GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GRADE 10

COMPUTER APPLICATION TECHNOLOGY



STUDY GUIDE

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SCHOOL OF LEADERSHIP & GOVERNANCE

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Overview

Practical Study Guide for Grade 10 CAT. This study guide aims to strengthen the skills and abilities of the Grade 10 CAT learner.

Introduction

Computer Application Technology (CAT) is an integrated subject for teachers and learners. Comprising of aspects such as Systems Technology, Internet and Network Technology, Social implications and Solution Development.

CAT allows learners to obtain various skills for the real world, including the ability to have good problem-solving skills.

The focus of this study guide is to assist learners and educators to utilize the Practical Study Guide for Grade 10, to enhance their study skills and consolidation of work.

Purpose of the Manual

The overall aim of this study guide is to provide learners and teachers with additional support and development to improve the teaching and learning of Grade 10 Computer Application Technology in the classroom.

Furthermore, the information contained in this study guide is intended to assist learners and educators to cope and manage their own learning and teaching, and to develop learners' study skills to:

- enhance their CAT knowledge;
- understand and use the concepts related to aspects of CAT;
- develop the necessary skills to obtain higher marks;
- enhance and develop problem solving skills that equip them for the real world

Theory unit

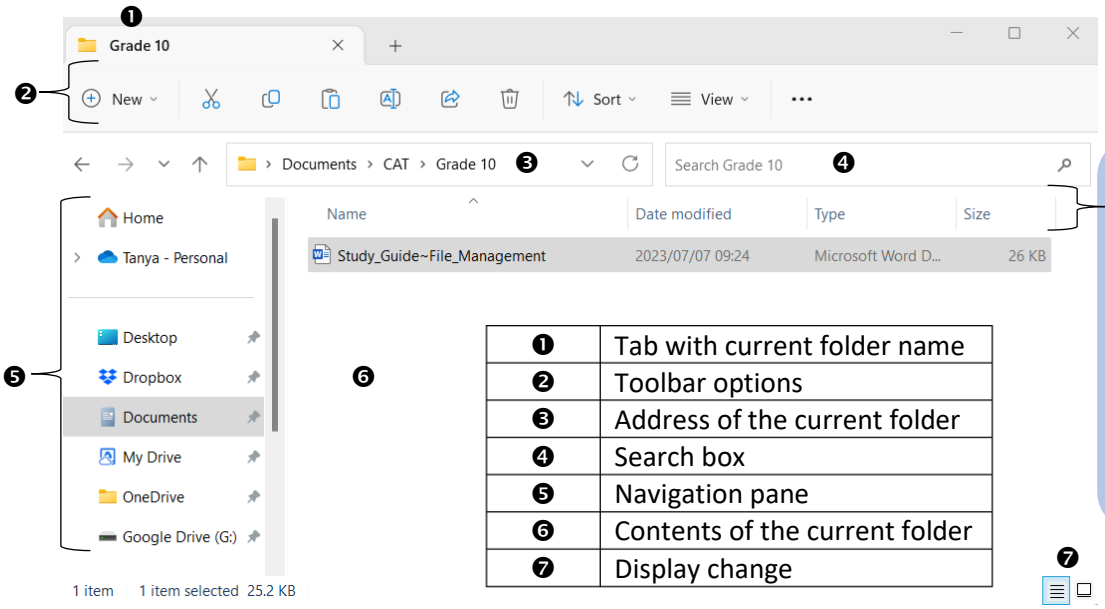


Summary of File Management

File explorer

A file explorer is a graphical user interface that assist user in the navigation of their file system. This helps user to manage and control their files in an organised manner.

The file explorer in Windows 11 has the following features:

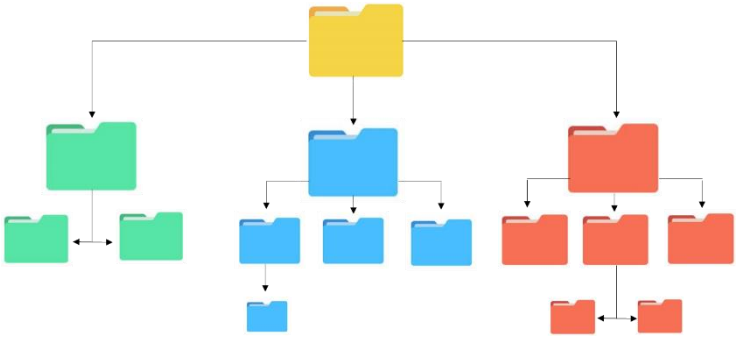


❶	Tab with current folder name
❷	Toolbar options
❸	Address of the current folder
❹	Search box
❺	Navigation pane
❻	Contents of the current folder
❼	Display change

Folders

Folders can contain a collection of subfolders and files that are organised in the file explorer. Creating folders helps us to keep our files in a logical sequence and manage our system.

When our files are organised in folders and subfolders it is easier to locate and share information.



Renaming	Right click → *Rename* → new name	To give the file/folder a different name
Deleting	Right click → *Delete* **OR** Click → Delete	Remove a file/folder
Copying	Right click → *Copy* → *Paste*	Create a duplicate file/folder
Moving	Right click → *Cut* → *Paste*	Move a file/folder to a different location
Shortcut	Right click → *Send to* → *Shortcut*	Create a shorter way to access the file/folder

Files

Files can be created by various programs and are stored in different formats. Files can be identified by an icon that is unique to the software used to create the file.

File types & file extensions

A file type refers to the software that is used to create/open a file. A file extension is automatically added to a file when we create and save the file. A file extension helps the operating system identify which software to use when we open an existing file.

Type	Extension	Programs/Software	Purpose
Word Processing	.docx	Microsoft Word	Used to add, edit and format text and images.
Spreadsheet	.xlsx	Microsoft Excel	Used for calculations, creating graphs and sorting data.
Presentation	.pptx	Microsoft PowerPoint	Used to create presentations for an audience.
Database	.accdb	Microsoft Access	Used to store a collection of records and information.
Hypertext Markup Language	.html	Notepad	Used to create and design a website/web page.
Portable document	.pdf	Adobe reader	Used to share files that others cannot edit/modify.
Program/Application	.exe	Apps	Software that can be installed for system or application use.
Graphis	.jpg; .png; .bmp; .gif	Paint; Photos	Display images
Video	.mp4; .avi; .wmv; .mpeg	Windows media player; VLC Player	To play video clips
Audio	.mp3; .wav; .wma	Windows media player;	To play audio clips
Compressed	.zip; .rar	7Zip; WinZip	To compress/extract information in a folder





We also have similar software apps on our smart devices which we can use to create, view/play or edit files on our phones.

File names

File names are the name you give a file when you save it. Use short descriptive words to create a file name. File names usually consists of three parts:

❶	The name of the file when you save/create the file.
❷	To separate the file name and the file extension.
❸	File extension



File paths

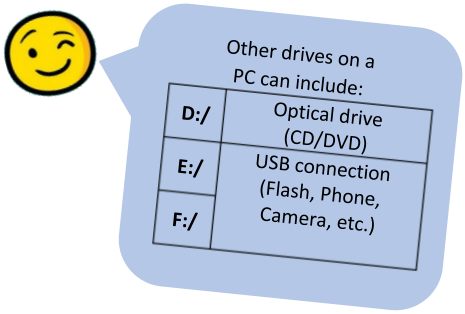
A file path refers to the location where a file is saved on your computer, i.e., the way to get to the file.

An example of a file path can be displayed as follows:
(Note the pathway in the short clip below)

C:\ Users\ PCName\ Documents\ CAT\ Grade 10\ Study_Guide~File_Management.docx



C:\	This refers to the **C drive**. *(Note the : refers to drive)* Usually known as the hard drive of a computer.
Users\	This is a common folder on the hard drive with the user's information.
PCName\	This is the user's personal folder with all working documents.
Documents\	This is a general Library folder that is part of the operating system.
CAT\	This is a main folder in the Documents section.
Grade 10\	This is a subfolder in the CAT folder.

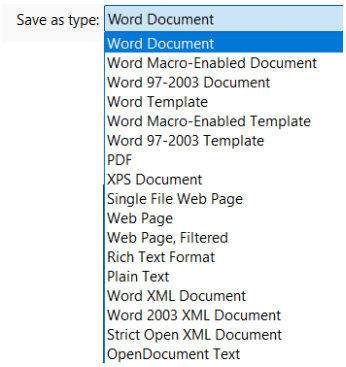


Converting file types

Converting a file type means changing the existing file type into a format that others can access. This feature especially comes in handy when we want to:

- use an older version of the software, or
- when we want to share data so that others can view the file if they do not have the software;

To convert a file, we can go to the *Save As* option and change the type of file so that it opens in the selected format.



Management of peripheral devices

Peripheral devices are any additional device that connects to a computer or digital device. For example: keyboards, printers, smartphone, headsets, projectors, etc.

These connections can be wired or wireless. An additional device usually has a cable that is used to connect to the computer. There are various types of devices that connect with different types of cables. For example: projector → HDMI; headsets → jack; smartphone → USB type C; modem → ethernet

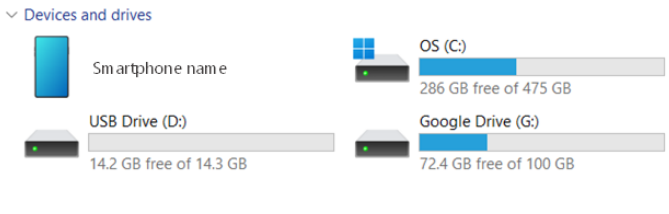


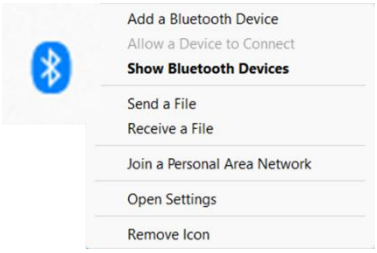
Instead of connecting your devices with a cable, it is also possible for some devices to connect to your computer wirelessly. This means that there will be a wireless receiver that transmits the communication from your computer to the additional device. These methods include: USB-over-WiFi receiver, built-in-wireless transmission or a USB dongle connected to your computer.



Plug-and-play:
This is when the operating system automatically detects the device and installs the device driver!

One of the main reasons for connecting additional devices to your computer is also to share files with others or move files to a different device. To share files, you can go to the Devices and drives section in This PC or you can share via the Bluetooth settings.





Activities File Management

Activity 1

a. Explain the use of a file manager?
b. What feature will help a user to find files that they cannot locate?
c. What does metadata refer to?
d. How can you identify the path of a file?
e. What is the purpose of the navigation pane in a file explorer?

Activity 2

Indicate whether the following statements are TRUE or FALSE. If a statement is false, write 'FALSE' and change the underlined word to make the statement TRUE.

2.1 A file path is the address to get to a specific file.
2.2 USB cables allows you to share files wirelessly.
2.3 A shortcut is a quicker way to get to a file.
2.4 Renaming a file type will allows users with older versions to access the file.
2.5 A .exe file extension is associated with software applications.

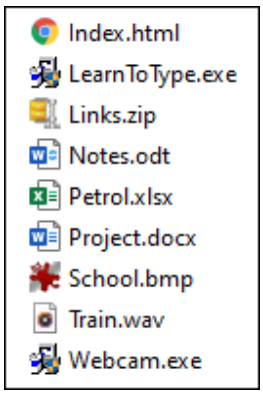
Activity 3

Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter (A–F) next to the question numbers (3.1 to 3.6)

COLUMN A	COLUMN B	
3.1 When taking files away from one location to another	A	Bluetooth
3.2 The file … refers to the software that is used to open the file	B	Copying
3.3 You can create … to organise and manage your information	C	Files
3.4 Sharing files to your phone through wireless technology	D	Extension
3.5 Allows the operating system to identify the software to use	E	Type
3.6 The main hard drive of a computer	F	HDMI
	G	C:
	H	Program
	I	Folders
	J	Moving
	K	Name
	L	D:

Activity 4

Consider the screenshot below, of files in a certain folder, and answer the questions that follow.



4.1 Name the file that can be opened in Paint.

4.2 Name the file which, when run, will most likely install a driver.

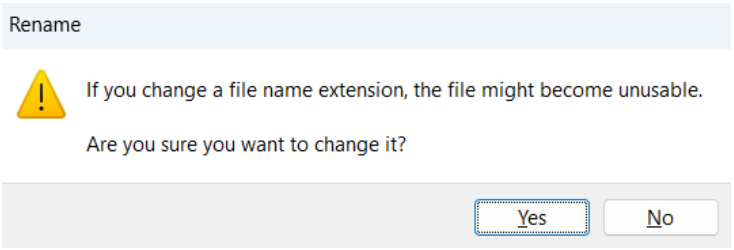
4.3 Name the file that was created by using compression software.

4.4 Name the file that is a web page.

4.5 Name the file that could have been created by making use of a microphone.

Activity 5

5.1 Your sister was renaming a file when the following message appeared:



Explain why changing a file name extension may cause the file to become 'unusable'.

5.2 Suppose that you have to retrieve the file Budget.xlsx in the following location:

F:\Documents\Invoices\January\Budget.xlsx

5.2.1 Give the term used to describe the location of a file.

5.2.2 What do each of the words *Documents*, *Invoices* and *January* represent.

5.2.3 State which program would open, if you double-clicked this file in Windows Explorer.

5.3 Explain what it means to 'zip' a file and give ONE practical reason why you would want to 'zip' a file.

5.4 Your sister has a few questions about shortcuts on her desktop of the computer at school.

5.4.1 Briefly explain what a shortcut on the desktop represents.

5.4.2 Give the general reason why we create these shortcuts.

5.4.3 Your sister copied a Word document as a shortcut to her flash drive so that she can work at home. When she double-clicked the shortcut on her home computer, she received an error message.

Explain to her why this happened, and what she should have done differently.

5.5 Your father received a new laptop computer from his work. He was advised to set up and plan a folder structure.

Give your father TWO tips on how to set up and plan a folder structure.

5.6 Many users are not sure when to use the copy and when to use the cut option when working with files and folders.

5.6.1 Clearly explain the difference between these two options.

5.6.2 The clipboard plays an important role in both the copy and the cut options.

Explain why the clipboard does NOT play a role when you delete a file or a folder.

Solutions File Management

Solution Activity 1

1.1 A file manager provides a user interface ✓ for the user to organise and manage the folders and files on the device. ✓

1.2 Search bar ✓

1.3 A set of data that provides information about a file. ✓

1.4 Check the address bar in the file explorer. ✓

1.5 To easily locate a folder or drive. ✓

Solution Activity 2

2.1 True ✓

2.2 False, Bluetooth ✓

2.3 True ✓

2.4 False, converting ✓

2.5 True ✓

Solution Activity 3

3.1 J ✓

3.2 E ✓

3.3 I ✓

3.4 A ✓

3.5 D ✓

3.6 G ✓

Solution Activity 4

4.1 School.bmp ✓
4.2 Webcam.exe ✓
4.3 Links.zip ✓
4.4 Index.html ✓
4.5 Train.wav ✓

Solution Activity 5

5.1	• The file extension indicates to the operating system what program it must use to open the file. ✓ • Changing the file extension may cause the operating system not to know which program to use to open the file, and try to open it in another / incorrect program, generating an error message ✓
5.2.1	Path ✓
5.2.2	Folders ✓
5.2.3	Excel ✓
5.3	Zipping a file means to make it smaller or compress it. ✓ • To save disk space • To reduce the size of a file you are sending to someone electronically (e.g. via e-mail), in order to save download time / cap / money ✓ *(any one)*
5.4.1	A shortcut is a link to a resource (file or program or hardware etc). ✓
5.4.2	They are useful to quickly access items that you use frequently. ✓
5.4.3	• It happened because the shortcut is just a file that describes the location of the Word document, but is not the document itself. Since only the shortcut was copied, and not the Word document, the document could not be located and an error message was generated. ✓ • She should have copied the Word document to her flash drive, not the shortcut to it. ✓
5.5	• Plan what you would like your basic folder structure to look like. • Identify the main 'categories' under which you would need to save your files. • Keep on refining each folder level. If you find you start having too many files in one folder, you should 'sub-divide' the folder by adding subfolders. • Use meaningful names for your folders and files so that they are easily identifiable. • If you move between computers (say at school and at home) it is a good idea to use the same structure on both computers for ease of use, etc. ✓✓ *(any two)*
5.6.1	• Copy makes a copy of the file / folder, leaving the original one in place. ✓ • Cut also makes a copy of the file / folder, but when you have pasted it in the new location, it deletes the original. ✓
5.6.2	The function of the clipboard is to store objects (temporarily) that are 'waiting' to be pasted, i.e. in copy and cut operations. A deleted object does not need to be pasted anywhere, so it does not go to the clipboard. ✓

Summary of System Technology

Introduction to computers

Computers have changed our lives in many ways, they have enabled us to work smarter and not harder. By using computers, we have entered the ICT phase where we use computer to communicate, and to save us money and time. Today there are many computing devices, from your smartphone and tablets, to the smart appliances in our homes like SmartTv's etc.

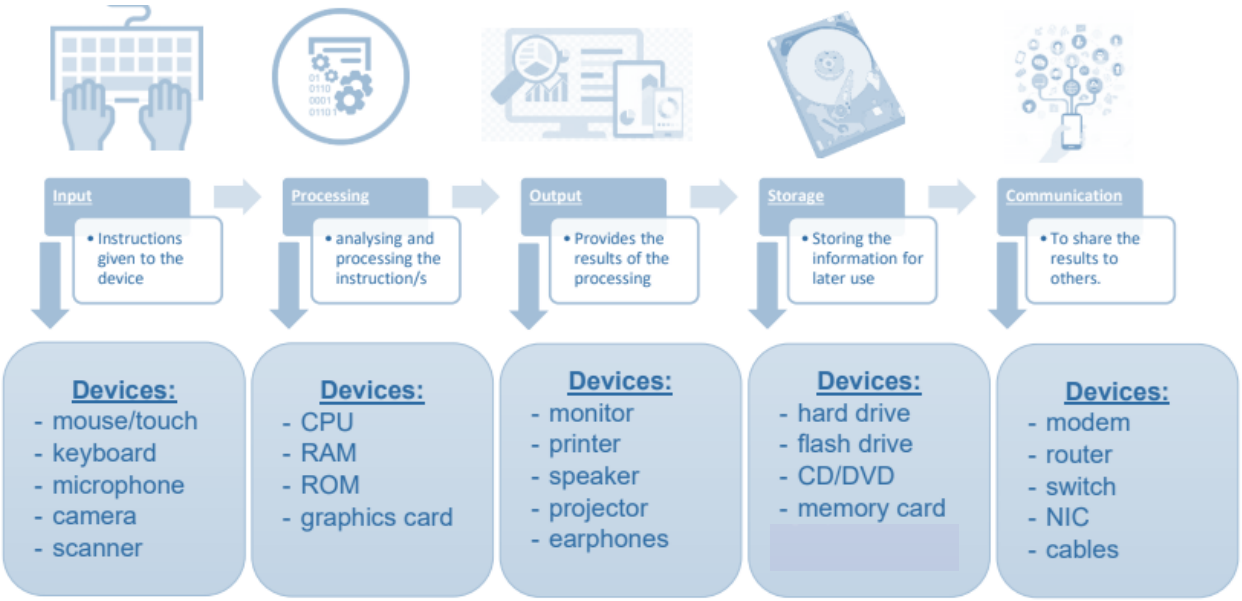
ICT definition and purpose:

- Information Communication Technology.
- Any technology that allows us to manipulate or process data.
- Allows us to transfer and move data.
- Work more accurately and more reliably than people.
- Works faster than people.
- Reduces resources.

General-purpose device vs Dedicated device

	General-purpose Device	Dedicated Device
Definition	A device that can be used for many different purposes.	A device that is used for one purpose/task only.
Example	Laptop / desktop computer / Tablet / Smartphone.	ATM / Washing machine / Microwave / MP3 player.

Information processing cycle



(Image source: Grade 12 CAT Study Guide pg 4)

Different parts of a computer

Hardware: Hardware devices are the tangible parts of the computer, i.e. the parts we can see and touch.

Software: Software is a set of instructions, data or programs used by computer to perform specific tasks and for a user to interact with a device.



Basic parts of a Computer

(Image source: https://informationq.com/about-the-basic-parts-of-a-computer-with-devices/)

ICT incorporates all the sections and parts of a computer system, including the hardware, software to allow us to exchange data and information as well as the user and the processes it uses to run the system.

ICT systems allow us to combine the different sections of the computer to collect, process, store and communicate data and information. We use them daily on our phones, and when we are in the shops and use the POS(Point of Sale) systems for example.



Main features we look for in a POS system are a barcode scanner, keyboard, card machine, screen, mini printer for receipts and cash till.

(Image source: https://jitub.medium.com/cost-and-features-to-develop-a-restaurant-pos-18f9505ea3b)

In the newer technology we see how we can have multiple technologies combined in one device – this is known as *convergence*. Examples are smartphones as they have a phone, computer, GPS, camera etc all in one device.

Information vs Data

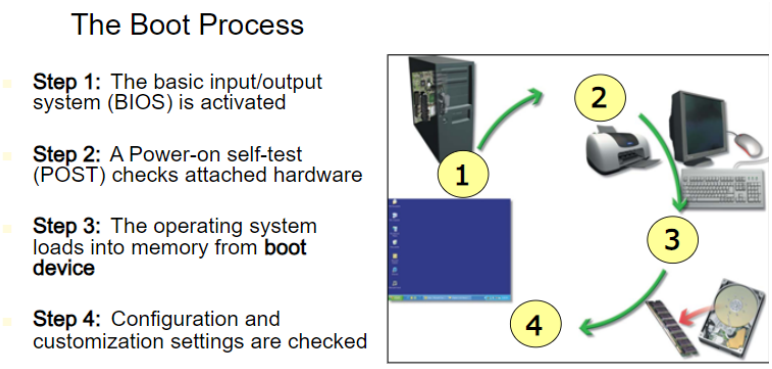
Data is raw facts that have not been sorted, processed or worked on. **Information** is data that has been worked on and been processed (sorting/calculating etc) and there is an outcome, that is information.

For example, data would be your individual term marks per assessment in a subject, but once it is on your report you have an average and that is information, it gives you an indication on how you did in the term.

Computer Management

Starting up a computer

When we push the power button to put the computer on, we initiate the booting process. This does a few checks to ensure we have everything we need to work on the computer. It activates the BIOS system that checks we have all the input and output devices needed, then loads the operating system and we then arrive at the log in screen. See the image below and the QR code for a full explanation.



(Image source: https://slideplayer.com/slide/4595146/)

For more information on **Booting** scan me:

Once we have activated and started the computer successfully, we then log in to the user account with our username and password, some have further authentication processes like a biometric scan or screen lock pattern. This allows us to have security in place to ensure we only allow certain people to access the system.

To ensure we have enough security when we are using a computing device, we have a few security checks put into place that we can count on to keep our data and access to a computer device secure. With so much of our lives happening on mobile devices like smartphones, tablets and laptops, it's no wonder our digital accounts have become a magnet for criminals. They are:

- User account (on the computer) by using a **username and password**. These are not to be shared – as any misconduct committed under your name can be pinned to you.
- We also have the **biometric scan** mentioned above which uses your individual biological features (i.e. finger print, eye, face or voice) to create an impossible password that only you can open.
- We also have the **screen password** or **screen pattern** which is not very secure due to the fact that they can be copied or cracked due to smudges left on the screen etc.
- **Two-way authentication** process which forces us to use an extra level of protection on our accounts to make sure that people trying to gain access to an online account are who they say they are.
  First, a user will enter their username and a password. Then, instead of immediately gaining access, they will be required to provide another piece of information. This second factor could come from one of the following categories:



Image source: https://www.malwarebytes.com/blog/news/2018/09/two-factor-authentication-2fa-secure-seems

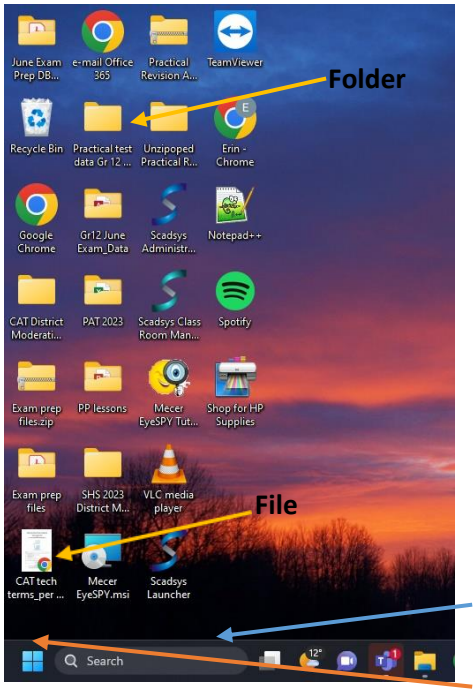
- Something you know: This could be a personal identification number (PIN), a password, answers to “secret questions” or a specific keystroke pattern.
- Something you have: Typically, a user would have something in their possession, like a credit card, a smartphone, or a small hardware token.
- Something you are: This category is a little more advanced, and might include biometric pattern of a fingerprint, an iris scan, or a voice print.

Desktop

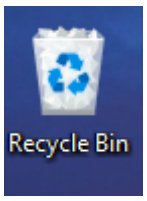
When we are logged in, we are welcomed by the Desktop. The desktop is also known as a GUI – Graphics User Interface. This allows the user to access programs and software directly on the desktop by using the mouse to click and open the applications.

We have many different options that we can use with the mouse:

- Right click – brings up the menu to select from relevant options.
- Left click – select the place of the cursor.
- Double click – open applications.
- Dragging – click and drag to move around the screen.
- Scroll – move up and down the screen.

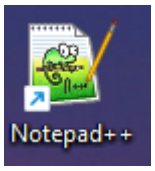


Icon on Desktop



Shortcut on Desktop

Above we mentioned **icons** and **shortcuts** that appear on the Desktop. Icons are the little tiles that you click on to open the utilities shown on the Desktop. Shortcuts have a little curved arrow to show you that they connect to the software on the computer.



On the Desktop screenshot below on the left we also notice that there are **folders** and **files** on the Desktop. Files are individual documents, while a folder is where you would move a number of documents to be in one place. It is used for better file management. When we create files or folders we try and name them appropriately, so we know what we have there when we looking for the files.

On the Desktop we also have a **search bar** where we can type in a name of an application, or a document and it will search for it.

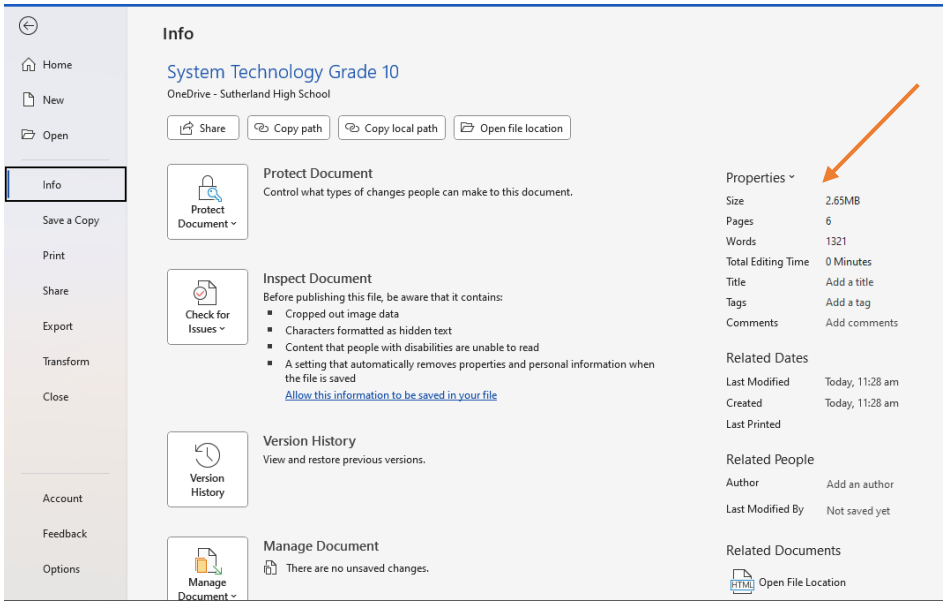
There is a **Windows button/**Menu button which brings up the start menu where you have the list of applications on the computer.

File Explorer or My PC allows us to view our file system we have on the computer, and there we can see our documents and folders we have created.

The **Recycle bin** – this is where our deleted files and applications go once we hit delete. The Recycle bin allows us to have a safety net in case we delete something accidently, and we can then restore that file, by right clicking on it and selecting restore file.

File management is very important – see it like doing some spring cleaning on the documents, it must be done to ensure the computer runs at its full potential. We need to check there are not duplicated files as that could cause a problem with knowing which is the correct one to use. Here we need to check our files by using the information/properties that comes with the file. This extra information about a file is known as **metadata**. We can find out about the file, who created it, when it was created and more.

To view this we need to open the file information which we access in the File tab and select Info and then we can view the properties. The properties show us the metadata of the file. Note the file name of the document at the top of the screenshot, is not the full file name as it does not include the file extension.



File Types

There are many different types of files. To view the full list of file types scan the QR code here.

The file extension are the 3-5 letters that come after the **.** in the file name. It indicates what type of file it is and which program it is intended to open in. You get many different types of files, and the extension are very important. YOU MUST NOT manually change the file extension as it could cause it to corrupt the file, you should rather save the file as another type of file to be able to open it in another program.

To view **file types** scan here

Adding devices

When we use computer devices, we will always end up needing to add a device to our smartphones or computers like a printer or speaker. To do this there are two ways we can: we can do it **wirelessly** by pairing the two devices or connecting it via a **cable** and allowing communication to take place. Both ways need a driver to be installed or found in our operating system. A **driver** is the software used to allow communication to take place between the device we adding and the computer/smartphone.

Many of us have paired devices using Bluetooth/NFC – put your Bluetooth on ensure you allow yourself to be seen by all devices and then pair them using the code to a password. With a cable we plug it in, and sometimes we witness the plug and play system take place, where the driver is pre-loaded on our operating system and we just plug the device in and it works without us having to load a driver. If it does not, we then need to access a driver either from a CD/ memory stick which has the driver on or via the internet to download and access.

Ethical use of ICT

With the use of computer devices we find we doing everything online now adays, from education, to shopping, to our leisure. But we are also finding a new criminal aspect that has evolved. We need to be aware of these influences and ensure we do not fall victim to any of these crimes.

Online we have new challenges that we face like the cyber criminal who works in the dark and no one sees. They can be working from anywhere in the world and so it is very difficult to track and catch them.

The most common crimes we find being committed are:

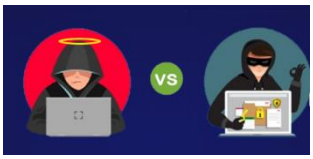
- Software piracy – stealing software and distributing it.
- Identity theft – pretending to be someone else.
- Data theft – when someone uses your data or steals your data and tries to say it is their data.
- Computer time theft – when people are using the company computer to do other things than their work in working hours.
- Fake news – spreading untrue news around.
- Malware – creating and distributing viruses/worms/trojans to cause damage on computers.



(Image source: https://securelist.com/russian-speaking-cybercrime-evolution-2016-2021/104656/)

We also have computer crimes being committed like:

- Scammers using:
  - Phishing – tricking people into giving their information away.
  - Pyramid schemes – tricking people into giving their money away.
  - Fake lottery winnings etc
- Hackers and crackers
  - Hack into company computer networks to commit crimes like money laundry or stealing money from companies.



(Image Source: https://www.syntaxtechs.com/blog/difference-between-hacker-and-cracker)

There is a difference between hackers and crackers. Hackers hack with good intentions to provide protection and security to the data. In contrast, crackers hack the system to break or violate the system for illegal activity.

Hardware

Hardware consists out of the physical parts of the computer – the parts you can touch and see. We have two sections of hardware, the hardware on the outside of the computer like the screen, tower, keyboard and the mouse, and then the parts inside the computer like the RAM, Hard drive and the CPU.

Ports and connections

These hardware components listed above connect to the computer in different ways. Some connect via ports from the outside via the tower like the **USB port** which is the most popular connection, and that is why you will see at least 4 USB ports on a computer or laptop.

Devices like the keyboard, mouse and printers connect using the USB port. We then have **HDMI port** which allows us to connect screens or projectors for higher quality visuals. For our network port or NIC we use the **ethernet port** (LAN port) where we plug in our network cable.

The connectors that allow us to plug different hardware in is known as an **adapter**. They adapt one connection type to another. We also get **convertors** which convert signal from one type to another, for example the HDMI convertors that allow older projector connections (VGA) to work on HDMI port on a laptop.



(Image source: (INPUT OUTPUT PORTS, n.d.))

Input devices

Input devices are devices we use to insert data or information on a computer device. The most popular input device is the keyboard.

We do have two types of input: data which is unprocessed text, numbers, images and audio, and then we have instructions which are programs and commands.

Keyboard

The keyboard as mentioned above is the most popular input device, as it is on all computing devices. Some devices have it is on-screen or touch screen and others it's the physical keyboard. It is the easiest way to enter input/data.

There are also special keys which allow you to use as shortcuts. **F1** - is for help, **Esc** – allows for cancelling action, **Prt scr** – give us a screenshot. We have the **ctrl** and **alt** keys to use to activate other commands on the keyboard like ctrl +V = shortcut to paste.

To improve your keyboarding skills see the QR code here to access an online keyboard tutor.

Scan this to access a keyboard tutor

Mouse

The mouse is the device we use to interact with the GUI (desktop) so we can control and work with the software. The mouse is shown on the screen as a cursor/pointer and allows us to navigate around and activate commands.

Wireless mouse and keyboard: these allow us to be more mobile and be restricted by the length of the cable.

Advantages	Less clutter – no cables
	Wider range of movement
Disadvantages	Need batteries
	More expensive
	Easily stolen
	Can cause interference which stops device from working

Pointing Devices

These devices are used in place of a mouse on the different devices to save space.

Touchpad – rectangular pad that is built in laptop to replace the mouse, sometimes have buttons you can press, else you push on the pad.

Pointing stick – small button found in between the keyboard on a laptop, that you use to move the cursor around the screen.

Pen input device/Stylus – Has a pressure sensitive pad that you can write on or draw more naturally. Used by artists and designers.

Trackball – Looks similar to a mouse but has a large ball that you roll using your thumbs. People with motor control disabilities use it to control their cursor.

Touch screen – Allows direct contact with a device – allows multi-touch which means that two or more fingers can be used at once. Gestures used on touch screens include swiping, pinching, expanding touch and dragging.

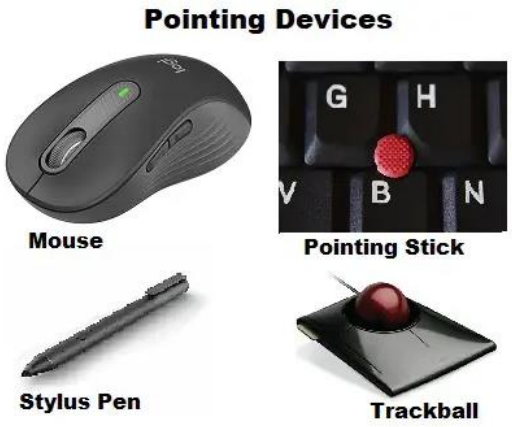


Image source: *https://www.knowcomputing.com/types-function-advantages-of-pointing-device/*

Joystick – used in gaming where there are triggers, buttons and a joystick you can use to manoeuvre while playing games.

Sensors

Sensors are built into devices to automatically collect information and adjust things to make the use of the device more comfortable.

Some sensors we find in our smartphones are:

Accelerometer – detects movement and adjusts the [hones screen from portrait to landscape.

Temperature sensor – detects when the phone is getting too hot and shuts it down to protect it.

Light sensor – adjusts the screen brightness according to the light in your surroundings to make it more comfortable on your eyes.

Compass – can show you directions.



(Image source: *https://www.quora.com/How-many-different-sensors-are-available-inside-a-smartphone)*

Scanning and reading devices

Scanner	Flatbed/Sheet Feed: - Scans hard copies to soft copies (as images) - Need OCR software to convert scanned images into editable document.	
	Advantages	**Disadvantages**
	- Images can be shared	- Needs to be high quality
Biometric	- Uses unique body features to access a device, i.e. acts as a password. - Features include: fingerprint, face, voice	
	Advantages	**Disadvantages**
	- More secure – not easy to hack - Cannot be lost or forgotten	- Cannot access if feature is damaged - Expensive to set up
Barcode	- Reads the code of a product	
	Advantages	**Disadvantages**
	- More accurate - Faster service - Easy to manage stock	- Scan from close proximity - Damaged barcode won't scan

Scanners allow us to capture an image or document via a Flatbed or Sheet fed scanners. We then use OCR software – Optical Character Recognition software which identify the image scanned and identifies which is text and which are images so we can edit the document.

Biometric scanners are devices we use to scan our individual body features like our fingerprint, iris or retina (eye), or facial features or our voice to create a secure password. This is the most secure form of a password as it cannot be replicated.

QR Codes	Quick Response: - Uses a camera and OCR technology to decode - Grouping of black and white squares - 2D barcode (matrix barcode) - Can be used as a shortcut to a website or a link to make a payment	
RFID	Radio Frequency Identification: - Transmits digital data through a receiver and transmitter.	
	Advantages	**Disadvantages**
	- High speed - High accuracy - Multiple reading	- Interference - High cost - Fail to read
NFC	Near Field Communication: - A standard that allows devices to connect wireless by bringing them closer to each other, e.g. sharing files between smartphones.	
	Advantages	**Disadvantages**
	- Power efficient - Measure of security: data can only be collected in proximity	- Not all devices have NCF - Devices need to be very close to collect data
Magnetic readers	- Reads the information on the magnetic stripe located on the back of a card.	

Barcode scanners are what we use to read the barcodes.



QR codes – we use to read the code via a smartphone camera to go to websites or more information on the code.



RFID tag – is used when we chip our animals to be able to track them.

Video and audio input devices

Many people can create video's using a webcam or a video camera, or even their smartphone. Once they have created the video they can transfer it to a computer to edit it via a cable or wirelessly.

Audio files can be made by recording music, editing and adding narration to presentations or simply giving a computer device a command like voice recognition software. To do any of these we use a microphone. Microphones can be built into the device like a laptop or can be connected to a computer via a USB port.

Output

Output is where we can see or hear the results of our processing we have completed. There are different output devices:

- Screen
- Projector
- Printer
- Speakers
- Headphones

Any device outside of the computer that we connect via a cable or wirelessly we refer to as **peripheral devices**. The printer is one of the more popular ones, you can also have scanners as a peripheral device.

When we print out results, we call it a *hard copy* and if we view the results on a screen we call it a *soft copy*.



(Image source: https://www.tutorialsmate.com/2021/05/output-devices-of-computer.html)

Audio output

Sound is one of the most important outputs as we use it to interact with the computer, it "pings" when we do something wrong, it is used by blind or visually impaired users in text-to-speech software and we use it for leisure when we play music or games.

Sound is heard via speakers, or headphones or earphones and the quality of the sound depends on the equipment.

Visual output

To see the results is vitally important, we can see the results of the processing we do on screens or monitors, using a data projector or a visualiser. Depending on how large a crowd of people you are showing the information to, would determine of you need a screen or a projector.

Monitor/Screen



Types	- LCD (liquid crystal display) - LED (light-emitting diodes) - Touchscreens - LCD & LED screen uses less electricity.	
Size	- Measured in inches (19") or (23) - Diagonally from one corner to the opposite corner	
Resolution	- Measured in pixels (1920 X 1080) - Number of pixels vertical X horizontal - Determines the quality of the image	
High Quality Resolution	**Advantages** - Larger picture size - Clear and sharp - Better crop options	**Disadvantages** - Requires high quality lens - Larger file sizes
Aspect ratio	- Common ratios are 4:3/16:9 - Relationship between width X height	
Response time	- Measured in ms (milliseconds) - Time to shift from one colour to another	
Refresh rate	- Number of times your monitor updates with new images	
Contrast ratio	- Common ratio is 1000:1 - Ratio of the darkest vs brightest colours	
Colour depth	- Measured in 32-bit/64-bit - Refers to the number of bits per pixel	
Connections	**VGA** - Video only - Poor quality	**HDMI** - Both audio & video - High quality

(Image source: Grade 12 CAT Study guide pg7)

Data Projector – is used to show the information to a large amount of people. It is connected to the computer and most projectors need to be in a slightly darker room, depending on the lumens of the projector as to how bright is projects.

Visualiser – Allows projection of a live demonstration of a dissection or a maths problem to be shown via a projector to a large group of people.

Multi-function printer – This printer allows us to be able to do multiple functions, namely print, copy, fax/email and scan.

Advantages:

- Saves space – not needing to take up space for four different devices.
- Costs less.
- Uses a single USB connection to connect to the computer.

Printer

Inkjet / Laser / Multi-Function



3D Printer



Types	Inkjet	Laser
Cost	- Expensive to buy - Ink cartridges are cheaper - Cost per page is expensive	- Cheaper to buy - Toner is more expensive - Cost per page is cheaper
Resolution	- Measured in DPI (dots per inch)	
	- Good **photo** quality	- Good **monochrome** quality
Speed	- Slow printing	- Fast printing
Colour	- Uses ink cartridges - Usually used for colour printing	- Uses toner - Usually monochrome
Paper options	- Sizes: A4, A3, A2 - Types: glossy, matte, cardboard	
Printing Capacity	- Refers to the number of sheets that can be inserted in the paper tray (250 sheets)	
Functions	- Multi-functional printer: scan, fax, copy	
Connection Options	- Wireless (Bluetooth/Wi-Fi) - Wired (USB/Ethernet)	
System compatibility	- Refers to the capacity that the printer and the hardware/software should have to function	
3D Printer	- Creates 3 dimensional solid objects by adding consecutive layers of material on top of each other	

(Image source: Grade 12 CAT Study guide pg7)



Printers allow you to choose a default printer which means the default printer is the printer that is closest to you, the one you would print to. To select a printer as your default, go to Control Panel – Printers – right click on the printer you want to have as the default. You know it is selected as a default printer when a tick shows on the printer.

Printer que is created when multiple print jobs are sent to print and they are loaded into a que. You can mange this que by cancelling a print job, pausing a print job or restarting a print job.

Storage

Storage is where we save our documents and work permanently, and we must not confuse this with memory, which is our temporary storage on RAM.

Storage has much bigger capacities (size) than RAM. We can have storage that is on our computer, like our hard drive(HDD) or solid state drive (SSD) or storage which is portable and removeable, like CD/DVD, flash drive or an external hard drive. We can even use our smart phone as storage devices.

Storage is non-volatile meaning it retains what is saved in it even when there is no power to the computer.

Storage device is the hardware we save our work on and is also referred to as drives on the computers, and a *storage media* is the object we save our data on.

One of the storage output devices which is very handy is the card reader – it allows you to read multiple sized memory cards on one device. Some computers have a card reader built into them, others have a slot for a card reader to be inserted.

On the table below we see the different types of storage.

<table>
<tr><td rowspan="8">CAPACITY
8 bits = 1 byte
1024 bytes = 1 kilobyte (kb)
1024 kilobyte = 1 megabyte (MB)
1024 megabytes = 1 gigabyte (GB)
1024 gigabytes = 1 terabyte (TB)</td><td rowspan="3">Hard drive</td><td colspan="2">- Capacity various from 500 GB to 2 TB
- Permanent memory – non-volatile</td></tr>
<tr><td>SSD (Solid-State Drive)</td><td>HDD (Hard Disk Drive)</td></tr>
<tr><td>- More expensive
- Faster than HDD
- More durable</td><td>- Cheaper than SDD
- Slower than SDD
- Easily damaged</td></tr>
<tr><td>Flash disk</td><td colspan="2">- Capacity various from 4 GB to 128 GB
- More durable than CD/DVD</td></tr>
<tr><td>DVD/CD</td><td colspan="2">- Capacity DVD (4,7 GB) / CD (700 MB)
- Easily damaged/scratched</td></tr>
<tr><td>Memory card</td><td colspan="2">- Capacity various from 4 GB to 64 GB
- Used in mobile devices (phone/camera)</td></tr>
<tr><td rowspan="3">Cloud storage</td><td colspan="2">- Allows users to save on the internet</td></tr>
<tr><td>Advantage</td><td>Disadvantage</td></tr>
<tr><td>- Mostly free
- Retrieve data from anywhere</td><td>- Needs internet
- Not secure</td></tr>
</table>

(Image source: Grade 12 CAT Study guide pg6)

Green computing

Using the different computing devices mentioned above in a way that is good for the environment and does not harm it is very important. We need to try and ensure we do not do any more harm but ensure we use computers in an environmentally friendly way.

The most common way to do this is by using devices that use less power. We also can donate older devices to the less fortunate and they then also learn how to use computers, which bridges the digital divide[1] that we have in South Africa.

Another way is by having a paperless environment – this means everything is done electronically, no printing, which saves paper, ink and toner cartridges and trees.
Another way is knowing that e-waste needs special recycling and cannot be thrown away in the normal rubbish bins. Many places have e-waste recycling drop off points.

Tips on green computing:

- Switching off the computers when you are not using them.
- Try printing 2 pages on 1 or back-to-back to save paper.
- Proofread the documents before printing.
- Repair or upgrade computer hardware rather than throwing it away.
- Return ink/toner cartridges to manufacturers rather than throwing it away.
- Refill or reuse cartridges.

Ergonomics

It is very important to ensure that when we use computer devices that we do it without harming ourselves. This practice is known as ergonomics, creating computer devices with the comfort and safety of the user in mind.

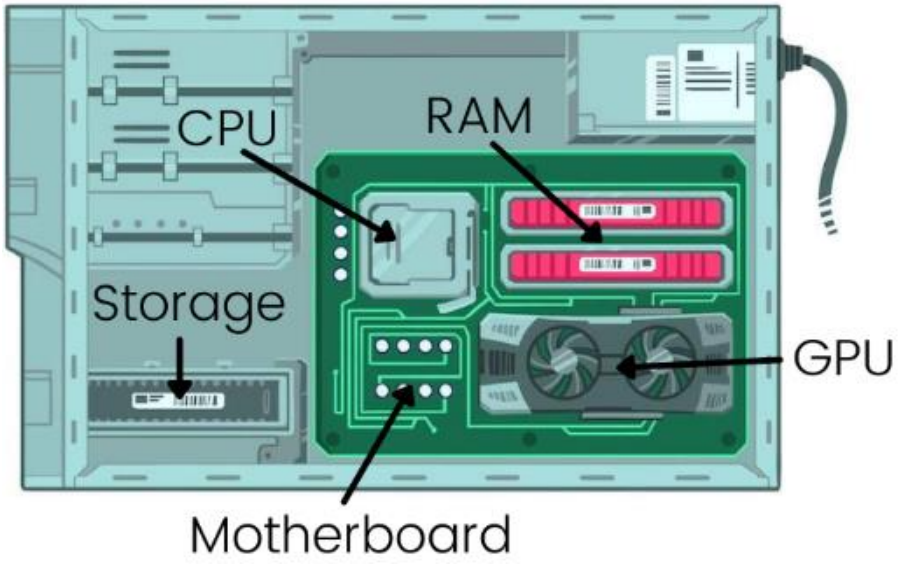
[1] Digital divide is the gap between communities who have computers and know how to use them, and those communities who do not have computers and do not know how to use them.

Tips to use a computer in a safe and comfortable way:

- Keyboards with wrist rests.
- Proper posture – no slouching, sit up straight.
- Height of chair and table must be right for elbows and wrists level with each other.
- Proper ventilation.
- Proper lighting.
- Mouse and keyboard close to each other,
- Monitor positioned correctly and distanced far away enough to not put strain on neck or shoulders.
- Take a break often.
- Look away from the monitor and rest your eyes.
- Use ergonomically designed devices.

Processing

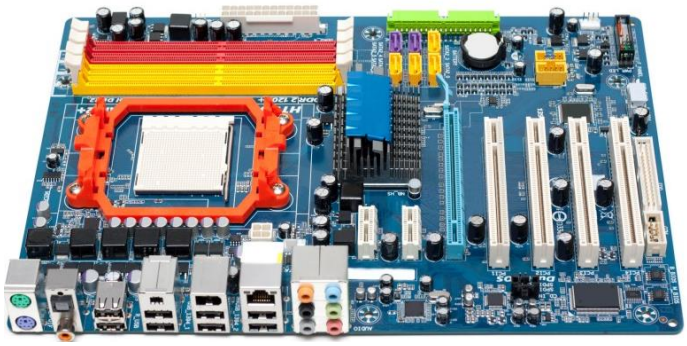
For any processing to take place in a computer we need to have the main components in mind. The image below refers to the basic 5 parts of a computer.



(Image source: https://www.idtech.com/blog/parts-of-a-computer)

Motherboard

The motherboard is the main part of the computer that keeps everything connected. It is a large rectangular board that has circuits soldered onto it to allow for communication to take place. On the motherboard you will find the CPU. RAM, ROM, storage devices and connections for peropheral devices to connect to.



(Image source: https://www.tech21century.com/parts-of-computer-motherboard/)

CPU

This is the brain of the computer. It's speed us how fast it can process instructions in a second and it is measured in Ghz. We can find these cores of a CPU in dual core (means 2 cores) or quad core (means 4 cores). The more cores the CPU has the better and faster is works.



(Image source: https://intelligentcomputing.co.za/product-category/intel-core-i5-gen8-cpu/)

RAM

In computers we get two types of memory namely RAM (Random Access memory) and ROM (Read only memory).

RAM is used when we open up a program, as soon it is loaded into RAM we can then access the software. The more RAM you have the better your computer will perform.

- Keeps current data being worked on.
- Is volatile meaning it needs power to save data in it.
- Also known as DIMM (Dual inline memory module).
- Is fast.
- Is expensive.

ROM holds the instructions for the computer to start up and load the operating system when it switches on.

Software

Software allows us to use the programs on the computer. We get two types of software system software which runs and manages the computer and application software that helps the user perform specific tasks.

There are also accessories that come with our computer like a calculator, calendar, clock, snipping tool and screenshot or cropping tools.

System software

Feature	Description
OPERATING SYSTEM	
Function	- Allows communication between the hardware, system programs and the user - Controls hardware and software - Runs/manages applications (via file extensions) - Provides the user with an interface (GUI): icons, buttons, tabs and drop-down lists
Managing applications	- Control between single user and multi user - Controls multitasking - Provides the Task Manager - Management of files - File types and properties
Examples	- MS Windows - Linux - Mac OS - Apple iOS - Android
DRIVERS	
Function	- Small programs that acts as a translator between the operating system and hardware devices - Providing communication between the hardware device and the computer
Examples	- Soundcard - Display card - Network card - Printer

File Types
File extensions determine the type of file (e.g. docx; mp3)
File Properties
Indicate the size of a file.
Attributes: Read-only/Hidden
Metadata
Additional information of a file.
(e.g. Author, Title, Location)

UTILITIES	
Function	- Designed to analyse, maintain, configure and improve a computer
Examples	
File management	- Managing files and folders by creating, copying and searching - Importing/Exporting and even conversion of files
Updates	- Updates are important as it keeps newest features available - **Scheduled** updates will run automatically (in case a user forgets to make updates)
Disk clean-up	- To clean the hard drive from all the temporary files that are not in use
Defragmentation	- To rearrange fragments of files that are scattered on the hard drive
File compression	- Allows a user to reduce the size of a file – "Zip"
Backups	- A copy of data, files or software saved on a different storage medium and kept off-site on a different location. If the original data gets lots/damaged it can be restored
Coordinate tasks	- Tasks are coordinated in order for problems not to occur. - FIFO (First In First Out), i.e. printing jobs are send to the print spooler and are queued in the order it was sent
Control security	- **Firewall**: hardware or software that stops unauthorized access to the computer. - **Access control**: usernames and passwords - **Anti-malware**: prevents malware like spyware, viruses, worms and Trojans. - **Adware Blocker**: Blocks adds that are part of software.
Anti-virus	- Software designed to stop viruses from entering the system - Scanning removable devices, email attachment and websites for viruses. e.g. Avast!; Bitdefender

(Image source: Grade 12 CAT Study guide pg10)

Application software

Application software is software which help users complete a specific task, and there are different types of application software namely:

Description	Examples
PRACTICAL APPLICATION	
- Applications used to create, edit and design information.	- Word processor, Spreadsheet, Database, Presentation - Photoshop
REFERENCING SOFTWARE	
- Instead of using printed materials such as books, dictionaries, encyclopaedia's	- Google Earth - Wikipedia - Google Translate' - Babylon dictionary
COMMUNICATION SOFTWARE	
- Software used to communicate with anyone anywhere.	- Skype - WhatsApp - Facebook - Email, etc.
DOCUMENT MANAGING SOFTWARE	
- An application used to manage and store documents. - Functions include: Storage, Searching, Indexing	- Windows Explorer - eFileCabinet
WEB BROWSERS	
- An application used to access websites	- Edge - Mozilla Firefox - Google Chrome - Opera Mini

(Image source: Grade 12 CAT study guide pg11)

Using these different applications to create different documents means that we need to have some software that is licensed, and some software is free. The different categories of the software are shown in the table below.

<table>
<tr><td>Stand-alone
vs
Integrated</td><td colspan="2">- Stand-alone software that can "stand on its own"
e.g. Windows 10</td><td colspan="2">- Integrated software is when more than one software is bundled into a package
Advantages:
- Interface is the same
- Installation as a unit
- Data can easily be transferred
- Cheaper to buy than separate options
e.g. MS Office Suite</td></tr>
<tr><td>Freeware
vs
Shareware</td><td colspan="2">- Freeware is provided free of charged
- The full program and features are available for use</td><td colspan="2">- Shareware is provided free of charge, with conditions:
• Only for a period of time (trial)
• With limited features
This is used for a user to see if they would like to buy the software after the trial version</td></tr>
<tr><td>Proprietary
vs
Open-source</td><td colspan="2">- Proprietary software is software you buy, however do not own
- You pay for the rights to use the software. (EULA)
- The source code is never released</td><td colspan="2">- Open-source software is free
Advantages:
- Software can be shared
- Source code can be edited
Disadvantages:
- Little or no support to users
- Not as user friendly
- Compatibility issues</td></tr>
<tr><td rowspan="4">Web-based
vs
Installed</td><td colspan="2">- Web-based applications are accessed via the internet and can be accessed from anywhere anytime</td><td colspan="2">- Installed application that can be access without removable devices or the internet</td></tr>
<tr><td>Advantages</td><td>Disadvantages</td><td>Advantages</td><td>Disadvantages</td></tr>
<tr><td>-No need to install
-Doesn't take storage space</td><td>-Web browser need to be compatible</td><td>-More functions to use
-Doesn't need internet access</td><td>-Must be installed
-Takes up storage space</td></tr>
<tr><td>-Automatically up-to-date
-Accessed from anywhere at any time</td><td>-Needs internet access
-Security risk
-Slower than installed apps</td><td></td><td>-Only on computer where installed</td></tr>
</table>

(Image source: Grade 12 CAT Study Guide pg12)

As mentioned earlier some software have terms and conditions for installing and using them. These conditions are listed in the term and conditions of the EULA (End User License Agreement). Some of these conditions are:

- No copying or sharing the software.
- No changes are allowed to be made.
- Not allowed to be installed on more than one device.

These are the different EULA type agreements:

Single User License	Multi-User License	Site License
•One device only	•More than one device as stipulated by the agreement	•Any number of computers as long as they belong to one company

When we use software, we need to understand the difference between copyright and creative commons.

Copyright is when we refer to the legal right to make copies and publish and sell products.

Intellectual property is what we recognise as an idea someone came up with that they create or work on.

Creative Commons is a non-profit organization and international network that is devoted to educational access and expanding the range of creative works available for others to build upon legally and to share freely. Creative Commons licenses are a set of copyright licenses that enable creators to grant permissions for others to use their work under certain conditions.

Activities System Technology

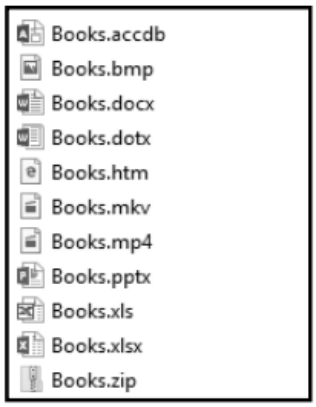
Activity System Technologies

Activity 1

1. a. Explain what a device driver is? (2)
   b. Give TWO ways of finding device drivers? (2)

2. Define the term plug-and-play? (2)

3. A list of files are shown below:



3.1 Which file is a movie file? (1)

3.2 Which file is a Word file? (1)

3.3 Which file is a compressed file? (1)

3.4 Which files are an Excel file? (2)

Activity 2



1.1 This image above refers to a multifunction printer. Name 2 different functions we can do on a multifunction printer apart from printing. (2)

1.2 When we use a printer to ensure we keep “Green computing” in mind, name two things we can put into practice when we print to ensure we keep the environment safe. (2)

1.3 Name two ergonomically design that has been put into placed to ensure that we do not harm ourselves. (2)

1.4 What two tips can we give to the new Grade 10 CAT learners to ensure they work in a safe environment when using the computer? (2)

Activity 3

1. Identify the image below and state the function of this image? (2)



2. Give one advantage of using this code? (1)
3. Give two advantages of using a barcode scanner for inputting large amounts of data for example at the school's tuckshop. (2)
4. Name the software needed to change a scanned image to text? (1)

Activity 4

1. What is an HDD/SSD used for, and state two differences between an HDD and an SSD? (1)
2. What is the main function of RAM? (1)
3. What is the purpose of a CPU? (1)
4. What unit is CPU measured in? (1)
5. Name two types of system software? (2)
6. Name one type of program that would assist visually impaired users? (1)

Activity 5

1. What is the difference between Application software and system software? (2)
2. List TWO examples of system software and list TWO examples of application software. (4)
3. What crime do you commit when you ignore the copyright's on a document? (1)
4. Give a definition of creative commons and an example. (2)

Activity 6

1.1 State TWO disadvantages of wireless keyboards and mouse? (2)

1.2 State TWO kinds of tiles you find on a GUI desktop? (2)

1.3 Name TWO devices that have been created due to convergence? (2)

1.4 PDF is a popular file format.

1.4.1 Give one advantage of using a PDF file format? (1)

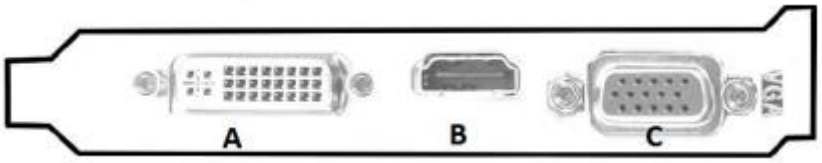
1.4.2 How do you covert an office document to a PDF? (2)

1.5 POS (Point of Sales) is a great ICT device. Name two ways you can input information into the system? (2)

1.6 You buy software and see it has a site license. What does that mean? (2)

1.7 Give two advantages of wireless mouse? (2)

1.8 Ports are an important connections on a computer. Study the picture below and answer the questions that follow.



1.8.1 Name port C. (1)

1.8.2 Name port B. (1)

1.8.3 State two disadvantages of port C compared to port B. (2)

1.9 Different types of memory/storage are often used on a one device.

1.9.1 Give an example of memory that loses its content when the computer is switched off? (1)

1.9.2 You have a digital camera with an SD memory card, and you want to transfer your pictures to you computer. Name TWO ways you can do that? (2)

1.10 Your teacher is using a screen/monitor to show the presentation while she teaches. What output device would you suggest she uses to show her whole class the presentation? (1)

1.11

DESKTOP COMPUTER	TABLET
	
• 2.4 GHz CPU • 8 GB DDR4 • 256 GB Solid State • 4 GB Video Card • 21" Monitor • 4 x USB ports • Integrated 10/100/1000 Network Port • Integrated HDMI port • FHD Webcam, 1920x1080 • SD Card Slot • On-site warranty	• 1300 MHz CPU • 2 GB RAM • 16 GB internal storage • Touch screen • 25.6 cm (10.1") display • Rear camera 8 MP • 4G standard LTE, Wi-Fi • Bluetooth version BT 4.0 • 2G standard, GSM, 4G • SD Card Slot

1.11.1 What is the speed of the faster processor when compare the two devices above? (1)

1.11.2 Why is the tablet more suitable for someone who works on the go? (1)

1.12 Explain what biometric input is and give TWO examples of biometric input? (3)

1.13 What is the main advantage of using biometric input? (1)

1.14 Draw an image to show how we measure a screen/monitor size. (1)

[30]

Solutions System Technology

Solution Activity 1

1. a) Driver is a software program✓ that allows for communication to take place ✓ between the computer and an additional device.
   b) Searching the internet ✓ or on the operating system ✓or a CD/memory stick
2. Plug and play is when you plug a device into the computer ✓and the driver is automatically loaded✓ without you doing anything.

3.1 Books.mp4✓
3.2 Books.docx✓
3.3 Books.zip ✓
3.4 Books.xlx or Books.xlsx✓✓

Solution Activity 2

1.1 Copy / fax/email / scan ✓✓
1.2 Print on both sides of the paper
Proof read before printing
Print 2 pages on 1 page etc ✓✓
1.3 Wrist rests on keyboard
Little lifts on the keyboards etc ✓✓
1.4 Take a break from the computer every hour or so
Look away from the screen to relax your eyes
sit in correct posture
keep mouse and keyboard close to each other etc✓✓

Solution Activity 3

1. QR code and generally used to link to websites for more information. ✓
2. No need to type the URL in
   Less errors are made
   QR code scanners can be downloaded/used for free
   Can store extra information ✓✓
3. Easier and faster than manual methods ✓
   More accurate that human ✓
4. OCR ✓

Solution Activity 4

1. HHD/SSD is used for permanent storage of data and information. ✓
2. Temporary storage of data and instructions. ✓
3. To process the input of data/information. ✓
4. GHz ✓
5. Operating system
   Utility programs✓✓
6. Text-to-speech program
   Speech-to-text program
   Screen reader ✓

Solution Activity 5

1. We get two types of software system software which runs and manages the computer ✓and application software that helps the user perform specific tasks. ✓
2. System Software – Windows, Linux ✓✓
   Application Software – Word, Excel, Access, Power point ✓✓✓
3. Piracy ✓
4. *Creative Commons* is a non-profit organization and international network that is devoted to educational access and expanding the range of creative works available for others to build upon legally and to share freely. Creative Commons licenses are a set of copyright licenses that enable creators to grant permissions for others to use their work under certain conditions. ✓✓

Solution Activity 6

1.1 Can be stolen easily
Needs batteries
Can have interference and loose signal ✓✓

1.2 Icons ✓ and shortcuts ✓

1.3 Smartphones ✓ and laptops ✓

1.4.1 Small file size – easy to email ✓
Easy to access people do not need to download specific software to open the file ✓

1.4.2 Save the file as PDF
Export it to a PDF

Print to PDF ✓✓

1.5 Barcode scanner or keyboard ✓✓

1.6 Site license means there is no limit to how many computers you load it onto as long as the computers all belong to the company who bought the license. ✓✓

1.7 Less clutter
More flexible in moving around ✓✓

1.8.1 VGA ✓

1.8.2 HDMI ✓

1.8.3 HDMI can have both sound and picture✓ in one cable where VGA only is picture. ✓

1.9.1 RAM ✓

1.9.2 Card Reader ✓ or via cable ✓ that is connected to computer.

1.10 Data projector ✓

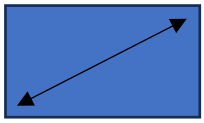
1.11.1 2.4 GHz ✓

1.11.2 More mobile as it has a battery ✓ and smaller and easier to transport around. ✓

1.12 Biometric input is using our own unique body features ✓to create passwords or security. We can use our fingerprints, eyes, palm or face. ✓✓

1.13 It cannot be replicated or guessed like passwords. ✓

1.14 Measure it corner to corner to find out how many inches it is. ✓



Summary of Network Technologies

What is a Computer Network?

A network is formed when two or more computers and other hardware devices (switch, router, hub) are connected together through a communication medium to share electronic communications and hardware with various users.

Advantages and Disadvantages of Networks

Advantages	Disadvantages
• Allows for people/devices to communicate with each other. • Data and information can be easily shared. • Allows for sharing of single hardware devices, such as, printers and scanners. • Software can be easily installed or updated from one central location. • Data and information can be saved in one place, for example a server.	• One can be a victim of cybercrimes, such as identity theft, credit-card theft and scams. • Malware can easily be transferred from one computer to another through the network. • People can try to access private and restricted information using the network. • A network administrator has control over the network, and administers and manages usage.



https://www.n-able.com/blog/how-to-design-a-network

Reasons for using a Network

- Sharing of resources, such as software, files and hardware.
- Allowing for people to communicate with each other.
- Organisation of information and the accessing of information from a central location.
- Access to entertainment.

Basic Network Terminology



Network Administrator

- People that are part of a technical support team, and who can modify and change the network according to the organisation's needs. The administrator can, for example, remove computers from the network and restrict access to users, preventing them from having access to confidential information.



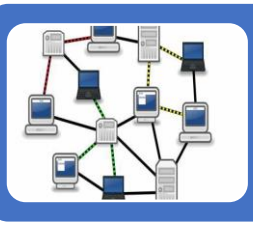
Server Computer

- Provide resources and services to client computers.



Client Computers

- Utilise the resources and services provided by servers.



