

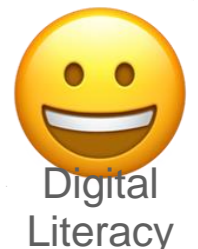
My Knowledge Organiser



Computer
Science



Information
Technology



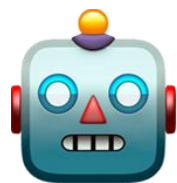
Digital
Literacy

Computing Knowledge Organiser for **Year 2**

Name:

Computing in Year 2

Computing is full of important skills and it helps us understand the digital world around us. Computing has three parts.



Computer Science

Computer Science teaches us about problem-solving, how computers work and coding languages.



Information Technology

Information Technology teaches us about how to use devices and apps to be creative and make digital content.



Digital Literacy

Digital Literacy teaches us about online life and how to stay safe and healthy when using technology.

Year 2's Important Person:

Bill Gates



- Founder of the world's biggest software company.
- Born in Washington in 1955, he learnt to program computers at age 13.
- Owns a charity which helps people in developing countries by improving their health and wellbeing.



[Watch fun facts about Bill Gates.](#)

What Should I Already Know Checklist:

- Can you follow a simple algorithm and create a simple sequence algorithm?
- Can you turn algorithms into a program using a robot or digital device?
- Can you debug simple sequence errors in a program?
- Can you use logical reasoning to predict the outcome of simple programs?

We will learn:

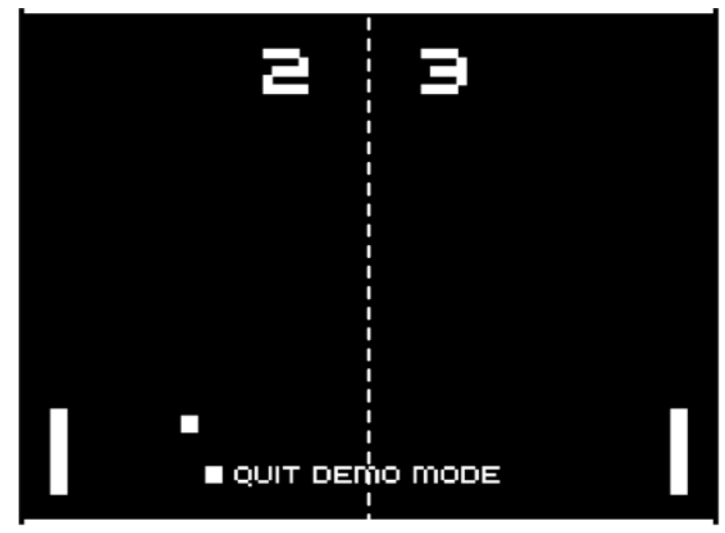
- To write algorithms and turn them into programs.
- To create and debug simple programs that includes a repeat loop.
- To make accurate predictions about the outcome of programs.
- To use inputs and outputs in programs.
- To use internet services like email, streaming and the web.

What is a computer program?

A computer **program** is a collection of **instructions** written so a computer can perform a specific task. A computer program is written by a person called a **computer programmer**. Programs need to be written in a way that the computer can understand, this is called a **programming language or code**.

What are video games?

You could say that video games are simply games that you play on a computer, phone, tablet or console. Pong was one of the first, it was released in 1972, that's 40 years ago. Pong is a simple "tennis like" game that features two paddles and a ball. Click to play.



Scan to play.



What do you think?

What do you think about when you think of a **computer program**? In order to play games, do homework or talk to friends on a computer, phone or tablet, programs are used. Computer programs are made using a special language called code. Coding is used so that the computer understands what to do. Sometimes programs can also be described as software, applications or apps.




The 3 Steps to Writing a Program

1. Writing an Algorithm:

Algorithms are written for someone who needs to know how to do something. An algorithm is a set of step-by-step instructions. They are written in step by step points. They are written in chronological order and can be words or pictures.


Plan!



2. Writing a Program:

A program is a set of instructions completed in order to achieve a task. Programs are created on a computer using a programming language (code).

