# Computing Overview

| EYFS | | | | | |
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| | Unit Overview | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
| Autumn 1<br><br>Awesome Autumn | Explore patterns in Garlands Galore, create a leaf labyrinth and make Pumpkin Soup using computational thinking skills | **Computer Science**<br>• To know that we control computers.<br><br>**Computer components and networks**<br>• To know the basic parts of a computer, e.g. mouse, screen, keyboard.<br>• To be able to explore different technology.<br><br>**Information Technology**<br>• To be able to operate a digital device with support to fulfil a task e.g. take a photo. | • To know the basic parts of a computer, e.g. mouse, screen, keyboard.<br>• To know there are different types of computers (iPads, laptops, game consoles). | Computer, tablet, screen, mouse, speakers, games console, iPad, button, input, camera, photography, replay, video, touch, close. | Hello Ruby book |
| Autumn 2<br><br>Winter Warmers | Snowmen scarves and patterns, creating igloos and bird feeders- all take centre stage in our three winter themed activities. | **Computer Science**<br>• To be able to explore different technology.<br>• To know how to repeat an action with technology to trigger a specific outcome.<br>• To be able to follow simple instructions to control a digital device.<br>• To know that we control computers. | • To know that we control computers by giving them instructions.<br>• To know instructions must be in an order. | Technology, sequence, order, instruction, outcome, control. | Hello Ruby book |
| Spring 1<br><br>Super Space | Includes 3 space themed activities to develop pupils computational thinking and problem solving skills. Include creating algorithms and spotting patterns. | **Information Technology**<br>• To be able to operate a digital device with support to fulfil a task e.g. take a photo.<br>• To be able to create simple digital content, e.g. digital art.<br>• To be able to use different digital devices.<br>• To be able to use a mouse, touchscreen or appropriate access device to target and select options on screen.<br><br>**Digital Literacy**<br>• To know that some online content is inappropriate.<br>• To know that information can be public or private.<br>• To know to tell an appropriate adult if they see something on the computer that upsets them | • To know how to take a picture.<br>• To know how to review a picture I have taken.<br>• To interact with computer inputs (touchscreen, keyboard or mouse).<br>• To know who to talk to when we are scared or worried about something we have seen on a computer or tablet. | Photo, digital, online, information, private, true, false, digital device. | iPads<br>Keynote or PowerPoint |
| Spring 2<br><br>Spring Time | Three Spring themed activities see the children make a Rabbit run, create Junk scarecrows and explore sequencing whilst planting seeds. | **Information Technology**<br>• To be able to use technology to explore and access digital content.<br>• To be able to operate a digital device with support to fulfil a task e.g. take a photo.<br>• To be able to create simple digital content, e.g. digital art.<br>• To be able to use different digital devices.<br>• To be able to use a mouse, touchscreen or appropriate access device to target and select options on screen. | • To interact with computer inputs (touchscreen, keyboard or mouse).<br>• To use a mouse or a touch screen to move an image.<br>• To use a mouse or a touchscreen for mark making. | Technology, digital, device, mouse, touchscreen, photo, select. | iPads |
| Summer 1<br><br>Boats Ahoy | Takes children on a journey of discovery as they investigate boats. | **Computer Science**<br>• To be able to explore different technology.<br>• To know how to repeat an action with technology to trigger a specific outcome.<br>• To be able to recognise the success or failure of an action.<br>• To be able to follow simple instructions to control a digital device.<br>• To know that we control computers.<br>• To be able to input a short sequence of instructions to control a device. | • To know that we control computers by giving them instructions.<br>• To know instructions must be in an order.<br>• To input instructions on a robotic device.<br>• To know an algorithm is a precise set of instructions. | Instructions, robot, sequence, technology, control, internet, algorithm, computer, iPad/tablet, app (application). | Beebots |
| Summer 2<br><br>Summer fun | Children explore their surroundings and get creative, take a journey and make a map, and discover seaside tangrams. | **Information Technology**<br>• To be able to use technology to explore and access digital content.<br>• To be able to operate a digital device with support to fulfil a task e.g. take a photo.<br>• To be able to create simple digital content, e.g. digital art.<br>• To be able to use different digital devices.<br>• To know that you can access content on a digital device.<br>• To be able to use a mouse, touchscreen or appropriate access device to target and select options on screen. | • To know how to take a picture and video.<br>• To move and rotate shapes.<br>• To use a mouse or a touchscreen for mark making.<br>• To add text to a document. | Technology, digital, device, mouse, touchscreen, photo, select. | iPad or a digital camera. |