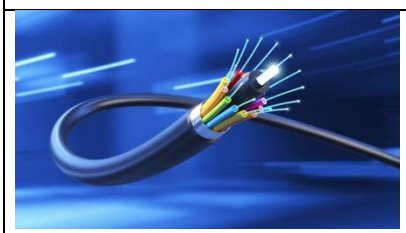
Nodes

- Computers connected in the network.

Communication Media

A **wired** network is a common type of network and uses ethernet cables, or fibre-optic cables to transfer data between computers that are connected to the network.

Wireless networks allow many devices to connect to the same internet connection, as well as to share files and other resources. It refers to a network where the devices are connected via radio- or microwaves, and not through physical cables.

Fibre optic cables	Unshielded Twisted Pair	Wireless connectivity
		

Types of Networks

Personal Area Network (PAN)

Refers to a network that is built for a single person and contains all the devices connected to the network, for example, Bluetooth

ADVANTAGES	DISADVANTAGES
Easy to use: It is easy to use and no complicated setup is required. **Portable:** You can move these devices easily as they do not have a whole bunch of wires that come with them. **Reliable:** This type of network is reliable and stable for the devices within ten metres of the network. **Secure:** Files and information shared on this network can only be accessed by authorised people. **Synchronisation:** You can synchronise as many computing devices, where you can download, upload, or exchange information between the devices.	**Costly:** PAN only makes use of digital devices, and these types of devices are expensive, for example, laptops, smartphones, smartwatches and many more. **Slow data transfer:** The use of Bluetooth to transfer files has a slow transfer rate compared to other types of networks, such as LANs. **Health issues:** In some instances, PAN uses microwave signals in digital devices that can have a negative effect on the human brain and body.

Home Area Network (HAN)

A Home Area Network is a small network that usually covers a single home or home office.

ADVANTAGES	DISADVANTAGES
Accessibility: Allows several users to be connected to the same internet connection. **Resources:** Resources, such as printers, faxes and files can be shared over the same network. **More economical:** Because several users can use the same hardware and internet, this reduces the costs of these things.	**Internet:** Sometimes, if someone is downloading a big file from the internet, this can slow down the internet speed drastically for other users. **Security:** Sometimes, if your home network is not secure, a person that lives close by can have access to files and folders on your network, so a password is necessary. **Costly:** Buying all the equipment required, depending on the number of computing devices that must be connected to the home network, could be costly.

Local Area Network (LAN)

Local area network (LAN) or wireless local area network (WLAN) cover small geographic areas such as schools, office buildings and university campuses.

Wide Area Network (WAN)

Wide area network (WAN) covers a big geographical area or connects more than one LAN in different places, for example, cities or buildings, into one big network.

Network Equipment

Modem Hardware device that allows network devices to connect to the internet	
Switch Allows multiple devices on a network to communicate with each other	
Router A device that connects network to other networks wirelessly or through cables.	
Wireless Access Point (WAP) These points allow devices to connect to a wireless network without cables. It can also give useful data about the devices on the network.	

Internet Service Providers (ISP)

An ISP provides businesses and individuals with internet services such as, internet access, for a monthly fee. ISPs have fast, permanent connections to the internet. Examples include: MWeb, TelkomSA, Internet Solutions, Cell C and VOX telekom.

Advantages	Disadvantages
If cables are stolen, no additional costs will be added.	ISP manages all connections.
Installation/Maintenance is done by the ISP.	Data Cap or line speed changes need to be done in-store.
ISP offers regular support with any internet issues.	Not all areas are covered by the ISP.

Obtaining Internet access

To connect to the internet, you need to have:

- an internet service provider (ISP)
- a modem/router

The modem/router is what connects your device to the internet. You can connect your device to the modem/router using an Ethernet cable or Wi-Fi.

- If you are using an Ethernet cable, plug one end of the cable into the Ethernet port on your device and the other end into the Ethernet port on your modem/router.
- If you are using Wi-Fi, you will need to connect your device to your modem's Wi-Fi network. To do this, go to your device's Wi-Fi settings and select your modem's/router's Wi-Fi network. You will then be prompted to enter the Wi-Fi password.





Hardware and Software needed to obtain Internet access

Hardware	Software
• Modem/Router • Switch • Communication media	• Internet browsers: Software used to access and view websites. Examples include Google Chrome and Internet Explorer. • Email programs: Software used for emailing. Examples include Outlook and Gmail. • Operating system: Software that provides the user interface and manages system resources. Examples include Windows and Mac OS. • TCP/IP software: Software that enables communication between different systems. TCP/IP is the standard protocol suite for the internet.

Basic security and privacy issues

Common network vulnerabilities:

- Improperly installed hardware or software.
- Operating systems or firmware that have not been updated.
- Misused hardware or software.
- Poor or a complete lack of physical security.
- Lack of good password management
- Design flaws in a device's operating system or in the network.

Network Security Attacks

- **Data Theft:** Data theft refers to when an attacker uses their unauthorized access to obtain private information from the network.
- **Malware Attacks:** A malware attack occurs when malicious software (malware) inserts unwanted software onto a network device. Malware can easily spread from one device to another.
- **Password Attacks:** Any type of attack that involves someone attempting to use a password illegitimately is considered to be a password attack.

Network Security Solutions

- **Antivirus Software:** Antivirus software can be installed on all network devices to scan them for malicious programs.
- **Encryption:** If data is intercepted or seen by an unauthorized user, they are unable to read it by encrypting the data.
- **Firewalls:** Firewalls are a software program, hardware device or combination of both that blocks unsolicited traffic from entering a network.
- **Multi-Factor Authentication:** Users must provide two separate methods of identification to log into an account (for instance, typing in a password and then typing in a numeric code that was sent to another device).

Activities: Network Technologies

Activity 1

Question 1: Multiple-choice Questions

Various options are given as possible answers to the following questions. Choose the answer and only wire down the letter (A-D) next to the question number, for example, 1.3 C

1.1 Which ONE of the following roles does a computer take on when it connects to a server to use resources?
A. Client
B. Firewall
C. Server
D. Wearable device (1)

1.2 Which ONE of the following is a company that provides internet services such as internet access?
A. IP
B. HTML
C. HTTP
D. iSP (1)

1.3 How can a group of friends access the internet simultaneously from their portable devices if only one of them has airtime or data?
A. WiFi
B. Router
C. Mobile Hotspot
D. Bluetooth (1)

1.4 Which of the following technologies use radio waves to transfer data
A. WiFi
B. Ethernet
C. Fibre optic cables
D. STP (1)

1.5 Which of the following is component in each computer that makes it possible to connect to a network?
A. UPS
B. NIC
C. AUP
D. UTP (1)

[5]

Question 2: True and False Items

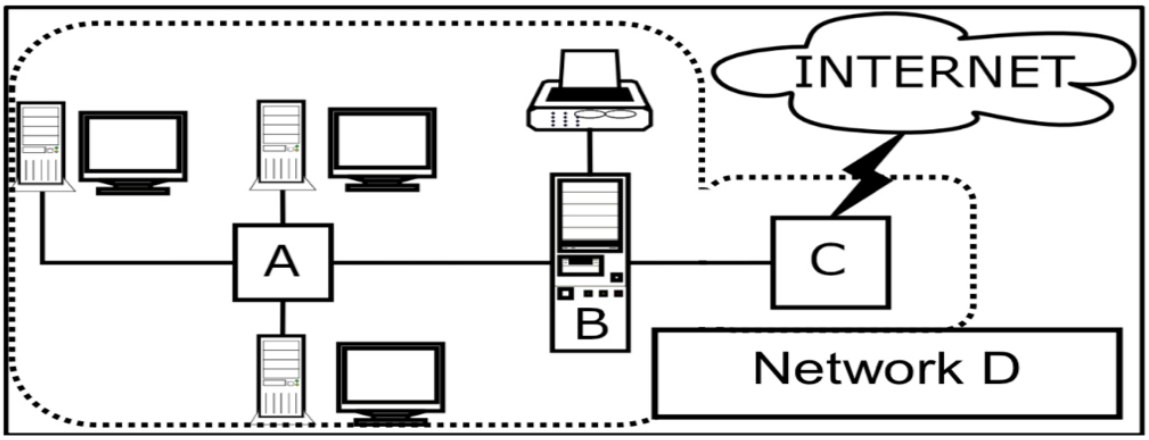
State whether the following statements are TRUE or FALSE. Correct the statement if it is FALSE by changing the underlined word(s) to make the statement TRUE. For example, 2.3 False, SSD

2.1 A <u>smartphone</u> can be used as a Wi-Fi Hotspot. (1)

2.2 A <u>HAN</u> is a network that covers a small area around an individual, for example, Bluetooth. (1)

Question 3:

3.1 Identify devices A, B and C in the network diagram (3)



Total: 10 marks

Activity 2

Answer the following questions:

1. State FOUR advantages of using a network. (4)
2. Compare the functionality of a switch and router in a network. (2)
3. Give a general term/acronym for a network that covers a small area such as a home. (1)
4. State TWO disadvantages of using Bluetooth to connect devices in a network. (2)
5. What does LTE stand for? (1)

Total: 10 Marks

Activity 3

Study the following case study and answer the questions that follow.

Computer Networking: Demand of Today's Competitive Corporate World

Nowadays, computer networking is one of the most sought-after career fields. In today's corporate environment, computer network has emerged as an essential tool. In simple terms, computer networking involves connecting two or more computers with an intent to share resources. Whether, one wants to share resources in a business, across corporation or internationally, networking makes it easier to perform this task just at the click of a mouse.

On the matter of fact that computer network has made the lifestyle of many very smooth and easier, there are certain downfalls of networking. Various hackers may try to hack the important files and information from computer networks.

https://www.ipl.org/essay/Computer-Networking-Case-Study-PJYE6UCKGG

1. Why can we consider a computer network as an essential tool in the corporate world? (2)

2. Name TWO hardware items needed to set up a computer network, besides a computer itself (2)

3. What role does a server computer play in a network? (2)

4. Name TWO communication methods that can be used to connect computing devices to a network. (2)

5. According to the article, what is the biggest downfall of networking? (1)

6. What is the name of the cable that connects the internet backbone? (1)

Total: 10 marks

Consolidation Activity

Question 1:

Various options are given as possible answers to the following questions. Choose the answer and only wire down the letter (A-D) next to the question number, for example, 1.3 C

1.1 A HAN is a…
- A. Network that operates in a large area, such as across a country
- B. Network built for a single person connecting all the devices
- C. Very small network that usually covers a single home
- D. Network that operates in a small area, such as a house, school or office (1)

1.2 Sharing of resources is one of the aims and objectives of a network.
- A. True
- B. False
- C. Neither of the above (1)

1.3 .. allows computing devices to connect to a wireless network without cables

- A. Wireless Access Point
- B. Ethernet
- C. Fibre optics
- D. Switch (1)

1.4 Which of the following devices is most likely to have a built-in network adaptor?
- A. Microwave
- B. Smart Refrigerator
- C. Sewing Machine
- D. Washing Machine (1)

[4]

Question 2:

Answer the following questions:

2.1 Define the term Computer Network. (2)

2.2 List TWO disadvantages of using a network. (2)

2.3 What is a PAN? (1)

2.4 List ONE advantage and ONE disadvantage of a PAN. (2)

2.5 Give ONE advantage of a HAN. (1)

2.6 Mrs Radebe, Ntando's mom, is an Accountant that works from home. She has three other children. The family always have to go to Mrs Radebe's office to print documents or even just to use the internet.

You recommended they set up a network. What type of network is best suited in this context? Motivate your answer. (2)

2.7 Ntando has a laptop with the Windows 11 operating system installed on it. He has the Mozilla Firefox browser installed on on his computer. He wishes to connect his computer to the internet. He already has an internet connection line with a popular ISP.

What additional hardware device, other than his computer, does Ntando need to connect to the internet? (1)

[11]

Question 3

Identify the following network items and provide the purpose/function of each:

3.1



(2)

3.2



(2)

3.3



(2)

3.4



(2)

[8]

Question 4

Read the following article and answer the questions that follow:

Nhlanhla Dlamini from Tembisa in Gauteng – accused rapper Refiloe Phoolo (Cassper Nyovest) of stealing his song Baby Girl.

Dlamini claimed the song sounded like a track he had released way before Nyovest. He said he had sent a sample of the track to Nyovest last year, but the hitmaker's representatives did not acknowledge receipt of his email.

https://www.news24.com/news24/give-unknown-musos-the-credit-they-deserve-20170908

4.1 What is the general term called when presenting work or ideas from another source as your own, without full acknowledgement of the original creator (1)

4.2 Do you think the term referred to in question 4.1 is a crime worthy of punishment? Motivate your answer (2)

[3]

Total: 25 marks

Solutions: Network Technologies

Activity 1

Question 1: Multiple-choice Questions

1.1	A ✓	(1)
1.2	D ✓	(1)
1.3	C ✓	(1)
1.4	A ✓	(1)
1.5	B ✓	(1)
		(1)
		[5]

Question 2: True and False Items

2.1	True ✓	(1)
2.2	False – PAN/Personal Area Network ✓	(1)

Question 3:

3.1 A – Switch ✓
B – Server ✓
C – Router ✓ (3)

Total: 10 marks

Activity 2

2. **FOUR advantages of using a network:** ✓✓

- Allows for people/devices to communicate with each other.
- Data and information can be easily shared.
- Allows for sharing of single hardware devices, such as, printers and scanners.
- Software can be easily installed or updated from one central location.
- Data and information can be stored in one place, for example a server (2)

2. A **switch** allows for multiple devices to connect to a network✓, whereas, a **router** connects a network to another network, such as the Internet ✓ (2)

3. HAN/Home Area Network ✓ (1)

4. **TWO disadvantages of using Bluetooth to connect devices:** ✓✓
   - Slower compared to other wireless technology like WI-FI and LAN with optic fibre.
   - Have a small data range of up to 50 meters.
   - Can have security issues while data is transferring.
   - Have lower bandwidth.

   (2)

5. LTE stand for Long Term Evolution ✓ (1)

Total: 10 Marks

Activity 3

.

1. When TWO or more computers are able to share resources. ✓ (2)

2. **TWO hardware items needed to set up a computer network, besides a computer itself:** ✓✓

   - Router/Modem
   - Switch (2)

3. The role of a server is to provide resources and services to client computers. ✓✓ (2)

4. **TWO types of communication methods/media are:**

   Wired (Cabled) ✓
   Wirelessly ✓ (2)

5. The biggest downfall of networking is that a network is prone to hacking/cyberattacks ✓ (1)

6. The backbone of the internet uses fibre optic cables ✓ (1)

Total: 10 marks

Consolidation Activity

Question 1:

1.1 C ✓ (1)
1.2 A ✓ (1)
1.3 A ✓ (1)
1.4 B ✓ (1)
[4]

Question 2:

2.1 A network is formed when two or more computers and other hardware devices (switch, router, hub) are connected together through a communication medium to share electronic communications and hardware with various users. ✓ (2)

2.2 **TWO disadvantages of using a network** ✓✓

- One can be a victim of cybercrimes, such as identity theft, credit-card theft and scams.
- Malware can easily be transferred from one computer to another through the network.
- People can try to access private and restricted information using the network.
- A network administrator has control over the network, and administers and manages usage (2)

2.3 Personal Area Network/PAN ✓ (1)

2.4 **ONE advantage of a PAN** ✓

- it is easy to use and no complicated setup is required.
- You can move these devices easily as they do not have a whole bunch of wires that come with them.
- This type of network is reliable and stable for the devices within ten metres of the network.
- Files and information shared on this network can only be accessed by authorised people.
- You can synchronise as many computing devices, where you can download, upload, or exchange information between the devices.

ONE disadvantage of a PAN ✓

- PAN only makes use of digital devices, and these types of devices are expensive, for example, laptops, smartphones, smartwatches and many more.
- The use of Bluetooth to transfer files has a slow transfer rate compared to other types of networks, such as LANS.
- In some instances, PAN uses microwave signals in digital devices that can have a negative effect on the human brain and body. (2)

2.5 **Any ONE advantage of a HAN** ✓

- Allows several users to be connected to the same internet connection.
- Resources, such as printers, faxes and files can be shared over the same network.
- Because several users can use the same hardware and internet, this reduces the costs of these things. (1)

2.6 HAN/Home Area Network. ✓

A HAN is a small network that covers an area such as someone's house. It is ideal for a home environment where all members need access to resources such as printing or using the internet ✓ (2)

2.7 Router✓ to be able to connect to the internet. (1)

[11]

Question 3

3.1 Router ✓ Allows for a network to connect to other networks, such as the Internet ✓ (2)

3.2 Switch ✓ Allows for multiple devices to connect to a network. ✓ (2)

3.3 Wireless Access Point ✓ Allows for devices to connect to a network wirelessly. ✓ (2)

3.4 UTP/Ethernet Cable ✓ A type of communication method/media used to transfer data in a network. ✓ (2)

[8]

Question 4

4.1 Plagiarism ✓ (1)

4.2 Yes, ✓ because it is stealing someone else's work and presenting the work as your own without acknowledging the original creator. ✓ (2)

[3]

Total: 25 marks

Summary of Internet Technologies

What is the Internet?



The internet is a world-wide network that consists of computers that are connected to each other. These networks connect with each other using cables, telephone lines and communication satellites. The Internet is an example of a Global Area Network (GAN)

An IP (Internet Protocol) Address is a unique number that is provided to all devices that are connected to the internet.

Internet Service Providers (ISP)

An ISP provides businesses and individuals with internet services such as, internet access, for a monthly fee. ISPs have fast, permanent connections to the internet. Examples include: MWeb, TelkomSA, Internet Solutions, Cell C and VOX telekom.

Advantages	Disadvantages
If cables are stolen, no additional costs will be added.	ISP manages all connections.
Installation/Maintenance is done by the ISP.	Data Cap or line speed changes need to be done in-store.
ISP offers regular support with any internet issues.	Not all areas are covered by the ISP.

The World Wide Web (WWW)

The World Wide Web is part of the internet. It is a collection of websites and webpages that are hyperlinked to each other

Websites	A collection of web pages that can be accessed under the same web address.
Web pages	An interactive document that consists of text, graphics, animation, etc.
Web server	A computer that hosts a website,
Web master	A person who develops and maintains websites
Hyperlinks (Links)	A word or phrase on a web page that is blue or underlined in blue. Links are used to navigate.
HTTP	Hypertext Transfer Protocol (HTTP) is a method for transporting information between a client, such as, a web browser and a web server.
HTML	Hyper Text Markup Language is a markup language for creating Web pages. HTML describes the structure of a Web page. There are other languages that can be used for formatting and interaction, such as CSS, JavaScript, etc.

Web browsers and Search Engines

Web browser	A web browser is a type of software that lets you browse websites or web pages.	
Search engine	A website or web page that allows users to search for what they are looking for	

Techniques for successful searching

- Decide exactly what you want to find, omit unnecessary words by placing a hyphen in front of the word.
- Identify keywords
- Use synonyms if necessary
- Use advanced search options
- Use quotation marks (“ ”) before and after the search words. For example, if you search for “Amapiano songs”, the search results will only have songs about the Amapiano genre.

URLs

Uniform Resource Locator (URL)

Refers to a unique address given to each webpage on the internet. The URL tells the internet exactly what page you want to see on a website.

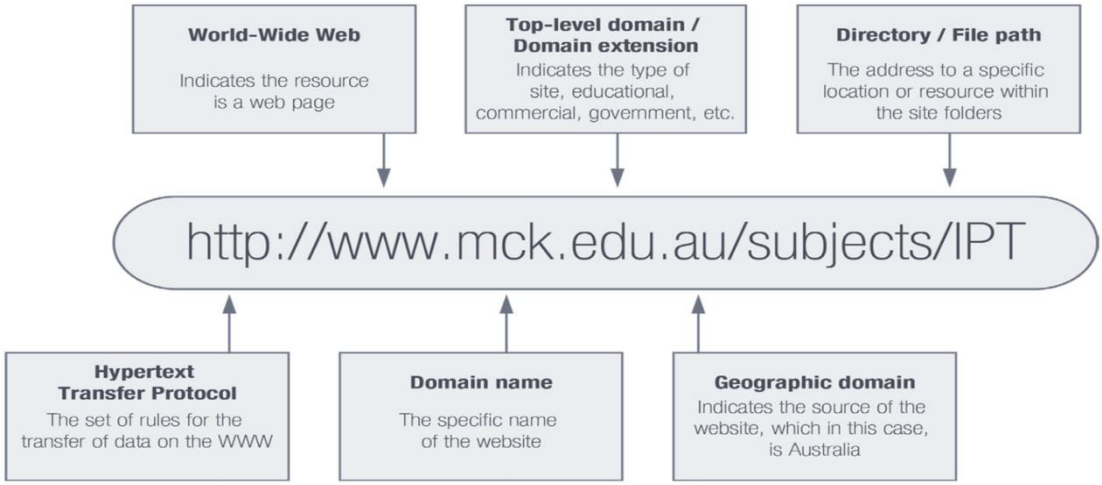
URL Shortener

A URL shortener is an online application that converts a normal URL into a much shorter format.

Scan the QR code to use a free URL shortener.

The Address Bar

The following is the format of a URL:



Examples of types of organisations/domain extensions:

.com	Any type of organisation (used to be Commercial)
.co	Company
.ac	Academic institutions
.org	Non-profit Organisation
.net	Network providers
.edu	Education
.gov	Government
.biz	Business

Examples of geographical domains

.za	South Africa
.uk	United Kingdom
.us	United States of America
.au	Australia
.cn	China
.zw	Zimbabwe
.ls	Lesotho
.dk	Denmark
.ae	United Arab Emirates
.in	India

Navigation Buttons

Navigation buttons are found on the web browser and allow you to perform various actions. The arrow buttons, which are called the back and forward buttons, let you go to the websites that you have recently visited. If you click and hold on one of the buttons, you can view the recent browsing history.

https://www.groovypost.com/google-chrome/



Tabbed browsing

Allows one to open more than one web page in one browser window.



https://www.pcmag.com/encyclopedia/term/tabbed-browsing

Downloading and Uploading

Downloading refers to the transmission of a file from one computer to another. When downloading a file, one requests it from another computer.

Uploading refers to the process of moving files from your computer and placing them on a server so that other people can see them.

SCAN ME

Internet Communication

E-Communication

Electronic communication refers to any data, information, words, photos, emojis and symbols that are sent electronically to one or more people.

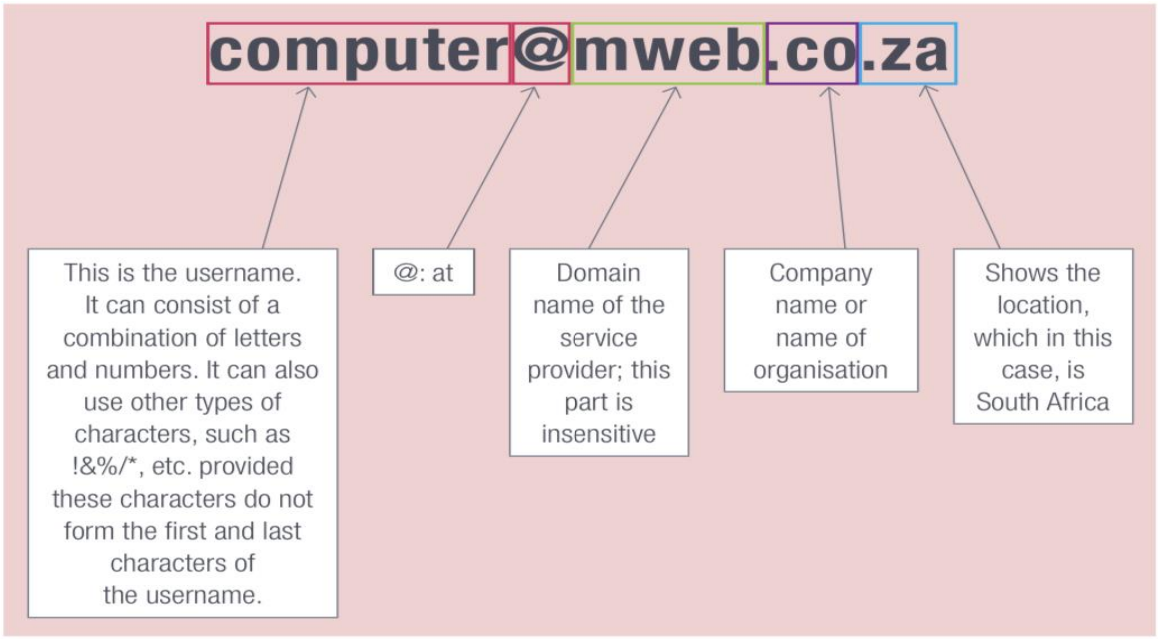
Examples include:

- Instant Messaging (WhatsApp Messenger, Twitter DMs, etc)
- Social Networking Sites (Facebook, Instagram, etc)
- Emailing services
- Voice Over Internet Protocol (Ms Teams, FaceTime, Skype, Zoom, etc)
- Weblogs
- Fax-to-email

Emailing as a form of e-communication

Email is a way of communicating electronically with other people using computers or other devices that can connect to the internet. You also need an email app that lets you do things like send, receive, forward and reply to email messages. With emails, you can also attach files, such as documents, photographs and even videos (restricted to a certain data cap).

Taxonomy of an email address:



ISP versus web-based emails:

ISP email is provided by your internet service provider and your email resides on the ISP's servers. To check your emails, you will need to configure an email client to connect to the ISP mail server and download your messages.

Web-based email is usually free and can be accessed from any device that is connected to the internet. Examples include Gmail, Hotmail, and Yahoo.

Etiquette in emails:

- Do not spam people at work, your friends or family with unwanted email messages or chain emails. Spam refers to unwanted or irrelevant messages that are sent over the internet or through emails.
- Make sure that when writing emails, they are clear and to the point. Also make sure that they do not contain spelling and grammatical errors.
- Make sure the subject line is clear so that the recipient knows what the email is about.
- Always say who and what you are at the beginning of the email and add a signature with your phone number at the end of the email.
- Let the recipient know right away if any action is required from his or her side. You can do this by marking emails that do not require any action with "FYI" in the subject line.
- Do not type emails in capital letters as it gives the recipient the idea that you are shouting.
- Exclamation marks: Avoid using exclamation marks or if really needed, use them sparingly. The use of exclamation marks sends a message to the recipient that you are demanding.

Social Issues

Cybercrime Threats

Type	Definition
Virus	A computer virus is any program that infects a user's computer and acts in a way that will harm users without their knowledge. Users do not install viruses; viruses spread automatically, without the users knowing about them.
Trojan	A Trojan horse pretends to be a useful piece of software. However, once you install it, the Trojan horse infects the computer and can damage it in many ways.
Keylogger	Records every key you press on the computer and sends the information to a hacker on the internet. This allows the hacker to easily figure out your internet usernames and passwords.
Computer Worms	A worm is a type of virus that can travel from one computer to another computer, without any human interaction.
Hoax	Hoax warnings are passed on by users who think that they are helping other people by spreading the warning. The most common virus is the "email hoax". The email will probably notify the recipient that there is a new destructive virus and that they should pass on this email to everyone in their address book. This results in thousands of unwanted emails that overload the system.
Phishing	Phishing tries to obtain sensitive information (such as usernames, passwords and banking details) by sending emails to users that look like official emails.
Pharming	Creates an official-looking website that requests sensitive information. A very common pharming attack allows users to "change" their passwords. Instead of changing their

	passwords, the user's username and password are recorded and their account is taken over
Ransomware	Ransomware is a malware designed to deny a user or organisation access to files on their computer. By encrypting these files and demanding a ransom payment for the decryption key

Computer crimes

Type	Description
Data theft	Data theft is caused due to a third-party gaining access and using your internet connection without your knowledge.
Hotlinking	Hotlinking is when someone takes a file or video from their website and links it to your website.
Identify theft	Identity theft is when someone uses another person's personal information, such as, their name, ID number, or card details, without their permission, for malicious intentions.
Information theft	The act of cybercriminals committing fraudulent activities and accessing personal information through hacking into someone's computer files.

Digital Citizenship

Digital citizenship refers to the responsible use of technology by anyone who uses computers, the Internet, and digital devices to engage with society on any level.

Digital Footprint

A digital footprint is a unique data trace of a user's activities, actions, communications or transactions in digital media. This data trace can be left on the internet, computers, mobile devices or other mediums. Almost every online activity leaves some form of digital trace. A digital footprint is the trail of data that you intentionally or unintentionally leave behind while using the internet.

Your digital footprint can be used to track your online activities and devices. It can determine your digital reputation which is now considered as important as your offline reputation. Employers can check their potential employees' digital footprints, particularly their social media, before making hiring decisions. Colleges and universities can check their prospective students' digital footprints before accepting them too.

POPI Act

The Protection of Personal Information Act 4 of 2013 (POPIA) is South Africa's data privacy law. It governs when and how organizations collect, use, store, delete and otherwise handle personal information.

The act aims to:

- promote the protection of personal information processed by public and private bodies
- to introduce certain conditions so as to establish minimum requirements for the processing of personal information
- to provide for the establishment of an Information Regulator to exercise certain powers
- to perform certain duties and functions in terms of this Act and the Promotion of Access to Information Act, 2000
- to provide for the issuing of codes of conduct; to provide for the rights of persons regarding unsolicited electronic communications and automated decision making
- to regulate the flow of personal information across the borders of the Republic

Activities: Internet Technologies

Activity 1

Answer the following questions:

1. What is the internet? (1)
2. What does the acronym IP stand for in IP address? (1)
3. What is the WWW? Do no simply just expand the acronym. (1)
4. What is the difference between a website and a webpage? (2)
5. The following is an example of a …

   https://www.education.gov.za (1)
6. Differentiate between the terms *search engine* and *web browser*. (2)
7. Name a language used to create/code the structure of a webpage. (1)
8. Choose the correct answer from the answers given below.

   News24 is an example of a … type of website.

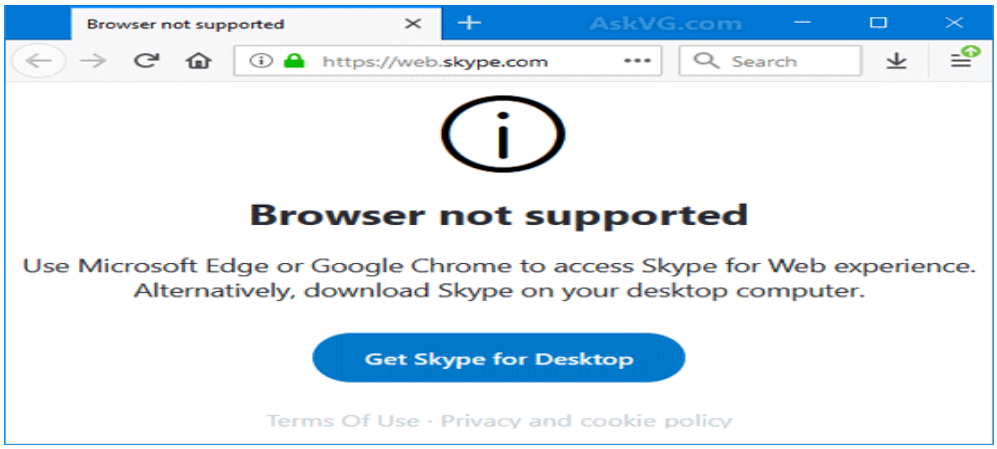
   A. News
   B. Entertainment
   C. Educational
   D. Content aggregator (1)

Total: 10 marks

Activity 2

Question 1

Study the screenshot below that shows the home page of a website and use it to answer the questions that follow:



1.1 What is the URL of the web page? (1)

1.2 What is the domain name of the webpage? (1)

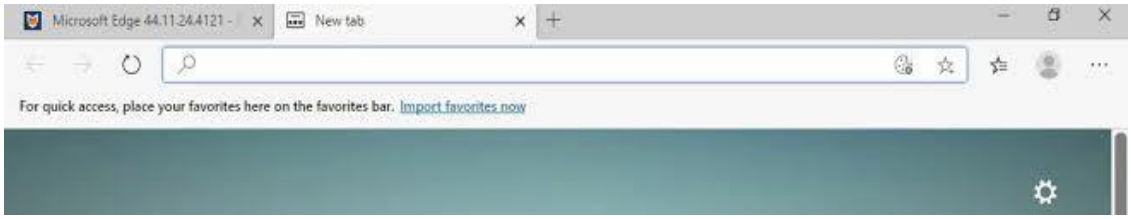
1.3 What is the significance of the home button? (1)

1.4 What do you call the blue button contacting the words “Get Skype for Desktop” (1)

1.5 What could be the reason why the current web browser does not support Skype as a web application? (1)

Question 2:

Study the following image and answer the questions that follow:



2.1 The Microsoft Edge browser uses tabbed browsing. Provide ONE advantage of using tabbed browsing. (1)

2.2 What tab is currently opened? (1)

2.3 What is the purpose of the + button after the second tab? (1)

2.4 Name TWO other web browsers, besides Microsoft Edge (2)

Total: 10 marks

Activity 3

Use the following Google Forms URL or scan the QR code to access activity 3.

https://forms.gle/zPoLNuTXX3GjtnZC8

Total: 10 marks

Results will go to the learner. Results will also indicate the correct answer to the learner.

Activity 4

Question 1:

Read the following article and answer the questions that follow:

State-owned bank in South Africa confirms 'Akira' cyberattack

The Development Bank of Southern Africa said Monday that it was hit with a cyberattack, adding that servers, logfiles and documents were encrypted by the Akira gang last month.

In a statement, the state-owned bank said the attack began around May 21 and that the gang threatened to publish stolen information if an undisclosed ransom was not paid.

The bank is a development finance institution that invests in infrastructure projects and educational efforts. It has an annual net income of about $122 million and more than 600 employees.

"Upon becoming aware of the Incident, the DBSA immediately conducted an investigation and determined that" information including business names, the names of directors and shareholders, addresses, identification documents, and contact information including phone numbers and email addresses "may have been unlawfully accessed or acquired by the threat actor," the bank said.

Many of the documents also had details of commercial or employment relationships with DBSA and financial information of stakeholders.

https://therecord.media/development-bank-of-southern-africa-akira-cyber-attack

1.1 What kind/type of cyberattack/internet threat is the article an example of? Briefly explain your answer by referring to the definition of this internet threat. (2)

1.2 Do you think the DBSA could have done something to prevent this threat? (2)

1.3 Name any TWO types of cyberattacks/internet threats, besides the one you mentioned in question 1.1. (1)

[5]

Question 2:

Identify the internet threat/cyberattack for each of the following scenarios/statements:

2.1 A fraudulent SMS, social media message, voice mail, or other in-app message asks the recipient to update their account details, change their password, or tell them their account has been violated. (1)

2.2 A user would open their browser and enter the web address of their bank in order to complete a transaction in online banking. However, the user is redirected to a fraudulent site that looks like the bank's website. (1)

2.3 A type of malicious software, or malware, that infects computers and corrupts their data and software. (1)

2.4 A type of malware that invades your computer disguised as real, operational programs. For example: Bitfrost (1)

2.5 A Twitter post stating a famous celebrity has passed away, however, the celebrity is still alive and in healthy condition. (1)

[5]

Total: 10 marks

Consolidation

Question 1: Multiple Choice Questions

Various options are provided as possible answers for questions 1.1 to 1.5. Choose the correct answer by simply writing down the question number and the correct letter next to it, for example, 1.6 D

1.1 The catch phrase: "It's criminal, if it's not original" describes
A. the theft of intellectual property.
B. hacking into a computer.
C. software piracy
D. text encryption (1)

1.2 Purchasing of goods or holiday bookings over the internet is known as…
A. e-booking
B. e-commerce
C. e-buying
D. e-sales (1)

1.3 E-communication is known as…
A. electronic communication
B. electricity communication
C. elective communication
D. elaborative communication (1)

1.4 WhatsApp is an example of a/an… site/application
A. Instant Messaging
B. Social Networking
C. News
D. Educational

1.5 Which ONE of the following terms does not logically belong with the other terms?
A. Trojan
B. Shareware
C. Worm
D. Virus

[5]

Question 2: True and False Items

Indicate whether the following statements are TRUE or FALSE. If the statement is FALSE, correct it by changing the underlined word(s).

2.1 Social networks create a platform to connect groups of people with similar interests. (1)
2.2 Uploading refers to storing an mp3 file on your computer that was retrieved from the internet. (1)
2.3 Digital Citizenship is a unique data trace of a user's activities, actions, communications or transactions in digital media. (1)
2.4 The POPI Act is South Africa's data privacy law. (1)
2.5 A web browser is a website that allows one to find information.

[5]

Question 3:

Answer the following questions.

3.1 Explain the concept **online/cloud storage** and provide a suitable example of it. (2)

3.2 The following "lock" icon is shown next to your URL in the address bar of your web browser.



What does it refer to? (1)

3.3 Differentiate between web-based email applications and installed email applications. (2)

3.4 Why would you get a 'Page Not Found' or 'Not Found' error message when browsing the internet? Provide ONE reason. (1)

3.5 State TWO netiquette rules for sending of an email. (2)

3.6 Provide TWO good webpage design techniques. (2)

3.7 Explain the concept Digital Citizenship. (1)

[11]

Question 4

Provide the name of the following web browsers:

4.1



4.2



(1)

4.3



(1)

4.4



(1)

[4]

Total: 25 marks

Solutions: Internet Technologies

Activity 1

Answer the following questions:

1. The internet is a world-wide network that consists of computers that are connected to each other. ✓ (1)

2. The acronym IP stands for Internet Protocol ✓ (1)

3. The World Wide Web is a collection of websites and webpages that are hyperlinked to each other ✓ (1)

4. A **website** is a collection of web pages that are **linked** (making use of hyperlinks) to each other and that contains specific information and that have a similar design and look. ✓
   A **website** is a collection of web pages that are **linked** (making use of hyperlinks) to each other and that contains specific information and that have a similar design and look. ✓ (2)

5. https://www.education.gov.za is an example of a URL/web address ✓ (1)

6. **Search engine:** Is a website that allows one to search/find information. ✓

   Web browser: Software that allows one to view/browse websites and webpages ✓ (2)

7. HTML/Hypertext Markup Language ✓ (1)

8. E. News ✓ (1)

Total: 10 marks

Activity 2

Question 1

1.1 The URL of the web page is https://web.Skype.com ✓ (1)

1.2 The domain name of the webpage is Skype ✓ (1)

1.3 The significance of the home button to redirect the user to the home page/default page ✓ (1)

1.4 Navigation button/Hyperlink ✓ (1)

1.5 **Any ONE of the following:** ✓

The browser might not have the needed plugins or add Ons to view this site
The browser needs to be updated. (1)

Question 2:

2.1 Allows for users to switch between web sites or web pages in a single window. ✓ (1)

2.2 New tab ✓ (1)

2.3 To create/open a new tab ✓ (1)

2.4 **TWO other web browsers, besides Microsoft Edge: ✓✓**

- Google Chrome
- Apple Safari
- Mozila Firefox
- Opera Mini
- https://www.webdevelopersnotes.com/browsers-list (Follow link to see a complete list of web browsers) (2)

Total: 10 marks

Activity 3

Use the following Google Forms URL or scan the QR code to access activity 3.

https://forms.gle/zPoLNuTXX3GjtnZC8

Total: 10 marks

Activity 4

Question 1:

1.1 Ransomeware ✓ (2)

1.2 Learners' own answer.
Yes/No ✓
If yes, must mention precautionary measures of Ransomware: ✓

- Backup your data
- Keep all systems and software updated
- Install Antivirus software and Firewalls
- Divide the network into smaller networks
- Email protection
- Whitelist Applications (Applications that can be downloaded and installed)
- Limit user access privileges (2)

1.3 **TWO types of cyberattacks/internet threats, besides Ransomware:** ✓✓

- Phishing
- Pharming
- Keylogger
- Virus
- Computer worm
- Trojan
- Spam
- Hoax (1)

[5]

Question 2:

Identify the internet threat/cyberattack for each of the following scenarios/statements:

2.1 Phishing ✓ (1)
2.2 Pharming ✓ (1)
2.3 Virus ✓ (1)
2.4 Trojan ✓ (1)
2.5 Hoax ✓ (1)

[5]
Total: 10 marks

Consolidation

Question 1: Multiple Choice Questions

1.1 A ✓
1.2 B ✓
1.3 A ✓
1.4 A ✓
1.5 B ✓

[5]

Question 2: True and False Items

2.1 True ✓ (1)
2.2 False – Downloading ✓ (1)
2.3 False – Digital Footprint ✓ (1)
2.4 True ✓ (1)
2.5 False – search engine ✓ (1)

[5]

Question 3:

3.1 Storing your data and information on a server that is connected to the internet ✓

Examples include: ✓
Google Drive
OneDrive
iCloud, etc (2)

3.2



It refers to the site being secure ✓ (1)

3.3 **Web-based email applications** are not installed on your device. You need internet access to access the application online. ✓

Installed email applications are programmed that you download and install on you're your local storage drive. ✓ (2)

3.4 **ONE reason why the 'Page Not Found' or 'Not Found' error message shows when browsing the internet:** ✓

- website content has been removed or moved to another URL.
- The URL was **typed in incorrectly.**
- The server hosting the website is not running or the connection is broken.
- The requested domain name **can't be converted to an IP** by the DNS.
- The entered **domain name doesn't exist** (anymore) (1)

3.5 **TWO netiquette rules for sending of an email:** ✓✓

- Keep your tone professional.
- Do not type in all capital letters – it's considered as screaming.
- Avoid vague subject lines.
- Use proper email punctuation.
- Practice good grammar.
- Resist emojis in email.
- Keep subject lines descriptive and short.
- Choose your email salutation carefully.
- Leave the right impression with your email sign-off. (2)

3.6 **TWO good webpage design techniques:** ✓✓

- The website must be easy to navigate (consistent placing of links – no broken links)
- The website must be easy to read and (good selection of colour contrast, lists, tables)
- The website must be good to look at (relevant to its purpose and updated, readable font sizes, headings, relevant text and images)
- Plan in advance your page layout and how you will arrange content on it. Don't place content randomly. People read from left to right and from top to bottom. Important information should be where people naturally look first
- Consider the spacing of the website. Using empty space (or negative space) balances out the page and draws the eye to the most important content. A lot of negative space also makes things look elegant and clean.
- Each page on the website must look like it belongs with the rest. You should carry specific design elements (like colour, logos and font) through to all the pages. (2)

3.7 Digital citizenship refers to the responsible use of technology by anyone who uses computers, the Internet, and digital devices to engage with society on any level. ✓ (1)

[11]

Question 4

4.1 Microsoft Edge ✓
4.2 Google Chrome ✓ (1)
4.3 Safari ✓ (1)
4.4 Mozila Firefox ✓ (1)

[4]

Total: 25 marks

Summary of Information Management

What is information management?

Information management is a **process** of solving a problem ⇒ by asking questions ⇒ that will guide you to gather data and information ⇒ from various sources so that you can provide a solution and reach a conclusion.

Problem

A problem can be seen as any situation that needs a decision or action to reach a specific goal or outcome.

Questions

In order to solve the problem, you need to ask questions that will guide you to understand the problem. For example:



- What do we already know about this problem?
- What aspects should be taken into consideration regarding this problem?
- What advantages/disadvantages are there in solving this problem?

These questions should help you to make decisions and take action to solve the problem and reach a conclusion.

There are two main categories of questions:

Closed questions	vs	Open-ended questions
• Answered in a single word/phrase • Gives limited insight • Easier to analyse because of the limited answers		• Answered in more detail • Gives different views/perspectives • More difficult to analyse due to variety of answers

Sources

There are types various sources that we can use to gather necessary information to solve a problem and reach a conclusion.

Electronic media	Printed media	People (questionnaire/interviews)
Any form of media that can be found online or electronically.	Any form of media that can be found in hard copy format	Any form of information that can be retrieved from people for their opinions/point of view.
Videos; Articles; Websites; Radio; Television; etc.	Books; Newspapers; Magazines; Journals; etc.	Interviews; Questionnaires; Surveys; Forms; etc.

Surveys	Questionnaires	Interviews
A survey is the method of collecting data from individuals that is not available in other sources.	A **list of questions** on a paper that is used to gather data from people about their opinions and experiences.	A **face-to-face** meeting where questions are asked to gather data from people about their opinions and experiences.
Questionnaires and interview:	Usually closed-ended questions	Usually open-ended questions.

It is highly important that the information you research to use is accurate, reliable and authentic. Therefore, you need to take note of the *author*, *date*, *objectivity* and *coverage* found for the source.

Process and analyse

After collecting the data from your sources, it is necessary to process and analyse the data. We need to process the data in order to eliminate unnecessary information and to provide findings to the solution.

Processing data

Sift through the data to make it meaning information that can be used in your presentation. The processing of data should provide you with answers to the questions that you have asked in the beginning of your research investigation.



VS



Data is any raw facts or items that has to be manipulated or processed before it becomes useful.

Information is processed facts or data that can help you make a decision or take action to solve a problem.

Analysing data

Answers collected from questionnaires/surveys and interviews will provide data that can be manipulated into measurable information for the solution of the problem and conclusion.

This includes aspects like: How many …? What is the total cost? What is the most chosen option? etc. These types of data can be manipulated in a spreadsheet to make it more organised and easier to interpret.

Calculations	Functions/formulas used to create findings that contribute to the solution.
Sorting & Filtering	Features to display information in an organised manner.
Graphs/Charts	Using graphs can display different trends or patterns in the data.

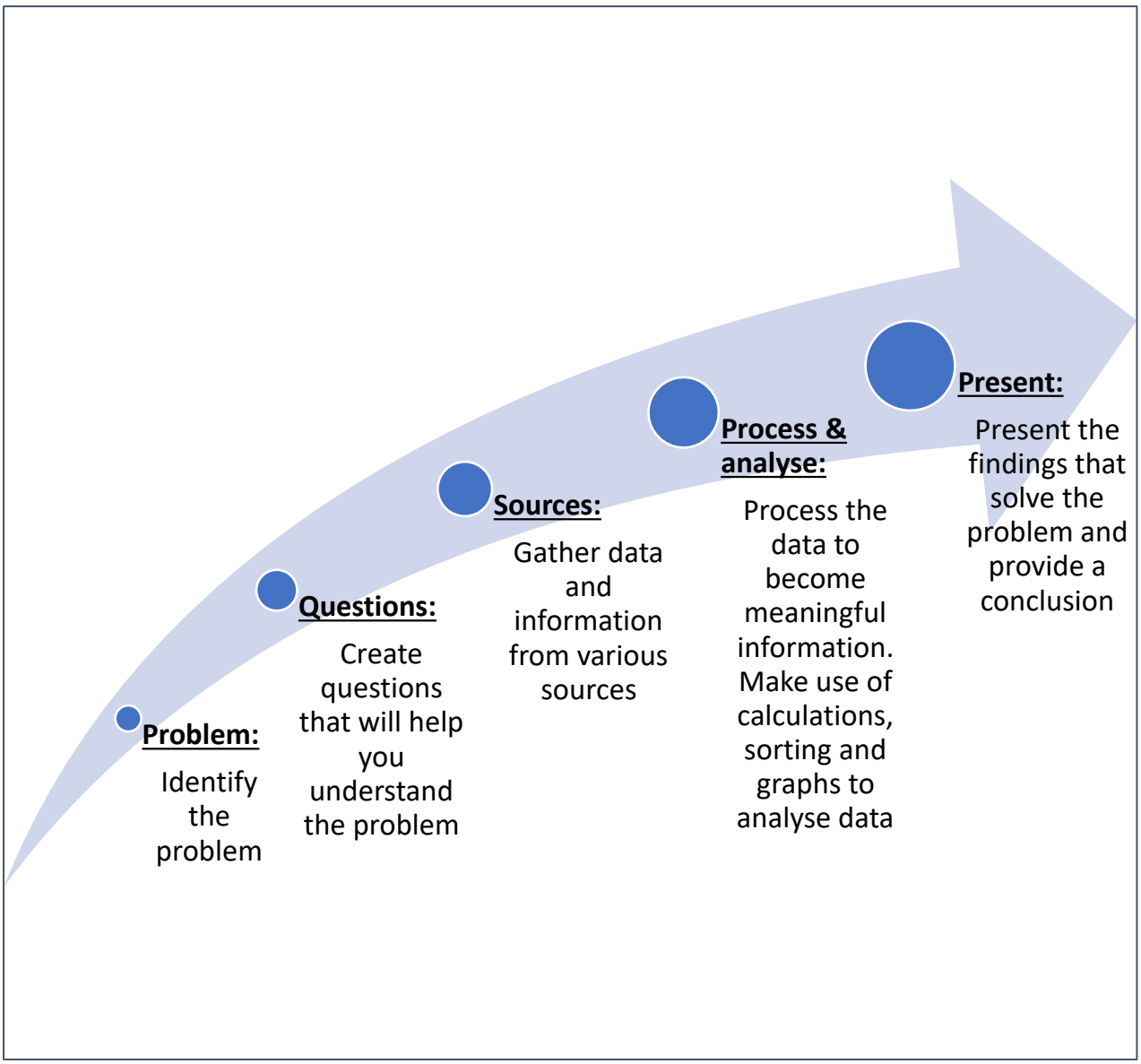
Present

Now you are ready to present your findings and provide a solution to the given problem. Create a structure that includes an introduction, appropriate headings with information and a conclusion. Include relevant images, graphs and information that contribute to the solution and the conclusion.



It is important that you use ***your own words*** throughout the presentation and give acknowledgement to the sources you have used.

Plagiarism: using someone else's words or ideas and passing them off as your own work, without acknowledging the person.


Problem:
Identify the problem
Questions:
Create questions that will help you understand the problem
Sources:
Gather data and information from various sources
Process & analyse:
Process the data to become meaningful information. Make use of calculations, sorting and graphs to analyse data
Present:
Present the findings that solve the problem and provide a conclusion

Activities Information Management

Activity 1

1.1 Discuss the difference between an open-ended and closed question?
1.2 List one advantage of a close-ended question?
1.3 List on disadvantage of an open-ended question?
1.4 Why is it necessary to also use questionnaires when searching for information?
1.5 What is the difference between data and information?
1.6 How can I verify the accuracy of information in sources?
1.7 What is the purpose of processing the data?

Activity 2

Indicate whether the following statements are TRUE or FALSE. If a statement is false, write 'FALSE' and change the underlined word to make the statement TRUE.

2.6 A questionnaire is a face-to-face method of data collection.
2.7 You should create questions that guide your research process.
2.8 Processing data means to manipulate the data into graphs.
2.9 In the end of your research project, you should come up with a problem.
2.10 Data is raw unprocessed facts.

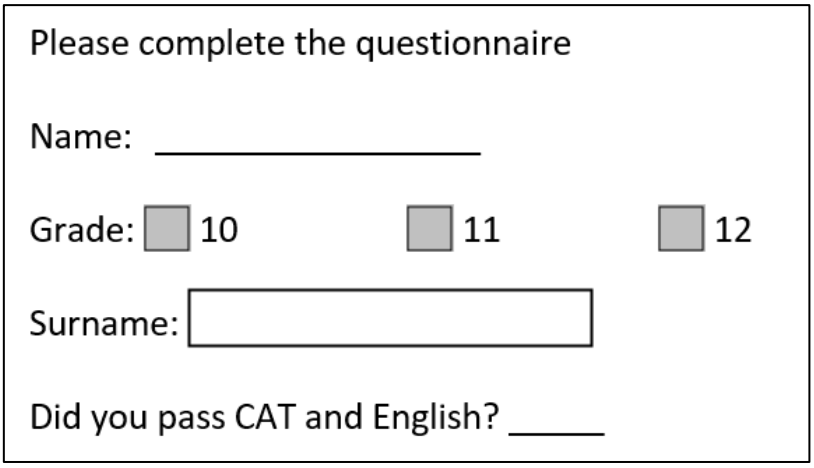
Activity 3

Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter (A–F) next to the question numbers (3.1 to 3.6)

COLUMN A	COLUMN B	
3.1 Data that has been processed	A	Data
	B	Conclusion
3.2 Used to give a visual representation of information	C	Open-ended
	D	Calculations
3.3 Sifting through data to organise into information	E	Survey
	F	Analyse
3.4 Questions that provide detailed answers from individuals	G	Solution
	H	Information
3.5 Method to gather data from people	I	Closed-ended
	J	Graphs
3.6 Final answer to the problem that was stated	K	Questionnaire
	L	Process

Activity 4

Your friend created the following questionnaire to gather data for his research project about how many learners in his school has CAT as a subject.



4.1 Identify THREE problems with this questionnaire.

4.2 Why should you not ask a question like the last question in this questionnaire?

4.3 What question can you add to assist your friend to gather the data he requires?

Activity 5

5.1 Explain TWO advantages of using electronic data rather than using data in a hard copy format.

5.2 Give ONE reason why you would use a survey instead of internet research.

5.3 Mention TWO feature that can be used in a spreadsheet to analyse data.

5.4 Explain TWO disadvantages of using closed questions in a questionnaire.

5.5 State TWO aspects that should be considered when validating your research.

5.6 Explain why it is important to use current information in your research and not older information.

5.7 The graph below displays the average temperatures for a year.



5.7.1 Name a more suitable graph that can display the information.

5.7.2 Recommend THREE changes to the graph that will make it easier to understand.

5.8 Explain what is meant by plagiarism?

5.9 State TWO possible sources that can provide information besides the internet?

5.10 State TWO ways of how an interview will be conducted?

Solutions: Information Management

Solution Activity 1

1.1 An open question can have many variations of answers, ✓ while a closed question has limited answers. ✓

1.2 – Easier to respond to
– Easier to process and analyse
– Data validation ✓ *(any one)*

1.3 – Lower response rate
– Time consuming to answer
– Difficult to analyse ✓ *(any one)*

1.4 To gather data from people's opinions and views. ✓

1.5 Data is raw facts ✓ and information is processed data. ✓

1.6 To check the author ✓ and date. ✓

1.7 To eliminate unnecessary information ✓ and provide findings. ✓

Solution Activity 2

2.1 False, Interviews ✓

2.2 True ✓

2.3 False, Analysing ✓

2.4 False, solution/conclusion ✓

2.5 True ✓

Solution Activity 3

3.1 H ✓
3.2 B ✓
3.3 J ✓
3.4 C ✓
3.5 E ✓
3.6 L ✓

Solution Activity 4

4.1 – The fields are unorganised
– The spaces provided for answers are inconsistent
– The grade only caters for gr10 – 12 learners ✓✓✓ *(any three)*

4.2 The question asks for 2 different aspects ✓, thus creating confusion in the answering ✓

4.3 Do you have CAT? ✓

Solution Activity 5

5.1	• Easier to get data online or via e-mail • Easier to share information • Easier to edit/improve • Easier to share • Easier to analyse • Don't need to retype information ✓✓ *(any two)*
5.2	Surveys usually gathers unique information ✓ /Collect information that is not available elsewhere/To gather views and opinions of individuals
5.3	• Calculation • Sorting • Filtering • Graphs ✓✓ *(any two)*
5.4	• Limited/specific answers • Won't know if a question was unclear or misunderstood • Options could be biased/discriminating • Could give a meaningless result ✓✓ *(any two)*
5.5	• Author ✓ • Date ✓
5.6	Older information might not be relevant to the situation ✓
5.7.1	• Bar graph • Line graph • Column graph ✓ *(any one)*
5.7.2	• Add a title • Display data labels • Use different colours • Meaningful axis labels ✓ ✓ ✓ *(any three)*
5.8	When you use someone else's information ✓ and presenting it as your own ✓

5.9	• Printed media: Magazines/Books • Interviews • Questionnaires • Electronic sources (besides internet) ✓✓ *(any two)*
5.10	• Face-to-face ✓ • Telephonically ✓

Summary of Social Implications

Ergonomics

Think about the angle of your computer monitor, or the height of your desk. Think about whether your eyes are strained by the end of the day or if your wrists hurt from typing. A sound understanding of ergonomics can prevent most workplace injuries by adjusting tools to the user, putting an emphasis on proper posture to reduce the impact of repetitive movements.

When speaking of computer ergonomics, the focus is on the way in which people use their computers, for the final goal to make people more comfortable and reduce discomfort and injuries.

INPUT DEVICES AND HEALTH ISSUES	OUTPUT DEVICES AND HEALTH ISSUES
Think about the many hours you spend in front of a computer. Remember that by the way we sit while using input devices can have a negative impact on your health. Problems such as a sore neck, headaches, backaches and muscle or joint strain can occur.	How many hours do you spend at looking at a monitor or using headphones at too high volume? This can cause problems, for example eye strain, headaches and damage hearing.

The solution for spending long hours in front of the computer include ergonomically designed devices, but important is to adjust your work space to be comfortable and to manage your work style.

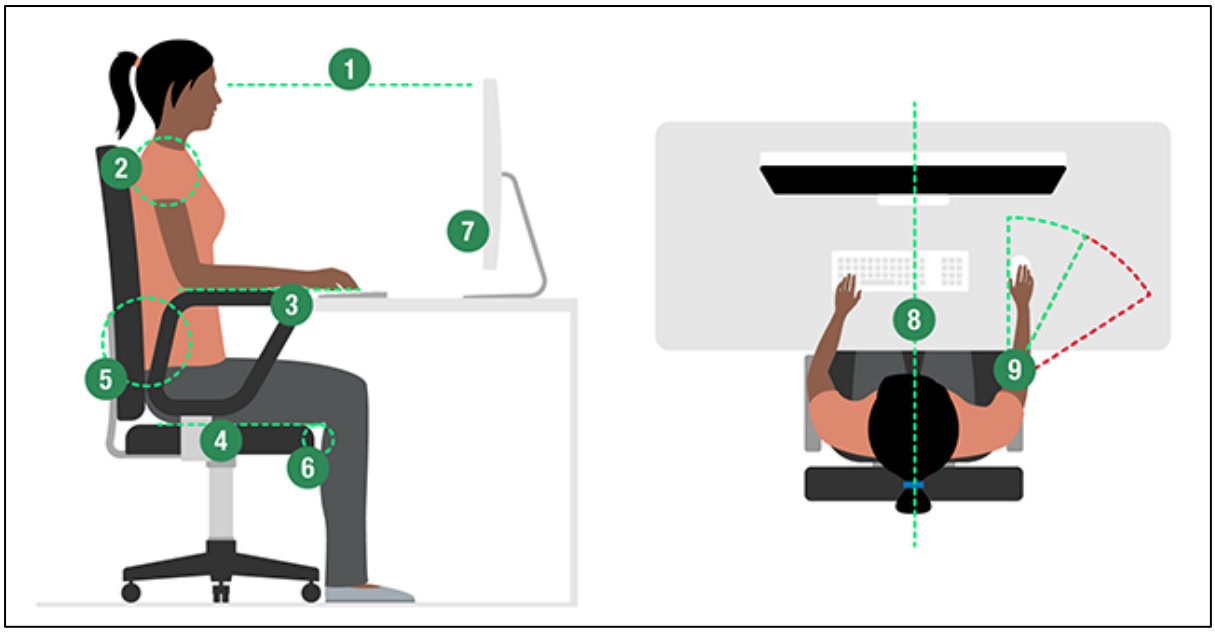
Ergonomic Equipment
Chairs.
Fitness Balls (Swiss, Exercise or Physio ball)
Desks.
Adjustable sit/stand workstations.
Laptops.
Keyboard.
Mouse.
Wrist rests / Gel pads.



Image Source: https://www.google.com /1-ergonomic-office-furniture.jpg

Work in this way to maintain good posture

Standard workstation setup



1. Top of screen level with eyes, about an arm's length away
2. Relax your shoulders - try to position yourself high enough so you don't need to shrug your shoulders
3. Keyboard just below elbow height
4. Seat height equally supports front and back of thighs (or use cushion to raise seated position)
5. Back of the seat provides good lower back support (or use cushion, to provide additional back support)
6. Gap of 2-3 cm between front of seat bottom and back of knee
7. Computer and screen directly in front of you on desk
8. Screen and keyboard central - don't twist your back
9. Mouse in line with elbow

Source: https://www.hse.gov.uk/msd/dse/good-posture.htm

Remember:

- Get up and move around – do not sit for hours in front of your computer.
- Glance at other objects in the room or out the window instead of staring fixedly at the screen.
- Know your keyboard shortcuts to prevent movement between the mouse and keyboard.
- Do appropriate exercises to relieve tension
- Be careful that the volume of the headphones is not too loud – this can damage your hearing.
- Tilt the screen slightly to avoid reflections or glare.
- Make sure the lighting is adequate
- Make sure the ventilation/air circulation is adequate
-

For more information on some exercises to relieve tension – click here

Ergonomics-stretches-and-exercises.pdf



Health risks from computer games	Solutions
Playing computer games for too long or without correct furniture and posture can lead to health problems such as: • Overuse injuries of the hand • Obesity • Muscle and joint problems • Eyestrain • Behavioural problems including aggressive behaviour	Parents can reduce the risk of children developing computer-related health problems. You can encourage your child to: • Sit at least one metre away from the screen • Take frequent breaks • Pursue other activities. • Encourage your child to enjoy different hobbies and interests, particularly sports and physical activities.

Source: https://www.betterhealth.vic.gov.au/health/healthyliving/computer-related-injuries

Activity 1

Green computing

Green computing, also known as green technology, is the use of computers and other computing devices and equipment in energy-efficient and eco-friendly ways. Already a lot of equipment is designed to consume less power.
All the hardware of computers can have a negative impact on the environment. This include ink and toner cartridges. These all contain components that are very bad for the environment and plastic components that do not decompose easily.

How to recycle mobile phones, computers and other electronics

1. Postpone upgrading for as long as you can
2. Find opportunities for reuse
3. Try returning the item to the manufacturer
4. Take them to a dedicated e-waste recycling facility

How to achieve green computing

Average computer users can employ the following strategies to make their computing usage greener:

- Use the hibernate or sleep mode when away from a computer for extended periods
- Buy energy-efficient notebook computers, instead of desktop computers
- Activate the power management features for controlling energy consumption
- Make proper arrangements for safe electronic waste disposal
- Turn off computers at the end of each day/when not working on it
- Refill printer cartridges, rather than buying new ones
- Instead of purchasing a new computer, try refurbishing an existing device
- Data stored on SSDs use considerably less electricity than data on disk drives
- More efficient software requires less processing and storage space, which requires less electricity.

Source: https://www.techopedia.com/definition/14753/green-computing

These improvements have already made significant improvements to the energy use of computers.

Going green when printing



Computers were supposed to create a paperless world, but the goal was never achieved. We ended up using more paper than before.

With printing, you need to understand the negative effect that printing has on the environment. Too much paper gets wasted and thrown away after they have been used.

Consider the following:

- We should print documents when necessary, and rather file and send documents electronically (for example, through email).
- Try to avoid the senseless wasting of paper by proofreading on the screen before you print or by printing 2 pages on 1
- You can also save paper by printing on both sides of the paper (double-sided printing), as well as by recycling paper.
- Performing a spell check on soft copies of documents
- Scanning documents that need to be shared with others
- Training people to use Outlook effectively
- Disposing printer cartridges in the wrong way (throwing them out in the environment) can cause serious damage to the environment. Rather, find a disposal outlet that has special bins for this purpose, for example, this type of outlet can be found at a local supermarket, such as PicknPay.

Electronic waste (e-waste)

This concept refers to all broken and outdated electronic devices and equipment that get dumped. All these electronic devices and equipment contains toxic chemicals and materials. People simply dump their old devices and equipment and forget that it is harmful to the environment and also the people in surrounding areas.

Activity 2

Watch the following video for more information on Green Computing and Electronic waste:



https://youtu.be/QgQLBhvCQxE

AUTHENTICATION

Security, while using your computer is something you must take very seriously. You must always make sure that you prevent and detect unauthorised access to your computer. When somebody else gets access to your computer, they can steal, change or destroy your information.

Watch the following video for more information on 2-Way Authentication:

https://youtu.be/mMKo-fG89jQ

Protect your account with 2-Step Verification

Prevent hackers from accessing your account with an additional layer of security. When you sign in, 2-Step Verification helps make sure that your personal information stays private, safe and secure.



Security made easy

In addition to your password, 2-Step Verification adds a quick, second step to verify that it's you.



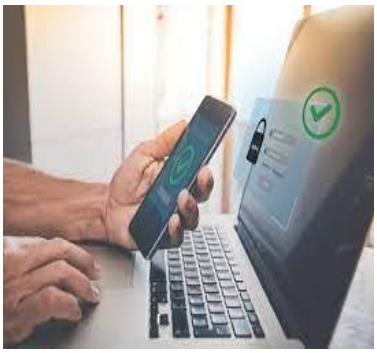
Use 2-Step Verification for all your online accounts

2-Step Verification is a proven way to prevent widespread cyber-attacks. Turn it on wherever it's offered to protect all your online accounts.

Another step you can take to be more secure, is to create a password that allows access to your computer.

What is a password?

Password refers to a string of characters used to authenticate a user to a system. A password is typically a combination of letters, numbers, and/or special characters used to verify a user's identity. The purpose of passwords is to protect data from unauthorized access.
When you want access to your computer, you need to key in the correct login name and password. Always remember to log off when you are done, so that no one else has access to your information.



Tips for creating a password:

- Don't write passwords down – remember them
- Avoid names, places and dictionary words.
- The longer the better – a minimum of 12-characters is recommended.
- Passwords should have a mixture of letters (upper and lower case), numbers and special symbols, e.g. S1T&pl*fg8
- Use different passwords for different accounts and change them from time to time
- Certainly, don't give your passwords out

OTHER AUTHENTICATION METHODS

The world of computers is changing every year. Nowadays, with the touch of your finger, you can unlock your computer and phone.

