



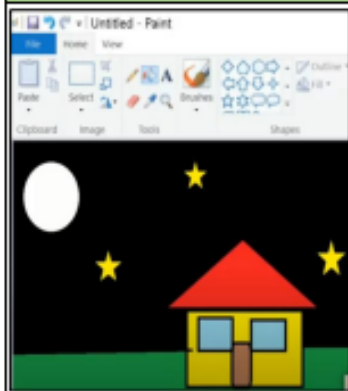
# COMPUTING: CREATING MEDIA

Year 1 Summer

## KNOWLEDGE ORGANISER




### Overview



#### Digital Painting

- We can use digital devices to help us to draw and paint pictures.
- Some of the programs that we can use to do this are Microsoft Paint, Paintz and Sketches (for iOS).
- When we use paint programs, we can use tools to create different effects.
- We can draw in different ways, using freehand, lines and shapes in our drawings.
- We can also change sizes and colours for effect.

### Simple Tools

- The buttons at the top/side of the page are called tools, and they all have different jobs.
- By clicking on a tool (with the left button on our mouse) we can select to use it. 



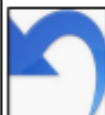
This is the pencil tool. It draws freehand. As we click and hold the left mouse button, it draws on the page. As we hold and move the mouse, the pencil follows on the page!



This is the paintbrush tool. It works freehand, in much the same way as the pencil does. However, we can choose a number of different colours (by clicking on them) to paint with!



The eraser tool lets us rub out parts of our drawing when we have made a mistake. It works by clicking and holding the left mouse button over the areas to erase.



The undo tool reverses the last thing that you did. If you make a mistake, the undo tool can help you to get your drawing back to how it was beforehand!

### More Complex Tools



This is the fill tool. It let us fill a shape with a colour of our choice. Be careful though, if the shape has any gaps in it, the fill tool will colour everything else!



This is the spray-paint tool. When you hold down the left button on the mouse, it is like you are spraying a can of spray-paint. With this tool, it is more difficult to colour neatly.



The line tools are useful when we need to draw a line more neatly than we can do with freehand. You can select the start and end points of your line, and choose if you want it to be straight or curvy.



The shape tools draw perfectly formed shapes! There are many different shapes to choose from. As we click and drag using the left mouse button, we make the shape bigger and smaller.



When we want to save our painting, we should click on this icon. The first time that we save, we need to choose a file name and a location (folder) to save it in.

### Making Careful Choices



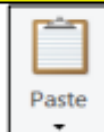
Be clicking on this icon, we are able to choose the size of the lines that we draw with.

We can choose thick, bold lines, or thin, feinter lines for effect.

These tools mean that we don't have to draw the same things over and over again if we need to repeat them.

The copy tool makes a copy of the line, shape, drawing features that are selected. By pressing paste, the copy will then appear on the page.

The cut tool also makes a copy of the line, shape, or drawing, but removes the original. The paste option places the copy in the new location.



### Important Vocabulary

Paint Program

Tool

Paintbrush

Erase

Fill

Undo

Click

Drag

Save

icon



# KS1 Online Safety



Communicating	Online bullying	Privacy	Information online

- ✓ We can use electronic mail (known as e-mail) using the Internet.
- ✓ These can be sent around the world much quicker than a written letter.
- ✗ Don't open e-mails from people you don't know. Tell a trusted adult.
- ✗ Don't click on any links. Tell a trusted adult.



Some messaging apps are for older children only. Check at [www.net-aware.org.uk](http://www.net-aware.org.uk)



**1** People you don't know are strangers. They're not always who they say they are.

It's fun chatting with known friends 😊

- ✓ Be nice and friendly when online.
- ⊗ Some people can be unkind online.
- ⊗ This can make others feel unhappy, sad and lonely.
- ✓ If we see this, then we must tell a trusted adult straight away.

