

Year 3	Autumn	Spring	Summer
Theme	<p>Autumn 1.</p> <p><u>Computing systems and networks – Connecting computers</u></p> <p>Autumn 2</p> <p><u>Creating Media – Stop-frame animation</u></p>	<p>Spring 1.</p> <p><u>Programming A – Sequencing sounds</u></p> <p>Spring 2.</p> <p><u>Data and Information - Branching databases</u></p>	<p>Summer 1.</p> <p><u>Creating Media – Desktop publishing</u></p> <p>Summer 2.</p> <p><u>Programming B - Events and actions</u></p>
Prior Knowledge	<p>Autumn 1</p> <p><u>Computing systems and networks – Connecting computers</u></p> <p>This unit progresses learners’ knowledge and understanding of technology by focusing on digital and non-digital devices and introducing the concept of computers connected together as a network.</p> <p>Autumn 2</p> <p><u>Creating Media – Stop-frame animation</u></p> <p>This unit progresses learner’s knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. It builds on learners previous understanding of images</p>	<p>Spring 1.</p> <p><u>Programming A – Sequencing sounds</u></p> <p>This unit assumes that learners will have some prior experience of programming; via the KS1 NCCE units. They will have experienced programming via floor robots; Moving A Robot Year 1 and Robot algorithms Year 2, alongside the use of ScratchJr through Programming animations Year 1 and Programming quizzes Year 2.</p> <p>Spring 2.</p> <p><u>Data and Information - Branching databases</u></p> <p>This unit progresses learners’ knowledge and understanding of the categories of data handling, with a particular focus on implementation. It builds on their knowledge of data and information from key stage 1.</p>	<p>Summer 1.</p> <p><u>Creating Media – Desktop publishing</u></p> <p>This unit progresses learners’ knowledge and understanding of using digital devices to combine text and images building on work from year 1 and 2 units.</p> <p>Summer 2.</p> <p><u>Programming B - Events and actions</u></p> <p>This unit assumes that learners will have some prior experience of programming. The key stage 1 National Centre for Computing Education units focus on floor robots and ScratchJr, however experience of other languages or environments may also be useful. The Year 3 – Programming A unit introduces the Scratch programming environment and the concept of sequences.</p>

	<p>from the Digital Photography Year 2 unit.</p>		
<p style="text-align: center;">Sequence of lessons</p>	<p>Autumn 1</p> <p><u>Computing systems and networks – Connecting computers</u></p> <p>Lesson 1: LI: To explain how digital devices function Introduce the concepts of input, process, and output and how to protect devices using secure passwords.</p> <p>Lesson 2: LI: To identify input and output devices Develop knowledge of the relationship between inputs, processes, and outputs and apply it to devices and parts of devices that are familiar.</p> <p>Lesson 3: LI: To recognise how digital devices can change the way that we work Use programs in conjunction with inputs and outputs on a digital device. 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.</p> <p>Lesson 4: LI: To explain how a computer network can be used to share information Introduce the concept of connections and moving information between</p>	<p>Spring 1.</p> <p><u>Programming A – Sequencing sounds</u></p> <p>Lesson 1: LI: To explore a new programming environment Compare Scratch to other programming environments experienced. Familiarise themselves with the basic layout of the screen.</p> <p>Lesson 2: LI: To identify that commands have an outcome Create movement for more than one sprite. Design and implement code, and create code to replicate a given outcome.</p> <p>Lesson 3: LI: To explain that a program has a start Introduce the concept of sequences by joining blocks of code together. Learn how event blocks can be used to start a project in a variety of different ways.</p> <p>Lesson 4: LI: To recognise that a sequence of commands can have an order Explore sequences, and how they are implemented in a simple program. Experiment with sequences where order is and is not important.</p> <p>Lesson 5: LI: To change the appearance of my project Combine motion and sounds in one sequence. Use costumes to change the appearance of a sprite, and backdrops to change the appearance of the stage. They</p>	<p>Summer 1.</p> <p><u>Creating Media – Desktop publishing</u></p> <p>Lesson 1: LI: To recognise how text and images convey information Recognise the terms ‘text’ and ‘images’ and understand that text and images need to be used carefully to communicate messages clearly.</p> <p>Lesson 2: LI: To recognise that text and layout can be edited Recognise how to make careful choices regarding font size, colour, and type in an invitation. Explore the use of the Return, Backspace, and Shift keys. Understand that once content has been added, it can be rearranged on the page.</p> <p>Lesson 3: LI: To choose appropriate page settings Introduce the terms 'templates', 'orientation', and 'placeholders' within desktop publishing software. Create a magazine template, which will have content added to during the next lesson.</p> <p>Lesson 4: LI: To add content to a desktop publishing publication Add content (text and images) to the magazine templates created in lesson 3. Copy information for the front of the magazine from a prewritten document and paste it into the chosen place on the magazine cover. Images</p>

	<p>connected devices. Explain how and why computers are joined together to form networks.</p> <p>Lesson 5 LI: To explore how digital devices can be connected Introduce key network components, including a server and wireless access points. Examine each device’s functionality.</p> <p>Lesson 6 LI: To recognise the physical components of a network Further develop their understanding of computer networks. Recognise examples of network infrastructure in a real-world setting.</p> <p>Autumn 2</p> <p><u>Creating Media – Stop frame animation</u></p> <p>Lesson 1 LI: To explain that animation is a sequence of drawings or photographs Discuss whether a picture can move. Discover simple animation techniques and create animations in the style of flip books (flick books) using sticky notes.</p> <p>Lesson 2 LI: To relate animated movement with a sequence of images Develop knowledge of animations and apply it to make a stop-frame animation using a tablet.</p> <p>Lesson 3 LI: To plan an animation</p>	<p>will apply the skills in Activity 1 and 2 to design and create their own project, including sequences, sprites with costumes, and multiple backdrops.</p> <p>Lesson 6: LI: To create a project from a task description Create a musical instrument in Scratch. Apply the concept of design to help develop programs and use programming blocks. Understand that code can be copied from one sprite to another, and that projects should be tested to see if they perform as expected.</p> <p>Spring 2.</p> <p><u>Data and Information - Branching databases</u></p> <p>Lesson 1: LI: To create questions with yes/no answers Explore questions with yes/no answers, and how these can be used to identify and compare objects. They will create their own yes/no questions, before using these to split a collection of objects into groups.</p> <p>Lesson 2: LI: To identify the attributes needed to collect data about an object Develop understanding of using questions with yes/no answers to group objects more than once and arrange objects into a tree structure</p> <p>Lesson 3: LI: To create a branching database Develop understanding of ordering objects/images in a branching database structure. Explore how to use an online</p>	<p>will be added from within the search facility in Canva.</p> <p>Lesson 5: LI: To combine images for a purpose Review some images and consider what makes an image look real or made up. Plan own image using given originals.</p> <p>Lesson 6: LI: To consider the benefits of desktop publishing Explain what desktop publishing means in own words. Recognise how desktop publishing is used in the wider world and consider the benefits of using desktop publishing applications.</p> <p>Summer 2.</p> <p><u>Programming B - Events and actions</u></p> <p>Lesson 1: LI: To explain how a sprite moves in an existing project Investigate how characters can be moved using ‘events’. Analyse and improve an existing project, and then apply learning to own projects.</p> <p>Lesson 2: LI: To create a program to move a sprite in four directions Program a sprite to move in four directions: up, down, left, and right. Choose a sprite and size it to fit in with a given background. Create code to move the sprite in one direction before duplicating and modifying it to move in all four directions.</p> <p>Lesson 3: LI: To adapt a program to a new context</p>
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	<p>Create a storyboard showing the characters, settings and events that they would like to include in their own stop-frame animation.</p> <p>Lesson 4 LI: To identify the need to work consistently and carefully Use tablets to carefully create stop-frame animations, paying attention to consistency.</p> <p>Lesson 5 LI: To review and improve an animation Evaluate animations and try to improve them by creating a brand-new animation based on feedback.</p> <p>Lesson 6 LI: To evaluate the impact of adding other media to an animation Add other media and effects into animations, such as music and text.</p>	<p>database tool to arrange objects into a branching database, and create their own questions with yes/no answers.</p> <p>Lesson 4: LI - To explain why it is helpful for a database to be well structured Develop understanding of how to create a well-structured database. Use attributes to create questions with yes/no answers, and apply these to given objects. Compare the efficiency of different branching databases.</p> <p>Lesson 5: LI - To plan the structure of a branching database Independently plan a branching database by creating a physical representation of one that will identify different types of dinosaur. Think about the attributes of objects to write questions with yes/no answers, enabling them to be separated into groups of objects effectively.</p> <p>Lesson 6: LI - To independently create an identification tool Independently create a branching database to identify different types of dinosaur, based on the paper-based version created previously.</p>	<p>Introduce extension blocks in Scratch using the Pen extension. Use the pen down block to draw lines, building on the movement they created for their sprite in Lesson 2.</p> <p>Lesson 4: LI: To develop my program by adding features Use additional Pen blocks. Predict the functions of new blocks and experiment with them, before designing features to add to projects.</p> <p>Lesson 5: LI: To identify and fix bugs in a program Explore the process of debugging, specifically looking at how to identify and fix errors in a program. Review an existing project against a given design and identify bugs within it. Correct errors in given designs.</p> <p>Lesson 6: LI: To design and create a maze-based challenge Using a template (which can be blank or partially completed), complete projects to move a sprite around a maze, with the option to leave a pen trail showing where the sprite has moved. Projects will include setup blocks to position the sprite at the start of the maze and clear any lines already on the screen.</p>
<p>Key Vocab</p>	<p>Autumn 1 – Computing systems and networks - Connecting computers</p> <p>digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access</p>	<p>Spring term 1 - Programming A – Sequencing sounds</p> <p>Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide,</p>	<p>Summer term 1 - Creating Media – Desktop publishing</p> <p>text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder,</p>