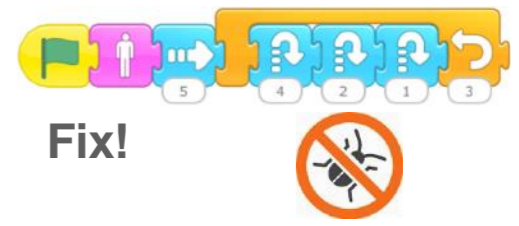
Create!



3. Debugging the Program:

Debugging is when you find a problem in the instructions or program you have written and have to fix it.

Fix!





Important Words:

Algorithm: Steps or instructions to follow to achieve a task.

Application (App): A program such as a game or drawing app that performs a task on a computer.

Bugs: Mistakes or errors in code.

Data: Numbers and information that can be represented by images, video, text and sound.

Debug: Finding and correcting errors (bugs).

Event: Code that runs when something happens, such as a button being clicked.

Execute: Play or run code in a program.

Input: A method of computers receiving data (Eg. keyboard, mouse, touch, sensors etc).

Object: An item on screen, such as an image, a button or some text.

Output: The information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly through the control of motors in physical systems.

Prediction: Make a guess about what happen in a program or how a problem might be solved. Also know as logical reasoning.

Program: A series of instructions written in a computer language (Code).

Repeat (Loop): Instructions that can be repeated.

Sequence: A set of instructions that are followed in order.

Testing: Checking if a program works how it should.

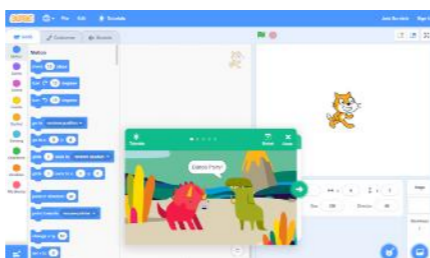
Videos to watch:



A basic explanation of what coding is. Programs are used to play games, do homework or talk to friends on a computer, Watch video.

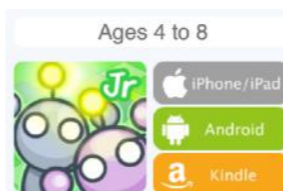


A quick video on how to create a program with Scratch Jr - Year 2 Watch video.



Learn how to use Scratch. Video tutorial on using Scratch to create programs. Watch video.

Try this online game to learn about programming robots.



What is the Internet?

The internet can be described as lots of computers connected to each other. Watch video - What is the Internet?

How do we use computers in our everyday lives?

They are used in shops, factories and offices. They are used for taking photographs, in sport, for making music and films, to help us to learn, in aeroplanes and for going into space. What do you use your computer for? Watch the video.

What are Internet Services?

Internet Services allow us to send and receive huge amounts of information such as text, images, sound, video and apps over the **internet**. Some of the services provided by the internet are; email, video calling, sending files, streaming video and the world wide web (www). Computers have programs called **browsers**, which are used to access the **world wide web (www)**. The web is one of the most important uses of the internet. There are lots of websites on the internet. They are made up of **webpages**. A web page can have videos, pictures, words and games on it. The words and pictures you are looking at now are on a web page.



What is the Internet?



How are computers used in the world around us? How do you use computers?



What can you do on the Internet? Visit this website and click on the images to find out.





What is a repeat command?

A repeat command or loop is a very useful instruction block when creating a program. It's simply instructions that repeat or loop. Let's have a look at using a simple repeat loop using Scratch Jr.

Here I have written a simple dance algorithm (set of instructions to perform the dance) for Scratchy the Cat.



Dance
Algorithm

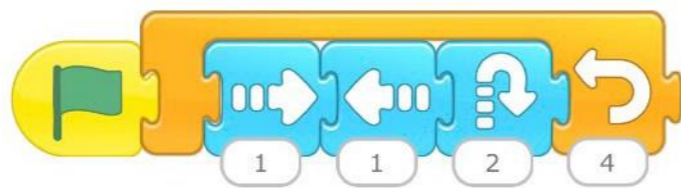
Start
Move right
Move left
Hop
Repeat 4 times
End



Here is that algorithm as a program in Scratch Jr. Firstly, using a repeat command and secondly, without. Which do you think is the better program and why?