Activity 3

The following is the list of 13 top password alternative authentication:

- Fingerprint scan
- Facial recognition
- Retina scan
- Voice recognition
- Magic Link or Email Link
- Email OTP
- SMS OTP
- Two-factor authentication
- Social login
- Single-sign On
- PIN authentication
- Pattern authentication
- Keystroke authentication

Source: https://mojoauth.com/blog/password-alternatives/

SCREEN LOCK PATTERN

To secure your smartphone or other devices, you can use a screen lock. When you want to open your device, it requires a screen lock pattern. This can be in a form of a pin, password, fingerprint or retina scan.

More about the pattern:

- The user draw a pattern with his/her finger.
- It is a more secure way to access the device.

Watch this video for different unlock patterns

DOCUMENTS\How Many Different

1https://youtu.be/D9dXrKUCfO0

ECONOMIC REASONS FOR USING COMPUTERS:



Society has come to rely heavily on computers. Computers affect nearly every aspect of our lives.
You should always keep the benefits and disadvantages of technology in mind because then you can try to anticipate the damage that technology can do and at the same time you can ensure that you benefit from all the advantages that technology has to offer.
Computers have several economic benefits, such as:

Saving paper: You can save paper by rather working on computers and keep your work electronically. You can use emails to send communication through, read books and magazines electronically, rather than to print out hard copies.	**Saving labour:** Companies can use computer-controlled devices for repetitive work, that would normally require employees to do the work and in that way save money and labour. Computers can perform dangerous tasks that can put people at risk to perform the tasks themselves. Another significant change in employment practice is the increase level of education, technical skill and computer literacy required from people looking for a job. It is virtually impossible to get a job as an office worker without computer literacy today.
Communication speed and costs: Communication cost such as telephone and postage can be reduced by using computers and the internet. This can be done much faster with computers. For example, the use of email allows instant communication with staff, clients and other individuals at any place or time. The use of smartphones will help employers to keep in touch with their employees regularly, which ultimately saves time and phone calls. Communication and meetings by using Email, Videoconferencing, Mobile Phones, Social Media, Chatting will save time and money.	**Efficiency:** Instead of being swamped with paperwork or sorting out piles of paperwork, files can be stored on computers. Retrieval of old documents is much easier when it is stored electronically. Also, computers can do the work of more than one person in less time than normal employees. getting things done with less cost and effort
Accuracy: Data analysis are much more accurate by using computers than human beings. Take in mind that this quality depends on the input of data. If the information entered is incorrect, the results produced will most likely be incorrect. The best way to improve accuracy is to remove the human element by using extra, specialised hardware, sensors, etc. to capture data.	**Reliability:** For computers to run properly, it must be maintained properly. It is safe to say that we can rely on computers to perform the tasks that they have been programmed to do. Where people tend to get bored, get tired, complain or ask for more money, computers can be relied on to do tasks without any demands.

Today, many services help save you time. Several examples are listed below.

- Using a site like Amazon, you can find many of the same products you would find at a store for the same price or cheaper. You can also have those items shipped to your door without having to leave your home.
- You could use an online banking site to view your bank balance and pay bills.
- If your favourite restaurant has a website, you can order take-out without having to wait in line.
- You can view online traffic cameras and maps with traffic information to find the quickest route.
- Assist the physically challenged
    - Computers and computer-controlled technology are excellent tools for the physically challenged. For example, Stephen Hawking used a computer to speak, which wouldn't be as easy without a computer.
    - Computers are also great tools for the blind; special software (screen reader), can read what is on the screen.
    - For those who have a hard time leaving the house, shopping, or socializing, a computer can also help with these tasks.
    - Computers and computer-controlled devices help increase a better quality of life for many different types of people.

Source: https://www.computerhope.com/issues/ch001798.htm

Ethical use of – software, hardware, computer management and networks

Licensing agreements

When you purchase software, you must know that you do not own the software. You only buy a licence to use the software, but there are certain conditions.
When users pay for proprietary software, they pay for the rights to use it while the software still belongs to the developer. When you install proprietary software, you have to agree to terms and conditions in the licence agreement.

The agreement includes the following information:
- The software cannot be changed or even modified;
- You cannot make copies of the software and distribute it;
- You cannot install the software on more than ONE device.



Licensing Contracts

How does it work if you work on a network in the school?
The school cannot just share software over a network, it must purchase a network licence for it to be legal. This licence lets more than one user at a time access the software on the server.

The cost depends on the number of computers attached to the network.
The End-User License Agreement (EULA) is a license used for most software. It is a contract between the manufacturer and/or author and the end user. This agreement defines rules for software use and not every agreement is the same. One common rule in most EULAs prohibits users from sharing the software with others.

These licence agreements are called EULAs (End User Licence Agreement). This include three types of agreements:

How do software licenses work?
A software license is a document that states the rights of the developer and user of a piece of software. It defines how the software can be used and how it will be paid for. The following are some examples of specifications a license might include:

- how many times the software can be downloaded;
- what the software will cost; and
- what level of access users will have to the source code.

Software also comes with a license key or product key. The key is used to identify and verify the specific version of the software. It is also used to activate the software on a specific computer or device.
Source: https://www.techtarget.com /searchcio/definition/software-license

Single-user licence:	Multi-user licence:	Site licence:
This means that you may only install one copy of the software – only on one computer or device. You can make one copy as backup when you purchase the software on a CD or DVD.	This means you can install the software on several devices or computers, which will be indicated in the licence agreement. This will still cost less than a single user licence for each computer.	This licence allows you to install software on an unrestricted number of computers AT THE SAME SITE. This type of licence is often used by businesses and schools. Although it is more expensive than a single user licence, it is still cheaper than buying a single user licence for each computer.

User Policies

All organisations normally have an acceptable computer usage policy in place. This policy stipulates how computer equipment should be used and prevents anyone from accessing restricted information or data on the network. If a person breaks the rules, it is regarded as a serious offence and the person could get into a lot of trouble.



Activity 4

Software piracy

Software piracy refers to the illegal installation, copying and distributing (on CDs, DVDs or other storage medium) of proprietary software or if illegal copies are sold at a cheap price. Remember that you can generally only make one copy for backup purposes – this copies is NOT to give to others. Most software now requires online activation or registration, this is an attempt to reduce software piracy. Software piracy is a crime and can result in hefty fines or even jail time!



Copyright laws were originally put into place so that the people who develop software (programmers, writers, graphic artists, etc.) would get the proper credit and compensation for their work. When software piracy occurs, compensation is stolen from these copyright holders.

Types of Software Piracy

There are five main types of software piracy. This variety of pirating techniques explains how some individuals purposely pirate software while others may unknowingly be an accomplice.

Soft lifting
Soft lifting is when someone purchases one version of the software and downloads it onto multiple computers, even though the software license states it should only be downloaded once.
Client-server overuse
Client-server overuse is when too many people on a network use one main copy of the program at the same time. This often happens when businesses are on a local area network and download the software for all employees to use.
Hard disk loading
Hard disk loading is a type of commercial software piracy in which someone buys a legal version of the software and then reproduces, copies or installs it onto computer hard disks. The person then sells the product.
Counterfeiting
Counterfeiting occurs when software programs are illegally duplicated and sold with the appearance of authenticity. Counterfeit software is usually sold at a discounted price in comparison to the legitimate software.
Online Piracy
Online piracy, also known as Internet piracy, is when illegal software is sold, shared or acquired by means of the Internet. This is usually done through a peer-to-peer (P2P) file-sharing system, which is usually found in the form of online auction sites and blogs.

The Dangers of Software Piracy
Software piracy may have a cheaper price point, but there are many dangers that software pirates should be aware of.
Consequences of software piracy are:

- Increased chances that the software will malfunction or fail
- Forfeited access to support for the program such as training, upgrades, customer support and bug fixes
- No warranty and the software can't be updated
- Increased risk of infecting your PC with malware, viruses or adware
- Slowed down PC
- Legal repercussions due to copyright infringement

Keep your PC secure by only purchasing software from authorized dealers. Be aware of any software's terms and conditions — make sure you agree and adhere to their guidelines.
Source: https://www.pandasecurity.com/en/mediacenter/panda-security/software-piracy/

For more information:

2https://cpl.thalesgroup.com/software-monetization/how-to-prevent-software-piracy

Copyright

A software copyright is a form of copyright protection provided for the programmers and makers of software programs. It refers to the legal right to make copies and to publish and sell products.
Software copyright prevent a CD from being burned



Intellectual property

Intellectual property is a broader concept that recognises the ownership of the person that came up with the original idea or thought. It simply means that permission is granted by the owner of an Intellectual property right to another person or organisation to use it on



agreed terms and conditions.

Creative Commons (CC)

A Creative Commons (CC) license is one of several public copyright licenses that enable the free distribution of an otherwise copyrighted "work". It is used when a developer wants to give people the right to share, use and build upon a program that they have created.
There are several CC licences that allow the user to do the following:

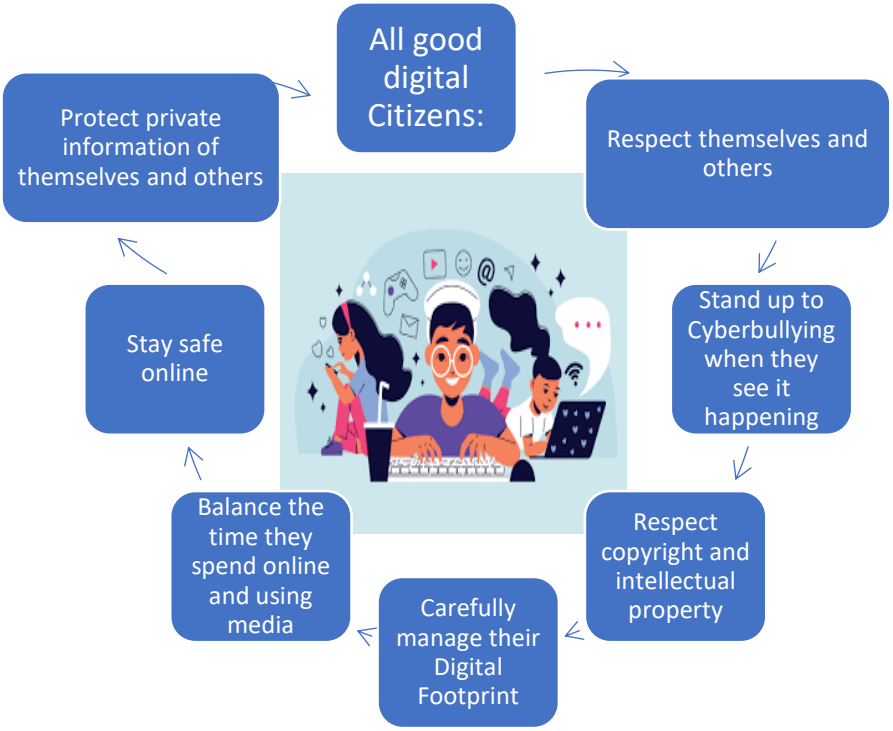
- Copy the work – i.e. you can download, copy and photocopy the content that is required.
- Distribute the content, for example to teachers, schools and other educational purposes.
- Communicate the content, for example make it available on the school network.

Examples of organisations that use the CC licence are Wikipedia, YouTube channels, Flickr, Google Search, etc.

Digital Citizenship

Digital citizenship is the ability to navigate our digital environments in a way that's safe and responsible and to actively and respectfully engage these environments
.
Although we live and interact in the digital world in a similar way to the offline world, we're not always as mindful of our actions online. We can sometimes act without realizing how it could affect our reputation, safety and growth as digital citizens. In the meantime, everything we do online continues to affect and define our digital world.

Our actions in our online world can have a real impact and we all have a role to play as active digital citizens.



Here are some examples of how we can all be responsible digital citizens and help build a better online world:

- I remind myself that there's a real person behind the screen
- I reach out to help if I see someone being cyberbullied
- I take a break before doing anything when I get angry
- If I get in a conflict with someone I know online, I talk it out in person
- I push back against hate and prejudice when I see them online
- I report hate and harassment when I see them online
- I complain to platforms and advertisers if I see them supporting hate
- I speak out to shape the values of my online communities

Digital footprint

A digital footprint is data that is left behind when users have been online.

Types of digital footprints	Description	Example
Passive	A passive footprint is made when information is collected from the user without the person knowing this is happening.	An example of a passive digital footprint would be where a user has been online and information has been stored on an online database. This can include where they came from, when the footprint was created and a user IP address.

Active	An active digital footprint is where the user has deliberately shared information about themselves either by using social media sites or by using websites.	An example of an active digital footprint is where a user might have logged into a site when editing or making comments such as on an online forum or a social media site. The registered name or profile can be linked to the posts that have been made and it is surprisingly easy to find out a lot about a person from the trails you leave behind.

Many people want to share the fact that they are going on holiday and how long they are going for – think about the impact and danger this could be placing your family in.
Source: https://www.familylives.org.uk/advice/your-family/online-safety/digital-footprints



Digital footprints matter because:

They are relatively permanent, and once the data is public – or even semi-public, as may be the case with Facebook posts - the owner has little control over how others will use it.

A digital footprint can determine a person's digital reputation, which is now considered as important as their offline reputation.

Words and photos which you post online can be misinterpreted or altered, causing unintentional offense.

Content intended for a private group can spread to a broader circle, potentially damaging relationships and friendships.

Cybercriminals can exploit your digital footprint – using it for purposes such as phishing for account access or creating false identities based on your data.

For these reasons, it is worth considering what your digital footprint says about you. Many people try to manage their digital footprint by being cautious about their online activities to control the data that can be gathered in the first place.

Digital footprint examples

An internet user could have hundreds of items form part of their digital footprint. Some of the ways in which users add to their digital footprint include:

- Online shopping
- Making purchases from e-commerce websites
- Downloading and using shopping apps
- Online banking
- Social media
- Sharing information, data, and photos with your connections
- Joining a dating site or app
- Health and fitness
- Using fitness trackers
- Registering your email address with a gym



For more information on how to protect my Digital Footprint:

https://youtu.be/NwEmBs9cQ14

Protect your digital footprint

Because employers, colleges, and others can look up your online identity, it's a good idea to be mindful of your digital footprint. Here are some tips for protecting your personal data and managing your online reputation.

- Use search engines to check your digital footprint
- Reduce the number of information sources that mention you
- Limit the amount of data you share
- Double-check your privacy settings
- Avoid oversharing on social media
- Avoid unsafe websites
- Create strong passwords and use a password manager
- Keep software up to date
- Review your mobile use
- Think before you post

Source: https://www.kaspersky.com/resource-center/definitions/what-is-a-digital-footprint

POPIA Act

Purpose of the Act

The increasing cases of theft and misuse of people's personal information has led to the need to promulgate regulations to protect personal information and one's right to privacy. The POPIA Act sets out the minimum standards regarding accessing and 'processing' of any personal information belonging to another.

The Act defines 'processing' as collecting, receiving, recording, organizing, retrieving, or the use, distribution or sharing of any such information.

Whatch this video for more information on POPIA Act:

https://youtu.be/n1ubQ5uTCVc

The POPI Act (POPIA) was signed into law in **November 2013** and the remaining provisions of the Act were due to come into effect on **1 April 2020,** however given the current Covid-19 pandemic and emergency need to redeploy efforts, these were delayed. The President issued a Proclamation on **22 June 2020**, commencing some sections of the POPIA Act which came into effect on **1 July 2020**.

Defining personal information

Personal information is any information that may identify a person such as a name, surname, identity number, contact number, email address, religion, medical history, education, financial or any other information that is unique to an individual.
Source: https://www.westerncape.gov.za/site-page/introduction-protection-personal-information-act-or-popi-act-or-popia

The POPIA describes how a school must collect, handle and store the personal information of data subjects.

Before handing over valuable personal information, ask your school these questions:

- For what purpose do you need this information?
- Who will you share this information with?
- Will this information be processed in other countries, and if so, what protections are in place?
- How do you limit access to this information?
- How do you safeguard this information?
- How and when do you retain and destroy this information?

It is important to destroy ALL personal information (PI) you do not need, such as:

- Old CD backups
- Gender, race, marital status, nationality, sex, mental health, religion, belief, language, etc.
- Education or financial, criminal, medical and employment history.
- Biometrics, including physical, behaviour or physiological characterisations (DNA analysis, retinal scanning, blood type, etc.)
- Email address, telephone number, location information, online identifier, etc.
- Correspondence of a private nature.

Source: https://serr.co.za/popi-act-5-top-questions-answered

Ownership of electronic material

Accessing data that is not your own is regarded as a criminal offence. For example, you should not change or access the data on the computer of another network user without getting his or her permission. Plagiarism is when you illegally copy information from the internet, or from any other published material and say that it is your own, unless you obtained permission to use it.

Appropriate communication etiquette

Always use appropriate communication etiquette when using the internet. This includes not only communicating via email but for all forms of e-communication.
Avoid posting everything, tagging everything, commenting on everything and knowing everything online. Remember that if you are not comfortable to say something in public, do not post it online.

Netiquette and social networking

By its nature every social networking site is a public place – ask yourself

- Would I be happy if this were placed on a poster at school?
- Is this the kind of information I would be happy for my family/friends/teacher to see?
- Is this the kind of information that really reflects who I am?
- Would I be happy for a prospective employer to see my site before they interviewed me?

Many schools and companies block social networking sites to so that students or employees do not spend too much time on these sites instead of working. Other reasons include the abuse of resources, such as bandwidth, especially by the downloading and uploading of large files such as videos and photographs.

Anti-virus software

Anti-virus software is software that scans computer files for viruses and tries to eliminate them. It detects the virus by scanning the computer file and comparing it to its database of virus definitions.

A virus signature or definition is the pattern that uniquely identifies a virus. Because new viruses and variants of old viruses appear daily, these definitions need to be updated

Netiquette and email

- Make sure that your email messages are clear of any errors.
- Do not type email messages in capital letters. If you do, it implies that you are shouting at the other person.
- Do not attach any files that contain viruses.
- Never be insulting in an email message.
- Emotions and emojis should only be used in informal correspondence, or in messages to people you know personally.
- Never pass on chain mail, hoaxes or spam.
- Be careful of a large attachment, contact the recipient and agree on a suitable method – e.g. Google Drive.
- If you forward an email message to many people, rather add their addresses in the Bcc field. It this way the message will not be seen as spam and you will not be giving out people's email addresses to others.
- Be careful of passing on personal information in an email message, as it can easily be forwarded to others.

Activity 6

Safe internet use

- Use a secure password.
- Pay careful attention to the websites and links you open.
- Do not share sensitive information unnecessarily.
- Do not download suspicious programs or attachments.
- Keep antivirus applications up to date.
- Keep other software up to date.

The email and internet are not always safe and secure. You might receive e emails from scammers and cybercriminals who are looking to get information from you, such as your banking information and passwords. You should, therefore, avoid storing any sensitive information, such as credit card numbers and passwords on your computer, or sending details to anyone asking for them. In this section, we will look at email threats and what you can do to ensure safe email and internet use.

It is important to know that not every computer problem is caused by a virus. How will I know that I have a virus on my computer?

- Files suddenly start disappearing.
- The computer slows down dramatically.
- Programs stop working properly.
- Free space on the hard drive suddenly gets greatly reduced.
- Error messages that you have not seen before start appearing.
- The computer no longer boots up.
- Your anti-virus software reports the threat or presence of a virus.

Secure URL

When a URL begins with https:// or a small closed lock is displayed somewhere on the page, often next to the URL, it means that the site is encrypted for security.

We all are using the internet for communication and research. We must always be aware of the fact that while using this, there are harmful threats that we need to know about.

Best practices when interacting with others online

Using instant messaging and social networking sites such as Facebook and Instagram are very common these days. You always need to be aware that the person with whom you are communicating may not be who they say they are.

- Do NOT give out any personal details such as your name, address or telephone number to people you meet online.
- Do not decide to meet in person with someone you have met online.
- If someone makes you feel uncomfortable by asking personal questions or using bad language, then discontinue the conversation immediately and inform an adult.
- It is acceptable to ignore friend requests from strangers on social networking sites.
- Consider turning off the geotagging function on your mobile device to keep your location secret.

Being safe on the internet – watch the following video:

https://youtu.be/HxySrSbSY7o

Dangers (viruses)

The following table shows the common email and internet threats, as well as what you can do to protect yourself from potential threats.

TYPE	DESCRIPTION	PROTECTION
Virus	A computer virus is any software that will affect your computer in a negative way – without your knowledge. Many viruses are also designed to disrupt security in systems. A virus does not attack hardware, but the software that controls the hardware.	• Make sure you have an anti-virus program installed. • Setting your anti-virus program to update the database of definitions automatically when you are connected to the internet. • Setting your anti-virus software to scan incoming and outgoing email. • Scanning email attachments and downloaded files before opening them. • Avoiding pirated software because malware is often packaged with pirated software. • Do not run programs obtained from untrusted sources. • Disable the autorun feature for flash drives.
Trojans	A Trojan horse is another type of virus that pretends to be useful software. This program could delete files on your computer or even scan your computer for personal information and send it off to the person who created the Trojan. One of the most dangerous types of trojan horses is called a keylogger, which records every key you press on the computer and sends the information to a hacker on the internet. Unlike viruses and worms, Trojans do not reproduce themselves or infect other files. They rely on you to activate them.	• Do NOT open any emails, or download any attachments from unknown sources. • Only use software from sites that are trustworthy, and to steer well clear of pirated software, as the pirated copy might have been modified to include a Trojan. • Install antivirus software so that it will scan every file that you download and protect you from these types of threats.

TYPE	DESCRIPTION	PROTECTION
Worms	A worm is malware that can travel from one computer to another computer or through the network, without any human interaction. It is able to reproduce itself many times and so your computer could send out thousands of these worms that they take up your entire computer's available memory or free hard disk space.	• Use updated anti-virus software on your computer. • Do not click on any links on emails from unknown sources. • Avoid downloading attachments from unknown sources. • Install antivirus software, with a software firewall so that it can block any potential threats from the network.
Spam	Also known as junk mail – email advertisements sent to you that you did not request. This can take up a lot of time to filter and delete the unwanted emails, which also take up unnecessary space.	• Be careful of who you give your email address to. • Many service providers filter out as much as possible spam. • Investigate the capabilities of your email program. Most programs allow you to set up rules to filter out spam and automatically send it to a so-called junk or spam folder. Some anti-virus programs have anti-spam software included. • Never respond to spam (this merely confirms a valid email address).
Hoax	An internet hoax is a message or article intended to deceive or defraud others. It can be sent via email, SMS, WhatsApp, Facebook and Twitter posts. Hoax warnings are passed on by users who think that they are helping other people by spreading the warning. The most common virus is the “email hoax”. Many email hoaxes encourage people to forward the message to as many recipients as possible so that they can get a reward for themselves or on behalf of someone else. The internet community is swamped with email hoaxes and scams.	• Do not open any emails, or download any attachments from unknown sources. • Delete these messages to take care of this problem. • Install antivirus software, this will scan every file that you download to protect you from this type of threat. • When people try to legitimise information by saying that they got it from a friend of a friend, it is probably not true. • If you recognize a message as being a hoax, simply delete it. • Be particularly aware of virus hoaxes that encourage you to delete files that may actually be crucial to the functioning of your computer.

TYPE	DESCRIPTION	PROTECTION
Ransomware	Ransomware is a particularly malicious virus that locks all of a user's files. Thanks to the strong encryption, it can be physically impossible to unlock these files on your own. The only way to gain access to the file is by paying the virus creator a specific amount of money (usually around R3 000) within 72 hours.	• If your computer is infected with ransomware, do research online to find out what happened to other users who either paid, or who did not pay the ransom and then decide if your files are worth the amount being asked.
Phishing and email spoofing	Phishing and email spoofing attacks, con people to obtain sensitive information (such as usernames, passwords and banking details) by sending emails to users that look like official emails. In the email you are given a link to a supposedly legitimate website (banking or shopping), which you are requested to visit in order to update or confirm your account details. This website has been set up to look like the official website, but it is actually a fake website. The request is often accompanied with a warning of what will happen if you fail to do as asked. Email spoofing is the changing of an email header so that the email appears to come from a different source. It is used in spam and phishing emails to disguise the origin of the email message. For example, a spoofed email may look like it is from someone in a position of authority, making the email more credible.	• Never send sensitive information, such as usernames and passwords over email. • Check that the site is secure. • No company will ever ask for this information via email or phone. • SmiShing is when the phishing attack is done via an SMS on a smartphone. Short for SMS phishing.

TYPE	DESCRIPTION	PROTECTION
Pharming	Pharming is similar to phishing – but not sent through an e-mail. It creates an official-looking website that requests sensitive information. The user is automatically redirected to another (fake) webwide even if he/she types in the correct URL for the official website. A very common pharming attack allows users to "change" their passwords. Instead of changing their passwords, the user's username and password are recorded and their account is taken over. Pharming is similar to phishing but the used does not get sent an email. Pharming is a scamming practice where a criminal is then able to use any data the user enters – usually passwords and PINs.	• Although pharming is very hard to detect and prevent, do not follow any links to change your password, unless you have requested the password change. • Verify the domain name and web address of any website that requests sensitive information. • Ensure that you have up to date anti spyware software installed. • Ensure that the site you are accessing is secure. • Many sites requiring secure information will warn you if you are redirected to another site. Always pay attention to these warnings.

Activity 5

For more information on viruses, worms, trojans:

https://youtu.be/a8hZQxWC3A8

Impact on society – how ICTs influence one's life and life styles

Definition

Information and communication technology (ICT) are the combination of hardware, software, and communication technologies used to process, store, retrieve, transmit, and manipulate data, often in the context of business, education, healthcare, and other sectors.

The impact of ICT on the individual

Communication

We use social networking sites and instant messaging to communicate, share opinions. We use email to communicate in more detail. All this communication can take place through our smartphones and tablets.

This also means that we are never out of reach of mobile communications. We can never really switch off.

Access to information

We live in the Information Age.

Today information is considered to be a commodity. Any information that we need can be reached nearly immediately, because our source of information is with us all the time.



Information is becoming more accessible all the time – via WWW, SMS, cell phone and TV. Information surrounds you constantly. In order to use this to your advantage you need to be able to:

- Find any information you may need immediately
- You are able to see if a source is reliable or not
- You can analyse and summarise your information accurately

Leisure

Most of the things we entertain ourselves with these days only require the press of a button. Examples:

- Series, movies, music of your taste, books and magazines are all available through the internet and smartphones.
- You can choose programmes online.
- You can buy a ticket to travel online.
- Computer games range from simple games to complicated simulations, or competitive gaming online.
- If you want to exercise you can find fitness programs or healthy eating habits online.

The impact of ICT on Businesses

The competitive edge in business no longer depends only on resources and physical possessions or location – but on who has the best information available, and on who can process this information in the best and the quickest way.

Information and communication technology (ICT) have become the backbone of businesses nowadays. Can you imagine a world where emails, video conferencing, and document sharing don't exist? It's hard to imagine a modern business functioning without these essential technologies. With ICT, businesses can collect, store, and analyse data more efficiently, which in turn helps them make informed decisions. And let's not forget about communication technologies that enable companies to coordinate with employees and clients worldwide

In short, ICT has revolutionized the way businesses operate, enabling them to become more efficient, productive, and competitive in the global market.

One of the biggest running costs of a business is employees' salaries and wages, and one of the big advantages of a home office is that you do not need administrative staff for tasks the computer allows you to do yourself, such as:

- Create or edit any document.
- Manage budgets, keeping track of your accounts.
- Communicating with clients and suppliers anywhere in the world.
- Filing and organising client data, contacts, diaries, etc.
- Advertising your product or service to people all over the world.

The computer makes it possible to handle all these tasks.



https://www.studysmarter.co.uk/explanations/business-studies/influences-on-business/information-and-communication-technology-in-business/

Impact of ICT on education

Education, like so many other things in the world, are constantly changing. The manner in which learners learn and are taught will also change to keep pace with new developments. ICT can assist learners in absorbing knowledge and help prepare them for being part and taking the lead in this changing world. Examples:

ICT use in the management of a school

- Create timetables.
- Set up own examination papers with Word processors.
- Share information with parents via email, SMS or Social media platforms.
- Calculate marks and produce reports on the learners' performance.
- Market the school via a website/social media.



ICT use by teachers for presentation of lessons

- Data projectors present what is on the computer screen.
- Electronic whiteboards are large boards for presenting information interactively with the aid of special software.
- All administration documents, like lesson plans, etc are typed up and neatly formatted using a word processor.
- Use Computer programs to display video's, manipulate data.

ICT use by learners

- Retrieve information from the Internet.
- Process data in to get information.
- Give neat assignments using applications such as a word processor, Power Point Presentations, etc.
- Create pictures and diagrams using Paint or SmartArt.
- Take photographs with smartphones.
- Record interviews with smartphones
- Watch videos that explain how to do practical tasks in all the subjects.
- Use social networking sites to work with other learners on various projects.
- Use a computer program to practise a specific skill.



Computer crime – types (information theft, data theft and identity theft

COMPUTER CRIMES

Although ICTs are useful, various computer crimes can take place if you are not careful enough.

INFORMATION THEFT

Data theft – also known as information theft – is the illegal transfer or storage of personal, confidential, or financial information. This could include passwords, software code or algorithms, and proprietary processes or technologies.



A cybercriminal can have access to the following types of information:

Personal information:

Personal information, such as your identity number, can be used to steal your identity. This allows the cybercriminal to open store accounts and apply for loans using your personal information.

Financial information:

Information about your banking details can give the cybercriminal access to your banking accounts, steal your money and do online purchasing.

Social media information:

If a cybercriminal has access to your social media accounts or information, the cybercriminal can exploit your friends and family by impersonating you. This can be done by sending a message to people asking them for money, or a message containing a virus that will allow the cybercriminal to exploit more people.

Interests:



Information, such as your likes and interests, can be very valuable as it can be sold to companies. The companies then use this information to tailor make advertisements and specials that are specifically aimed at you.

To avoid these problems:

- Do not share your sensitive information unnecessarily and make sure to protect your information using a strong and secure password.
- While sharing information is part of using the internet, be selective about the websites with which you choose to share your information.
- If you suspect that someone has obtained access to your network, change your username and password.

The second type of data theft is hotlinking. Hotlinking is when someone takes a file or video from their website and links it to your website. This is problematic, as each time a user clicks on the link to download the file or view the video, your bandwidth will be used.

IDENTITY THEFT



Identity theft has become one of the fastest growing white-collar crimes in the world. It occurs when an individual's personal information such as inter alia his or her name, date of birth or credit card details is used by another individual to commit identity fraud.

Identity theft can be committed via physical means or online. The increased use of the Internet for business and financial transactions, social networking and the storage of personal information has facilitated the work of identity thieves. Identity theft has an impact on the personal finances and emotional well-being of victims, and on the financial institutions and economies of countries.

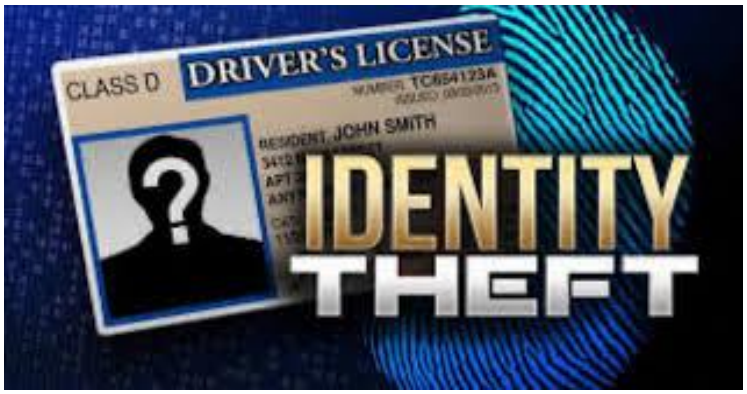
It presents challenges for law enforcement agencies and governments worldwide. Identity theft is a growing and evolving problem that requires a multi-faceted and multi-disciplinary approach by law enforcement agencies, businesses, individuals and collaboration between countries. It is advocated that businesses and institutions should take measures to protect personal information better and that individuals should be educated about their rights, and be vigilant and protect their personal information offline and in cyberspace.

How to protect yourself from identity theft

- **Secure your connection:** If you are going to use your personal information online, make sure you do so only when your connection is secure.
- **Keep your devices secure:** Protect your laptop, smartphone and tablet from malicious software and attackers by using a reliable, multi-layered, up-to-date security solution.
- **Stay away from suspicious messages and sites:** Visit our pages about spam and phishing to learn how to spot social engineering attacks that are after your sensitive data.
- **Maintain good password hygiene:** Create strong passwords that are long, hard to guess, and unique.
- **Monitor your bank and credit accounts:** Check your online banking account and credit scores regularly for suspicious activity.
- **Be careful with sensitive data:** If you want to throw away any physical documents that contain personal information, make sure you discard them in a safe manner.
- **Don't overshare:** In an era where most users have multiple social media accounts, oversharing can be a serious problem. Even more so when the posts, photos or videos contain sensitive information that might be misused to impersonate you – such as your ID, purchase orders, flight tickets or any similar documents. Avoid posting any of these, as well as too many details about your personal life and history, which could be misused by the crooks to act in your name.

Source: https://www.eset.com/za/types-of-cyber-threats/identity-theft/

Activity 7



Identity Theft and how to protect yourself:

3https://youtu.be/BtvFp9LtXLs

Activities Social Implications

Activity 1

Look at the image below and answer the questions that follow:



1. Is this person using good posture? (1)
2. Motivate your answer by naming three aspects you would change to avoid health problems in the future. (3)

Activity 2

Watch the E-waste Slideshow and answer the questions that follow:

All these articles raise a concern on the environment.

1. Name TWO ways that you can manage your old devices such as Smartphones, Printers, etc. that will help to save the environment. (2)

2. Name TWO other ways that you can live a more 'greener' lifestyle when using electronic devices. (2)

3. Computers were supposed to create a paperless world, but the goal was never achieved. We ended up using more paper than before.
   In what way can you contribute to solve the problem mentioned above? (2)

Activity 3

1. Rate each of the following passwords as “weak”, “strong” or “very strong”:
   a) P@3sword2o23
   b) Road2Sucess#Gauteng
   c) MarYThompson (your Mom's name) (3)

2. Mention two types of access control systems that are found on smartphones other than a password or pin. (2)

Activity 4

1. 'You do not own the software that you paid for!'
   Explain this statement briefly. (2)

2. Whenever you download software you are asked to read the EULA.
   Explain what a EULA is. (2)

3. Your friend made a copy of a new program that he just purchased.
   Is he guilty of piracy? Motivate your answer by explaining what software piracy is. (2)

Activity 5

Match the appropriate term in Column B with the correct definition in Column A:

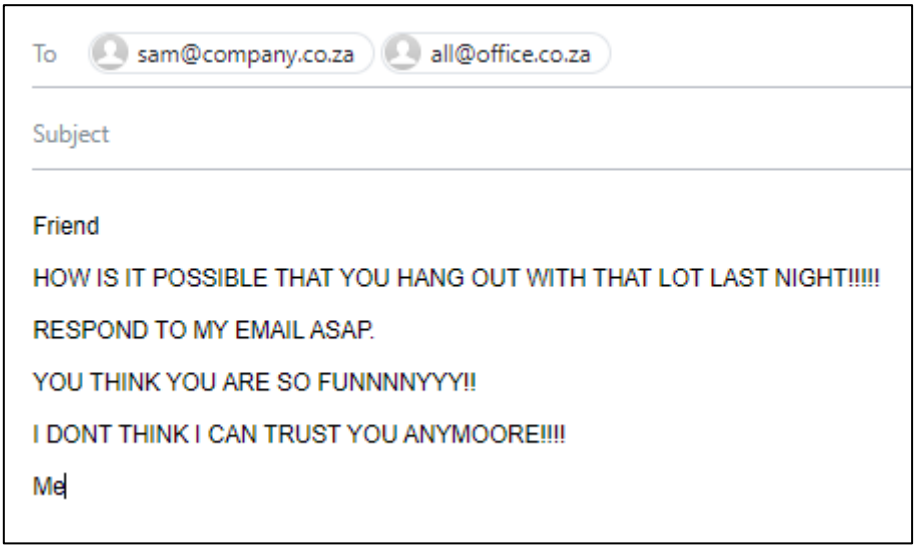
COLUMN A	COLUMN B
1. This virus pretends to be useful software. 2. A virus that redirect a user to another (fake) webwide even if he/she types in the correct URL for the official website. 3. Ay malicious virus that locks all of a user's files until the user pays a specific amount of money. 4. A virus that is able to reproduce itself many times. 5. Data that is left behind when users have been online.	A Digital footprint B Ransomware C Hoax D Worm E Trojan F Digital Citizenship G Pharming

(5)

Activity 6

Tanya sent an email to her friend Sam, but by mistake sent the email to everybody at her office.

Study the following email and answer the questions that follow:



1. What is meant by good netiquette? (2)

2. Mention three ways in which the writer has not followed good netiquette? (3)

3. How can the writer safe her reputation? (2)

Activity 7

Have a group discussion in class on the topic of Computer Crimes by discussing the following:

1. Information Theft and Identity Theft – what it is. (4)

2. Mention experiences that any of the learners had of Identity Theft in real life. (2)

3. Discuss ways to protect yourself against Computer Crimes. (4)

The educator can do this by dividing the learners in groups and give a mark out of 10 on how they contributed, or the learners can participate individually.
Marks can be given to knowledge of the topic (4), examples in real life (2) and ways to protect themselves (4).

Activity 8

1. Explain in your own words what is a virus. (2)

2. Define the following viruses:

2.1 Trojan (2)
2.2 Pharming (2)
2.3 Worm (2)

3. How can you prevent a virus infecting your computer? (3)

Activity 9

Definitions:

Explain the following concepts in your own words:

1. Digital footprint
2. Creative Commons
3. Green Computing
4. Authentication
5. Ergonomics
6. Identity theft
7. Electronic waste (e-waste)
8. Software Piracy
9. Hoax
10. Ransomware (20)

Activity 10

Question 1

Write down only the *number* of the description from Column A, and next to it the correct matching *capital letter* from Column B, for example 1.4 F.

Column A	Column B
1.1 A destructive program disguised as a useful application	A. EULA B. Wikipedia C. **Trojan** D. Non-profit E. Academic
1.2 A legal agreement that describes what you may and may not do with software	
1.3 An example of a website that lets anyone add content to web pages	

[3]

Question 2

State whether each of the statements 2.1–2.4 below is TRUE or FALSE.

If a statement is FALSE, then write down the word 'False' and, next to it, only the word(s) which should replace the underlined word(s) to make the statement TRUE.

Note: No marks will be awarded if 'False' is given without a suggested replacement.

Example 1: A printer is an example of an output device.

Answer: True

Example 2: A printer is an example of software.

Answer: False – hardware

2.1 Spoofing refers to a situation where a user is redirected to another (fake) website even if they type in the correct address for the official website. (1)

2.2 Email pharming is used to disguise the origin of an email message. (1)

2.3 Copyright is a legally binding contract between the user and the software company whose software the user is installing. (1)

2.4 Burning is the process of copying digital content from CDs and DVDs. (1)

[4]

Question 3: Social Implications

3.1 Describe ONE way of contributing to *green computing*, that is not directly related to printing or the use of paper. (1)

3.2 Phishing emails, pharming scams and email spoofing have become everyday occurrences.

3.2.1 What is the main aim of phishing emails? (1)

3.2.2 Explain why phishing scams are more difficult for a user to deal with than pharming scams. (2)

3.2.3 What is email spoofing? (1)

[5]

TOTAL **[12]**

Activity 11

Question 1:

1.1 Ergonomically designed keyboards are becoming more popular.

1.1.1 Give ONE feature of an ergonomically designed keyboard. (1)

1.1.2 Give the name of the type of injury that can result from the use of a keyboard that is not ergonomically designed. (1)

1.2 Give ONE tip, that is not applicable to printers, on how to practice green computing. (1)

1.3 For what useful function are hackers often hired by computer security companies?(1)

1.4 What other cost is typically involved in running a large network (e.g. in businesses), besides the cost of the hardware and software? (1)

1.5 Explain what *software piracy* refers to. (2)

1.6 For what reason would an anti-virus program not warn you of the presence of a virus on your computer? (1)

1.7 Give ONE reason for turning off the geotagging function (GPS) on your mobile device. (1)

1.8 Explain why even a very 'strong' (secure) password will not protect one from a phishing attack. (1)

[10]

Question 2:

2.1 Interviewing people can be a valuable source of information.

Give TWO etiquette ('good manners') rules you should follow when conducting an interview, <u>besides</u> making an appointment with the person. (2)

2.2 Describe TWO indications from an email you received that the email is an attempt at *phishing*. (2)

2.3 Describe TWO general ways of reducing the amount of spam you receive, <u>besides</u> using any additional software. (2)

2.4 Describe ONE general way of contributing to green computing, that is <u>not</u> directly related to printers or printing. (1)

2.5 Explain what a *site license* is and what it allows one to do. (2)

[9]

Question 3:

3.1 With so many online classes taking place, through channels like Skype, teachers were asked to remind learners about netiquette.

3.1.1 Explain what netiquette is. (2)

3.1.2 Give TWO netiquette guidelines specifically for online classes. (2)

3.2 Some teachers complained that they started receiving a lot of spam regarding adverts for products they could use to protect themselves by considering the POPI Act.

Give TWO strategies teachers could use to avoid (and to deal with) all the spam.(2)

3.3 Explain what it means when a virus is quarantined. (1)

[7]

TOTAL: **[26]**

Solutions: Social Implications

Activity 1 solution

1. No ✓ (1)
2. Sit up straight
   Do not sit too close to the monitor
   Screen and keyboard central - don't twist your back
   Make sure your forearms are level with your keyboard.
   Make sure the mouse is positioned close to the keyboard.
   The back and height of your chair, as well as the height of your armrests should be adjusted to support your body in this position.
   Place your feet next to each other

(✓✓✓ Any 3)

Activity 2 Solution

1. Refill printer cartridges, rather than buying new ones
   Instead of purchasing a new computer, try refurbishing an existing device
   Buy energy-efficient notebook computers, instead of desktop computers
   (✓✓ Any 2)

2. Use the hibernate or sleep mode when away from a computer for extended periods
   Activate the power management features for controlling energy consumption
   Make proper arrangements for safe electronic waste disposal
   Turn off computers at the end of each day (✓✓ Any 2)

3. We should print documents when necessary, and rather file and send documents electronically.
   Try to avoid the senseless wasting of paper by proofreading on the screen before you print or by printing 2 pages on 1.
   You can also save paper by printing on both sides of the paper (double-sided printing), as well as by recycling paper.
   Performing a spell check on soft copies of documents. (✓✓ Any 2)

Activity 3 Solution

1. a) Strong
   b) Strong
   c) Weak

2. Fingerprint scan
   Two-factor authentication
   PIN authentication
   Pattern authentication
   Keystroke authentication (✓✓ Any 2)

Activity 4 Solution

1. They did not buy the software, but bought the licence to use the software. ✓
   There is conditions that you must adhere to when you buy software. ✓ (2)

2. It is a legally binding contract between the user and the software company. ✓
   It describes what you may and may not do with the software. ✓ (2)

3. No, he is not guilty. ✓ (1)
   Software piracy refers to the illegal installation, copying and distributing of proprietary software. ✓
   You can generally only make one copy for backup purposes – you may not make copies to give to your friends. ✓ (Any 1 ✓)

Activity 5 Solution

1. E ✓
2. G ✓
3. B ✓
4. D ✓
5. A ✓ (5)

Activity 6_Solution

1. Netiquette is using good manners ✓ when communicating electronically or when using the internet ✓. (2)

2. No subject line
   Shouting (all in capitals)
   Spelling errors
   Tone of message is insulting
   Too many exclamation marks (Any 3 ✓✓✓)

3. The writer can send another email to everyone apologising for the previous email as well as apologising for the content of the email, acknowledging that what she said was wrong. ✓
   She should apologise to her friend Sam as well for what she said. ✓ (2)

Activity 7_Solution

1. Data theft – also known as information theft – is the illegal transfer or storage of personal, confidential, or financial information. This could include passwords, software code or algorithms, and proprietary processes or technologies ✓✓

   Identity theft - It occurs when an individual's personal information such as his or her name, date of birth or credit card details is used by another individual to commit identity fraud. ✓✓

2. Examples – use own discretion (2)

3. Secure your connection
   Keep your devices secure
   Stay away from suspicious messages and sites
   Maintain good password hygiene
   Monitor your bank and credit accounts
   Be careful with sensitive data
   Don't overshare (Any 4 ✓✓✓✓)

Activity 8_Solution

1. A computer virus is any software ✓ that will affect your computer in a negative way – without your knowledge. ✓ (2)

2.1 A Trojan horse is type of virus that pretends to be useful software. ✓ Trojans do not reproduce themselves or infect other files. They rely on you to activate them. ✓ (2)

2.2 Pharming is not sent through an e-mail. It creates an official-looking website that requests sensitive information. ✓
The user is automatically redirected to another (fake) webwide even if he/she types in the correct URL for the official website. ✓ (2)

2.3 A worm is malware that can travel from one computer to another computer or through the network, without any human interaction. ✓ It is able to reproduce itself many times. ✓ (2)

3. Make sure you have an anti-virus program installed.
Setting your anti-virus program to update the database of definitions automatically when you are connected to the internet.
Setting your anti-virus software to scan incoming and outgoing email.
Scanning email attachments and downloaded files before opening them.
Avoiding pirated software because malware is often packaged with pirated software.
Do not run programs obtained from untrusted sources.
Disable the autorun feature for flash drives. (Any 3 ✓✓✓)

Activity 9_Solution

1. A digital footprint is data that is left behind when users have been online.

2. A Creative Commons (CC) license is a copyright licenses that enable the free distribution of an otherwise copyrighted "work". It is used when a developer wants to give people the right to share, use and build upon a program that they have created.

3. Green computing, also known as green technology, is the use of computers and other computing devices and equipment in energy-efficient and eco-friendly ways.

4. Verification helps make sure that your personal information stays private, safe and secure.

5. When speaking of computer ergonomics, the focus is on the way in which people use their computers, for the final goal to make people more comfortable and reduce discomfort and injuries.

6. It occurs when an individual's personal information such as inter alia his or her name, date of birth or credit card details is used by another individual to commit identity fraud.

7. This concept refers to all broken and outdated electronic devices and equipment that get dumped.

8. Software piracy refers to the illegal installation, copying and distributing (on CDs, DVDs or other storage medium) of proprietary software or if illegal copies are sold at a cheap price.

9. An internet hoax is a message or article intended to deceive or defraud others. It can be sent via email, SMS, WhatsApp, Facebook and Twitter posts.

10. Ransomware is a particularly malicious virus that locks all of a user's files.

    Thanks to the strong encryption, it can be physically impossible to unlock these files on your own. The only way to gain access to the file is by paying the virus creator a specific amount of money (10 x 2 = 20)

Activity 10_Solution

Question 1

1.1	1.2	1.3
C	A	B
Trojan	EULA	Wikipedia
✓	✓	✓

[3]

Question 2

[Note: Accept correct answers even if 'False' is not stated]

2.1 False — Pharming ✓ (1)

2.2 False – spoofing ✓ (1)

2.3 False – EULA ✓ (1)

2.4 False – Ripping ✓ (1)

[4]

Question 3: Social Implications

3.1 Any ONE way (not directly related to printing or use of paper) of: ✓

- Power saving (e.g. switching off computers and devices you are not using) / Using energy-efficient equipment
- Use safe / environmentally friendly ways of disposing of old hardware and consumables
- Try upgrading / selling / donating / repairing hardware (e.g. refilling printer cartridges) / Rather than throwing old or broken hardware away, see if someone else can make use of it, etc. (1)

3.2.1 They try to con / trick users into giving out personal / confidential details ✓ (1)

3.2.2 Phishing scams rely on the user clicking on a link in an email ✓

With pharming, the user is redirected to another (fake) website automatically (even if he/she types in the correct URL for the official website) ✓ (2)

3.2.3 The changing / disguising of an email header (the addressing section of the email) so that the email appears to come from a different source ✓ (1)

[5]

TOTAL **[12]**

Activity 11_Solution

Question 1:

1.1.1 Any ONE feature of: ✓

- Wrist / palm rests
- Curved shape
- Soft-touch keys (1)

1.1.2 RSI (Repetitive Strain Injury) / CTS (Carpal Tunnel Syndrome) ✓ (1)

1.2 Any ONE tip (not applicable to printers) of: ✓

- Switch off computers / devices not being used
- Recycle or dispose of old / broken equipment in an environmentally friendly way
- Try to repair or upgrade old / broken equipment
- Donate old / broken equipment to someone who can make use of it, etc. (1)

1.3 To test security systems / trace bugs (and offer suggestions on how to improve their systems) ✓ (1)

1.4 Cost of hiring a network administrator / someone to manage the network ✓ (1)

1.5 The illegal ✓

installation / copying / distribution of (proprietary) software ✓ (2)

1.6 The anti-virus program does not have that particular virus signature / definition in its database of virus definitions ✓

[Accept: the virus definitions have not been updated] (1)

1.7 Any ONE reason of: ✓

- To keep your location secret
- To save battery power (1)

1.8 Users are tricked into giving out their passwords (In a successful phishing attack, the password is disclosed voluntarily) ✓ (1)

[10]

Question 2:

2.1 Any TWO rules of: ✓✓

- Be prepared / know what questions you will ask
- Be polite (thank them for their time, willingness, etc.)
- Ask interviewee if they mind the taking of notes / recording the conversation
- Do not take too long
- Do not ask irrelevant questions, etc.

[Do not accept making an appointment with the person] (2)

2.2 Any TWO indications of: ✓✓

- Comes from a source you do not normally deal with
- Spelling mistakes
- Lack of personal details (user is not addressed by name)
- Sense of urgency in terms of responding (e.g. what will happen if you don't respond)
- Requests the user to click on a link, etc. (2)

2.3 Any TWO ways of: ✓✓

- Using an ISP that detects and blocks spam
- Use filters of existing email program
- Use anti-spam software built into existing anti-virus software on the computer
- Be careful of who you give your email address to
- Make use of different email addresses (for different accounts/usages)
- Blacklist/block senders of spam
- Never respond to spam, etc.

[Do not accept answers related to the use of any additional software] (2)

2.4 Any ONE way of: ✓

- Switch off computers and devices you are not using.
- Rather than throw old or broken hardware away, see if someone else can make use of it.
- Try to repair or upgrade old or broken hardware. (1)

2.5 It is a software licensing agreement ✓

that allows the software to be installed on all computers within a business/organisation ✓ (2)

[9]

Question 3:

3.1.1 The use of good manners (and showing respect for other users) ✓

when using the internet (or electronic communications generally) ✓ (2)

3.1.2 Any TWO netiquette guidelines (specifically for online classes) of: ✓✓

- Use the same manners as would be expected in any normal class (no eating, listening carefully, not shouting, not interrupting, etc.)
- Check sound and video settings before you start
- Check there is sufficient light in your venue
- Ensure you are working in a quiet area
- Mute your microphone unless you need to speak
- Dress appropriately
- Use the 'Raise your hand' option if you wish to say something
- Do not do other work while you are in the class
- Make sure your surroundings are neat and clean (2)

3.2 Any TWO strategies of: ✓✓

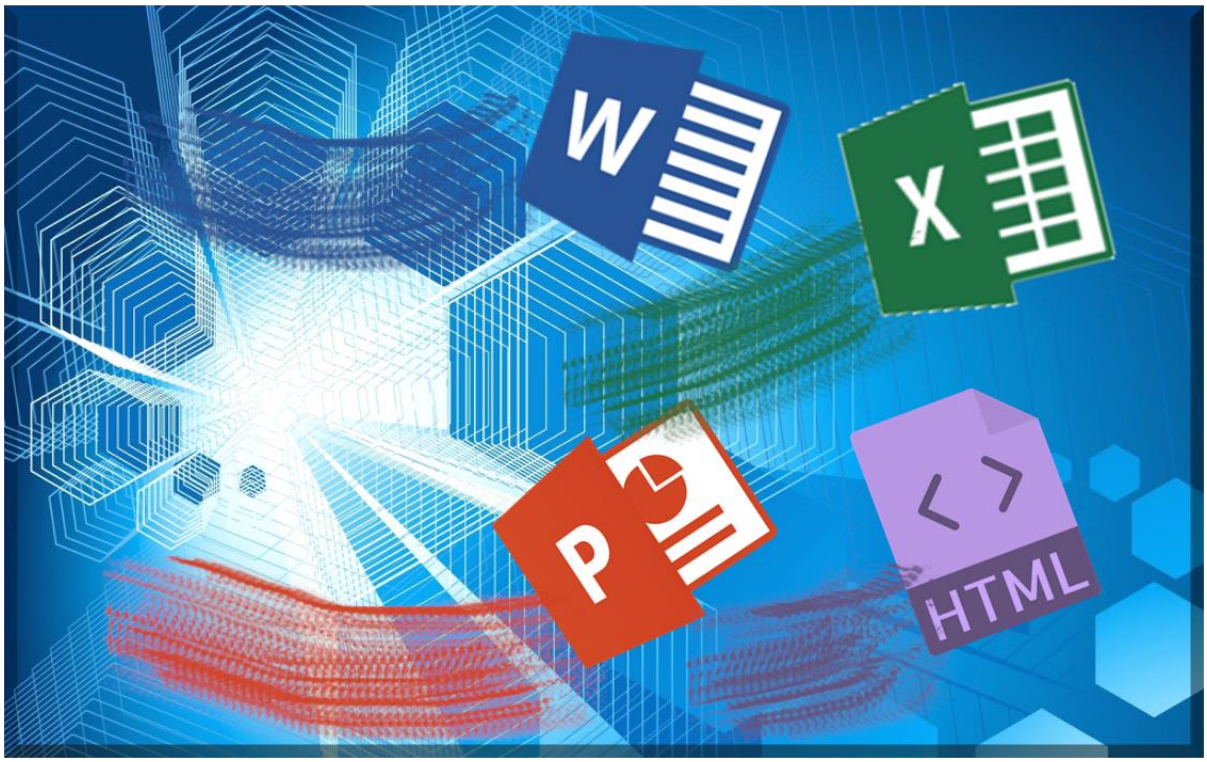
- Be careful of who they give their email address to (limit it)
- Check if their ISP can help
- Use the capabilities of their email program (e.g. to set up rules to filter out spam, and automatically send it to the Junk or Spam folder)
- Use a dedicated utility to filter out spam, e.g. MailWasher
- Never respond to the spam (this merely confirms a valid email address) (2)

3.3 The virus is placed in an area of the disk where it cannot infect the computer ✓ (1)

[7]

TOTAL **[26]**

Practical unit



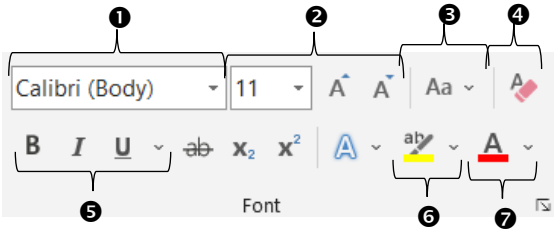
Summary of Word Processing Document

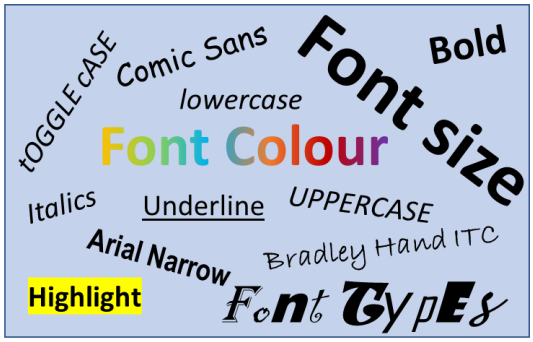
Text formatting

Text formatting refers to any changes you make to the text in your document. For example: changing the font colour of text; increasing or decreasing the size of your text and even applying a pre-set style to your headings.

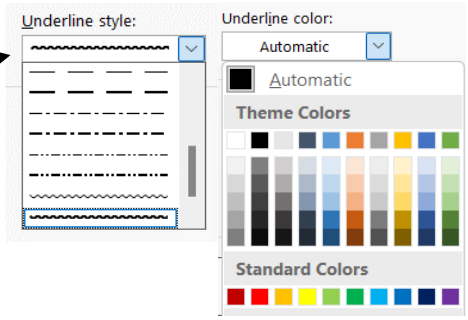
Basic text formatting

Change your text from plain and boring to interesting and exciting by using basic font formatting!





❶	Font type
❷	Font size
❸	Change Case
❹	Clear formatting
❺	Font styles (**B**old, *I*talics, U̲nderline)
❻	Highlight
❼	Font colour





Check it out!
You can even add a style and colour when you choose to underline text.

Text (*layout)* formatting

Paragraph markers are hidden formatting symbols that display various symbols to guide us in the layout of our text. Activate your Show/Hide (¶) to display these hidden symbols:

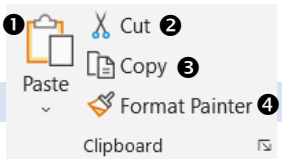
Symbol		Purpose	Keyboard key/s
¶	Paragraph marker	Ends a paragraph.	Enter
.	Space	Indicates a space between words.	Spacebar
→	Tab	Shows the position of the text.	Tab
↵	Soft enter	Ends a line in a paragraph.	Shift+Enter
°	Hard space	Prevents an automatic break line.	Ctrl+Shift+Enter

For example:

Between·these·words·you·will·find·spaces.·To·create·a·new·paragraph,·I·can·press·enter¶

I·can·also·use·tabs → to·create → a·different·layout → between → words.·A·hard·space°allows·me·to·keep·words·together·in·the·same·line.·A·soft·enter↵
creates·a·new·line·without·creating·a·new·paragraph.¶

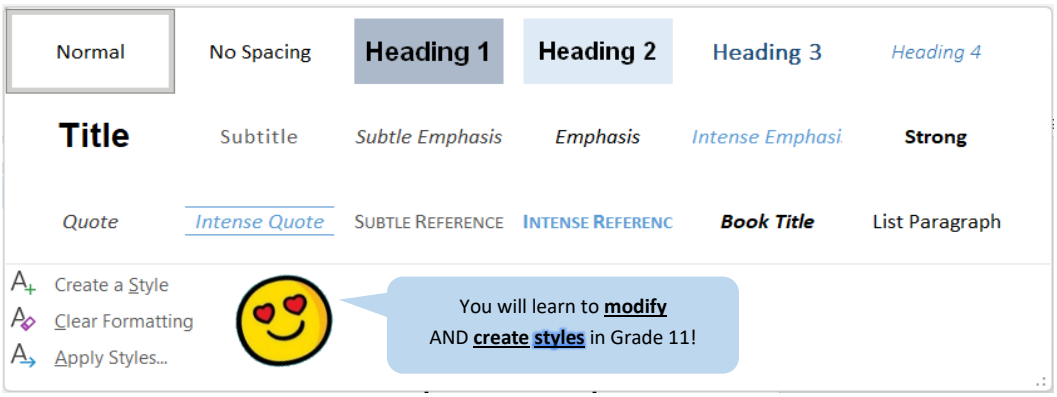
❶	Paste	Make a copy of text
❷	Cut	Move text
❸	Copy	Duplicate text
❹	Format Painter	Copies formatting



Format painter is useful in many cases. Use this to copy *formatting* on existing text to other text.

Styles

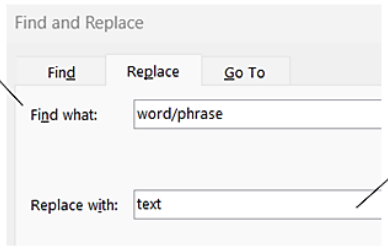
Styles have pre-set formatting features. Making us to keep formatting consistent throughout the document. Some reasons why it is beneficial to use styles is that it helps us to automatically create a table of contents or even it can even be used for cross-referencing.



Find and Replace

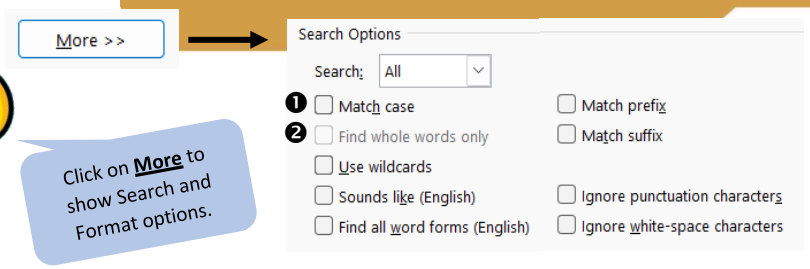
Let's say you have a document with many pages and you want to change a specific word/phrase that repeats in the document. It will be very time consuming to read through all the pages and change the word/phrase.

Luckily for us, MS Word has a feature called **Find and Replace**. This feature allows us to *look* for a word/phrase throughout the whole document and then replace this word/phrase with a different word/phrase or even in a different format.



Let's say you have a document with many pages and you want to change a specific text that repeats in the document. It will be very time consuming to read through all the pages and change the text.

Luckily for us, MS Word has a feature called **Find and Replace**. This feature allows us to *look* for a text throughout the whole document and then replace this text with a different text or even in a different format.

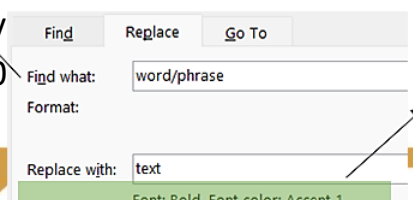




❶	Searches for: exact case	Matches the upper/lower cases in the words
❷	Searches for: exact word	Instead of parts of a word; searches for the whole word

Let's say you have a document with many pages and you want to change a specific word/phrase that repeats in the document. It will be very time consuming to read through all the pages and change the word/phrase.

Luckily for us, MS Word has a feature called **Find and Replace**. This feature



Let's say you have a document with many pages and you want to change a specific text that repeats in the document. It will be very time consuming to read through all the pages and change the text.

Luckily for us, MS Word has a feature

Advanced text formatting

We can go even deeper with our text formatting and get even more creative.

Formatting effects

Click the dialogue box on the Font group to explore more advance formatting options!

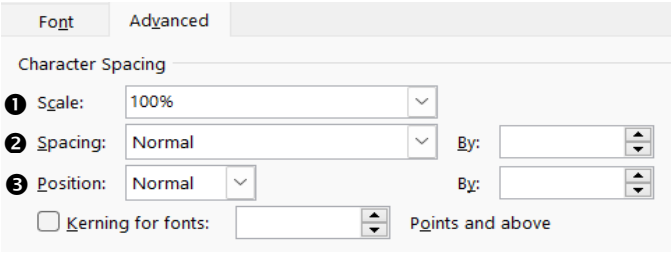
Font effects



Hidden text will not be visible, unless the Show/Hide symbols have been activated!

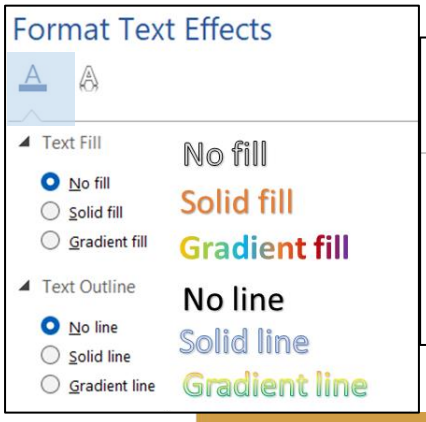


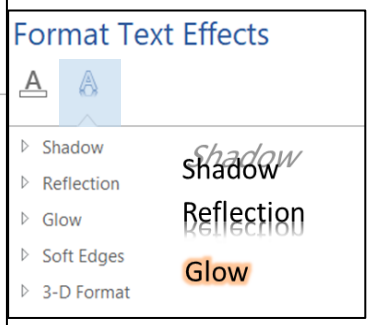
Advanced effects – Character Spacing



❶	Scale	Scale at 200%
❷	Spacing	Expanded or Condensed
❸	Position	Raised or Lowered

Text effects



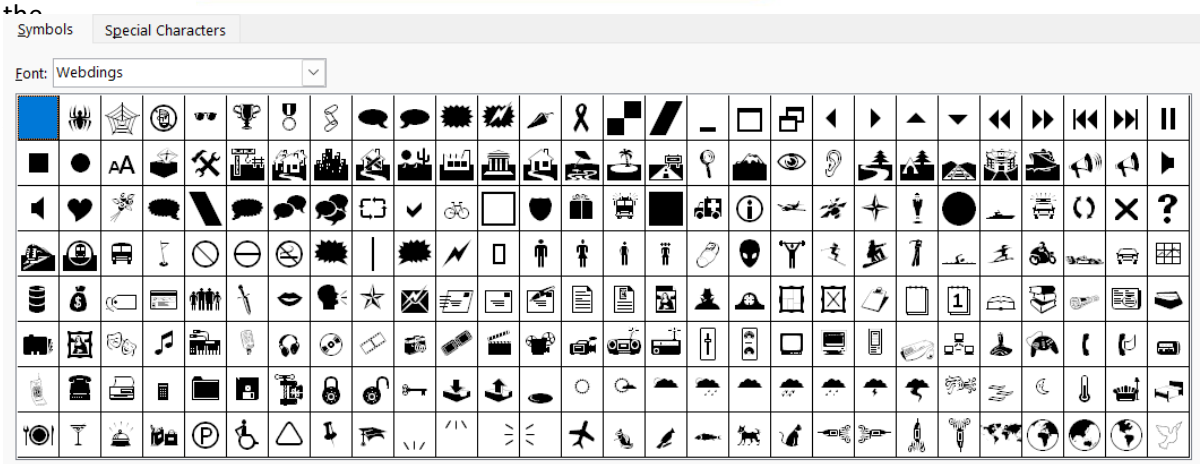


Check out the Graphics section for more detail on **Text Effects**!