UTTOXETER LEARNING TRUST
INSPIRED TEACHING
INSPIRING CHILDREN

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| **YEAR 1** | | | | | |
| | Unit Overview & Driving Question | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
| Autumn 1<br><br>Beebot Explorers | *Can you code a robot?*<br><br>Learn to control a BeeBot by sequencing algorithms and predicting the program outcomes. | **Computer Science**<br>• To be able to explain that we control computers by giving them instructions.<br>• To be able to create a simple program e.g. to control a floor robot.<br>• To be able to create a simple algorithm.<br>• To be able to predict the outcome of a simple algorithm or program.<br>• To be able to explain what an algorithm is – *a sequence of instructions to make something happen*.<br>• To be able to debug an error in a simple algorithm or program e.g. for a floor robot. | • To know that we control computers by giving them instructions.<br>• To know an algorithm is a step by step set of instructions. | Algorithm, sequence, program, debug, decomposition, design, control, instructions, Beebot, robot, instruction, test, tinker, command, predict. | Beebots<br>Cubetto<br>(extension) |
| Autumn 2<br><br>Digital Painting | *How do I use technology to create artwork?*<br><br>To create digital art by taking photographs, drawing using different brushes and rotating shapes to create your own masterpiece. | **Information Technology**<br>• To be able to recognise different forms of digital content, i.e. text, image, video and audio.<br>• To be able to select a digital device to fulfil a specific task, e.g. to take a photo.<br>• To be able to log on to the school computer / unlock the school tablet with support.<br>• To be able to use a suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer.<br>• To be able to save and open files with support.<br>• To be able to create digital content by adding shapes and text.<br>• To know that you can edit digital content to change its appearance.<br>• To be able to select basic tools/options to change the appearance of digital content, e.g. filter on an image / font / size of paintbrush.<br>• To be able to take a screenshot.<br><br>**Digital Literacy**<br>• To be able to recognise that digital content belongs to the person who created it. | • To know digital content can be images, text, video or audio.<br>• To know that computers can create and edit digital content.<br>• To know that digital content belongs to the person who created it. | Illustration, paint, pen, input, brush, search, digital, digital content, shapes, edit, save, open, digital device. | iPad or Laptop<br>Paint program – Sketches for School (free)<br>Keynote or PowerPoint. |
| Year 1 Spring 1<br><br>Just Dance | *Can you code a dance routine?*<br><br>Plan, write and sequence algorithms to create a programme using unplugged and block-based coding languages. | **Computer Science**<br>• To be able to explain that we control computers by giving them instructions.<br>• To be able to create a simple program e.g. to control a floor robot.<br>• To be able to create a simple algorithm.<br>• To be able to predict the outcome of a simple algorithm or program.<br>• To be able to explain what an algorithm is – *a sequence of instructions to make something happen*.<br>• To be able to recognise that the order of instructions in an algorithm is important.<br>• To be able to debug an error in a simple algorithm or program e.g. for a floor robot. | • To know that we control computers by giving them instructions.<br>• To know an algorithm is a step by step set of instructions.<br>• To know a loop repeats a set of code. | Algorithm, sequence, program, debug, design, Scratch Jnr, search. | Scratch Jnr (iPads) |
| Year 1 Spring 2<br><br>Clean water | *Why should everyone have clean water?*<br><br>Plan, design and create your own drinks labels with the aid of a computer. | **Information Technology**<br>• To be able to recognise different forms of digital content, i.e. text, image, video and audio.<br>• To be able to select a digital device to fulfil a specific task, e.g. to take a photo.<br>• To be able to log on to the school computer / unlock the school tablet with support.<br>• To be able to identify the basic parts of a computer, e.g. mouse, keyboard, screen.<br>• To be able to use a suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer.<br>• To be able to open key applications independently.<br>• To be able to save and open files with support.<br>• To be able to create digital content by adding shapes and text.<br>• To choose media from a selection (e.g. images, video, sound) to present information on a topic.<br>• To know that you can find out information from a website.<br>• To know that you can edit digital content to change its appearance.<br>• To be able to select basic tools/options to change the appearance of digital content, e.g. filter on an image / font / size of paintbrush.<br>• To be able to combine media with support to present information, e.g. text and images. | • To know a computer stores information and that it can be edited using different software.<br>• To know that photos can be shared online.<br>• To identify up to four adults in my life who I trust and how to ask them for help if I have a problem online<br>• To know and explain that objects can be grouped by similarities | Illustration, paint, pen, input, brush, water, sanitation, save, open, paintbrush, digital content, combine media, tools, appearance, login, computer, tablet. | iPad or Laptop<br>Paint program – Sketches for School (free)<br>Keynote or PowerPoint. |

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| | | **Digital Literacy**<br>• To know who to tell if concerned about content or contact online.<br>• To be able to talk about their use of technology at home. | | | |
| Year 1 Summer 1<br><br>Wildlife Data | *What wildlife lives around school?*<br>Learn to sort, group and compare data by looking at the different wildlife in the local habitat around school. | **Data**<br>• To be able to sort, organise and compare data.<br>**Information Technology**<br>• To be able to recognise different forms of digital content, i.e. text, image, video and audio.<br>• To be able to select a digital device to fulfil a specific task, e.g. to take a photo.<br>• To be able to log on to the school computer / unlock the school tablet with support.<br>• To be able to open key applications independently.<br>• To be able to save and open files with support.<br>• To be able to create digital content by adding shapes and text.<br>• To be able to combine media with support to present information, e.g. text and images. | • To know what data is.<br>• To know data can be grouped and labelled. | Data, sort, group, branching database, present, digital content, save, open, information, website, application. | Laptop<br>J2E data (free) |
| Year 1 Summer 2<br><br>Technology around us | *What is technology is used for?*<br>Identify the different types of technology around them and the impact it has on their daily lives. | **Computer Science**<br>• To be able to name a range of digital devices, e.g. laptop, phone, games console.<br>• To be able to identify the basic parts of a computer, e.g. mouse, keyboard, screen.<br>• To be able to use a simple password when logging on, where relevant. Explain why we use passwords.<br>• To know that you can find out information from a website.<br><br>**Digital Literacy**<br>• To explain what personal information is and give examples e.g. name, image.<br>• To be able to recognise that digital content belongs to the person who created it.<br>• To be able to talk about their use of technology at home. | • To know and identify a range of technology.<br>• To name the main parts of a computer.<br>• To know different computer inputs: mouse, keyboard, touch, webcam.<br>• To know different computer outputs: sound, screen.<br>• To know how to use technology safely.<br>• To know who to talk to if they are worried or concerned about something they have seen online. | Technology, devices, input, camera, output, digital content, technology, website, information, mouse, keyboard, screen. | Showbie |