- ⊗ If someone is unkind **several times on purpose then this could be bullying (STOP!)**
- ✓ If we see this, then we must tell a trusted adult.

**2** Be nice to people like you would on the playground.

Some information is OK to share online.

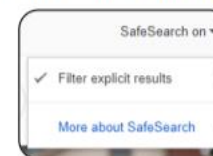
- ✓ Only share with friends you know
- ✓ Favourite sports teams, movies or music.

Information that tells others who and where we are should be kept private.

- ✗ Remember: we **never** share our full name with anyone online.
- ✗ Things like where we live or where we go to school should **never** be shared with strangers.
- ✗ Never share your passwords with other people.

**3** Keep your personal information private.

- ✓ Lots of people share pictures and information online. Because of this, we need to make sure we stay safe online.
- ✓ Use your web browser to access [www.google.co.uk](http://www.google.co.uk)
- ✓ Make sure 'safe search' is on.



- ✓ Be careful not to click on any pop ups.
- ✓ Remember: all the information on the internet might not be true.
- ✓ Use YouTube Kids to help you find safe videos and media.

**4** If you ever get that 'uh oh' feeling, tell a grown-up you trust.







# COMPUTING: PROGRAMMING

Year 2 Summer

## KNOWLEDGE ORGANISER



### Overview

#### Robot Algorithms



- **Programming** is when we make a set of instructions for computers to follow.



- **Robots** are one type of machine that can follow programs - they follow what we instruct them to do.



- We use **algorithms** (a set of instructions to perform a task) to help robots to do things that we want them to do.  
**Debugging** can help to correct algorithms and programs.

### Using a Floor Robot

- **Robots:** Robots are machines that we can program to do human jobs.

- Robots help us to do things, for example to help us clean, mow and learn!

- Robots in factories make things, and in hospitals they help make us better.



#### -Turning on a Bee-bot:

Before we use a Bee-bot, we need to make sure it is charged. To turn it on, using the switch underneath. You can tell that the Bee-bot is on because its eyes light up.

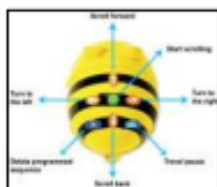


Remember to switch it back off again after you have finished using it.



- **Buttons:** Bee-bots have buttons on the top. They each make the Beebot do something different (see picture).

- The arrows move the Bee-bot in different directions. The GO button makes the Bee-bot start its program. The X button makes the Bee-bot forget the last set of instructions.



### Algorithms and Instructions

- **Algorithms:** Algorithms are precise set of instructions, that a computer can turn into a code. A floor robot has a computer inside of it.



- **Programs:** When we press the buttons of our floor robot, we are creating a program for it to follow. The program is how the algorithm is run as code on the robot.



- **Instructions:** It is important that our instructions to the floor robot are clear. If our sequence of instructions is in the wrong order, has anything missing, or has anything additional, the floor robot will end up in a different place! Plan the route to avoid obstacles and get to the right place.



### Designing Algorithms

- We can buy or create mats for floor robots. We then need to design our algorithms so that the robot follows the given route.



- We should carefully consider the start point & end point that we want the robot to reach.

- Use symbols (e.g. arrows, crosses) to indicate the commands that will be inputted as a program.



### Chunking and Debugging

- **Chunking:** With larger programs, we can break the task into chunks and create algorithms for each chunk.

- **Debugging:** Debugging is finding and fixing errors in our algorithms and programs. These errors can include:

- **Sequence errors:** An instruction in the sequence is wrong or in the wrong place.

- **Keying errors:** Typing in the wrong code.

- **Logical errors:** Mistakes in plan/thinking.

### Important Vocabulary

Program

Robot

Algorithm

Direction

Route

Obstacle

Design

Error

Chunking

Debugging



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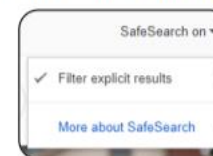
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- ✓ Favourite sports teams, movies or music.