Symbols

Symbols are

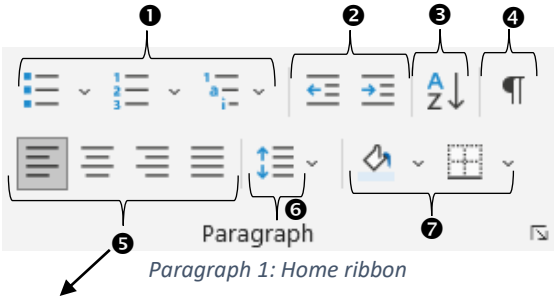


Paragraph formatting

Paragraph formatting refers to any changes you make to the layout of the *paragraphs*. When working with paragraph formatting it is always a good idea to make sure your Ruler is visible! The ruler helps us to view features like tabs, indent and columns; which makes our formatting easier.



Basic paragraph formatting



Paragraph 1: Home ribbon

❶	Bullets & Numbering
❷	Indentation
❸	Sort
❹	Show/Hide
❺	Alignment
❻	Line & Paragraph spacing
❼	Borders and Shading

Click the **dialogue box** on the Paragraph group to explore more options!

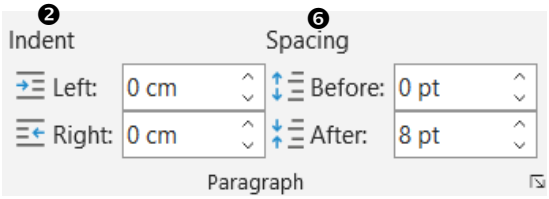


Text can be **Left** aligned, which means that it is aligned to the left side of the margin.

Text can be **Right** aligned; which means that it is aligned to the right side of the margin.

Text can be **Centred**; which means that it is aligned in the middle of the page.

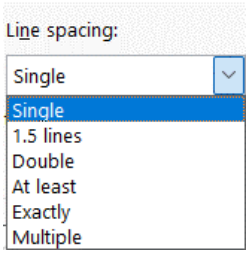
Text can be **Justified**; which means that the alignment will be equal to the left and right side of the margin.



Paragraph 2: Layout ribbon

Line & Paragraph Spacing

Line spacing refers to the space between the lines of a paragraph.



Single line spacing Single line spacing Single line spacing Single line spacing Single line spacing Single line spacing

Double line spacing Double line spacing Double line spacing Double line spacing Double line spacing Double line spacing

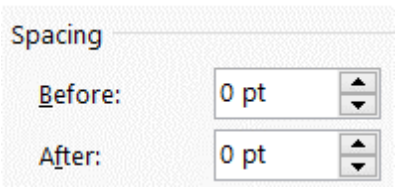
1.5 line spacing 1.5 line spacing 1.5 line spacing 1.5 line spacing 1.5 line spacing 1.5 line spacing

Paragraph spacing refers to the space between the paragraphs.

There is spacing **before** the paragraph, i.e., the top of the first line of the paragraph will have space.

Then there is spacing **after** the paragraph, i.e., the bottom of the last line of the paragraph will have space.

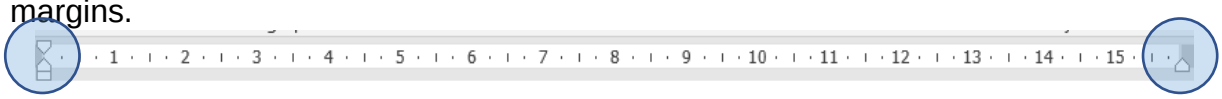
Adding paragraph spacing separates different paragraphs from each other, making it easier to identify.



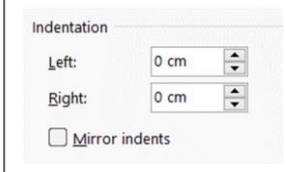
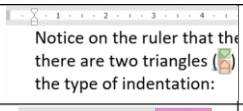
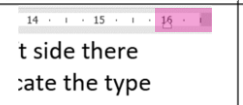
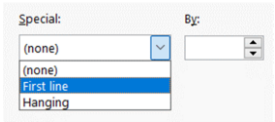
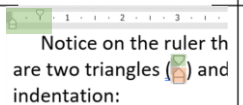
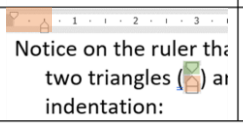
Compute

Indentation

Paragraph indentation refers to the indent of text on the left and/or right-side of the margins.



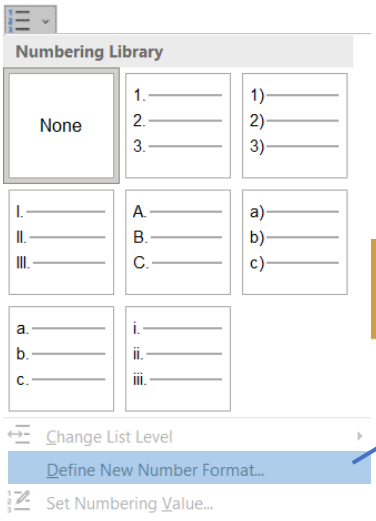
Notice on the ruler that there are three triangles on the sides of the margins. On the left side there are two triangles ( ) and on the right side there is one triangle ( ). These triangles indicate the type of indentation:

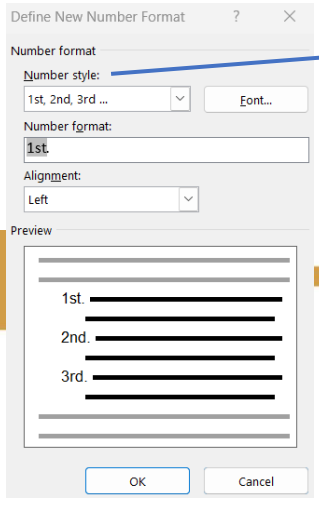
	Normal		Left		The paragraph lines are dented in to the left with 0.5cm.
			Right		The paragraph lines are dented on the right side with 0.5cm.
	Special		Left: First line		The first line of the paragraph is dented in to 0.5cm
			Left: Hanging		The lines of the paragraph are dented in to 0.5cm.

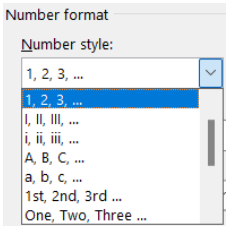
Bullets & Numbering

Bullets and numbering are used to organise text in a list format. With bullets you can create a random ordered list and with numbering you can create an ordered list.

Numbering lists:



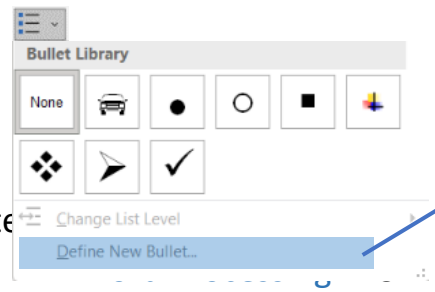


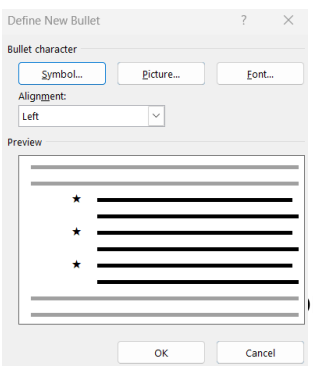


Not finding the type of Bullet or Number you want – click Define New...



Bullet lists:

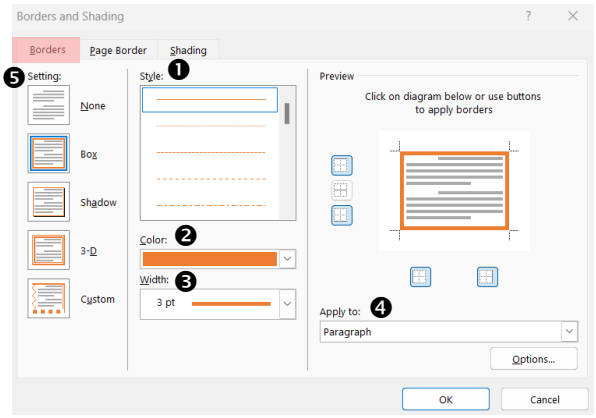




You can use any symbol or even a picture as a bullet!

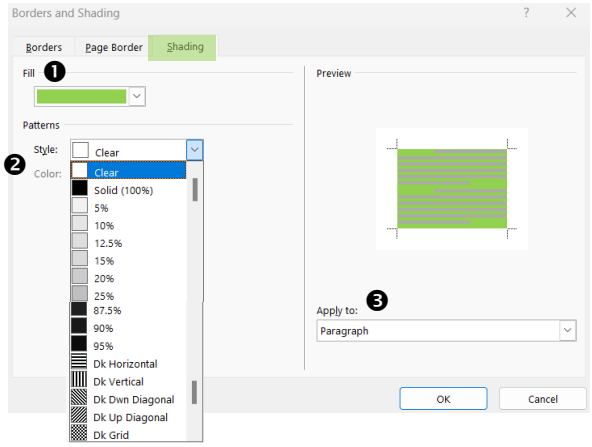
Borders and Shading

You can apply borders and/or shading around your paragraphs to be more create or emphasise th Borders and Shading... settings for more options:



Paragraph borders Paragraph borders Paragraph borders Paragraph borders Paragraph borders Paragraph borders Paragraph borders Paragraph borders

❶	Style	Type of line
❷	Colour	Colour of line
❸	Width	Thickens of line
❹	Apply to	Apply to paragraph or text
❺	Settings	Different style settings

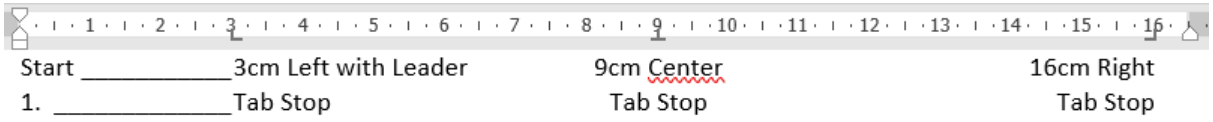


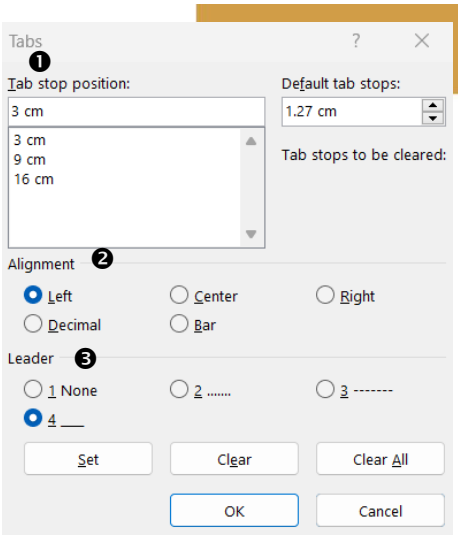
Paragraph shading Paragraph shading Paragraph shading Paragraph shading Paragraph shading Paragraph shading Paragraph shading Paragraph shading

❶	Fill	Fill colour for the shading
❷	Patterns	Add a style with a colour
❸	Apply to	Apply to paragraph or text

Tab Stops

Tabs help us to create a better layout so that we can align the text in a specific manner.





❶	Tab stop	Position on the Ruler where the text should start
❷	Alignment	Align the tab stop to Left; Right; Center; Decimal or Bar
❸	Leader	A leader refers to the line between text

The **Ruler** is your best friend when you do **Tab Stops**! Use it to guide you in the alignment of your text.

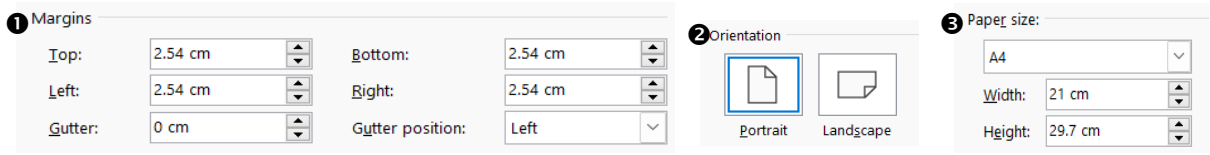


Page formatting

Page formatting refers to any layout changes you make to the pages of the document. For example, page size, adding page numbers to the document or even dividing information into columns.

Page Setup

The setup of pages can change according to the margins, size, and orientation.



❶	Margins	The blank spaces around the page	Top; Bottom; Left; Right
❷	Orientation	The direction of the page	Portrait; Landscape
❸	Paper size	The size of the page (A4; A5; etc.)	Height; Width

NOTE: The *Gutter* and *Gutter position* –
this is usually added to create extra space on the left or top to bind the document after printing.

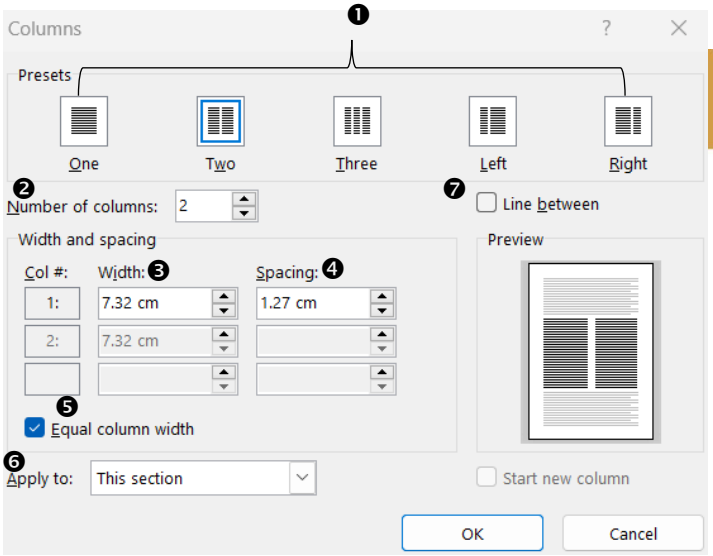
Columns

Columns are used when you want to divide information into different sections on a page. We usually see this type of formatting in magazine or newspaper articles.

Check this out!
There are **THREE** columns in the newspaper article: Column 1's width is bigger than column 2 and 3's width. And column 2 and 3 are equal in size!







❶	Pre-set options of column settings which allows for 1 – 3 columns or left/right.
❷	Choose a specific number of columns if the desired option is not a pre-set option.
❸	Change the width of the columns. If you want different widths, untick at ❺.
❹	Change the size of the blank space between the columns.
❺	Divides columns into equal width or you can set different widths to columns.
❻	Apply to the specific text or to the all the text in the document.
❼	Display a line between the columns. This helps readers distinguish the columns.

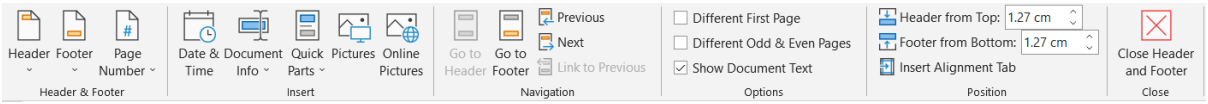
Page header & footer

Page headers and page footers refers to the area on the top (header) and at the bottom (footer) of the page in the *margins*. The information typed in the header and/or footer will appear on all pages of the document.

The header and/or footer usually contain information such as page numbers, file paths, dates, etc. The screenshot below is the Header & Footer ribbon that appears once you activate the area.



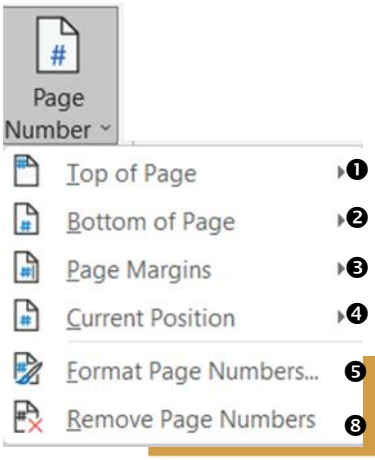
Tip:
Double click in the top margin area to activate the header and footer!

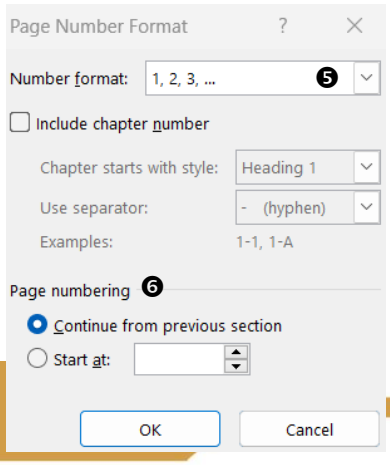


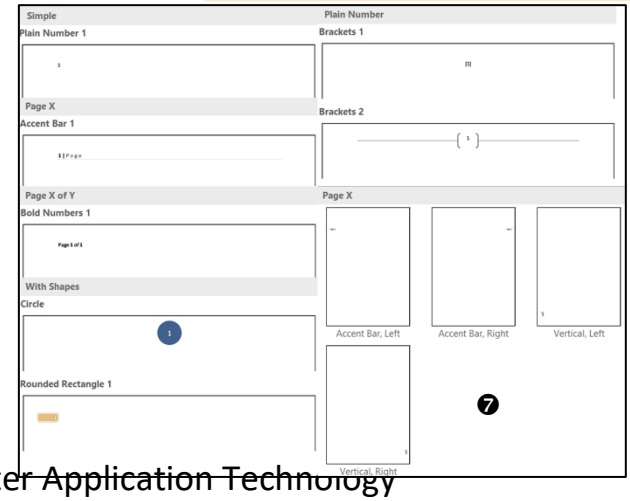


Page numbering

Page numbering allows us to manage the order of our pages in a document. This is especially useful in documents with many pages.







❶	Page numbers will appear in the header
❷	Page numbers will appear in the footer
❸	Page numbers will appear on the sides
❹	Page numbers will display at the position of the cursor: anywhere in the document
❺	The format (style) of numbering can be change. i.e.; 1, 2, 3 → A, B, C → i, ii, iii,
❻	Set the numbers to continue from previous pages/start with specific number
❼	A sample of pre-set options
❽	Remove page numbers from the document

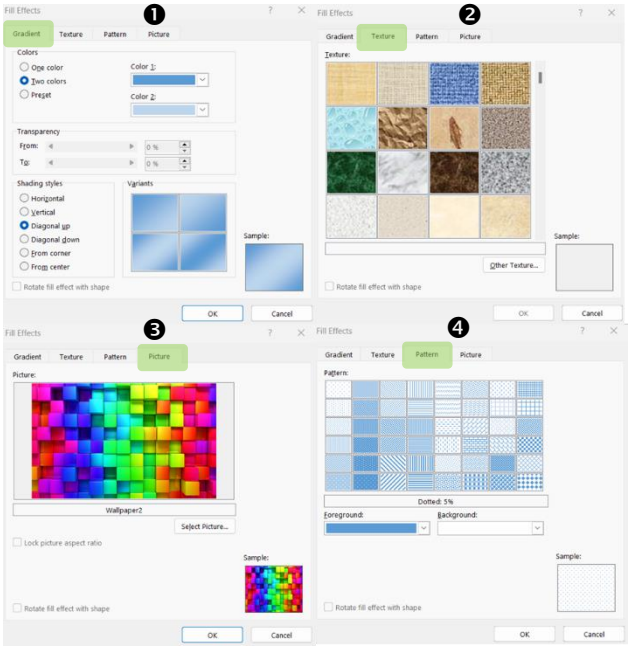
Page Background (Design)

You can add more creativity to your document by changing the design of the pages. For example, adding a page border or page colour or display a watermark on the pages of your document.

Colour



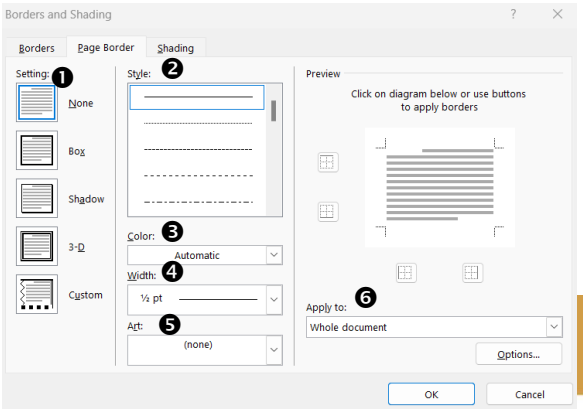
You can fill the page colour with a plain colour or you can add a fill effect to change the page colour/background



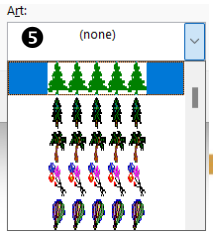
❶	**Gradient**	Colours that gradually change from one to the other
❷	**Texture**	A specific texture fill colour
❸	**Picture**	An image from your device
❹	**Pattern**	A pattern of two different colours

Borders

Besides paragraph borders that we spoke about earlier, we can also add exiting and colourful borders around our pages.



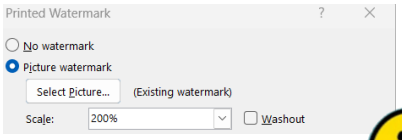
❶	Settings	Different style settings
❷	Style	Type of line
❸	Colour	Colour of line
❹	Width	Thickens of line
❺	Art	Art type of style
❻	Apply to	Apply to paragraph or text





Check it out!
Funky art style borders to make your page look more exciting!

Watermark

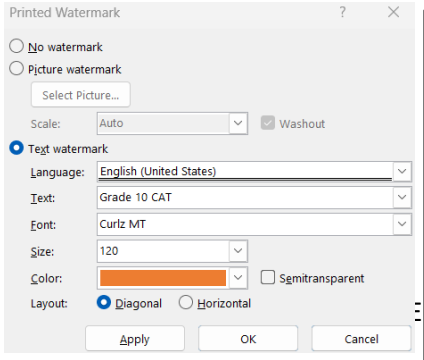


A watermark is an image or text that displays on the pages behind the information in your document.





Washout/ Semitransparent: This displays the watermark as faded out image/text

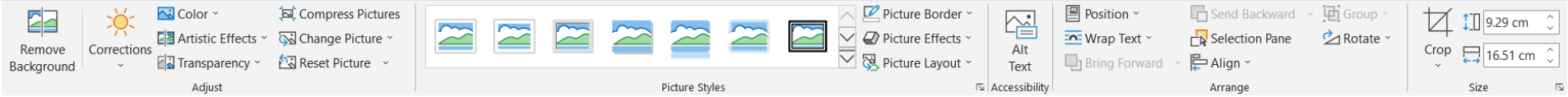




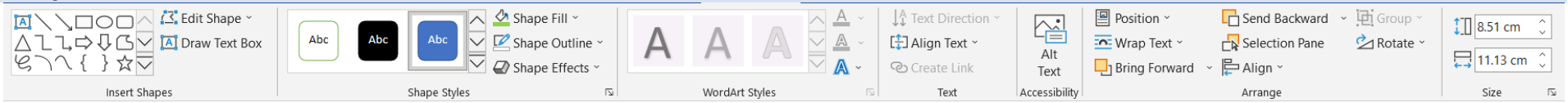
Graphics

Graphics are any type of visual illustrations that can enhance your document's **creativity** and make it more **interesting!** This includes images, graphs, diagrams and effects.

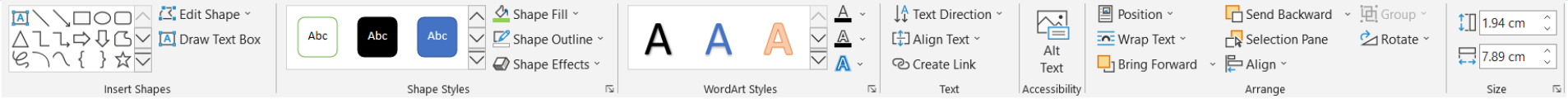
Pictures



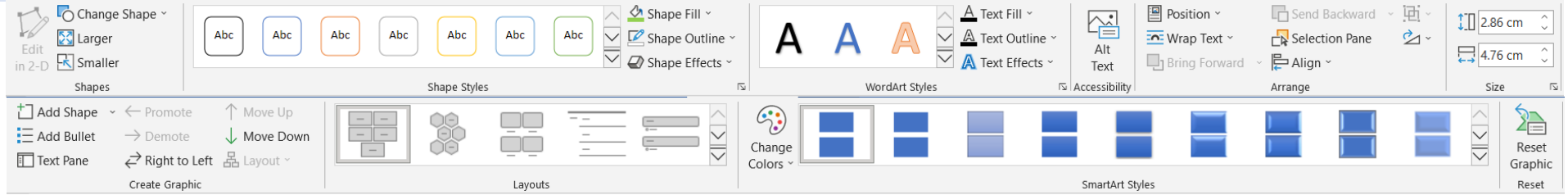
Shapes



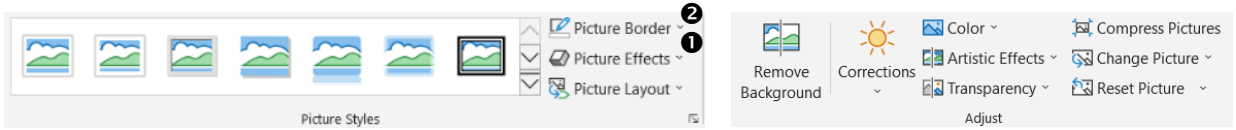
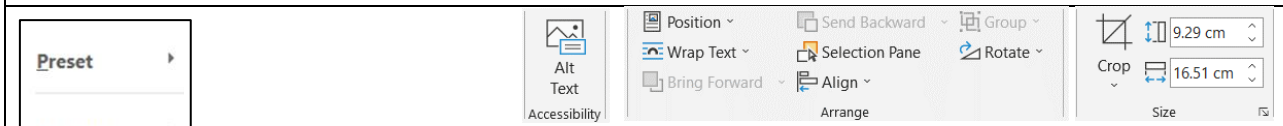
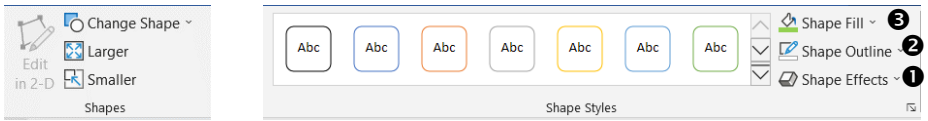
WordArt (Text Effects)

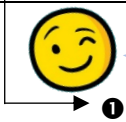


SmartArt



You will notice that many of the formatting aspects of graphics are similar. For example, to change the size of an image has the same settings than the size settings for WordArt, shapes or SmartArt.

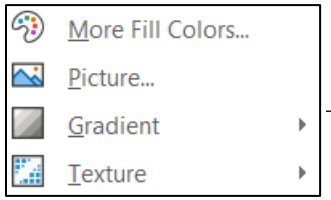
Formatting settings	Applied to: *Object*	Formatting:
	Pictures	**Picture Styles:** Change the style by adding a border or effect to the picture. **Adjust:** Change the brightness or saturation of the picture.
	Pictures WordArt SmartArt Shapes	**Alt text:** display text if object is not available **Arrange:** align or wrap with text **Size:** change the size/crop images
	WordArt Shapes	**Insert Shapes:** insert a new shape or change current shape **Shape style:** Add fill colour or border to the shape **Text:** Align text inside shape
	WordArt Shapes SmartArt	**WordArt Style:** Add fill colour of border to the text
	SmartArt	**Shapes:** Change the shape in the SmartArt or adjust the size **Shape styles:** Add fill colour or border to the shape



Notice that the **effects** for the different objects are also similar!



You can also change the thickness and style of the border/outline!

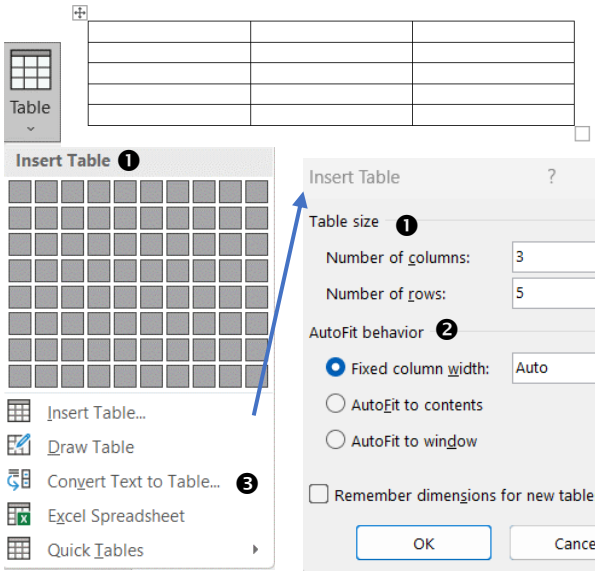


If you want to a different fill for your object, you can choose a picture, a gradient fill or even a texture.
A Gradient fill is when you combined two or more colours

Tables

Tables are used to organise content in a specific manner and layout. A table consist of rows and columns where information can be inserted and formatted.

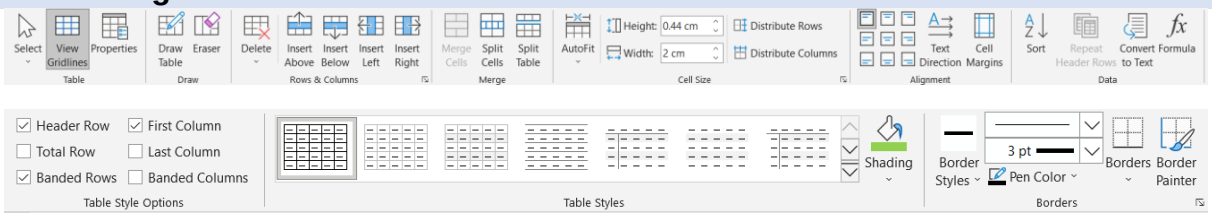
Creating a table



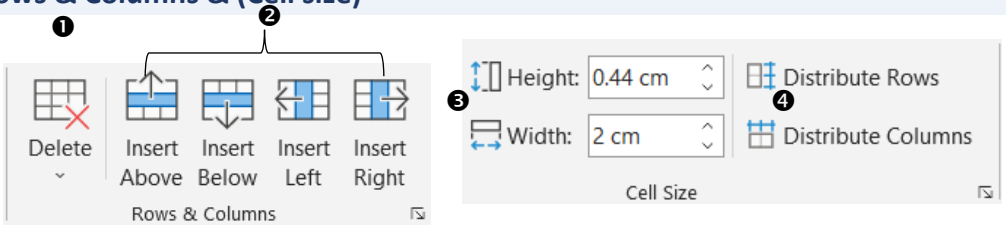
Notice the small cross ( ) in the top left-hand corner of the table? Click this to select the whole table.

❶	Table size	Choose the number of rows and columns
❷	AutoFit	**Fixed column:** the columns width won't change **Fit to contents:** the column adjusts its width according to the information **Fit to window:** the column widths stretch from left to right
❸	Text to table	Select existing text and convert it to a table

Formatting a table

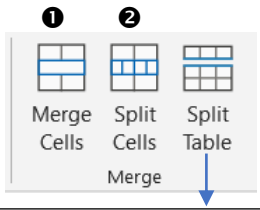


Rows & Columns & (Cell size)



❶	Delete	Delete the whole table, a row or a column
❷	Insert	Insert rows or columns in the table
❸	Height/Width	Adjust the row height or column width
❹	Distribute	Display the rows or columns in equal size

Merge/Split



Breaks one table into two separate tables

❶	Merge	This combines cells together; i.e.; make 2 cells 1

2 cells merged to 1		

❷	Split	Split a cell from 1 into more; e.g.; make 1 cell 3 cells

split	1 into	3 cells	

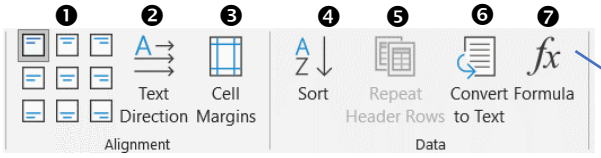
Table Design (Borders & Shading)

Format and change the design of the table to be stylish and easy to understand.



❶	Table styles	Pre-set styles with specific formatting
❷	Shading	Fill colour that will shade a cell, row or column
❸	Borders	Lines inside and outside the table

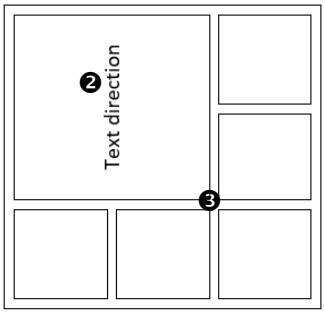
Alignment & Date (Text in tables)

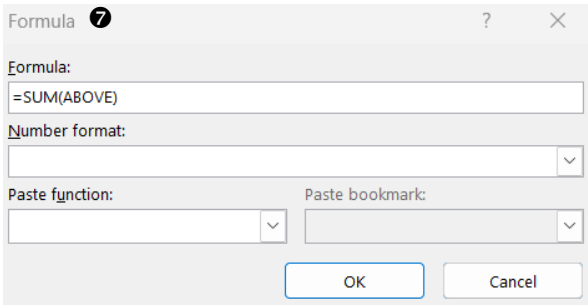


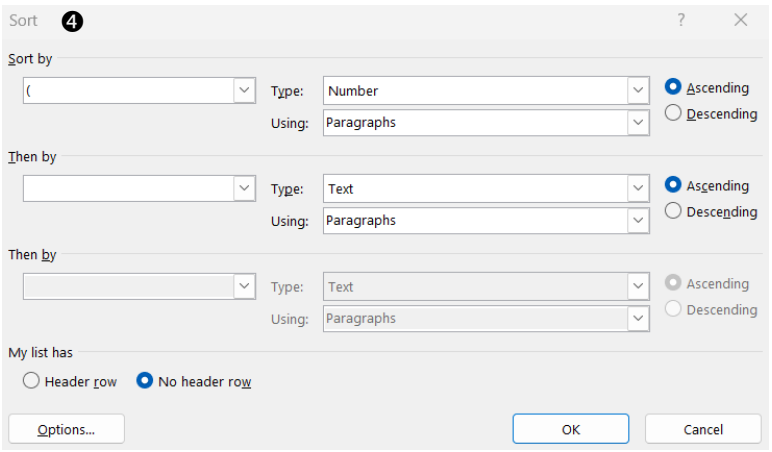
Product	Cost
A	R15
B	R25
C	R30
Total	{ =SUM(ABOVE) } ❼

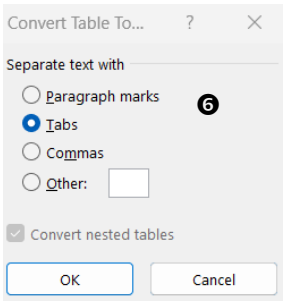
❶

Top left	Top center	Top right
Center left	Center	Center right
Bottom left	Bottom center	Bottom right









❶	Position of the text in a cell – the text will align in specific areas of the cell
❷	Direction of the text in a cell – direction changes from top to bottom
❸	Cell margins: space between the text and the cell & Spacing: space between cells
❹	Sort according to a column – in ascending or descending order
❺	Automatically repeat the first row, especially if the table appears on more pages
❻	Changes text in an existing table to a plain text layout
❼	Formula – insert a formula to automatically calculate the above cells

Links

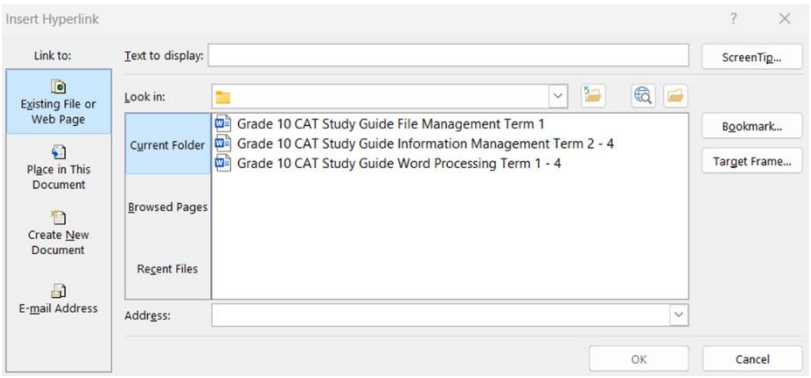
Links are used to take us from one place to another. They are navigation methods that helps a user jump from a specific location to a different related location.



In Grade 11 & 12 you learn about bookmarks and cross-reference that is also associated with Links!

Hyperlinks

Hyperlinks are usually associated with websites and web pages and allows user to click and be directed to a different location. They are identified by a blue underlined font style.



❶	Link to:	You can link to a website, a file or a place in the current document
❷	Address:	Type the web address you want to link to here
❸	Text to display	Type the text that should display (e.g., Click Here)
❹	Screen tip	Note that shows what the link is about

Review

Reviewing a document means to proof check it before sharing or printing. This helps us to eliminate any errors, make comments for others and even protecting the document.

Spelling & Grammar

Spelling and grammar errors can be change according to the set Language chosen for the document.

Speling erors are indicated with red wavy lines!

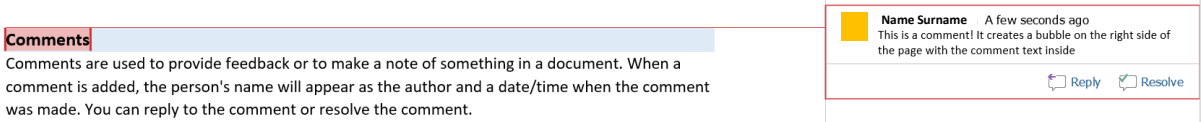
Grammar are shown by blue double lines!



Right click on the errors and possible solution will display or click Spelling & Grammar in the Review ribbon.

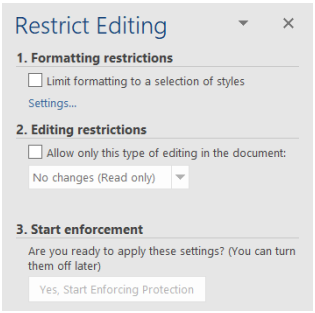
Comments

Comments are used to provide feedback or to make a note of something in a document. When a comment is added, the person's name will appear as the author and a date/time when the comment was made. You can reply to the comment or



Protecting a document

A document can be restricted for specific editing purpose. You can restrict users from formatting and editing your document.



Activities: Word Processing

Activity 1

Open a blank Word document and insert a table and modify it to appear as the example below:

Merge the first row in the three columns		
		3 pt border
Fill with green shading		
	Change the text direction	Split Cells

Save the document as **Act1**

Activity 2

Open a blank Word document and create the following logo:



NOTE:

- Use the 2Tree image in the folder
- Make sure the image moves as one object
- Save as an image called LOGO

Save the document as **Act2**

Activity 3

Open the Act3.docx document and make the following changes

3.1 Change the font of the heading to Arial Black, 32 pt.

3.2 Replace the text Tel with the symbol (☎).

3.3 Apply tab stops so that the information appears as the example:



3.4 Make the following adjustments to the table:

- Apply any blue shading to the header row.
- Update the total for Gr12's.
- Insert a formula in the last cell to calculate the total amount raised.

Save the Act3 document.

Activity 4

Open a blank Word document and create the following program. Your final result should look like the example below.



NOTE:

- Use the 4Talent image in the folder
- Apply a gradient page colour

Save the document as Act4

Activity 5

Open the Act5.docx document and make the changes.

5.1 Find the heading 'Talent Show' and change the heading to appear as the example below.

TALENT SHOW

NOTE:

- The font is Algerian, 28 pt, bold.
- The character spacing is *Normal*. (5)

5.2 Find the paragraph that starts with 'Yellow Bridge Secondary …' and that ends with '… shows to come.' and change it to appear as the example below.

Yellow Bridge Secondary School will be hosting an inter-school talent show in the second half of the year, and we will be going big. The purpose of this circular is to familiarise everyone with the arrangements and planning to date. In terms of the final format and the program of events, nothing is cast in stone. We remain open to constructive suggestions. This is indeed a joint undertaking, and at this early stage we are still exploring all the avenues. A talent show is by definition a pooling of diverse abilities and aspirations, and the organisational aspects must likewise draw on a variety of different talents. We aim to put on an extravaganza of note – the biggest and best of its kind. Brave words. But we believe that we collectively 'have what it takes to produce an event that will be echo down the years as the standard for all talent shows to come.



(3)

5.3 Find the bulleted list below the heading 'Why a talent show?' and edit the list as follows:

- Change the bullet character to a symbol (Wingdings character code: 170 (✦)).
- Format the list so that it appears against the margin. (2)

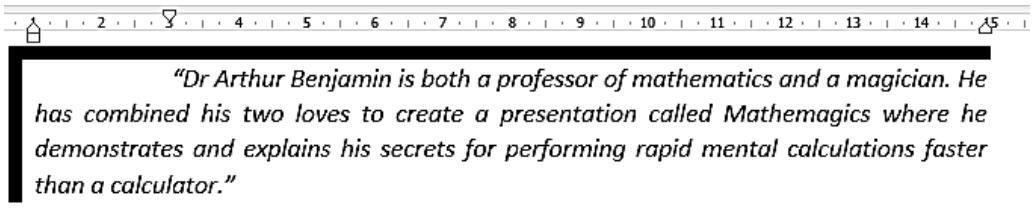
5.4 Find the text 'seating — the' and replace the em dash with an en dash (1)

5.5 Find the heading 'Management' and apply the Heading 3 style to this heading. (1)

5.6 Find the table below the heading 'Support staff' and apply a 3pt dashed border *around* the table. (2)

5.7 Find the image below the heading 'Neighbouring School Participation' and reset the image to its original appearance.
(1)

5.8 Find the paragraph that starts with '"Dr Arthur Benjamin …' and change the paragraph to appear as the example below.



"Dr Arthur Benjamin is both a professor of mathematics and a magician. He has combined his two loves to create a presentation called Mathemagics where he demonstrates and explains his secrets for performing rapid mental calculations faster than a calculator."

NOTE: Do not use the space bar to position any text. (2)

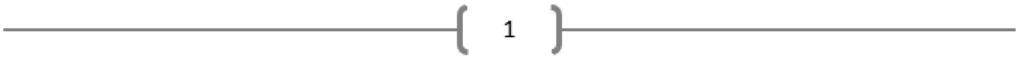
5.9 Find the text 'SOME STUFF' and modify the text as follows:

- Change the font colour of the text to blue.
- Apply any reflection effect to the text.
- A word has been 'hidden' between the words 'SOME' and 'STUFF'. Unhide this word to make it visible. (3)

5.10 Find and replace the exact word 'big' with the word 'GREAT'. (2)

5.11 Find the table under the heading 'Here are a …' and insert a formula in the cell below 'Total Value' to calculate the total for all the tickets sold. (2)

5.12 Insert automatic page numbering at the bottom of all the pages in the following format:



(3)

Activity 6

Open the Act6.docx document and make the changes.

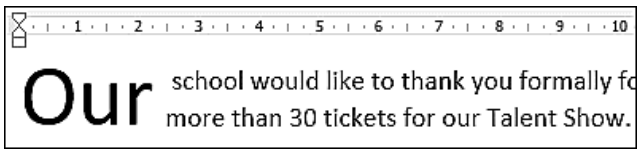
6.1 Change the page size to *Letter*. (1)

6.2 Change the left margin to 2.5 cm. (1)

6.3 Find the WordArt 'Yellow Bridge Secondary' at the top of the document.

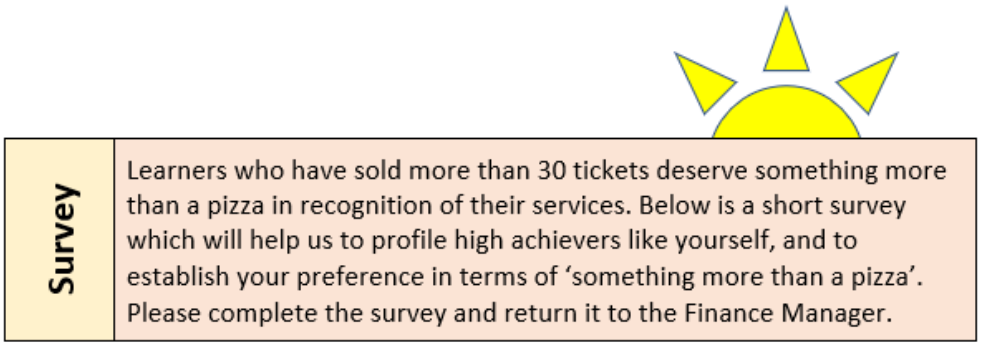
- Transform this WordArt to any 'arch' or 'warp' shape.
- Fill the text with any colour of your choice (except white). (2)

6.4 Find the first paragraph below the text 'Dear Ticket Seller' and add a Drop Cap that appears as shown below.



NOTE*:* The distance of the Drop Cap from the text must be 0.2 cm. (3)

6.5 Find the table and the shape on the first page and edit the table and the shape to appear as shown below.



NOTE:

- Change the left cell of the table so that it appears as shown above.
- Ensure that the image appears 'behind' the table. (2)

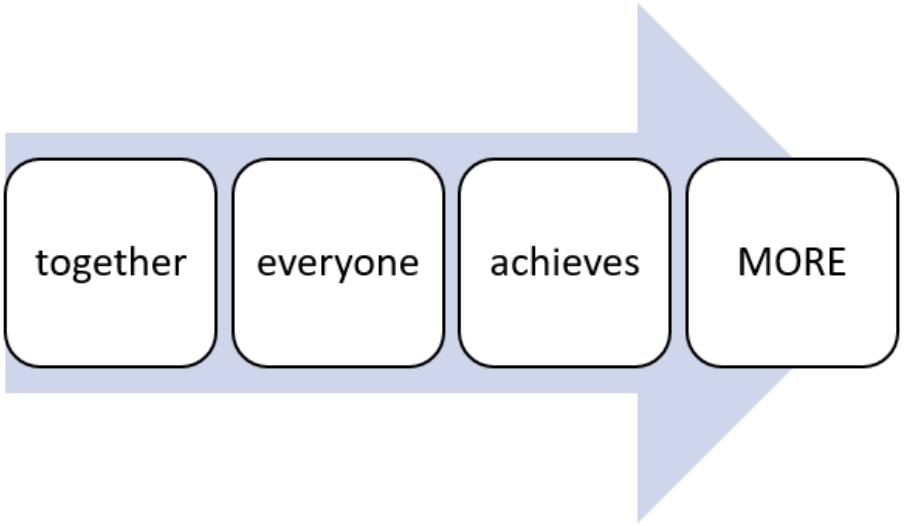
6.6 Find the text 'Cut here' and change existing tab settings so that the line appears as follows:



(2)

6.7 Find the paragraph shaded in green at the bottom of the first page and insert a page break so that the paragraph will start at the top of the next page. (1)

6.8 Find the SmartArt diagram on the second page and change the diagram so that it is displays as follows:



(3)

6.9 Find the horizontal green line at the bottom of the second page.

- Change the thickness of the line to half its current value.
  Tip: Make use of a pop-up menu.
- Ensure that the length of the line will always be half the distance between the left margin and the right margin, even if the margins are changed.
  NOTE: Do NOT change the margins! (2)

6.10 Find the text in blue at the top of the third page and format the text to that it appears as shown below:

SUPPORTERS AND SPONSORS, LISTED ALPHABETICALLY (3)

6.11 Change the page border as follows:

- Change the colour of the page border to blue.
- Ensure that the page border does not appear on page 1. (2)

6.12 Insert the file name and path of the current document at the bottom of all the pages. Make sure that the file name and file path will automatically update.
(3)

Solutions: Word Processing

Solution Activity 1

Criteria	Maximum Mark			Candidate Mark
Table inserted • 5 rows and 3 columns □	1		1	

Table formatting
• Row 1:
  • Merged □
  • Text: Centred and bold □
• Row 2 – column 3
  • Cell border □
  • Size: 3 pt □
• Row 3 – column 1
  • Shading: Green □
  • Text: White □
• Row 4 – column 2 & 3
  • (2) Text: Direction changed and centred □
  • (3) Cell split into 2 columns □
  • (3) Text: Split & Cells added □
• Borders: Left outside border removed □
	1
	1
	1
	1
	1
	1
	1
	1
	1
	1
			10	

Total for QUESTION			**[11]**	

Solution Activity 2

Criteria	Maximum Mark			Candidate Mark
Logo • Arrow: Pentagon inserted □ • Arrow: Pentagon rotated □ • Ribbon: titled down inserted □ • Ribbon: Text: Carpe diem □ • Image: 2Tree inserted □ • WordArt: Yellow Bridge Secondary School □ • Colours: Yellow-ish colour applied to all shapes/text □ • All objects grouped as one image □ • Saved as image: LOGO □	1 1 1 1 1 1 1 1 1		9	
Total for QUESTION			**[9]**	

Solution Activity 3

No	Criteria	Maximum Mark		
3.1	**Heading:** • Font: Arial black, 32 pt ✓	1		1
3.2	**Symbol** • Tel replaced with ☎ ✓	1		1
3.3	**Tabs** • 1st tab stop: 5.25 cm ✓ • 2nd tab stop: 11.5 cm ✓ • Leader: 3 -------- ✓ • Tabs applied to text ✓	1 1 1 1		4
3.4	**Table:** • Row 1: Any blue shading ✓ • Gr12 total: updated (SUM(LEFT)) ✓ • Last cell: Formula: =SUM(ABOVE) ✓	1 1 1		3

Solution Activity 4

No	Criteria	Maximum Mark		
4.1	**Programme** • Page divided into two columns ✓ • With a line between the columns ✓ • Page border added ✓ • Page colour added ✓ • Gradient fill used ✓ • Left side: text added correctly ✓ • Left side: image added in correct position ✓ • Column break inserted ✓ • Right side: text added correctly ✓ • Font: Jokerman ✓	1 1 1 1 1 1 1 1 1 1		10

Solution Activity 5

No	Criteria	Maximum Mark			Candidate Mark
5.1	**Heading: '*Talent show*'** • Font: Algerian, 28 pt, bold ✓ • Character spacing: Normal ✓ • Underlining removed ✓	 1 1 1		3	

5.2	**Paragraph formatting and image**
	• Paragraph alignment: Justified ✓
	• Image:
	  • Rotate: Flipped horizontally ✓
	  • Text wrapping = Square ✓
		
		1
		
		1
		1
				3	

5.3	**Bulleted list** • Character: Wingdings character code: 170 (✦) ✓ • List against left margin ✓	 1 1		2	
5.4	**Text: *'seating – the'*** • Em dash (—) replaced with en dash (–)	 1		1	
5.5	**Heading: '*Management*'** • Changed heading to Heading 3 style	 1		1	
5.6	**Table border:** • Outside border: Dashed border ✓ • Width: 3pt ✓	 1 1		2	
5.7	**Image:** • Image reset to original ✓	 1		1	
5.8	**Paragraph border & Indentation:** • First line indent: 2cm ✓ • Border: bottom & right removed ✓	 1 1		2	
5.9	**Font formatting: 'SOME STUFF'** • Font colour: Blue ✓ • Effects: any reflection added ✓ • Hidden: hidden effect unticked ✓ (MAGIC)	 1 1 1		3	
5.10	**Find and replace:** • Find whole words selected ✓ • big replaces with GREAT ✓ *(Note to marker: 4 replacements)*	 1 1		2	
5.11	**Table: Formula** • Formula: SUM ✓ (LEFT) ✓	 2		2	
5.12	**Page numbers** • Automatic page numbering applied ✓ • Position: Footer ✓ • Format: Plain number: Brackets 2 ✓	 1 1 1		3	
	Total for QUESTION			**[25]**	

Solution Activity 6

No	Criteria	Maximum Mark			Candidate Mark
6.1 6.2	**Layout** • Page size = Letter ✓ • Left margin = 2.5 cm ✓	1 1		2	
6.3	**WordArt:** • Transformed: any 'arch' or 'warp' shape ✓ • Text filled with any colour (except white) ✓	1 1		2	
6.4	**First paragraph under 'Dear Ticket Seller'** • Drop Cap added ✓ • Drops 2 lines ✓ • Distance from text = 0.2 cm ✓	1 1 1		3	
6.5	**Table and shape: pg. 1** • Text direction (1st cell) set vertically up ✓ • Image 'behind' table ✓	1 1		2	
6.6	**Text 'Cut here' and line in red** • Tab leader changed to dotted line (option '2') ✓ • Tab leader extends to ± 16 cm on ruler ✓	1 1		2	
6.7	**Paragraph shaded in green** • Page break inserted –starts at top of pg. 2 ✓	1		1	
6.8	**SmartArt** • Shape added ✓ • Text = 'MORE' *[Must be upper case]* ✓ • Order of shapes correct ✓	1 1 1		3	
6.9	**Horizontal green line** • Width (length) = 50% ✓ • Height (thickness) = 5 pt ✓ *(Note to marker: double-click on line, or right-click → Picture)*	1 1		2	

6.10	**Text in blue at top of 3rd page** • Italics removed ✓ • Double strikethrough removed ✓ • Upper case / All caps ✓	 1 1 1	 	3	
6.11	**Page border** • Page border colour = blue ✓ • Page border NOT on page 1 ✓	 1 1	 	2	
6.12	**File name in footer** • File name in footer ✓ • Inserted as a field ✓ • with path (also as a field) ✓	 1 1 1	 	3	
	Total for QUESTION			**[25]**	

Summary of Spreadsheets – Excel

Overview of the basic skills and core concepts of spreadsheets

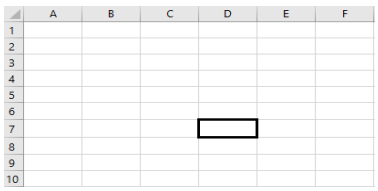
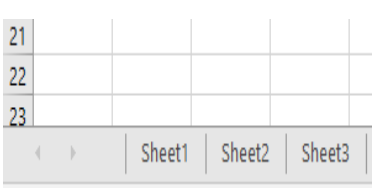
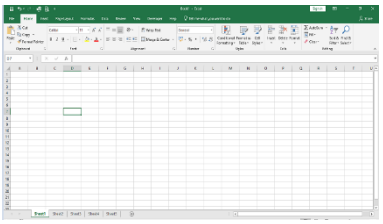
There is a number of spreadsheet programs that are used, however Excel is commonly used and for the school curriculum we use Excel. Over the years, Microsoft has introduced a series of upgrades, enhancing its products with new features and improved performance to cater to evolving user needs and technological advancements

Excel can apply to statistics, finance, data management, forecasting, analysis, tracking inventory & billing, and business intelligence, etc.

Below are a list of some things that Excel can do for you:

- Number Crunching
- Creating an invoice
- Manipulating Text
- Creating a study timetable that calculates your breaks and study time
- Calculating term averages and term marks
- Displaying data visually through graphs or other forms of charts
- Store and Import Data

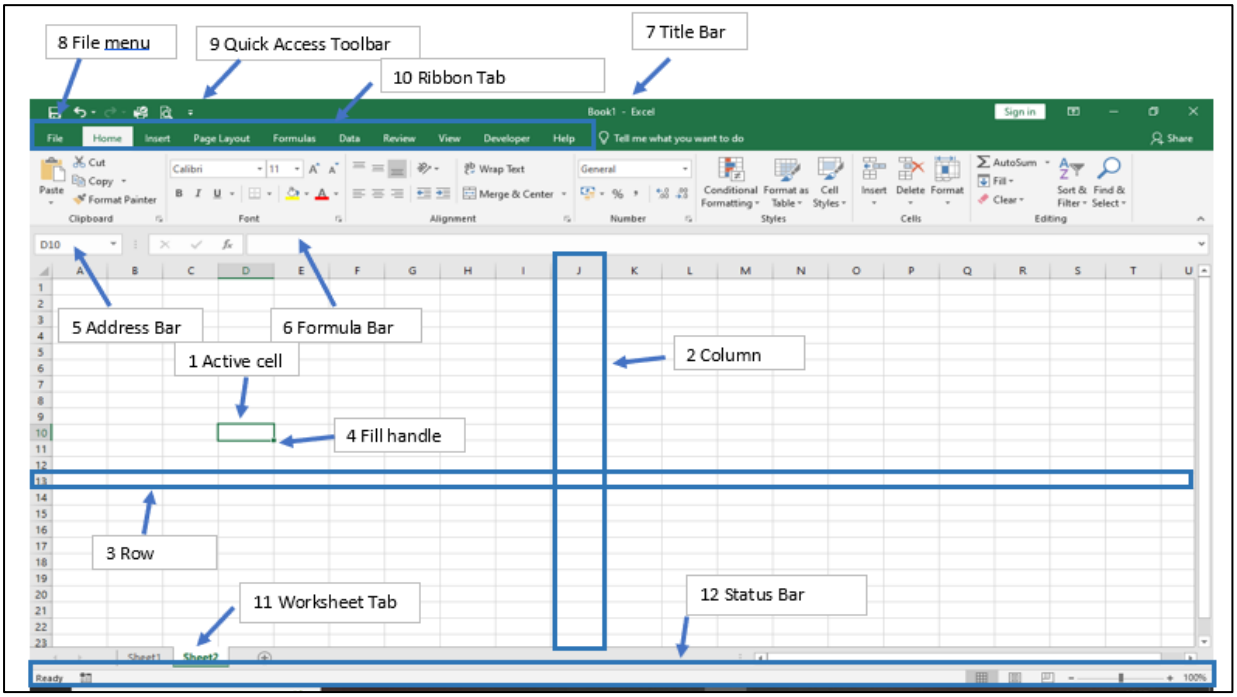
The three most important components of Excel you need to understand:

Cell	Worksheet	Workbook
A cell is a smallest but most powerful part of a spreadsheet. You can enter your data into a cell either by typing or by copy-paste. Data can be text, numbers, or dates. You can also customize it by changing its size, font colour, background colour, borders, etc. Every cell is identified by its cell address. A cell address contains its column number and row number (If a cell is on the 7th row and on column D, then its address will be D7).	A worksheet is made up of individual cells which can contain a value, a formula, or text. It also has an invisible draw layer, which holds charts, images, and diagrams. Each worksheet in a workbook is accessible by clicking the tab at the bottom of the workbook window. In addition, a workbook can store chart sheets. A chart sheet displays a single chart and is accessible by clicking a tab.	A workbook is a separate file just like every other application has. Each workbook contains one or more worksheets. You can also say that a workbook is a collection of multiple worksheets or can be a single worksheet. You can add or delete worksheets, hide them within the workbook without deleting them, and change the order of your worksheets within the workbook.
		

Microsoft Excel Window Components

First look – workspace

Before you start using it, it's really important to understand what's where in its window. Below we have all the major components which you need to know before entering the world of Microsoft Excel.



1. Active Cell
   A cell that is currently selected. It will be highlighted by a rectangular box and its address will be shown in the address bar.
   You can activate a cell by clicking on it or by using your arrow buttons. To edit a cell, you double-click on it or you can use F2 as well.

2. Column
   A column is a vertical set of cells. A single worksheet contains 16384 total columns.
   Every column has its own alphabet for identity, from A to XFD. You can select a column by clicking on its header.

3. Row
   A row is a horizontal set of cells. A single worksheet contains 1048576 total rows. Every row has its own number for identity, starting from 1 to 1048576.
   You can select a row by clicking on the row number marked on the left side of the window.

4. Fill Handle
   It's a small dot present in the lower right corner of the active cell. It helps you to fill numeric values, text series, insert ranges, insert serial numbers, etc.

5. Address Bar
   It shows the address of the active cell.
   If you have selected more than one cell, then it will show the address of the first cell in the range.

6. Formula Bar
   The formula bar is an input bar, below the ribbon. It shows the content of the active cell, and you can also use it to enter a formula in a cell.

7. Title Bar
   The title bar will show the name of your workbook, followed by the application name ("Microsoft Excel").

8. File Menu
   The file menu is a simple menu like all other applications. It contains options like (Save, Save As, Open, New, Print, Excel Options, Share, etc).

9. Quick Access Toolbar
   A toolbar to quickly access the options which you frequently use. You can add your favourite options by adding new options to the quick access toolbar.

10 Ribbon
   Starting from Microsoft Excel 2007, all the options menus are replaced with ribbons.
   Ribbon tabs are a bunch of specific option group which further contains the option.

11. Worksheet Tab
    This tab shows all the worksheets which are present in the workbook.

12. Status Bar
    It is a thin bar at the bottom of the Excel window. It will give you instant help once you start working in Excel.

Source: https://Excelchamps.com/Excel-basics/

The basic understanding of Cells

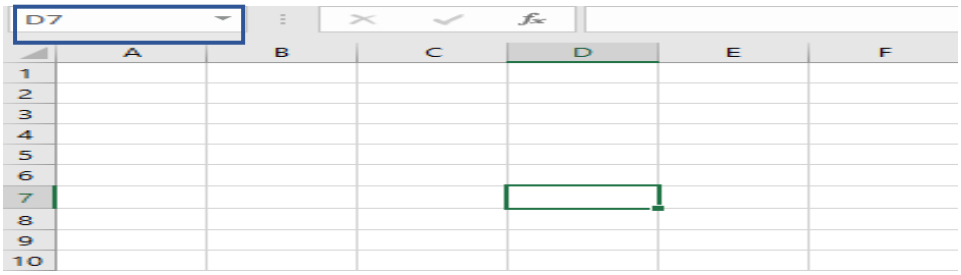
You will find many cells in every worksheet. When working in the cells – you will find that each cell has its own cell address. The address is based on the column and the row in which it is found. Here are a couple of examples:

Watch the following video on how to select cells:

https://youtu.be/7SGcyxNE0TQ

Example 1

The cell address appears in the Address Bar – D7 – The intersection of Column D and
Row 7:

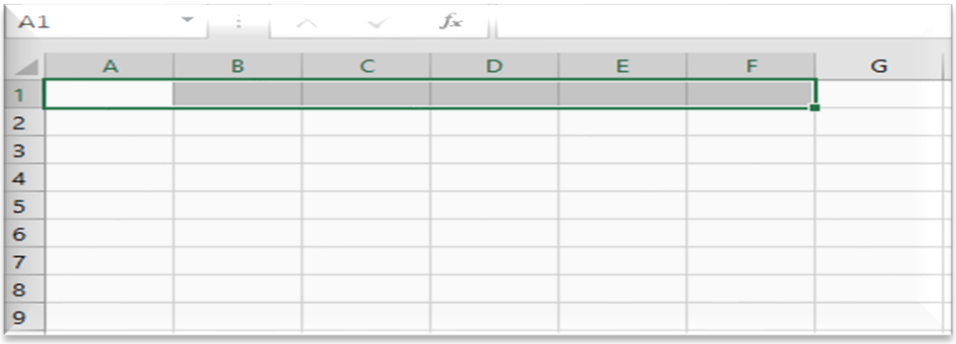


Note - When a cell is selected, the cell row and column headings will be highlighted.

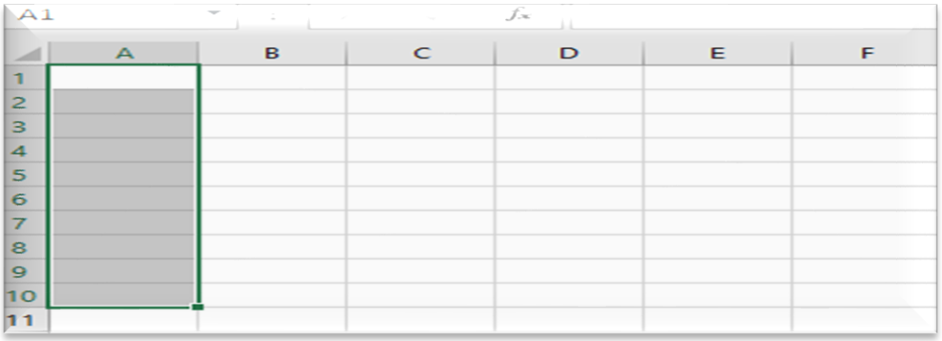
Example 2

Cell Range

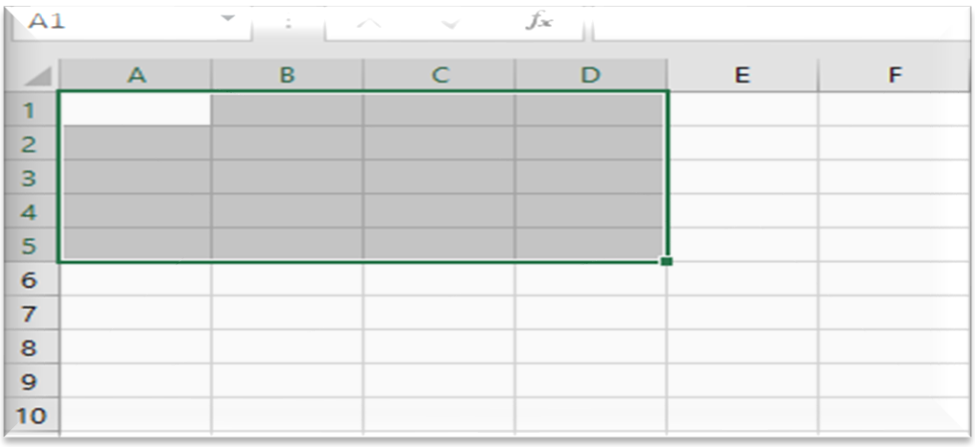
When you select a number of cells at the same time, it is called a range of cells. A cell range that includes cells in a row for example A1, B1, C1, D1 and F1 is written as A1:F1.