	<p>point, cables, sockets <u>Autumn 2 – Creating Media – Stop-frame animation</u></p> <p>animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition.</p>	<p>sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code.</p> <p><u>Spring term 2 - Data and Information - Branching databases</u></p> <p>attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.</p>	<p>template, layout, content, desktop publishing, copy, paste, purpose, benefits.</p> <p><u>Summer term 2 - Programming B - Events and actions</u></p> <p>motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.</p>
<p>Challenge</p>	<p><u>Autumn 1 – Computing systems and networks - Connecting computers - The internet</u></p> <p><u>Lesson 1</u> Explain what makes a good password. <u>Lesson 2</u> Apply understanding to non-familiar devices. <u>Lesson 3</u> Compare and contrast the two approaches in the lesson. <u>Lesson 4</u> Recognise the benefit of connecting digital devices. <u>Lesson 5</u> Look at the benefits of networking computers. <u>Lesson 6</u> Identify the benefits of computer networks.</p>	<p><u>Spring term 1 - Programming A – Sequencing sounds</u></p> <p><u>Lesson 1</u> Recognise that commands in Scratch are represented as blocks. <u>Lesson 2</u> Experiment with new motion blocks. <u>Lesson 3</u> Apply principles of design to plan and create a project. <u>Lesson 4</u> Explain why questions need to be in a specific order. <u>Lesson 5</u> Design and create a project, including sequences, sprites with costumes, and multiple backdrops.</p>	<p><u>Summer term 1 - Creating Media – Desktop publishing</u></p> <p><u>Lesson 1</u> Give advantages and disadvantages of using text, images, emojis or both text, Images and emojis to communicate messages effectively online. <u>Lesson 2</u> Explain that text can be changed to communicate more clearly. <u>Lesson 3</u> I can recognise placeholders and say why they are important. <u>Lesson 4</u> Consider when it’s appropriate to edit an image and discuss some of the ethics around retouching photos. <u>Lesson 5</u> I can choose a suitable layout for a given purpose. <u>Lesson 6</u></p>

	<p>Autumn 2</p> <p><u>Creating Media – Stop frame animation</u></p> <p>Lesson 1 Explain how an animation/flip book works.</p> <p>Lesson 2 Create an effective stop-frame animation.</p> <p>Lesson 3 describe an animation that is achievable on screen.</p> <p>Lesson 4 Use onion skinning to help me make small changes between frames.</p> <p>Lesson 5 Explain ways to make an animation better.</p> <p>Lesson 6 Explain why other media was added to my animation.</p>	<p>Lesson 6 Implement an algorithm as code.</p> <p><u>Spring term 2 - Data and Information - Branching databases</u></p> <p>Lesson 1 Reflect on the importance of collecting the right data to answer questions.</p> <p>Lesson 2 Think about which attributes the questions are related to.</p> <p>Lesson 3 Demonstrate that branching database works through testing.</p> <p>Lesson 4 Analyse a data file with given information.</p> <p>Lesson 5 Arrange the questions and objects into a tree structure, before testing the structure.</p> <p>Lesson 6 Test that their database works, before considering real-world applications for branching databases.</p>	<p>Compare work made on desktop publishing to work created by hand</p> <p><u>Summer term 2 - Programming B - Events and actions</u></p> <p>Lesson 1 Control multiple sprites in the same project</p> <p>Lesson 2 Consider how their project could be extended to prove that their sprite has successfully navigated a maze.</p> <p>Lesson 3 Decide how to set up a project every time it is run.</p> <p>Lesson 4 Add features to their projects and test their effectiveness.</p> <p>Lesson 5 Develop projects by considering which new setup blocks to use.</p> <p>Lesson 6 Evaluate work once completed, and showcase games.</p>
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<p>Suggested outcomes</p>	<ul style="list-style-type: none"> • Recordings using garage band. • Plans for podcasts • Evaluations of podcasts • Website evaluations • Analysis of websites • Network maps 	<ul style="list-style-type: none"> • Seesaw posts • Photos • Printouts • Anduino workbooks • Logo programs • Evaluations 	<ul style="list-style-type: none"> • Seesaw posts • Photos • Printouts • Scratch programs • Evaluations • discussions
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Year 4	Autumn	Spring	Summer
Theme	<p>Autumn 1.</p> <p><u>Computing systems and networks – Connecting computers - The internet</u></p> <p>Autumn 2</p> <p><u>Creating Media – Audio production</u></p>	<p>Spring 1.</p> <p><u>Programming A - Repetition in shapes</u></p> <p>Spring 2.</p> <p><u>Data and Information - Data logging</u></p>	<p>Summer 1.</p> <p><u>Creating Media – Photo editing</u></p> <p>Summer 2.</p> <p><u>Programming B - Repetition in games</u></p>
Prior Knowledge	<p>Autumn 1</p> <p><u>Computing systems and networks – Connecting computers - The internet</u></p> <p>This unit progresses students’ knowledge and understanding of networks from that developed in the Year 3 Connecting Computers unit.</p> <p>Autumn 2</p> <p><u>Creating Media – Audio production</u></p> <p>No previous learning on Audio production</p>	<p>Spring 1.</p> <p><u>Programming A - Repetition in shapes</u></p> <p>This unit progresses students’ knowledge and understanding of programming. Within the Year 3 units, Programming A- Sequencing Sounds and Programming B- Events and Actions in programs, learners will have an awareness of the sequence of commands in a program.</p> <p>Spring 2.</p> <p><u>Data and Information - Data logging</u></p> <p>This unit progresses learners’ knowledge and understanding of data and how it can be collected over time to answer questions. Specifically, it builds on the concept of answering questions with data which is first introduced in the KS1 data and information units.</p>	<p>Summer 1.</p> <p><u>Creating Media – Photo editing</u></p> <p>This unit progresses students’ knowledge and understanding of digital photography and using digital devices to create media. Learners will have had some exposure to images and their manipulation through the Teach Computing Digital Photography- Year 2 unit.</p> <p>Summer 2.</p> <p><u>Programming B - Repetition in games</u></p> <p>The KS1 NCCE units cover floor robots and ScratchJr, and Scratch, and the skill of sequence, is introduced in the Year 3 programming units: Sequencing Sounds and Events and actions in programs.</p>