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**2** Be nice to people like you would on the playground.

**3** Keep your personal information private.

**4** If you ever get that 'uh oh' feeling, tell a grown-up you trust.







# COMPUTING: PROGRAMMING

Year 3 Summer

## KNOWLEDGE ORGANISER



### Overview



**Sequencing in Scratch**  
- Programming is when we make a set of instructions for computers to follow.

- Scratch is a program that we can use in order to code our own stories and animations.



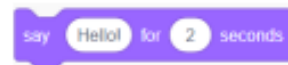
- We use algorithms (a set of instructions to perform a task) to sequence movements, actions and sounds in order to program effective animations.

### Programming Using Blocks

- **Basic Programming:** Make sure that the feature of the stage that you want to program (e.g. sprite, background) is selected by clicking on it. Drag the block command that you want onto the code area. Blocks can be deleted by right-clicking on the block and selecting 'delete block.'



- **Block Editing:** White areas on blocks can be edited. Click on them and type in the preferred value.



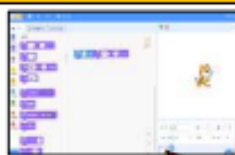
- **Running the Code:** You can run your animation by performing the action stated in the event block (e.g. clicking the event block). If this does not work, you may need to debug your animation (find errors and fix them).



### The Basics of Scratch

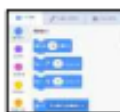
- **What is Scratch?** Scratch is a website/ app that lets us code our own stories, games and animations.

- Scratch helps us to learn how to use programming language, whilst also being creative and using problem-solving skills.



#### There are three main areas in Scratch:

- **The Blocks Palette** (on the left) contain all of the different blocks: puzzle piece commands which control the animation.



- **Code Area** (in the middle) is where the blocks are placed to create a program.



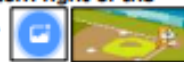
- **Stage with Sprite** (right) is where the output of the program is presented. The sprite is the character.



**Adding/Removing Sprites:** This can be done here, at the bottom of the stage. There are many sprites to choose from.

**Attributes:** There are three attributes of the sprite which we can change to make our animation: Code, Costumes, Sounds.

- **Backdrops:** Backdrops can be added by clicking on this icon (bottom right of the screen, below the stage).



### Sequencing and Algorithms

- **A sequence** is a pattern or process in which one thing follows another.

- In Scratch, blocks can stack vertically on top of one another to create sequences.

- **Event blocks** are used to start sequences. They are orange and have a curved shape at the top.



- Designing an **algorithm** (set of instructions for performing a task) will help you to program the sequence that you require.

### Making Music

- Several sprites, each following connected sound sequences, can create music!



- In order to do this, you will need to **carefully plan your algorithm**.



- If your animation does not work correctly the first time, remember to **debug** it.



### Important Vocabulary

Programming

Scratch

Blocks

Commands

Code

Sprite

Stage

Costume

Backdrop

Debugging



# LKS2 Online Safety



## What should I already know about privacy?

- \* Remember: we **never** share our full name with anyone online.
- \* Things like where we live or where we go to school should **never** be shared with strangers.
- \* Never share your passwords with other people.



## What should I already know about age restrictions?

Use Net Aware to check the age restrictions

App aware

Net Aware

13+



16+



## Privacy: Stay Safe. Be SMART!

- Be careful. Information you put online may be seen and used by others.
- Rather than use your name, use an alias (maybe your favourite cartoon character) for public profiles.
- Be careful. Never share your home address. This is because people online may not be who they say they are.
- Ask a trusted adult to ensure your privacy settings are on so your location and profile are not public.
- NEVER meet up with someone you've be in contact with online



Has Lola been SMART and stayed safe? What advice would you give and why?

