



# COMPUTING: PROGRAMMING

Year 1 Spring

## KNOWLEDGE ORGANISER



### Overview

#### Moving a Robot



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



- **Robots** are one type of machine that can follow programs. Floor robots include Bee-bots and Blue-bots.



- Floor robots have **buttons** which help us to direct them. We can use algorithms (a set of guidelines to perform a task) to program floor robots along **routes**.

### Robots and Floor Robots

- **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.



- **Bee-bots:** Bee-bots are a type of floor robot.

- We can programme Bee-bots to move around.



- **Turning on a Bee-bot:** Before we use a Beebot, 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. Switch it back off again after you have finished using it.



Bee-bots should only be used on the floor, and not tables etc. They can be damaged if they fall from high surfaces. (Other floor robots, e.g. Blue-bot, can also be used).

### Buttons and Programs

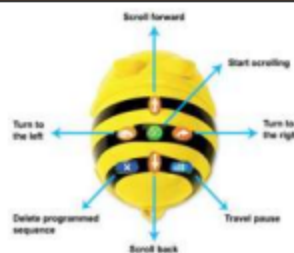
- **Buttons:** Bee-bots have buttons on the top. They each make the Beebot do something different (see picture).

- The arrows move the Bee-bot in different directions.

- The GO button makes the Bee-bot start its program. (on some models, it also pauses the Beebot in-program).

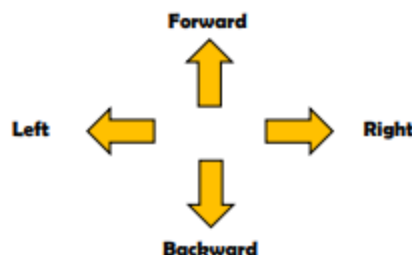
- **Programs:** A program is a series of instructions. We can program the Bee-bot by pressing the direction buttons (in order) that we want it to move in, followed by GO.

- The X button makes the Bee-bot delete the program and make a new program. Switching the Bee-bot off and on again also deletes the program.



### Directions

- In order create clear routes for our Bee-bots, we need to be sure of our directions.



Make sure that you stand **behind** Bee-bot.

### Routes and Algorithms

- A **route** is the course that we travel to get somewhere. We use **algorithms** (a set of guidelines to complete a task) to program our floor robot to take a route to where we want it to go.



- We should think carefully about how to avoid obstacles. We should also consider how many times we need to press each button to travel the correct distance.

### Important Vocabulary

Programmed

Robot

Algorithm

Button

Direction

Forward

Backward

Left

Right

Route



# 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.

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.**

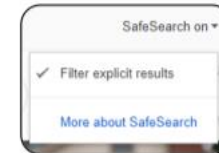
Some information is OK to share online.

- ✓ 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.

- ✓ 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.



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

- ⊗ If someone is unkind **several times on purpose then this could be bullying (STOP!)**
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**1** People you don't know are strangers. They're not always who they say they are.

**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.







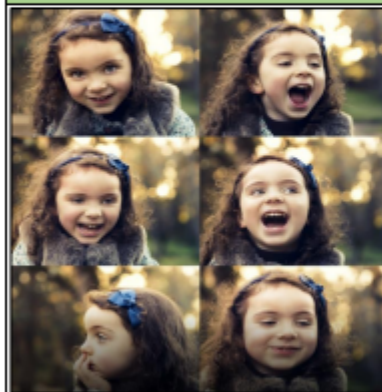
# COMPUTING: CREATING MEDIA

## KNOWLEDGE ORGANISER

Year 2 Spring



### Overview

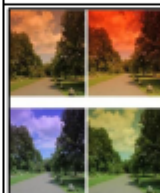


#### Digital Photography

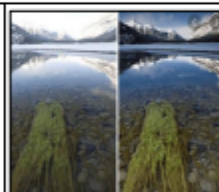
- We can use digital devices to help us to take and edit photographs.
- Many different devices can be used to take photographs, for example digital cameras, phones, tablets and webcams.
- We can also use lots of different apps and programs to edit and improve photos, for example Photoshop, Luminar and Pixlr.
- We should understand the not all photographs that we see are real – they may have been edited.

### Editing Techniques

Editing is when we add, change and remove things to get the result that we want. Many things can be edited in photographs 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.