<h2 style="margin: 0;">Sequence of lessons</h2>	<p>Autumn 1</p> <p><u>Computing systems and networks – Connecting computers - The internet</u></p> <p>Lesson 1: LI: To describe how networks physically connect to other networks Explore how a network can share messages with another network to form the internet.</p> <p>Lesson 2: LI: To recognise how networked devices make up the internet 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.</p> <p>Lesson 3: LI: To outline how websites can be shared via the World Wide Web (WWW) Explore what can be shared on the World Wide Web and where websites are stored.</p> <p>Lesson 4: LI: To describe how content can be added and accessed on the World Wide Web (WWW) Analyse a website and identify the key parts. Use a website to create content online.</p> <p>Lesson 5:</p>	<p>Spring 1.</p> <p><u>Programming A - Repetition in shapes</u></p> <p>Lesson 1: LI: To identify that accuracy in programming is important Learn the basic Logo commands, and use them to read and write code.</p> <p>Lesson 2: To create a program in a text-based language Create algorithms for children’s initials. Implement these algorithms by writing them in Logo commands to draw the letter.</p> <p>Lesson 3: To explain what ‘repeat’ means Create algorithms for drawing a square. recognise the repeated pattern within a square. use the repeat command within Logo to program squares the ‘short’ way.</p> <p>Lesson 4: To explore count-controlled loops to produce a given outcome Using count-controlled loops in regular 2D shapes. Predict which shapes will be drawn from code.</p> <p>Lesson 5: To decompose a task into small steps 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. Create, name, and call procedures in Logo.</p> <p>Lesson 6: To create a program that uses count-controlled loops to produce a given outcome</p>	<p>Summer 1.</p> <p><u>Creating Media – Photo editing</u></p> <p>Lesson 1: LI: To explain that the composition of digital images can be changed Introduce the concept of editing images and discuss whether or not editing is ethical. Explore when we need to rotate and crop an image as well as how to use an image editor to make these changes.</p> <p>Lesson 2: LI: To explain that colours can be changed in digital images look at the effect that different colours and filters can have on an image. Choose appropriate effects to fit a scenario. Edit images using different effects to suit different scenarios.</p> <p>Lesson 3: LI: To explain how cloning can be used in photo editing Introduce the cloning tool and its use in both changing the composition of a photo and photo retouching. Show how parts of a photo can be removed or duplicated using cloning.</p> <p>Lesson 4: LI: To explain that images can be combined Use different tools to select areas of an image. Use copy and paste within one image and between two images to produce a combined image.</p> <p>Lesson 5: LI: To combine images for a purpose Review some images and consider what makes an image look real or made up. Plan own image using given originals.</p>
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	<p>LI: To recognise how the content of the WWW is created by people Explore who owns the content on the World Wide Web.</p> <p>Lesson 6: LI: To evaluate the consequences of unreliable content Gain an appreciation of the fact that not everything they see on the internet is true, honest, or accurate. Review images and decide whether or not they are real.</p> <p>Autumn 2</p> <p><u>Creating Media – Audio production</u></p> <p>Lesson 1: LI: To identify that sound can be recorded Identify the input devices used to record sound and output devices needed to listen to it. Record voices using a computer, and reflect on what makes a good audio recording.</p> <p>Lesson 2: LI: To explain that audio recordings can be edited Record and re-record their voices to improve their recordings. They will edit the recordings, removing long pauses and mistakes.</p> <p>Lesson 3: LI: To recognise the different parts of creating a podcast project Record their voices and then import and align sound effects to create layers in their recordings. Plan a podcast</p>	<p>Create a program containing a count-controlled loop. Create algorithms and then implement as code.</p> <p>Spring 2.</p> <p><u>Data and Information - Data logging</u></p> <p>Lesson 1: LI: To explain that data gathered over time can be used to answer questions Consider what data can be collected and how it is collected. Think about questions that can and can't be answered using available data</p> <p>Lesson 2: LI: To use a digital device to collect data automatically Be introduced to the concept that computers can capture data from the physical world using input devices called 'sensors' and to data loggers.</p> <p>Lesson 3: LI: To explain that a data logger collects 'data points' from sensors over time Explore how data loggers work. Record data at set moments in time and draw parallels with the data points that a data logger captures at regular intervals.</p> <p>Lesson 4: LI - To recognise how a computer can help us analyse data Open an existing data file and use software to find out key information.</p> <p>Lesson 5: LI - To identify the data needed to answer questions Think about questions that can be answered using collected data. Choose a question to</p>	<p>Lesson 6: LI: To evaluate how changes can improve an image Review the image created in Lesson 5. Make changes to their image based on this review.</p> <p>Summer 2.</p> <p><u>Programming B - Repetition in games</u></p> <p>Lesson 1: LI: To develop the use of count-controlled loops Look at real-life examples of repetition, and identify which parts of instructions are repeated. Use Scratch to create shapes using count-controlled loops.</p> <p>Lesson 2: LI: To recognise infinite loops and count-controlled loops Look at different types of loops: infinite loops and count-controlled loops. Practise using these within Scratch.</p> <p>Lesson 3: LI: To develop a design that includes two or more loops which run at the same time Create designs for an animation of the letters in their names. The animation uses repetition to change the costume of the sprite. Program the designs in Scratch.</p> <p>Lesson 4: LI: To modify an infinite loop in a given program Look at an existing game and match parts of the game with the design. Make changes to a sprite in the existing game to match the design. Look at a completed design, and implement the remaining changes in the Scratch game.</p>
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	<p>which will be worked on in future lessons.</p> <p>Lesson 4 LI: To apply audio editing skills independently Record the voice tracks for their podcast. Review recordings and re-record if necessary. Edit, trim, and align voice recordings.</p> <p>Lesson 5 LI: To combine audio to enhance a podcast project Add content such as sound effects and background music to a podcast.</p> <p>Lesson 6 LI: To evaluate the effective use of audio Evaluate their own podcasts and that of others.</p>	<p>focus on and then plan the data logging process. Set up data loggers to collect data.</p> <p>Lesson 6: LI - To use data from sensors to answer questions Access and review data collected using a data logger. Use data collected to answer a question.</p>	<p>Lesson 5: LI: To design a project that includes repetition Look at a model project that uses repetition. Design own games based on the model project, producing designs and algorithms for sprites in the game.</p> <p>Lesson 6: LI: To create a project that includes repetition Build games, using designs created in Lesson 5. Follow algorithms, fix mistakes, and refine designs.</p>
<p>Key Vocab</p>	<p>Autumn 1 – Computing systems and networks - Connecting computers - The internet</p> <p>internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts</p> <p>Autumn 2 – Creating Media – Audio production</p> <p>audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim,</p>	<p>Spring term 1 - Programming A - Repetition in shapes</p> <p>Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.</p> <p>Spring term 2 - Data and Information - Data logging</p> <p>data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.</p>	<p>Summer term 1 - Creating Media - Photo editing</p> <p>image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.</p> <p>Summer term 2 - Programming B - Repetition in games</p> <p>Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.</p>

