

## Computing - Key Stage 2 Long Term Plan 2021/ 2022

### Autumn 1

### Autumn 2

#### Computing Systems and Networks

#### Creating Media

#### Connecting Computers

#### Stop frame animation

Year  
3

Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.

Capturing and editing digital still images to produce a stop-frame animation that tells a story.

**1. How does a digital device work?**

- This lesson introduces the concepts of input, process, and output. These concepts are fundamental to all digital devices.

**2. What parts make up a digital device?**

- In this lesson, children will develop their knowledge of input, process, and output and apply it to devices and parts of devices that they will be familiar with in their everyday surroundings.

**3. How do digital devices help us?**

- In this lesson, children will apply their learning from lessons 1 and 2 by using programs in conjunction with inputs and outputs on a digital device.
- They will create two pieces of work with the same focus, using digital devices to create one piece of work, and non-digital tools to create the other.

**1. Can a picture move?**

- Children will discuss whether they think that a picture can move.
- They will learn about simple animation techniques and create their own animations in the style of flipbooks (flick books) using sticky notes.

**2. Frame by frame**

- In the previous lesson, children created their own flip book–style animations.
- In this lesson, they will develop this knowledge, and apply it to make a stop-frame animation using a tablet.

**3. What’s the story?**

- Tell the children that during this lesson, they will create a storyboard showing the characters, settings, and events that they would like to include in their own stop-frame animations next lesson.

**4. Picture Perfect**

- In the previous lesson, children planned out their own stop frame animations in a storyboard.

- They will then compare and contrast the two approaches.

**4. How am I connected?**

- Many digital devices are now connected to other digital devices, e.g. computers through wires, tablets through WiFi, and smartphones through mobile phone networks. The benefit of connecting digital devices is that it allows information to be shared between users and systems.
- This lesson introduces the concept of connections and moving information between connected devices.
- Children will learn to explain how and why computers are joined together to form networks.

**5. How are computers connected?**

- This lesson introduces key network components, including a server and wireless access points.
- Children will examine each device's functionality and look at the benefits of networking computers.

**6. What does our school network look like?**

- In this lesson, children will further develop their understanding of computer networks.
- They will see examples of network infrastructure in a real-world setting and relate them to the activities in the last lesson.

- This lesson, they will use tablets to carefully create stop frame animations, paying attention to consistency.

**5. Evaluate and make it great**

- Last lesson, children created their own stop frame animations.
- This lesson, they will evaluate their animations and try to improve them by creating a brand-new animation based on their feedback.

**6. Lights, camera, action!**

- Last lesson, children perfected their stop frame animations.
- This lesson, they will add other media and effects into their animations, such as music and text.

**Computing Champions**

Mary Keller

**Computing Champions**

Victor B Lawrence

	<p style="text-align: center;"><b><u>Career Profile</u></b></p> <p style="text-align: center;">A Network Administrator</p>	<p style="text-align: center;"><b><u>Career Profile</u></b></p> <p style="text-align: center;">Data Entry Clerk</p>
	<p style="text-align: center;"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Privacy and Security</u></b></p> <p>To describe how connected devices can collect and share anyone’s information with others.</p> <p><b><u>Managing Online Information</u></b></p> <p>To explain the difference between a ‘belief’, an ‘opinion’ and a ‘fact. and can give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc.</p>	<p style="text-align: center;"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Copyright and Ownership</u></b></p> <p>To explain why copying someone else’s work from the internet without permission isn’t fair and can explain what problems this might cause.</p> <p><b><u>Health, well being and Lifestyle</u></b></p> <p>To explain why spending too much time using technology can sometimes have a negative impact on anyone; I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged.</p>

	<b><u>Spring 1</u></b>	<b><u>Spring 2</u></b>
	<b><u>Creating Media</u></b>	<b><u>Data and Information</u></b>
<b>Year 3</b>	<p style="text-align: center;"><b>Desktop Publishing</b></p> <p>Creating documents by modifying text, images, and page layouts for a specified purpose.</p> <ol style="list-style-type: none"> <li><b>1. Words and Pictures</b> <ul style="list-style-type: none"> <li>● In this lesson, children will become familiar with the terms 'text' and 'images' and understand that text and images need to be used carefully to communicate messages clearly.</li> <li>● Children will be able to give advantages and disadvantages of using text, images, or both text and images to communicate messages effectively.</li> </ul> </li> <li><b>2. Can you edit it?</b> <ul style="list-style-type: none"> <li>● This lesson will build on last week's lesson, in which we looked at using images and text to communicate a message effectively.</li> <li>● In this lesson we will look at desktop publishing. Children will think about how to make careful choices regarding font size, colour, and type in an invitation.</li> </ul> </li> </ol>	<p style="text-align: center;"><b>Branching Databases</b></p> <p>Building and using branching databases to group objects using yes/no questions.</p> <ol style="list-style-type: none"> <li><b>1. Yes or no questions</b> <ul style="list-style-type: none"> <li>● During this lesson, children will start to explore questions with yes or no answers, and how these can be used to identify and compare objects.</li> <li>● They will create their own yes or no questions before using these to split a collection of objects into groups.</li> </ul> </li> <li><b>2. Making groups</b> <ul style="list-style-type: none"> <li>● During this lesson, children will continue to develop their understanding of using questions with yes or no answers to group collections of objects.</li> <li>● They will learn how to arrange objects in a tree structure and will continue to think about which attributes the questions are related to.</li> </ul> </li> <li><b>3. Creating a branching database</b> <ul style="list-style-type: none"> <li>● During this lesson, children will continue to develop their understanding of ordering objects/images in a branching database structure.</li> </ul> </li> </ol>

- The use of the Return, Backspace, and Shift keys will be explored and children will be taught how to type age-appropriate punctuation marks. This will build on the typing skills learned in the Year 1 'Digital painting' unit.
- Children will understand that once content has been added, it can be rearranged on the page.

### 3. **Great template!**

- Children will be introduced to the terms 'templates', 'orientation', and 'placeholders' within desktop publishing software.
- They will create their own magazine template, which they will add content to during the next lesson.
- This lesson has been designed on a laptop using Adobe Spark and this is reflected in the screenshots and videos. Teachers may decide to use the Adobe Spark app, or other software such as Canva or Microsoft Publisher.

### 4. **Can you add content?**

- In this lesson, children will add their own content (text and images) to the magazine templates they created in lesson 3.
- They will copy the information for the front of their magazine from a prewritten document and paste it into the chosen place on their magazine cover. Images will be added from within the search facility in Adobe Spark.
- Teachers could ask learners to gather copyright-free images from <http://www.pixabay.com> if using a different application.

### 5. **Lay it out**

- They will learn how to use an online database tool to arrange objects into a branching database, and will create their own questions with yes or no answers.
- The children will show that their branching database works through testing.

### 4. **Structuring a branching database**

- During this lesson, children will continue to develop their understanding of how to create a well-structured database.
- They will use attributes to create questions with yes or no answers and apply these to given objects.
- The children will be able to explain why questions need to be in a specific order and will compare the efficiency of different branching databases.

### 5. **Using a branching database**

- During this lesson, children will independently create a branching database that will identify a given object.
- They will continue to think about the attributes of objects to write questions with a yes or no answer, which will enable them to separate a group of objects effectively.
- The children will then arrange the questions and objects into a tree structure, before using their branching database to answer questions.