| YEAR 2 | | | | | |
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| | Unit Overview and Driving Question | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
| Autumn 1<br><br>Fundamentals in Coding | *How can you create a Computer programme?*<br><br>Explore computational thinking skills such as decomposition and sequencing in different programming languages. | **Computer Science**<br>• To be able to explain that computers have no intelligence, and we have to program them to do things.<br>• To be able to predict the outcome of an algorithm or program with multiple steps.<br>• To be able to identify and correct errors in a given algorithm or program, and recognise the term debugging.<br>• To be able to use loops and know they repeat sections of code.<br>• To be able to plan out a program by creating an algorithm and evaluate its success. | • To know that the instructions in an algorithm need to be clear and unambiguous.<br>• To know what an algorithm is, and that when inputted on a computer it is called a program.<br>• To know that computers need programmes to achieve a specific goal.<br>• To know there are different coding languages.<br>• To know decomposition is breaking down problems into smaller parts.<br>• To know loops repeats a set of codes and make our code more efficient. | Loops, algorithm, decomposition, direction, compass, sprites, background, code, algorithm, size, programming. | Scratch Jnr<br>Beebots |
| Year 2<br><br>Art attack | *Can I take and edit my own photographs?*<br><br>Explore how to capture and manipulate shapes and images using different art programmes | **Information Technology**<br>• To be able to open key applications independently.<br>• To be able to add an image to a document from a given folder/source.<br>• To be able to resize an image in a document.<br>• To be able to capture media independently (e.g. take photos, record audio).<br>• To be able to create simple digital content for a purpose by adding text, images and shapes.<br>• To know that we can use technology to record and playback audio or take and view photographs.<br>• To be able to apply edits to digital content to achieve a particular effect, e.g. emphasize part of a text.<br>• To be able to present ideas and information by combining media, e.g. text and images.<br>• To be able to identify the common features of digital content, e.g. title, images.<br><br>**Digital Literacy**<br>• To be able to explain what personal information is and the need to keep it private . | • To know how to take a photograph.<br>• To know photographs can be edited.<br>• To know not all images are real and can be trusted.<br>• To know what personal information is.<br>• To know why we keep personal information private. | Applications, image, folder, resize, media, digital content, shapes, images, edits, present, identify. | iPad or Laptop<br>Paint program – Sketches for School (free)<br>Keynote or PowerPoint. |

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| Spring 1<br><br>Robot algorithms | *Can you navigate a robot to overcome obstacles?*<br><br>Write, plan, sequence and debug algorithms, in both using a robotic device (Beebot) and a block-based coding language (Scratch Jnr). | **Computer Science**<br>• To be able to explain that computers have no intelligence and we have to program them to do things.<br>• To be able to create a program with multiple steps e.g. to control a floor robot.<br>• To be able to predict the outcome of an algorithm or program with multiple steps.<br>• To be able to identify and correct errors in a given algorithm or program, and recognise the term debugging.<br>• To be able to plan out a program by creating an algorithm and evaluate its success. | • To know that computers need programmes to achieve a specific goal.<br>• To know that programs execute by following precise and unambiguous instructions.<br>• To know there are different coding languages. | Program, steps, predict, algorithm, plan, debug. | iPad or Laptop<br>Logins to code.org (free)<br>Beebots |
| Spring 2<br><br>Computer museum | *How has technology changed over time?*<br><br>Understand and discover the impact of technology on the world and identify how it helps us by collating a museum of old hardware, including phones, laptops, and tablets. | **Information Technology**<br>• To be able to create simple digital content for a purpose by adding text, images and shapes.<br>• To be able to present ideas and information by combining media, e.g. text and images.<br>• To be able to identify the common features of digital content, e.g. title, images.<br><br>**Computer components and networks**<br>• To know that a range of digital devices contain computers, e.g. phone, games console, smart speaker.<br>• To be able to identify and use input devices, e.g. mouse, keyboard, and output devices, e.g. speakers, screen.<br><br>**Digital Literacy**<br>• To be able to explain the rules for acceptable use of technology. | • To know what a Computer is (input > process > output).<br>• To know what an input and an output is<br>• To know that computers have adapted and evolved over time.<br>• To know that you can use the internet to search for information. | Digital content, text, images, shapes, present, information, input, process, output, phone, games console, internet, output, speaker, screen. | iPad or laptop<br>Showbie<br>Old Computers (tablets, phones, laptops etc). |
| Summer 1<br><br>Animals | *How do we combine text and shapes to create patterns?*<br><br>Explore how to combine text and images to recreate animal patterns. Also explore the impact of sharing information online. | **Information Technology**<br>• To be able to capture media independently (e.g. take photos, record audio).<br>• To be able to create simple digital content for a purpose by adding text, images and shapes.<br>• To know that we can use technology to record and playback audio or take and view photographs.<br>• To be able to apply edits to digital content to achieve a particular effect, e.g. emphasize part of a text.<br>• To be able to present ideas and information by combining media, e.g. text and images.<br>• To be able to identify the common features of digital content, e.g. title, images.<br>• To be able to select basic tools/options to change the appearance of digital content, e.g. filter on an image / font / size of paintbrush.<br><br>**Digital Literacy**<br>• To be able to remember a simple password to log onto the computer or a website.<br>• To be able to explain the rules for acceptable use of technology.<br>• To understand that spending a lot of time in front of a screen can be unhealthy. | • To know what personal information is and that we should not share it online.<br>• To know that not all information online is true.<br>• To know who to talk to if they are worried or concerned about something they have seen online.<br>• I know that digital art can be modified and transformed using various techniques. | Edit, effect, combining media, identity, images, digital content, personal information, unhealthy, screen, acceptable, password. | iPad or laptop<br>Showbie |
| Summer 2<br><br>Investigators | *How can I use data to track can sustainable recycling?*<br><br>Plan and run an investigation by collecting data from a variety of sources and presenting it in pictograms and charts. | **Information Technology**<br>• To be able to open key applications independently.<br>• To be able to save and open files to/from a given folder.<br>• To be able to add an image to a document from a given folder/source.<br>• To be able to create simple digital content for a purpose by adding text, images and shapes.<br>• To be able to present ideas and information by combining media, e.g. text and images.<br><br>**Data**<br>• To be able to recognise charts, pictograms and branching databases, and know why we use them. | • To know what data is.<br>• To know tally charts can be used to collect data.<br>• To know how to create a pictogram using a computer. | Applications, save, open, folder, image, digital content, text, images, branching database, information, pictogram. | iPad or Laptop<br>j2e data (free)<br>Showbie<br>Keynote or PowerPoint. |

| Year 3 | | | | | |
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| | Unit Overview and Driving Question | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
| Autumn 1 | *Can you code a music sequence?* | **Computer Science**<br>• To be able to predict the outcome of a block or text- based program (Scratch/Logo).<br>• To be able to modify an existing program successfully, e.g. change background, number of times things happen. | • To know what decomposition is.<br>• To know that the sequence of commands can affect the outcome.<br>• To know there are different computing languages | Predict, modify, background, repeated, loops, program, algorithm, forever loop, counted | iPad or Laptop<br>Showbie<br>Scratch |