	<p>align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback.</p>		
<p style="text-align: center; font-size: 24pt; font-weight: bold;">Challenge</p>	<p><u>Autumn 1 – Computing systems and networks - Connecting computers - The internet</u></p> <p><u>Lesson 1</u> Discuss what should be kept in and out of a network to keep safe.</p> <p><u>Lesson 2</u> Demonstrate how networked computers communicate.</p> <p><u>Lesson 3</u> Explore how the World Wide Web can be accessed on a variety of devices.</p> <p><u>Lesson 4</u> Consider what factors they should consider before adding content to a website.</p> <p><u>Lesson 5</u> Relate their learning to principles of ownership and sharing in the real world.</p> <p><u>Lesson 6</u> Consider how quickly information can spread beyond their control.</p> <p><u>Autumn 2 – Creating Media – Audio production</u></p> <p><u>Lesson 1</u> Consider ownership and copyright issues related to recordings.</p> <p><u>Lesson 2</u> listen to a range of podcasts and identify the features of a podcast.</p> <p><u>Lesson 3</u></p>	<p><u>Spring term 1 - Programming A - Repetition in shapes</u></p> <p><u>Lesson 1</u> Compare different sound sources to explain what is vibrating.</p> <p><u>Lesson 2</u> Use data to make predictions about loudest/quietest places in the school.</p> <p><u>Lesson 3</u> Explain what may stop or impede sounds travelling.</p> <p><u>Lesson 4</u> Link the pitch of a sound to its waveform.</p> <p><u>Lesson 5</u> Predict the pitch of an instrument based on its characteristics.</p> <p><u>Lesson 6</u> Evaluate their programs against the original brief.</p> <p><u>Spring term 2 - Data and Information - Data logging</u></p> <p><u>Lesson 1</u> Reflect on the importance of collecting the right data to answer questions.</p> <p><u>Lesson 2</u></p>	<p><u>Summer term 1 - Creating Media - Photo editing</u></p> <p><u>Lesson 1</u> Discuss image composition.</p> <p><u>Lesson 2</u> Explain how they made choices for editing colours in images.</p> <p><u>Lesson 3</u> Consider when it is necessary to edit photographs using the cloning tool.</p> <p><u>Lesson 4</u> Consider when it's appropriate to edit an image and discuss some of the ethics around retouching photos.</p> <p><u>Lesson 5</u> Consider how editing images manipulates what a viewer may think.</p> <p><u>Lesson 6</u> Add text to an image to complete it as a publication.</p> <p><u>Summer term 2 - Programming B - Repetition in games</u></p> <p><u>Lesson 1</u> Predict what the output will be once the code is run.</p> <p><u>Lesson 2</u> Consider which loop will be more suitable for different purposes.</p> <p><u>Lesson 3</u> Consider how effectively they used repetition in their code.</p> <p><u>Lesson 4</u></p>

	<p>Include ambitious ideas for their podcast including multiple voices and sound effects.</p> <p>Lesson 4 Recognise when audio needs re-recording and make improvements.</p> <p>Lesson 5 Create multi layers of audio including voice recordings.</p> <p>Lesson 6 Decide if they can improve their podcast and then make any changes they have chosen.</p>	<p>Investigate how data loggers can automatically collect data while not attached to a computer.</p> <p>Lesson 3 Collect data and then import to a computer.</p> <p>Lesson 4 Analyse a data file with given information.</p> <p>Lesson 5 Make predictions about the data to be collected.</p> <p>Lesson 6 Reflect on the benefits of using a data logger.</p>	<p>Add a sprite, re-use and modify code blocks within loops, and explain the changes made.</p> <p>Lesson 5 Make any changes to their design as required.</p> <p>Lesson 6 Evaluate work once completed, and showcase games.</p>
<p>Suggested outcomes</p>	<ul style="list-style-type: none"> • Recordings using garage band. • Plans for podcasts • Evaluations of podcasts • Website evaluations • Analysis of websites • Network maps 	<ul style="list-style-type: none"> • Seesaw posts • Photos • Printouts • Anduino workbooks • Logo programs • Evaluations 	<ul style="list-style-type: none"> • Seesaw posts • Photos • Printouts • Scratch programs • Evaluations • discussions

Year 5	Autumn	Spring	Summer
Theme	<p>Autumn 1.</p> <p><u>Computing systems and networks - systems and searching</u></p> <p>Autumn 2</p> <p><u>Creating Media - Video production</u></p>	<p>Spring 1.</p> <p><u>Programming A - Selection in physical computing</u></p> <p>Spring 2.</p> <p><u>Data and Information - Flat-file databases</u></p>	<p>Summer 1.</p> <p><u>Creating Media -Introduction to vector graphics</u></p> <p>Summer 2.</p> <p><u>Programming B - Making Quizzes</u></p>
Prior Knowledge	<p>Autumn 1</p> <p><u>Computing systems and networks - systems and searching</u></p> <p>This unit progresses students’ knowledge and understanding of the internet from that developed in the Year 4 The Internet unit</p> <p>Autumn 2</p> <p><u>Creating Media - Video production</u></p> <p>This unit progresses learners’ knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video. The unit builds on the Year 4 Photo editing unit where composition is introduced and the Year 3 unit ‘Stop-frame animation’</p>	<p>Spring 1.</p> <p><u>Programming A - Selection in physical computing</u></p> <p>This unit assumes that learners will have prior experience of programming using a block-based language (e.g. Scratch) and understand the concepts of sequence and repetition. The National Centre for Computing Education Key Stage 1 units focus on floor robots and ScratchJr.</p> <p>*** The unit has been designed to make use of the components provided in the Crumble starter kit. If access to crumble kits will prevent you teaching this unit, your local hub may be able to support with a loan kit. Find out more by visiting Physical Computing Kits - Teach Computing</p> <p>Spring 2.</p>	<p>Summer 1.</p> <p><u>Creating Media -Introduction to vector graphics</u></p> <p>This unit progresses learners’ knowledge and understanding of digital painting and has some links to the Year 3 ‘Creating media – Desktop publishing’ unit, in which learners used digital images. In this Year 5 unit, learners create images that could be used in desktop publishing documents.</p> <p>Summer 2.</p> <p><u>Programming B - Making Quizzes</u></p> <p>This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of ‘sequence’ (Year 3 units:</p>