You can also change the contrast of a photograph. This can make the subjects become clearer or more blurry.



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



There are features that we can add or remove from the photograph whilst editing. E.g. removing red eyes.



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

### Taking Photographs

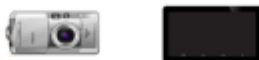
Photography is a way of making a picture using a camera.

-There are lots of different photography devices (things that we can take photographs on).

e.g. smartphones, digital cameras and tablets.



-There are also lots of different subjects we can take photos of: e.g. a selfie, an action shot, or a beautiful scene.



#### How to take a photograph

1. Hold the device firmly with both hands
2. Point the camera at the subject.
3. Look at the viewing screen.
4. Move the device to get the shot that you want.
5. Press the capture button.

Choose landscape or portrait.



### Real or Edited?

-There are lots of different ways that images can be changed. Sometimes it is hard to tell whether a photograph is real or has been changed.

-The software for editing photographs is becoming better, and people are getting more skilled at using it.

-People may change a photograph to make it look as though it is real, but in fact it is edited

-They may do this to try and advertise a product or present something in a different way. Do not always believe what you see!



### Important Vocabulary

Photography

Editing

Software

Digital

Portrait

Landscape

Scene

Subject

Lighting

Colour



# KS1 Online Safety



| Communicating | Online bullying | Privacy | Information online |
|---------------|-----------------|---------|--------------------|
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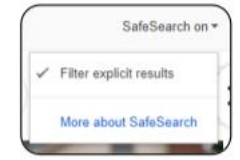
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# COMPUTING: CREATING MEDIA

## KNOWLEDGE ORGANISER

Year 3 Spring



### Overview

#### Animation



- Animation is a technique used to make objects and drawings appear as if they are moving.
- Stop-frame animation is a technique in which many photographs are taken of objects, with small movements in between.
- When the images are quickly shown together, the objects appear to move! (They are animated).
- There are many stop-frame animation apps and programs, for example iMotion, Stop Motion Studio and Clayframes.

### Creating a Basic Animation

iMotion is one of many apps that you can use to create animation. You can create a new animation by selecting the 'new movie' option.



#### Setting Up

- Select 'manual.' Type in the movie title.
- Tap 'Start'. Turn on 'onion skinning'
- Make sure that your object/ drawing is in the frame (can be seen by the camera).



#### Creating the Animation

- Take a picture of your object/ drawing (press 'capture').
- Change the object/drawing very slightly. If drawing, keep a faint line of the original drawing to show you where to go next (onion skinning). Capture again.
- Repeat the process lots of times.

### Introduction to Animation

Animation is a technique used to make objects and drawings appear to move.



Animations have been around for many years – even before computers! Stop-frame animations work in the following way:

- A number of pictures are drawn or taken of an object or picture.
- In each drawing or picture, the object has been moved slightly. Each picture is called a frame.
- When the frames are shown in a sequence, an illusion is created where it looks as though the object is moving!



Lots of movies and TV programmes are animated. These include cartoons, and films like *Wallace and Grommit* and *Chicken Run*.



- In recent years, lots of stop-frame apps and programs have been released, which can be used to make homemade animations!

**Playback and Saving:** When you are finished, press 'stop' and then 'stop' again. Your animation will begin playing. You can change the speed (frames per second). Press 'export' to save your animation.



### More Complex Animations



Storyboards can be used to plan animations. They help you to plan your different frames.



-Consistency is important. In each frame, we need to think about which things stay the same (e.g. background), and which things change.



-Add music by tapping 'audio.' You can add in soundtracks, your own music, or sound effects. Tap + to select the track that you want. Carefully choose when the audio starts/ stops.



-You can also add text into your animation. Tap on the frame that you want to enter text into. Tap T for text. You can choose different fonts, and select where you want the text to appear.

