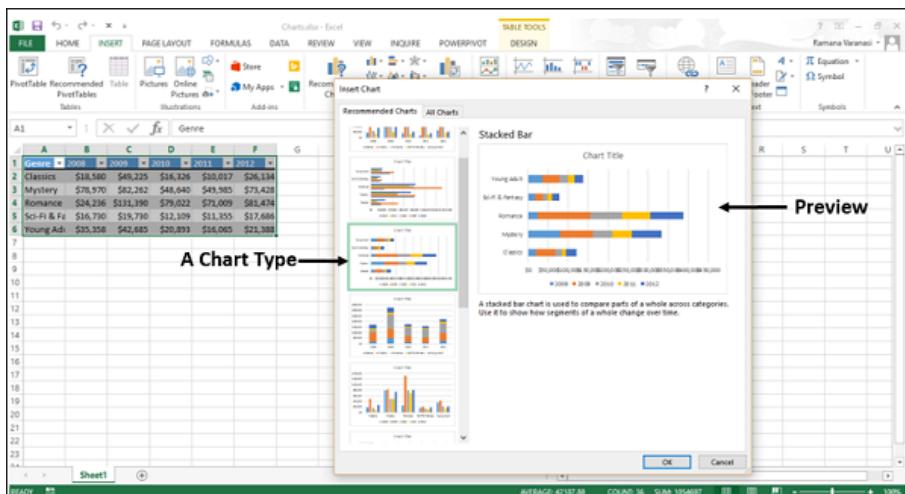
Step 3 – Click **Recommended Charts**.

A window displaying the charts that suit your data will be displayed, under the tab **Recommended Charts**.

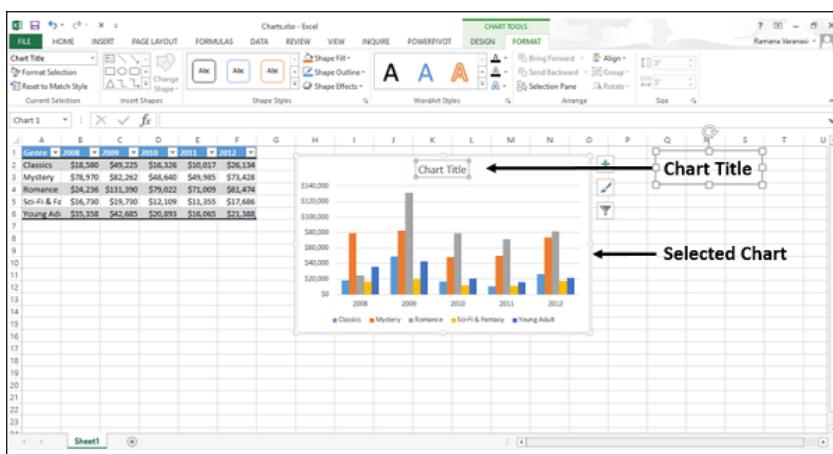


Step 4 – Browse through the Recommended Charts.

Step 5 – Click on a chart type to see the preview on the right side.

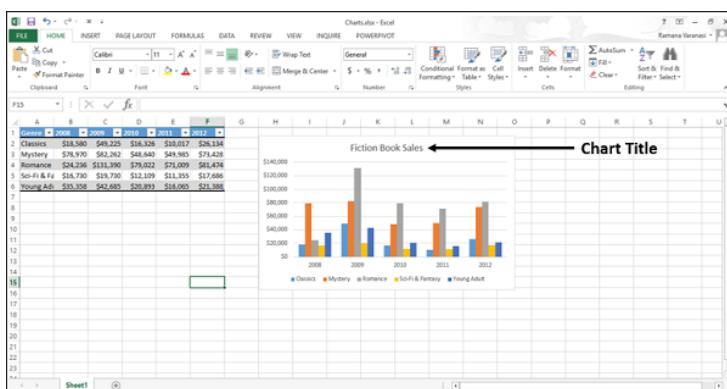


Step 6 – Select the chart type you like. Click OK. The chart will be displayed in your worksheet.