Program 1 with repeat command.



Program 2 without repeat command.



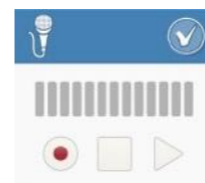
If I wanted to change the program so Scratchy the Cat repeated the simple dance 6 times instead, how would I do that? Which program would be the easiest to change?

Using Inputs & Outputs in a Program

What is a program? A program is a set of commands completed in order to achieve a task. Programs are created using commands written in programming languages that computers understand. Here we will use Scratch Jr to write a Program that make a character speak. In order to do this we must use an input (the microphone) to record the voice and an output (the speaker) to hear the recording.



1. Open Scratch Jr.
2. Use the sound/microphone (input) to record your voice saying "Hello my name is Scratchy the Cat".



3. Create a simple program that plays the recorded sound using the speaker (output).



Input Devices



Lets you input information **into** a digital device.

Keyboards let you type in letters and words.

Mouse or **trackpads** let you move and click items.

Game Controller are designed to control your in-game character, vehicle, animal or widget.

Camera lens lets you take photos and record video.

Microphone lets you speak to a device or record sound.

GPS tells you where a computer or mobile device is. Used to give you directions when using map apps.

Output Devices



Lets you get information **out** of a digital device.

Headphones and **speakers** let you listen to sounds and music.

Screens show you the picture and graphics.

Printers lets you put your work onto paper.

Lights shows you if a computer is turned on or off.

Vibration motor is use on a phone when on silent mode.

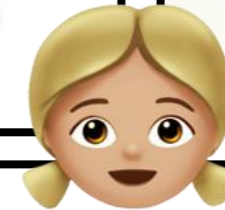
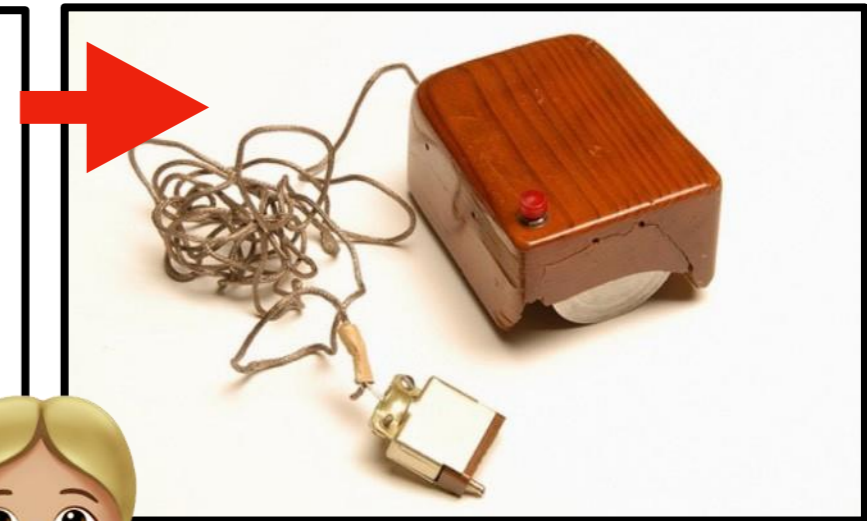
What Should I Already Know Checklist:

- Can you use classroom apps and devices?
- Can you sign in & out of online apps?
- Can you use a search engine to find information?
- Can you create & access different types of digital content?
- Can you use technology to collect data?
- Can you save and share digital work?



Did you know?

This is crazy! The first computer mouse ever made was made of wood. The job of a mouse is to be an input. It allows you to move a cursor and click on objects to select them on a screen.



We will learn:

- To create a presentation or basic digital book.
- To read a simple database to find information.
- To organise & collect data.
- To create digital content using more than one app.
- To independently save and open files.
- To use a search engine & navigate the results to answer questions.



What is a web address?