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| **Sequencing sounds** | Create sequences in a block-based programming language (Scratch) to make music using different forms of input. | • To be able to identify repeated steps in a program or algorithm.<br>• To be able to identify errors in a block or text-based program and debug them.<br>• To be able to trigger code with different events (when flag is click, when sprite is clicked). | | control loops, debug, inputs, outputs. | |
| Autumn 2<br><br>**Be Internet Smart** | *How can I be internet smart?*<br><br>Know how to be internet smart by exploring what information we should share but also keep private on the internet. | **Digital Literacy**<br>• To explain why we need to keep our password safe.<br>• To be able to explain that digital content belongs to the person who first created it, but we can give permission for others to use it.<br>• To be able to list different types of personal information and when to share it and when not to.<br>• To understand that some people lie about who they are online.<br>• To explain that that games and films have age ratings.<br><br>**Information Technology**<br>• To be able to use a search engine to find simple information.<br>• To be able to use a keyboard effectively to type in text.<br>• To be able to use left-, right- and double-click on the mouse or navigate a tablet using touch. | • To know computers can be used for communication (video calls, text messages).<br>• To know who to talk to if they are worried or concerned about something they have seen online.<br>• To know that not all information online is true.<br>• To know what personal information is and that we should not share it online.<br>• To know the difference between fact and opinion is. | Passwords, digital content, permission, personal information, privacy, digital footprint, age ratings. | iPad or Laptop<br>Showbie |
| Spring 1<br><br>**Events and actions in programmes** | *What are the different ways I can trigger data?*<br><br>Write algorithms and programs that use a range of events to trigger sequences of actions. | **Computer Science**<br>• To be able to predict the outcome of a block or text- based program (Scratch/Logo).<br>• To be able to successfully modify an existing program, e.g. change background, number of times things happen.<br>• To be able to plan and write an algorithm to run a program.<br>• To be able to identify repeated steps in a program or algorithm.<br>• To be able to identify errors in a block or text-based program and debug them.<br>• To be able to use different inputs to control a program. | • To know decomposition is breaking down problems into smaller parts.<br>• To explain that the sequence of commands can affect the outcome.<br>• To know that there are different events to run an algorithm (ie. when sprite is touched/when green flag is clicked). | Predict, modify, background, repeated, loops, program, algorithm, forever loop, counted control loops, debug, inputs, outputs. | iPad or Laptop<br>Showbie<br>Scratch |
| Spring 2<br><br>**Branching Database** | *How can we organise data?*<br><br>Collect, organise and sort data into a branching database. | **Data**<br>• To be able to recognise charts, pictograms, and branching databases, and know why we use them.<br>• To be able to create a branching database.<br>To explain some benefits of using a computer to create charts and branching databases.<br>• To be able to identify an object using a branching database.<br><br>**Information Technology**<br>• To be able to save files with appropriate names.<br>• To be able to edit digital content to improve it, e.g. resize text, rotate shapes and change colour. | • To know a branching database is a tree structure.<br>• To know data can be searched, filtered and filtered.<br>• To know how to find information in a branching database.<br>• To know how computers are used to collect, store and retrieve data. | Charts, pictograms, databases, present, record, filters, field, search, search engines. | iPad or Laptop<br>Showbie<br>J2e data (free) |
| Summer 1<br><br>**Animation** | *Can you create a stop-time animation?*<br><br>Explore different types of animation before planning a storyboard and creating stop-time animation. | **Information Technology**<br>• To be able to save and open files (e.g. in shared folder).<br>• To be able to save or export files with appropriate names.<br>• To be able to use a keyboard effectively to type text.<br>• To be able to use left-, right- and double-click on the mouse or navigate a tablet using touch.<br>• To be able to add an image to a document.<br>• To be able to resize and move an image in a document.<br>• To be able to present ideas and information by combining media independently, e.g. text and images.<br>• To be able to design and create simple digital content for a purpose/audience, e.g. poster.<br>• To be able to edit digital content to improve it, e.g. resize text, rotate shapes and change colour.<br>• To be able to explain why we use different types of media to convey information, e.g. text, image, audio, video, animation. | • To know what animation is.<br>• To know the difference between stop-time, flipbook, 2D and 3D animation.<br>• To know stop-time animation is a series of frames of images. | Save, file, folder, image, resize, digital content, media, animation, stop-time, frame, edit, crop. | iPad or Laptop<br>Paint program – Sketches for School (free)<br>Keynote or PowerPoint. |
| Summer 2<br><br>**Connecting Computers** | *How are computers connected around the world?*<br><br>Know that digital device has inputs, processors | **Computer components and networks**<br>• To be able to describe what a computer is (input > process > output).<br>• To be able to explain the difference between input and output devices on a computer.<br>**Information Technology**<br>• To be able to add an image to a document.<br>• To be able to design and create simple digital content for a purpose/audience, e.g. poster. | • To know that a network is a series of computers connected.<br>• To know computers can be connected wirelessly and wired. | Input, process, output, search engine, edit, design, digital content. | iPad or Laptop<br>Showbie |