### 6. **Presenting Information**

- During this lesson children will understand that there are other ways to present data than using tally charts and pictograms.
- They will use a pre-made tally chart to create a block diagram on their device.

	<ul style="list-style-type: none"> <li>● In this lesson, children will think about the different ways information can be laid out on a page.</li> <li>● They will look at a range of page layouts such as letters and newspapers, and begin to think about the purpose of each of these.</li> </ul> <p><b>6. Why desktop publishing?</b></p> <ul style="list-style-type: none"> <li>● In this lesson, children will explain what desktop publishing means in their own words.</li> <li>● They will think about how desktop publishing is used in the wider world and consider the benefits of using desktop publishing applications.</li> </ul>	<ul style="list-style-type: none"> <li>● Children will then share their data with a partner and discuss their findings. They will consider whether it is always OK to share data and when it is not OK.</li> <li>● They will know that it is alright to say no if someone asks for their data, and how to report their concerns.</li> </ul>
	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center"><b>Johanna Lucht</b></p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center"><b>Mary Keller</b></p>
	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Computer Games Developer</p>	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">A Network Administrator</p>
	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Managing Online Information</u></b></p> <p>To explain that not all opinions shared may be accepted as true or fair by others (e.g. monsters under the bed).</p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Health, well being and Lifestyle</u></b></p> <p>To explain why some online activities have age restrictions, why it is important to follow them and know who I can talk</p>

	<p><b><u>Privacy and Security</u></b></p> <p>To give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult.</p>	<p>to if others pressure me to watch or do something online that makes me feel uncomfortable (e.g. age restricted gaming or web sites).</p> <p><b><u>Self Image and Identity</u></b></p> <p>To explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why.</p>
	<p><b><u>Summer 1</u></b></p>	<p><b><u>Summer 2</u></b></p>
	<p><b><u>Programming A</u></b></p>	<p><b><u>Programming B</u></b></p>

Year  
3

## Sequencing Sounds

Creating sequences in a block-based programming language to make music.

### 1. Introduction to Scratch

- This lesson introduces children to a new programming environment: Scratch.
- They will begin by comparing Scratch to other programming environments they may have experienced, before familiarising themselves with the basic layout of the screen.

### 2. Programming Sprites

- In this lesson, children will create movement for more than one sprite.
- In doing this, they will design and implement their code, and then will create code to replicate a given outcome.
- Finally, they will experiment with new motion blocks.

### 3. Sequences

- In this lesson, children will be introduced to the concept of sequences by joining blocks of code together.
- They will also learn how event blocks can be used to start a project in a variety of different ways.
- In doing this, they will apply principles of design to plan and create a project.

### 4. Ordering commands

## Events and Actions in Programs

Writing algorithms and programs that use a range of events to trigger sequences of actions.

### 1. Moving a Sprite

- In this lesson, children will investigate how characters can be moved using 'events'.
- They will analyse and improve an existing project, and then apply what they have learned to their own projects.
- They will then extend their learning to control multiple sprites in the same project.

### 2. Maze Movement

- In this lesson, children will program a sprite to move in four directions: up, down, left, and right.
- They will begin by choosing a sprite and sizing it to fit in with a given background.
- Children will then create the code to move the sprite in one direction before duplicating and modifying it to move in all four directions.
- Finally, they will consider how their project could be extended to prove that their sprite has successfully navigated a maze.

### 3. Drawing Lines

- This lesson will introduce children to extension blocks in Scratch using the Pen extension.
- They will use the pen down block to draw lines, building on the movement they created for their sprite in Lesson 2.
- Children will then decide how to set up their project every time it is run.



- This lesson explores sequences, and how they are implemented in a simple program.
- Children have the opportunity to experiment with sequences where order is and is not important.
- They will create their own sequences from given designs.

### **5. Looking Good**

- This lesson develops children's understanding of sequences by giving them the opportunity to combine motion and sounds in one sequence.
- They will also learn how to use costumes to change the appearance of a sprite, and backdrops to change the appearance of the stage.
- They will apply the skills in Activity 1 and 2 to design and create their own project, including sequences, sprites with costumes, and multiple backdrops.

### **6. Making an instrument**

- In this lesson, children will create a musical instrument in Scratch.
- They will apply the concept of design to help develop programs and use programming blocks — which they have been introduced to throughout the unit.
- They will learn that code can be copied from one sprite to another, and that projects should be tested to see if they perform as expected.

### **4. Adding Features**

- In this lesson, children will be given the opportunity to use additional Pen blocks.
- They will predict the functions of new blocks and experiment with them, before designing features to add to their own projects.
- Finally, they will add these features to their projects and test their effectiveness.

### **5. Debugging Movement**

- This lesson explores the process of debugging, specifically looking at how to identify and fix errors in a program.
- Children will review an existing project against a given design and identify bugs within it.
- They will then correct the errors, gaining independence as they do so.
- Children will also develop their projects by considering which new setup blocks to use.

### **6. Making a project**

- In this lesson, children will design and create their own projects.
- Using a template (which can be blank or partially completed), children will complete projects to move a sprite around a maze, with the option to leave a pen trail showing where the sprite has moved.
- Ideally, projects will include setup blocks to position the sprite at the start of the maze and clear any lines already on the screen.

	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Victor B Lawrence</p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Johanna Lucht</p>
	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Data Entry Clerk</p>	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Computer Games Developer</p>
	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Self Image and Identity</u></b></p> <p>To explain how people can represent themselves in different ways online.</p> <p><b><u>Online Relationships</u></b></p> <p>To explain what is meant by ‘trusting someone online’, why this is different from ‘liking someone online’, and why it is important to be careful about who to trust online including what information and content they are trusted with.</p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Online Relationships</u></b></p> <p>To explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. sharing images and videos.</p> <p><b><u>Online Reputation</u></b></p> <p>To give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal.</p> <p><b><u>Online Bullying</u></b></p>

		<p>To give examples of how bullying behaviour could appear online and how someone can get support.</p>
	<p><b>Computing - Key Stage 2 Long Term Plan 2021/ 2022</b></p>	
	<p><b><u>Autumn 1</u></b></p>	<p><b><u>Autumn 2</u></b></p>
	<p><b><u>Computer Systems and Networks</u></b></p>	<p><b><u>Creating Media</u></b></p>