If you do not see a chart you like, click the All Charts tab to see all the available chart types and pick a chart.

Step 7 – Give a meaningful title to the chart by editing Chart Title.

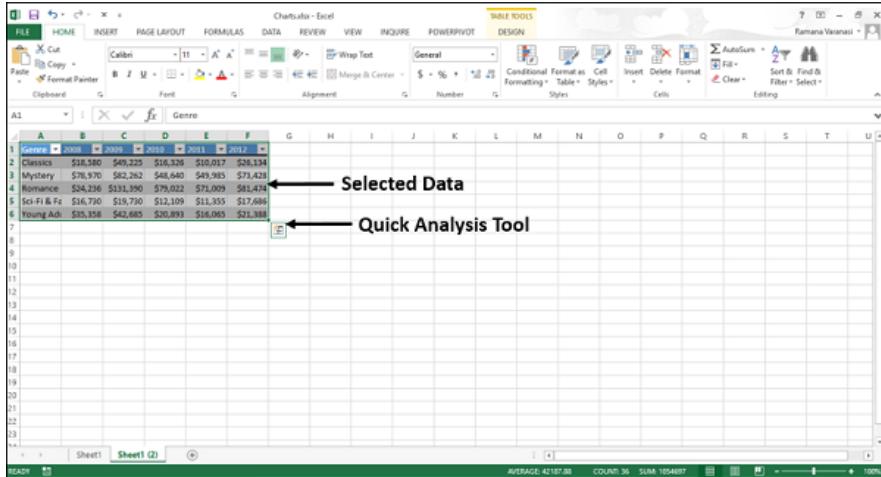


Creating Charts with Quick Analysis

Follow the steps given to create a chart with Quick Analysis.

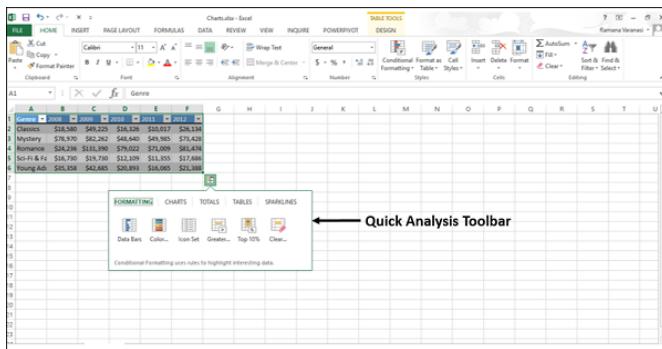
Step 1 – Select the data.

A Quick Analysis button  appears at the bottom right of your selected data.



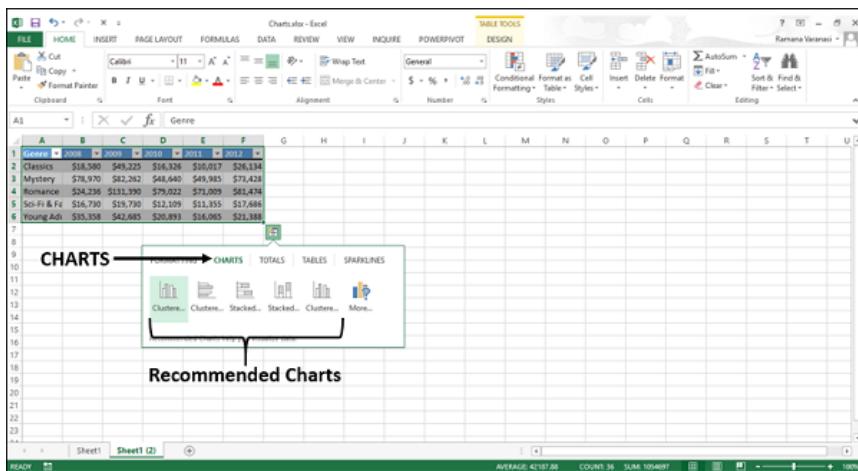
Step 2 – Click the Quick Analysis icon.