<h1 style="color: #FFDAB9;">S</h1> <p><b>Stay Safe</b></p> <p>Don't give out your personal information to people / places you don't know.</p>	<h1 style="color: #90EE90;">M</h1> <p><b>Don't Meet Up</b></p> <p>Meeting someone you have only been in touch with online can be dangerous. Always check with an adult you trust.</p>	<h1 style="color: #ADD8E6;">A</h1> <p><b>Accepting Files</b></p> <p>Accepting emails, files, pictures or texts from people you don't know can cause problems.</p>	<h1 style="color: #FFD700;">R</h1> <p><b>Reliable?</b></p> <p>Check information before you believe it. Is the person or website telling the truth?</p>	<h1 style="color: #FFFF00;">T</h1> <p><b>Tell Someone</b></p> <p>Tell an adult if someone or something makes you feel worried or uncomfortable.</p>
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Be SMART: make sure you're safe with privacy settings ON and tell a trusted adult if you are worried..





# COMPUTING: CREATING MEDIA KNOWLEDGE ORGANISER

Year 4 Summer



## Overview



### Photo Editing

- You should already know that we can use digital devices to help us to take and edit photographs.
- There are many different apps and programs to edit and improve photos, for example Photoshop, Luminar and paint.net
- There are lots of different ways that we can edit photographs, for example cropping, rotating, flipping, and changing colours and styles.
- We should understand the not all photographs that we see are real – they may have been edited.



## Using Software

Paint.net is one example of photo editing tool, but many others are available. Below is how to select, copy and paste in new elements to edit your photograph.

1. Open the photo and use the 'lasso select' tool to select the area that you need.



2. Right click on the image and select 'copy.'



3. Open the image that you want your copied photo in. Select 'paste.'



4. Use the handles to resize the image, and drag into position.



The 'Adjustments' tab allows us to turn the photo black and white, and change contrast & brightness.



The 'clone stamp' copies pixels from one part to another. 'Recolor' is used to replace colours. 'Magic wand' allows areas with a similar colour to be selected.



When we want to save our edit, we should click on this icon or the 'save' button. We can reverse the last thing we have done with the undo tool.



## Editing Techniques

Below are a number of different ways that we can edit photographs.



When we only need a part of a photograph, we can crop the image. We can also enlarge and reduce the parts that we need.



We can make more than one of an image by copying it. We can also rotate and flip images to create different effects.



Photograph editing programs often have filters. These can change the colours in a photograph. Different colours can give us different feelings.



When the lighting of the photograph is not quite right, we can change the brightness of the photograph.



We can add and remove parts of a photograph by using cut, copy and paste tools.



We can change the contrast of photographs, making the subjects clearer.

## Considerations of Edited Photos

-As photographers and editors become more skillful, and editing programs become more advanced, it can be hard to tell if images are real or edited.

-We therefore need to be alert, and not believe everything we see. We should also edit photos for positive, and not negative reasons (see right).



### Positive Reasons for Editing Photos

- To make things clearer;
- To highlight the important things;
- To show things in a nice way;
- To avoid embarrassment.

### Negative Reasons for Editing Photos

- To try to deceive people;
- To embarrass or put down others;
- To spread fake news or dishonest ideas.

## Important Vocabulary

Photography

Editing

Software

Crop

Rotate/Flip

Copy

Brightness

Contrast

Enlarge

Reduce





# LKS2 Online Safety



## What should I already know about privacy?

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## What should I already know about age restrictions?

Use Net Aware to check the age restrictions

App aware

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## Privacy: Stay Safe. Be SMART!

- Be careful. Information you put online may be seen and used by others.
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Has Lola been SMART and stayed safe? What advice would you give and why?

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Be SMART: make sure you're safe with privacy settings ON and tell a trusted adult if you are worried..



# COMPUTING SYSTEMS AND NETWORKS KNOWLEDGE ORGANISER

## Overview



### Systems

- You should also know that information technology (I.T.) includes computers and things that work with computers.
- You should also know that computers have Input, Process and Output (IPO) components.
- Computer systems are built using a number of parts.
- Computer systems can communicate with other devices.
- There are many, many different kinds of computer systems all around the world, ranging from small-scale to large scale.