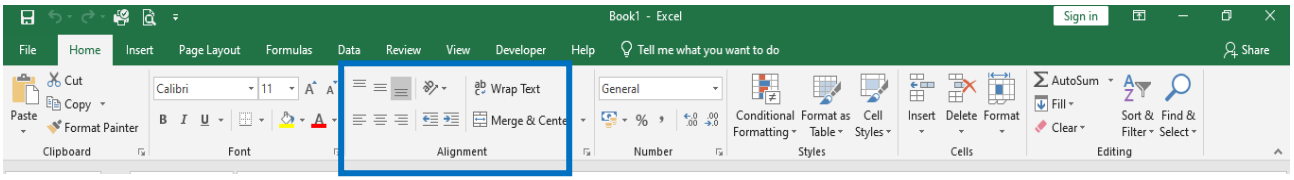
A cell range that includes cells in a Column for example A1, A2, A3, A4 … A10 is written as A1:A10.



A cell range that includes cells in columns AND in rows for example A1 up to D5 is written as A1:D5.



THE RIBBON



A spreadsheet makes use of a tabbed Ribbon similar to Word. This contains several tabs and each group has a set of commands. You will make use of these tabs to perform the basic tasks in the spreadsheet. Each tab has one or more groups.

Activity 1

Enter data

Open a blank Excel document. Save it as Data.

We are going to look at a few practical aspects when entering data into a spreadsheet.

Type in the following information into the document Data:

In cell A1 type Package and in cell B1 type Monthly.

Click on cell A2 and type Netflix Premium, press tab and in cell B2 type 199. Press enter – you will see that it moved to the next row. Do the same with all the other data. (Use the data as in the example below.)

If you want to correct data in a cell, you can navigate back to the cell using the arrows, and just type in the new value.

You can also double-click on a cell to edit content of the cell, rather than replacing everything.

Below is an example how your sheet should look.

	A	B	C
1	Package	Monthly	
2	Netflix Premium	199	
3	Prime Video	79	
4	Showmax	39	
5	Disney Plus	119	
6	Spotify	60	
7	Dstv Family	299	
8			

Notice that all text is left-aligned in a cell and numbers are all right-aligned.

Place the mouse pointer on the right-hand boundary of the column letter to drag a column wider. You can also double click on the boundary line to fit the (longest) content.

Watch the following video to support you with the editing of a cell.

https://youtu.be/ldRHRjde0sw

Basic Calculations

The main reason why people use spreadsheets is because they can perform calculations. Spreadsheets use standard operators for formulas.

Formula

A formula is an expression that calculates the value of a cell.

We are using the following operators in formulas.

Operator	Description
+	Addition – to add numbers/values together
-	Subtraction – to subtract numbers/values
/	Division – To divide numbers/values
*	Multiplication – to multiply numbers/values

All formulas must begin with an equal-sign. This will distinguish a calculation from a value.

=

Work in the **Data** spreadsheet document:

- Place your mouse in **cell C2**.
- We want to calculate the sum of Netflix Premium, Prime Video and Showmax.
- The calculation will be as follows:
- =199+79+39 (press enter) – the answer will display in **cell C2**:

	A	B	C
1	Package	Monthly	
2	Netflix Premium	199	=199+79+39
3	Prime Video	79	
4	Showmax	39	
5	Disney Plus	119	
6	Spotify	60	
7	Dstv Family	299	
8			

	A	B	C
1	Package	Monthly	
2	Netflix Premium	199	317
3	Prime Video	79	
4	Showmax	39	
5	Disney Plus	119	
6	Spotify	60	
7	Dstv Family	299	

Change the value of Prime Video to 85 in **cell B3**:

	A	B	C
1	Package	Monthly	
2	Netflix Premium	199	317
3	Prime Video	85	
4	Showmax	39	
5	Disney Plus	119	
6	Spotify	60	
7	Dstv Family	299	

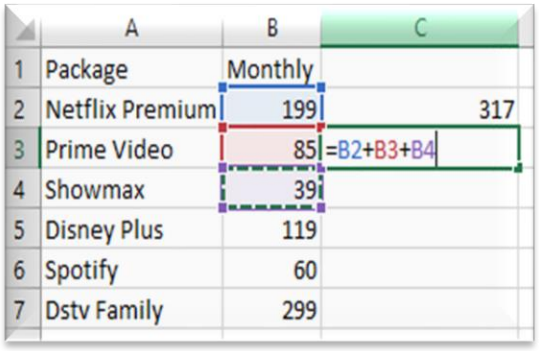
The answer in **cell C2** remained the same.

For this reason, we are using cell reference for calculations instead of typing out the values in the calculation.

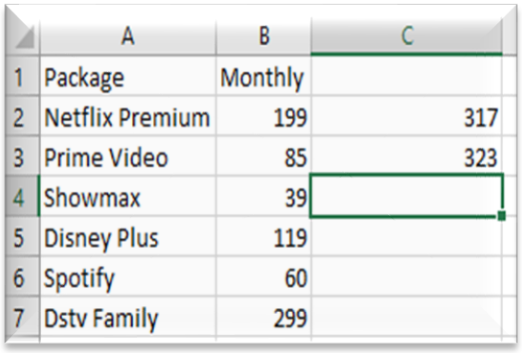
Cell References

Work in **cell C3** and do the following:

Type the equal-sign to start the calculation, click on **cell B2**, type the addition sign (+), click on **cell B3**, type the addition sign (+) and click on **cell B4**. Press enter. The answer will display in **cell C3**.

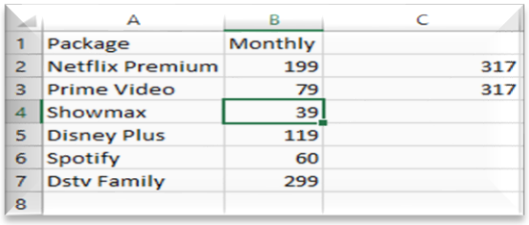


	A	B	C
1	Package	Monthly	
2	Netflix Premium	199	317
3	Prime Video	85	=B2+B3+B4
4	Showmax	39	
5	Disney Plus	119	
6	Spotify	60	
7	Dstv Family	299	



	A	B	C
1	Package	Monthly	
2	Netflix Premium	199	317
3	Prime Video	85	323
4	Showmax	39	
5	Disney Plus	119	
6	Spotify	60	
7	Dstv Family	299	

Change the value of Prime Video back to 79. Did you notice that the value in **cell C3** changed?



	A	B	C
1	Package	Monthly	
2	Netflix Premium	199	317
3	Prime Video	79	317
4	Showmax	39	
5	Disney Plus	119	
6	Spotify	60	
7	Dstv Family	299	
8			

To refer to cells that contain data, we use cell references in formulas or functions. In this way the data in the cells can be changed, but correct answers will still be obtained.
As far as possible, use cell references instead of constants in formulas and functions. Use constants only if you are quite certain that you will never need to change the value.

Cell Name

To refer to cells that contain data, we use cell references in formulas or functions. In this way the data in the cells can be changed, but correct answers will still be obtained.
As far as possible, use cell references instead of constants in formulas and functions. Use constants only if you are quite certain that you will never need to change the value.

In addition to using a cell reference or address, you can also **NAME** a single cell or even a range of cells. We will do this when we can only calculate with the name in one cell and we cannot use the AutoFill option.

Open the **CellName** spreadsheet document.

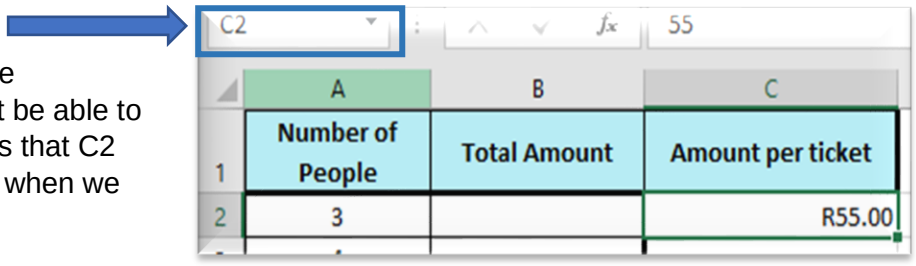
Calculate the total amount that each person needs to pay for tickets. The price of the ticket is stored in **cell C2**.

Can you see that we cannot use AutoFill in this example? We need to give a name to **cell C2** to calculate with the value in **cell C2**.

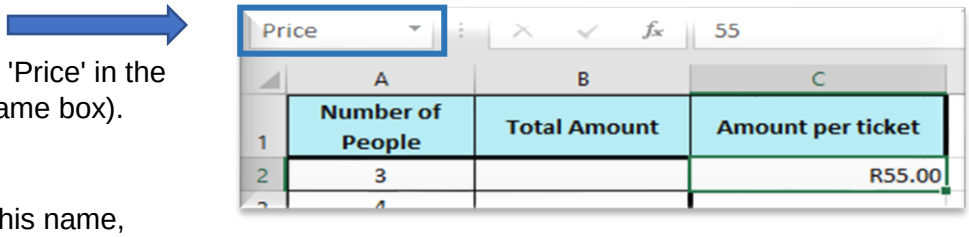
Select **cell C2.**

The name of the cell is currently displayed as **C2** in the address bar (name box).

If we use **cell C2** in the calculation, we will not be able to AutoFill – the reason is that C2 becomes C3, C4, etc. when we AutoFill.



- Type the name 'Price' in the address bar (name box).
- Press enter



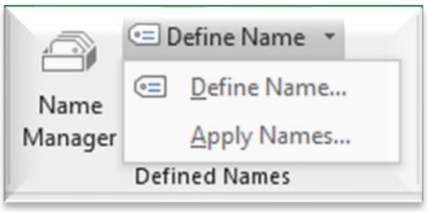
You can now use this name, instead of the cell reference in the formula.

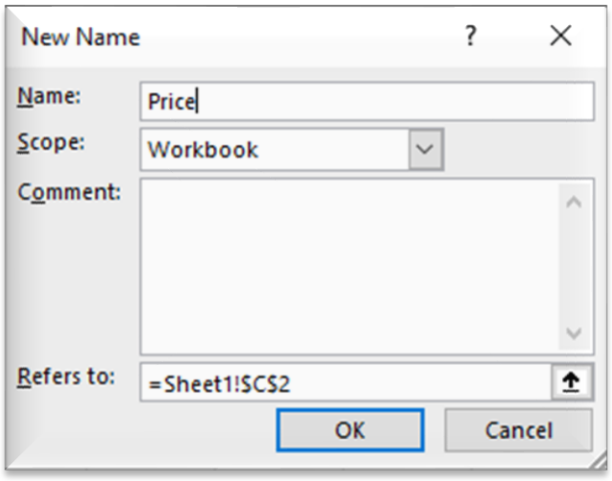


AutoFill the formula to the rest of column B.

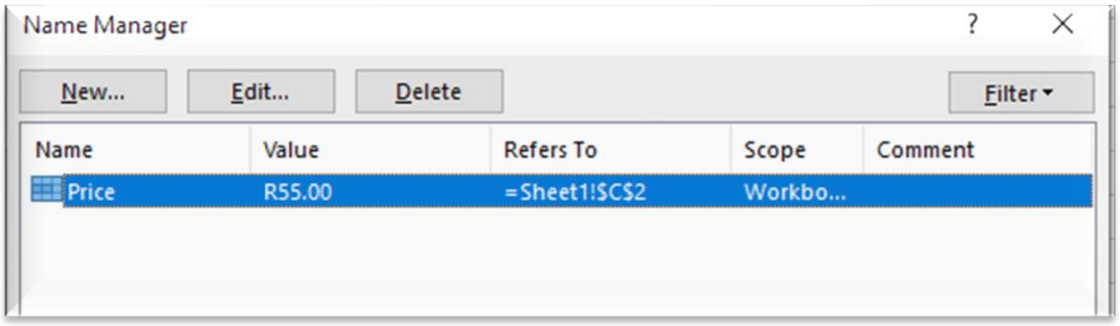
	A	B	C
1	Number of People	Total Amount	Amount per ticket
2	3	=A2*Price	55
3	4	=A3*Price	
4	2	=A4*Price	
5	5	=A5*Price	
6	5	=A6*Price	
7	1	=A7*Price	
8	2	=A8*Price	
9	1	=A9*Price	
10	5	=A10*Price	
11	4	=A11*Price	
12	5	=A12*Price	

You can alternatively use the Define Name option on the Formulas tab, in the Defined Names group to give a name to **cell C2**.





The name manager (defined names group) can be used to change or remove cell names.



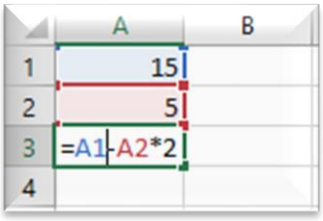
The same can be done for a cell range – select the range, type a name into the address bar (name box), press enter.

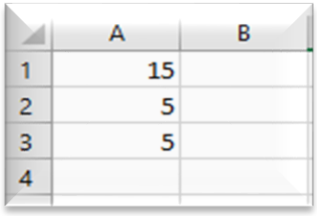
Order of precedence and the use of brackets

The order in which operations are carried out is important when more than one operator is used in a formula.
Standard mathematical rules apply: brackets are always executed first, then exponentiation (raising to a power), followed by multiplication and division, and lastly addition and subtraction. If the operators in a formula are of the same type – addition and subtraction, they are executed from left to right.

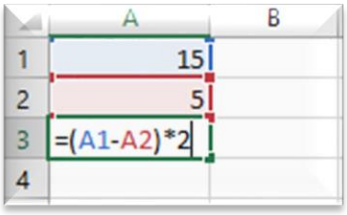
In Mathematics, the **B**rackets, **O**f, **D**ivision, **M**ultiplication, **A**ddition and **S**ubtraction (BODMAS) rule is applied.
In a spreadsheet, the same applies to formula operators. The BODMAS rule also applies.

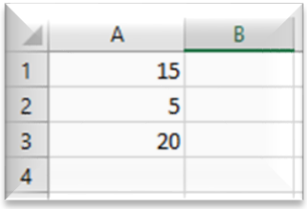
Examples:





Multiplication will be done first.





Brackets will be done first.

Activity 2

Data Types

Types of data formats

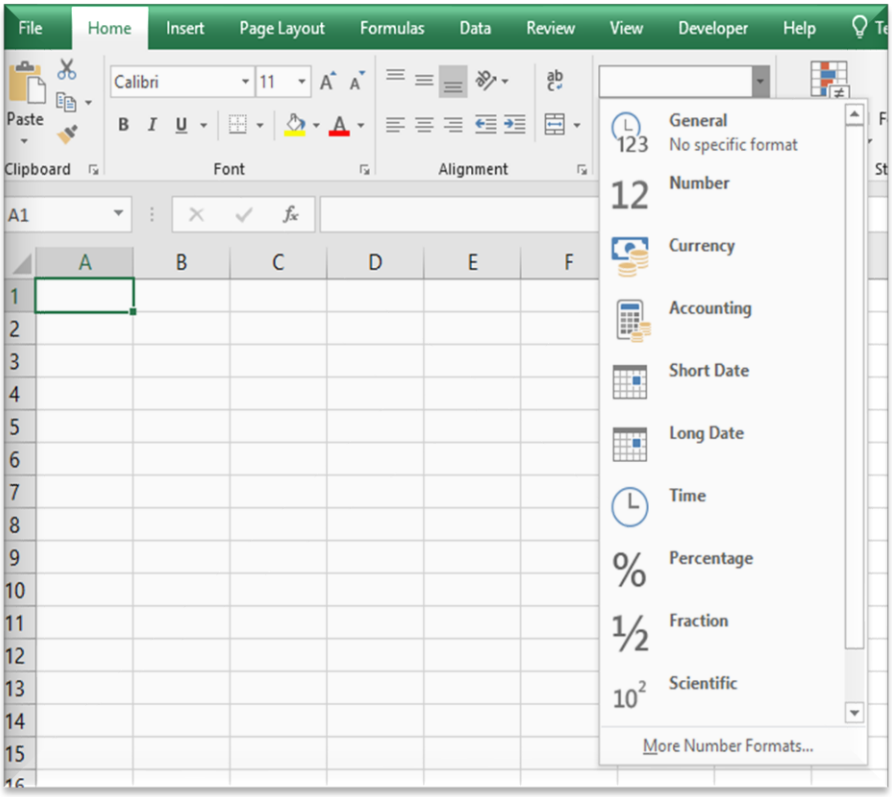
Three types of data can be used in a cell, namely:

Numerical values This includes numbers, dates, times	Text This includes names, labels	Functions or formulas

Watch the video on Data Types:

https://youtu.be/XjsTd8JuO7w

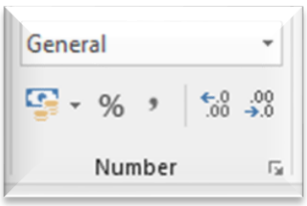
For a quick change of data types, you can click on the home tab and in the number group, select the drop-down arrow next to General, which will give you options to change the data type by default settings.



To have a more specified option, do the following:

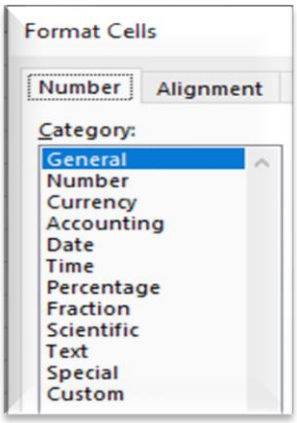
To change the data format, first select the cell or range of cells concerned.

- Click on the number format drop-down arrow in the number group on the home tab and select the number format.

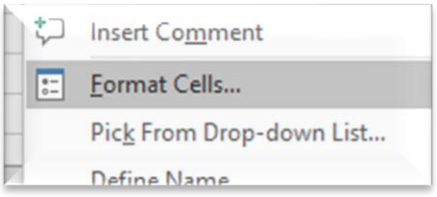


OR

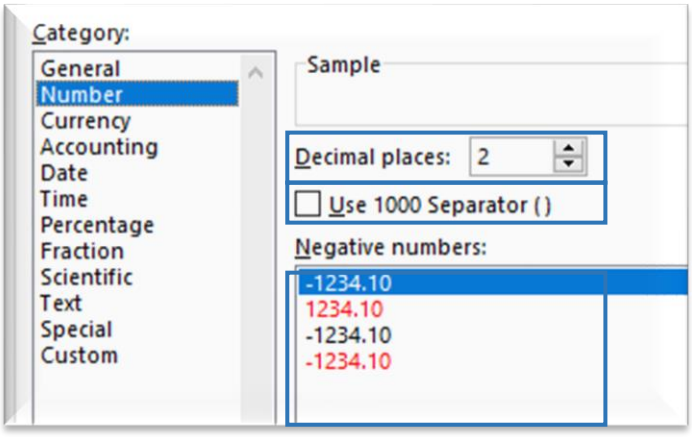
- Work on the number tab of the Format Cells dialog box, which gives you more options.



- You can also use one of the most useful right-click options in Excel – by using Format Cells when right-click on a cell which will give you a pop-up menu.



Ordinary numbers



It can be negative or positive whole numbers, e.g. 1, 2, 0, -1, -2.

It can also be decimal numbers, e.g. 40.345 or -10.07.

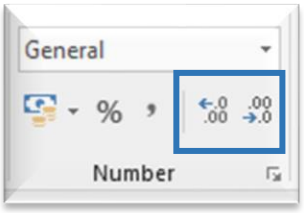
Select the category Number on the number tab in the Format Cells dialog box, for options to format a number.

Examples

- To display 40.345 as 40.35, change the number of places after the decimal point.
- You can choose to use the 1000 separator, to separate the thousands, e.g. 1234567 can be displayed as 1,234,567.
- You can display negative numbers by default with a minus sign in front, e.g. -20 – this can also display in red when chosen.

The default separator can be changed via the control panel

Besides using the Format Cells dialog box, the number of places after the decimal point can be decreased or increased by using the decrease decimal and increase decimal in the number group on the home tab.

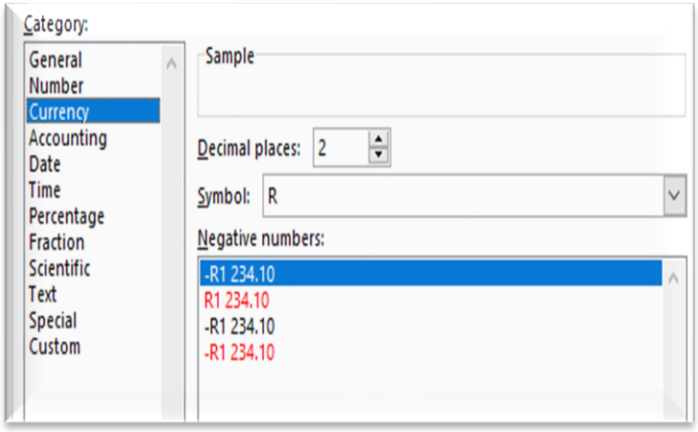


It is not the value itself that change, only the displayed number of places after the decimal point, e.g. 10.5678 when format to 10.6, will remain 10.5678 when you do any calculations with it.

Currency formats

Use the Currency or Accounting when the amount must be displayed in for example, South African Rand, e.g. R (Rand) or $ (dollar).

Be careful not to type a currency symbol in front of the amount. Excel could regard this as text, and you may not be able to perform any calculations involving that cell.



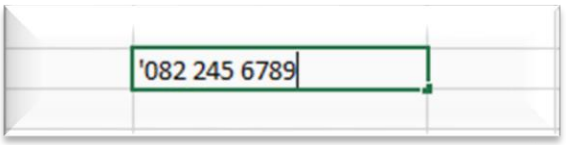
Difference between the display of currency and accounting format:

Currency	Accounting	
R1 200.00	R	1 200.00
R100.00	R	100.00
R80.00	R	80.00
R180.00	R	180.00
R250.00	R	250.00

Numbers which must be treated as text

When you type a cell number into a cell, for example 082 234 5678, it will display as 82 234 5678. Excel treats it as a number. This number must be treated as text, because you are not going to do any calculations with it.

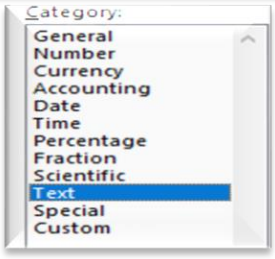
When you want numbers that must be treated as text, do the following:



- Type a single quotation mark (') and then the data.

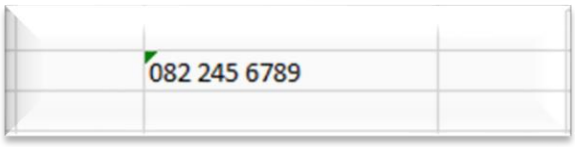
OR

- Format the data type of the cell to text before typing in the data.

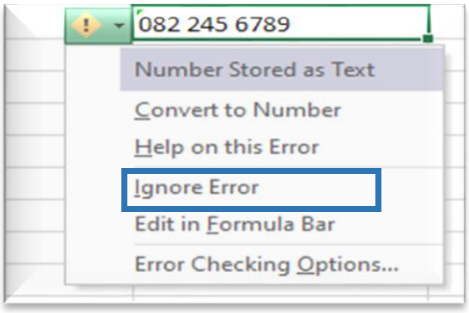


Error message when typing in numbers as text

Excel alerts you to a possible error when a number is stored as text, by displaying a small green triangle in the top left corner of the cell.



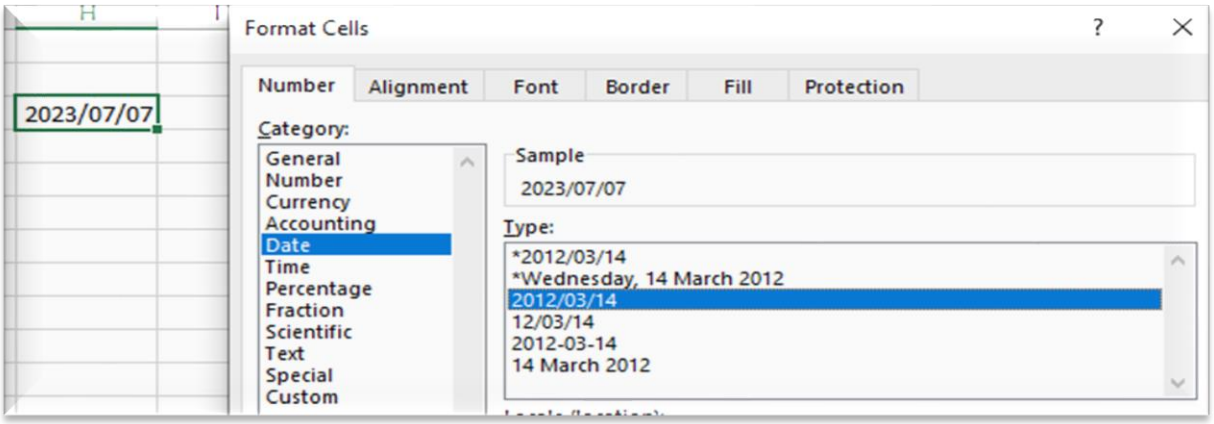
When you click on the cell a small diamond-shaped warning sign appears. Click on the sign and select Ignore Error in the drop-down list.



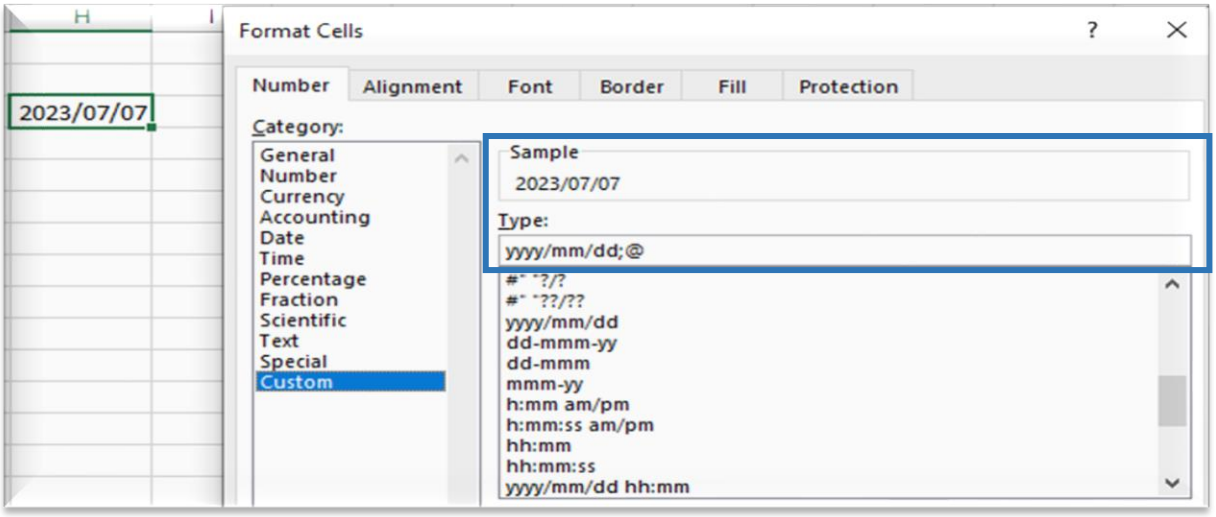
Dates and times

When you type a date into a cell, it will appear on the right-hand side of the cell. This is because Excel treats dates and times as numbers.

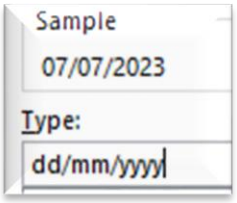
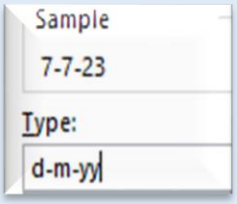
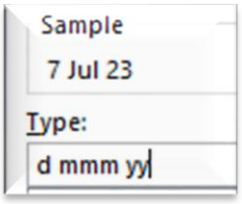
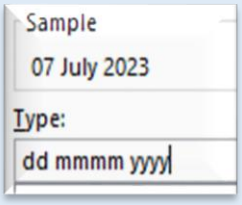
You can select the Date or Time data formats to display it in different ways.

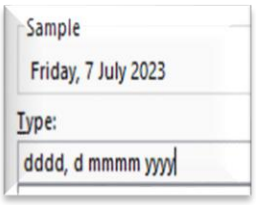


If none of the available formats meets with your requirements, use the custom option. You can also type in the format you want – it will display in the sample, e.g. yyyy/mm/dd.

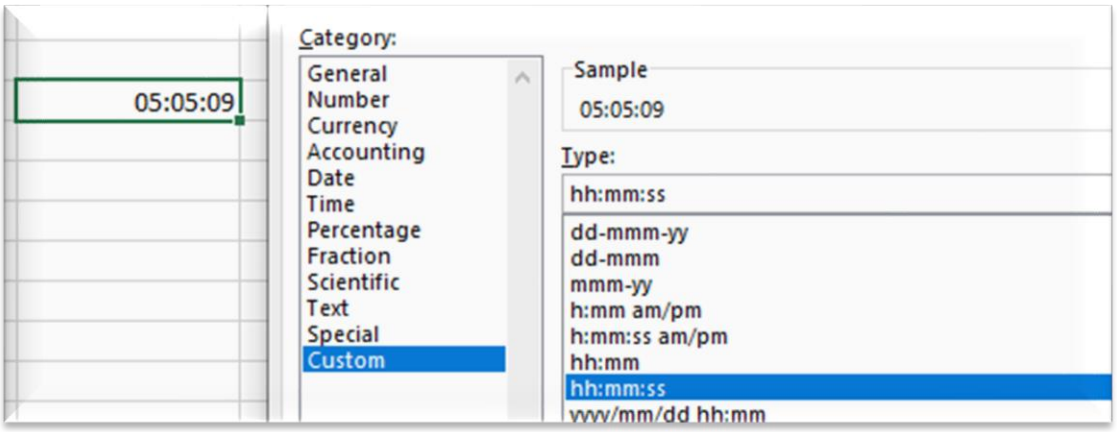


Examples of different date formats:

Custom specification	How date display	Example
dd/mm/yyyy	07/07/2023	
d-m-yy	7-7-23	
d mmm yy	7 Jul 23	
dd mmmm yyyy	07 July 2023	

dddd, d mmmm yyyy	Friday, 7 July 2023	

The same can be done with the formatting of hours (h), minutes (m) and seconds (s).



If you omit the year, Excel will assume that it is the current year.

Activity 3

Format Cells

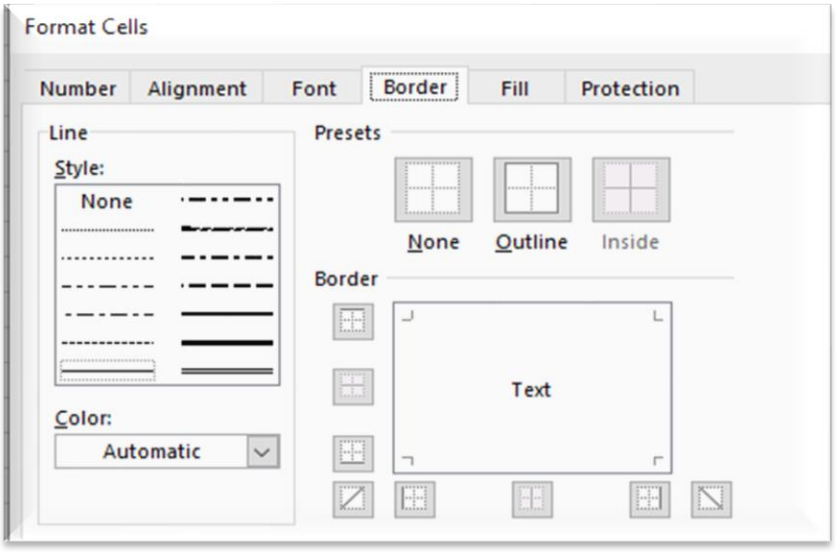
Formatting can change the appearance of the worksheet, allowing the reader to understand the content and information better.

For more information on formatting of cells, watch the following video:

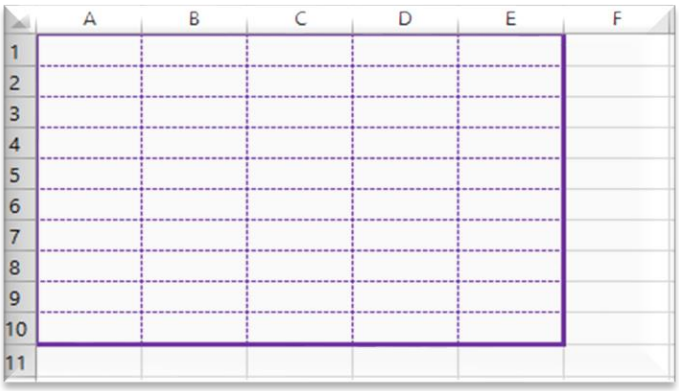
https://youtu.be/egGrW53vLnQ

Borders and shading

Use the Format Cells dialogue box to add borders to cells.

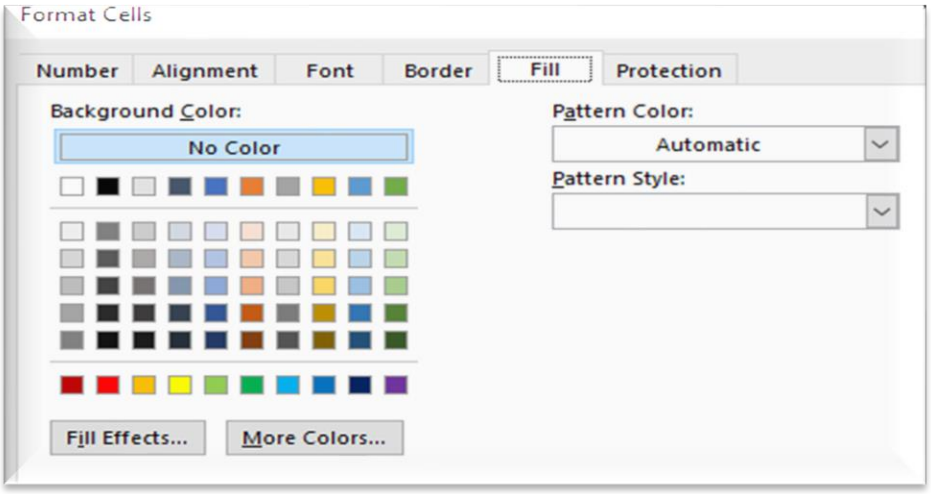


- Open an empty spreadsheet. Select cells A1:E10.
- Open the Format Cells dialogue box and select the Border tab. Select a style (on the left) for an outside border, you can choose a different colour for the border as well.
- On the right-hand side select outline
- Choose a style for the inside border and on the right-hand side choose inside.
- Select OK. The selected border style will then be applied.



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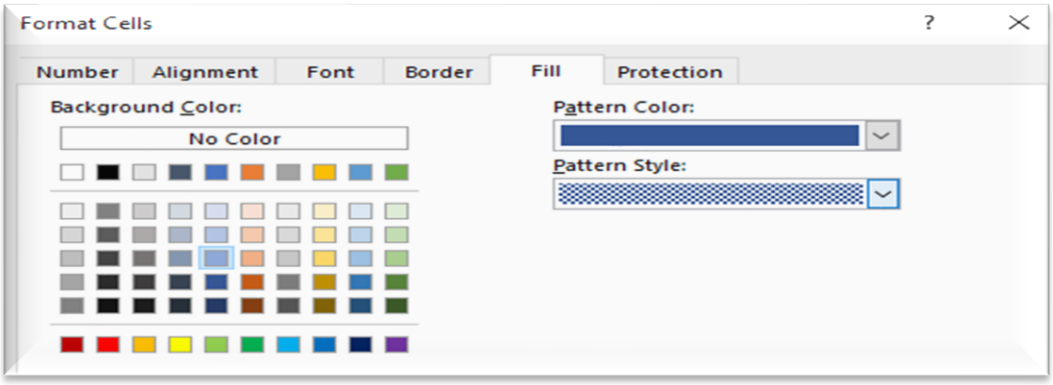
Work in the same workbook. We are going to apply a fill effect to cells.



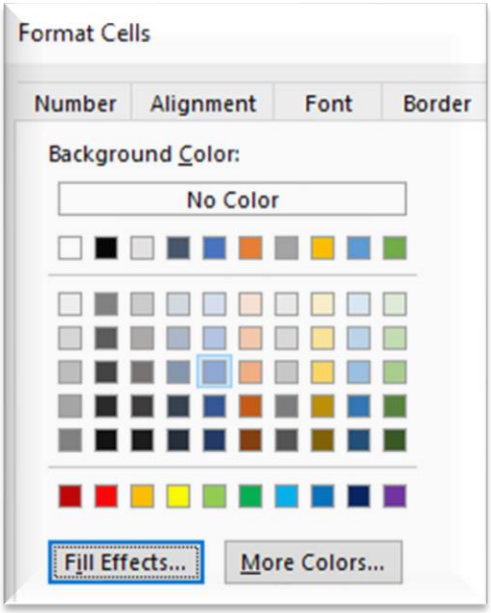
- Select cells G1:K10.
- Open the Format Cells dialogue box and select the Border tab. Choose any colour shading that you want to apply to the selected cells.

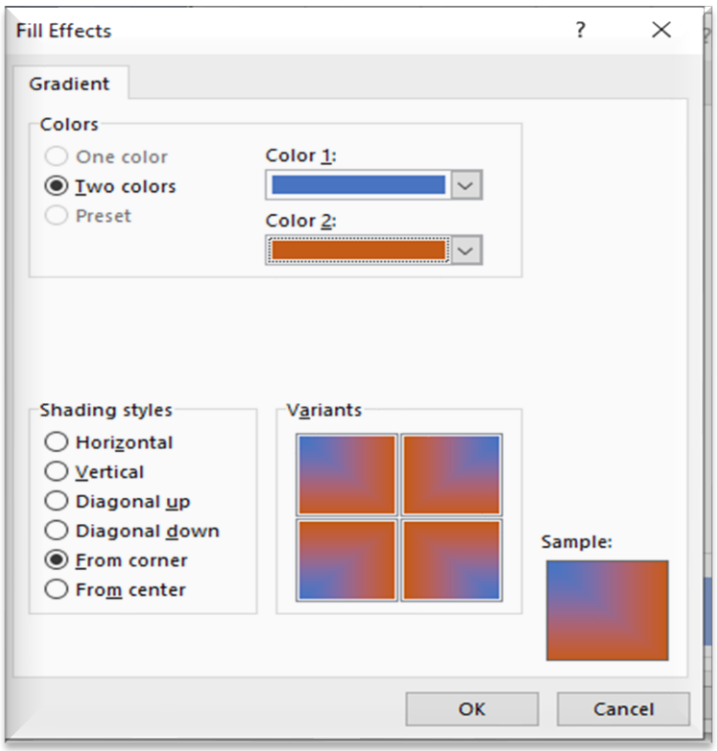


You can change the pattern colour and style with fill effects. Choose your Pattern colour and a Pattern style to fill certain areas.



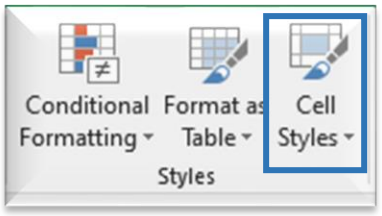
When you click on Fill Effects on the dialogue box, you can use different gradient-effects to fill the area:

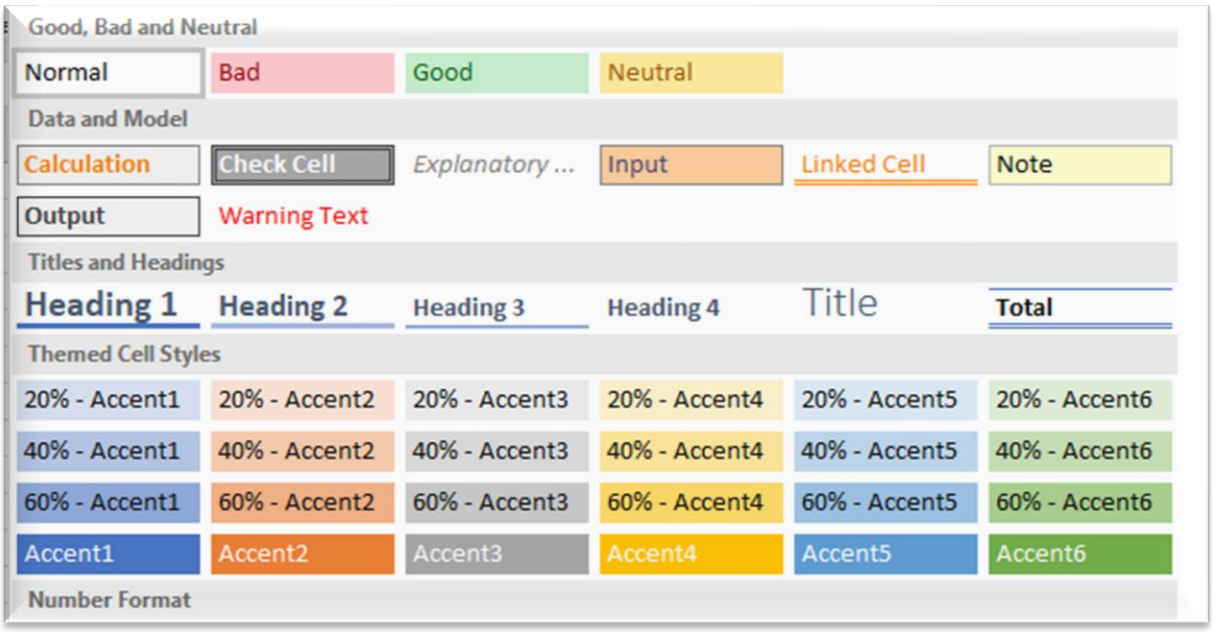




Cell Styles

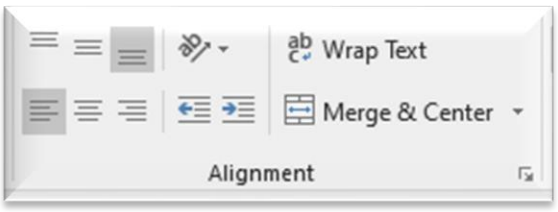
You can make use of Cell Styles (On the home tab, in the Styles Group). Important is to take note that cell styles will override any formatting you did on the cells.



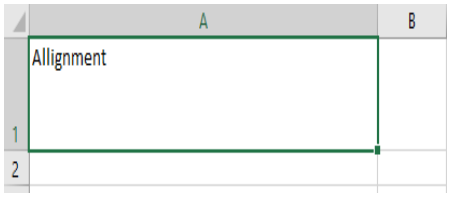
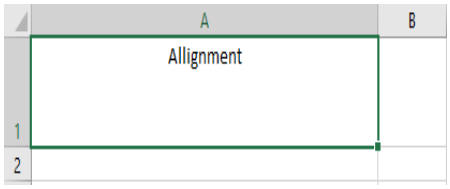
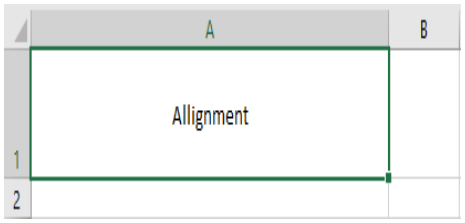
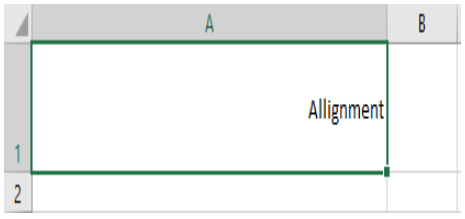


Alignment

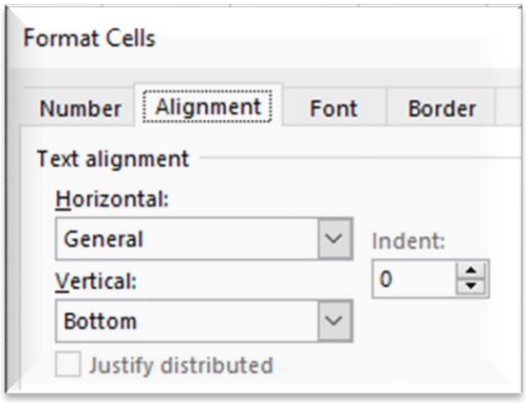
When you enter text in a worksheet, the text will always be aligned to the bottom left of a cell. Numbers will be aligned to the bottom right of a cell. This can be changed by using different alignments.



Some examples:

Alignment selection	How it will display
	
	
	
	

You can also make use of the alignment command on the Format Cells dialogue box.



Wrap Text

The cell content in a cell is usually displayed on one line. When there is too much cell content in the cell, you will either need to resize the column width/row height, wrap the text, or merge the cell. These actions will display the cell contents better.

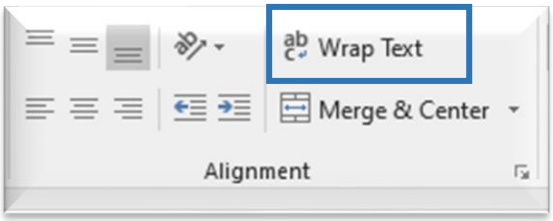
Wrap text to display lines of text below one another in a single cell.

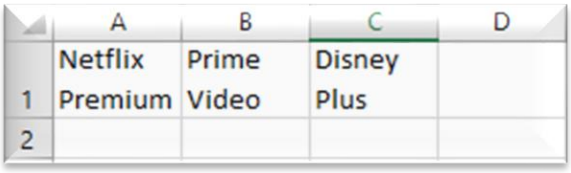
Example:

Text was typed into cells A1:C1, but displays as follows:



Choose the Wrap Text option when selecting Cell A1:C1 in the Alignment Group.





To unwrap the text, just select the Wrap Text command again.

Merge Cells

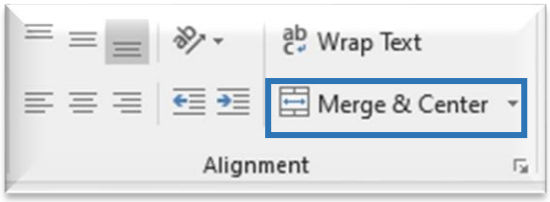
You might need a title heading for the contents of a worksheet.

The Merge and Center command is used to merge cells – join the selected cells into one larger cell. It is also used to un-merge them again.

Example:

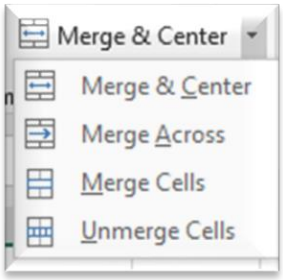
	A	B	C
1	Different Packages		
2	Package	Monthly Fee	
3	Netflix Premium	R199.00	
4	Prime Video	R79.00	
5	Showmax	R39.00	
6	Disney Plus	R119.00	
7	Spotify	R60.00	
8	Dstv Family	R299.00	
9			

Select Cell A1:B1. Select Merge & Center on the home tab in the Alignment Group.



	A	B	C
1	Different Packages		
2	Package	Monthly Fee	
3	Netflix Premium	R199.00	
4	Prime Video	R79.00	
5	Showmax	R39.00	
6	Disney Plus	R119.00	
7	Spotify	R60.00	
8	Dstv Family	R299.00	
9			

You can also make use of the different options by using the drop-down arrow next to Merge & Center:



To unmerge a cell, just select the merged cell and click on merge – which will unmerge the cell or select unmerge on the option mentioned above.

Activity 4

Text Direction

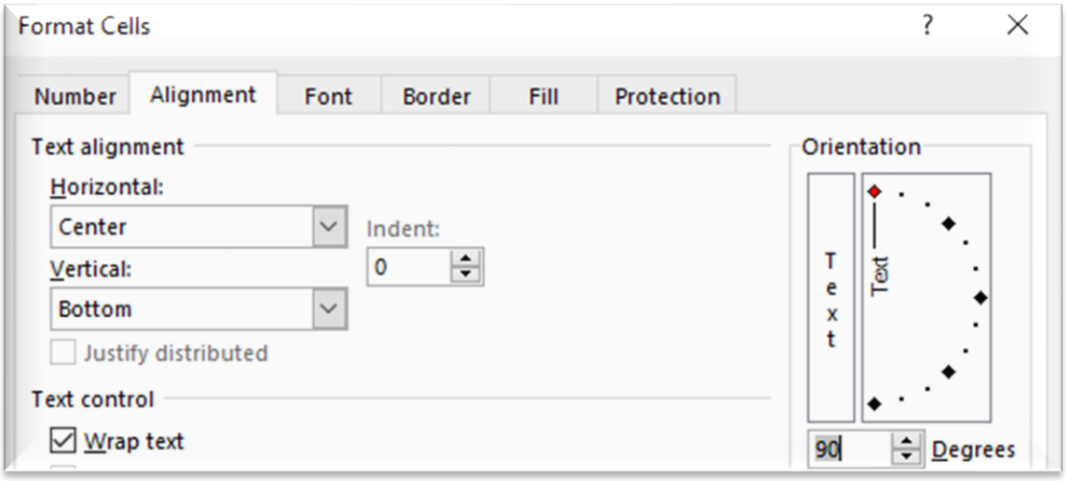
If you want to change the direction of text in a cell, use Text Orientation. This is particularly useful, for example, if you want the title headings to stand out from the rest of the text. It also can make the text easier to read.

Example:

Open the TextDirect spreadsheet.

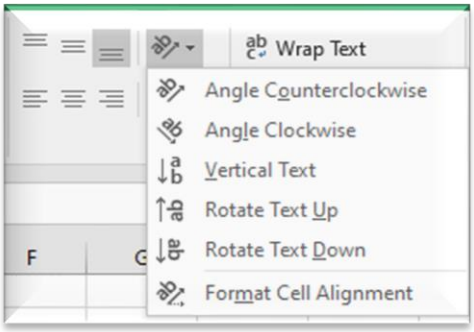
	A	B	C	D	E	F	G	H	I
1	Name	Province	Policy	Initial Date	Updated	Included	Incidents without policy	Incidents with policy	
2									

- Select the headings in cell G1:H1.
- Select the alignment command in the Format Cells dialogue box.
- Change the text direction as in the example below:



	A	B	C	D	E	F	G	H	I
1	Name	Province	Policy	Initial Date	Updated	Included	Incidents without policy	Incidents with policy	
2									

You can also make use of the orientation command in the alignment group on the home tab to change text direction:



Activity 5

Autofill

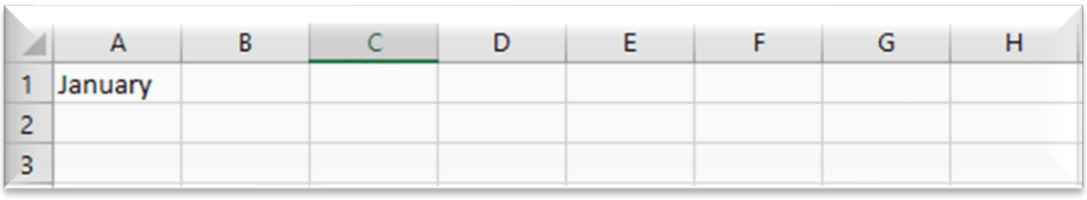
The AutoFill feature in a worksheet allows you to automatically fill in cells with cell content that follows a specific pattern. You can also use AutoFill to quickly copy the contents of one cell to adjacent cells.
AutoFill can also be used to create a series automatically. You only need to type data in the first row. The rest of the column data is created through the use of AutoFill.

Autofill can be used in the horizontal direction as well as vertical direction.

Making use of this feature can save you time and effort when adding data to a worksheet!

To use AutoFill in creating a series of months of the year, you can do the following:

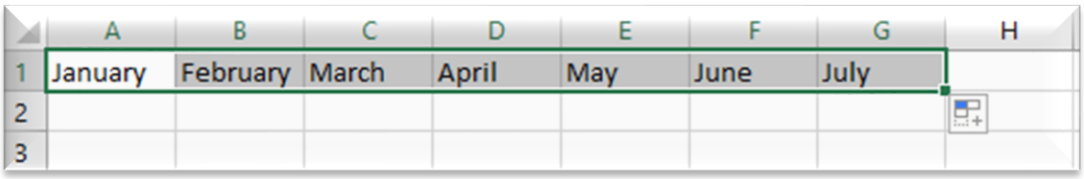
- Open a blank Excel workbook.
- Type the month January in cell A1





Move the mouse to the bottom right corner (fill handle) – it will change to a small black cross ("+")

Drag the AutoFill handle to the right, until you have all the months that you need.



The series will be completed automatically

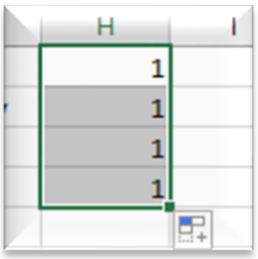
Other examples:

Do this for Monday; Jan, Mon.

	A	B	C	D	E	F	G	H
1	January	February	March	April	May	June	July	
2	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
3	Jan	Feb	Mar	Apr	May	Jun	Jul	
4	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
5								

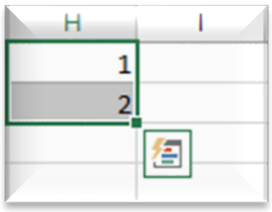
Continue in cell H1 and type the number 1 in the cell.

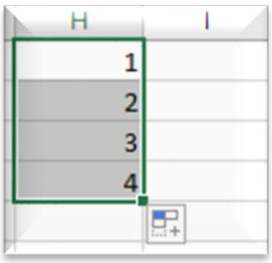
You will note that when you autofill the number – it remains a number 1:



The reason for this is that Excel needs a pattern to AutoFill.

Try the following – type number 1 in cell H1 and number 2 in cell H2. Select **both the numbers** and AutoFill downwards – it will recognize the pattern you want to use and the numbers will continuously follow each other.





What this video for more information on AutoFill:

https://youtu.be/YKBNNlzPFHs

Formatting columns, rows

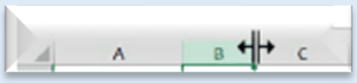
When you open a worksheet, all rows and columns have the same height and width.

Dragging the mouse to the right will increase the column width and dragging the mouse to the left, will decrease the column width.

When using dates or numbers in a cell, and the column width is too narrow, hashtags (#####) will display. All you need to do is to increase the column width so that the data is readable.

The cells group on the home tab contains commands for the formatting of cells, rows, columns and even worksheets.

To adjust a column to the correct width – simply put your mouse between the column numbers, e.g. B and C and drag it wider.

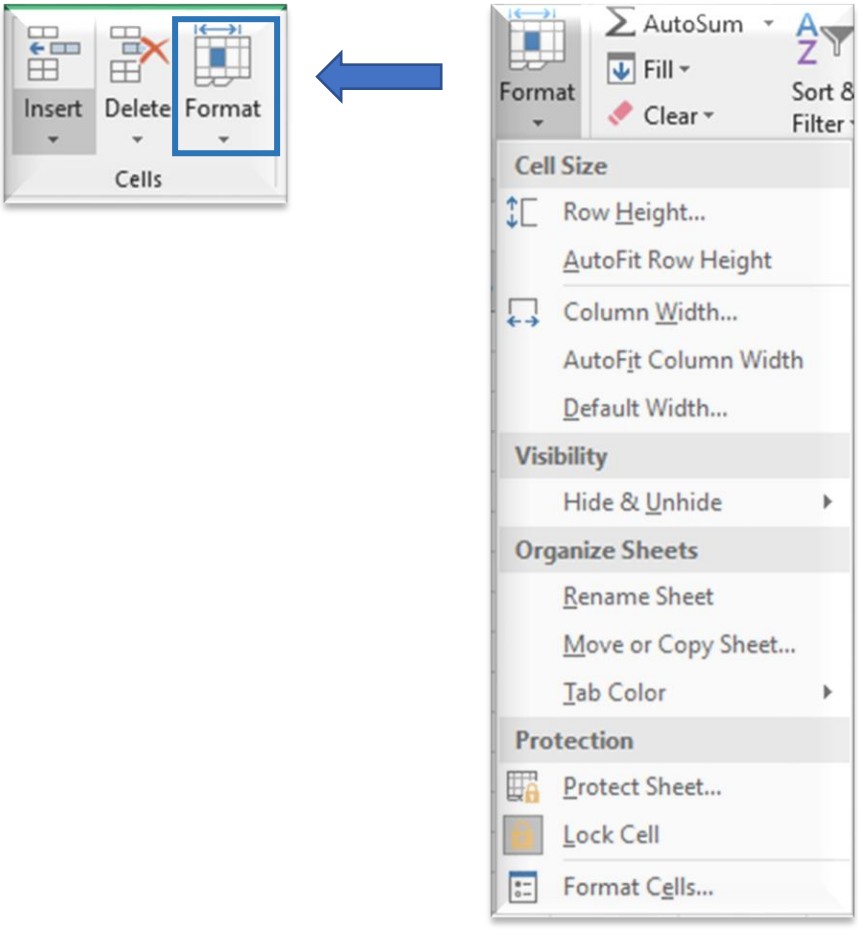


You can also double-click on the line between the columns – the cell will adjust to the longest text in that column.

Column Width:

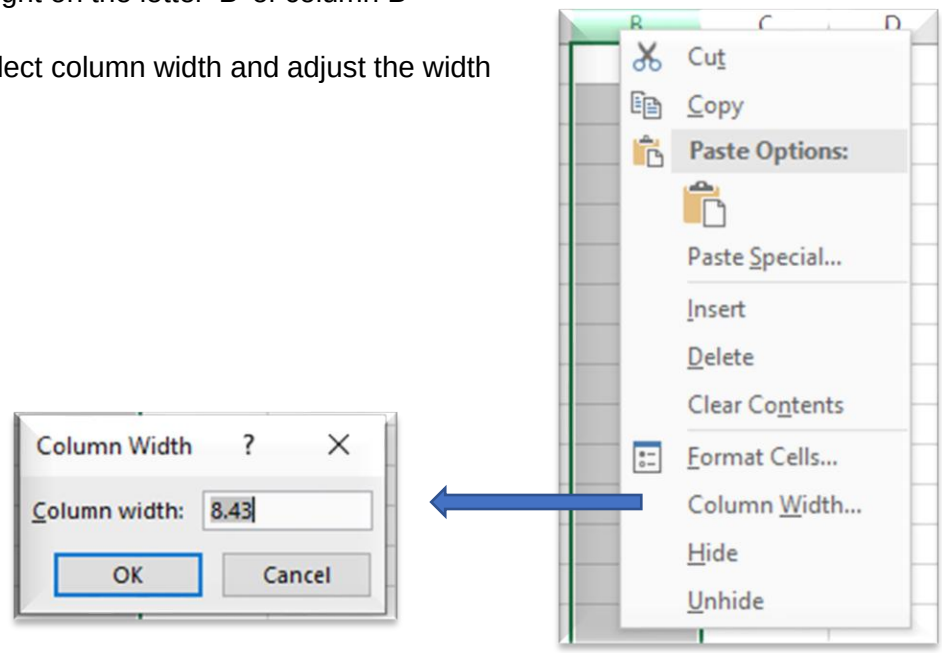
Example:

The height and width of rows and columns can be changed by dragging the mouse. If you need to make a specific size – use the format command in the cells group or right-click on the row number or column letter and select the relevant option.



Click right on the letter 'B' of column B

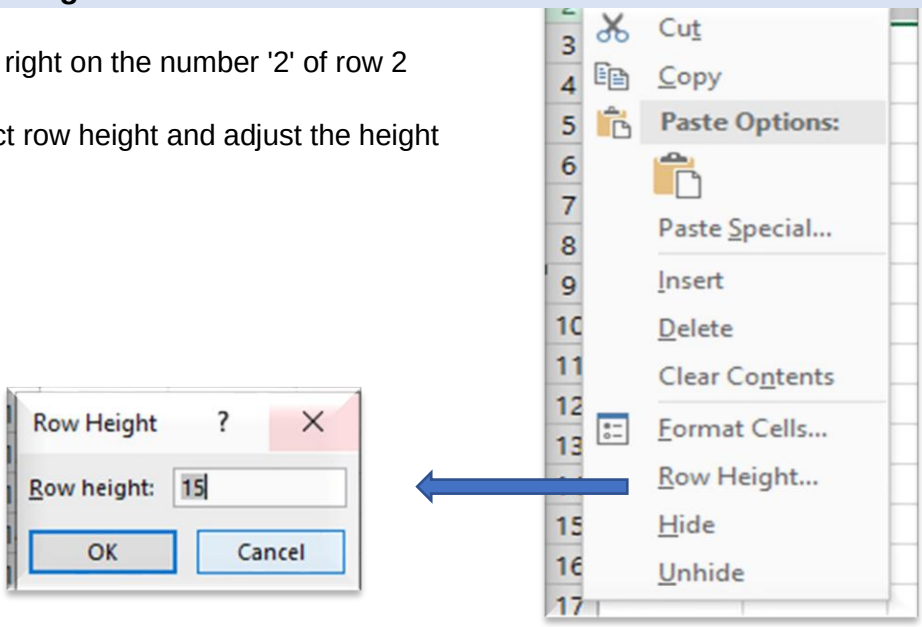
- Select column width and adjust the width



Row Height

Click right on the number '2' of row 2

Select row height and adjust the height



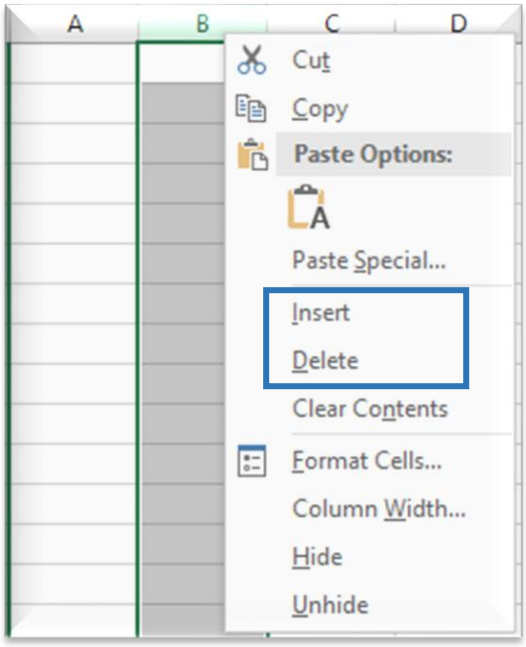
Insert or delete columns and rows

It might sometimes be necessary to add or delete columns or rows in a worksheet.

Select the column letter to the right of where you want the new column to be displayed. For example, if you want to place a column between Columns A and B, select Column B. The new column will be inserted after Column A.

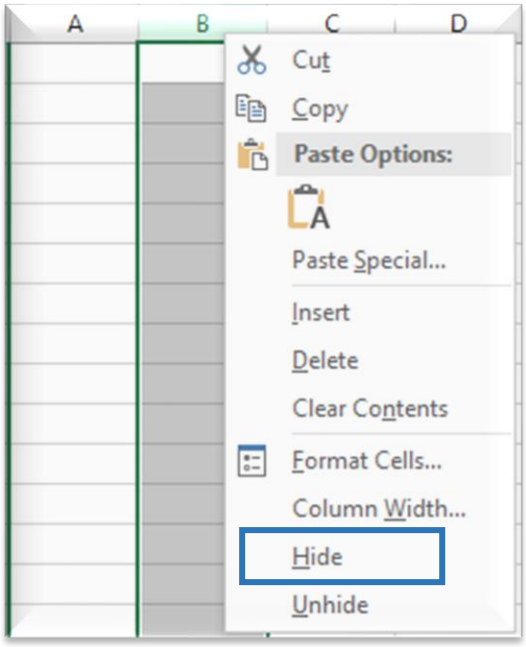
A worksheet will always insert a row or column before the column or row you select.

A worksheet will always delete the row or the column that you selected.

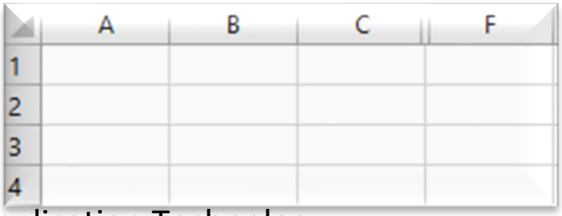


Hide and Unhide

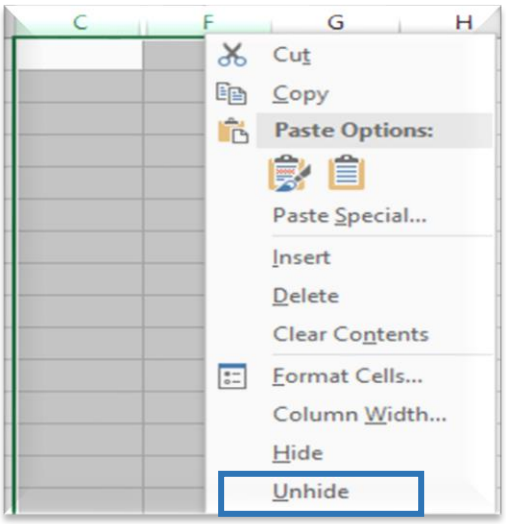
It may sometimes be necessary to hide certain rows or columns. Simply right-click on the number B of column B and select hide.



In the example below, columns D and E are hidden.



To display hidden rows and columns – select rows or columns on both sides of the hidden row or column, right-click and select unhide.



You can also double-click on the column that has been hidden when you see the double-line arrow.