The Quick Analysis toolbar appears with the options FORMATTING, CHARTS, TOTALS, TABLES, SPARKLINES.



Step 3 – Click the CHARTS option.

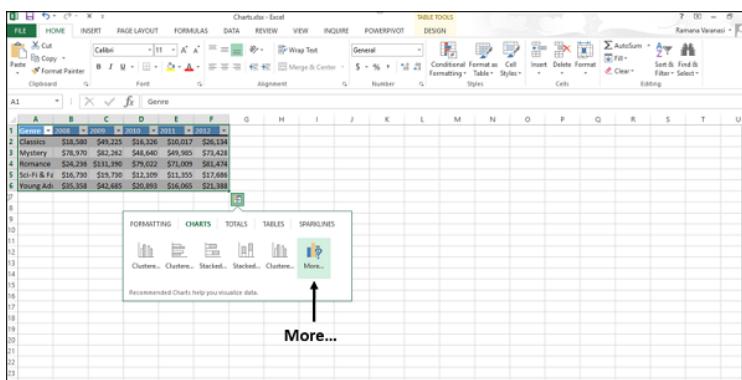
Recommended Charts for your data will be displayed.



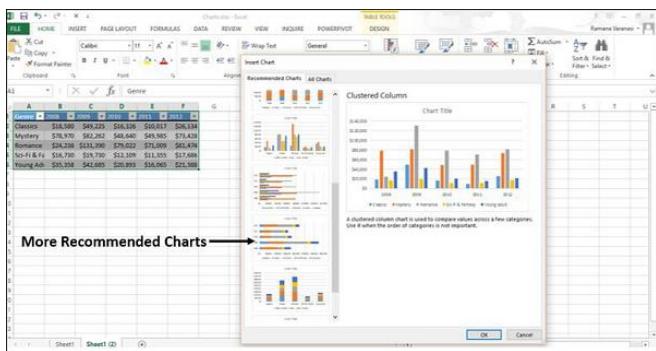
Step 4 – Point the mouse over the Recommended Charts. Previews of the available charts will be shown.



Step 5 – Click More.

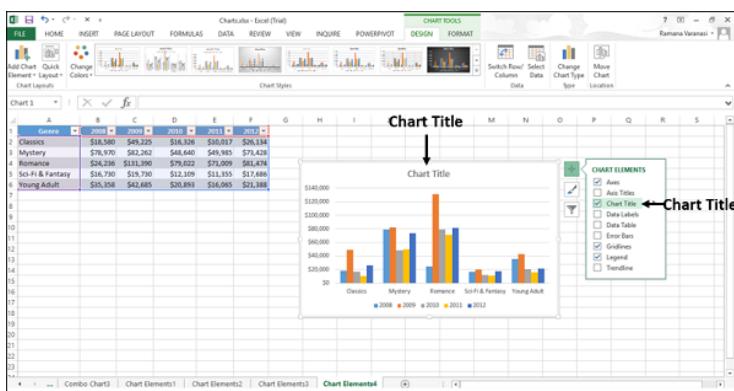


More Recommended Charts will be displayed.



Step 6 – Select the type of chart you like, click OK. The chart will be displayed in your worksheet.

Step 7 – Give a meaningful title to the chart by editing **Chart Title**.



Topic2: Table style

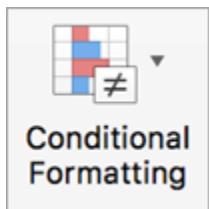
1.1. Conditional formatting

Conditional formatting can help make patterns and trends in your data more apparent. To use it, you create rules that determine the format of cells based on their values, such as the following monthly temperature data with cell colors tied to cell values.