### Important Vocabulary

Animation

Frame

Illusion

Sequence

Onion Skinning

Playback

Storyboard

Audio

Consistency

Text





# 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



|   |   |   |  |   |
|---|---|---|--|---|
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|---|---|---|--|---|

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

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



# COMPUTING: PROGRAMMING

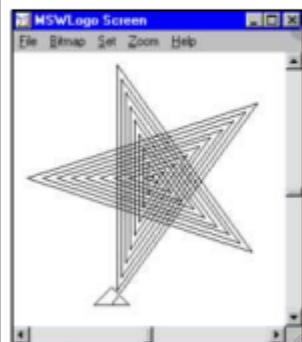
Year 4 Spring

## KNOWLEDGE ORGANISER



### Overview

#### Repetition in Shapes



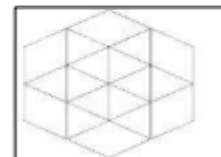
- **Programming** is when we make a set of instructions for computers to follow.
- **Logo** is a text-based program that we can use in order to create shapes and patterns.
- We use **algorithms** (a set of instructions to perform a task) which we can plan, model and test, in order to create accurate and imaginative shapes and patterns.

### Programming Patterns

- **Patterns:** Patterns are things that repeat in a logical way. In everyday life, patterns are everywhere!

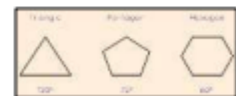


- **Patterns in Logo:** Instead of typing in the code to create each individual shape, we can save time by repeating a sequence of instructions. We use the 'repeat' function.



- **Repeat:** Type the command 'repeat' — this repeats commands a set number of times. The number following repeat is the number of times to repeat the code, and the code to be repeated is in square brackets, e.g. repeat 4 [FD 100 LT 90]

The above code will repeat FD 100 LT 90 four times.



- **Creating Shapes and Loops:** To make shapes, we need to know the angles of corners of different shapes (see right). Using the repeat function with shapes can help us to make spirals.



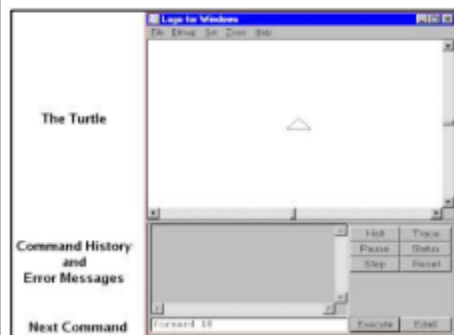
### The Basics of FMS Logo

- **What is FMS Logo?** Logo is a text-based programming language, where we can type commands which are then drawn on the screen.

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



#### The Display:



#### Basic Commands:



- **FD:** Forwards. Always followed by a space and the number of steps, e.g. FD 50
- **BK:** Backwards. As above, e.g. BK 50
- **LT:** Left turn. Always followed by a space and then the degrees to turn, e.g. LT 90
- **RT:** Right turn. As above, e.g. RT 90
- **CS:** Clears any pen marks on your screen and gets the turtle back to the centre.
- **PU:** Stops turtle from leaving a pen trail.
- **PD:** Makes turtle leave a pen trail again.

### Sequencing and Algorithms

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

- We design **algorithms** (sets of instructions for performing a task) to help us program the sequence that we require to achieve our desired outcomes.



- **Programming** is the process of keying in the code recognized by the computer (using your algorithm).

### Trialling and Debugging

- Programmers do not put their computer programs straight to work. They **trial** them first to find any errors:

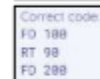


- **Sequence errors:** An instruction in the sequence is wrong or in the wrong place.

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

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

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



### Important Vocabulary

Programming

Logo

Turtle

Commands

Code

Cursor

Algorithm

Pattern

Sequence

Debugging





# LKS2 Online Safety



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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..





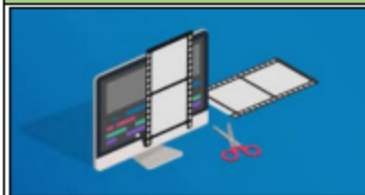
# COMPUTING: CREATING MEDIA

## KNOWLEDGE ORGANISER

Year 5 Spring

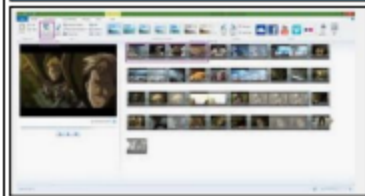


### Overview



#### Video Editing

- You should already know that video means the recording, reproducing and broadcasting of visual images (often accompanied by audio).
- Video is made up of a sequence of images shown in quick succession, giving the impression of movement.
- Many different devices can be used to record, edit and playback video and sound.
- Theme, setting, characters, colour, sound, and dialogue are all important features of video.