Web addresses are made up of different parts

www.bbc.co.uk



this means it's on
the world wide
web

it's name

it's location (UK)

Popular Browsers



Chrome

Android / Chromebook



Safari

iPhone / iPad / Mac



Firefox

PC / Windows / Mac



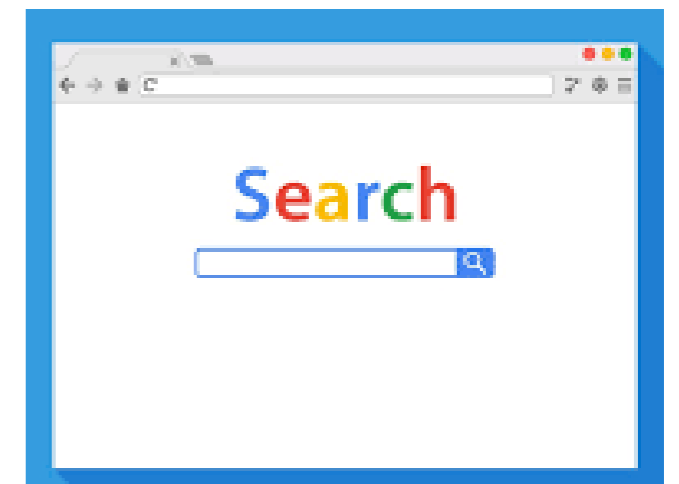
4th

Edge

PCs / Windows

What do you do when you need answers?

If you want to use the Internet to find out the answer to a question, you would need to open a browser first. Can you find the browser on your device? The Internet is a big place and everything online has an address, a bit like your home, for example www.youtube.com. The www at the start of the address stands for world wide web. But imagine you didn't know the address of the website you wanted. Then you could use a search engine like Google to find the address. When you want to find the answer to a question such as, 'What countries did the Vikings raid?' You need to think about the important keywords. You could just type the whole sentence into the search engine but it will probably ignore some words, like joining words and punctuation. Instead it might save time to search for keywords like 'countries', 'Vikings' and 'raid'. Try using some keywords yourself.



Important Words:

Data

Numbers that represent images, video, text and sound.

eBook

A digital book that can be read on a computer.

Emoji

Images that show a mood, feeling or actions.

Format

Changing or editing the look of your digital work. For example making the text bigger.

Frame

Single image in a film or animation.

Icon

Small image that can be used instead of words.

Illustration

Drawings showing ideas or characters.

Image

Another name for photographs or graphics.

Information

Data such as numbers, text, images presented in a meaningful way.

Menu

A set of options when using a **computer** or app to help find information or do a task.

Multimedia

Different types of media. For example images, text, video and sound.

Publish

Share online so people can see your work.

Reorder

Change the order or sequence of something.

Save

Keep and store your work on a computer.

Slide

A single page or screen in a presentation app.

Tool

An item in an app that helps you do something on a computer. For example the pen tool can be used to draw.

Word Processor

An application for writing text on a computer.

Presenting:

What is a presentation? A presentation is a collection of individual slides (pages) that contain information on a topic. These are commonly used by teachers for lessons.



What does a presentation look like?

You can see all of your slides down the left hand side of your screen. When you click on one of the small versions of your slides it shows you that slide in full screen. You can add and format text in the same way you do using word processing programs.

Who uses presentations? Anyone who needs to explain information or facts to groups of people. For example; teachers, university students and business people.

What apps can you use to create presentations?



Google Slides on a Chromebook



PowerPoint on a PC Computer



Keynote on a Mac or iPad

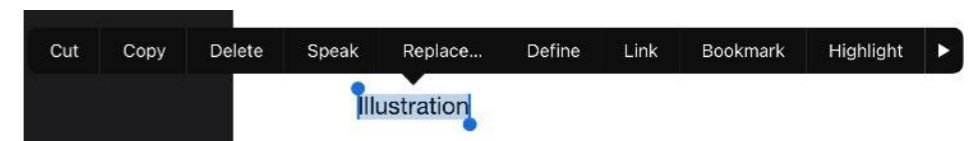
What is 'Read Text Aloud'?