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| | and outputs and how devices can be connected to make networks. | • To be able to edit digital content to improve it, e.g. resize text, rotate shapes and change colour.<br>• To be able to use a search engine to find simple information. | • To recognise the physical components of a network (computer, switch, server)<br>• To know a computer network can be used to share data and information.<br>• To know that search engines store information in databases. | | |

| **Year 4** | | | | | |
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| | Unit Overview and Driving Question | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
| Autumn 1<br><br>**Cryptography unit** | *How has technology been used to crack codes?*<br><br>Explore how computers interpret data from Binary and how the invention of the very first computer has impacted the world. | **Computer Science**<br>• To be able to decompose a problem into smaller parts to help solve it.<br><br>**Computer components and networks**<br>• To be able to recognise that school computers are connected together on a network.<br><br>**Information Technology:**<br>• To be able to copy and paste text or images in a document.<br>• To be able to use a search engine to find specific information.<br>• To be able to design and create digital content for a specific purpose using the most appropriate piece of software, e.g. poster, animation. | • To know that computers work on the binary system (0, 1)<br>• To know binary can represent letters, pictures and sound.<br>• To know and be able to order different file sizes (kb, mb, gb, tb).<br>• To know that computers have changed over time. | Decompose, connected, network, copy, paste, search engine, information, collect, organise, media, digital content, computer system | iPad or Laptop<br>Showbie |
| Autumn 2<br><br>**Repetition in Shapes** | *Why should be use loops in code?*<br><br>Use a block-based programming language to explore count-controlled loops when drawing shapes. | **Computer Science**<br>• To be able to create a program using a range of events/inputs to control what happens.<br>• To be able to decompose a problem into smaller parts to help solve it.<br>• To be able use a count-controlled loop (e.g. repeat 3 times) to make a program more efficient.<br>• To be able to design a program for a purpose.<br>• To be able to debug common mistakes in programs. | • To know a loop command in a programme can be used to repeat instructions.<br>• To know a count-controlled loop stops after a specific number of times.<br>• To know there are different coding languages. | Program, event, input, decompose, forever loops, count-controlled loops, design, debug, algorithm, sequence, logic. | iPad or Laptop<br>Showbie<br>Scratch<br>Logo |
| Spring 1<br><br>**Top Trumps** | *Can you create your own mythical beast?*<br><br>Create your own mythical underwater animal using image editing software to combine and modify images. Enter data on a database to compare creature features. | **Data**<br>• To be able to draw conclusions from information stored in a database, chart or table.<br><br>**Digital Literacy**<br>• To be able to explain that digital content belongs to the person who has created it and that not all information found online is true.<br>• To explain why we should use copyright- free content in our work.<br><br>**Information Technology:**<br>• To know that you can organise files using folders.<br>• To be able to delete and move files.<br>• To be able to use key parts of a keyboard effectively (e.g. shift, arrow keys, delete).<br>• To be able to edit an image by:<br>▪ Cropping the composition<br>▪ Removing the background<br>▪ Adjust colours by applying a filter<br>▪ Adding effects<br><br>• To be able to combine digital content by adding text, multiple images, drawings, annotations, and borders to images.<br>• To be able to edit digital content to improve it according to feedback.<br>• To be able to identify the features of a good piece of digital content and apply these in own design.<br>• To explain the benefits of using technology to present information. | • To know which software is best for image editing.<br>• To know what copyright is.<br>• To know how images can be edited. | Database, chart, table, digital content, copyright-free, files, folder, delete, move, keyboard, crop, filter, collect, organise, edit, media, improve, feedback. | iPad or Laptop<br>Showbie<br>Excel (laptop) or Numbers (iPad)<br>Powerpoint or Keynote<br>Snapseed (iPads) or paint.net (laptop) |

# Computing Overview

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| Spring 2<br><br>**Be Internet Alert** | *How can I be Internet Alert?*<br><br>Understand how and why we need to be alert online and what to do if we are concerned about playing a game online. | **Digital Literacy**<br>• To be able to remember and use an individual password.<br>• To recognise what kinds of websites trustworthy sources of information are.<br>• To explain the benefits and risks of different apps and websites.<br>• To explain that the media can portray groups of people differently.<br>• To be able to explain why my personal information needs to be kept private [*addresses, passwords*].<br>• To be able to explain that digital content belongs to the person who has created it and that not all information found online is true.<br>• To explain why we should use copyright- free content in our work.<br>• To be able to recognise suspicious behaviour in phishing emails, text messages and social media. | • To know not all information on the internet is trustworthy.<br>• To know some of the risks of sharing photos, videos and comments publicly.<br>• To know who to contact when they are concerned over online content.<br>• To know why someone else might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media).<br>• To know that phishing emails try to catch users out by installing spam or getting them to reveal personal information.<br>• To know what acceptable and unacceptable behaviour is online. | Phishing, spear phishing, scam, trustworthy, authentic, verifiable, deceptive, URL, identity, profile, suspicious, chatbot, content, discern. | iPad or Laptop<br>Showbie |
| Summer 1<br><br>**Repetition in Games** | *What are the different types of loop we can use in a code?*<br><br>Use a block-based programming language to explore controlled and infinite loops when creating a game. | **Computer Science**<br>• To be able to create a program using a range of events/inputs to control what happens.<br>• To be able to decompose a problem into smaller parts to help solve it.<br>• To know when to use forever loops and count-controlled loops and use them in programs.<br>• To be able to design a program for a purpose.<br>• To be able to debug common mistakes in programs. | • To know a loop command in a programme can be used to repeat instructions.<br>• To know a forever loop repeats instructions until the programme is stopped.<br>• To know a count-controlled loop stops after a specific number of times. | Program, event, input, decompose, forever loops, count-controlled loops, design, debug, algorithm, sequence, logic, conditions. | iPad or Laptop<br>Showbie<br>Scratch |
| Summer 2<br><br>**How does the internet work** | *How does the internet work?*<br><br>Know that the internet is a global network of computers, servers and routers that are interconnected. | **Computer components and networks**<br>• To be able to recognise that school computers are connected together on a network.<br>• To be able to explain that the Internet is made up of computers and other digital devices connected together all around the world.<br>• To recognise that you use a web browser to access information stored on the internet.<br><br>**Digital Safety**<br>• To explain that digital content belongs to the person who has created it and that not all information found online is true.<br>• To explain why we should use copyright- free content in our work.<br><br>**Information Technology:**<br>• To be able to copy and paste text or images in a document.<br>• To explain the benefits of using technology to present information. | • To know that a network is a series of computers connected.<br>• To know computers can be connected wirelessly and wired.<br>• To know the difference between the internet and the World Wide Web (ie. *the internet allows us to view the World Wide Web).*<br>• To know a computer network can be used to share information.<br>• To know there are copyright rules to protect online content.<br>• To know not all information on the internet is trustworthy. | Connected, network, internet, digital devices, web browser, information, digital content, benefits, copy, copyright free. | iPad or Laptop<br>Showbie |