### Editing Videos

Windows Movie Maker is one example of a video editing tool, but many others are available. Examples include WeVideo, Nero Video, and Apple iMovie.



In order to edit your video, you first need to import it from your device to the computer. You then need to import it into Movie Maker by clicking 'Add videos and photos.'



By right-clicking on the video thumbnail, you can choose to 'split' the video into pieces. The different pieces can be moved or deleted.



The trim tool allows you to move excess video from the beginning or the end.



A number of special effects are available, including using animations and transitions between shots. You can also add text in captions.

Remember to save your project regularly. You need to save your project as a \*.wmv file so that you can continue to edit it.



### Features of Videos

Videos present moving images, often accompanied by sound. The following features are commonly found in videos.



Plot means the main events in the video, shown in a sequence. Plot features are caused by and affect one another.



Themes are the main ideas that run through the video, e.g. love, friendship, magic, violence.



Most videos, even very short videos, try to give the audience a message. This may be obvious or hidden.



Props are the moveable objects that are used by the actors/ actresses in videos texts.



Dialogue is the name given for the conversations between people in video texts.



Characters are the different people and animals in a story, including in a video.

### Recording Videos



Static Camera: The camera is in a fixed position, sometimes using a stand or tripod. Examples of this in use are during news-reading and weather forecasts.



Zooming: Zooming in means to give a closer view of the subject. Zooming out gives us a further, broader view of the subject. Zooming too close can make the subject appear blurry.



Pan: The camera position is fixed, but moves from side to side.

Tilt: The camera position is fixed, but moves up and down.

#### Top Tips for Recording High-Quality Videos

- Use considered lighting.
- Think carefully about the sounds that you will use, e.g. music and sound effects.
- Think about the use of colour.
- Consider the use of a green screen for settings.

### Important Vocabulary

Video

Audio

Themes

Message

Dialogue

Plot

Props

Zoom

Angle

Pan/Tilt

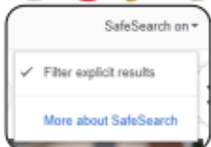
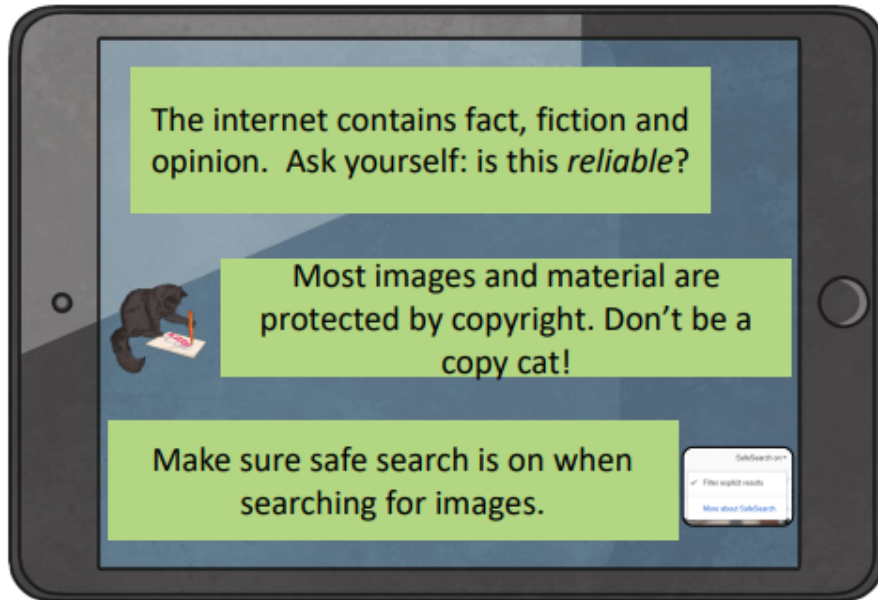


# UKS2 Online Safety



## 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.





# COMPUTING: CREATING MEDIA

## KNOWLEDGE ORGANISER

Year 6 Spring



### Overview



#### Web Page Creation

- A **webpage** is a **hypertext** document that is a part of the World Wide Web.
- Websites** are a collection of webpages about the same topic. They can be found using **browsers**.
- Examples of websites are **Amazon** and **YouTube**. Webpages are the different pages on the websites.
- Websites are created for a chosen **purpose**, and with a particular **audience** in mind.
- They include **navigation paths**, and must adhere to copyright and fair use of media rules.