Year	The Internet	Audio Editing
4	<p>Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.</p> <ol style="list-style-type: none"> <li><b>1. Connecting Networks</b> <ul style="list-style-type: none"> <li>● Children will explore how a network can share messages with another network to form the internet.</li> <li>● They will consider some of the network devices involved in this, such as routers, and then discuss what we should keep in and out of a network to keep safe.</li> </ul> </li> <li><b>2. What is the internet made of?</b> <ul style="list-style-type: none"> <li>● Children will describe the parts of a network and how they connect to each other to form the internet.</li> <li>● They will use this understanding to help explain how the internet lets us view the World Wide Web and recognise that the World Wide Web is part of the internet which contains websites and web pages.</li> </ul> </li> <li><b>3. Sharing Information</b> <ul style="list-style-type: none"> <li>● Children will explore what can be shared on the World Wide Web and where websites are stored.</li> <li>● They will also explore how the World Wide Web can be accessed on a variety of devices.</li> </ul> </li> <li><b>4. What is a website?</b></li> </ol>	<p>Capturing and editing audio to produce a podcast, ensuring that copyright is considered.</p> <ol style="list-style-type: none"> <li><b>1. Digital recording</b> <ul style="list-style-type: none"> <li>● In this lesson, children will familiarise themselves with digital devices capable of recording sound and/or playing audio.</li> <li>● They will identify devices' inputs (microphone) and outputs (headphones or speakers).</li> <li>● They will consider ownership and copyright issues relating to the recording of audio.</li> </ul> </li> <li><b>2. Recording sounds</b> <ul style="list-style-type: none"> <li>● In this lesson, children will record their own sounds and play back the recorded audio.</li> <li>● They will also listen to a range of podcasts and identify the features of a podcast.</li> </ul> </li> <li><b>3. Creating a podcast</b> <ul style="list-style-type: none"> <li>● In this lesson, children will plan and begin recording their own podcast.</li> <li>● They will also discuss the importance of saving their work and save their recordings as a file.</li> <li>● Note: Due to the amount of time required to plan the podcast content, the written parts of the planning template could be completed in a different subject's lesson (e.g. English, or a subject related to the podcast content).</li> </ul> </li> <li><b>4. Editing digital recordings</b></li> </ol>

- Children will analyse a website and identify the key parts.
- They will then consider what content can be added to websites and what factors they should consider before adding content to a website.
- Finally, they will use a website which enables them to create their own content online.

### **5. Who owns the website?**

- Children will explore who owns the content on the World Wide Web (or 'web' for short).
- They will explore a variety of websites and will investigate what they can and cannot do with the content on them.
- They will also relate this to principles of ownership and sharing in the real world.

### **6. Can I believe what I read?**

- Children will gain an appreciation of the fact that not everything they see on the internet is true, honest, or accurate.
- They will review images and decide whether or not they are real, before looking at why web searches can return ambiguous (and sometimes misleading) results.
- Finally, children will complete a practical activity, demonstrating how quickly information can spread beyond their control.

- In this lesson, children will open their existing work and continue recording their podcast content.
- They will also edit their recordings, for example by changing the volume of the recording or making the recording fade in or out.

### **5. Combining audio**

- In this lesson, children will record additional content for their podcast, such as sound effects or background music.
- The audio will be combined, or mixed, with their existing digital recordings and exported as an audio file.

### **6. Evaluating podcasts**

- In this lesson, children will export their digital recordings so that they can be listened to on a range of digital devices.
- They will give feedback on their own and their peers' podcasts, including areas for improvement.

	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Margaret Hamilton</p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Mark Dean</p>
	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Digital Media Manager</p>	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">App Developer</p>
	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Managing Online Information</u></b></p> <p>To analyse information to make a judgement about probable accuracy and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others.</p> <p><b><u>Managing Online Information</u></b></p> <p>To explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true.</p> <p><b><u>Self Image and Identity</u></b></p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Copyright and Ownership</u></b></p> <p>When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.</p> <p><b><u>Health, well being and lifestyle</u></b></p> <p>To explain how using technology can be a distraction from other things, in both a positive and negative way.</p>

	To explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this.	
	<b><u>Spring 1</u></b>	<b><u>Spring 2</u></b>
	<b><u>Creating Media</u></b>	<b><u>Data and Information</u></b>
<b>Year 4</b>	<p style="text-align: center;"><b>Photo Editing</b></p> <p>Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.</p> <ol style="list-style-type: none"> <li><b>1. Changing digital images</b> <ul style="list-style-type: none"> <li>● In this lesson, children will be introduced to the online editor, and changes that can be made to images using a range of tools.</li> <li>● They will look at changing the composition of images using the 'crop' tool, and evaluate the effect that this can have on an image.</li> </ul> </li> <li><b>2. Changing the composition of images</b> <ul style="list-style-type: none"> <li>● In this lesson, children will identify changes that have been made to edited images.</li> <li>● They will search for and save images from a copyright-free website.</li> </ul> </li> </ol>	<p style="text-align: center;"><b><u>Data Logging</u></b></p> <p>Recognising how and why data is collected over time, before using data loggers to carry out an investigation.</p> <ol style="list-style-type: none"> <li><b>1. <u>Answering questions</u></b> <ul style="list-style-type: none"> <li>● This lesson will set the scene for the unit of work.</li> <li>● Children will consider what data can be collected and how it is collected.</li> <li>● They will think about data being collected over time.</li> <li>● Children will also think about questions that can and can't be answered using available data, and reflect on the importance of collecting the right data to answer questions.</li> <li>● Later in the unit, children will put into practice the ideas that they have thought about in this lesson.</li> </ul> </li> <li><b>2. Data collection</b></li> </ol>

- Children will then use an image editor to make a new image composition linked to a cross-curricular theme.

### 3. Changing images for different uses

- In this lesson, children will look at the effect that different colours and filters can have on an image.
- They will choose appropriate effects to fit a scenario, and explain how they made their choices.
- They will then edit the same original image using different effects to suit two different scenarios, and compare the two versions.

### 4. Retouching images

- This lesson is based on editing images by using retouching tools.
- Children will consider why people may choose to retouch images, and the positive and negative effects that retouching can have on images.
- They will use retouching tools to improve images, and consider which tools are appropriate for retouching.

### 5. Fake Images

- This lesson is based on the concept of fake images. Children will sort images into 'fake' and 'real', and give reasons for their decisions.
- They will create their own fake images and reflect on how easy it is to digitally alter images, and what this might mean for the images that they see around them.

### 6. Making and evaluating a publication

- This lesson is the final lesson in the unit on photo editing.

- This lesson will build on the idea of collecting data over time, and introduce the idea of collecting data automatically using computers.
- Computers can capture data from the physical world using input devices called 'sensors'.
- Sensors can be connected to data loggers, which can collect data while not attached to a computer.
- Data collected by a data logger can be downloaded for use later.

### 3. Logging

- In this lesson, children will explore how data loggers work.
- They will try recording data at set moments in time and draw parallels with the data points that a data logger captures at regular intervals.
- They will use data loggers independently from a computer, then they will connect the loggers to a computer and download the data.

### 4. Analysing Data

- In this lesson, children will open an existing data file and use software to find out key information.
- The data file is a five-hour log of hot water cooling to room temperature.
- Note: The logged activity can't be done safely in school due to the high starting temperature.
- Later in the unit, children may choose to complete a warming experiment, starting with ice and allowing it to warm to room temperature.