## Systems

- Systems are a set of things working together as parts of a whole.
- Computer systems are made up of inputs (something that sends a message to the device), processes (the way the device acts on the message) and outputs (something that is sent out by the device). Below are some examples.

### Washing Machine:

- Input:** Dials and buttons.
- Process:** The computer inside follows a program.
- Output:** The clothes are washed and the display shows the remaining time.



### DVD Player:

- Input:** The disc is inserted and play is pressed on the remote.
- Process:** The system reads the information on the disc
- Output:** The screen displays the movie/ show.



### Smart Locker:

- Input:** The customer scans in a barcode.
- Process:** The code is recognised by the system.
- Output:** The correct locker is opened.



## Transferring Information

### Protocols and Packets

- Protocols are an agreed way of doing something. When we communicate, we use an agreed set of protocols (greeting, speaking, listening, etc.).
- In computing, agreed protocols are the way that computers communicate with one another.
- The digital information they send is called a 'packet.'



### IP Addresses

- Computers and their users are not always in the same place as one another.
- With billions of computers around the world, computers need to send the information to the correct place.
- To do this, computers use special addresses called IP addresses. They may look like this:

From: 216. 58. 1. 214

To: 216. 64. 1. 20

My IP Address  
63.255.173.183



## Working Together

- Collaborating is another word for working together on something, to reach a shared goal.
- The internet can be used to help people collaborate online, even when they are a long distance apart!
- 'Chat' functions can be used keep each other updated with new information.
- Shared 'cloud' spaces and online drives can allow one or more person to have access to/ edit documents.
- When building upon someone else's work, you need to be aware of copyright and intellectual property rules.



## Important Vocabulary

System

Input

Process

Output

Protocol

IP Address

Packet

Reuse

Explore

Collaboration

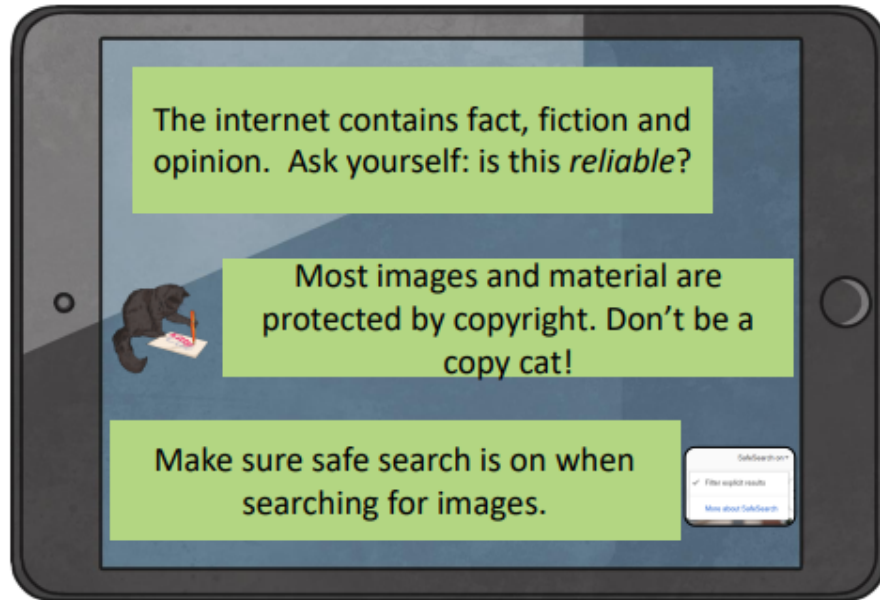


# UKS2 Online Safety



## Information online: is it *reliable*? Can you use it? Be SMART!

### What do I already know from Years 1 - 4?



### NEW LEARNING! Is all you see and hear to be believed?



Search engines, such as Google, work by indexing websites and ranking the pages. The results are ranked. Websites can pay to have their results displayed towards the top. **Check! Use a different key word search.**



The internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads. **Check! Read the URL and check the extension (.com etc) before clicking a link.**



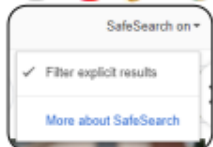
Searching using voice services is handy. But, these are provided by large companies who make money from links. Sometimes voice-activated searching gives one result. Is that the only result? **Check!**



Some people share false news online. Sometimes what we see and read is a 'hoax'. Think carefully before sharing something. Is it **reliable**? Or is it fake and a hoax? **If in doubt: do not share!**



Copying someone else's work and pretending it is yours is plagiarism. If you use text or images from online, then you need to **reference** this. **Quote the publisher, the URL and the date you accessed it.**



- ✓ Make sure 'safe search' is on.
- ✓ Use YouTube Kids to help you find safe videos and media.
- ✓ Check results by searching for different key words.
- ✓ Check the search results: are they an advert? A real website? Look at the URL and look for the padlock.

**Be SMART: make sure you're safe with privacy settings ON. Check all links before you click on them! Tell a trusted adult if you are worried.**





# COMPUTING: PROGRAMMING

Year 6 Summer

## KNOWLEDGE ORGANISER



### Overview



#### Using Micro:bits

- **Programming** is when we make a set of instructions for computers to follow.
- **Micro:bits** are small computers that perform different actions based on programs written on computer software. Programs are then downloaded to the micro:bit.
- Micro:bits have a range of **input sensors** that can be used as input triggers for different codes to run.
- Output devices on Micro:bits (e.g. LED displays) can be programmed to display words, pictures and numbers.



### Using Micro:bit Software

- **Software Interface:** Just like other programming software, the micro:bit interface has programming blocks and a programming area. The emulator gives a simulation for testing code.



- **Basic Blocks:** Can be used to do things like display images, text and pictures on the LED display. They should be placed into the 'on start' or 'forever' blocks.



- **Input Blocks:** Enables the user to create 'triggers' using different parts of the micro:bit device, e.g. 'on button ... pressed.'



- **Logic Blocks:** Allow conditions to be set. E.g. 'if, then, else' blocks allow us to set actions for when certain conditions are met (true), and alternative actions for when they are not met (false).



- **Math Blocks:** Includes numbers and sums in programs. The 'pick random number' block can allow different codes to run dependent on the random number generated.



### The Basics of Micro:bits

- **What is a Micro:bit?** A micro:bit is a pocket-sized computer. We can write programs on our computers which can then be transferred to micro:bits to run.
- Micro:bits have an LED light display, buttons, sensors and many input/output features that we can program.



#### The Parts of a Micro:bit - Front

1. **A and B buttons:** make things happen.
2. **LED Display:** shows words, pictures, numbers.
3. **Light Sensor:** Measures the light that falls onto the micro:bit.
4. **Input and Output Pins:** Connects the micro:bit to other devices.



#### The Parts of a Micro:bit - Rear

5. **Temperature Sensor**
6. **Compass**
7. **Accelerometer** – Detects movement
8. **Radio Communication** – to communicate with other micro:bits and devices.
9. **USB Port** – Connects device to computer.
10. **Reset Button**
11. **Battery Socket** – to power away from the computer.
12. **Processor** – The 'brain' of the device.

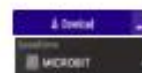


### Transferring to Micro:bit

Micro:bit can be connected to the computer using a USB cable.



1. Select 'download'
2. Locate the file in the downloads folder.
3. Copy the file from the MICROBIT drive.
4. Run the program on the micro:bit.