### Creating a Webpage

Google Sites has been used in these examples, but lots of other web page creation software and apps are available, with similar tools and functions.

**Setting Up:** Click + to start a new website. Click on the top left to add a website name and the top centre to add a page title.

**Text Box:** Lets you add different sections of text.

**Images:** Add in pictures from your computer or from the internet.

**Header:** You can add images used in the header, and the type of header, by clicking on these options.

The **layouts** feature lets you set out your page in different ways. There are six for you to choose from.

Most websites contain a home page, which introduces the website. The other pages (sub-pages) on the website go into more detail about individual topics.

### Features of Good Websites

Websites can be found using browsers. Browsers allow us to find our way around the worldwide web, and show us what websites look like.

- The website name is usually visible in large font, particularly on the home page.
- There is often a slogan/ logo and short description of what the website is about.
- The search allows you to find different things on the website.
- The menus at the top of the page allow you to look at different parts of the website.
- Pictures are used to highlight what the text is about. Colours are used carefully.
- There are links to other areas of the website/ World Wide Web (in blue).
- Webpages are made up of a code called Hypertext Markup Language (HTML). You can find this by right-clicking on a page and selecting 'Inspect'.

### Making Effective Web Pages

**Purpose:** The purpose is the reason for your web page – what is it for? You should make sure that your web page meets its purpose.

**Audience:** The audience are the people who your web page is aimed at. You should make decisions with your target audience in mind.

**Copyright:** You should only use images that are copyright-free. Many images are owned by people/ companies and cannot just be reused.

**Navigation Pathways**  
Navigation Pathways are also known as breadcrumb trails.

- Hyperlinks allow different pages to be linked together.
- These links help the audience to navigate the website easily.
- The user can also keep track of where they have been on the website.

### Important Vocabulary

Web Page

Website

Domain

Hypertext

Purpose/ Audience

Browser

Copyright

Homepage

Navigation Pathways

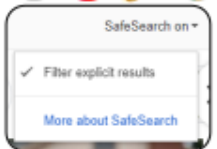
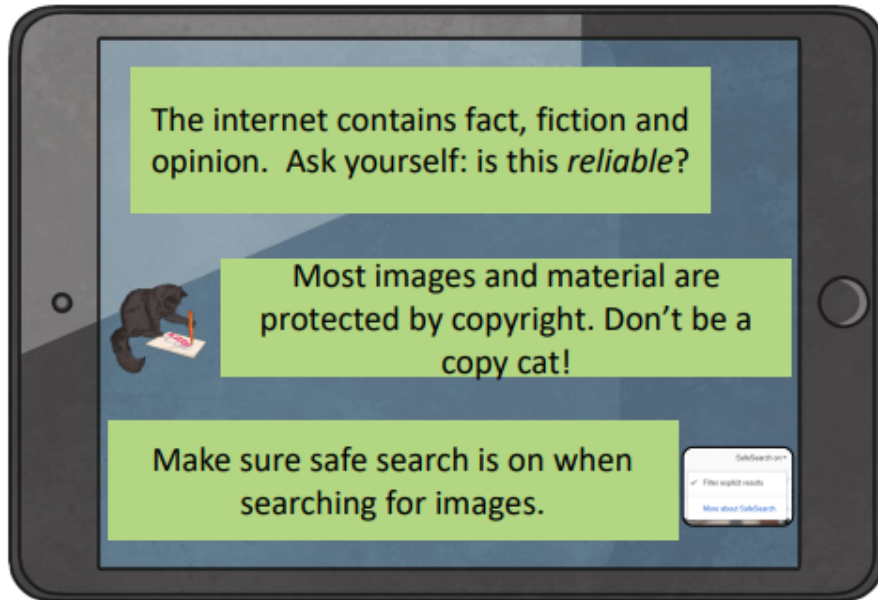


# UKS2 Online Safety



## 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.**