	A	B	C	D	E	F	G
1	City	Jan	Feb	Mar	Apr	May	Jun
2	Barstow	80	84	84	97	95	98
3	California City	78	86	84	96	98	102
4	Cinco	83	86	86	97	95	103
5	Hesperia	78	85	87	98	97	102
6	Lancaster	78	85	86	99	95	101
7	Mojave	82	85	86	98	96	99
8	Palmdale	81	84	85	97	95	101
9	Ridgecrest	81	87	87	97	96	98
10	Rosamond	82	86	88	99	97	101
11	Santa Clarita	79	85	87	95	96	103

Apply conditional formatting

1. Select the range of cells, the table, or the whole sheet that you want to apply conditional formatting to.
2. On the **Home** tab, click **Conditional Formatting**.



3. Do one of the following

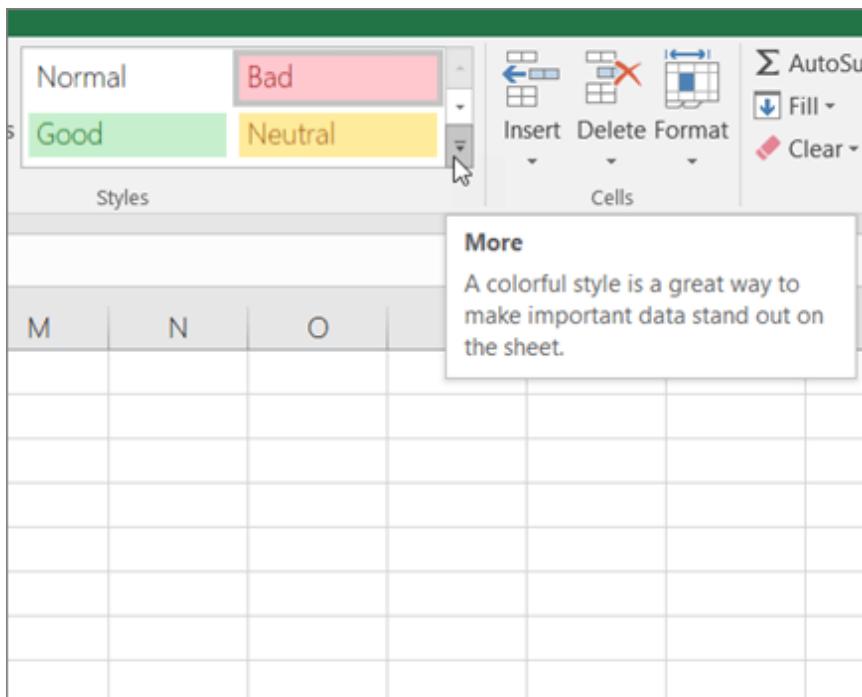
1.2.Format as table

- Select a cell within your data.
- Select **Home > Format as Table**.
- Choose a style for your table.
- In the **Create Table** dialog box, set your cell range.
- Mark if your table has headers.
- Select **OK**.

1.3.Cell style

Apply, create, or remove a cell style

1. Select the cells that you want to format. For more information, see Select cells, ranges, rows, or columns on a worksheet.
2. On the **Home** tab, in the **Styles** group, click the **More** dropdown arrow in the style gallery, and select the cell style that you want to apply.