## Year 5

| | Unit Overview and Driving Question | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
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| Autumn 1<br><br>**Audio engineers** | *How can I record and edit a radio jingle?*<br><br>Remix, edit and record audio to create a radio jingle to promote climate change. | **Information Technology**<br>• To be able to use common keyboard shortcuts, e.g. ctrl C (copy), ctrl V (paste).<br>• To be able to use folders to organise files.<br>• To be able to search for an application on a computer/tablet.<br>• To be able to identify and use appropriate hardware and software to fulfil a specific task.<br>• To be able to remix and edit a range of existing and their own media to create content.<br>• To be able to consider the audience when designing and creating digital content.<br>• To be able to evaluate their own content against success criteria and make improvements accordingly.<br>• To be able to record and playback a recording. | • To know audio can be recorded and edited. | Audio, record, playback, microphone, speaker, headphones, input, output, copyright, plagiarism, start, pause, stop, jingle, track, edit, trim, filter, arrange, save Sound, wave, loop, voice, effect, file, filter, undo, | Audacity or Bandlab<br>Garage Band<br>iPads or Computers |

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# Computing Overview

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| | | • To be able to select an audio clip to trim and apply effects.<br>• To be able to layer audio samples.<br>• To be able to delete a section of audio.<br>• To be able to save/export an audio file. | | Export, MP3, volume, mixing, evaluate, feedback | |
| Autumn 2<br><br>**Real or Fake** | *Is everything we see online real?*<br>Know how we communicate safely online, whether it is through online games, videos or text messages and the implications of negative actions online. | **Data**<br>• To explain the difference between data and information.<br>• To explain that different computer programs work with different types of data, e.g. text, number, video.<br><br>**Digital Literacy:**<br>• To be able to critically evaluate websites for reliability of information and authenticity.<br>• To be able to demonstrate responsible use of an online services and know a range of ways to report concerns.<br>• To explain what makes a strong password.<br>• To explain the benefits and risks of sharing data online.<br>• To be able to identify and explain why my personal information needs to be kept private and the potential impact on their digital footprint.<br>• To know who to go to if they had concerns over online contact.<br>• To be able to be discerning about what information they I gather, checking the validity of data and showing due respect to privacy and copyright.<br>• To be able to use a search engine effectively to find information and images.<br><br>**Computer Components and networks**<br>• To explain the difference between a search engine and a web browser. Explain the basics of how search engines work, and that different search engines may give different results.<br>• To be able to perform complex searches for information using advanced settings in search engines. | • To know and explain the impact of online mis- dis-information.<br>• To know what information to keep private.<br>• To know and explain why we can't trust everything on the internet.<br>• To know what makes a strong password.<br>• To know what is acceptable and unacceptable behaviour online. | Privacy, online identity, trustworthy, fans, followers, digital footprint, Misinformation, disinformation, bias, fact-checking, sources, Data, information, reliability, privacy, tracking, Password, security, encryption, hacking, two-factor authentication, Hacker, scam, encryption, phishing, breach | iPad or Laptop<br>Showbie |
| Spring 1<br><br>**Selection in Quizzes** | *How do I add choice to my game by using selection and conditions?*<br><br>Use a block-based programming language to selection by coding a quiz. | **Computer Science**<br>• To recognise that different solutions may exist for the same problem.<br>• To be able to predict what will happen in a program or algorithm when the input changes (e.g. sensor, data or event).<br>• To be able to use selection in algorithms in programs to alter what happens when a condition changes, e.g. if…then.<br>• To be able to create programs including repeat until loops.<br>• To be able to evaluate a program and make improvements to the code or design accordingly. | To know a loop can be stopped when a condition is met.<br>• To know conditions in computing allows the programme to flow in different directions. | implement, design, algorithm, program, debug, test, setup, selection, condition, outcome, share, evaluate, constructive | iPad or Laptop<br>Showbie<br>Scratch |
| Spring 2<br><br>**Computing Influencers** | *Who are the key influences of innovation of technology?*<br><br>Explore how we research and check information online is accurate before creating an eBook all about key influencers in computing and the impact they have had on the world. | **Information Technology**<br>• To be able to type using fingers on both hands.<br>• To be able to use common keyboard shortcuts, e.g. ctrl C (copy), ctrl V (paste).<br>• To be able to use folders to organise files.<br>• To be able to search for an application on a computer/tablet.<br>• To be able to identify and use appropriate hardware and software to fulfil a specific task.<br>• To be able to remix and edit a range of existing and their own media to create content.<br>• To be able to consider the audience when designing and creating digital content.<br>• To be able to evaluate their own content against success criteria and make improvements accordingly.<br><br>**Data**<br>• To explain the difference between data and information.<br>• To explain that different computer programs work with different types of data, e.g. text, number, video.<br><br>**Digital Literacy**<br>• To be able to demonstrate responsible use of an online services and know a range of ways to report concerns.<br>• To be able to be discerning about what information they gather, checking the validity of data and showing due respect to privacy and copyright. | • To know how technology has changed over time.<br>• To understand the positive and potentially negative impact technological changes have had on society.<br>• To know key influencers on technology and explain the impact they have had.<br>• To know how technology has changed over time.<br>• To know how search engines rank websites<br>• To know the difference between the internet and the world wide web. | Type, shortcut, search, hardware, software, remix, edit, digital content, data, information, report concerns, discerning. | iPad or Laptop<br>Showbie |