	<p>where learners explored some of the features of video production.</p>	<p><u>Data and Information - Flat-file databases</u></p> <p>This unit progresses learners’ knowledge and understanding of why and how information might be stored in a database and looks at how tools within a database can help us to answer questions about our data. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems.</p>	<p>Sequencing Sounds and Events and actions in programs) and ‘repetition’ (Year 4 units: Repetition in shapes and Repetition in games), and have some experience of using ‘selection’. Ideally, learners will have completed ‘Programming A – Selection in physical computing’ before undertaking this unit, as this will provide them with the required knowledge of ‘selection’.</p>
<p>Sequence of lessons</p>	<p>Autumn 1</p> <p><u>Computing systems and networks - systems and searching</u></p> <p>Lesson 1: LI: To explain that computers can be connected together to form systems Introduce the concept of a system. Begin to understand that components can work together to perform a task.</p> <p>Lesson 2: LI: To recognise the role of computer systems in our lives Consider how larger computer systems work. Investigate how devices and processes are connected.</p> <p>Lesson 3: LI: To identify how to use a search engine Introduce a range of search engines. Explain how to search, before writing and testing instructions. Learn that searches do not always return the results that someone is looking for and refine searches accordingly. Introduce the two most common methods of</p>	<p>Spring 1.</p> <p><u>Programming A - Selection in physical computing</u></p> <p>Lesson 1: LI: To control a simple circuit connected to a computer Introduce the Crumble controller and the programming environment used to control it. Connect a Sparkle to a Crumble and then program the Crumble to make the Sparkle flash different colour patterns using infinite loops.</p> <p>Lesson 2: LI: To write a program that includes count-controlled loops Connect a Sparkle and a motor to the Crumble controller. Design sequences of actions for these components. Apply understanding of repetition by using count-controlled loops when designing a program.</p> <p>Lesson 3: LI: To explain that a loop can stop when a condition is met Introduce conditions, and how they can be used in programs to control the flow. Identify conditions in statements, stating if</p>	<p>Summer 1.</p> <p><u>Creating Media -Introduction to vector graphics</u></p> <p>Lesson 1: LI: To identify that drawing tools can be used to produce different outcomes Introduce vector drawings and begin to understand that they are made up of simple shapes and lines. use the main drawing tools within the Google Drawings application to create vector drawings.</p> <p>Lesson 2: LI: To create a vector drawing by combining shapes Identify the shapes that are used to make vector drawings. Explain that each element of a vector drawing is called an object. Create own vector drawing by moving, resizing, rotating, and changing the colours of a selection of objects.</p> <p>Lesson 3: LI: To use tools to achieve a desired effect Increase the complexity of vector drawings and use the zoom tool to add detail to work. Explore how grids and resize handles can improve the consistency of drawings. Use tools</p>

	<p>searching: using a search engine and using the address bar.</p> <p>Lesson 4: LI: To describe how search engines select results Understand why search engines are necessary to help find things on the World Wide Web. Conduct own searches and break down, in detail, the steps needed to find things on the web. Emulate web crawlers to create an index of own classroom.</p> <p>Lesson 5: LI: To explain how search results are ranked Take part in an unplugged activity to find out about how a webpage’s content can influence where it is ranked in search results. Create paper-based webpages and discover how webpages would rank when searching for keywords relating to content.</p> <p>Lesson 6: LI: To recognise why the order of results is important, and to whom Explore how someone performing a web search can influence the results that are returned, and how content creators can optimise their sites for searching. Explore some of the limitations of searching and discuss what cannot be searched.</p> <p>Autumn 2 <u>Creating Media - Video production</u></p> <p>Lesson 1: LI: To explain what makes a video effective</p>	<p>they are true or false. Introduce a Crumble switch, and how it can provide the Crumble controller with an input that can be used as a condition.</p> <p>Lesson 4: To explain that a loop can be used to repeatedly check whether a condition has been met Develop understanding of how the flow of actions in algorithms and programs can be controlled by conditions. Introduce selection and then represent conditions and actions using the ‘if...then...’ structure. Create algorithms that include selection.</p> <p>Lesson 5: LI: To design a physical project that includes selection Identify how selection might be used in real-world situations. Produce design sketches to show how the model will be made and how they will connect the microcontroller to its components.</p> <p>Lesson 6: LI: To create a project from a task description Create a musical instrument in Scratch. Apply the concept of design to help develop programs and use programming blocks. Understand that code can be copied from one sprite to another, and that projects should be tested to see if they perform as expected.</p> <p>Spring 2. <u>Data and Information - Flat-file databases</u></p> <p>Lesson 1: LI: To use a form to record information</p>	<p>to modify objects to create a new image.</p> <p>Lesson 4: LI: To recognise that vector drawings consist of layers Understand layers and how they are used in vector drawings. Discover that each object is built on a new layer and that these layers can be moved forwards and backwards to create effective vector drawings.</p> <p>Lesson 5: LI: To group objects to make them easier to work with Discover how to select and duplicate multiple objects at a single time. Develop this skill further by learning how to group multiple objects to make them easier to work with. Use this knowledge to group and ungroup objects, in order to make changes to and develop vector drawings.</p> <p>Lesson 6: LI: To apply what I have learned about vector drawings Use the skills gained in this unit to create a vector drawing for a specific purpose. Reflect on the skills used to create the vector drawing and think about why they used the skills they did.</p> <p>Summer 2. <u>Programming B - Making Quizzes</u></p> <p>Lesson 1: LI: To explain how selection is used in computer programs Revisit previous learning on ‘selection’ and identify how ‘conditions’ are used to control the flow of actions in a program. Introduce the blocks for using conditions in programs using</p>
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	<p>Introduce video as a media format. Show examples of videos featuring production and editing techniques that be used in own videos. Explain what the medium of video is before analysing and comparing examples of videos.</p> <p>Lesson 2: LI: To use a digital device to record video Explore the capabilities of a digital device that can be used to record video. Experiment with different camera angles, considering how different camera angles can be used for different purposes.</p> <p>Lesson 3: LI: To capture video using a range of techniques Use a storyboard to explore a variety of filming techniques, some of which will be used in a video project later in the unit.</p> <p>Lesson 4: LI: To create a storyboard Plan a video by creating a storyboard. Describe each scene and include a script, camera angles, and filming techniques. Use these storyboards to film the first scene of a video.</p> <p>Lesson 5: LI: To identify that video can be improved through reshooting and editing Film the remaining scenes of the video, and then import content to video editing software. Explore key editing techniques and decide whether</p>	<p>Using a card template, create a data set, with each learner creating eight to ten cards linked to a theme, e.g. animals. Complete records for each of the animals in the database and then physically sort the cards to answer questions about the data.</p> <p>Lesson 2: LI: To compare paper and computer-based databases Use a computer-based database to examine how data can be recorded and viewed. Recognise that a database consists of ‘records’, and that each record contains ‘fields’. Order records in different ways and compare this database to the paper database created in Lesson 1.</p> <p>Lesson 3: LI: To outline how you can answer questions by grouping and then sorting data Investigate how records can be grouped, using both the paper record cards created in Lesson 1 and a computer-based database from J2E. Use ‘grouping’ and ‘sorting’ to answer questions about the data.</p> <p>Lesson 4: LI - To explain that tools can be used to select specific data Develop search techniques to answer questions about data. Use advanced techniques to search for more than one field, and practise doing this through both unplugged methods and using a computer database.</p> <p>Lesson 5: LI - To explain that computer programs can be used to compare data visually Consider what makes a useful chart, and how charts can be used to compare data.</p>	<p>the Scratch programming environment.</p> <p>Lesson 2: LI: To relate that a conditional statement connects a condition to an outcome Develop understanding of selection by using the ‘if... then... else...’ structure in algorithms and programs. Revisit the need to use repetition in selection to ensure that conditions are repeatedly checked. Identify the two outcomes in given programs and how the condition informs which outcome will be selected.</p> <p>Lesson 3: LI: To explain how selection directs the flow of a program Recognise how the ‘if... then... else...’ structure can be used to identify two responses to a binary question (one with a ‘yes or no’ answer). 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. 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. Use an algorithm to design a program that uses selection to direct the flow of the program based on the answer provided.</p> <p>Lesson 4: LI: To design a program that uses selection Outline the requirements to design a quiz and use an algorithm to show how they will use selection in the quiz to control the outcomes based on the answer given. Use design templates to identify the questions that will be asked, and the outcomes for both correct and incorrect answers.</p> <p>Lesson 5: LI: To create a program that uses selection</p>
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	<p>sections of their video can be edited or need to be shot again.</p> <p>Lesson 6: LI: To consider the impact of the choices made when making and sharing a video Complete videos by removing unwanted content and reordering their clips. Export finished video and evaluate the effectiveness of edits.</p>	<p>Create charts from data in order to answer questions about it.</p> <p>Lesson 6: LI - To use a real-world database to answer questions Use a real-life database to ask questions and find answers in the context of a flight search based on set parameters. Take on the role of a travel agent and present findings, showing how to arrive at the chosen options.</p>	<p>Use Scratch to implement the first section of the algorithm as a program. Run the first section of the program to test whether they have correctly used selection to control the outcomes, and debug the program if required. Consider the value of sharing their program with others so that they can receive feedback.</p> <p>Lesson 6: LI: To evaluate my program Identify ways in which the program can be improved. 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. Implement their identified improvements by returning to Scratch and adding to their programs.</p>
<p>Key Vocab</p>	<p>Autumn 1</p> <p><u>Computing systems and networks - systems and searching</u></p> <p>system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking.</p> <p>Autumn 2</p> <p><u>Creating Media - Video production</u></p>	<p>Spring 1.</p> <p><u>Programming A - Selection in physical computing</u></p> <p>microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power,</p>	<p>Summer 1.</p> <p><u>Creating Media -Introduction to vector graphics</u></p> <p>vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection</p> <p>Summer 2.</p>