### 5. Data for answers



	<ul style="list-style-type: none"> <li>● Children will use the ‘fake’ image that they created in lesson 5 to make a publication designed to advertise their imaginary place.</li> <li>● They will add elements such as text, shapes, and borders.</li> <li>● They will design a survey for gaining feedback on their work, and compare their completed publications with the original images.</li> </ul>	<ul style="list-style-type: none"> <li>● In this lesson, children will think about questions that can be answered using collected data.</li> <li>● They will choose a question to focus on and then plan the data logging process that they need to complete.</li> <li>● After they have completed their plan, they will set up the data loggers to check that their plan will work. This setting up is designed to ensure that the data collection will work, and that children will have data to use in Lesson 6.</li> </ul> <p><b>6. <u>Answering my question</u></b></p> <ul style="list-style-type: none"> <li>● In this lesson, children will access and review the data that they have collected using a data logger.</li> <li>● They will then use the data collected to answer the question that they selected in Lesson 5.</li> <li>● Children will also reflect on the benefits of using a data logger.</li> </ul>
	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Markus Alexej Persson</p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Margaret Hamilton</p>
	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">IT Project Manager</p>	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Digital Media Manager</p>
	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Copyright and Ownership</u></b></p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Privacy and Security</u></b></p> <p>To explain that internet use is never fully private and is monitored, e.g. adult supervision.</p>

	<p>To give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images.</p> <p><b><u>Privacy and Security</u></b></p> <p>To describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not sure.</p>	<p><b><u>Self Image and Identity</u></b></p> <p>To describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them.</p>
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	<b><u>Summer 1</u></b>	<b><u>Summer 2</u></b>
	<b><u>Programming A</u></b>	<b><u>Programming B</u></b>
Year  4	<p style="text-align: center;"><b>Repetition in Shapes</b></p> <p>Using a text-based programming language to explore count-controlled loops when drawing shapes.</p> <p><b>1. Programming a screen turtle</b></p> <ul style="list-style-type: none"> <li>● This lesson will introduce children to programming in Logo.</li> <li>● Logo is a text-based programming language where children type commands that are then drawn on screen.</li> </ul>	<p style="text-align: center;"><b>Repetition in Games</b></p> <p>Using a block-based programming language to explore count-controlled and infinite loops when creating a game.</p> <p><b>1. Using loops to create shapes</b></p> <ul style="list-style-type: none"> <li>● In the first lesson, children look at real-life examples of repetition, and identify which parts of instructions are repeated.</li> <li>● They then use Scratch, a block-based programming environment, to create shapes using count-controlled loops.</li> <li>● They consider what the different values in each loop signify, then use existing code to modify and create</li> </ul>

- They will learn the basic Logo commands, and will use their knowledge of them to read and write code.

## 2. Programming Letters

- In this lesson, children will create algorithms (a precise set of ordered instructions, which can be turned into code) for their initials.
- They will then implement these algorithms by writing them in Logo commands to draw the letter.
- They will debug their code by finding and fixing any errors that they spot.

## 3. Patterns and Repeats

- In this lesson, children will first look at examples of patterns in everyday life.
- They will recognise where numbers, shapes, and symbols are repeated, and how many times repeats occur.
- They will create algorithms for drawing a square, using the same annotated diagram as in Lesson 2.
- They will use this algorithm to program a square the 'long' way, and recognise the repeated pattern within a square.
- Once they know the repeated pattern, they will use the repeat command within Logo to program squares the 'short' way.

## 4. Using loops to create shapes

- In this lesson, children will work with count-controlled loops in a range of contexts.

new code, and work on reading code and predicting what the output will be once the code is run.

## 2. Different Loops

- In this lesson, children look at different types of loops: infinite loops and count-controlled loops.
- They practise using these within Scratch and think about which might be more suitable for different purposes.

## 3. Animate your name

- In this lesson, children create designs for an animation of the letters in their names.
- The animation uses repetition to change the costume (appearance) of the sprite.
- The letter sprites will all animate together when the event block (green flag) is clicked.
- When they have designed their animations, the learners will program them in Scratch.
- After programming, children then evaluate their work, considering how effectively they used repetition in their code.

## 4. Modifying a game

- In this lesson, children look at an existing game and match parts of the game with the design.
- They make changes to a sprite in the existing game to match the design.
- They then look at a completed design, and implement the remaining changes in the Scratch game.
- They add a sprite, and re-use and modify code blocks within loops, and explain the changes made.

## 5. Designing a game

- In this lesson, children look at a model project using repetition.

- First, they will think about a real-life example, then they will move on to using count-controlled loops in regular 2D shapes.
- They will trace code to predict which shapes will be drawn, and they will modify existing code by changing values within the code snippet.

#### 5. **Breaking things down**

- In this lesson, children will focus on decomposition.
- They will break down everyday tasks into smaller parts and think about how code snippets can be broken down to make them easier to plan and work with.
- They will learn to create, name, and call procedures in Logo, which are code snippets that can be reused in their programming.

#### 6. **Creating a program**

- In the final lesson, children will apply the skills that they have learnt in this unit to create a program containing a count-controlled loop.
- Over the course of the lesson, they will design wrapping paper using more than one shape, which they will create with a program that uses count-controlled loops.
- They will begin by creating the algorithm, either as an annotated sketch, or as a sketch and algorithm, and then implement it as code.
- They will debug their work throughout, and evaluate their programs against the original brief.

- They then design their own game based on the model project, producing a design and algorithm for sprites in the game.
- They share these designs with a partner and have time to make any changes to their design as required.

#### 6. **Creating our games**

- In this lesson, children build their games, using the designs they created in lesson 5.
- They follow their algorithms, fix mistakes and refine designs in their work as they build.
- They evaluate their work once it is completed, and showcase games at the end.

	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Mark Dean</p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Markus Alexej Persson</p>
	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">App Developer</p>	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Robotics Engineer</p>
	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Online Reputation</u></b></p> <p>To explain ways that some of the information about anyone online could have been created, copied or shared by others.</p> <p><b><u>Online Relationships</u></b></p> <p>To describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming,gaming platforms)</p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Online Bullying</u></b></p> <p>To describe ways people can be bullied through a range of media (e.g. image, video, text, chat).</p> <p><b><u>Health, well being and Lifestyle</u></b></p> <p>To identify times or situations when someone may need to limit the amount of time they use technology e.g. I can suggest strategies to help with limiting this time.</p>

**Computing - Key Stage 2 Long Term Plan 2021/ 2022**

	<u>Autumn 1</u>	<u>Autumn 2</u>
	<u>Computer Systems and Networks</u>	<u>Creating Media</u>
Year  5	<p style="text-align: center;"><b>Sharing Information</b></p> <p>Identifying and exploring how information is shared between digital systems.</p> <ol style="list-style-type: none"> <li><b>1. Systems</b> <ul style="list-style-type: none"> <li>● This lesson introduces children to the concept of a system.</li> <li>● They will develop their understanding of components working together to make a whole.</li> <li>● They will outline how digital systems might work and the physical and electronic connections that exist.</li> </ul> </li> <li><b>2. Computer systems and us</b> <ul style="list-style-type: none"> <li>● In this lesson, children will consider how larger computer systems work.</li> <li>● They will consider how devices and processes are connected.</li> <li>● They will also reflect on how computer systems can help us.</li> </ul> </li> <li><b>3. Transferring Information</b> <ul style="list-style-type: none"> <li>● This lesson introduces the idea that parts of a computer system are not always in the same place</li> </ul> </li> </ol>	<p style="text-align: center;"><b>Video Editing</b></p> <p>Planning, capturing, and editing video to produce a short film.</p> <ol style="list-style-type: none"> <li><b>1. The drawing tools</b> <ul style="list-style-type: none"> <li>● In this lesson children will be introduced to vector drawings and begin to have an understanding that they are made up of simple shapes and lines.</li> <li>● They will use the main drawing tools within a software package.</li> <li>● This unit is written assuming the use of Google Drawings (<a href="https://docs.google.com/drawings/">docs.google.com/drawings/</a>) but other packages such as Microsoft Publisher, or Microsoft PowerPoint can be used if preferred.</li> <li>● They will discuss how vector drawings differ from paper-based drawings.</li> </ul> </li> <li><b>2. Create a vector drawing</b> <ul style="list-style-type: none"> <li>● During this lesson children will begin to identify the shapes that are used to make vector drawings.</li> <li>● They will be able to explain that each element of a vector drawing is called an object.</li> <li>● They will create their own vector drawing by moving, resizing, rotating, and changing the colours of a selection of objects.</li> <li>● They will also learn how to duplicate the objects to save time.</li> </ul> </li> </ol>

or country. Instead, those parts of a system must transfer information using the internet.