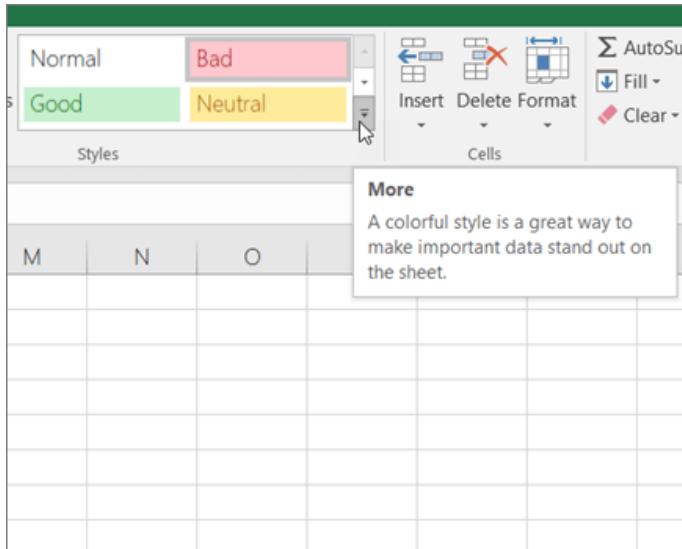
Create a custom cell style

1. On the **Home** tab, in the **Styles** group, click the **More** dropdown arrow in the style gallery, and at the bottom of the gallery, click **New Cell Style**.
2. In the **Style name** box, type an appropriate name for the new cell style.
3. Click **Format**.
4. On the various tabs in the **Format Cells** dialog box, select the formatting that you want, and then click **OK**.
5. Back in the **Style** dialog box, under **Style Includes (By Example)**, clear the check boxes for any formatting that you do not want to include in the cell style.
6. Click **OK**.

Remove a cell style from data

You can remove a cell style from data in selected cells without deleting the cell style.

1. Select the cells that are formatted with the cell style that you want to remove. For more information, see Select cells, ranges, rows, or columns on a worksheet.
2. On the **Home** tab, in the **Styles** group, click the **More** dropdown arrow in the style gallery.



3. Under **Good, Bad, and Neutral**, click **Normal**.

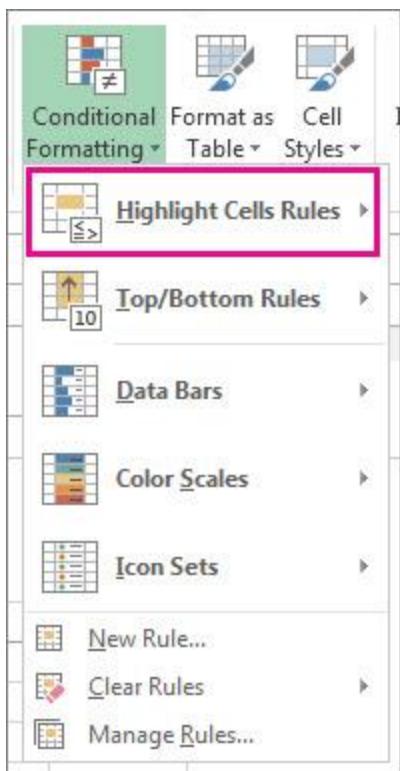
Topic3: Duplication removal

Sometimes duplicate data is useful, sometimes it just makes it harder to understand your data. Use conditional formatting to find and highlight duplicate data. That way you can review the duplicates and decide if you want to remove them.

1. Select the cells you want to check for duplicates.

Note: Excel can't highlight duplicates in the Values area of a PivotTable report.

2. Click **Home > Conditional Formatting > Highlight Cells Rules > Duplicate Values**.



3. In the box next to **values with**, pick the formatting you want to apply to the duplicate values, and then click **OK**.



Remove duplicate values

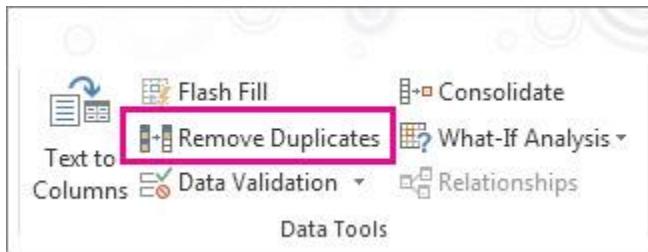
When you use the **Remove Duplicates** feature, the duplicate data will be permanently deleted. Before you delete the duplicates, it's a good idea to [copy the](#)

original data to another worksheet so you don't accidentally lose any information.