# Computing Overview

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| | | • To identify how technology has impacted the world we live in. | | | |
| Summer 1<br><br>**Crab maze** | *How can I create a multiple level video game?*<br><br>Use a block-based programming language to explore selection and variables when creating their own game. | **Computer Science**<br>• To recognise that different solutions may exist for the same problem.<br>• To be able to predict what will happen in a program or algorithm when the input changes (e.g. sensor, data or event).<br>• To be able to use selection in algorithms in programs to alter what happens when a condition changes, e.g. if…then.<br>• To be able to create programs including repeat until loops.<br>• To be able to evaluate a program and make improvements to the code or design accordingly. | • To know a loop can be stopped when a condition is met.<br>• To know conditions in computing allow the program to flow in different directions. | Sensors, predict, program, input, sensor, data, variables, repeat, until loops, evaluate, program, design, data, information. | iPad or Laptop<br>Showbie<br>Scratch |
| Summer 2<br><br>**Visual Storytelling** | *How can we shoot and edit a video?*<br><br>Plan, record, remix and edit video to create a powerful visual story about the impact of global warming. | **Information Technology**<br>• To be able to type using fingers on both hands.<br>• To be able to use common keyboard shortcuts, e.g. ctrl C (copy), ctrl V (paste).<br>• To be able to use folders to organise files.<br>• To be able to search for an application on a computer/tablet.<br>• To be able to identify and use appropriate hardware and software to fulfil a specific task.<br>• To be able to remix and edit a range of existing and their own media to create content.<br>• To be able to consider the audience when designing and creating digital content.<br>• To be able to evaluate their own content against success criteria and make improvements accordingly.<br>• To be able to create and edit a video clip by editing, trimming, splitting, layering and adding special effects such as green screen.<br>**Digital Literacy**<br>• To know where to find copyright free images and audio, and why this is important.<br>• To be able to be discerning about what information they gather, checking the validity of data and showing due respect to privacy and copyright. | • To know video as moving pictures combined with audio.<br>• To know video can be edited. | Type, shortcut, search, hardware, software, remix, edit, digital content, data, information, report concerns, discerning, copyright. | iPad or Laptop<br>Showbie<br>Green Screen<br>Video recording (iPad) |

| **YEAR 6** | | | | | |
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| | Unit Overview and Driving Question | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
| Autumn 1<br><br>**3D modelling** | *How is Computer Aided Design used to create 3D models?*<br><br>Create a 3D model of a keyring by using CAD design software to promote a local business. Use formulas in a spreadsheet to calculate cost and profit. | **Information Technology**<br>• To be able to organise files effectively using folders and files names.<br>• To be able to use the advanced search tools when using a search engine to find specific information and images.<br>• To be able to select, combine and remix a range of media to create original content (i.e. website, app, video, images).<br>• To be able to consider all steps of the design process when creating content (e.g. identify problem, plan, create, evaluate, share).<br>• To be able to identify the most effective tools to present information for a specific purpose.<br>• To be able to evaluate existing digital content in terms of effectiveness and design.<br>• To know how to modify a 3D object in a computer programme by:<br>o Repositioning<br>o rotating in three dimensions<br>o resizing<br>o recolouring<br>o duplicating<br>o deleting<br><br>**Data**<br>• To know what a spreadsheet is and what it is used for.<br>• To be able to use simple formulae in a spreadsheet to find out information from a set of data. | • To know computer aided design can make 3D models.<br>• To know what a spreadsheet can organise and sort data. | 2D, 3D, 3D object, 3D space, view, reposition, rotate, resize, recolour, duplicate, delete, Resize, colour, lift, rotate, position, select, duplicate, Placeholder, hollow, measure, align, duplicate, Modify, evaluate, improve, Cell, row, column, formula, data, input, output | Tinkercard<br>Laptops or iPads<br>Spreadsheets – Excel or Numbers |

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# Computing Overview

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| | | • To be able to collect data for a purpose and plan out a spreadsheet to present it effectively, using relevant formulae.<br>• To be able to produce graphs from data in a spreadsheet to answer a question.<br>• • To be able to analyse and evaluate data and information in a spreadsheet, chart or database. | | | |
| Autumn 2<br><br>**Variables in Games** | *How can variables be used in code?*<br><br>Utilise variables when designing and coding a game in a programming language. | **Computer Science**<br>• To be able to plan out a program in detail, including task, algorithm, code and execution level.<br>• To be able to debug common errors in programs and explain how to fix them.<br>• To be able to create and use simple variables, e.g. to keep score.<br>• To know key concepts (sequence, selection, repetition and variables) in a range of languages and contexts. | • To know what a variable is and that it can hold numbers (integers) or letters (strings). | Variable, change, name, value, sprite set, design, event, design, algorithm, debug, evaluate, improve | iPad or Laptop<br>Showbie<br>Scratch |
| Spring 1<br><br>**Company Launch** | *What digital tools can you use to launch a company?*<br><br>Combine and remix media to create an app prototype to fulfil a design brief. | **Digital Literacy**<br>• To be able to explain that algorithms are used to track online activities with a view to targeting advertising and information.<br>• To be able to explain why their personal information needs to be kept private and the potential impact on their digital footprint.<br>• To know how to report concerns over online contact or content.<br>• To be able to engage in online communities safely, respectfully and responsibly.<br>• To be able to be discerning about what information they gather, checking the validity of data and showing due respect to privacy and copyright.<br><br>**Information Technology**<br>• To be able to type efficiently using both hands.<br>• To be able to use a range of keyboard shortcuts.<br>• To recognise that different devices may have different operating systems.<br>• To be able to organise files effectively using folders and files names.<br>• To be able to use the advanced search tools when using a search engine to find specific information and images.<br>• To be able to select, combine and remix a range of media to create original content. (i.e. website, app, video, images).<br>• To be able to consider all steps of the design process when creating content (e.g. identify problem, plan, create, evaluate, share).<br>• To be able to identify the most effective tools to present information for a specific purpose.<br>• To be able to evaluate existing digital content in terms of effectiveness and design. | • To know what an app is and its common features.<br>• To know what a website is and its common features<br>• To know why we use copyright-free images<br>• To know whatwhen a hyperlink is meant byclicked, it takes the term 'fair use'user to another specified location (URL).<br>• To know prototypes are used to plan and design digital content. | Algorithms, personal information, digital footprint, online communities, respectful, responsible, discerning, type, shortcuts, operating systems, organise, search engine, remix, media, present information | iPad or Laptop<br>Showbie<br>Powerpoint or Keynote |
| Spring 2<br><br>**Be internet kind and brave & #Life Skills** | *How can I be Internet Smart?*<br><br>Explore how to be kind on the internet as well as how to report people or sites when things do not go to plan. | **Digital Literacy**<br>• To know what makes a strong password and why this is important at school and in the wider world.<br>• To be able to explain that algorithms are used to track online activities with a view to targeting advertising and information.<br>• To understand that there are laws around the purchase of games; the production, sending and storage of images; what is written online; and around online gambling.<br>• To be able to explain why their personal information needs to be kept private and the potential impact on their digital footprint.<br>• To be able to identify acceptable and unacceptable behaviour online.<br>• To know how to report concerns over online contact or content.<br>• To be able to engage in online communities safely, respectfully and responsibly.<br>• To be able to be discerning about what information they gather, checking the validity of data and showing due respect to privacy and copyright.<br>• To be able to select, combine and remix a range of media to create original content. (ie, website, app, video, images). | • To know what cyberbullying is and the impact it can have on others.<br>• To know who to contact when they are concerned.<br>• To know how to use the internet to communicate positively (i.e. video calling friends and family).<br>• To know what acceptable and unacceptable behaviour is online. | Password, algorithms, laws, personal information, digital footprint, acceptable, unacceptable, concerns, report, online communities, respectful, responsible, discerning, present information, remix, media | iPad or Laptop<br>Showbie<br>Sphero |
| Summer 1 | **How do computers learn to make decisions?** | • To understand that artificial intelligence systems make decisions by following rules or identifying patterns in data, rather than by thinking or reasoning like humans. | • To know that artificial intelligence systems are trained using data and examples. | Algorithm, data, pattern, rule, classify, predict, | • iPad or laptop<br>• Showbie |