- This lesson builds on the introduction to the internet in the Year 4 'What is the internet?' unit, adding awareness of IP addresses and the rules (protocols) that computers have for communicating with one another.

#### **4. Working together**

- In this lesson, children will consider how people can work together when they are not in the same location.
- They will discuss ways of working and start a collaborative online project.
- The online activity assumes that learners can make simple slides including text and images.
- If children are unsure how to do this, you may wish to spend some time on the Year 3 'Desktop publishing' unit before this lesson.

#### **5. Better working together**

- In this lesson, children will reflect on how they worked together in the previous lesson and how their working together might be improved.
- They will work together on an unplugged activity and use that experience to develop their own ideas of good collective working practices.

#### **6. Shared working**

- In the previous two lessons, children worked together online on a shared project.

### **3. Being effective**

- During this lesson children will continue to increase the complexity of their vector drawings by using the zoom tool to help them add detail.
- They will begin to understand how grids and resize handles can be used to improve consistency in their drawings and use tools to modify objects, creating different effects.

### **4. Layers and Objects**

- During this lesson children will gain an understanding of layers and how they are used in vector drawings.
- They will learn that each object is built on a new layer and that these layers can be moved forward and backward to create effective vector drawings.

### **5. Manipulating objects**

- During this lesson children will be taught how to duplicate multiple objects.
- They will learn how to group objects to make them easier to work with, how to copy and paste these images, and then make simple alterations.

### **6. Get designing**

- During this lesson children will understand how digital images can be made from shapes or pixels.
- They will suggest and implement improvements to vector drawings and complete the unit by creating their own labels for the classroom using the skills they have learned.

	<ul style="list-style-type: none"> <li>• This lesson introduces another approach to online working: reusing and modifying work done by someone else. (Using someone else’s work needs to be done within the bounds of copyright and with the relevant permissions.)</li> <li>• This lesson uses the Scratch programming tool, which allows learners to use other people’s work.</li> </ul>	
	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Bill Gates</p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Annie Easley</p>
	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Digital Media Manager</p>	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">App Developer</p>
	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Privacy and Security</u></b></p> <p>To explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others.</p> <p><b><u>Privacy and Security</u></b></p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Copyright and Ownership</u></b></p> <p>To assess and justify when it is acceptable to use the work of others.</p> <p><b><u>Self Image and Identity</u></b></p>



	To explain what app permissions are and can give some examples.	To demonstrate how to make responsible choices about having an online identity, depending on context.
	<b><u>Spring 1</u></b>	<b><u>Spring 2</u></b>
	<b><u>Creating Media</u></b>	<b><u>Data and Information</u></b>
<b>Year 5</b>	<p style="text-align: center;"><b>Vector Drawing</b></p> <p>Planning, capturing, and editing video to produce a short film.</p> <ol style="list-style-type: none"> <li><b>1. What is video?</b> <ul style="list-style-type: none"> <li>● Children will be introduced to video as a media format.</li> <li>● They will see examples of videos featuring production and editing techniques that they will work towards using their own videos.</li> <li>● Children will begin by explaining what the medium of video is before analysing and comparing examples of videos.</li> </ul> </li> <li><b>2. Filming techniques</b> <ul style="list-style-type: none"> <li>● Children will explore the capabilities of a digital device that can be used to record video.</li> <li>● Once they are familiar with their device, learners will experiment with different camera angles,</li> </ul> </li> </ol>	<p style="text-align: center;"><b><u>Flat file Databases</u></b></p> <p>Using a database to order data and create charts to answer questions.</p> <ol style="list-style-type: none"> <li><b>1. Creating a paper-based database</b> <ul style="list-style-type: none"> <li>● In the first lesson, children create a paper version of a record card database.</li> <li>● Using a card template, they create a data set, with each pupil creating eight to ten cards linked to a theme, eg animals.</li> <li>● They complete records for each of the animals in their database and then physically sort the cards to answer questions about the data.</li> </ul> </li> <li><b>2. Computing database</b> <ul style="list-style-type: none"> <li>● In this lesson, children use a computer-based database to examine how data can be recorded and viewed.</li> <li>● They learn that a database consists of 'records', and that each record contains 'fields'.</li> </ul> </li> </ol>

considering how different camera angles can be used for different purposes.

### 3. Using a storyboard

- Children will use a storyboard to explore a variety of filming techniques, some of which they will use in their own video project later in the unit.
- They will evaluate the effectiveness of these techniques before offering feedback on others' work.

### 4. Planning a video

- Children will plan a video by creating a storyboard.
- Their storyboard will describe each scene, and will include a script, camera angles, and filming techniques.
- They will use their storyboards to film the first scene of their videos.

### 5. Importing and editing video

- Children will film the remaining scenes of their video, and then import their content to video editing software.
- They will then explore key editing techniques and decide whether sections of their video can be edited or need to be shot again.

### 6. Video evaluation

- Children will complete their video by removing unwanted content and reordering their clips.
- They will then export their finished video and evaluate the effectiveness of their edits.
- Finally, they will consider how they could share their video with others.

- In addition, they will order records in different ways and compare this database to the paper database they created in lesson 1.

### 3. Using a database

- In this lesson, children investigate how records can be grouped, using both the paper record cards created in lesson 1 and a computer based database from J2E.
- They use 'grouping' and 'sorting' to answer questions about the data.

### 4. Using search tools

- In this lesson, children develop their search techniques to answer questions about the data.
- They use advanced techniques to search for more than one field, and practise doing this through both unplugged methods (without using computers), and using a computer database.

### 5. Comparing data visually

- In this lesson, children consider what makes a useful chart, and how charts can be used to compare data.
- They create charts from their data in order to answer questions about it.

### 6. Databases in real life

- The final lesson requires pupils to use a real-life database to ask questions and find answers in the context of a flight search based on set parameters.
- They take on the role of a travel agent and present their findings, showing how they arrived at their chosen options.