1. Select the range of cells that has duplicate values you want to remove.

Tip: [Remove any outlines or subtotals](#) from your data before trying to remove duplicates.

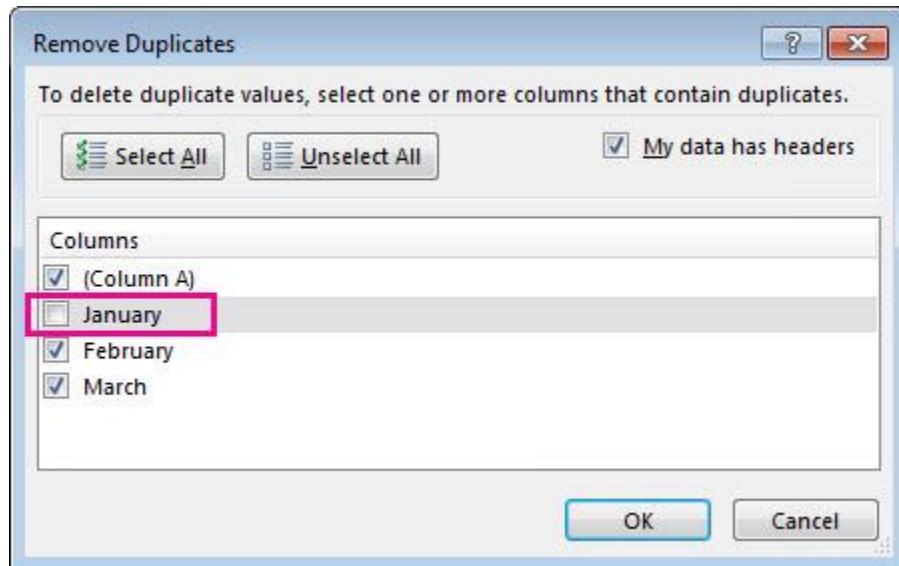
2. Click **Data > Remove Duplicates**, and then Under **Columns**, check or uncheck the columns where you want to remove the duplicates.



For example, in this worksheet, the January column has price information I want to keep.

	A	B	C	D
1	Name	Price each month		
2		January	February	March
3	Entrenching Tool	\$0.00	\$32.00	\$43.00
4	Biker Fuel Energy Bar	\$0.00	\$5.00	\$5.00
5	Biker Fuel Energy Bar	\$0.00	\$12.00	\$18.00
6	No-Hands Riding Kit	\$250.00	\$220.00	\$180.00
7	Combination Lock	\$30.00	\$20.00	\$15.00
8	Key Lock	\$0.00	\$11.00	\$22.00
9	Standard Locking Chain	\$0.00	\$26.00	\$25.00
10	Deluxe Locking Chain	\$0.00	\$55.00	\$53.00
11	Executive Locking Chain	\$0.00	\$85.00	\$99.00
12	Entrenching Tool	\$0.00	\$32.00	\$43.00
13	Biker Fuel Energy Bar	\$0.00	\$5.00	\$5.00
14	Biker Fuel Energy Bar	\$0.00	\$12.00	\$18.00
15	No-Hands Riding Kit	\$250.00	\$220.00	\$180.00
16				

So, I unchecked **January** in the **Remove Duplicates** box.



3. Click **OK**.

Learning Outcome 3.4: Apply data protection

Protecting Excel data in financial modeling is critical. Users prefer to secure and protect cells that they will not tweak or change while leaving certain cells free to adjust assumptions and inputs. By doing so, users are protected from potential inconsistencies and mistakes that may result from typos and unwanted changes in output cell functions.