Read text aloud is an awesome trick that can be used with new or difficult to read words. It can be used on all devices and you can even change the voice your computer, iPad or phone uses to talk to you.




'Read to Me' on iPad or iPhone

Simply select the word by holding down your finger on it and, tap on 'Speak' from the pop up menu. You can even use the dictionary to explore the meaning of the word.



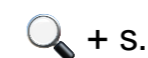
PCs - Microsoft Office

On a PC computer, select the word or sentence and click on the  from the top menu. You might need to ask an adult to enable this on for you.



Chromebooks

On a Chromebook. Highlight the text and press the Search key

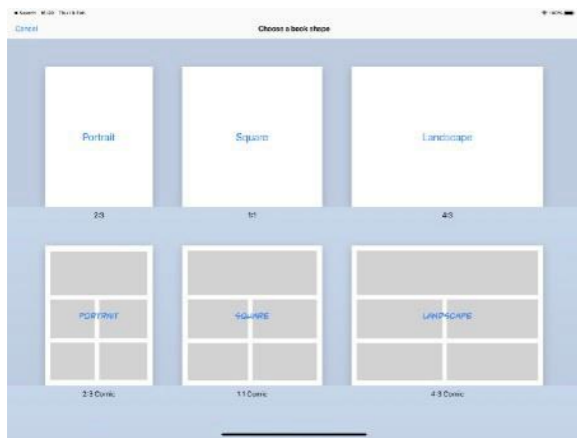




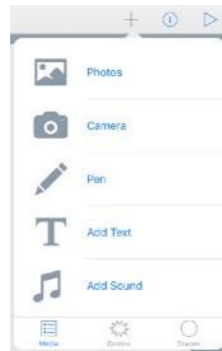
Making Digital Books:

Books on a computer are called electronic books or e-books. eBooks can combine multimedia content like text, images, sound recordings, shapes and video clips.

We will use the Book Creator app to create our own illustrated books.



First choose your page type. Use + button to add multimedia. Use (i) button to format text.

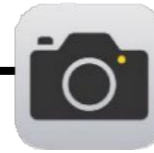


Practice these skills:

- Use different colour page backgrounds
- Insert images
- Add text and change the font, colour & size
- Add shapes
- Add pages



See example [illustration and book design](#).



Shooting Digital Photos & Video:

1. Shooting digital video is easy if you remember the basic rules.
2. Hold the camera / iPad steady with two hands.
3. Point and focus it on the subject of the video. If you are recording someone talking get as close as you can, it will sound better.
4. Try to record in a quiet space with plenty of light.
5. Indoor filming is always better, less background noise and no wind!
6. Always film in landscape.
7. Ask permission before video recording anyone.
8. Press the red record button.
9. Check the video by playing it back. Does it look and sound ok? Do you need to re-shoot it?
10. Delete any video you are not using.



This is landscape!

Drawing with Computers:

Using a computer or iPad to draw can be difficult at first but with a bit of practice you will be creating fantastic pieces of artwork. Try to experiment with different colours/brushes, create shapes, size, use the fill colour (paint bucket tool), undo/redo, add text, layers, format text/images and remember to save your work.

Try Drawing a Character:



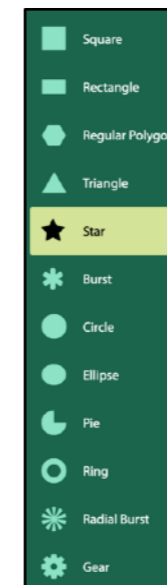
Use SketchBook to experiment with different tools (pencil, pen, paint etc). Change the Stroke (thickness of drawing tool). Don't just use one colour, use lots of different colours. Practise zooming in and out to add detail.



SketchBook



Try Drawing with Shapes



Use the Sketch Pad website to experiment with shapes. Practice manipulating shapes. Shapes can be rotated and resized. They are rotated using degrees. They can be rotated left or right. Try different colours. What can you create?