	<p>video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share.</p>	<p>cell, buzzer</p> <p>Spring 2.</p> <p><u>Data and Information - Flat-file databases</u></p> <p>database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.</p>	<p><u>Programming B - Making Quizzes</u></p> <p>Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator</p>
<p>Challenge</p>	<p>Autumn 1</p> <p><u>Computing systems and networks - systems and searching</u></p> <p>Lesson 1 Explore how digital systems can work and learn about physical and electronic connections.</p> <p>Lesson 2 Explain why communicating with other computers make life easier.</p> <p>Lesson 3 Compare results from different search engines</p> <p>Lesson 4 Consider why some searches return more results than others.</p> <p>Lesson 5 Give examples of criteria used by search engines to rank results.</p> <p>Lesson 6</p>	<p>Spring 1.</p> <p><u>Programming A - Selection in physical computing</u></p> <p>Lesson 1 Explain what an infinite loop does and why it is different to a count-controlled loop.</p> <p>Lesson 2 Design sequences that use count-controlled loops.</p> <p>Lesson 3 Explore how to write programs that use an input as a condition.</p> <p>Lesson 4 Use algorithms to guide program writing.</p> <p>Lesson 5 describe what a project will do and how it can be implemented.</p> <p>Lesson 6 Evaluate designs, testing and debugging projects.</p>	<p>Summer 1.</p> <p><u>Creating Media -Introduction to vector graphics</u></p> <p>Lesson 1 Give advantages and disadvantages of using text, images, emojis or both text, Images and emojis to communicate messages effectively online.</p> <p>Lesson 2 Write own programs that use selection with two outcomes.</p> <p>Lesson 3 Explain how alignment grids and resize handles can be used to improve consistency</p> <p>Lesson 4 Experiment with changing the order of layers in a vector drawing.</p> <p>Lesson 5 Reuse a group of objects to further develop vector drawing</p>

	<p>Explain how search engines make money</p> <p>Autumn 2</p> <p><u>Creating Media - Video production</u></p> <p>Lesson 1 Compare features in different videos</p> <p>Lesson 2 Explore a range of camera angles and their effects.</p> <p>Lesson 3 Evaluate the effectiveness of these techniques before offering feedback on others' work</p> <p>Lesson 4 Evaluate which filming technique will give the best results.</p> <p>Lesson 5 Select the correct tools to make edits to a video.</p> <p>Lesson 6 Consider how they could share their video with others.</p>	<p>Spring 2.</p> <p><u>Data and Information - Flat-file databases</u></p> <p>Lesson 1 Order, sort, and group data cards using set criteria</p> <p>Lesson 2 choose which field to sort data by to answer a given question</p> <p>Lesson 3 combine grouping and sorting to answer specific questions</p> <p>Lesson 4 Choose multiple criteria to answer a given question</p> <p>Lesson 5 Explain the benefits of using a computer to create charts</p> <p>Lesson 6 Ask questions that will need more than one field to answer.</p>	<p>Lesson 6 Compare vector drawings to freehand paint program drawings</p> <p>Summer 2.</p> <p><u>Programming B - Making Quizzes</u></p> <p>Lesson 1 Modify the conditions in an existing program and identify the impact this has.</p> <p>Lesson 2 Consider how their project could be extended to prove that their sprite has successfully navigated a maze.</p> <p>Lesson 3 Implement their algorithm as a program and test whether both outcomes can be achieved.</p> <p>Lesson 4 Identify which outcomes will be selected based on given responses.</p> <p>Lesson 5 Use another learner's quiz and provide feedback on it.</p> <p>Lesson 6 Identify the aspects of the program that worked well, those that were improved, and areas that could improve further.</p>
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<p>Suggested outcomes</p>	<ul style="list-style-type: none"> • Comic strips • Recorded Videos • Evaluations of videos • Website evaluations • Analysis of websites • Network maps 	<ul style="list-style-type: none"> • Seesaw posts • Photos • Printouts • Evaluations • Paper database • Physical models 	<ul style="list-style-type: none"> • Seesaw posts • Photos • Printouts • Scratch programs • Evaluations • discussions
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Year 6	Autumn	Spring	Summer
Theme	<p>Autumn 1.</p> <p><u>Computing systems and networks - Communication and collaboration</u></p> <p>Autumn 2</p> <p><u>Creating Media - Webpage creation</u></p>	<p>Spring 1.</p> <p><u>Programming A - Variables in games</u></p> <p>Spring 2.</p> <p><u>Data and Information - Introduction to spreadsheets</u></p>	<p>Summer 1.</p> <p><u>Creating Media - 3D Modelling</u></p> <p>Summer 2.</p> <p><u>Programming B - Sensing movement</u></p>
Prior Knowledge	<p>Autumn 1</p> <p><u>Computing systems and networks - Communication and collaboration</u></p> <p>This unit progresses learners’ knowledge and understanding of computing systems and online collaborative working.</p> <p>Autumn 2</p> <p><u>Creating Media - Webpage creation</u></p> <p>This unit progresses learners’ knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video. The unit builds on the Year 4 Photo editing unit where composition is introduced and the Year 3 unit ‘Stop-frame animation’</p>	<p>Spring 1.</p> <p><u>Programming A - Variables in games</u></p> <p>This unit assumes that learners will have prior experience of programming using a block-based language (e.g. Scratch) and understand the concepts of sequence and repetition. The National Centre for Computing Education Key Stage 1 units focus on floor robots and ScratchJr.</p> <p>*** The unit has been designed to make use of the components provided in the Crumble starter kit. If access to crumble kits will prevent you teaching this unit, your local hub may be able to support with a loan kit. Find out more by visiting Physical Computing Kits - Teach Computing</p> <p>Spring 2.</p> <p><u>Data and Information - Introduction to spreadsheets</u></p>	<p>Summer 1.</p> <p><u>Creating Media - 3D Modelling</u></p> <p>This unit progresses learners’ knowledge and understanding of digital painting and has some links to the Year 3 ‘Creating media – Desktop publishing’ unit, in which learners used digital images. In this Year 5 unit, learners create images that could be used in desktop publishing documents.</p> <p>Summer 2.</p> <p><u>Programming B - Sensing movement</u></p> <p>This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of ‘sequence’ (Year 3 units: Sequencing Sounds and Events and actions in programs) and ‘repetition’ (Year 4 units: Repetition in shapes and Repetition in games),</p>