Topic1: Data protection principles

1.1.Fair and lawful

What is fairness? **Processing of personal data must always be fair as well as lawful.** If any aspect of your processing is unfair you will be in breach of this principle – even if you can show that you have a lawful basis for the processing

- ✓ You must have a valid lawful basis in order to process personal data.
- ✓ There are six available lawful bases for processing. No single basis is 'better' or more important than the others – which basis is most appropriate to use will depend on your purpose and relationship with the individual.
- ✓ Most lawful bases require that processing is 'necessary' for a specific purpose. If you can reasonably achieve the same purpose without the processing, you won't have a lawful basis.
- ✓ You must determine your lawful basis before you begin processing, and you should document it. We have an interactive tool to help you.
- ✓ Take care to get it right first time - you should not swap to a different lawful basis at a later date without good reason. In particular, you cannot usually swap from consent to a different basis.
- ✓ Your privacy notice should include your lawful basis for processing as well as the purposes of the processing. If your purposes change, you may be able to continue processing under the original lawful basis if your new purpose is compatible with your initial purpose (unless your original lawful basis was consent).
- ✓ If you are processing special category data you need to identify both a lawful basis for general processing and an additional condition for processing this type of data.

- ✓ If you are processing criminal conviction data or data about offences you need to identify both a lawful basis for general processing and an additional condition for processing this type of data.

1.2.Purposes

One of the purposes of the General Data Protection Regulation (GDPR) is **to protect individuals' fundamental rights and freedoms, particularly their right to protection of their personal data**

1.3.Adequacy

What is adequacy? 'Adequacy' is a term that the EU uses to describe other countries, territories, sectors or international organisations that it deems to provide an 'essentially equivalent' level of data protection to that which exists within the EU

1.4.Accuracy

Data accuracy refers to **error-free records that can be used as a reliable source of information**. In data management, data accuracy is the first and critical component/standard of the data quality framework.

1.5.Retention

Data retention is **the storing of information for a specified period**. Data retention is primarily relevant to businesses that store data to service their customers and comply with government or industry regulations. Data retention is critical for modern organizations.

1.6.Rights

the right to be informed about the collection and the use of their personal data. the right to access personal data and supplementary information. the right to have inaccurate personal data rectified, or completed if it is incomplete. the right to erasure (to be forgotten) in certain circumstances.

1.7.Security

Data security is **the process of safeguarding digital information throughout its entire life cycle to protect it from corruption, theft, or unauthorized access**. It covers everything—hardware, software, storage devices, and user devices; access and administrative controls; and organizations' policies and procedures

Topic2: Ways of protecting excel data

1.1. protect a cell

Follow these steps to lock cells in a worksheet:

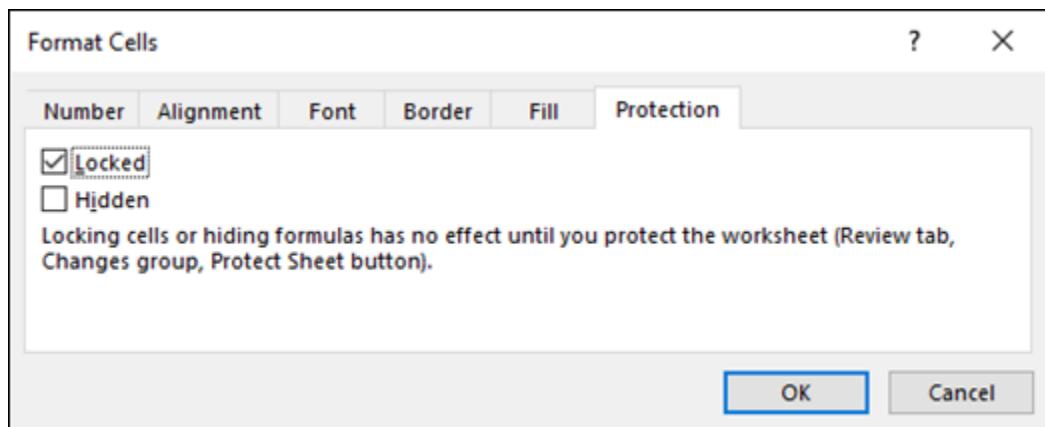
1. Select the cells you want to lock.
2. On the **Home** tab, in the **Alignment** group, click the small arrow to open the **Format Cells** popup window.
3. On the **Protection** tab, select the **Locked** check box, and then click **OK** to close the popup

On the **Review** tab in the ribbon, in the **Changes** group, select either **Protect Sheet** or **Protect Workbook**, and then reapply protection. See [Protect a worksheet](#) or [Protect a workbook](#).