Sketch Pad





What Should I Already Know Checklist:



- Do you understand how technology is used in modern life?
- Do you understand how we can find information?
- Can you send a digital message?
- Do you know who to trust online?
- Do you know who to ask for help?
- Can you use the internet safely and sensibly?
- Do you know why we keep personal information private?
- Do you know who makes the things we see online?

Did you know?

It is estimated that **12.6 million** people in the UK own a smart speaker. What is a Smart Speaker? The most popular ones are Amazon's Echo (Alexa), Google's Home and Apple's Homepod (Siri). Smart Speakers can be used to control wireless devices in our home such as lights, order shopping, play music as well as providing information like the weather forecast, time, date and many more things. Smart speakers run voice recognition technology. So all you have to do is ask a question or tell it to do something. Typically the smart speaker is listening all the time waiting for a "wake word." For example, the wake word for Amazon, (Alexa system) is "Alexa" e.g. "Alexa, play music".

What do you think?



Who owns all the content on the internet? Well what is content? Content is the photos, videos, drawings, music and text you see on the internet. It's fairly straightforward: if you created the content, you own it. The internet makes it really easy to copy, paste or download the things other people make and share. If you wrote a story and published it on the Internet, how would you feel if other people copied it and said they wrote it?

When you create something original, like something you've written, drawn, photographed or a video you've made, you automatically "own" the right to your creation. This right is called **copyright**. It means you are the only person who has the right to copy, reuse, sell or change it, and you are the only person who can give others permission to use your work.

We will learn:



- About the ways we communicate online in the world around us and how to communicate in a polite manner.
- About the Internet and which sites/apps are suitable for us to use.
- About different types of media content.
- About trusted adults, personal information and using strong passwords.
- About the differences between the Internet and the real world.
- About copyright.
- About how some information may be inaccurate or untrue.
- About using a search engine.

What is online safety?

Understanding risks and how to **protect yourself** from harm when using digital devices and the internet.





Important Words:

Bluetooth

Is a way of wirelessly exchanging of data over short distances.

Chat

To talk online in a friendly or easy manner.

Communication

To exchange thoughts, ideas, or information online. This could be talking, photos, video or text.

Digital

Storing, using, or sending information electronically in the form of numbers. A computer is a digital device.

Download

A computer file that is sent from one computer to another. She keeps all of her downloads in one folder.

Follow

To make friends with someone online and follow (see) what they share online.

Link

A button with a web address that when clicked will open that web page on your computer.

Online

Another name for using the internet or web.

Online bullying

The abuse and mistreatment of someone online.

Online game

A game that requires the internet. Also game were players can play against others who are not in the same room.

Personal information

Information about you, address, school, age, passwords etc.

Search

To use a search engine to find information online.

Send / Share

To send a message, photo or video using an online communication app to one or more people.

Sign-in / Log in

To join a particular online website or app. When signed in more features are available.

Trusted adult

A trusted adult is someone that you have a good relationship with. It is someone who you think has your best interests in mind. Parents and teachers etc.

Website

An information page online that can only be accessed using the internet.

Wireless (Wifi)

Is a way of connecting computers and digital devices to the internet and each other.

Videos to watch:



There are lots of different ways to communicate. Watch video.



Just like in real life it's important to be polite and respectful when you are online. Watch video.



'CEOP - Lee and Kim - Animal Magic'. Watch video.



Sharing information online can sometimes come with risks. Watch video.

What ways can we communicate online?

Being able to send messages and talk to other people is an important part of modern life. The internet has opened up lots of new ways for us to communicate.

At the touch of a button we have the ability to instantly get in touch with almost anyone, anywhere on the planet.

Text Message



In-Game Chat



FaceTime - Video Call



Email



Social Media Comments



Direct Messages (DMs)



Forums



Chat Rooms



There are many different types of communication technology. They all have different strengths. It is important to think about which type of communication is best for each occasion.

Who do you talk to online?

Can you trust everyone you meet online? What can you do if something online makes you uncomfortable or someone is unkind?

Tell an adult you trust if there is something or someone online that is upsetting you.



Parents, carers or teachers!

What are the possible dangers online?