	<p>where learners explored some of the features of video production.</p>	<p>This unit progresses learners’ knowledge and understanding of why and how information might be stored in a database and looks at how tools within a database can help us to answer questions about our data. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems.</p>	<p>and have some experience of using ‘selection’. Ideally, learners will have completed ‘Programming A – Selection in physical computing’ before undertaking this unit, as this will provide them with the required knowledge of ‘selection’.</p>
<p style="text-align: center;">Sequence of lessons</p>	<p>Autumn 1</p> <p><u>Computing systems and networks - Communication and collaboration</u></p> <p>Lesson 1: LI: To explain the importance of internet addresses Explore what is necessary for effective communication and the importance of agreed protocols. Apply this understanding to IP addresses and the rules (protocols) that computers have for communicating with one another.</p> <p>Lesson 2: LI: To recognise how data is transferred across the internet Introduce the concept of packets. Explore transferring an image across the internet, to see that as well as messages (text), other types of data (images, video, and audio) are also transferred over the internet. Understand the key parts of a packet: the header and the data payload.</p> <p>Lesson 3: LI: To explain how sharing information online can help people to work together</p>	<p>Spring 1.</p> <p><u>Programming A - Variables in games</u></p> <p>Lesson 1: LI: To define a ‘variable’ as something that is changeable Introduce variables. Recognise examples of real-world variables (score and time in a football match) before exploring them in a Scratch project. Design and make own project that includes variables. Identify that variables are named and that they can be letters (strings) as well as numbers.</p> <p>Lesson 2: LI: To explain why a variable is used in a program Understand that variables are used in programs, and that they can only hold a single value at a time. Complete an unplugged task that demonstrates the process of changing variables. Explore why it is important to name variables and apply this in a Scratch project.</p> <p>Lesson 3: LI: To choose how to improve a game by using variables Apply the concept of variables to enhance an existing game in Scratch. Predict the outcome of changing the same change score</p>	<p>Summer 1.</p> <p><u>Creating Media - 3D Modelling</u></p> <p>Lesson 1: LI: To recognise that you can work in three dimensions on a computer Introduce the concept of 3D modelling by creating a range of 3D shapes. Examine shapes from a variety of views within the 3D space.</p> <p>Lesson 2: LI: To identify that digital 3D objects can be modified Manipulate 3D objects digitally. Resize objects in one, two, and three dimensions. Lift and lower 3D objects relative to the workplane, and combine two 3D objects to make a new shape. Recolour 3D objects.</p> <p>Lesson 3: LI: To recognise that objects can be combined in a 3D model Develop understanding of manipulating digital 3D objects. Rotate objects in three dimensions, duplicate objects, use grouping and ungrouping to manipulate many objects at once. Combine these skills to create a 3D name badge.</p> <p>Lesson 4: LI: To create a 3D model for a given purpose</p>