		<ul style="list-style-type: none"> <li>● Presentations may be given between groups of pupils, or by each group to the whole class, depending on the time available.</li> </ul>
	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Louis Braille</p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Bill Gates</p>
	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">IT Security Manager</p>	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Digital Media Manager</p>
	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Managing Online Information</u></b></p> <p>To identify ways the internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads.</p> <p><b><u>Online Relationships</u></b></p> <p>To explain how someone can get help if they are having problems and identify when to tell a trusted adult.</p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Managing Online Information</u></b></p> <p>To evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results.</p> <p><b><u>Online Reputation</u></b></p> <p>To describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect.</p>

	<p><b><u>Health, well being and Lifestyle</u></b></p> <p>To explain how and why some apps and games may request or take payment for additional content (e.g. in-app purchases, lootboxes) and explain the importance of seeking permission from a trusted adult before purchasing.</p>	<p><b><u>Online Bullying</u></b></p> <p>To identify a range of ways to report concerns and access support both in school and at home about online bullying.</p>
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	<b><u>Summer 1</u></b>	<b><u>Summer 2</u></b>
	<b><u>Programming A</u></b>	<b><u>Programming B</u></b>
<p><b>Year</b></p> <p><b>5</b></p>	<p style="text-align: center;"><b>Selection in Physical Computing</b></p> <p>Exploring conditions and selection using a programmable microcontroller.</p> <p><b>1. Connecting Crumbles</b></p> <ul style="list-style-type: none"> <li>● In this lesson, children will become familiar with the Crumble controller, some of its associated components and the programming environment used to control it.</li> <li>● They will explore how the items connect together to create a complete circuit and how to construct</li> </ul>	<p style="text-align: center;"><b><u>Selection in Quizzes</u></b></p> <p>Exploring selection in programming to design and code an interactive quiz.</p> <p><b>1. Exploring conditions</b></p> <ul style="list-style-type: none"> <li>● In this lesson, children revisit previous learning on ‘selection’ and identify how ‘conditions’ are used to control the flow of actions in a program.</li> <li>● They are introduced to the blocks for using conditions in programs using the Scratch programming environment.</li> </ul>

programs that turn a LED on and off and set its colour.

- Children will make use of their understanding of repetition by identifying how their programs can be modified to make a LED flash continuously.

## 2. Combining output components

- In this lesson, children develop their knowledge of a Crumble controller further by connecting additional devices (another sparkle and a motor) to the controller and construct programs to control more than one of these.
- They design sequences of actions for these output devices to carry out. Then apply their understanding of repetition by using count controlled loops when implementing their design as a program.

## 3. Controlling with conditions

- In this lesson, children are introduced to conditions and how they can be used in algorithms and programs to control their flow.
- They identify conditions in statements, stating if they are true or false, and learn how they can be used to start and stop a set of actions.
- Children are introduced to a Crumble switch and learn how it can provide the Crumble controller with an input that can be used as a condition.
- They explore how to write programs that use an input as conditions and use this knowledge to write a program that uses a condition to stop a repeating light pattern.

## 4. Starting with selection

- In this lesson, children develop their understanding of how the flow of actions in algorithms and programs can be controlled by conditions.

- They modify the conditions in an existing program and identify the impact this has.

## 2. Selecting outcomes

- In this lesson, children will develop their understanding of selection by using the 'if... then... else...' structure in algorithms and programs.
- They will revisit the need to use repetition in selection to ensure that conditions are repeatedly checked.
- They identify the two outcomes in given programs and how the condition informs which outcome will be selected.
- Children use this knowledge to write their own programs that use selection with two outcomes.

## 3. Asking questions

- In this lesson, children consider how the 'if... then... else...' structure can be used to identify two responses to a binary question (one with a 'yes or no' answer).
- They identify that the answer to the question is the 'condition', and use algorithms with a branching structure to represent the actions that will be carried out if the condition is true or false.
- They learn how questions can be asked in Scratch, and how the answer, supplied by the user, is used in the condition to control the outcomes.
- They use an algorithm to design a program that uses selection to direct the flow of the program based on the answer provided.
- They implement their algorithm as a program and test whether both outcomes can be achieved.

## 4. Planning a quiz

- They are introduced to selection, and learn to represent conditions and actions using the If... Then... structure.
- They apply their understanding by using selection in an algorithm created to achieve the requirements of a task.
- They discover that infinite repetition is required when programming input devices to repeatedly check if a condition has been met.

### 5. Drawing designs

- In this lesson, children make use of their understanding of micro-controllers, output devices and selection when designing a project to meet the requirements of a given task. T
- They identify how selection might be used in real-world situations to secure their understanding before identifying how they can apply this knowledge when designing their project.
- They produce detailed drawings to show how their model will be made and how they will connect the micro-computer to its components.

### 6. Writing and testing algorithms

- In this final lesson of the unit, learners will build on the designs they developed in the previous lesson by creating an algorithm to meet the requirements of the given task.
- They will identify how they are going to use selection before writing their algorithm.
- They will then move into the code level to test their algorithm by implementing it as a program, running it, identifying any bugs and returning to the algorithm to debug it where necessary.

- In this lesson, children will be provided with a task: to use selection to control the outcomes in an interactive quiz.
- They will outline the requirements of the task and use an algorithm to show how they will use selection in the quiz to control the outcomes based on the answer given.
- Children will complete their designs by using storyboards to identify the questions that will be asked, and the outcomes for both correct and incorrect answers.
- To demonstrate their understanding of how they are using selection to control the flow of the program, learners will identify which outcomes will be selected based on given responses.

### 5. Testing a quiz

- In this lesson, children will use the Scratch programming environment to implement the first section of their algorithm as a program.
- They will run the first section of their program to test whether they have correctly used selection to control the outcomes, and debug their program if required.
- They will then continue implementing their algorithm as a program. Once completed, they will consider the value of sharing their program with others so that they can receive feedback.
- They will conclude the lesson by using another children's quiz and providing feedback on it.

### 6. Evaluating a quiz

- In this lesson, children will return to their completed programs and identify ways in which the program can be improved.

	<ul style="list-style-type: none"> <li>Finally, they will conclude the unit by evaluating their algorithms and other areas of their designs.</li> </ul>	<ul style="list-style-type: none"> <li>They will focus on issues where answers similar to those in the condition are given as inputs, and identify ways to avoid such problems.</li> <li>Children will also consider how the outcomes may change the program for subsequent users, and identify how they can make use of setup to provide all users with the same experience.</li> <li>They will implement their identified improvements by returning to the Scratch programming environment and adding to their programs.</li> <li>They conclude the unit by identifying how they met the requirements of the given task, and identifying the aspects of the program that worked well, those they improved, and areas that could improve further.</li> </ul>
	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Annie Easley</p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Louis Braille</p>
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	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Managing Online Information</u></b></p> <p>To describe how fake news may affect someone’s emotions and behaviour, and explain why this may be harmful.</p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Self Image and Identity</u></b></p> <p>To explain how identity online can be copied, modified or altered.</p>

	<p><b><u>Health, well being and Lifestyle</u></b></p> <p>To describe ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively.</p>	<p><b><u>Online Reputation</u></b></p> <p>To search for information about an individual online and summarise the information found.</p>
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	<b>Computing - Key Stage 2 Long Term Plan 2021/ 2022</b>	
	<b><u>Autumn 1</u></b>	<b><u>Autumn 2</u></b>
	<b><u>Computer Systems and Networks</u></b>	<b><u>Creating Media</u></b>
<b>Year</b>	<b>Internet Communication</b>	<b><u>3D Modelling</u></b>
<b>6</b>	<p>Recognising how the WWW can be used to communicate and be searched to find information.</p> <p><b>1. Searching the web</b></p>	<p>Planning, developing, and evaluating 3D computer models of physical objects.</p> <p><b>1. What is 3D modelling?</b></p>



- In this lesson, children will be introduced to a range of search engines.
- They will be given the opportunity to explain how we search, then they will write and test instructions.
- Next, they will learn that searches do not always return the results that we are looking for, and will refine their searches accordingly.
- Finally, they will be introduced to the two most common methods of searching: using a search engine and the address bar.