More information for insert and delete of columns:

https://youtu.be/zt72M8ps0Rg

How to hide and unhide columns:

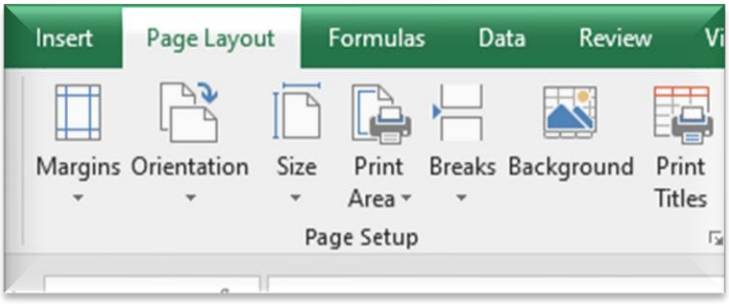
https://youtu.be/uZ6XE561DNI

It is important to know that all the skills you have learnt in Word Processing, can also be applied in Excel, for example:
Editing – Bold, Italics, Underline
Page Layout - Orientation
Illustrations – Images, Shapes
Proofing – Set proofing language, Spell check
Search – Find and Replace
File options – Open, save, save as, new, print

We are only going to look at some of these skills.

File Options

Work in the Page Setup group on the Page Layout tab for specific file options.

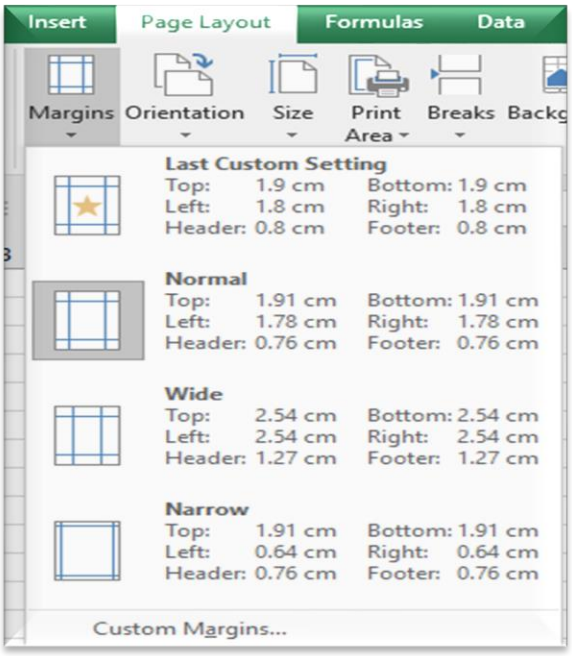


Margins

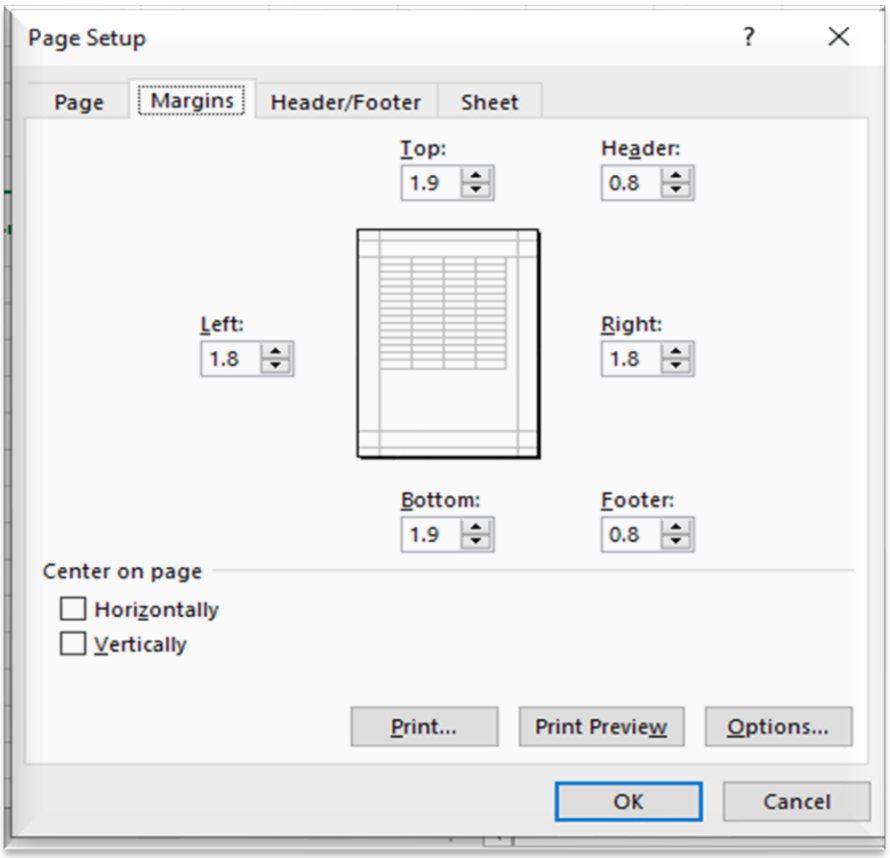
A margin is the space between the edge of the page and the content.
The margins can be used with default settings or you can adjust the margins to fit the data on better the page.

To use default margins, you can do the following:

- On the Page Layout tab, in the Page Setup group, select Margins.
- From the drop-down menu, select the margin that you want.

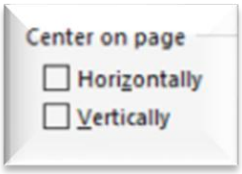


You can adjust the margins by choosing the Custom Margins option:



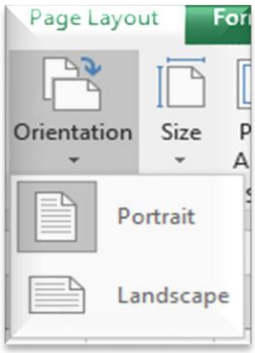
Enter your new values in the Top, Left, Right and Bottom text boxes.

You can select one or both Center on page Horizontally and Vertically checkboxes.
This is optional and it centres the data between the current margin settings.



Page Orientation

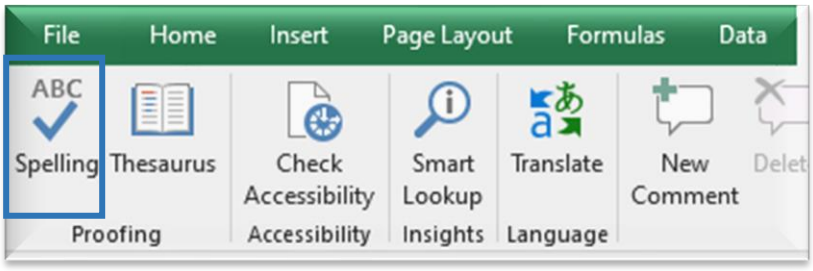
Choose between Portrait or Landscape for you page orientation:



Spell Check

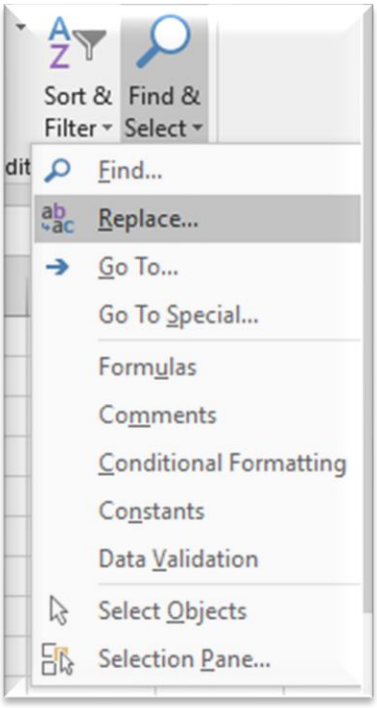
Before you share your workbook, it is always important to make sure that it does not have any spelling errors.

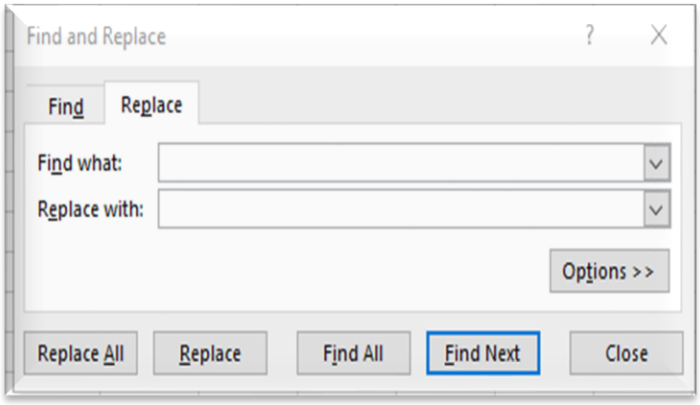
Work on the review tab and use the spelling option



Find and Replace

Finding and replacing data in a spreadsheet can be done by selecting the Find and Select option on the Editing group on the Home tab.

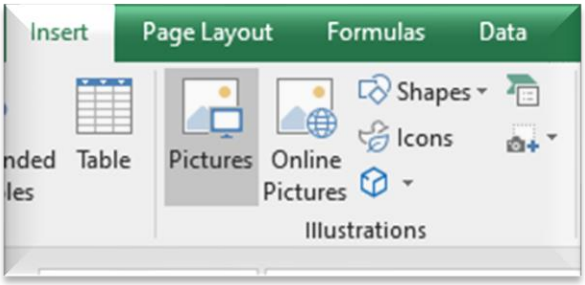




Inserting Illustrations

To insert pictures or shapes, work on the Insert tab and use the illustrations group to insert pictures or shapes.

Use the same skills as in a Word Processor.

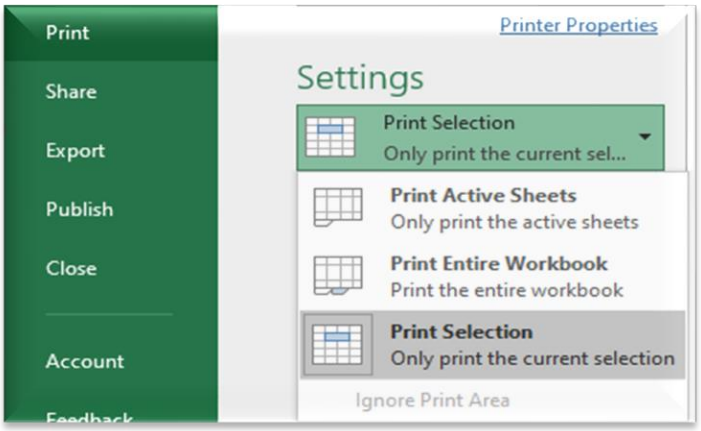


Print

When you want to print everything that is on a sheet – you can just select print on the file tab.

You can also indicate which pages to print and how many copies you want, or which part of a worksheet, etc.

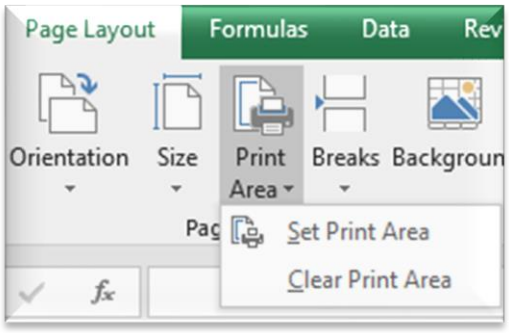
If you only want to print a certain part, do the following:
Select the area to be printed – on the file tab, select print and select print selection under settings, click print



OR

Select the area to be printed
Click on Page layout – print area in the page setup group – set Print Area.

When you have set the area, you can select Print Titles in the Page Setup group and select more options – see examples below:

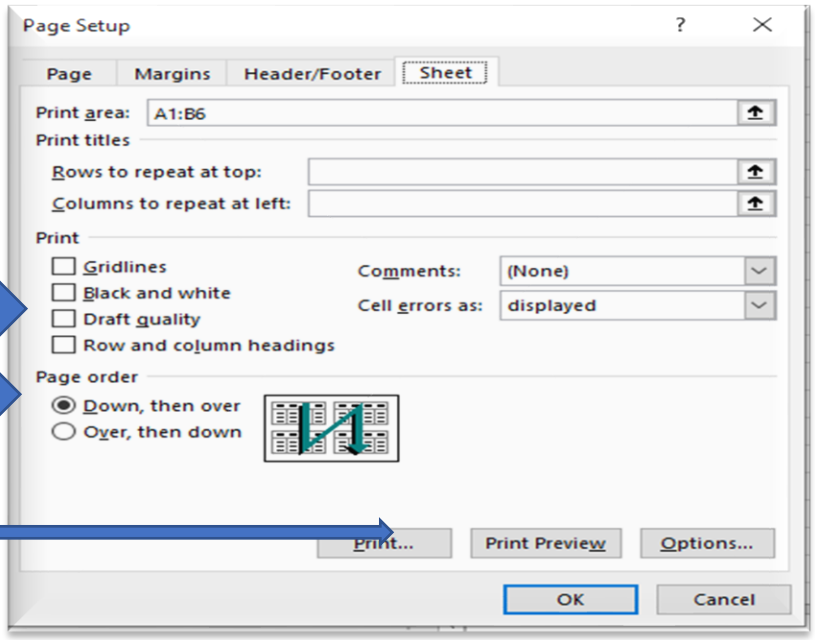


Rows or columns to repeat

Print options such as gridlines, black and white, draft quality

Page order to print

Use the print preview option before you print

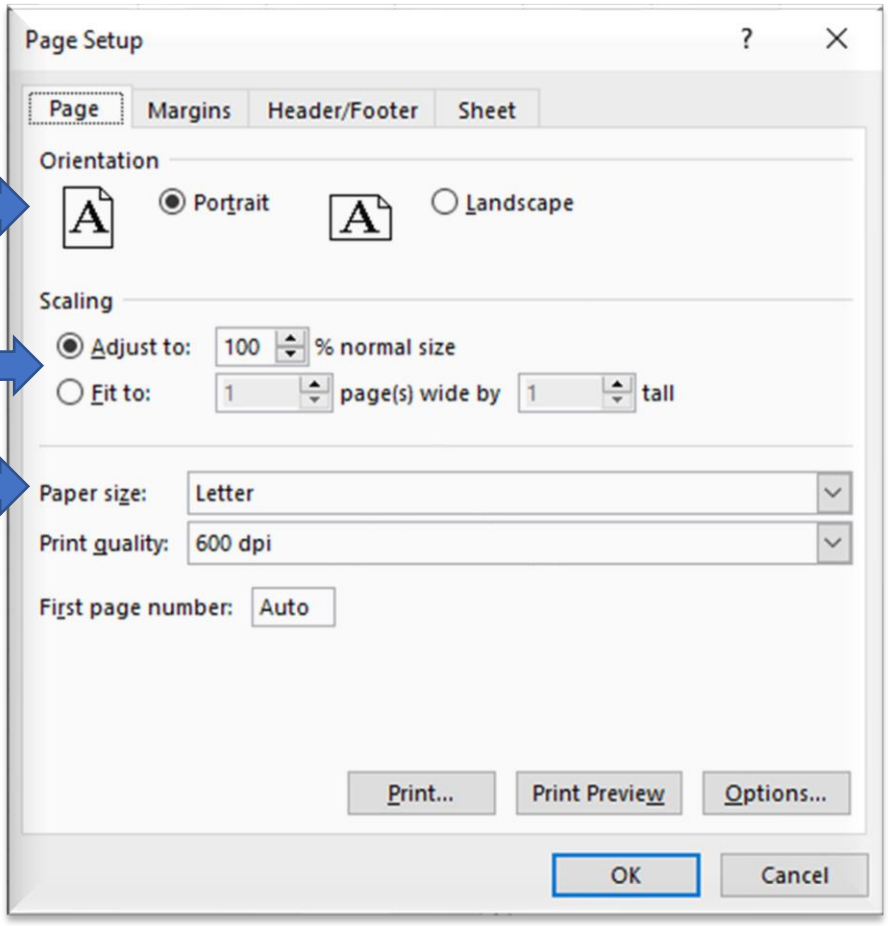


On the Page tab of the PageSetup dialogue box you can do the following:

Set orientation

Adjust the scaling of the page or fit the page to 1 sheet

Paper size, print quality



Tip

- Apart from scaling, you can also try the following to fit a worksheet on one page:
- Reduce font size
- Decrease margins
- Decrease column widths
- Chang page orientation to landscape

Formula vs functions

Spreadsheet function vs spreadsheet formula:

A **formula** is user-defined and may include two or more built-in functions.
A formula does calculations by using operators (+, *, /,-) combined with data in the selected cells, for example =B3+B4; =B1-B2; =B5*B8; =B3/B2

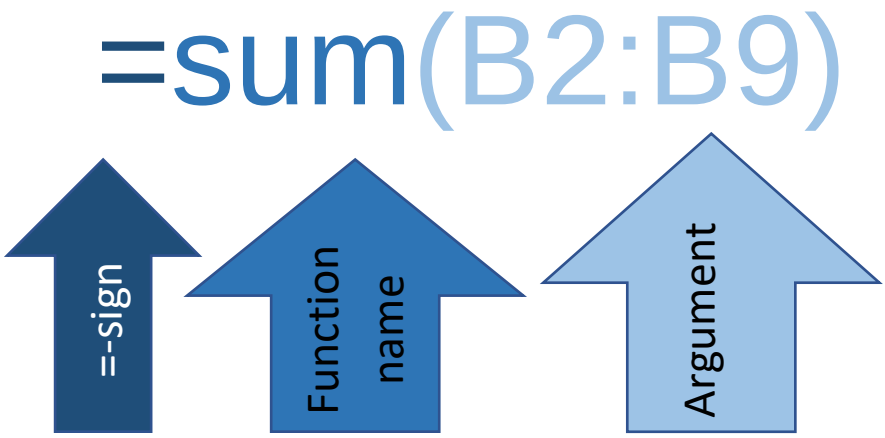
A **function** is viewed as a single built-in or predefined formula in Excel which receives arguments in brackets.
It uses reserved words, which process the input by the user to produce the output in the cell where the answer is supposed to be displayed.

For a function to work, it needs to be written in a specific layout and order. This is called the syntax.

The general format of a function is as follows:

=FunctionName(argument)

- A function always begins with an equal sign
- Followed by the name of the function
- Argument: cells (range) and/or values on which the function is based on – this must always be in brackets



Types of functions

There are a variety of functions that you can use in a spreadsheet.

Here are the most common functions:

Examples of functions

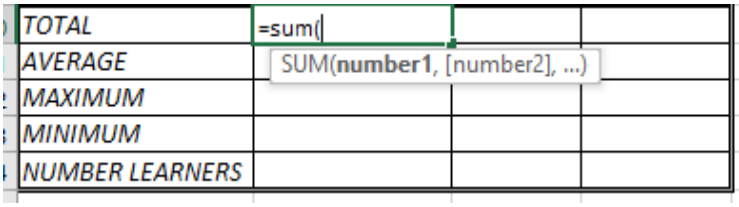
Name of functions	What the function does	Example
SUM	Calculates the sum or total – adds all the values in a range.	=SUM(B2:B19)
AVERAGE	Calculates the average value in a range.	-AVERAGE(B2:B19)
MIN	Calculates (find) the minimum value in a range.	=MIN(B2:B19)
MAX	Calculates (find) the maximum value in a range.	=MAX(B2:B19)
COUNT	Counts the number of cells in a range that contain numeric values (numbers only). Dates and times are also numeric types and are also counted.	=COUNT(B2:B10)

Open the spreadsheet **Functions** to learn how to do these functions:

	A	B	C	D
1	**Name & Surname**	**Tickets bought**	**rectAnswe**	**Score**
2	Chelin MC	47	6	13
3	Coetsee RB	19	2	11
4	Claassen MJ	36	7	19
5	Carelsen JJ	55	9	16
6	Crous J	41	5	14
7	Fourie HS	48	6	13
8	Jansen M	34	3	9
9	Jacob M	51	7	14
10	Malan C	43	4	9
11	Manoko S	28	3	11
12	Marais V	60	8	13
13	Mashego Z	44	6	14
14	Mashiane T	27	4	15
15	Mdhluli J	48	8	17
16	Naudé K	53	7	13
17	Prince NH	36	5	14
18	Pieterse J	48	6	13
19	Saunders MJ	33	4	12
20	*TOTAL*			
21	*AVERAGE*			
22	*MAXIMUM*			
23	*MINIMUM*			
24	*NUMBER LEARNERS*			

The SUM function

- Use your mouse to click in **cell B20** – we have to work out the TOTAL number of tickets sold of Column B.
- Type the equal sign (=) in **cell B20**.
- Type the required function name (sum) after the equal sign, followed by an opening bracket. (You can also double-click on the function name that appears as a tooltip.)



- You need to enter the cell range for the argument (between the brackets) – we are going to use the click and drag method – click on **cell B2**, while holding in the mouse's left button, drag down to **cell B19**.
  (You can also use the mouse to select **cell B2**, scroll down, and press and hold down the *Shift* key. Then, select **cell B19**.)

	Name & Surname	Tickets bought	rectAnswe	Score
1				
2	Chelin MC	47	6	13
3	Coetsee RB	19	2	11
4	Claassen MJ	36	7	19
5	Carelsen JJ	55	9	16
6	Crous J	41	5	14
7	Fourie HS	48	6	13
8	Jansen M	34	3	9
9	Jacob M	51	7	14
10	Malan C	43	4	9
11	Manoko S	28	3	11
12	Marais V	60	8	13
13	Mashego Z	44	6	14
14	Mashiane T	27	4	15
15	Mdhluli J	48	8	17
16	Naudé K	53	7	13
17	Prince NH	36	5	14
18	Pieterse J	48	6	13
19	Saunders MJ	33	4	12
20	*TOTAL*	=sum(B2:B19	18R x 1C	
21	*AVERAGE*	SUM(**number1**, [number2], ...)		
22	*MAXIMUM*			
23	*MINIMUM*			
24	*NUMBER LEARNERS*			

You will see that the cell range **B2:B19** will be displayed.
Enter the closing bracket and press enter on the keyboard.

0	*TOTAL*	=SUM(B2:B19)		
1	*AVERAGE*			
2	*MAXIMUM*			
3	*MINIMUM*			
4	*NUMBER LEARNERS*			

The answer will appear.

	TOTAL	751		
	AVERAGE			
	MAXIMUM			
	MINIMUM			
	NUMBER LEARNERS			

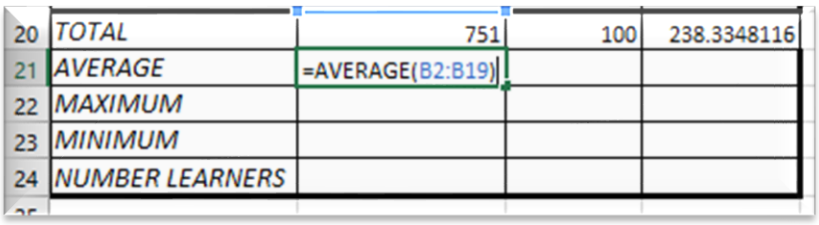
Use the Autofill feature to work out the Totals for **Column C** and **Column D**.

20	*TOTAL*	751	100	238.3348116
21	*AVERAGE*			
22	*MAXIMUM*			
23	*MINIMUM*			
24	*NUMBER LEARNERS*			

Use the same worksheet to complete the following functions:

The Average function

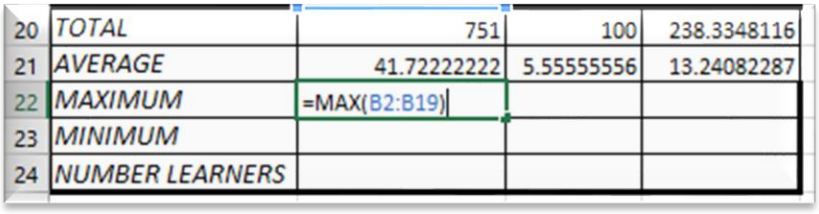
Work in **cell B21** and type the equal sign (=).
Type in the function name Average.
Enter the cell range for the argument. In this example we will use the cell range **B2:B19**.



Use AutoFill to use the same function for **Columns C and D**.

The Maximum function

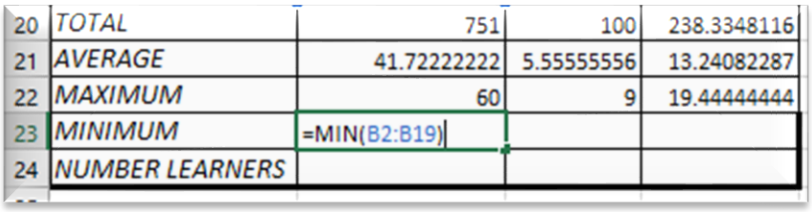
Work in **cell B22** and type the equal sign (=).
Type in the function name Max. Excel will find the maximum value in cell range **B2:B19**.
Enter the cell range for the argument. In this example we will use the cell range **B2:B19**.



Use AutoFill to use the same function for **Columns C** and **D**.

The Minimum function

Work in **cell B23** and type the equal sign (=).
Type in the function name Min. Excel will find the minimum value in cell range **B2:B19**.
Enter the cell range for the argument. In this example we will use the cell range **B2:B19**.

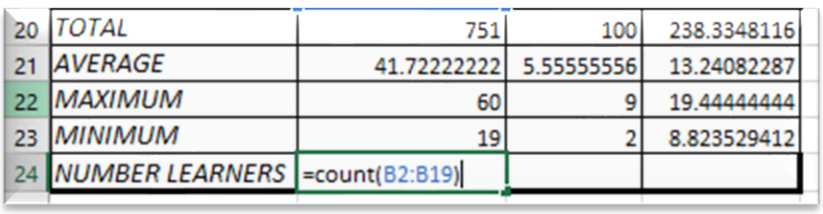


Use AutoFill to use the same function for **Columns C** and **D**.

The Count function

This function will **COUNT** the number of cells in a range that contain numeric values (numbers only).

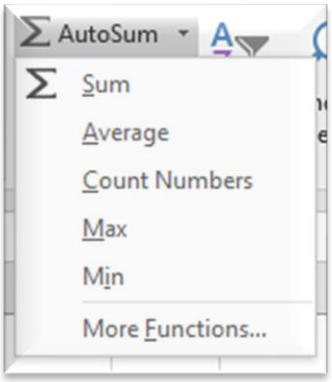
Work in **cell B24** and type the equal sign (=).
Type in the function name Count. Excel will count the number of cells in cell range **B2:B19**.
Enter the cell range for the argument. In this example we will use the cell range **B2:B19**.



Use AutoFill to use the same function for **Columns C** and **D**.

Continue working in the same workbook (**Functions**) and complete activity 4.

Using AutoSum

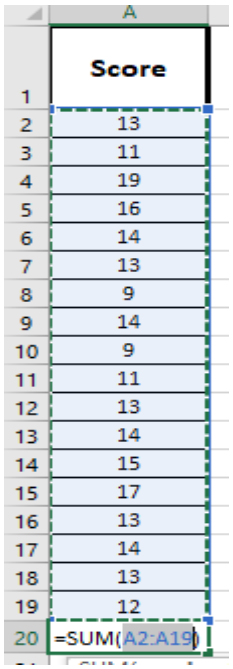


The AutoSum command automatically inserts common functions.

You will find the AutoSum feature on the home tab, in the editing group. Click on the drop-down arrow next to the AutoSum feature.

This includes the most commonly used functions, such as SUM, AVERAGE, COUNT, MIN and MAX.

Open the **AutoSum** spreadsheet.



- Select **cell A20**.
- Choose the Sum function (AutoSum command) for this calculation.
- Excel will insert the function into the selected cell, and automatically select the cell range for the argument. In this example, **A2:A19** will be selected to calculate the total.

Use the AutoSum command to complete the following:

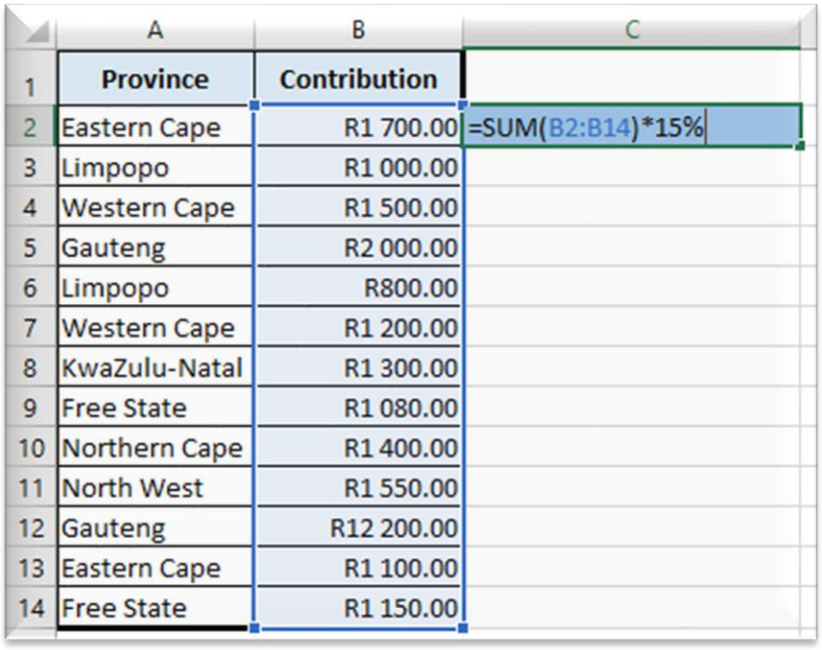
In **Column C** – Average
In **Column E** – Minimum
In **Column G** – Count

It is important to know that you can also make use of the following:

Examples:

A combination of formulas and functions

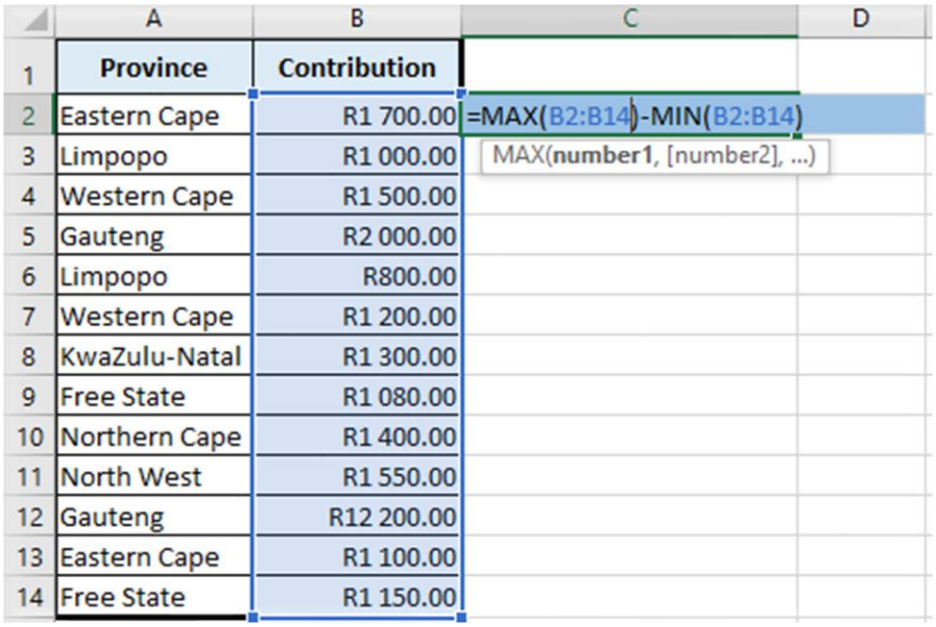
A Company in South Africa will donate 15% of the total amount of contributions received from the different Provinces. Calculate the amount that the Company will donate in **cell C2**.



	A	B	C
1	**Province**	**Contribution**	
2	Eastern Cape	R1 700.00	=SUM(B2:B14)*15%
3	Limpopo	R1 000.00	
4	Western Cape	R1 500.00	
5	Gauteng	R2 000.00	
6	Limpopo	R800.00	
7	Western Cape	R1 200.00	
8	KwaZulu-Natal	R1 300.00	
9	Free State	R1 080.00	
10	Northern Cape	R1 400.00	
11	North West	R1 550.00	
12	Gauteng	R12 200.00	
13	Eastern Cape	R1 100.00	
14	Free State	R1 150.00	

A combination of functions:

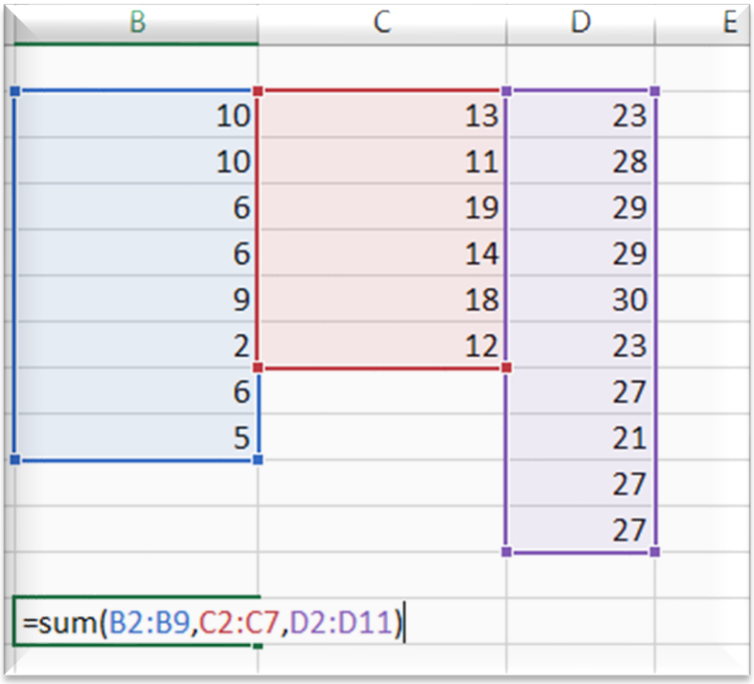
Calculate the difference between the highest contribution and the lowest contribution in **cell C2**.



	A	B	C	D
1	**Province**	**Contribution**		
2	Eastern Cape	R1 700.00	=MAX(B2:B14)-MIN(B2:B14)	
3	Limpopo	R1 000.00	MAX(**number1**, [number2], ...)	
4	Western Cape	R1 500.00		
5	Gauteng	R2 000.00		
6	Limpopo	R800.00		
7	Western Cape	R1 200.00		
8	KwaZulu-Natal	R1 300.00		
9	Free State	R1 080.00		
10	Northern Cape	R1 400.00		
11	North West	R1 550.00		
12	Gauteng	R12 200.00		
13	Eastern Cape	R1 100.00		
14	Free State	R1 150.00		

Multiple Arguments

Multiple arguments must be separated by a comma. For example, in the function **=SUM(B2:B9,C2:C7,D2:D11),** there are three arguments.
The function will add all the values of the cells from three arguments.



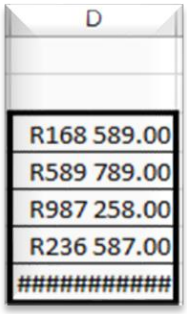
Error Indicators

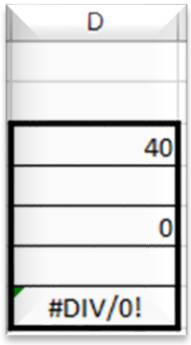
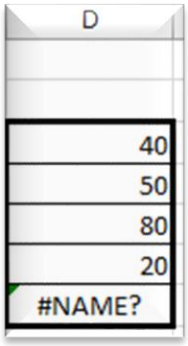
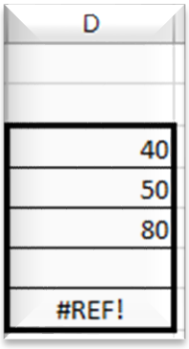
Error messages in Excel

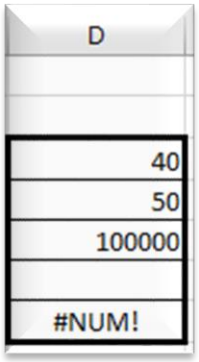
Error messages in Excel are caused by human error and can be avoided by entering formulas and functions correctly from the start.

An error message will always start with the hash-sign (#).

The error messages are the following:

Error Message	Explanation of the error message	How to fix the error	Example of the error message
#####	When the column is not wide enough to display the number.	Change the width of the column to display the number.	

Error Message	Explanation of the error message	How to fix the error	Example of the error message
#value!	Reference is made to cells in the formula function where the data type cannot be used in a calculation. When a cell containing text is multiplied by a number.	Ensure that all cell references and any other values used in the calculation are of a data type that can be used in calculations.	
#div/0!	Division by zero or an empty cell is attempted.	Change the divisor to another number, or key in a number if the cell is empty.	
#name?	An invalid function name is used – e.g. averag	Check the spelling of the function name - average.	
	The double quotation marks delimiting text references are left out.	Place text in double quotation marks if it is required by the function.	
	The colon in a range reference is left out, e.g. =SUM(B2B10).	Ensure that the colon is used in reference to a range, =SUM(B2:B10).	
#ref!	A cell reference in a formula function is no longer valid. For example, if a column or row is deleted and the cell reference no longer exists.	Make sure to use the correct cell reference.	

Error Message	Explanation of the error message	How to fix the error	Example of the error message
#num!	If an invalid numerical value is used in a formula/function, e.g. the square root of a negative number.	Ensure that numerical values are valid	
	It also occurs if a number is too large or too small, e.g. 1 000 000^100.	Ensure that the result of a calculation is not too large or too small.	

Basic functions

Name of functions	What the function does	Example
Functions used to count		
Count	Counts the number of cells in a range that contain numeric values (numbers only). Dates and times are also numeric types and are also counted.	=COUNT(A1:A10)
Counta	Counts the number of cells in a range that contain either numeric values or text (any cell that is not empty), it can even count symbols.	=COUNTA(A1:A10)
Countblank	Counts the number of empty cells in a range.	=COUNTBLANK(A1:A10)
Countif	Counts the number of cells that comply with a specific criterion or condition. *Examples:* We want to calculate the number of learners that stay in "Gauteng". We want to calculate the number of learners that sold more than 5 tickets for a concert. We want to calculate the number of learners with a score of 100.	Criteria can be numbers, text or an expression. If the criterion is text or an expression that uses any of the relational operators, it must be enclosed in double quotation marks. =COUNTIF(range, criteria) =COUNTIF(A1:A10,"Gauteng") =COUNTIF(B1:B10,">5") =COUNTIF(C1:C10,100)

Name of functions	What the function does	Example
Functions used to return random numbers		
Rand	Returns a random number between 0 and 1 – 0,468.	=RAND()
Randbetween	Returns a random whole number between two numbers that you specify.	=RANDBETWEEN(1,20)
Other useful functions		
Mode	Returns the value that occurs most frequently in a range of data.	=MODE(C1:C10)
Median	Returns the number in the middle of a set of sorted numbers. If there is an even set of numbers, the average of the middle two numbers is returned	=MEDIAN(C1:C10)
Functions that returns dates		
Today	Returns the current date.	=TODAY()
Now	Returns the current date and time.	=NOW()

The COUNT functions always count the number of cells; the SUM function always adds up the values inside the cells.

Relational Operators:

Operator	Description
>	Greater than
<	Less than
=	Equal to
>=	Greater than or equal to
<=	Less than or equal to
<>	Not equal to

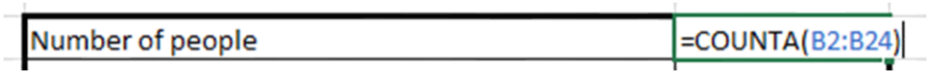
To practice some of these functions, open the **MoreFunctions** spreadsheet document.

1. Continue the numbering in **Column A** by using a spreadsheet feature. DO NOT TYPE OUT ALL THE NUMBERS.

   TIP: Select **cell A2:A3** and use the AutoFill feature to drag the numbers down to **cell A24**.

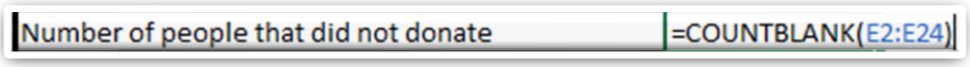
2. Calculate the number of people that will donate money by using a function in **cell H2**.

   In this scenario, we are not going to calculate any numbers. For this we are going to use the COUNTA function to count the number of people – use **column B** for this calculation:



3. Calculate in **cell H3** the number of people who did not donate anything.

   We want to calculate all the empty cells in **column E**.



4. Use a function in **cell H4** to count the number of people who made a monthly contribution for donations.

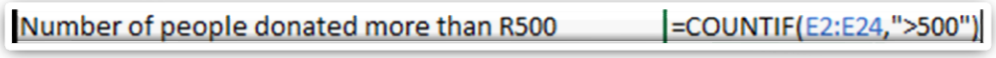
   We want to count the number of people by using a specific criterion – monthly. We are going to use the COUNTIF function.

   The format used for COUNTIF is: =COUNTIF(range,criteria)
   First type in the name of the function, then select the range, use the comma as separator for the criterion, then the criterion will follow enclosed in double quotation marks.



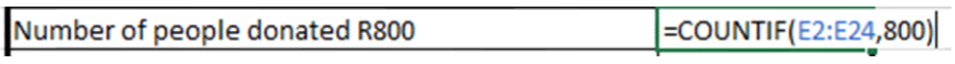
5. Use a function in **cell H5** to count the number of people who donated an amount more than R500.

   Remember - If the criterion is an expression that uses any of the relational operators, it must be enclosed in double quotation marks.

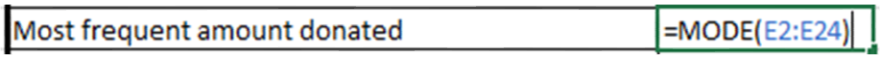


6. Calculate in **cell H6** the number of people who donated R800.

   We are going to use the COUNTIF function, but in this example, it is not necessary to enclose the number within double quotation marks. Do not type in the R-sign in the criterion.



7. Calculate in **cell H7** the most frequent amount donated.



8. There will be a lucky draw between the donators and the winner will receive a prize. Generate a random number between 1 and 23 in **cell H8** to determine the winner of the lucky draw.

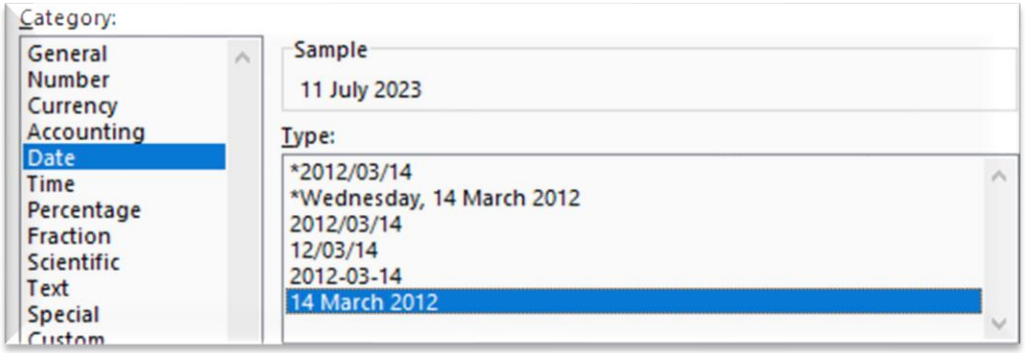
Use the comma as separator between the two numbers involved:



9. Use a function to insert todays' date in **cell H9**.
Change the format of the date to display in dd mmmm yyyy format.



Use the Format Cells dialogue box to change the format of the date:



Save and close the **MoreFunctions** document.

> The RAND, TODAY and NOW functions are the only functions with no range selections between the brackets.

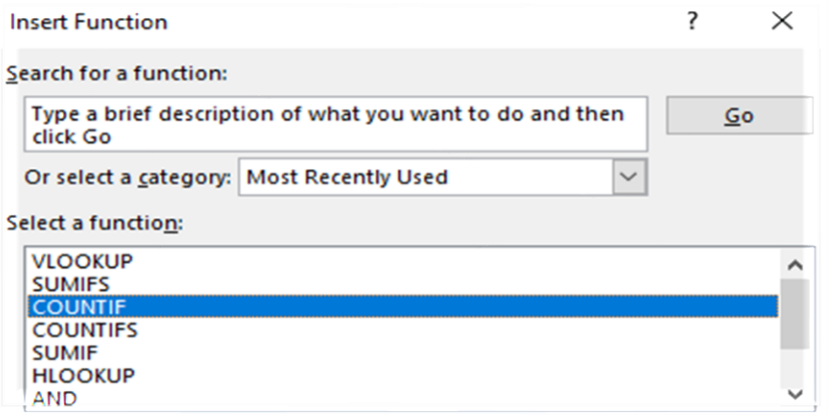
COUNTIF:

You can also use the insert function option to do the COUNTIF function.

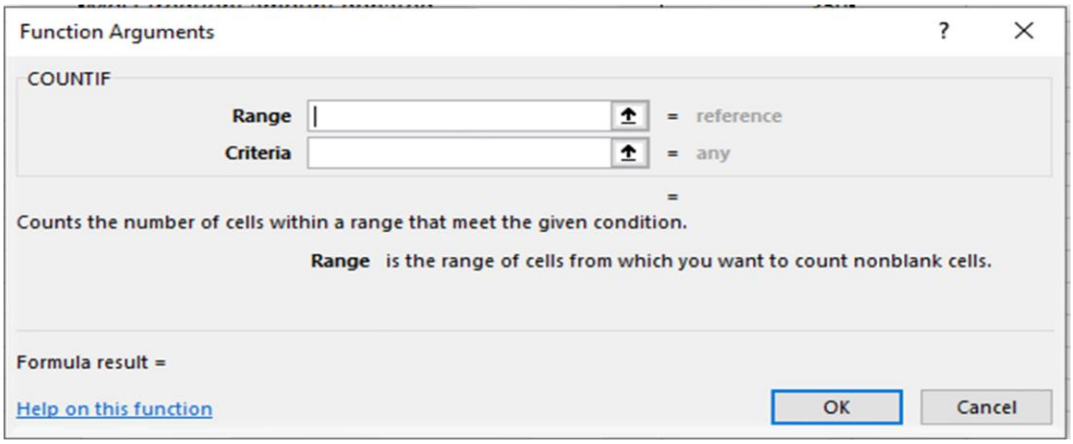


Click on insert function

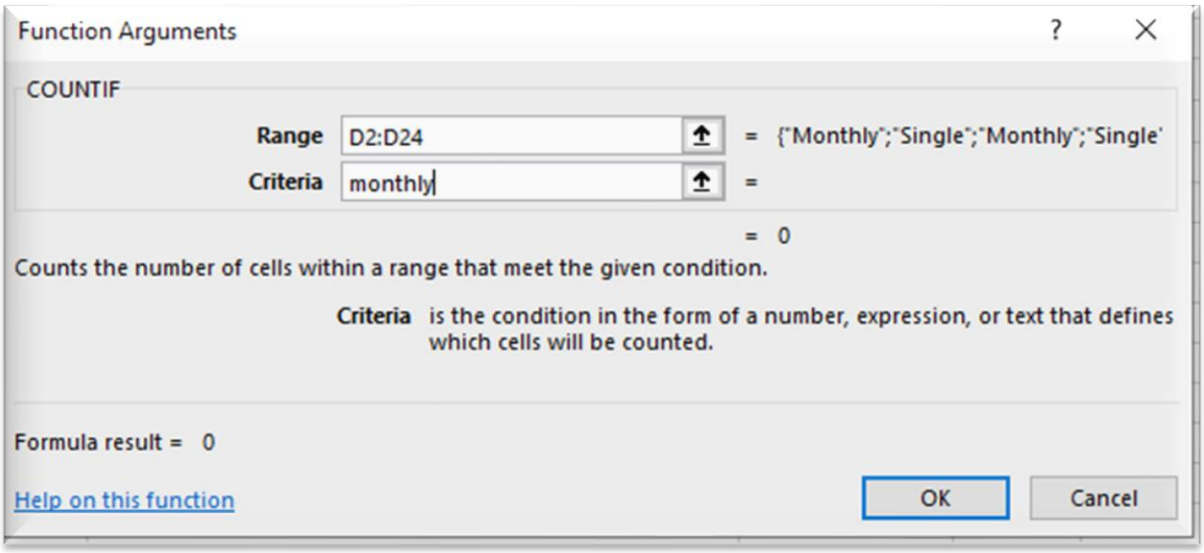
The following dialogue box will appear. Choose the COUNTIF function in the Select a function box.
(If the function name does not appear in the select a function box, you can search for it by typing COUNTIF in the search the function box and press Go. It will then appear in the select a function box.)



Double-click on the COUNTIF function. The following will appear:



You can then select the Range and type in the Criteria in the allocated spaces.



Take note that you do not need to add the double quotation marks when typing in the criterion. Excel will add the double quotation marks automatically.

Examples of Formulas:

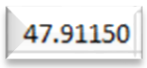
	A	B	C	D	E
1	**Item**	**Price per item**	**No. of items**	**Total amount**	
2	Pencil	15	15	**=C2*B2**	
3					
4					
5	**Name**	**Sport Fees**	**Paid**	**Outstanding**	
6	Melissa Komuno	2000	1500	**=B6-C6**	
7					
8	**Purchase price**	**Selling price**	**Profit**		
9	800	1200	**=B9-A9**		
10					
11	**Name**	**Number of tickets**	**Total amount @ R100 per ticket**		
12	Matthew Neethling	15	**=B12*100**		
13					

Examples of Functions:

G	H	I
Value	**Description**	**Function (applied to G2:G15)**
5	Highest value	=MAX(G2:G15)
5	Lowest value	=MIN(G2:G15)
5	Average value	=AVERAGE(G2:G15)
7	Total of the values	=SUM(G2:G15)
2	Number of values	=COUNT(G2:G15)
6	Number of empty cells	=COUNTBLANK(G2:G15)
8	Median of the values	=MEDIAN(G2:G15)
1	Mode of the values	=MODE(G2:G15)
3	Number of values equal to 5	=COUNTIF(G2:G15,5)
3	Number of values greater than 5	=COUNTIF(G2:G15,">5")
	Current date and time	=NOW()
1	Current date	=TODAY()
4	A random number from 1 to 10	=RANDBETWEEN(1,10)
8	The average; display 2 places after the decimal point	=AVERAGE(G2:G15)

Formatting decimal places

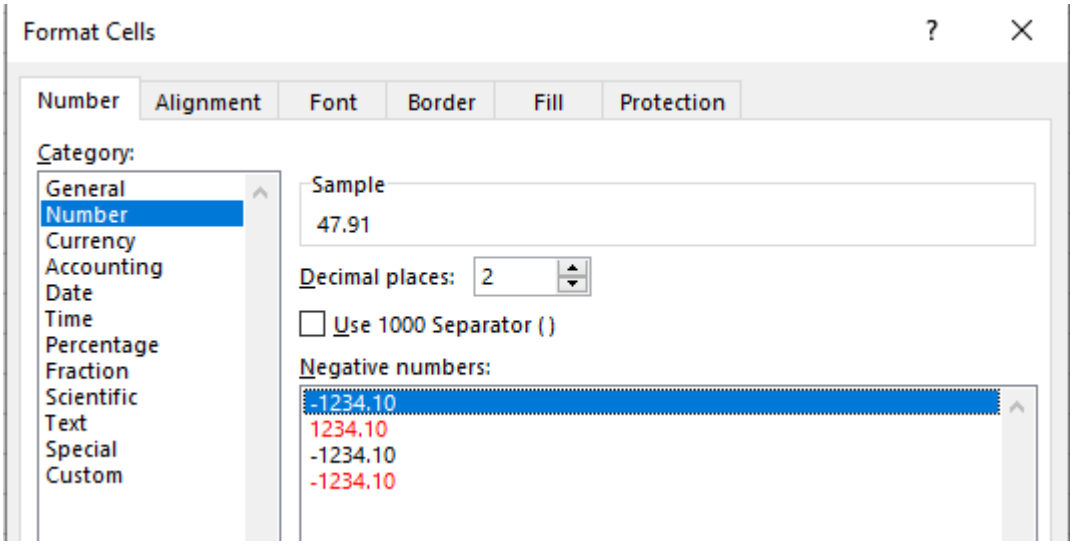
There are instances where you will need to round a number to the nearest whole number or decimal place.



Using the Format Cells dialogue box:

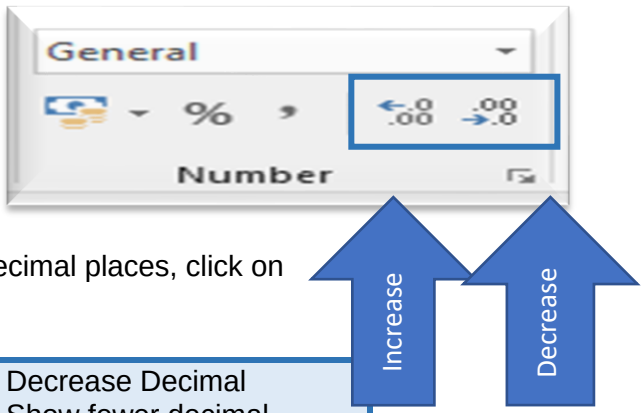
Right-click on the selected cells to open the Format Cells dialogue box. Or, you can press Ctrl+1.

In the Format Cells dialogue box, select the Number tab (or Currency if it is an amount). Specify the number of decimal places to which you want the values to be rounded off.
If you look at the Sample section, you will see a preview of how the rounded number will look.



Decrease/Increase decimal places by using formatting:

Besides using the Format Cells dialog box, the number of places after the decimal point can be decreased or increased by using the decrease decimal and increase decimal in the number group on the home tab.



Click in the cell that you want to change the decimal places, click on decrease decimals or increase decimal.

Increase Decimal: Show more decimal places for a more precise value	Decrease Decimal Show fewer decimal places

It is not the value itself that changes, only the displayed number of places after the decimal point, e.g. 10.5678 when format to 10.6, will remain 10.5678 when you do any calculations with it.

Basic sorting

Sorting in a spreadsheet is usually done by columns. It is important to keep the information organised in rows so that the data stay organised as well.

You must always select the whole range when sorting only one column. In that way, the row data associated with that column will be kept together.
For example, when workers in a company's names in an address list are sorted, the address of each worker have to be moved with the name.

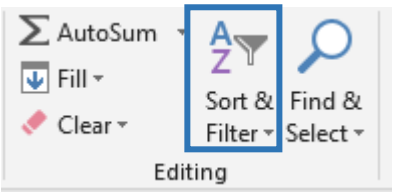
Open the **Sorting** spreadsheet to help you with sorting.

You can sort data as follows:

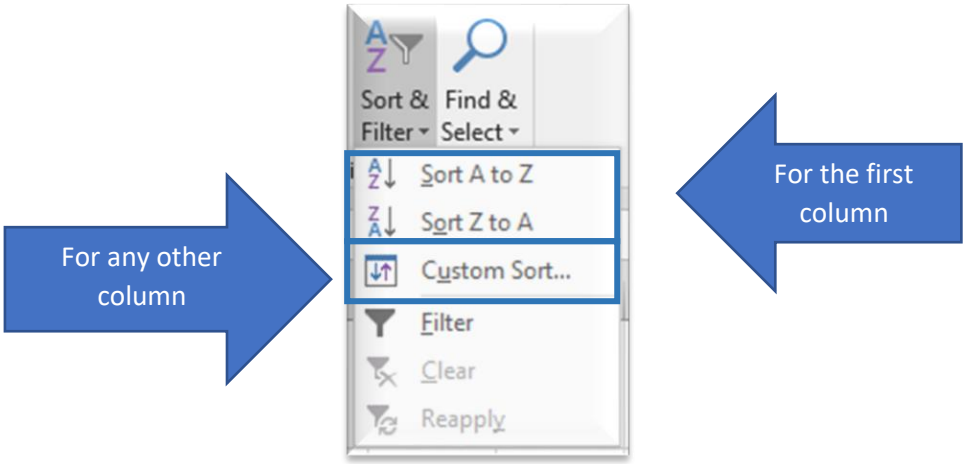
Select the data in **cell A2:G20** that you wish to sort. It is not necessary to include the column headings in your selection, but it is important to select the entire rows of data, not only the column/s by which the sort must be done by.

	A	B	C	D	E	F	G
1	User	Platform	Subscription fee	Download Speed (MB)	Amount spent on downloading	Amount spent on streaminig	Total amount spent
2	Majola	Netflix	R99.00	4	R249.00	R326.00	R674.00
3	Myeni	BoxOffice	R35.00	10	R207.00	R368.00	R575.00
4	Shange	PopcornTime		4	R296.00	R235.00	R531.00
5	Gerber	PopcornTime		50	R289.00	R407.00	R696.00
6	Ndwandwe	Netflix	R99.00	100	R426.00	R515.00	R1 040.00
7	Reddy	BoxOffice	R35.00	10	R346.00	R261.00	R642.00
8	Visser	Netflix	R99.00	2	R80.00	R297.00	R476.00
9	Smit	PopcornTime	R900.00	2	R356.00	R563.00	R919.00
10	Zungu	Showmax		20	R415.00	R500.00	R1 815.00
11	Mulaudzi	DSTV	R900.00	25	R363.00	R222.00	R1 485.00
12	Mkhize	BoxOffice	R35.00	4	R290.00	R449.00	R774.00
13	De beer	PopcornTime	R900.00	4	R213.00	R548.00	R761.00
14	Khanyile	Showmax	R900.00	50	R294.00	R201.00	R1 395.00
15	Dladla	Showmax	R900.00	4	R324.00	R413.00	R1 637.00
16	Bezuidenhout	Showmax		50	R295.00	R216.00	R1 411.00
17	Ferreira	Stremio	R900.00	10	R362.00	R299.00	R661.00
18	Sikhosana	Showmax		4	R467.00	R472.00	R1 839.00
19	Moloi	BoxOffice	R35.00	25	R230.00	R458.00	R723.00
20	Mnisi	Netflix	R99.00	4	R208.00	R403.00	R710.00

Click on sort and filter in the editing group on the home tab.



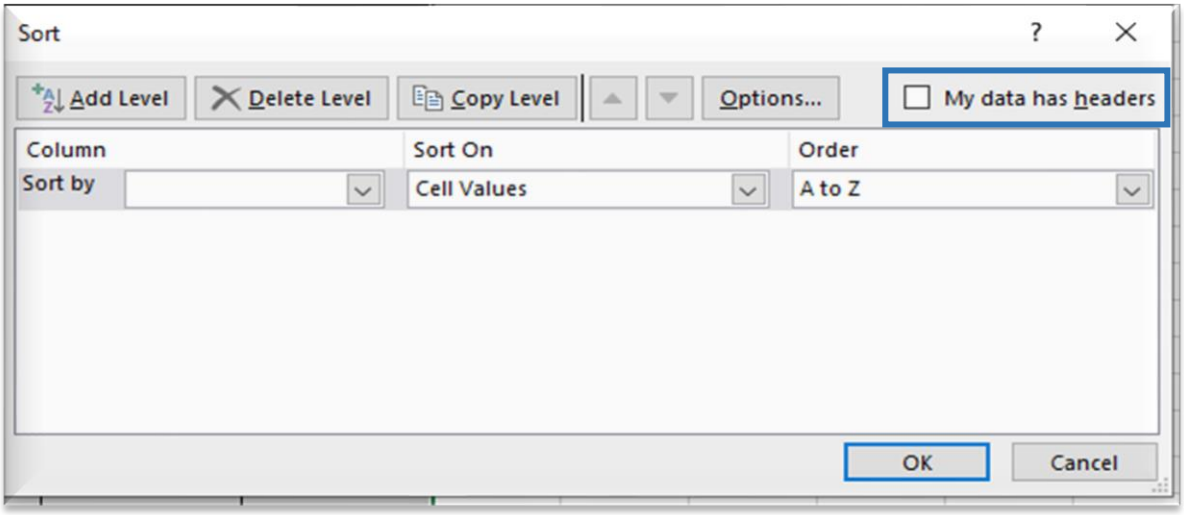
Select sort A to Z or sort Z to A if you wish to sort the data by the first column only.



OR

If you do not wish to sort the data by the first column, or you wish to sort it by more than one column, you must select custom sort.

The following dialogue box will appear:

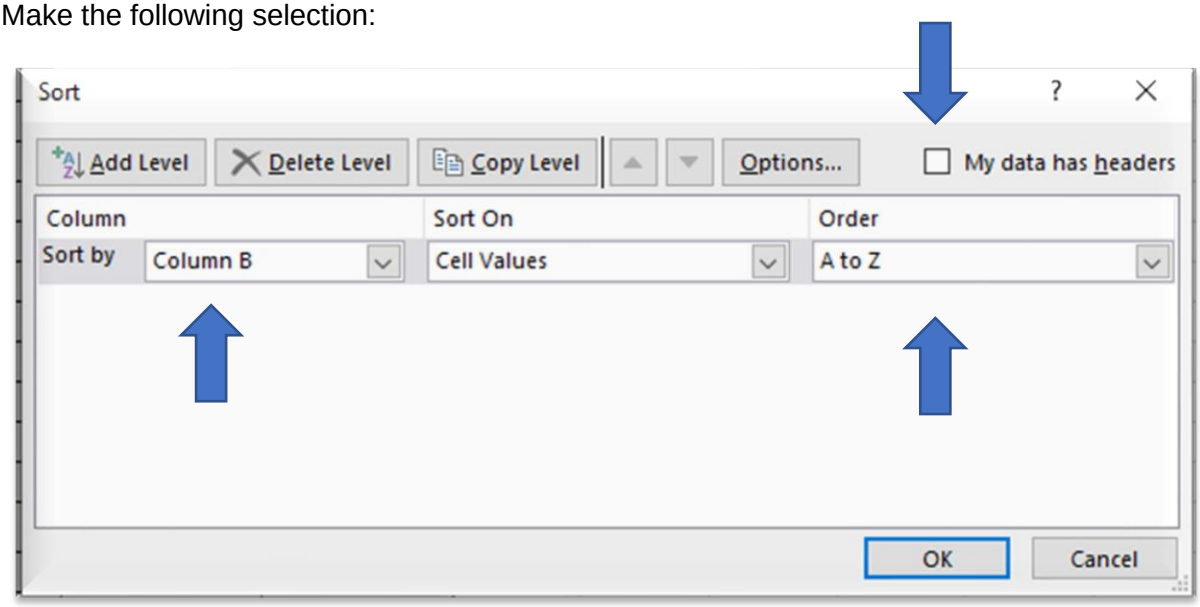


Do not select the 'My data has headers' tick box when you did not select the headings in the spreadsheet.
Alternatively, select the 'My data has headers' tick box when you selected the headings.

Then choose the column by which you wish to perform the sort.

We want to sort the data according to the platform chosen by the users – Column B.

Make the following selection:



Data will appear as follows:

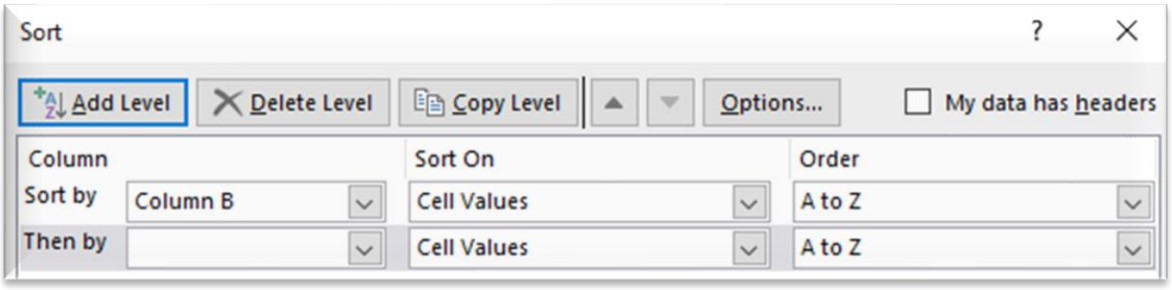
	A	B	C	D	E	F	G
1	User	Platform	Subscription fee	Download Speed (MB)	Amount spent on downloading	Amount spent on streaminig	Total amount spent
2	Myeni	BoxOffice	R35.00	10	R207.00	R368.00	R575.00
3	Reddy	BoxOffice	R35.00	10	R346.00	R261.00	R642.00
4	Mkhize	BoxOffice	R35.00	4	R290.00	R449.00	R774.00
5	Moloi	BoxOffice	R35.00	25	R230.00	R458.00	R723.00
6	Mulaudzi	DSTV	R900.00	25	R363.00	R222.00	R1 485.00
7	Majola	Netflix	R99.00	4	R249.00	R326.00	R674.00
8	Ndwandwe	Netflix	R99.00	100	R426.00	R515.00	R1 040.00
9	Visser	Netflix	R99.00	2	R80.00	R297.00	R476.00
10	Mnisi	Netflix	R99.00	4	R208.00	R403.00	R710.00
11	Shange	PopcornTime		4	R296.00	R235.00	R531.00
12	Gerber	PopcornTime		50	R289.00	R407.00	R696.00
13	Smit	PopcornTime	R900.00	2	R356.00	R563.00	R919.00
14	De beer	PopcornTime	R900.00	4	R213.00	R548.00	R761.00
15	Zungu	Showmax		20	R415.00	R500.00	R1 815.00
16	Khanyile	Showmax	R900.00	50	R294.00	R201.00	R1 395.00
17	Dladla	Showmax	R900.00	4	R324.00	R413.00	R1 637.00
18	Bezuidenhout	Showmax		50	R295.00	R216.00	R1 411.00
19	Sikhosana	Showmax		4	R467.00	R472.00	R1 839.00
20	Ferreira	Stremio	R900.00	10	R362.00	R299.00	R661.00

You will be able to sort according to any column.