1.2. protect worksheet

Step 1: Unlock any cells that needs to be editable

1. In your Excel file, select the worksheet tab that you want to protect.
2. Select the cells that others can edit.
3. Right-click anywhere in the sheet and select **Format Cells** (or use **Ctrl+1**, or **Command+1** on the Mac), and then go to the **Protection** tab and clear **Locked**.



Step 2: Protect the worksheet

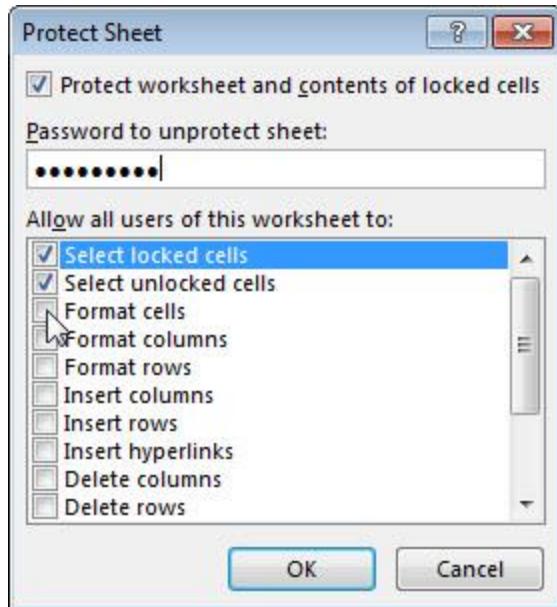
Next, select the actions that users should be allowed to take on the sheet, such as insert or delete columns or rows, edit objects, sort, or use AutoFilter, to name a few. Additionally, you can also specify a password to lock your worksheet. A password prevents other people from removing the worksheet protection—it needs to be entered to unprotect the sheet.

Given below are the steps to protect your sheet.

1. On the **Review** tab, click **Protect Sheet**.



2. In the **Allow all users of this worksheet to** list, select the elements you want people to be able to change.

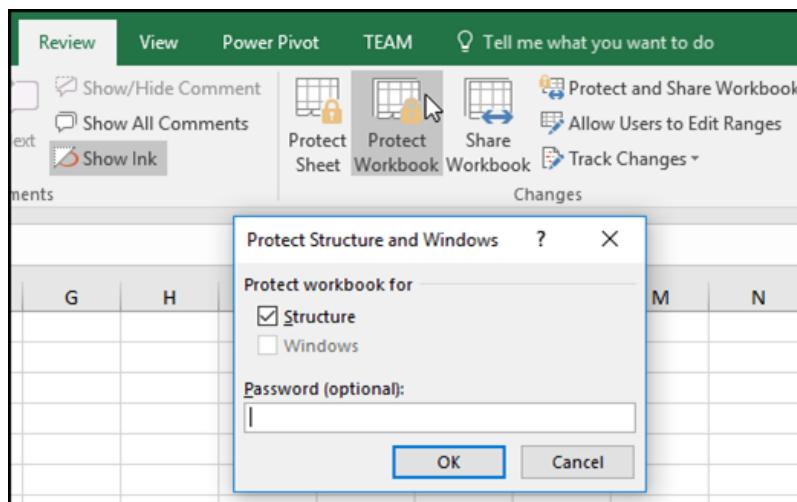


1.3.protect workbook

Protect the workbook structure

To protect the structure of your workbook, follow these steps:

1. Click **Review > Protect Workbook**.



2. Enter a password in the **Password** box.

3. Select **OK**, re-enter the password to confirm it, and then select **OK** again