## 2. Selecting search results

- In this lesson, children will gain an understanding of why search engines are necessary to help us find things on the World Wide Web.
- They will conduct their own searches and break down, in detail, the steps needed to find things on the web.
- They will then emulate web crawlers to create an index of their own classroom. Finally, they will consider why some searches return more results than others.

## 3. How search results are ranked

- This lesson includes an unplugged activity in which the class will learn about some of the main factors that influence how a search engine ranks a web page.
- Children will create paper-based 'web pages' in groups, on a topic that they are currently studying.
- They will then discover how their web pages would rank when searching for keywords relating to their content.

## 4. How are searches influenced?

- This lesson introduces children to the concept of 3D modelling by creating a range of 3D shapes that they select and move.
- They also examine the shapes from a variety of views within the 3D space.

## 2. Making changes

- This lesson examines the similarities and differences between working digitally with 2D and 3D graphics.
- Children initially discuss the similarities and differences they have identified so far, then move on to combine 3D shapes, including lifting the 3D object, to produce a house.
- Children then colour their 3D shapes, followed by adding further shapes and undertaking further reflection on the similarities and differences between working digitally with 2D and 3D graphics.

## 3. Rotation and Position

- During this lesson, children will produce a 3D model of a physical object, which will contain a number of different 3D objects.
- 3D objects will need to be rotated and placed into position in relation to other 3D objects.

## 4. Making holes

- During this lesson, children will produce a 3D model of a pencil holder desk tidy.
- The 3D model will contain a number of 3D objects that are of specific dimensions and use other 3D objects as placeholders to create holes with them.

## 5. Planning my own 3D model

- During this lesson, children will resize and enhance their 3D model of a pencil holder desk tidy.

	<ul style="list-style-type: none"> <li>● In this lesson, children will explore how the person performing a web search can influence the results that are returned, and how content creators can optimise their sites for searching.</li> <li>● They will also explore some of the limitations of searching, then discuss what cannot be searched.</li> </ul> <p><b>5. How we communicate?</b></p> <ul style="list-style-type: none"> <li>● In this lesson, children will deepen their understanding of the term ‘communication’.</li> <li>● They will explore different methods of communication, then they will consider internet-based communication in more detail.</li> <li>● Finally, they will evaluate which methods of communication suit particular purposes.</li> </ul> <p><b>6. Communicating responsibly</b></p> <ul style="list-style-type: none"> <li>● In this lesson, children will use information provided and their own prior knowledge to categorise different forms of internet communication.</li> <li>● They will then choose which method they would use for the scenarios discussed in the previous lesson.</li> <li>● During these activities, they will explore issues around privacy and information security.</li> </ul>	<ul style="list-style-type: none"> <li>● They will also plan their own 3D model of a photo frame, which will be developed during the next lesson.</li> </ul> <p><b>6. Making my own 3D model</b></p> <ul style="list-style-type: none"> <li>● During this lesson, children will produce their own 3D model based on their planning during the previous lesson.</li> <li>● They will evaluate their work and make improvements based on feedback from their peers.</li> </ul>
	<p><b><u>Computing Champions</u></b></p> <p>Charles Babbage</p>	<p><b><u>Computing Champions</u></b></p> <p>Anne-Marie Imafidon</p>
	<p><b><u>Career Profile</u></b></p> <p>Digital Product Owner</p>	<p><b><u>Career Profile</u></b></p> <p>3D Printing Technician</p>

	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Managing Online Information</u></b></p> <p>To explain how and why some people may present ‘opinions’ as ‘facts’; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal.</p> <p><b><u>Managing Online Information</u></b></p> <p>To demonstrate how to analyse and evaluate the validity of ‘facts’ and information and I can explain why using these strategies are important.</p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Health, well being and lifestyle</u></b></p> <p>To recognise features of persuasive design and how they are used to keep users engaged (current and future use).</p> <p><b><u>Privacy and Security</u></b></p> <p>To describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser).</p>

	<b><u>Spring 1</u></b>	<b><u>Spring 2</u></b>
	<b><u>Creating Media</u></b>	<b><u>Data and Information</u></b>

<p><b>Year</b></p> <p><b>6</b></p>	<p style="text-align: center;"><b><u>Webpage Creation</u></b></p> <p>Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.</p> <ol style="list-style-type: none"> <li><b>1. What makes a good website?</b> <ul style="list-style-type: none"> <li>● In this lesson children will explore and review existing websites and evaluate their content.</li> <li>● They will have some understanding that websites are created using HTML code.</li> </ul> </li> <li><b>2. How would you layout your webpage?</b> <ul style="list-style-type: none"> <li>● Children will look at the different layout features available in Google Sites and plan their own web page on paper.</li> <li>● Homework: Children will look at two of their favourite websites and sketch them on the worksheet provided, detailing the similarities and differences.</li> <li>● Note: For the homework activity, teachers could provide printed 'home page' images for anyone who doesn't have internet access at home.</li> </ul> </li> <li><b>3. Copyright or CopyWRONG.</b> <ul style="list-style-type: none"> <li>● During this lesson children will become familiar with the terms 'fair use' and 'copyright'.</li> <li>● They will gain an understanding of why they should only use copyright-free images and will find appropriate images to use in their work from suggested sources.</li> <li>● Homework: Children answer a series of questions based on copyright and fair use.</li> </ul> </li> <li><b>4. How does it look?</b></li> </ol>	<p style="text-align: center;"><b><u>Introduction to Spreadsheets</u></b></p> <p>Answering questions by using spreadsheets to organise and calculate data.</p> <ol style="list-style-type: none"> <li><b>1. What is a spreadsheet?</b> <ul style="list-style-type: none"> <li>● During this lesson children will understand that a spreadsheet is a computer application which allows users to organise, analyse, and store data in a table.</li> <li>● They will begin to realise the importance of data headings.</li> <li>● They will answer questions about a spreadsheet, and then create their own questions that can be answered using a given set of data.</li> </ul> </li> <li><b>2. Modifying spreadsheets</b> <ul style="list-style-type: none"> <li>● During this lesson children will be taught that objects can be described using data.</li> <li>● They will build a data set (a collection of related data that can be manipulated using a computer) within a spreadsheet application, and apply appropriate number formats to cells.</li> </ul> </li> <li><b>3. <u>What's the formula?</u></b> <ul style="list-style-type: none"> <li>● During this lesson children will begin to use formulas to produce calculated data.</li> <li>● They will understand that the type of data in a cell is important (e.g. numbers can be used in calculations whereas words cannot).</li> <li>● Children will create formulas to use in their spreadsheet using cell references and identify that</li> </ul> </li> </ol>
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- Today children will revise how to create their own web page in Google Sites.
- Using their plan from previous lessons, children will create their own web page/home page.
- They will preview their web page as it will appear on different devices and suggest or make edits to improve the user experience on each device.

#### **5. Follow the breadcrumbs**

- During this lesson children will begin to appreciate the need to plan the structure of a website carefully.
- They will plan their website, paying attention to the navigation paths (the way that pages are linked together).
- They will then create multiple web pages for their site and use hyperlinks to link them together as detailed in their planning.

#### **6. Think before you link!**

- Children will consider the implications of linking to content owned by other people and create hyperlinks on their own websites that link to other people's work.
- They will then evaluate the user experience when using their own website and that of another child.

changing inputs will change the output of the calculation.