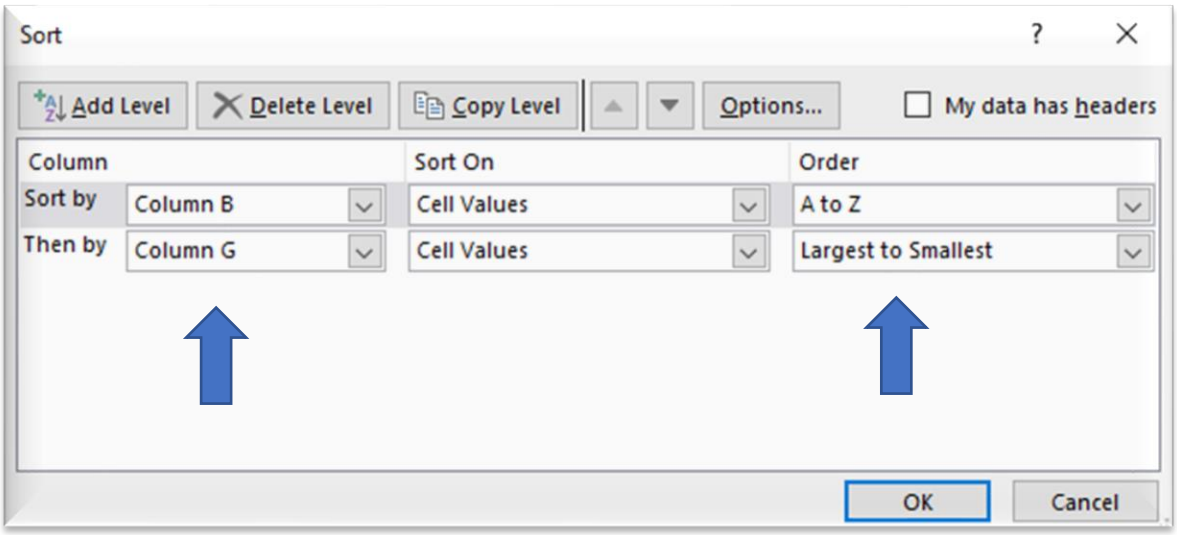
You can also add a level of sorting.

We want to sort according to the platforms alphabetically (Column B) and then according to the total amount spent – from the largest to the smallest amount (Column G).

- Select all the data.
- Click on sort and filter in the editing group on the home tab.
- Select Custom Sort:
- Click on Add Level



Make the following selections:



The data will appear as follows:

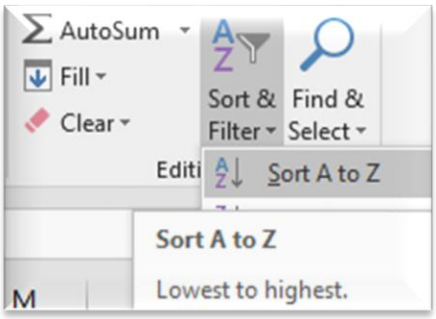
	A	B	C	D	E	F	G
1	User	Platform	Subscription fee	Download Speed (MB)	Amount spent on downloading	Amount spent on streaminig	Total amount spent
2	Mkhize	BoxOffice	R35.00	4	R290.00	R449.00	R774.00
3	Moloi	BoxOffice	R35.00	25	R230.00	R458.00	R723.00
4	Reddy	BoxOffice	R35.00	10	R346.00	R261.00	R642.00
5	Myeni	BoxOffice	R35.00	10	R207.00	R368.00	R575.00
6	Mulaudzi	DSTV	R900.00	25	R363.00	R222.00	R1 485.00
7	Ndwandwe	Netflix	R99.00	100	R426.00	R515.00	R1 040.00
8	Mnisi	Netflix	R99.00	4	R208.00	R403.00	R710.00
9	Majola	Netflix	R99.00	4	R249.00	R326.00	R674.00
10	Visser	Netflix	R99.00	2	R80.00	R297.00	R476.00
11	Smit	PopcornTime	R900.00	2	R356.00	R563.00	R919.00
12	De beer	PopcornTime	R900.00	4	R213.00	R548.00	R761.00
13	Gerber	PopcornTime		50	R289.00	R407.00	R696.00
14	Shange	PopcornTime		4	R296.00	R235.00	R531.00
15	Sikhosana	Showmax		4	R467.00	R472.00	R1 839.00
16	Zungu	Showmax		20	R415.00	R500.00	R1 815.00
17	Dladla	Showmax	R900.00	4	R324.00	R413.00	R1 637.00
18	Bezuidenhout	Showmax		50	R295.00	R216.00	R1 411.00
19	Khanyile	Showmax	R900.00	50	R294.00	R201.00	R1 395.00
20	Ferreira	Stremio	R900.00	10	R362.00	R299.00	R661.00

You can also sort according to a selected column, by selecting the first cell in the data content.

Example:

Click on **cell C2** in column C if you wish to sort according to the Subscription fee.

Make the following selection:



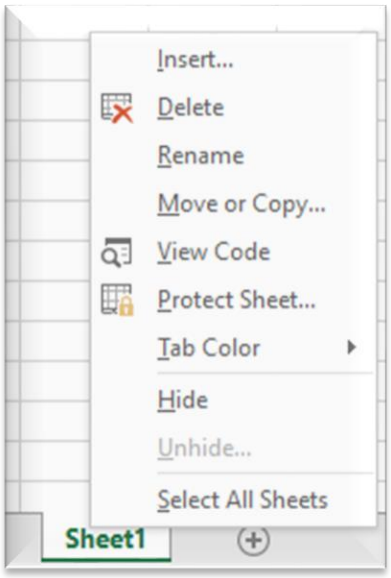
The data will appear as follows:

	A	B	C	D	E	F	G
1	User	Platform	Subscription fee	Download Speed (MB)	Amount spent on downloading	Amount spent on streaminig	Total amount spent
2	Gerber	PopcornTime		50	R289.00	R407.00	R696.00
3	Shange	PopcornTime		4	R296.00	R235.00	R531.00
4	Bezuidenhout	Showmax		50	R295.00	R216.00	R1 411.00
5	Zungu	Showmax		20	R415.00	R500.00	R1 815.00
6	Sikhosana	Showmax		4	R467.00	R472.00	R1 839.00
7	Mulaudzi	DSTV	R900.00	25	R363.00	R222.00	R1 485.00
8	De beer	PopcornTime	R900.00	4	R213.00	R548.00	R761.00
9	Smit	PopcornTime	R900.00	2	R356.00	R563.00	R919.00
10	Khanyile	Showmax	R900.00	50	R294.00	R201.00	R1 395.00
11	Dladla	Showmax	R900.00	4	R324.00	R413.00	R1 637.00
12	Ferreira	Stremio	R900.00	10	R362.00	R299.00	R661.00
13	Visser	Netflix	R99.00	2	R80.00	R297.00	R476.00
14	Mnisi	Netflix	R99.00	4	R208.00	R403.00	R710.00
15	Majola	Netflix	R99.00	4	R249.00	R326.00	R674.00
16	Ndwandwe	Netflix	R99.00	100	R426.00	R515.00	R1 040.00
17	Myeni	BoxOffice	R35.00	10	R207.00	R368.00	R575.00
18	Moloi	BoxOffice	R35.00	25	R230.00	R458.00	R723.00
19	Mkhize	BoxOffice	R35.00	4	R290.00	R449.00	R774.00
20	Reddy	BoxOffice	R35.00	10	R346.00	R261.00	R642.00

Work with Sheets – Rename, tab colour

Workbooks, consist out of sheets that you can add or delete – Sheet 1, Sheet 2, etc.

If you right-click on any of the worksheet tabs at the bottom of the spreadsheet, a list of choices appears. Options: delete, rename, move or copy, colour of the tab, Hide, etc.



Open a blank spreadsheet document to practice some of these options.

Rename

You can easily get confused with sheet names if you do not give them proper names. Renaming these sheets will help solve this problem.

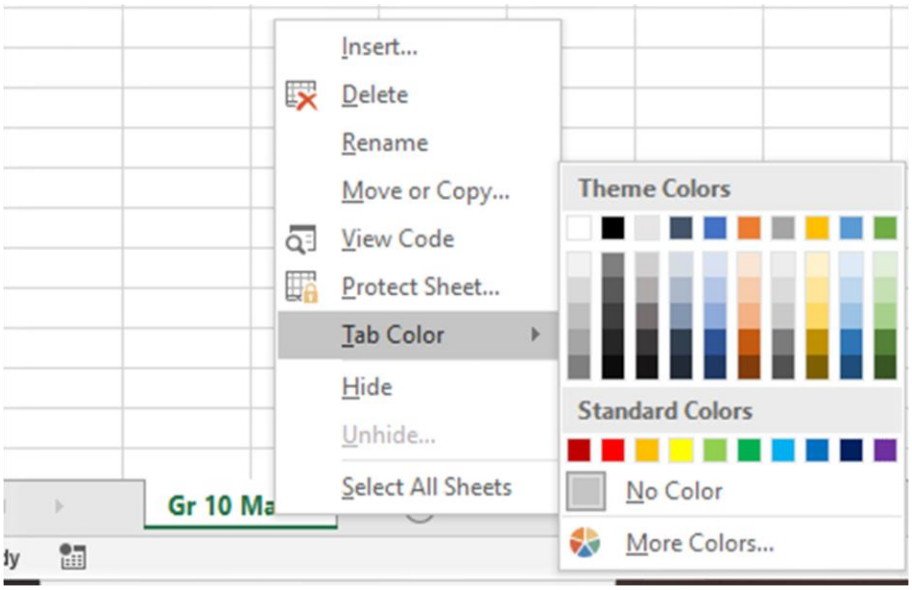
- Right-click on the Sheet you want to rename.
- Select Rename.

When you click on rename, you will be able to simply type in a new sheet name:



Tab Colour

- Right-click on the name of the sheet you want to change the colour.
- Select Tab Colour.
- From the Theme Colors, select the colour you want.



Adding a new sheet

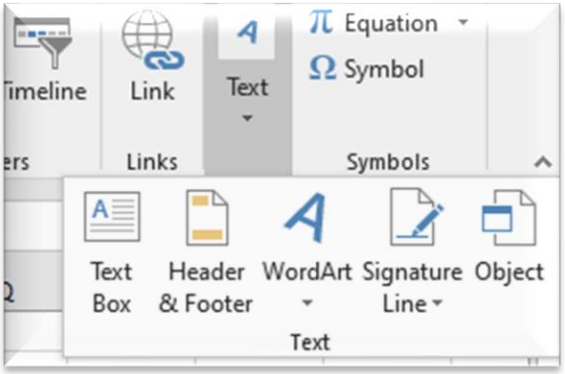
The plus sign at the bottom provide a new worksheet to be added.



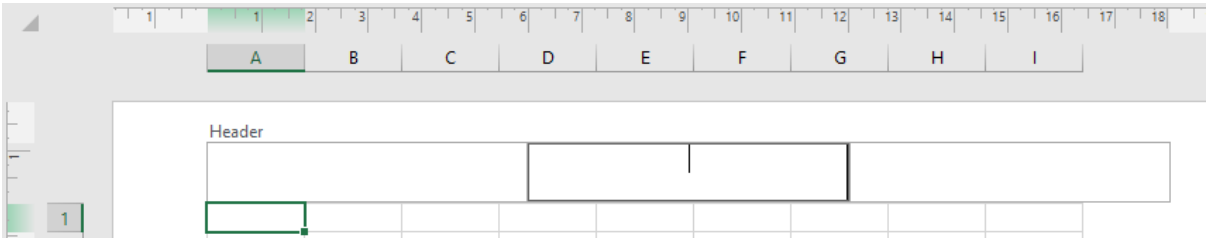
Headers and Footers

You can insert a header or footer in an Excel worksheet in a similar way as in a Word Processing Document.

Use the Insert tab and select Header & Footer in the text group:



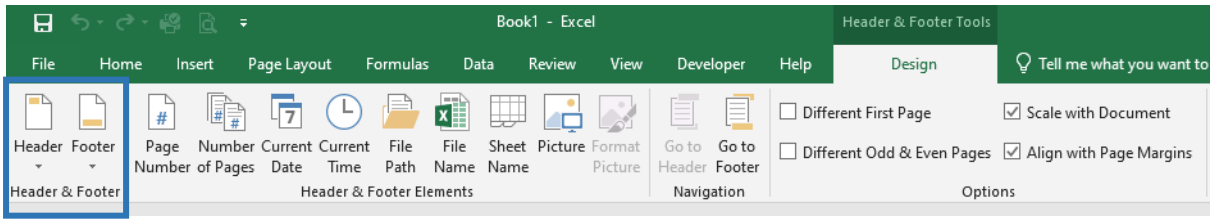
Your spreadsheet now displays in page layout view and the header & footer tools design tab is visible.



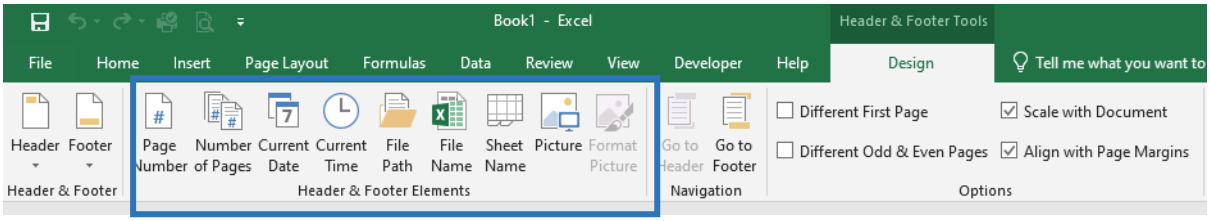
- Type in any of the three blocks (left, centre or right) in the header or footer section.

Instead of typing in the header or footer yourself, you can make use of the design tab in header & footer tools.

Click on the arrow at header or footer for a dropdown menu with different options such as file name, page number, current date, etc.



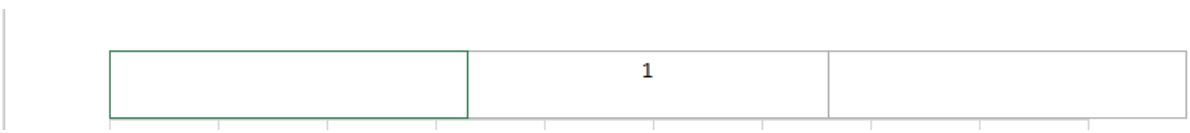
Or choose one of the commands in the header and footer elements group.
The items in the header and footer elements group are all dynamic – they get updated automatically according to the current time/date/workbook information.



In the following example we will insert a page number in the middle section of the header.



Select outside of the header area to see the result.

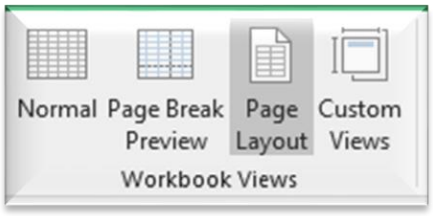


The header or footer will now display on each page (in page layout view)

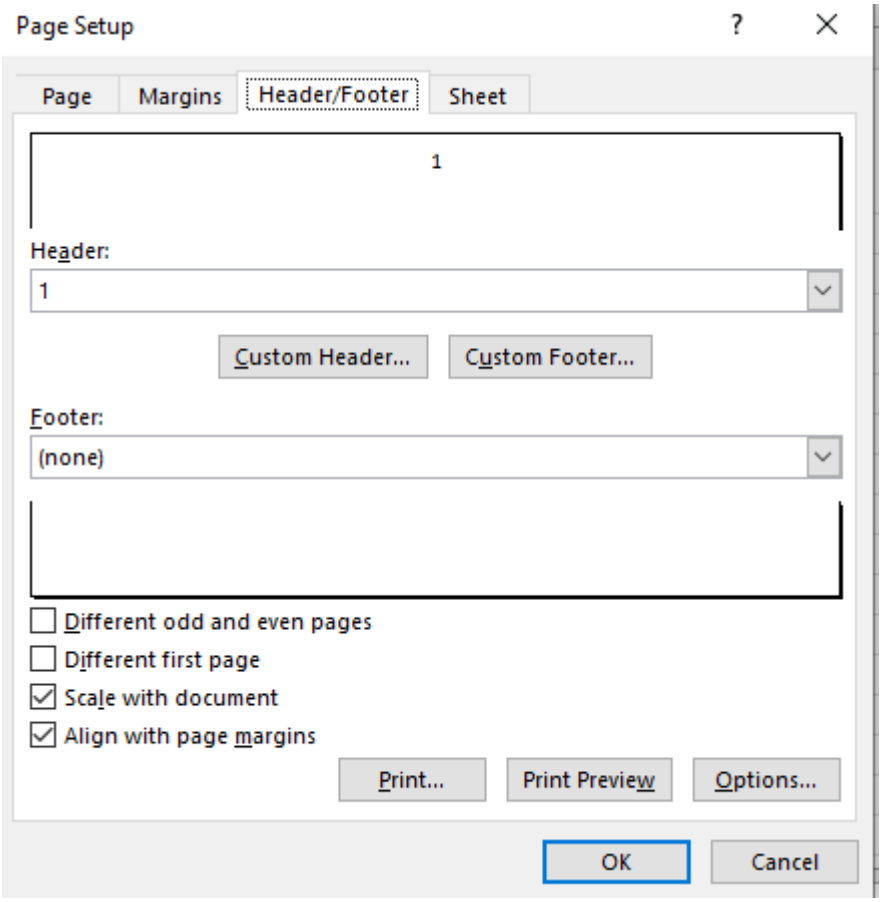
Use Page layout view if you want to see your header and footer.

When you are back in normal view, the header or footer will not display.

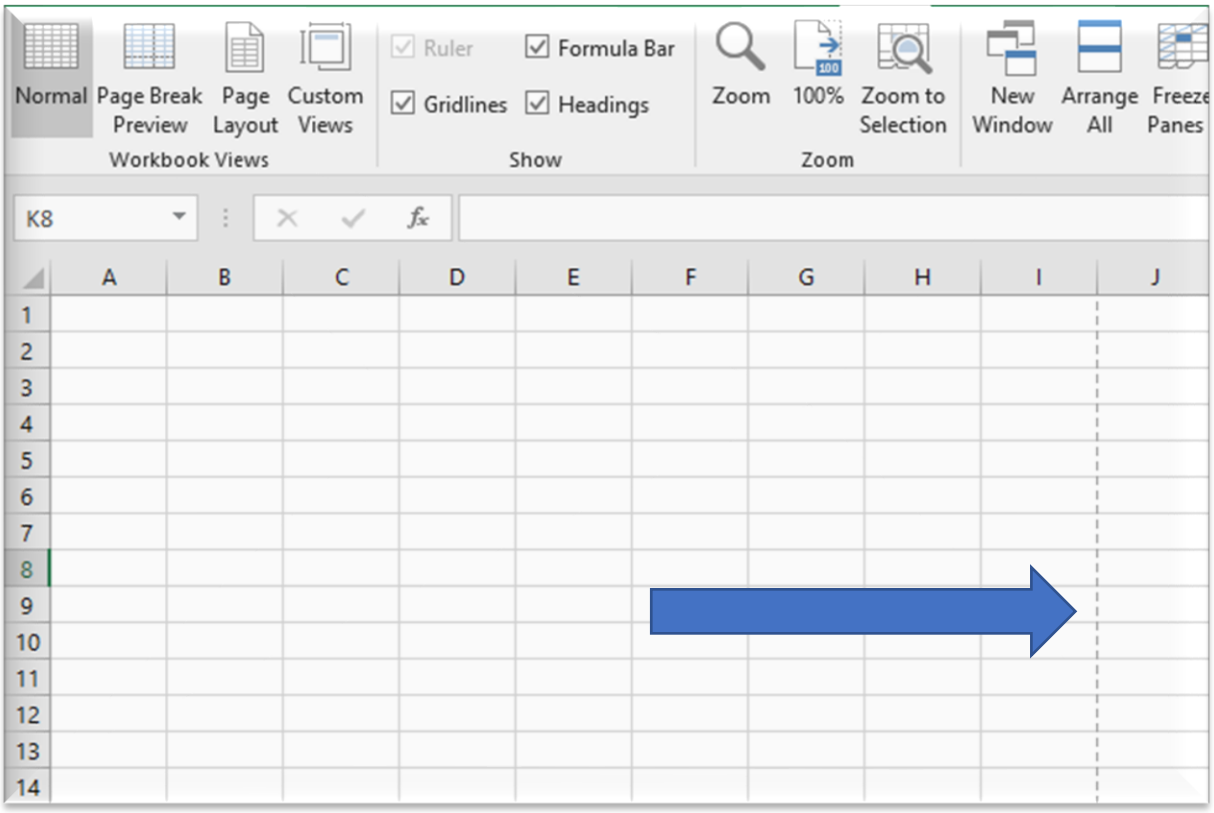
Here are the different views available in the workbook views group on the view tab.



The page setup dialog box has a tab which allows headers and footers to be inserted.



The dotted lines that appear in Normal view, after you have been working with headers and footers, are indications of where page breaks will occur if the worksheet is printed. You can disregard them – they will not show when the spreadsheet is opened afresh.



When you return to the *Normal View*, the header and footer will not be visible. Only when you print or work in the *Page Layout View*, you will see it again.

Charts/Graphs

A chart or graph is a visual representation of numerical data and results in a worksheet. Charts simplify the comparison of data, the recognition of patterns and the making of forecasts.
It can be difficult to interpret Excel workbooks that contain a lot of data. Charts allow you to illustrate your workbook data graphically, which makes it easy to visualize comparisons and trends.

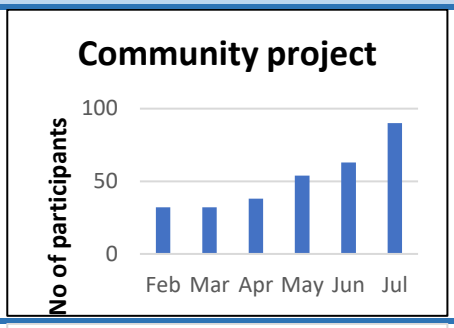
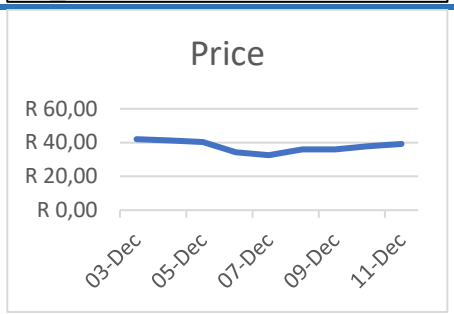
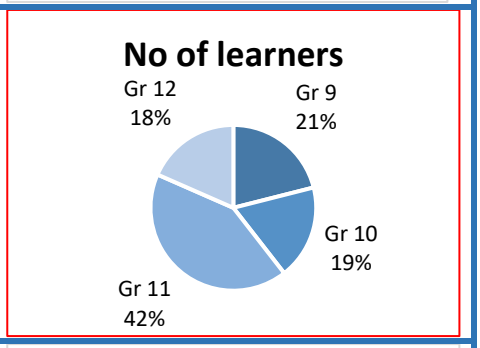
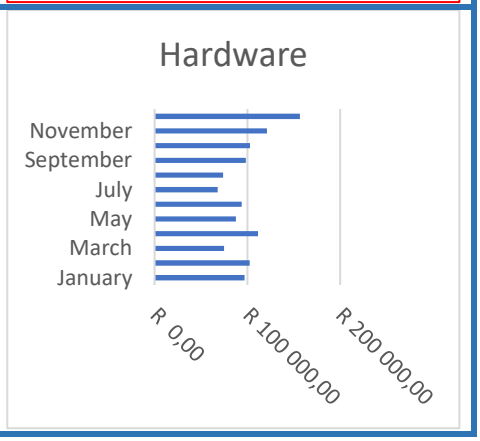
Follow the link to learn more about graphs:

documents\CHARTS.pptx

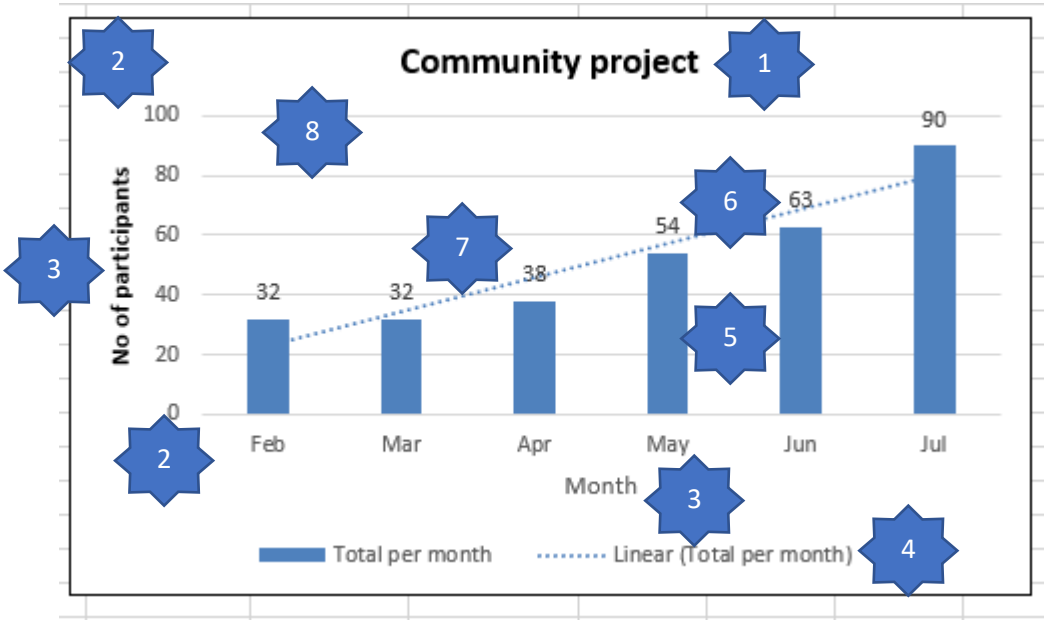
CHARTS.pptx

Types of Graphs

There are different types of graphs. The type of graph will be decided by the set of data.

Chart Name	The use of the chart	Example
Column Graph	A column chart is a good way to present data visually, as it makes it easy to see where certain values are greater than others.	
Line Graph	A line chart shows a trend over a period – if values have decreased or increased over time.	
Pie Graph	We use a pie chart when we want to see what amount each item contributes to the total amount. Pie graphs are best used to compare proportions. A pie chart is the only chart that has an option to display percentages as data labels.	
Bar Graph	A bar chart is a good way to present data visually, as it makes it easy to see where certain values are greater than others. Bar graphs are similar to column graphs, but use horizontal bars instead of vertical bars.	

Parts of a Graph



Number	Elements	Description
1	**Chart Title**	The title of what the chart is illustrating.
2	**Axes:** **Vertical Axis** **Horizontal Axis**	Charts typically have two axes that are used to measure and categorize the data. A vertical axis (also known as value axis or y axis), and A horizontal axis (also known as category axis or x axis)
3	**Axes Title**	Axes titles give the understanding of the data of what the chart is all about. You can add axes titles to any horizontal, vertical, or the depth axes in the chart. You cannot add axes titles to charts that do not have axes (Pie or Doughnut charts).
4	**Legend**	This shows which data series each colour in the graph represents. When you create a chart, the Legend appears by default.
5	**Data series**	Representing the data from which the graph was created.
6	**Data label**	Data labels make a chart easier to understand because they show the details about a data series or its individual data points. You can change the location of the data labels within the chart, to make them more readable.
7	**Trendline**	Trendlines are used to graphically display the trends in data and to analyse the problems of prediction.

Number	Elements	Description
8	Gridlines	In a chart that displays the axes, to make the data easier to read, you can display the horizontal and the vertical chart gridlines. Gridlines extend from any horizontal and vertical axis across the plot area of the chart. You can also display the depth gridlines in 3-D charts.

Create a graph

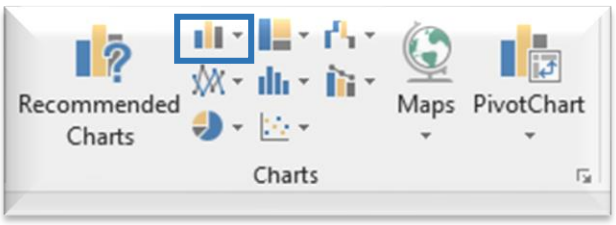
To create a graph that is successful you have to select the correct data.
Always select from top to bottom and left to right. Select the column headings as well.

Open the **Chart** spreadsheet and work in the **Column** worksheet.

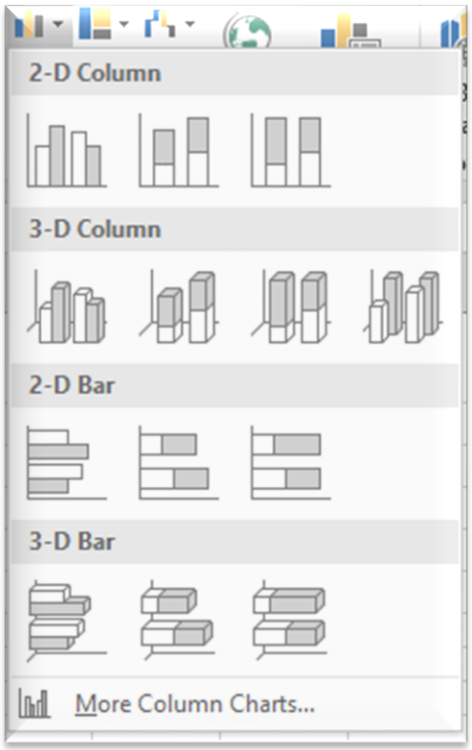
Select the cells that you want to use in your graph. This includes the column and row titles. The selected cells or cell range will be the source data for the graph. In this example, we will select **cell A1:B6**.

	A	B	C
1	**Island**	**Area (km²)**	
2	Samoa	2935	
3	Tonga	747	
4	Cook Islands	237	
5	Tuvalu	26	
6	Niue	259	
7			

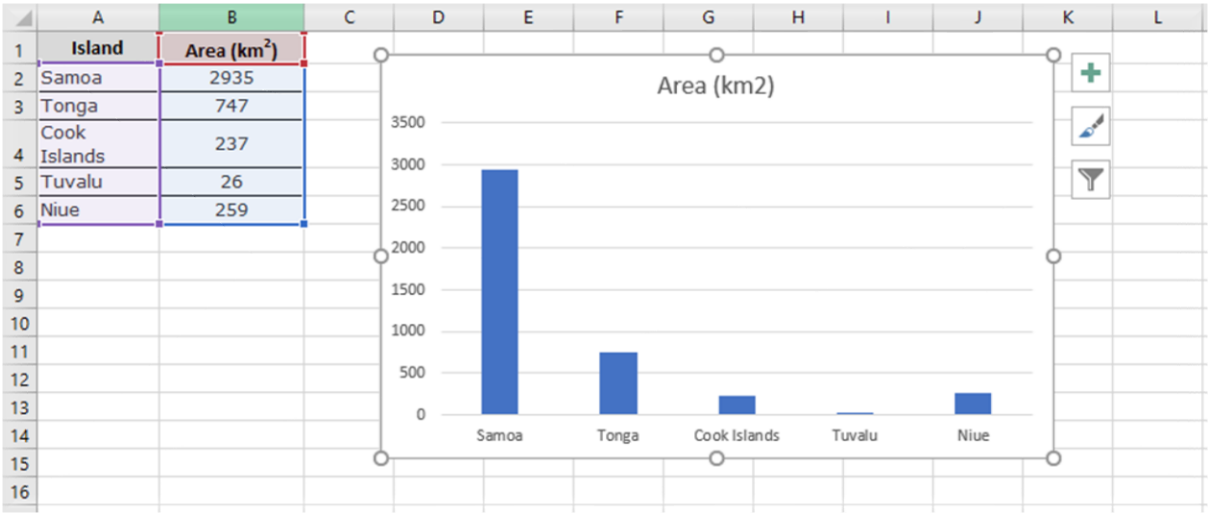
On the Insert tab, in the Graphs group, choose a graph that suits your data. In this example, we will use the Column graph.



Choose the type of column graph that you want from the drop-down menu.



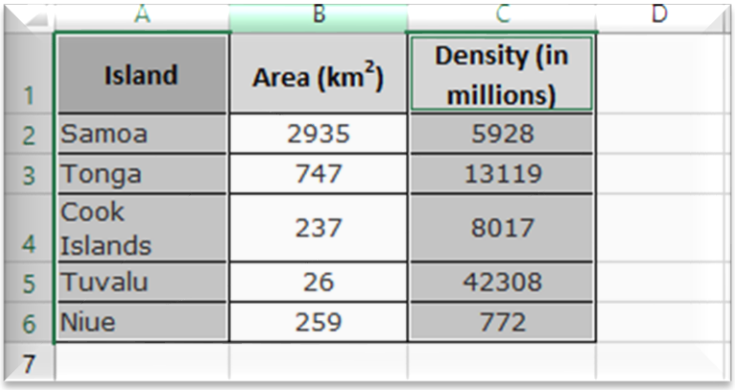
It will appear as follows:



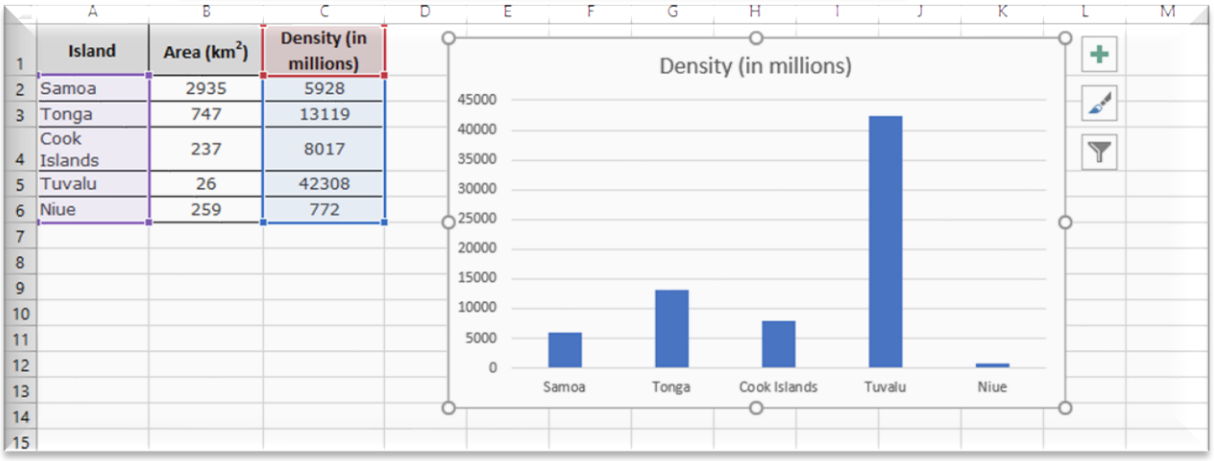
Work in the **Column2** worksheet.

Sometimes we want to select data that is not next to each other (non-adjacent data), select the first cell or range of cells. Hold down the Ctrl key on your keyboard while you select the other cell or cells.

Select **cell A1:A6**, hold down the Ctr key on your keyboard and select **cell C1:C6**.



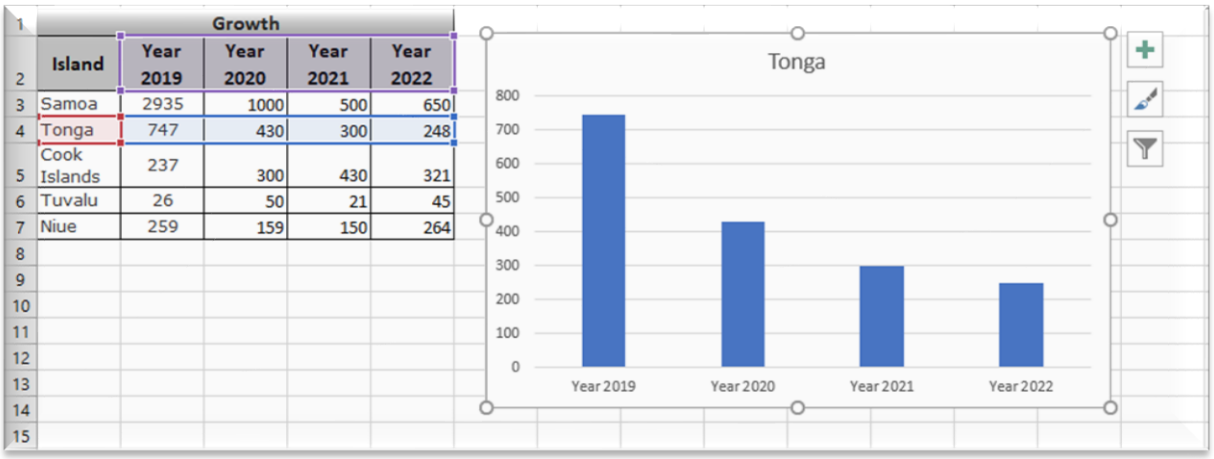
	A	B	C	D
1	Island	Area (km²)	Density (in millions)	
2	Samoa	2935	5928	
3	Tonga	747	13119	
4	Cook Islands	237	8017	
5	Tuvalu	26	42308	
6	Niue	259	772	
7				



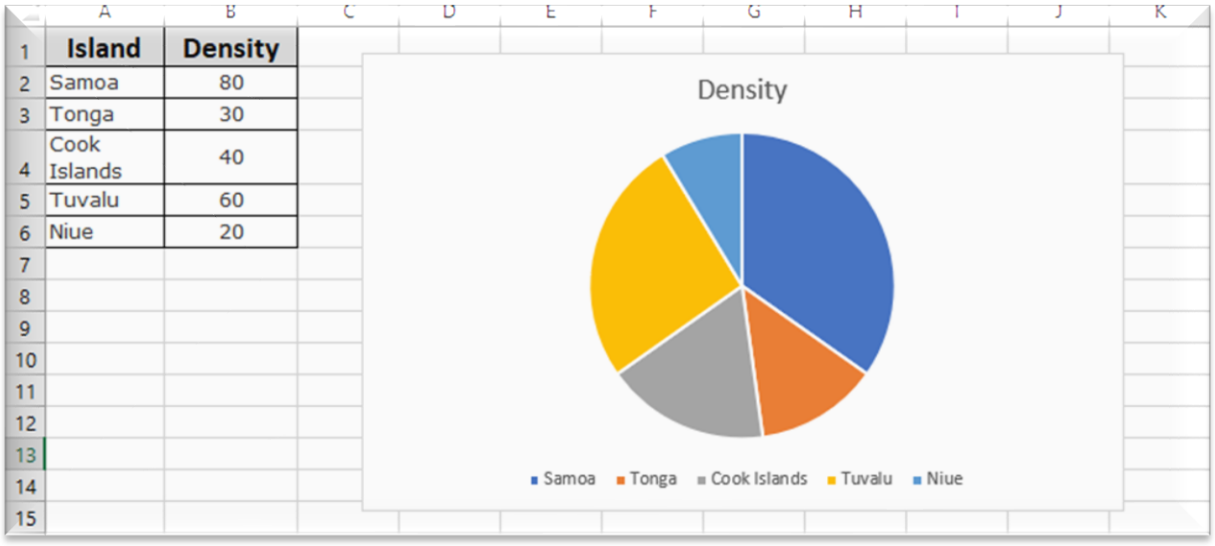
You can also select specific data in a row or rows to create a graph.

Work in the **Column3** worksheet.

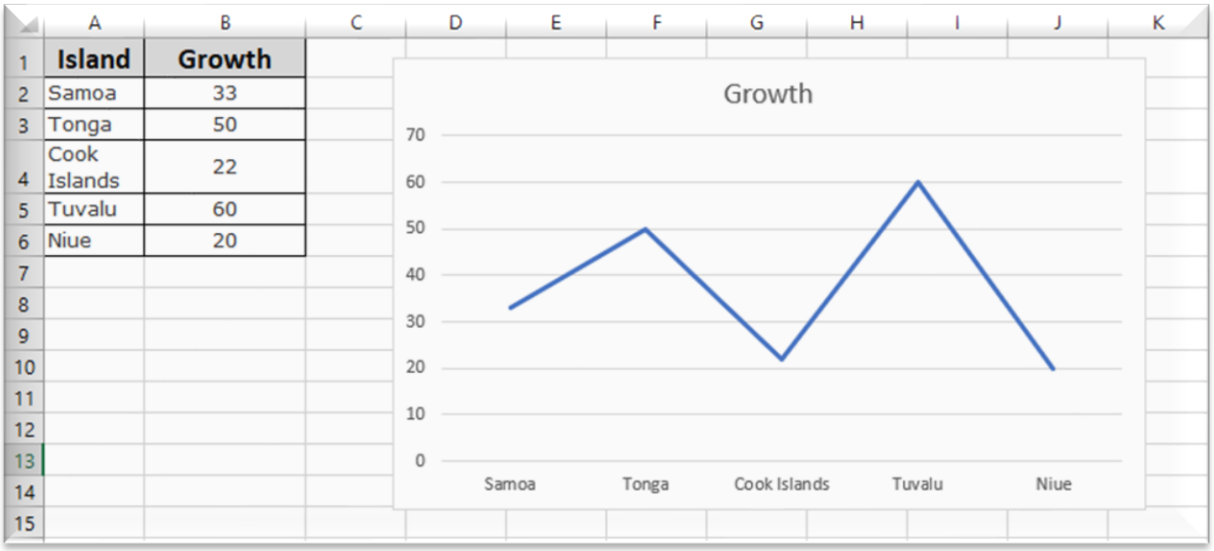
Select **cell A3:E3** and **cell A5:E5** for the graph:



Work in the **Pie** Worksheet to create a graph to resemble the example below:



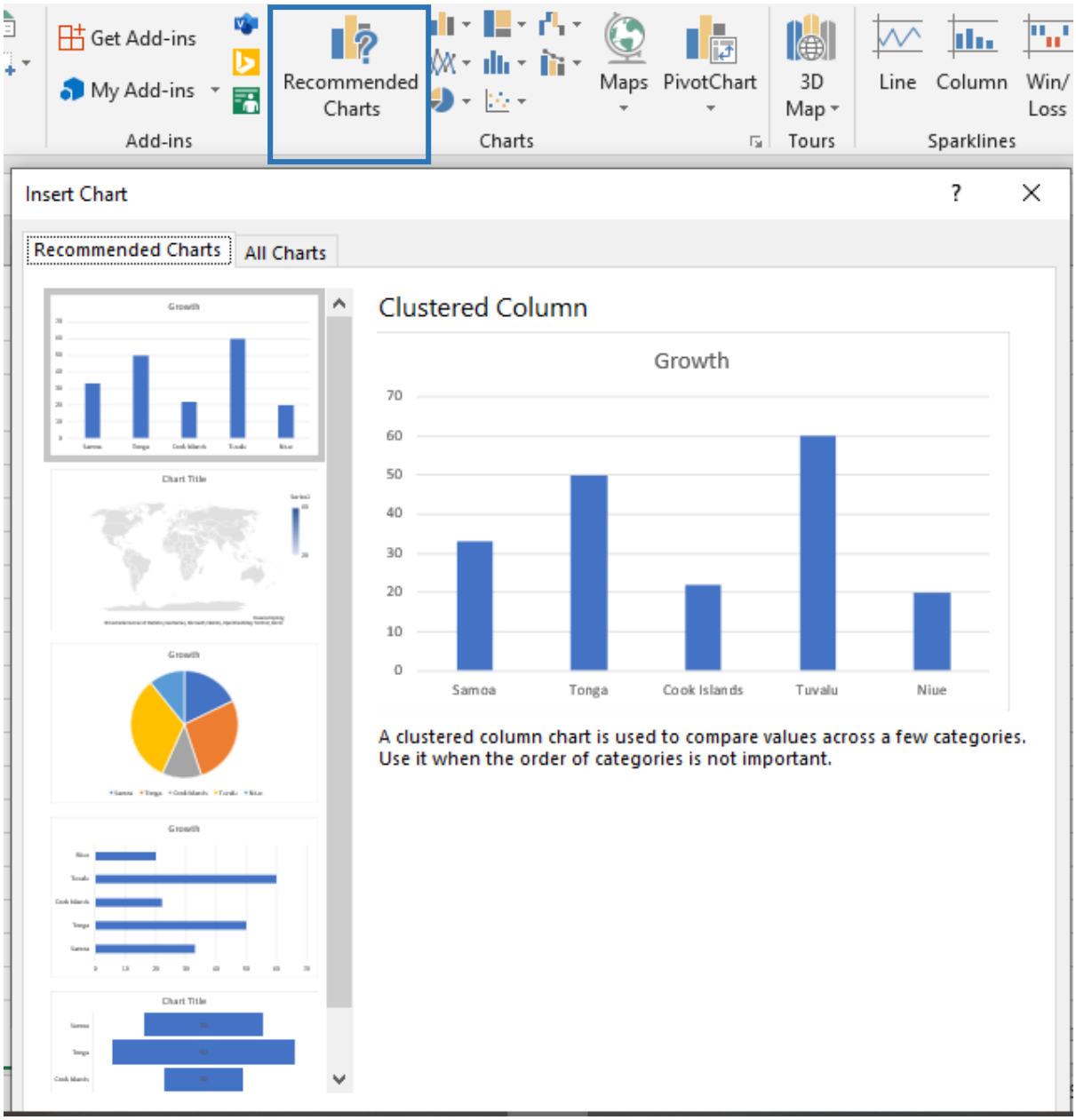
Work in the **Line** Worksheet to create a graph to resemble the example below:



Sometimes you might not be sure which graph to use. A helpful feature to use would be the Recommended Charts command. This will recommend the different graphs based on the source data.

Watch the following video on charts:

https://youtu.be/64DSXejsYbo



Formatting and editing of Graphs

Every part of a graph can be formatted or edited.

Chart elements give more descriptions to your charts, thus making your data more meaningful and visually appealing.

Click on the chart. Three buttons appear at the upper-right corner of the chart. They are −

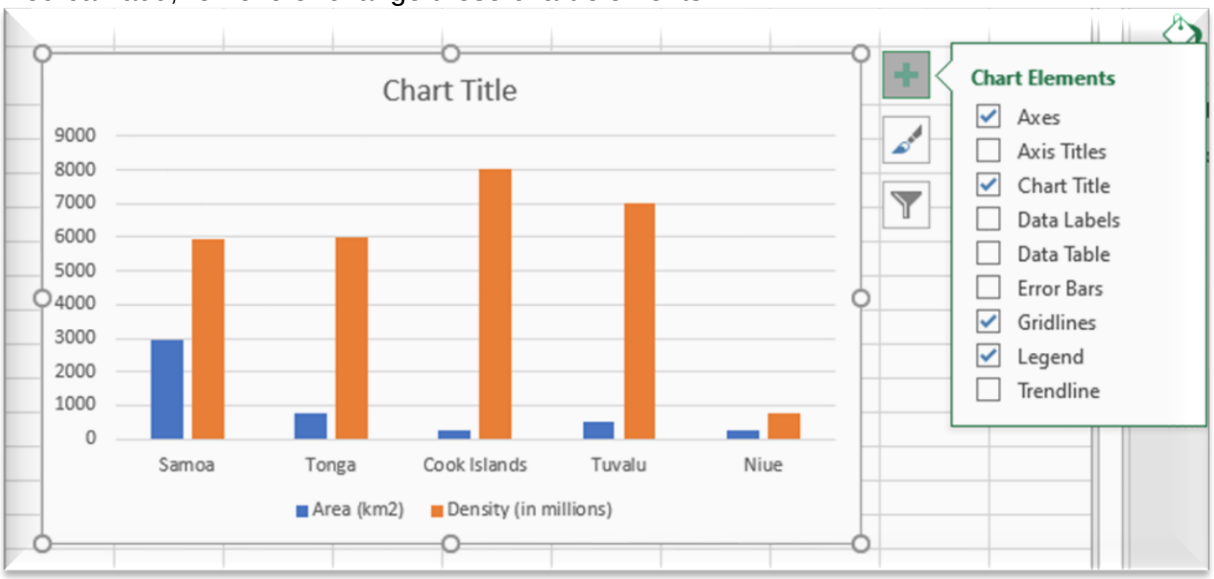
- Chart Elements
- Chart Styles and Colors, and
- Chart Filters

Click the Chart Elements icon. A list of available elements will be displayed.

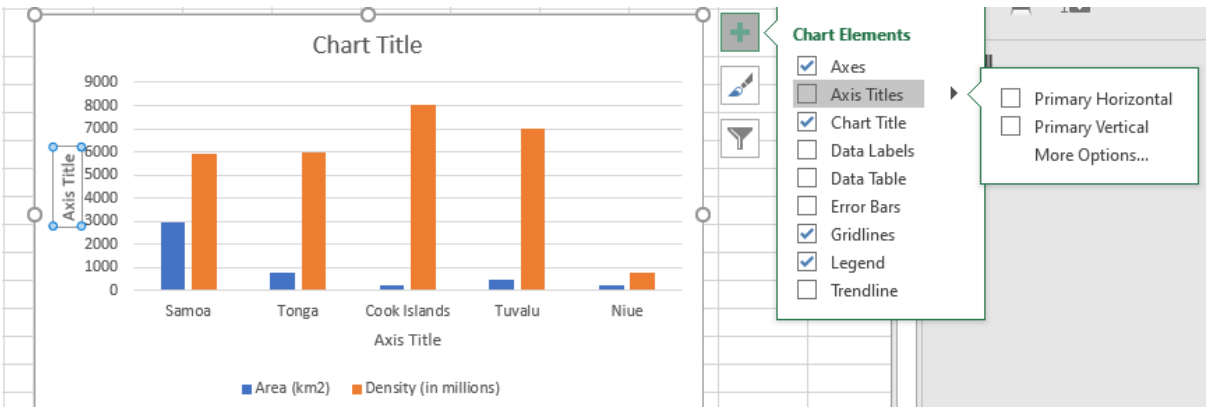
The following chart elements are available −

- Axes
- Axis titles
- Chart titles
- Data labels
- Data table
- Error bars
- Gridlines
- Legend
- Trendline

You can add, remove or change these chart elements.

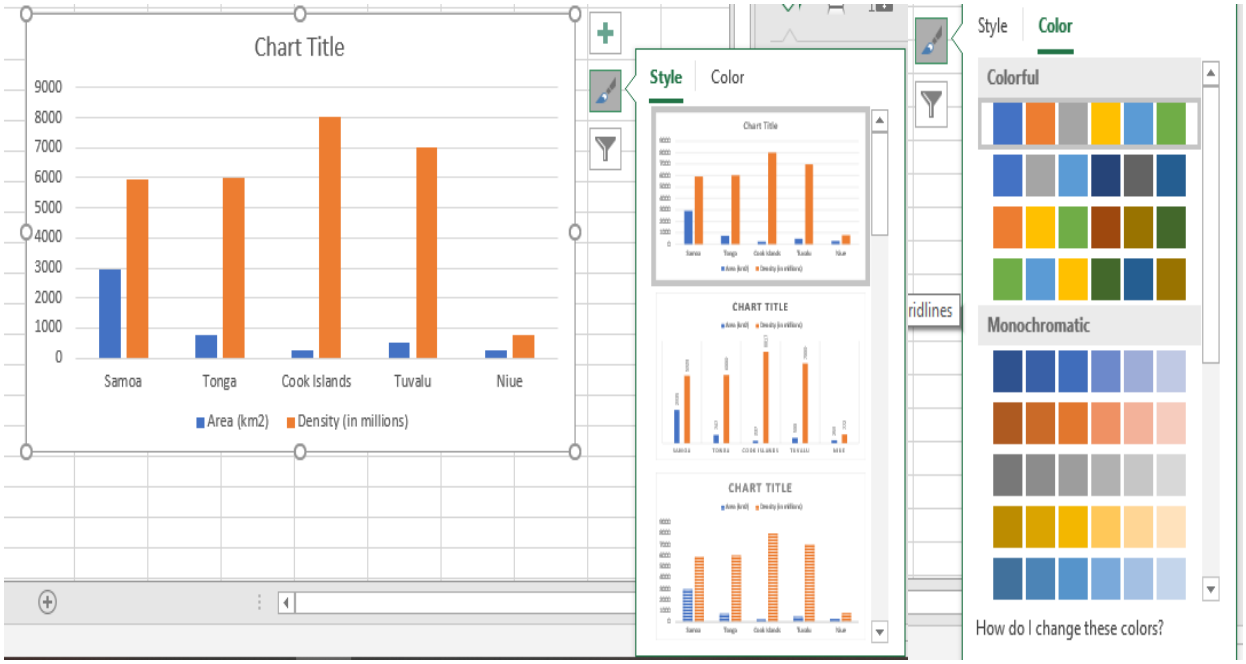


Point on each of these chart elements to see a preview of how they are displayed. For example, select Axis Titles. The Axis Titles of both, the horizontal and the vertical axes appear and are highlighted.

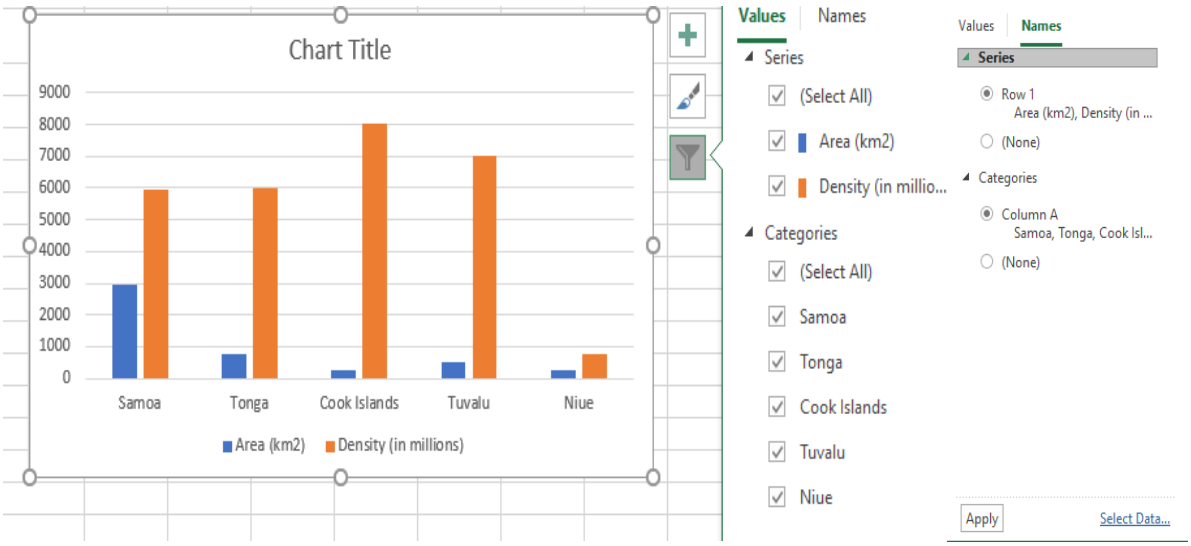


An Arrow appears next to Axis Titles in the chart elements list that will give you options.

Click the Chart Style icon. A list of Styles/Colors will be displayed.



Click the Chart Filters icon. The Values/Names will display.



Alternatively, you can use the *Design* tab.

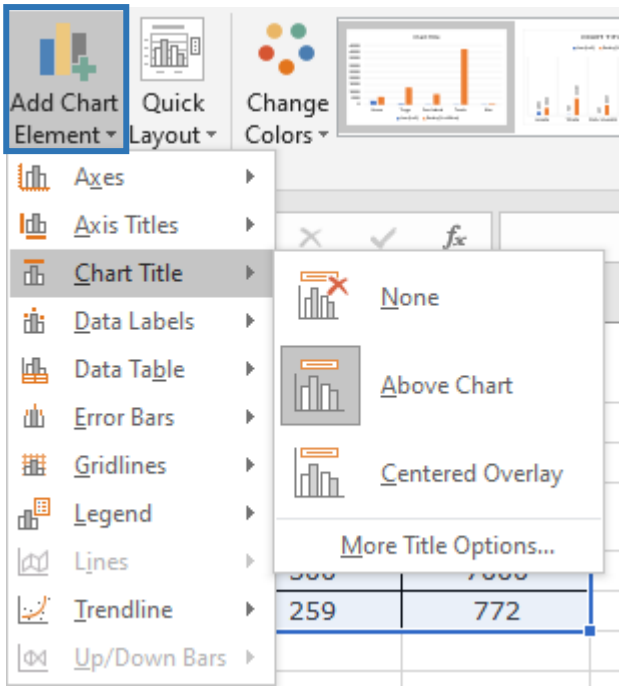
Excel lets you add chart elements.

You can add chart titles, legends and data labels.

If you want to add a chart element, on the *Design* tab, select the *Add Chart* Element command.

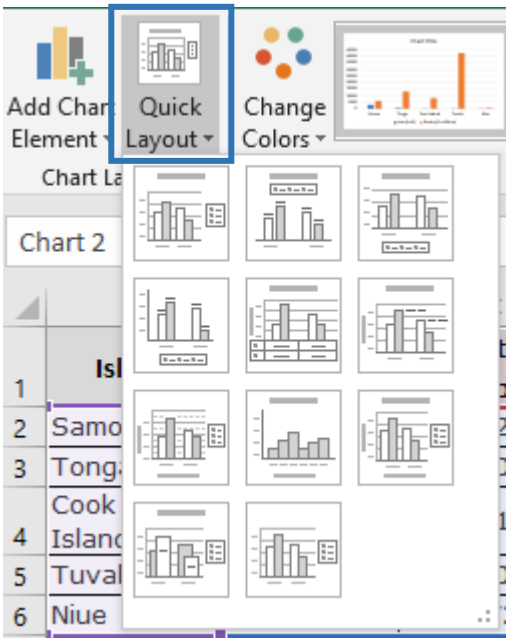
You can choose the element that you want from the drop-down menu.

To edit a chart element, like a chart title, simply double-click the placeholder and begin typing.

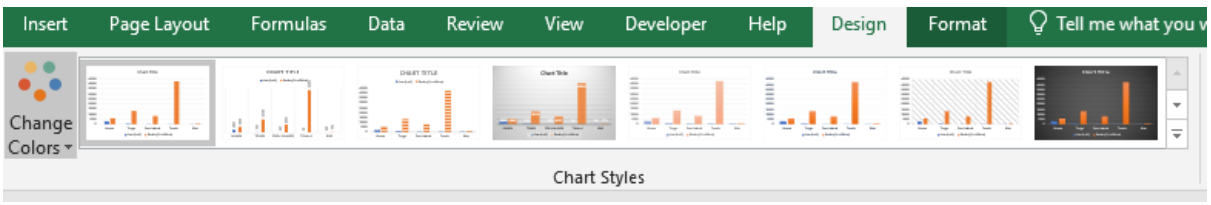


If you don't want to add chart elements individually, you can use one of Excel's predefined layouts.

Select the *Quick Layout* command and choose the layout from the drop-down menu.



Excel also includes several chart styles, which allow you to quickly modify the look and feel of your chart. To change the chart style, select the desired style from the Chart styles group. You can also click the drop-down arrow on the right to see more styles.



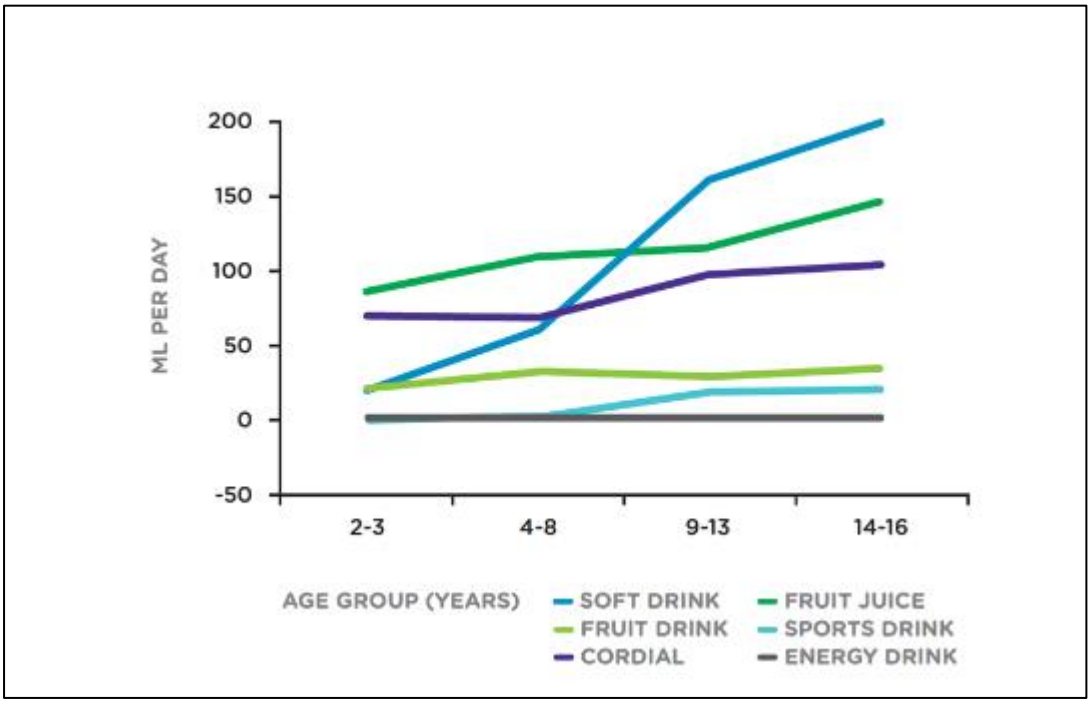
Interpretation of information presented in a graph

Charts and graphs are often used to summarize data. They make it easy to see trends and the amount of variation in the information being studied.

(A trend is the direction of change in the data. For example, people's average lifespan has generally increased over the last century, even though in a few war years it declined. So, we could say the trend has been for people to live longer than previous generations.)

Charts and graphs can help you judge information and make sense of what you read. That's why it's important to understand the ways charts and graphs display information.

Example:



Interpretation:

- This graph shows the types of drinks drunk by Australian children.
- A general pattern I notice in the graph is that as the child's age increases, they drink more of these kinds of drinks.
- A reason for this pattern might be because older children can go out and buy their own drinks.
- A different pattern in the graph is that energy drinks go down for 14 to 16-year old.
- A reason for this pattern might be because they prefer drinking other drinks.
- The data that most stood out to me was that sports drinks were drunk more than soft drinks.

Source: https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/english/literacy/Pages/interpreting-graphs.aspx

When creating a graph, make sure you can understand what the graph is displaying.

To interpret graphs better, do the following:

- Use data labels
- Use descriptive titles
- Use a graph title
- Choose the correct type of graph

For more on graphs – visit the following websites:

https://www.tutorialspoint.com/excel_charts/excel_charts_elements.htm

AND

https://edu.gcfglobal.org/en/excel2016/charts/1/#

Printing of Charts

To print a chart, choose the print option. It will be printed as it appears on the screen. If the chart appears on the same worksheet as the data, the chart and the data will be printed together – make sure that the chart and data fit on a page.
If you only want to print the chart, you must select it before you choose print – the chart will then fill the page.

Basic integration techniques

Data can easily be transferred between the different applications that form part of the suite, like text and objects.

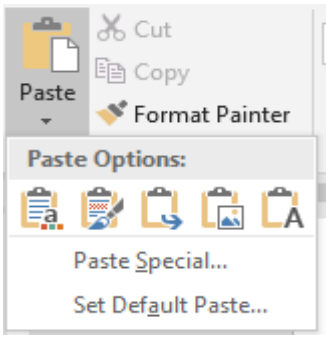
Example:

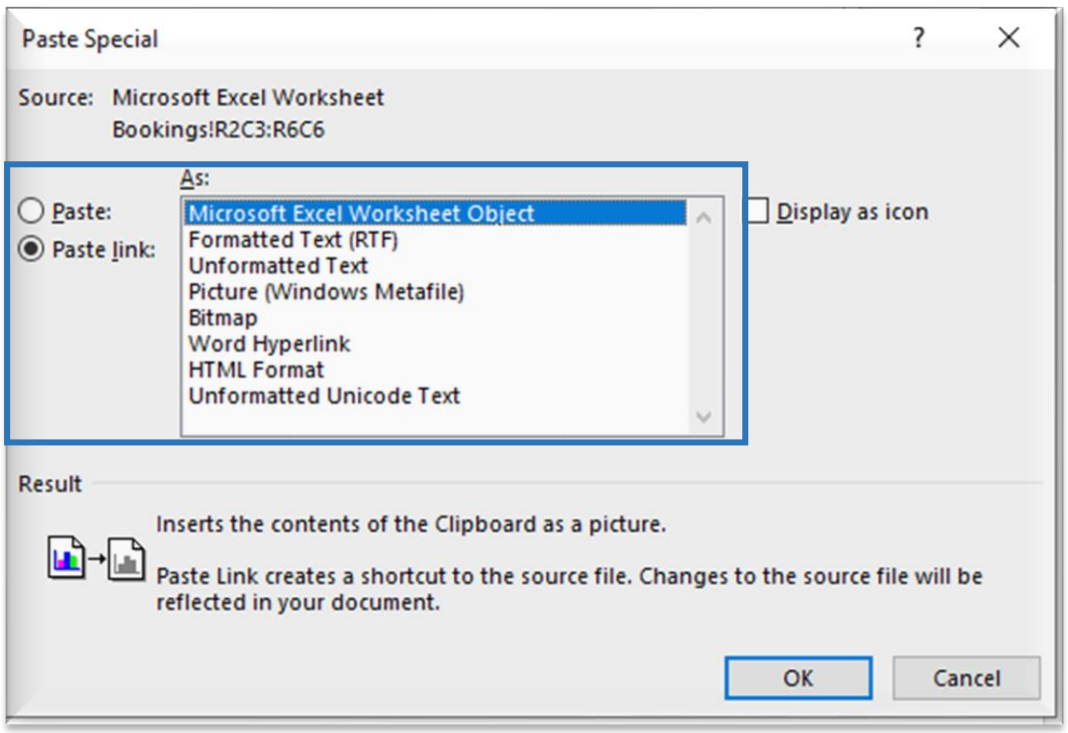
- A table that was typed in Word can be copied to an Excel worksheet.
- A chart that was created in Excel can be copied to a report in Word
- Any contents in Word or Excel can be copied to Power Point

What often happens in Excel is that the data in the spreadsheet is changed. This means that the results and charts are updated immediately. If the same information also appears in a Word document or Power Point presentation, you would like it to be updated there as well.