	<p>Consider how people can work together when they are not in the same location. Discuss ways of working and complete a collaborative online project.</p> <p>Lesson 4: LI: To evaluate different ways of working together online Introduce different approaches to online working: reusing and modifying work done by someone else.</p> <p>Lesson 5: LI: To recognise how we communicate using technology Deepen understanding of the term ‘communication’. Explore different methods of communication, before considering internet-based communication in more detail.</p> <p>Lesson 6: LI: To evaluate different methods of online communication Use information provided in the lesson and prior knowledge to categorise different forms of internet communication. Choose which method(s) they would use for the scenarios discussed in the previous lesson.</p> <p>Autumn 2 <u>Creating Media - Webpage creation</u></p> <p>Lesson 1 LI: To review an existing website and consider its structure explore and review existing websites and evaluate their content. Develop an</p>	<p>block in different parts of a program, then test predictions in Scratch. Experiment with using different values in variables. Add comments to a project.</p> <p>Lesson 4: LI: To design a project that builds on a given example Design the sprites and backgrounds for a project, then they design the algorithms to create the program flow.</p> <p>Lesson 5: LI: To use my design to create a project Implement the algorithms created in Lesson 4. Identify variables in an unfamiliar project and learn the importance of naming variables.</p> <p>Lesson 6: LI: To evaluate my project Consider how to improve own projects and make small changes to achieve this. Add a variable independently. Evaluate other’s projects; identify features that they liked and features that could be improved.</p> <p>Spring 2.</p> <p><u>Data and Information - Introduction to spreadsheets</u></p> <p>Lesson 1: LI: To create a data set in a spreadsheet Collect and organise data in any format. Explore how data can be structured in a table. Input data into a spreadsheet.</p> <p>Lesson 2: LI: To build a data set in a spreadsheet Develop understanding of the structure of a spreadsheet. Introduce cell references, data</p>	<p>Introduce the dimensions of shapes in Tinkercad, accurately resize and move shapes. Introduce placeholders which can be used to create holes in objects.</p> <p>Lesson 5: LI: To plan my own 3D model Recognise how computer-based 3D design is used in architecture to plan buildings. Explode 3D models of buildings to see what shapes they comprise of. Look at real world structures and identify the shapes that they include.</p> <p>Lesson 6: LI: To create my own digital 3D model Create a computer 3D model based on a design. Evaluate the model and that of another learner, before modifying own model to improve it.</p> <p>Summer 2.</p> <p><u>Programming B - Sensing movement</u></p> <p>Lesson 1: LI: To create a program to run on a controllable device Introduce the micro:bit as an input, process, output device that can be programmed. Introduce the device itself and the programming environment, create and run own programs.</p> <p>Lesson 2: LI: To explain that selection can control the flow of a program Explore how if, then, else statements are used to direct the flow of a program. Relate if, then, else statements to real-world situations, before creating programs in MakeCode. Apply knowledge of if, then, else statements to create a program that features selection influenced by</p>
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	<p>understanding that websites are created by using HTML code.</p> <p>Lesson 2 LI: To plan the features of a web page Explore different layout features available in Google Sites and plan own web page on paper.</p> <p>Lesson 3 LI: To consider the ownership and use of images (copyright) Recognise the terms ‘fair use’ and ‘copyright’. Understand why they should only use copyright-free images and will find appropriate images to use in their work from suggested sources. Understand how to search, reuse and reference images under creative commons to enable them to be respectful and responsible online users.</p> <p>Lesson 4 LI: To recognise the need to preview pages Revise how to create own web page in Google Sites. Using plans, create own web page/home page. Preview web page as it will appear on different devices and suggest or make edits to improve the user experience on each device.</p> <p>Lesson 5 LI: To outline the need for a navigation path Begin to appreciate the need to plan the structure of a website carefully. Plan a website, paying attention to the navigation paths. Create multiple web pages and use hyperlinks to link them together as detailed in planning.</p>	<p>items and the concept of formatting cells. Choose formats for data items.</p> <p>Lesson 3: LI: To explain that formulas can be used to produce calculated data Begin to use formulas to produce calculated data. understand that the type of data in a cell is important. Create formulas to use in a spreadsheet using cell references and identify that changing inputs will change the output of the calculation.</p> <p>Lesson 4: LI - To apply formulas to data Calculate data using the operations of multiplication, subtraction, division, and addition. Use these operations to create formulas in a spreadsheet. Understand the importance of creating formulas that include a range of cells.</p> <p>Lesson 5: LI - To create a spreadsheet to plan an event Plan and calculate the cost of an event using a spreadsheet. Use a predefined list to choose what to include in an event, and use a spreadsheet to answer questions on the data.</p> <p>Lesson 6: LI - To choose suitable ways to present data Create charts in Google Sheets. Evaluate the results from charts to answer questions.</p>	<p>a random number to create a micro:bit fortune teller project.</p> <p>Lesson 3: LI: To update a variable with a user input Use the buttons to change the value of a variable using selection. Develop programs to update the variable by moving the micro:bit using the accelerometer to sense motion. Recognise that a variable’s value remains the same after it has been checked by the program.</p> <p>Lesson 4: LI: To use an conditional statement to compare a variable to a value Apply understanding of the importance of order in programs. Use operands in selection to determine the flow of a program. Modify a program which will enable the micro:bit to be used as a navigational device by adapting the code to make a basic compass.</p> <p>Lesson 5: LI: To design a project that uses inputs and outputs on a controllable device Pick out features of a step counter. Relate those features to the sensors on a micro:bit. Design the algorithm and program flow for a step counter project.</p> <p>Lesson 6: LI: To develop a program to use inputs and outputs on a controllable device Use the design from Lesson 5 to make a micro:bit-based step counter. Review plans and then create the code. Test and debug their code, using the emulator and then the physical device.</p>
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	<p>Lesson 6 LI: To recognise the implications of linking to content owned by other people 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. Evaluate the user experience when using websites.</p>		
<p>Key Vocab</p>	<p>Autumn 1</p> <p><u>Computing systems and networks - Communication and collaboration</u></p> <p>communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, oneway, two-way, one-to-one, one-to-many.</p> <p>Autumn 2</p> <p><u>Creating Media - Webpage creation</u></p> <p>website, web page, browser, media, Hypertext Markup Language (HTML), logo,</p>	<p>Spring 1.</p> <p><u>Programming A - Variables in games</u></p> <p>variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare</p> <p>Spring 2.</p> <p><u>Data and Information - Introduction to spreadsheets</u></p> <p>data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output,</p>	<p>Summer 1.</p> <p><u>Creating Media - 3D Modelling</u></p> <p>TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify</p> <p>Summer 2.</p> <p><u>Programming B - Sensing movement</u></p> <p>Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else,</p>

	<p>layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed.</p>	<p>operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools</p>	<p>variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.</p>
<p>Challenge</p>	<p>Autumn 1</p> <p><u>Computing systems and networks - Communication and collaboration</u></p> <p>Lesson 1 Use a Domain Name Server (DNS) to translate web addresses into IP addresses.</p> <p>Lesson 2 Design a web page layout that suits a purpose.</p> <p>Lesson 3 Understand how to use technology respectfully and responsibly when online.</p> <p>Lesson 4 Recognise that working together on the internet can be public or private</p> <p>Lesson 5 Evaluate which methods of communication suit particular purposes.</p> <p>Lesson 6 Explore issues around privacy, information security and how to report</p>	<p>Spring 1.</p> <p><u>Programming A - Variables in games</u></p> <p>Lesson 1 Explain that variables can hold numbers or letters.</p> <p>Lesson 2 Apply an appropriate format to a cell.</p> <p>Lesson 3 Make use of an event in a program to set a variable.</p> <p>Lesson 4 Explain my design choices.</p> <p>Lesson 5 Test the code that has been written.</p> <p>Lesson 6 Use variables to extend a game.</p> <p>Spring 2.</p> <p><u>Data and Information - Introduction to spreadsheets</u></p> <p>Lesson 1 Suggest how to structure data in the most relevant format.</p> <p>Lesson 2</p>	<p>Summer 1.</p> <p><u>Creating Media - 3D Modelling</u></p> <p>Lesson 1 Move 3D shapes relative to one another</p> <p>Lesson 2 Use a range of basic 3d shapes to create new shapes.</p> <p>Lesson 3 Consider the practicality of 3D printing the objects they have made.</p> <p>Lesson 4 Duplicate, then resize multiple objects to create a meaningful 3D object.</p> <p>Lesson 5 Plan a 3D building design.</p> <p>Lesson 6 Explain how 3D models could be improved.</p> <p>Summer 2.</p> <p><u>Programming B - Sensing movement</u></p> <p>Lesson 1 Test programs on an emulator.</p> <p>Lesson 2</p>

	<p>concerns about inappropriate content online.</p> <p>Autumn 2 <u>Creating Media - Webpage creation</u></p> <p>Lesson 1 Discuss the different types of media used on websites</p> <p>Lesson 2 Explore a range of camera angles and their effects.</p> <p>Lesson 3 Evaluate the effectiveness of these techniques before offering feedback on others' work</p> <p>Lesson 4 Evaluate web page designs on different devices and suggest/make edits.</p> <p>Lesson 5 Describe why navigation paths are useful.</p> <p>Lesson 6 Create hyperlinks to link to other people's work.</p>	<p>choose which field to sort data by to answer a given question</p> <p>Lesson 3 Explain why changing inputs changes outputs.</p> <p>Lesson 4 Recognise the advantage of duplicating in order to apply formulas to multiple cells.</p> <p>Lesson 5 Recognise the importance of organising data and using formulas to work out costs for the event.</p> <p>Lesson 6 Recognise that there are different software tools available within spreadsheet applications to present data.</p>	<p>Determine the flow of a program using selection.</p> <p>Lesson 3 Explain how checking a variable doesn't change its value.</p> <p>Lesson 4 Explain the importance of the order of conditions in else, if statements.</p> <p>Lesson 5 Design the program flow for a project.</p> <p>Lesson 6 Use a range of approaches to find and fix bugs.</p>
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<p>Suggested outcomes</p>	<ul style="list-style-type: none"> • Comic strips • Recorded Videos • Evaluations of videos • Website evaluations • Analysis of websites • Network maps 	<ul style="list-style-type: none"> • Seesaw posts • Photos • Printouts • Evaluations • Spreadsheets • Web page designs 	<ul style="list-style-type: none"> • Seesaw posts • Photos • Printouts • Micro-bit programs • Evaluations • Discussions • 3d printed models
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