#### **4. Calculate and duplicate**

- During this lesson children will recognise that data can be calculated using different operations: multiplication, subtraction, division, and addition.
- They will use these operations to create formulas in a spreadsheet.
- Children will then begin to understand the importance of creating formulas that include a range of cells and the advantage of duplicating in order to apply formulas to multiple cells.

#### **5. Event planning**

- During this lesson children will plan and calculate the cost of an event using a spreadsheet.
- They will use a predefined list to choose what they would like to include in their event, and use their spreadsheet to answer questions on the data they have selected.
- Children will be reminded of the importance of organising data and will then create a spreadsheet using formulas to work out costs for their event.

#### **6. Presenting data**

- During this lesson children will acquire the skills to create charts in Google Sheets.
- They will evaluate results based on questions asked using the chart that they have created.

		<ul style="list-style-type: none"> <li>● Finally, children will outline their understanding that there are different software tools available within spreadsheet applications to present data.</li> </ul>
	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Grace Hopper</p>	<p align="center"><b><u>Computing Champions</u></b></p> <p align="center">Charles Babbage</p>
	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Web Designer</p>	<p align="center"><b><u>Career Profile</u></b></p> <p align="center">Security Service Personnel</p>
	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Privacy and Security</u></b></p> <p>To describe ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. scams, phishing).</p> <p><b><u>Copyright and Ownership</u></b></p> <p>To demonstrate how to make references to and acknowledge sources I have used from the internet.</p>	<p align="center"><b><u>Digital Citizenship and Literacy – e-safety</u></b></p> <p><b><u>Health, well being and lifestyle</u></b></p> <p>To assess and action different strategies to limit the impact of technology on health (e.g. night-shift mode, regular breaks, correct posture, sleep, diet and exercise).</p> <p><b><u>Self Image and Identity</u></b></p> <p>To identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online.</p>

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	<u>Summer 1</u>	<u>Summer 2</u>
	<u>Programming A</u>	<u>Programming B</u>
Year  6	<b>Variables in Games</b>  Exploring variables when designing and coding a game.  <b>1. Introducing Variables</b> <ul style="list-style-type: none"> <li>● In this lesson, children will be introduced to variables.</li> <li>● Children will see examples of real-world variables (score and time in a football match), then they will explore them in a Scratch project.</li> <li>● Children will then design and make their own project including variables.</li> <li>● Finally, children will identify that variables are named and can be letters (strings) as well as numbers.</li> </ul> <b>2. Variables in Programming</b>	<b>Sensing</b>  Designing and coding a project that captures inputs from a physical device.  <b>1.The Micro:bit</b> <ul style="list-style-type: none"> <li>● In this lesson, children will be introduced to the micro:bit as an input, process, output device that can be programmed.</li> <li>● Children will familiarise themselves with the device itself and the programming environment, before creating their own programs. They will then flash their programs to the device.</li> </ul> <b>2. Go with the flow</b>

- In this lesson, children will understand that variables are used in programs, and that they can hold a single value at a time.
- Children will complete an unplugged task that will demonstrate the process of changing variables.
- Next, they will explore why it is important to name variables, then they will apply their learning in a Scratch project in which they will make, name, and update variables.

### 3. Improving a game

- In this lesson, children will apply the concept of variables to enhance an existing game in Scratch.
- They will predict the outcome of changing the same change score block in different parts of a program, then they will test their predictions in Scratch.
- They will also experiment with using different values in variables, and with using a variable elsewhere in a program.
- Finally, they will add comments to their project, explaining how they have met the objectives of the lesson.

### 4. Designing a game

- This lesson focuses on the design elements of programming.
- For the majority of the tasks, children will be working at the algorithmic level of abstraction.
- Children will first design the sprites and backgrounds for their project, then they will design their algorithms to create their program flow.

### 5. Design to code

- In this lesson, children will explore how if, then, else statements are used to direct the flow of a program.
- They will initially relate if, then, else statements to real-world situations, before creating programs in MakeCode.
- They will apply their knowledge of if, then, else statements to create a program that features selection influenced by a random number to create a micro:bit fortune teller project.

### 3. Sensing inputs

- In this lesson, children will initially use the buttons to change the value of a variable using selection.
- They will then develop their programs to update the variable by moving their micro:bit using the accelerometer to sense motion.
- Finally, they will learn that a variable can be displayed after it is updated or in response to an input.

### 4. Finding your way

- In this lesson, children will initially work at code level by applying their knowledge from the previous lesson to make their micro:bit perform the function of a compass.
- They will then design a program which will enable the micro:bit to be used as a navigational device.
- To code this, they will adapt the code they completed to make the compass.

### 5. Designing a step counter

- In this lesson, children will be working at the design level. They will pick out features of a step counter, a piece of technology with which they are likely to be familiar.



	<ul style="list-style-type: none"> <li>● In this lesson, children will implement the algorithms that they created in Lesson 4 as code.</li> <li>● In doing this, they will identify variables in an unfamiliar project and learn the importance of naming variables.</li> <li>● They will also have the opportunity to add another variable to enhance their project.</li> </ul> <p><b>6. Improving and Sharing</b></p> <ul style="list-style-type: none"> <li>● This lesson gives children the opportunity to build on the project that they created in Lesson 5.</li> <li>● As the lesson develops, the scaffolding is gradually removed, so that the last main activity is without constraints.</li> <li>● Finally, children will evaluate each other's projects, identifying features that they like, and features that could be improved further.</li> </ul>	<ul style="list-style-type: none"> <li>● They will then relate those features to the sensors on a micro:bit. Having seen a simulated example of a micro:bit step counter, children will pick out features which they will be able to include in their design.</li> <li>● In the main activity, learners will design the algorithm for their step counter project.</li> <li>● Finally, they will connect the battery pack to their micro:bit to set it up as a portable device.</li> </ul> <p><b>6. Making a step counter</b></p> <ul style="list-style-type: none"> <li>● In this lesson, children will use the design that they have created in Lesson 5 to make a micro:bit-based step counter.</li> <li>● First they will review their plans, followed by creating their code. Depending on their level of confidence, they can use a scaffolded or part-complete project, otherwise they can start a new project.</li> <li>● Children will test and debug their code, using the emulator and then the physical device.</li> <li>● To successfully complete this project, children will need to use all four programming constructs: sequence, repetition, selection, and variables.</li> </ul>
	<p style="text-align: center;"><b><u>Computing Champions</u></b></p> <p style="text-align: center;">Anne-Marie Imafidon</p>	<p style="text-align: center;"><b><u>Computing Champions</u></b></p> <p style="text-align: center;">Grace Hopper</p>
	<p style="text-align: center;"><b><u>Career Profile</u></b></p> <p style="text-align: center;">Software Developer</p>	<p style="text-align: center;"><b><u>Career Profile</u></b></p> <p style="text-align: center;">Digital Marketer</p>

## **Digital Citizenship and Literacy – e-safety**

### **Online Relationships**

To explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this.

### **Online Relationships**

To describe how things shared privately online can have unintended consequences for others. e.g. screen-grabs.

### **Online Reputation**

To explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity.

## **Digital Citizenship and Literacy – e-safety**

### **Health, well being and lifestyle**

To describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose.

### **Online Bullying**

To describe how to capture bullying content as evidence (e.g screen-grab, URL, profile) to share with others who can help me.

### **Online Bullying**

To explain how someone would report online bullying in different contexts.