The information should not simply be pasted but linked as well.

- Choose the paste special option when you paste the chart into your word document
- The paste special dialog box will appear
- Select paste link and make sure that the chart is pasted as a Microsoft Excel chart object.





When changes are made to the original spreadsheet, the changes to the chart can be made to appear in the Word document as well. This can be done by right-clicking on the chart and choosing the update link option.
The same applies when an Excel chart or data is copied to PowerPoint.

Troubleshoot basic spreadsheet problems

We have already discussed the error indicators in Excel. This can help you to solve what went wrong in Excel.
Whenever a formula cannot be calculated – it will give you an error.

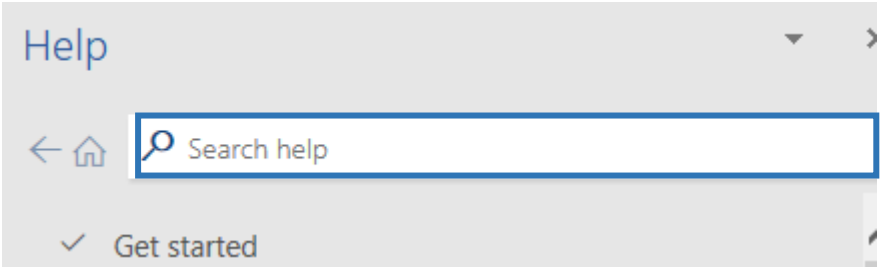
Some common errors that can appear will be explained in the following table:

Description	Error	Solution
When you enter a cell number in a cell, the '0' disappears.	The number appears as a value and not as text.	Make sure the cell is formatted as *text*, or alternatively type a single quotation mark before you type in the 0 in front: '0.
When you type in a formula, a date appear instead of a number value.	Incorrect formatting of the cell.	Your formula is in a cell that is formatted as *Date or Time.* Change the cell formatting to *Number* to view the correct result.
The function you entered displays as the function that you typed and not as a value.	Function returns the function.	Make sure the cell is not formatted as *text* and that there is nothing before the equal sign. Make sure you have used an equal sign at the start of the function.

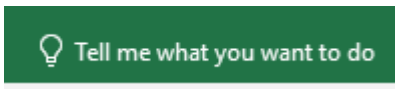
Solving problems

The *Help* function in a spreadsheet application is a useful tool for finding out how to do something. There are three ways in which to access the help files in Excel:

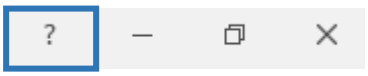
1. Press *F1* on your keyboard to open the *Help* pane. This is unfortunately only available when you are online.



2. Type your question into the box labelled *Tell me what you want to do* at the end of the tabs at the top of the document.



3. Select *File* and then the '?' in the top-right corner.



Activities 8 and 9

Activities: Spreadsheet (Excel)

Activity 1

Open a blank workbook and save it as **Activity1**.
Work in **Sheet 1**.

Select the following cells/cell ranges and shade each one in a different colour of your choice:

Cell D8
Cell A1:A10
Cell C5:C12
Cell F4:J9

Save this document as **Activity1**.

Activity 2

Open the **Data2** spreadsheet. Work in **Sheet 1**.

1. Change **cell A1:F1** to bold and the font size to 14.
   Ensure that all the cells' content will be visible.

2. Calculate in **column C** the amount that you will pay in a year for each package.

3. Calculate 15% VAT in **Column D** for each package.
   Use **Column B** for your calculation.

4. Calculate in **Column E** the monthly amount plus that VAT.

5. For the first year that you will join, you will receive the following discount:
   Netflix Premium, DSTV Family and Disney Plus – R50,00
   Prime Video, Spotify and Showmax – R15
   Calculate in **Column F** the discount that you will receive.
   Use **Column B** for your calculation.

	A	B	C	D	E	F	G
1	**Package**	**Monthly**	**Fee per year**	**VAT**	**Include VAT**	**Discount**	
2	Netflix Premium	199	2388	29.85	228.85	149	
3	Prime Video	79	948	11.85	90.85	64	
4	Showmax	39	468	5.85	44.85	24	
5	Disney Plus	119	1428	17.85	136.85	69	
6	Spotify	60	720	9	69	45	
7	Dstv Family	299	3588	44.85	343.85	249	
8							

Activity 3

Open the **DataTypes** spreadsheet.

1. Change the format of the dates in **column A** as follows:

   Cell A2 – dd-mmm-yy
   Cell A3 – dd/mm/yyyy
   Cell A4 – yyy mmmm d, dddd

2. Change the format of the times in column B as follows:

   Cell B2 - mm:ss
   Cell B3 - hh:mm:ss

3. Display the amounts in **Column C** in South African Currency, with 2 decimal places.

4. Display the amounts in **Column C** to Accounting, with 2 decimal places.

5. Use a spreadsheet feature to ensure that the '0' must display in front of the cell number in **Cell E2**.

Your answers should display as follows:

	A	B	C	D	E
	Dates	**Time**	**Currancy**	**Accounting**	**Text**
	07-Jul-23	00:34	R125.30	R 125.30	0824567891
	07/07/2023	06:00:34	R155.20	R 155.20	
	2023 July 7, Friday		R1 800.10	R 1 800.10	
			R8.50	R 8.50	

Save and close the **DataTypes** Document.

Activity 4

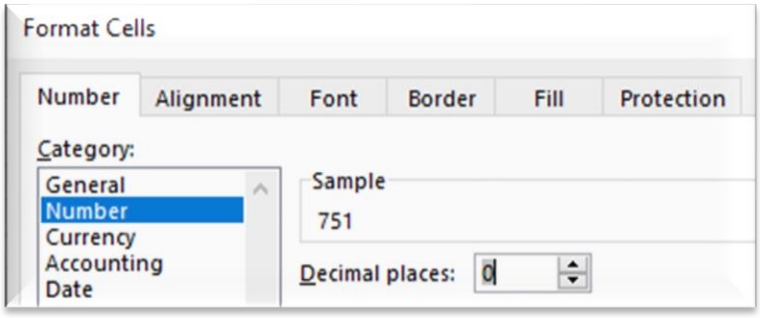
Open the spreadsheet Functions.

We have already calculated the functions to display as in the example below:

20	*TOTAL*	751	100	238.3348116
21	*AVERAGE*	41.72222222	5.55555556	13.24082287
22	*MAXIMUM*	60	9	19.44444444
23	*MINIMUM*	19	2	8.823529412
24	*NUMBER LEARNERS*	18	18	18

Make the following changes:

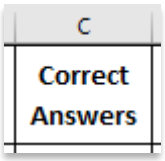
1. Select **cell B20:D24**. Adjust the decimal places so that no decimal places display.
   Tip: Use the Format Cells dialogue box and set the decimal places to 0.



Your answer should look like the example below:

20	*TOTAL*	751	100	238
21	*AVERAGE*	42	6	13
22	*MAXIMUM*	60	9	19
23	*MINIMUM*	19	2	9
24	*NUMBER LEARNERS*	18	18	18

2. Select **cell C1** and use an Excel feature to display the heading as in the example below.



3. Change the headings in **cell A1:D1** to display in bold, and edit the font size of the headings to 14.

4. Select **cell A20:D24** and shade it in any blue colour of your choice.

Save and close the Functions document.

Activity 5

Open the spreadsheet **Finances** and work in the **Traders** worksheet.

5.1 Make the following formatting changes:

5.1.1 Unhide **column B**.

5.1.2 Change the width of **column C** to 12.

5.1.3 Change the orientation of the text in **cell C1**, so that it is the same as the orientation of all the other text in the worksheet.

5.1.4 Format **cell D1:I2** so that they appear as follows (do not change any colours):

D	E	F	G	H	I
Payments					
Basic Fee	**Stall Type**	**Stall Fee**	**Electricity Fee**	**Total**	**Date**

5.1.5 Format all the dates in **column I** to be displayed in the format 23 Apr 17.

5.1.6 The cell phone number of Mrs Stryver in cell L5 is displayed without the leading zero.

Make the necessary correction. **(9)**

Activity 6

Open the **extra** Excel spreadsheet.

This spreadsheet contains extra activities on Formulas, Functions and Graphs.

Work in the different worksheets and follow the instructions given in the **Formulas, Functions, Chart 1, Chart 2** and **Chart 3** worksheets.

Activity 7

Open the **Stats** Excel spreadsheet and do the following:

Work in the **Subtotal** worksheet.

7.1 Format **Column C** in South African currency. (1)

7.2 The worksheet is currently sorted according to **Column A.** Use a Spreadsheet feature and sort the worksheet also according to the Stadiums (**Column B).**
NOTE: Do not remove the current sorting. (2)

7.3 Add the current date, by using a function in **cell F1**. (2)

7.4 Use a spreadsheet feature to give **cell F1** the name 'date'. (1)

7.5 In **cell F2** they attempted to calculate the average capacity per stadium. There is an error message. Correct this error. (1)

7.6 Add the file name as a field on the right side of the header of this document. (3)

Save and close the **Stats** spreadsheet. **[10]**

Activity 8

Open the **Stadium** document.

Work in the **Stadium_Stadion** worksheet**.**

8.1 Select **cell A1:E14** in this worksheet to prepare it for printing.
NOTE – no printing is necessary.
Set the data so that it will only print in black and white. (2)

8.2 Use a function in **cell D16** to display the smallest capacity of a stadium. (2)

8.3 The chart in this worksheet displays the capacity of the different stadiums.
Make the following changes to the chart:

8.3.1 Add an appropriate title to the chart. (2)

8.3.2 Fill the bar with the smallest capacity with any other colour. Use any texture style as fill colour. (3)

8.3.3 Use the image **City.jpg** in your folder to fill the 'chart area' of the graph. (2)

8.4 Use a function to calculate the number of stadiums (**Column A)** used in the World Cup in **cell D17.** (2)

8.5 Generate a random number between 1 and 12 in **cell E3**. Copy this function down to the all the cells in **Colum E**. (4)

Save and close the **Stadium** document.

TOTAL **17**

Activity 9

Open the **Survey** spreadsheet.

At an Air Show, they asked the spectators to complete a questionnaire. They need your help to process the data.

Work in the **Survey** worksheet.

9.1 Merge **cells A1 to H1**. (1)

9.2 Change **row 3** to make the information more visible and readable. (1)

9.3 Add a function in **cell J1** to display the current date automatically.
Display the format of the date as follows: dd MMMM yyyy (2)

9.4 Replace all instances of 18-25 in **column A** with 20-25 and display it in bold. (2)

9.5 Change the headings in **row 2**, to Arial 12. (1)

9.6 Change the column headings in **row 2** to display as in the example below:(2)

AgeGroup/ OuderdomsGroep	Attendances/ Bywoning	Flying lessons/ Vlieg lesse	Gender/Ge slag	Hours spend/Ure spandeer

9.7 Change the amounts in **column F** to R-format. (1)

9.8 Use a spreadsheet feature to ensure that the data in **cell A1:H52** fit on one page if they want to print that section.

NOTE: DO NOT print the spreadsheet. . (1)

9.9 Use a function in **cell F54**, to determine the total amount spend (**column F**). (2)

9.10 Change the colour of the Info worksheet tab to a colour of your choice. (1)

9.11 At the end of the year each person receives a bonus. The bonus is calculated by the number of years, multiplied with R200.
Calculate in **Column I** the bonus that each person will receive. The amount is stored in **Cell L1** and the number of years stored in **Column H**. Ensure that the amount displays correctly. (4)

9.12 Use the following functions in **column F**:

- Average amount spent in **Cell F55**. (2)
- Highest amount – **Cell F56**. (2)
- Smallest amount – **Cell F57**. (2)

9.13 Format the cells in **cell N1** to display the cell phone number correctly. The '0' needs to appear at the beginning of the cell phone number. Correct the cell number. (2)

9.14 Use the 'AutoFill'-feature to complete the months in **column J**. (2)

Save and close the **Survey** spreadsheet. [28]

Activity 10

Open the **Schedule** spreadsheet.

A summary of the Rugby World Cup 2019 schedule is saved in a spreadsheet. Some analysis still need to be done.

Work in the **Fixtures** worksheet.

10.1 The heading in **cell A1** is currently merge to column G. Make the necessary changes to merge it to **column J**. (1)

10.2 Add a thick bottom border below **row 2**. The colour of the border needs to be one shade darker as the top shaded header row. (2)

10.3 Format **cell H3** to display it as follows: (1)



10.4 Change the format of the dates in **column A** to display as MMM-dd. (2)

10.5 The content are currently sorted by groups – **column G**. Change the sorting so that the content of the worksheet will display the dates in order by **Column A** – the last date will be 13 October 2019. (2)

10.6 At the time the spreadsheet was compiled, some of the countries still needed to qualify for the World Cup. Canada qualified on the last minute for the World Cup. Replace all the instances of the words 'Repechage Winner' with the word 'Canada' in **column D**. (2)

10.7 Format **Column H** and **Column I** in South African currency. (2)

10.8 Determine in **column J** the difference between the highest and the lowest price per ticket per match. (3)

10.9 Use a function in **cell O4** to determine how many matches took place on a Monday. (3)

10.10 Calculate the average 'Lowest Price' (**Column H**) in **cell N12**. (2)

10.11 Calculate the highest 'Lowest Price' (**Column H**) in **cell N13**. (2)

10.12 The exchange rate from South African Rand to America dollar (US Dollar) is currently $1,00 for R14.58 – **cell N17**. Convert the amount in **cell L18** (currently in South African Rand) to display what a person will pay in 'US Dollars'. Use **cell N18** for your calculation. (3)

10.13 Generate a random number between 1 and 20 in **cell N20**. (2)

Work in the **Stadium** worksheet.

10.14 Use a function to determine how many competitions took place, in **cell H2**.(2)

Work in the **Pool** worksheet.

10.15 Give the name 'Pool' for the cell range **F2:F41**. (1)

10.16 Change the tab of the **Pool** worksheet to any colour of your choice. (1)

Work in the **Capacity** worksheet.

10.17 Use any method to copy the following data in the worksheet to the 3InternationalYokohama-Word Processing document:

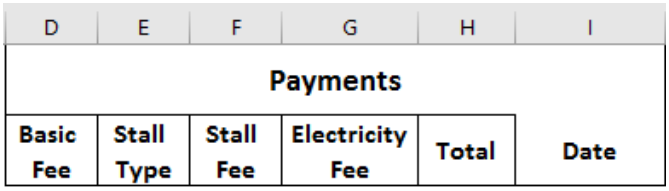
- Only matches in September month;
- Only matches where the capacity are more than 4000;
- Only stadiums completed in the year 2000 and after 2000. (4)

Save and close the **Schedule** document. [35]

Solutions: Spreadsheet (Excel)

Activity 5_Sollution

<table>
<tr><th colspan="2">Item / Criteria</th><th>Max</th><th></th></tr>
<tr><td colspan="4">Finances (Spreadsheet)</td></tr>
<tr><td>5.1.1
–
5.1.6</td><td colspan="2"><u>General formatting</u>
Column B unhidden ✓
Width of column C = 12 ✓
Orientation of text in cell C1 = 0 degrees ✓
<u>Cells D1:I2</u>
Cells D1:I1 merged and centred ✓
Cell E2 text wrapped ✓
Cell I2 centre-aligned (horizontally) ✓
Cell I2 top border removed ✓

Column I Dates in format dd mmm yy ✓
Cell L5 Cell phone number displayed with leading zero (0827367712) ✓
[Changed to Text format or '0827367712]</td><td>9</td><td></td></tr>
<tr><td colspan="2">Total</td><td>9</td><td></td></tr>
</table>

Activity 6_Sollution

FORMULAS Worksheet:

Total	180.23	
VAT	=B4*15/100	
Amount Due	=B4+B5	

Total	R180.23
VAT	**R27.03**
Amount Due	**R207.26**

Learner	Task 1 mark out of 60	%
Learner 1	45	=B10/60
Learner 2	55	=B11/60
Learner 3	33	=B12/60
Learner 4	25	=B13/60
Learner 5	58	=B14/60
Average		=AVERAGE(C10:C14)

Learner	Task 1 mark out of 60	%
Learner 1	45	75%
Learner 2	55	92%
Learner 3	33	55%
Learner 4	25	42%
Learner 5	58	97%
Average		72%

Purchase Price	Selling Price	Profit
180	210	=B20-A20

Purchase Price	Selling Price	Profit
R 180.00	R 210.00	**R 30.00**

	Current Price	New Price
Item 1	255	=B24+(B24*5/100)

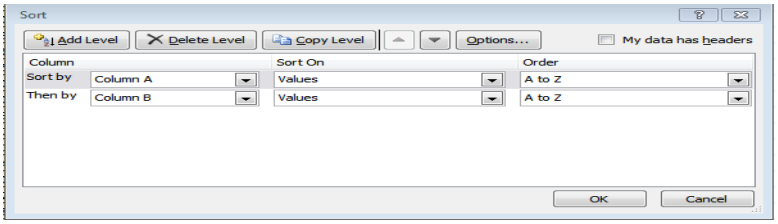
	Current Price	New Price
Item 1	R 255.00	**R 267.75**

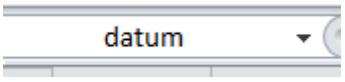
FUNCTIONS worksheet

	A	B	C
5	**Value**	**Question**	**Function**
6	25	Highest value	=MAX(A6:A24)
7	15	Lowest value	=MIN(A6:A24)
8	15	Average value	=AVERAGE(A6:A24)
9		Average value - formatted to 2 places after the decimal point	=AVERAGE(A6:A24)
10	15	Total of the values	=SUM(A6:A24)
11	8	Number of values	=COUNT(A6:A24)
12		What function will you use when you want to count the number of people in a spreadsheet, by using a list of surnames?	COUNTA
13	6	Number of empty cells	=COUNTBLANK(A6:A24)
14	8	Median of the values	=MEDIAN(A6:A24)
15	23	Value that occur the most	=MODE(A6:A24)
16	3	Number of values equal to 25	=COUNTIF(A6:A24,25)

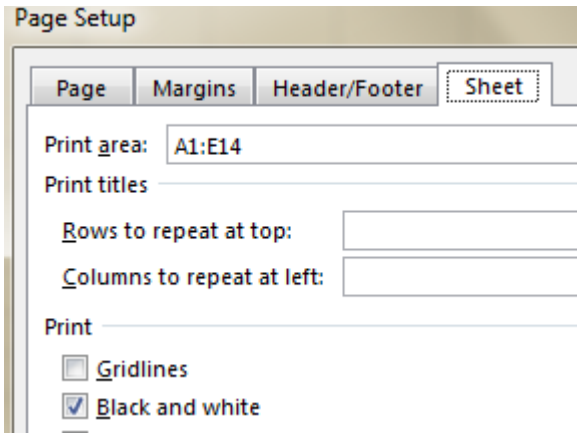
	A	B	C
17	3	Number of values greater than 10	=COUNTIF(A6:A24,">10")
18		Number of values not equal to 15	=COUNTIF(A6:A24,"<>15")
19	0	Current date and time	=NOW()
20	6	Current date	=TODAY()
21		Current date - display as dd MMMM yyyy	=TODAY()
22	2	A random number containing 3 digits	=RANDBETWEEN(100,999)
23	8	A random number between 0 and 1	=RAND()
24	16	A random decimal number between 1 and 5	=RAND()*5

Activity 7_Solutions

Subtotal Worksheet					
7.1	**South African Currency** Column C formatted to 'currency' ✓	1		1	
7.2	**Sorting** Worksheet sorted to Column A (Group) ✓ And column B (stadiums) ✓ 	1 1		2	
7.3	**Cell F1 – current date** **=TODAY()** =Today ✓ ()✓	1 1		2	

7.4	**Cell F1 – name (date)** Cell/ F1 – name changed to 'date' ✓ 	1		1	
7.5	**Cell F2 – error message** **=AVERAGE(D3:D50)** AVG changed to average ✓	1		1	
7.6	**Header** File name in header ✓ As a field ✓ Right hand side ✓ 	1 1 1		3	
TOTAL		**10**			

Activity 8_Solutions

STADIUM_STADION Worksheet					
8.1	**RANGE A1:E14 – print area** Correct range chosen to print ✓ Black and white – check mark ✓ As follows: 	1 1		2	
8.2	**Cell D16** **=MIN(D3:D14)** MIN function used ✓ Correct range used (D3:D14) ✓	1 1		2	

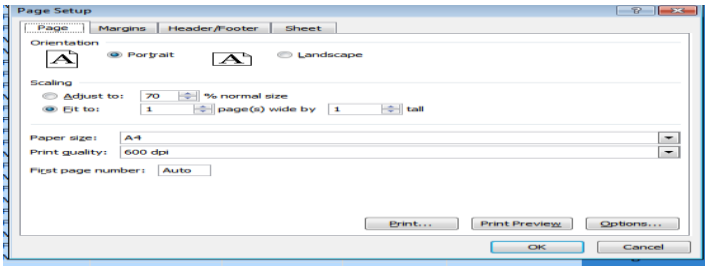
8.3.1 – 8.3.3	**Chart** Title add ✓ Appropriate title ✓ Smallest capacity bar filled ✓ With any colour ✓ Texture fill used ✓ Fill 'Chart Area' ✓ With image **3Stad.jpg**✓	 1 1 1 1 1 1 1		7	
8.4	**Cell D17** **=COUNTA(A3:A14)** Counta function used ✓ Correct range – A3:A14 ✓	 1 1		2	
8.5	**Cell E3** **=RANDBETWEEN(1,12)** Randbetween function used ✓ Bottom value – 1 ✓ Top value– 12 ✓ Copied down ✓	 1 1 1 1		4	
TOTAL		**17**			

Activity 9_Solutions

- *Mark the questions from the formulae and not the values/answers in the cell.*
- *Check against candidate's actual work (Cell references may differ, depending on the candidate's response).*
- *Candidate may use multiple formulae or cells as 'building blocks' to reach answers.*
- *The answers must still be correct even if changes made to the existing data.*

Filename: Survey **Total: 28**

Nr	Criteria	Maximum mark			Candidate mark
Survey-Worksheet					
9.1	**Row 1** Merge A1:H1 ✓	 1		1	
9.2	**Row 3** Information visible and readable ✓	 1		1	

9.3	**Cell J1** **=TODAY()** =Today() function used ✓ Format dd MMMM yyyy ✓ **NOTE**: Do not accept "NOW"	 1 1		2	
9.4	**Find and Replace column A** Replace 18-25 with 20-25 ✓ Bold ✓ **NOTE:** Except 6 changes	 1 1		2	
9.5	**Headings - row 2** Change to Arial 12 ✓	 1		1	
9.6	**Column headings:** Wrap text ✓ All headings ✓	 1 1		2	
9.7	**Column F** All amounts – Rand format ✓	 1		1	
9.8	**Page setup A1:H52** Data appear on one page ✓ 	 1		1	
9.9	**Column F** **=SUM(F3:F52)** Sum function used ✓ Correct range (F3:F53) ✓	 1 1		2	
9.10	**Column F – Below the worksheet** **F55 - =**average ✓ (F3:F53) ✓ **F56 -** =max ✓ (F3:F53) ✓ **F57 -** =min ✓ (F3:F53) ✓	 1 1 1 1 1 1		6	
9.11	**Info tab colour changed**			1	

	Changed to any colour except white ✓	1			
9.12.1 – 9.12.2	**Bonus – Column I** **=H3*bonus** **Cell L1** changed to the name 'bonus' ✓ =H3 ✓ *bonus ✓ Use AutoFill for the rest of the column ✓	 1 1 1 1		4	
9.13	**Cell N 1** Changed to text / or '0 in front of number ✓ Cell number correct ✓	 1 1		2	
9.14	**Column J** AutoFill months ✓ – Correct ✓	 1 1		2	
TOTAL					**28**

Activity 10_Solutions

- *Mark the questions from the formulae and not the values/answers in the cell.*
- *Check against candidate's actual work (Cell references may differ, depending on the candidate's response).*
- *Candidate may use multiple formulae or cells as 'building blocks' to reach answers.*
- *The answers must still be correct even if changes made to the existing data.*

File Name: Schedule **Total: 35**

Nr	Criteria	Maximum mark			Candidate mark
Fixture-Worksheet					
10.1	**'Merge & Centre' row 1** A1 to J2 – merge and centre ✓	 1		1	
10.2	**Border below row 2** Insert thick border below row 2 ✓ One shade darker as shading of row 1✓ Aqua, Accent 5, Darker 25%	 1 1		2	
10.3	**Cell H3 – 'wrap text'** Cell H3 – 'Wrap Text' applied ✓	 1		1	
10.4	**Date format – column A** Change format of column A ✓	 1		2	

	Format - MMM-dd (Sept-20) ✓	1			
10.5	**Sort according to column A** Content sorted correctly according to column A ✓ 'Oldest to newest' – 21 Sept – 13 Oct ✓	 1 1		2	
10.6	**Find and Replace – column D** All instances of the words 'Repechage Winner' ✓ Replaced with 'Canada' ✓ (4 changes)	 1 1		2	
10.7	**South African currency – column H and I** South African currency applied to both columns ✓✓	1 1		2	
10.8	**Column J** **=I4-H4** I4 ✓ -H4 ✓ Copied down ✓	 1 1 1		3	
10.9	**Cell 04** **=COUNTIF(B4:B43,N4)** Countif function used ✓ Criteria range – B4:B43 ✓ Criteria N4 (OR "Mon") ✓	 1 1 1		3	
10.10	**Cell N12** **=AVERAGE(H4:H43)** Average function used ✓ Correct range (H4:H43) ✓	 1 1		2	
10.11	**Cell N13** **=MAX(H4:H43)** Max function used ✓ Correct range (H4:H43) ✓	 1 1		2	
10.12	**Cell N18** **=L18/N17** L18 ✓ /N17 ✓	 1 1		2	

10.13	**Cell N20** **=RANDBETWEEN(1,20)** Randbetween function used ✓ Lowest level 1, highest level 20 ✓	 1 1		2	
Stadium Worksheet					
10.14	**Cell H2** **=COUNTA(B2:B41)** Counta function used ✓ Correct range (B2:B41) ✓ (Any column could be used for the range)	 1 1		2	
Pool Worksheet					
10.15	**Range F2:F41** Range name changed to 'Pool' ✓	 1		1	
10.16	**Tab colour** Changed to any colour ✓	 1		1	
Capacity worksheet					
10.17	**Subtract information** Data pasted in 3InternationalYokohama ✓ Only the following data display: September month ✓ capacity >4000 ✓ Completed (completed) >=2000 ✓	 1 1 1 1		4	
TOTAL			**35**		

Date	Day	Team 1	Team 2	Time South Africa	Stadium	Capac	Completed
21 September	Sat	France	Argentina	08:15	Tokyo	4997	2000
21 September	Sat	Australia	Fiji	05:45	Sapporo	4141	2001
22 September	Sun	England	Tonga	11:15	Sapporo	4141	2001
23 September	Mon	Wales	Georgia	11:15	Toyota	4500	2001
28 September	Sat	Japan	Ireland	08:15	Shizuoka	5088	2001
28 September	Sat	South Africa	Namibia	10:45	Toyota	4500	2001
29 September	Sun	Australia	Wales	08:45	Tokyo	4997	2000

Summary of PowerPoint

Uses of Presentations

A presentation conveys information from a speaker to an audience. Presentations are typically used in demonstrations, an introduction, a lecture/classroom, or speech. Presentations are meant to inform, persuade, inspire, motivate, or present a new idea/product.

Rules for creating a slide show

Do	Don't
Plan the Presentation. Ensure you check the Presentation while creating it.	Do not jump between slides – planning is key.
Give enough information, using bullets to bring the main points across	Do not add too many graphics – can take away from the meaningfulness.
Add animations or transitions to slides to add enhance the Presentation	Do not add too many transitions or animations to slides.
Use different layouts, use action buttons, and use a content page with correct working navigation	Do not use colours of themes that clash – check colours work with each other.
Use the Designer as options for your slides.	Do not just read a presentation – add notes that the presenter can use for extra information.

For more information on how to design good presentations scan me:

SCAN ME

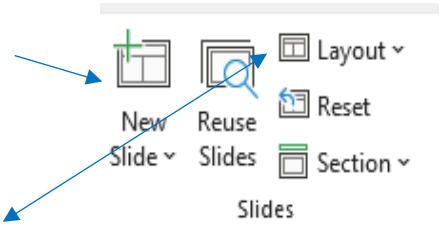
Creating a PowerPoint Presentation

When we create presentations, we need to keep in mind what we are putting into the slides. We need to plan out the information and if we want to add any video's or audio files to the presentation. There are many options we can use to create different layouts of the slides to ensure we have a well planned out presentation.

Inserting slides

Different slide layouts:

On the Home ribbon we have a Slides section where we can insert slides using the New Slide button.

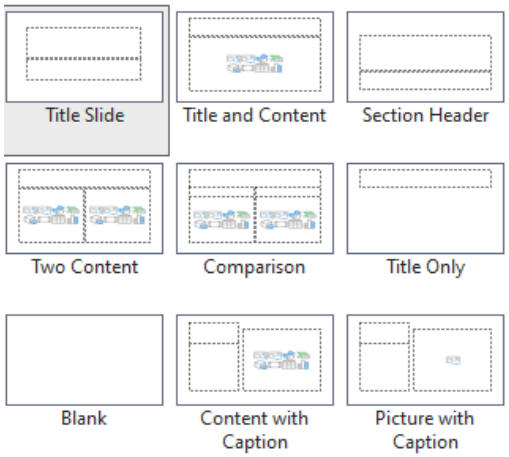


We can also choose from an array of different slide layouts according to what the information is we want to put in slide.

There are multiple layouts we can choose from namely:

- *Title Slide* – we use this for first slide for headings.
- *Title and Content* – we use this for the content page.

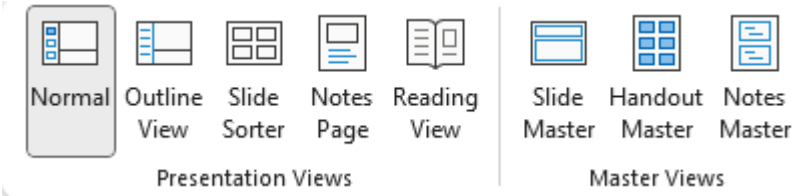
- *Section Header* – use this at start of a new section.
- *Two Content* – use this slide when we have an image and text, or we want to show text in two columns.
- *Comparison* – we use this to compare two aspects like advantages and disadvantages.
- *Title Only* – like section header but here we only have a title.
- *Blank* – we use a blank slide when we want to add an image or screenshot to take up the whole slide.
- *Content with caption* - we use this when we have text, or a diagram and we want to explain the content of the picture and use a caption for reference.
- *Picture with caption* – use this when we have a picture, and we want to reference where we got it from etc.



When we enter the slides and choose their order, we can check it using the different views we have in PowerPoint.

Presentation View:

Normal view: allow us to check the slides as a mini slide on the left and the full slide and their content on the right.



Outline view: gives us thumbnail view of the slides on the left and full view on the right and allows us to edit and jump around the slides.
Slide sorter: allows us to move the slides around as we view the slides as equals and move them around and sort them as we want.
Notes page: gives us the view of the notes added to the slides for the presenters purposes.
Reading view: shows us the slides full screen to view animations and transitions per slide.

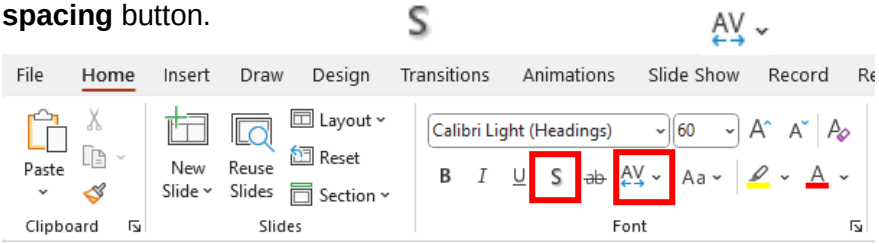
Master views are where we can create templates of slides to be used again.
Slide Master: allows us to control the whole presentations look, colours, fonts, background, effects etc.
Handout Master: allows us to customise the printed version of the slides.
Notes Master: allows us to customise how the printed version of the notes with the slide show will print.

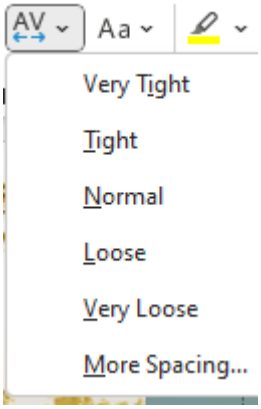
Adding text to slides

After we have added new slides and chosen the layouts, we then start entering text. To add text we click in the text boxes or shapes on the slides. We will see the dotted lines to show the different sections on the slides and once selected you will be able to add text.



The same Home ribbon with very similar font and editing options used in Word and Excel will be found in PowerPoint. Here we find two new buttons, namely the **shadow** button and the **spacing** button.





These buttons allow us to add a shading or change our spacing on the slides. Spacing button has the option of expanding – Loose and Very Loose (making spaces larger between the letters) or condensing the font (making space less between letters) Tight and Very Tight.

Editing and deleting slides

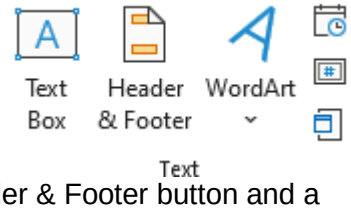
In PowerPoint (later Office Suites Office 2016 and 365) we have an amazing addition, the Designer. It is found on the Home tab/ribbon and it gives us options on how to change or edit the slide using the text and images we have added to it. This really elevates the slides to be very professionally designed.

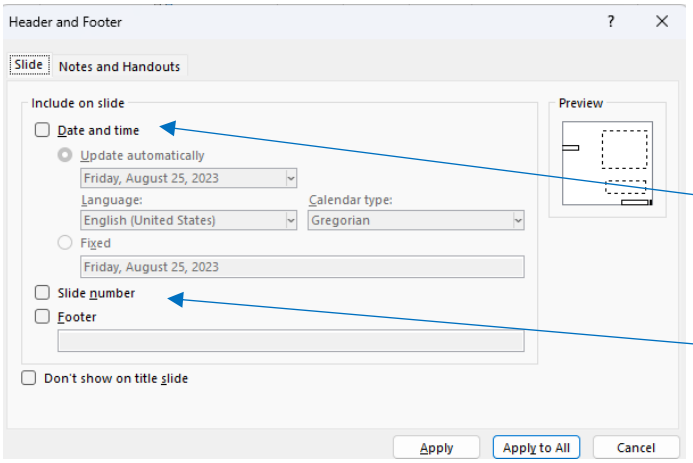


To delete a slide that we have too many of or a slide we no longer want is very easy. We can click on the slide in the Normal View or the slide in the Slide Sorter and push delete key on the keyboard or we can right click on the slide and choose delete.

To move the order of the slides is also easy in the Slide Sorter view, where you select a slide and can then hold your right mouse button down and drag it to the order you want.

The same as any other document we have worked in, PowerPoint slides also have headers and footers. We find them in the Insert tab by Text section. We can then push





header & Footer button and a dialog box will appear.

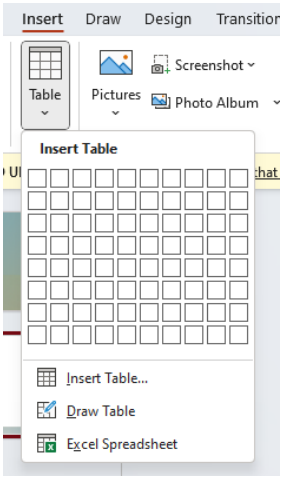
This dialog box offers us options to add a Date and Time on the slide, where we can select the format of the date and if it must be updated or be fixed.
It also offers us to add the slide number to the slide as well as a footer text that we can then type in. We also have a tick box which allows us choose if we want these details added to show on the title slide as well or not. There is also the Apply button where it will apply these changes to just the current slide you are working on or the Apply to All button where it will appear on all slides. NOTE these will appear in the *footer* of the slide only.

The tab at the top has two options, *Slide* and *Notes and Handouts*. The slides tab applies to the PowerPoint slides and will appear on the presentation slides, whereas the Notes and Handouts will be the header and footer information that will show on the print outs.

Adding additional objects to slides

To add additional content to the slides we can insert preset objects. Those are icons, images, pictures, smartart,3D models, videos tables and graphs by clicking on the different images on the slide. Click on the type of object you want to add to the slide and choose the file or graphic you want. Once you have added your object then edit the slide accordingly.

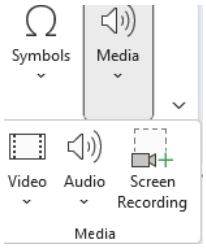




We can also integrate other documents with and files into our slide show. We can integrate Word or Excel tables into our presentation, by going to the Insert Ribbon and Tables and choosing the Excel or you can create your own table.

We can also insert pictures or screenshot here as well.

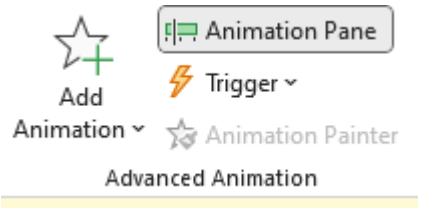
Further on the Insert ribbon we find the media button, here we can music, audio or a video on the slide. Click on the video or audio button and choose the different files you want to add.



On the Insert ribbon you will find the different objects to add to your slides.

Adding animations to slides

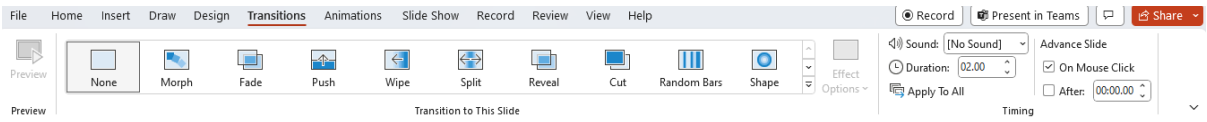
Animations is what adds the movement in the slides. You can add *animations* to text or objects in the slides by clicking on the object you want to add the animation to and then click on the different animations you can choose from in the Animation ribbon. Best practice is to see what the different animations are and how they work before adding them to the objects.



There is an animation pane where can choose what order the animations must happen in and more settings by clicking on drop down menu.

Adding transitions to slides

Slide *transitions* are the movements that you see in slides when you change from one slide to another. There are many options to choose from, but do not add too many to a presentation as it can become very distracting.



Transitions can be added to a slide when you choose the effect you want and then view the presentation to ensure you have the best effect. Best practice is to try the different transitions to see how they work on your presentation and which adds the most effective addition to the presentation.

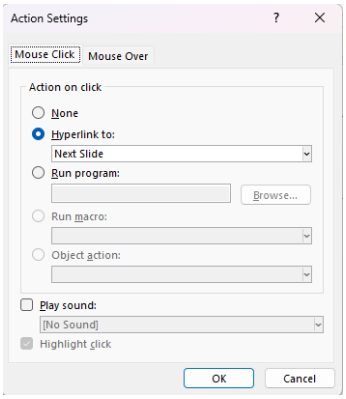
In the image above you will see on the far end the **Timing section** on the ribbon, this we can use to add some sound to the slide or all slides or allows you to choose how you want to change slides – using a mouse click or on a set timer.

Navigation in a presentation

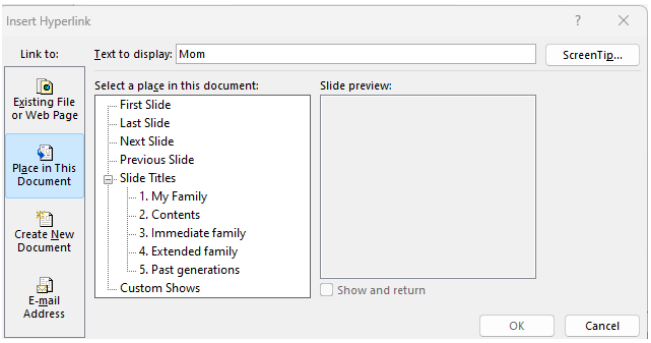
To be able to move around in a presentation we use action buttons and hyperlinks to navigate. Action buttons can be added in the Insert tab, by Shapes. At the very bottom are the action buttons we can use.



There are *action buttons* which we can use to move to the next slide or back to the previous slide (number 1). Then we have the ones that go to the first slide or last slide (number 2). Then we have the Home button which takes us to the slide we assign as the Home slide. The other action buttons are for information, return, video, document, sound, Help or blank action button.



Once you have chosen your action button you add it on the slide and then place it normally bottom right of the slide to be used. Each button you add will bring the following dialog box up. Here we allocate the action this button must do and the slide it must go to as well as if we want to add sound to the slide, and we can choose if it must happen on mouse click or if you hover the cursor over it.



Hyperlinks are used to navigate on a link you click on. In the contents page you will add a hyperlink from the slides name to the slide you what to open. To do this you right click and click Link, then go to Place in this document and choose the slide you want to link it to. If you want a specific slide, then look at Slide Titles and choose the slide you want.

Set up Slide shows

Recording Presentations

In Office 365 we have the option to be able to record our presentations and then share them. We can record them and have our voice over, so it is like we are there presenting it to them. We can do this by clicking on the record button on the tab or by going into the record tab for more options. We can then save the presentation as a show which allows it to have the audio as well as the presentation.



View/Run the Presentation

To view the presentation, you can click on the F5 key to run the slide show from the beginning, or you can click on the Slide Show tab and click From Beginning.



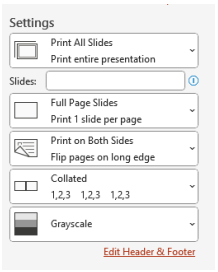


If you are wanting to view the slide you are working on and see how the animations or transitions are working just that slide you can click [shift +F5] and it will play just the slide you are on or click on Slide Show and click on the icon From Current Slide.

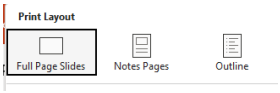
To save the slide show you click the Save or Save as button in the File tab and choose the file name and destination accordingly.

Printing Presentations

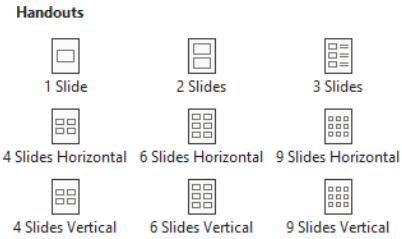
We have options when we print the slides as follows:



- We can print the slides full page, which will take over the whole page with the slide.
- We can print the selection where we choose only selected slides.
- We can print the current slide or custom slides.
- We also have print layout options:
  - Full Page Slides: where we have a for Full page
  - Notes Pages: where you have the slide and any additional notes printed
  - Outline: shows just the content in bullets



- Handout
  - 1 slide on a page
  - 2 slides on a page
  - 3 slides with space for notes
  - 4 slides Horizontal runs across top left to right, then bottom left to right
  - 6 slides Horizontal runs across top left to right, then bottom left to right



  - 9 slides Horizontal runs across top left to right, then bottom left to right
  - 4 slides Vertical runs from top to bottom on left and then to top right
  - 6 slides Vertical runs from top to bottom on left and then to top right
  - 9 slides Vertical runs from top to bottom on left and then to top right.

Activity PowerPoint Presentations

Activity 1

1. Create a PowerPoint with 3 slides.
   a. Slide 1 must be a Title Slide layout.
   b. Slide 2 must be a Content Slide.
   c. Slide 3 must be a with a title and content. (3)
2. Slide 1 must have the heading “My Favourites” as the heading. Add a picture of any of your favourite things as the background of this slide only. (3)
3. On slide 2 add the contents: My Favourite Colour, My Favourite Hobby, My Favourite Sport, My Favourite TV show, My Favourite Food. (2)
4. Slide 3 must then have the heading My Favourites and then sub-headings as follows: My Favourite Colour, My Favourite Hobby, My Favourite Sport, My Favourite TV show, My Favourite Food. Complete these sub-headings. Use one of the designer options for this slide. (3)
5. Add icons to your slide to show some of your favourites in images, you must have a minimum of 3 icons/images added to the slide. (3)

Save this as PowerPoint Act1. **[12]**

Solution Activity 1

Open presentation PowerPoint Act1.

1. 3 slides inserted
   Slide 1 = Title slide ✓
   Slide 2 = Content slide ✓
   Slide 3 = Blank slide/any other slide type. ✓

2. Slide 1:
   Add in Heading shape – My Favourites.
   Add a picture/image ✓ as background of slide. ✓
3. Slide 2:
   Have a content list of the 5 favourites given. ✓
4. Slide 3:
   Must have heading My Favourites ✓ the answers of the 5 favourites given. ✓ ✓
5. Slide 3 must have minimum of 3 images/icons added to the slide. ✓✓✓ **[12]**

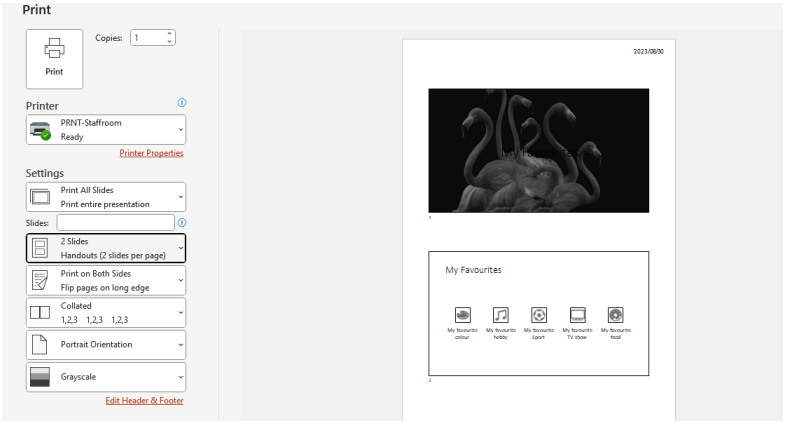
Activity 2

Continue to use the activity you created in Activity 1.

1. Add animations to the slides to emphasis a few points. (2)
2. Ensure you have added an appropriate transition to the first slide. (2)
3. Add a sound effect to the 3rd slide. (1)
4. Ensure you save the slide show as print handouts 2 slides a page. (2)
5. Save this as Powerpoint Act 2.

Solution Activity 2

1. Animations added to any slide ✓, not too many. ✓ (2)
2. Transition added to first slide. ✓✓ (2)
3. Sound effect added to 3rd slide ✓ (1)
4. Save As: Print options (2)



Activity 3

Create a slideshow save it as Action Buttons.

1. Slide 1: must have title layout – add the title Action Buttons. (1)
2. Slide 2: Add a Content layout and have 3 bullets namely: Next slide button, previous slide button, Home button. (3)
3. Slide 3: Add a section title slide layout, must have heading Next button. Add a next action button. Link it to the slide 4. (4)
4. Slide 4: Add a section title layout and add the heading Previous slide and place the previous action button linked to slide 3. Add a sound button as well to allow any sound to play when clicked. (5)
5. Slide 5: must be a section title layout, add a heading Home Button, and place a home button, to take you to the content slide. Add a back to start action button to take you to slide 1. (3)

Solution Activity 3

1. Slide 1: title layout – add the title Action Buttons. ✓ (1)
2. Slide 2: Content layout ✓ and have 3 bullets ✓namely: Next button, previous button, Home button. ✓ (3)
3. Slide 3: section title slide layout ✓, must have heading Next button ✓. Add next action button ✓. Link it to the slide 4. ✓ (4)
4. Slide 4: section title layout ✓ heading Previous slide Action Button ✓ and place the previous action button linked to slide 5 ✓as well as a Home button ✓to take you to the content slide✓. (5)
5. Slide 5: section title layout, place a home button✓, to take you to the content slide✓. Add back to start button. ✓ (3)

Activity 4

Use the presentation we created in activity 3.

1. Now we are applying timers to the slides. Add a transition to slide 1 and use a timer for 5 seconds to go to next slide.
2. Slide 2 add a timer to change to slide 3 after 10 seconds.
3. Slide 3 add an animation to the action button and make it take 3 seconds to get to place.
4. Slide 4: Add a timer for slide 4 to take 15seconds before going to next slide.
5. Slide 5: Add a transition to end the slide with applause sound effect.
6. Now record yourself presenting the slide show and save it as a Slide Show – Activity 4.

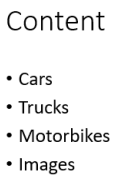
Solution Activity 4

Timers must be used on all slides – and there will be a recorded slide show to view of the learner presenting the slides.

Activity 5

Create a slideshow save it as Navigation.

1. Slide 1: must have title layout – add the title Road Transport.
2. Slide 1: must have a picture of any road transport vehicle and add an animation to make it drive across the slide from left to right.
3. Slide 2: must have a content slide layout which looks like the following screenshot:

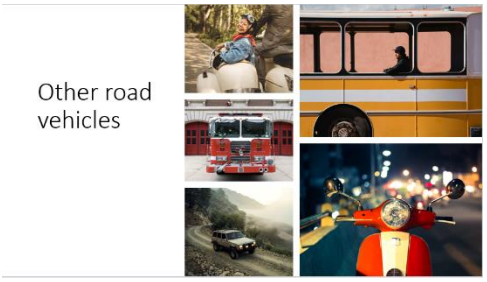


4. Slide 3: must have heading Cars. Add the information as the slide screenshot below. It does not have to look exactly like this, you can use any



images/pictures/icons and see what the designer offers for ideas. Use the text use any 5 facts about cars.

5. Slide 3: Add a sound effect to the slide, as well as a Home button to take you back to the content slide.
6. Slide 4: must have heading Trucks. Add an icon of a truck that has an animation to move around in a loop de loop motion path.
7. Slide 5: Must have heading Motorbikes. Add an image of a motorbike and add a caption:" Motorbikes are one of the most dangerous road vehicles". List 2 things about a motor bike as content. Add an end slide action button to take you to the final slide, slide 6.
8. Slide 6: must have a list of different road transport vehicles. See screenshot below, Images do not have to be exact replica as those on here.



Solution Activity 5

1. Slide 1: title layout –Road Transport.
2. Slide 1: add picture with animation moving from left to right
3. Slide 2: content slide layout with bullets as per screenshot
4. Slide 3: Heading Cars, 6 bullets with info as per screenshot, used images and designed well.
5. Slide 3: sound effect added and Home action button used.
6. Slide 4: Trucks in heading, and an image with animations doing loop de loop path.
7. Slide 5: Motorbikes and image with caption "Motorbikes most dangerous road vehicle". Action button end slide – linked to slide 6.
8. Slide 6: Must look similar to screenshot – images and heading Other road vehicles.

Summary: HTML

What is HTML?

HTML stands for Hyper Text Markup Language. HyperText refers to the fact that HTML allows you to click on links on the web page so you can move from one place to another in a web page (hyperlinks). Markup Language simply means that words/text is marked with codes to indicate what they must look like when viewed on the browsers like Microsoft Edge.

Basic Terminology

Websites	A collection of web pages that can be accessed under the same web address.
World Wide Web	The World Wide Web is part of the internet. It is a collection of websites and webpages that are hyperlinked to each other
Web pages	An interactive document that consists of text, graphics, animation, etc.
Hyperlinks (Links)	A word or phrase on a web page that is blue or underlined in blue. Links are used to navigate.
HTTP	Hypertext Transfer Protocol (HTTP) is a method for transporting information between a client (such as a web browser) and a web server.
URL	Uniform Resource Locator refers to a unique address given to each webpage on the internet. The URL tells the internet exactly what page you want to see on a website

What is an HTML Editor?

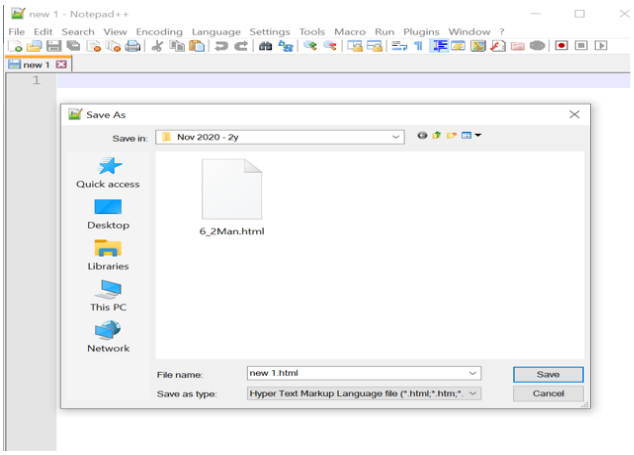
An HTML editor is software that allows one to create and edit HTML files. Notepad++ is a commonly used HTML editor. Other examples include: Adobe DreamWeaver, Microsoft Expression Web and KompoZer.



How to save an HTML file

To save an HTML file, you need to do the following:

- Go to File
- Go to Save As
- File Name: Type in a descriptive file name
- File Type: Change to Hyper Text Markup Language File
- Click on Save



Once you make changes in Notepad++, you must remember to save the changes in Notepad (ctrl + S) and then update the Web page (ctrl + 5) to view any changes you make.

HTML Syntax

Syntax is rules indicating how tags should be used and in which order. The syntax also helps you define where something starts and ends.

Opening and Closing Tags

Majority of HTML tags come in **pairs**, the first one is known as the **opening tag** and the second one is the **closing tag**.

Tags are enclosed in **angle brackets <>** and the opening and closing tags look the same, however, the closing tag has an added forward slash (/) after the first angled bracket to indicate the closing of the code

Example:

- **The text is bold.**
- The green tag above is the opening tag and the red tag is the closing tag.

Pairs of tags with content between them such as the example above, are referred to as **elements.**

Basic Structure of an HTML page

```
<html>

    <head>
        <title> Title here </title>
    </head>

    <body>
        Web page content goes here.
    </body>

</html>
```

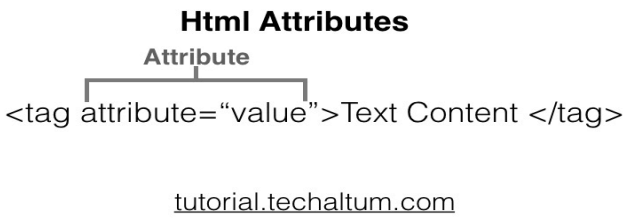
<html> </html>	Tells the browser that this is an HTML page.
<head> </head>	This element contains keywords about the document.
<title> </title>	Specifies a title for the document displayed on the browser tab.
<body> </body>	Indicates the body/content of the web page.

Please note: Tags that display text, images, backgrounds and videos on the web page are all found between the <body> </body> tags.

Attributes

Attributes consists of TWO parts:

- The attribute name
- The attribute values



For Example:

<body bgcolor="blue">

Attributes are ONLY added to opening tags. Attribute values should always be enclosed in inverted commas/quotation marks " ". Attributes use American spelling, for example colour and NOT colour or center and NOT centre

Good web design techniques

- It must be easy to navigate (consistent placing of links – no broken links)
- It must be easy to read and (good selection of colour contrast, lists, tables)
- It must be good to look at (relevant to its purpose and updated, readable font sizes, headings, relevant text and images)
- Plan in advance you page layout and how you will arrange content on it. Don't place content randomly. People read from left to right and from top to bottom. Important information should be where people naturally look first
- Consider the spacing of the website. Using empty space (or negative space) balances out the page and draws the eye to the most important content. A lot of negative space also makes things look elegant and clean.
- Each page on the website must look like it belongs with the rest. You should carry specific design elements (like colour, logos and font) through to all the pages.

Basic Tags	
Tag	**Description**
<body></body>	Defines the body of the web page
<body bgcolor="pink">	Sets the background colour of the web page
<body text="black">	Sets the colour of the body text
<head></head>	Contains information about the web page
<html></html>	Creates an HTML document starts and ends a web page
<title></title>	Defines a title for the web page
 	Inserts a line break
<!-- -->	Comment

Text Tags	
Tag	**Description**
<hl></hl>	Creates the largest heading
	Creates the smallest heading
	Creates bold text
	Creates italic text
<u></u>	Creates underlined text
	Sets size of font, from "1" to "7"
 	Sets font colour
	Sets font type

Links Tags	
Tag	**Description**
	Creates a hyperlink
<img src="name">	Creates an image link
	Creates a target location in the document
	Links to a target location created somewhere else in the document
<cite></cite>	Defines the title of a creative work

Formatting Tags	
Tag	**Description**
	Creates a new paragraph
	Aligns a paragraph to the "left" (default), can also be "right" or "center"
	Creates a numbered list
<ol type="A","a", "I","i","1">	Defines the type of numbering used
	Creates a bulleted list
<ul type="disc", "square","circle">	Defines the type of bullets used

Formatting Tags continued	
Tag	**Description**
	Inserted before each list item, and adds a number or symbol depending on the type of list selected
<img src="name">	Adds an image
<img src="name" align="left">	Aligns an image: can be "left", "right", "bottom", "top"
<img src="name">	Aligns an image in the "center", can also be "middle"
<img src="name" border="1">	Sets the size of the border around an image
<img src="name" width="200" height ="200">	Sets the height and width of an image
<img src="name" alt="alternative text">	Displays alternative text when the mouse hovers over the image or when the image is not found
	Inserts a horizontal line
<hr size="3"/>	Sets size (height) of a line
<hr width="80%"/>	Sets the width of a line, in percentage or absolute value
<hr color= "ff0000"/>	Sets the colour of the line

Table Tags	
Tag	**Description**
<table></table>	Creates a table
<tr></tr>	Creates a row in a table
<td></td>	Creates a cell in a table
<th></th>	Creates a table header (a cell with bold, centred text)
<table width="50">	Sets the width of the table
<table border="1">	Sets the width of the border around the table cells
<table cellspacing="1">	Sets the space between the table cells
<table cellpadding="1">	Sets the space between a cell border and its contents
<tr align="left">	Sets the alignment for cell(s) ("left", can also be "center" or "right")
<tr valign="top">	Sets the vertical alignment for cell(s) ("top", can also be "middle" or "bottom")
<td colspan="2">	Sets the number of columns a cell should span
<td rowspan="4">	Sets the number of rows a cell should span

Activities: HTML

Activity 1: Theory

Question 1:

Various options are given as possible answers. Write down the correct letter next to each question number, for example, 1.6 D.

1.1 HTML stands for…
A. Hypertext markup language
B. Hypertext makeup language
C. Hypertext modified language
D. Hypertext mode language (1)

1.2 .. tag tells the browser that this is an HTML page.
A. <title>
B. <body>
C. <head>
D. <html> (1)

1.3 The following tag will…

<body bgcolour="yellow">
A. not change the background colour.
B. change the background colour to yellow.
C. change the background colour to Orange
D. change the browser tab colour to yellow. (1)

1.4 Copying someone else's HTML code from GitHub (A collaboration code hosting site) is known as…
A. Stealing
B. Borrowing
C. Plagiarising
D. Theft of time (1)

1.5 CSS and JavaScript are languages used to enhance and improve a webpage.
A. True
B. False (1)

[5]

Question 2:

2.1 Explain the terms *website* and *web page*. (2)

2.2 What does HTML syntax mean? (2)

2.3 Which tag can be used to underline text? (1)

2.4 Attributes are made up of two parts, namely: (2)

2.5 Give TWO good web design techniques. (2)

2.6 Name TWO attributes that can be used with the font tag. (2)

[11]

Question 3:
Correct the mistakes of the following HTML code:

3.1	<p> ….. <p>	(1)
3.2	<body bgcolour="red">	(1)
3.3	<font face:"Comic Sans MS"	(1)
3.4	books	(1)

[4]

Question 4:
Indicate whether the following statements are TRUE or FALSE. If the statement is FALSE, correct it by changing the underlined word(s).

4.1	The font face tag can be used to change the font type of text in HTML.	(1)
4.2	Microsoft Word is an example of an HTML editor.	(1)
4.3	The <h6> tag indicates the largest heading in HTML>	(1)
4.4	An HTML editor is a program used to help make writing HTML easier.	
4.5	tag is used display text on next line.	(1)

[5]

Total:

Activity 2: Practical

You have been appointed as the Web Master for ABC Watches.

Create a web page to advertise their new Smartwatch.

Smart.jpg



1.	Create a new HTML file using Notepad++ and save it as **AdsSmart.**	(2)
2.	Type in the basic structure of an HTML file.	(3)
3	The text smart must appear on the browser tab.	(1)
4.	Set the background colour of your webpage to blue.	(2)
5.	Use the heading 1 style to add the following heading: **Smart Watches**	(1)

6. Use the incomplete code below to insert the picture **Smart.jpg** under the heading Smart Watches. The picture must be centre aligned.

    (1)

7. Type in the following two paragraphs and format them correctly.

   Paragraph 1: The perfect combination of affordability and functionality. This smart watch is perfect for everyone in life.

   Paragraph 2: We offer a 12-month warranty, supporting replacement, and refund. Your satisfaction is our goal. (2)

8. The word **smart** (in paragraph 1) must appear in bold and italics (2)

[15]

Activity 3: Google Forms Quiz

Use the link below or scan the QR code to answer the following quiz.

https://forms.gle/9PGxob16hgpqLUBG9

This is a self marking quiz. Results will go to the learner. Results will also indicate the correct answer to the learner.

Total: 15 marks

Solutions: HTML

Activity 1: Theory

Question 1:

1.1 A ✓ (1)
1.2 D ✓ (1)
1.3 A ✓ (1)
1.4 B ✓ (1)
1.5 A ✓ (1)

Question 2:

2.1 Explain the terms *website* and *web page*.
A **website** is a collection of web pages that are **linked** (making use of hyperlinks) to each other and that contains specific information and that have a similar design and look. ✓ (1)
Web pages are made up of text, pictures, audio clips, video clips and animations. Web pages can be viewed by making use of a web browser (also a program) like Google Chrome.✓ (1)

2.2 What does HTML syntax mean?
Syntax are rules ✓ indicating how tags should be used and in which order✓ (2)

2.3 Which tag can be used to underline text?
<u> … </u> ✓ (1)

2.4 Attributes are made up of two parts, namely:
Name ✓ **AND** values ✓ (2)

2.5 Give TWO good web design techniques.
Any TWO of the following: ✓✓

- The website must be easy to navigate (consistent placing of links – no broken links)
- The website must be easy to read and (good selection of colour contrast, lists, tables)
- The website must be good to look at (relevant to its purpose and updated, readable font sizes, headings, relevant text and images)
- Plan in advance your page layout and how you will arrange content on it. Don't place content randomly. People read from left to right and from top to bottom. Important information should be where people naturally look first
- Consider the spacing of the website. Using empty space (or negative space) balances out the page and draws the eye to the most important content. A lot of negative space also makes things look elegant and clean.
- Each page on the website must look like it belongs with the rest. You should carry specific design elements (like colour, logos and font) through to all the pages.

(2)

2.6 Name TWO attributes that can be used with the font tag. **(2)**

Any TWO of the following: ✓✓

- Align
- Color
- Face
- Size

[11]

Question 3:
Correct the mistakes of the following HTML code:

3.1 ….. ✓ (1)

3.2 <body bgcolor="red"> ✓ (1)

3.3 <font face="Comic Sans MS"> ✓ (1)

3.4 books ✓ (1)

[4]

Question 4:

4.1 True ✓ (1)
4.2 False – Notepad++ ✓ (1)
4.3 False – <h1> ✓ (1)
4.4 True ✓ (1)
4.5 False
 ✓ (1)

[5]

Total: 25 marks

Activity 2: Practical

You have been appointed as the Web Master for ABC Watches.

Create a web page to advertise their new Smartwatch.



1. Created a new HTML file using Notepad++ ✓
   File saved as **AdsSmart.** ✓ (2)

2. Typed in the basic structure of an HTML file. ✓✓
No errors: ✓

```
<html>

    <head>
        <title> Title here </title>
    </head>

    <body>
        Web page content goes here.
    </body>

</html>
```

(2)

3 The text smart appears in the browser tab.
<title> smart </title> ✓ (1)

4. Background colour of webpage set to blue.
<body bgcolor✓="blue"> ✓

One mark for bgcolor
One mark for ="blue" (2)

5. Heading 1 style used to add the heading: **Smart Watches**
<h1> Smart Watches </h1> ✓ (1)

6. Smart image inserted:

** ✓ (2)

7. **Following two paragraphs typed in and formatted as paragraphs using the tag.**

The perfect combination of affordability and functionality. This smart watch is perfect for everyone in life. ✓

We offer a 12-month warranty, supporting replacement, and refund. Your satisfaction is our goal. ✓ (2)

8. The word **smart** (in paragraph 1) appears in bold and italics

 smart ✓✓

**One mark for **
**One mark for **

Order does not matter, however if tags are not nested, no mark should be awarded (2)

[15]

Activity 3: Google Forms Quiz

Use the link below or scan the QR code to answer the following quiz.

https://forms.gle/9PGxob16hgpqLUBG9

Results will go to the learner. Results will also indicate the correct answer to the learner.

Total: 15 marks

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