The internet is a brilliant tool that people all over the world use. It is important that the internet is used properly however, some people don't use the internet safely and this means there are dangers to look out for online.

- Stranger danger! People asking for your personal details.
- Bullying! People being unkind to each other.
- Clicking on scam links and downloading viruses onto you computer. A virus may attack your device, stop it from running or steal your data.



What is meant by Online Bullying?

“The use of digital devices and the internet to deliberately upset someone else.” Find out more about online bullying by watching ‘Tell someone. Online safety SMART cartoons for 7 to 11 year olds’.



[Watch this video](#)

What is a website?

A website is a page or collection of pages that link to each other and contain information.

What is online?

When people talk about being ‘online’ they mean being connected to the internet on a digital device like a phone, computer, tablet or games console etc.

What is offline?

This means when a computer or other digital device isn’t connected to the internet.

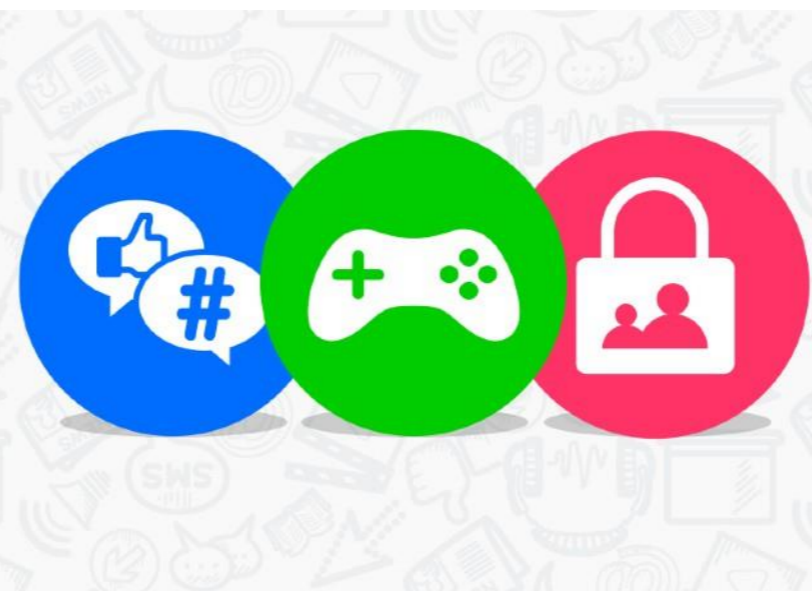
Everything we read online is true!

Do you agree with this statement? Can you believe everything you read online? To access this video [Click Here](#).



The Basic Rules for Keeping Safe Online

- Talk kindly online so you stay friends.
- Only message friends so strangers don’t contact you.
- Visit sites for children so you keep safe and have fun.
- Tap links carefully so you don’t buy things by mistake.
- Take breaks regularly so your eyes get rest and your body gets exercise.



What is a password and why do we need them?

Protecting your Information, What should you keep safe? To access this video [Click Here](#).



What is a blog and a vlog?

A blog is a website of your own where you enter information ordered by date. It can also be called an online diary or online journal that is shared with others online. A vlog is the same kind of thing however you make and share videos. A blog and a vlog like most other things online can be seen by anyone. So remember NOT to post personal information. Consider using a made-up name to keep your identify safe.

What is personal & Private information?

There are 3 types of information. Introduce Public (information we can share online), Personal (information we need to think carefully about sharing, made up of our interests) and Private (information we should never share with people online).

Public	Personal	Private
<ul style="list-style-type: none"> • My first name • My nickname • My avatar picture 	<ul style="list-style-type: none"> • My favourite film • Music I like • What videos I watch • My dog’s name • My favourite colour • Favourite cake • Where I’ve been on holiday 	<ul style="list-style-type: none"> • My birthday • Home address • Passwords • Where I play • Personal photos • My full name • Where I’m going on holiday • My friend’s photos • My school / photos of my uniform
Safe for anyone to read or share without you worrying	Carefully shared with others! Only friends.	Never to be shared!