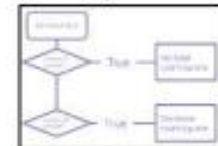
- Micro:bit will only run code that has been downloaded. If code is changed in the editor, it will need to be downloaded again in order to run on the micro:bit.

### Sensing Inputs

- There are a number of input sensors on micro:bits, including the buttons, light sensor, accelerometer, compass, temperature sensor and GPIO pins.

- We can create **algorithms** that enable different codes to run depending upon what is detected by different sensors.

- Remember to **trial** your programs and to **debug** them if there are sequence, keying, or logical errors.



### Important Vocabulary

Programming

Micro:bit

LED

Sensor

Random

Condition

Accelerometer

Sequence

Emulator

Motion

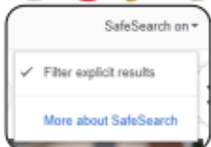
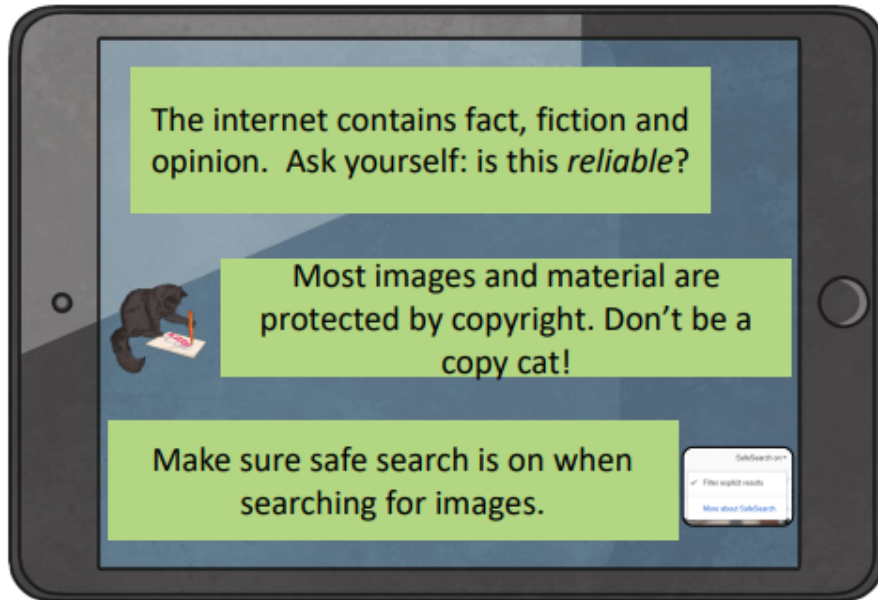


# UKS2 Online Safety



## Information online: is it *reliable*? Can you use it? Be SMART!

### What do I already know from Years 1 - 4?



- ✓ Make sure 'safe search' is on.
- ✓ Use YouTube Kids to help you find safe videos and media.
- ✓ Check results by searching for different key words.
- ✓ Check the search results: are they an advert? A real website? Look at the URL and look for the padlock.

### NEW LEARNING! Is all you see and hear to be believed?



Search engines, such as Google, work by indexing websites and ranking the pages. The results are ranked. Websites can pay to have their results displayed towards the top.  
**Check! Use a different key word search.**



The internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads.  
**Check! Read the URL and check the extension (.com etc) before clicking a link.**



Searching using voice services is handy. But, these are provided by large companies who make money from links. Sometimes voice-activated searching gives one result. Is that the only result? **Check!**



Some people share false news online. Sometimes what we see and read is a 'hoax'.

Think carefully before sharing something. Is it **reliable**? Or is it fake and a hoax?

**If in doubt: do not share!**



Copying someone else's work and pretending it is yours is plagiarism.

If you use text or images from online, then you need to **reference** this. **Quote the publisher, the URL and the date you accessed it.**

Be SMART: make sure you're safe with privacy settings ON. Check all links before you click on them! Tell a trusted adult if you are worried.