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| **Artificial Intelligence (AI)** | Computers don't "think" — they follow rules and learn patterns from data. Those patterns shape decisions. | • To recognise that algorithms, data, and variables work together to influence the decisions made by computer systems.<br>• To understand that computers process inputs to produce outputs, and that changing the input data can change the outcome.<br>• To recognise that AI systems can make errors when data is unclear, incomplete, or does not match previously learned patterns. | • To know that rule-based systems use if/then logic to make decisions.<br>• To know that data can be grouped or classified using shared features.<br>• To know that computers do not understand meaning, only patterns and instructions.<br>• To know that increasing the amount of data does not always improve accuracy.<br>• To know that computers may struggle to explain *why* a decision has been made. | feature, outcome, system, input, output | • Spreadsheet software (Excel or Numbers)<br>• Presentation software (Keynote or PowerPoint) |
| Summer 2<br><br>**Can we trust decisions made by AI?** | AI systems can be useful — but they can also be biased, misleading, or misused. Humans remain responsible. | • To understand that artificial intelligence systems can reflect bias present in the data they are trained on.<br>• To recognise that AI-generated outputs are not always accurate, fair, or trustworthy.<br>• To understand that algorithms influence the information people see online and can shape opinions and behaviour.<br>• To recognise that humans are responsible for the design, use, and impact of AI systems. | • To know that biased or incomplete data can lead to unfair or misleading outcomes.<br>• To know that images, text, and videos can be generated or altered using AI tools.<br>• To know that not all online content is real or reliable, even if it appears convincing.<br>• To know that algorithms are used to recommend content, advertisements, and information.<br>• To know that ethical decisions about technology involve considering fairness, impact, and responsibility.<br>• To know that people can question, verify, and challenge AI-generated content. | Bias, misinformation, trustworthy, data source, verify, manipulate, influence, ethical, responsibility, accountability | • iPad or laptop<br>• Showbie (<br>• Image editing software (Keynote, PowerPoint, or simple photo editing apps already available in school)<br>• Presentation software (Keynote or PowerPoint) |
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| **YEAR 7** | | | | | |
| **AUTUMN** | Unit Overview and Driving Question | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
| Week 1 | Setting a password<br>File management<br>Introduce touch typing | To be able to choose appropriate passwords to keep their accounts safe.<br>To develop touch typing skills to be able to access the curriculum more effectively.<br>To be able to create folders to store different subjects work in their user areas.<br>To be able to type at a speed which allows access to the full course and use keyboard shortcuts to increase the effectiveness of their computer use. | To know the factors that effect the strength of a password.<br>To understand the need for file management. | File management<br>Password strength<br>Folder<br>File | |
| Week 2 | Digital footprint | To know the actions we take online create a digit footprint.<br>To be able to describe what their digital footprint will look. | To know what is included in a digital footprint. | Digital footprint<br>Interactions<br>Website | |
| Week 3 | Phishing, pharming and smishing | To be able to identify defining elements of phishing, pharming and smishing and how to report | To understand the key elements that identify phishing/smishing communications. | Phishing<br>Pharming<br>Smishing<br>Communications | |
| Week 4 | Ethics – digital manufacturing and disposal | To understand what E-Waste is and the steps to take to reduce it. | To know that creating computers requires raw materials.<br>To know that some of the disposal methods for electronic devices are unethical. | E-Waste<br>Ethical / Unethical<br>Impact<br>Raw materials | |

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| Week 5 | Misinformation and reliable sources | To be inquisitive about the acceptance of information before it has been proven. | To know what a source is and how it can be used to check for reliability of data. | Reliable<br>Source<br>Data<br>Information | |
| Week 6-7 | Abstraction and decomposition in everyday tasks | To understand that in Computing “a problem” is any scenario where a solution is being designed.<br>To be able to use learning of computational thinking techniques to support decision making in a range of scenarios. | To know that decomposition is breaking a problem down into smaller parts.<br>To know that abstraction is focuses on just the key elements of a problem and ignoring unnecessary details.<br>To know an algorithm is steps to solve a problem.<br>To know that algorithms are used in everyday life. | Abstraction<br>Decomposition<br>Elements<br>Computational thinking | |
| Week 8-12 | Block based programming using sequence and variables | When coding is running it and is edited it will need to be rerun for the changes to take effect.<br>In block based programming the colours and shapes indicate which blocks can be connected to it and the purpose of that block.<br>A program will only do exactly what you program it to do, it will not adjust based on mistakes. | To know variables are a named storage space in memory for data.<br>To be able to create a range of programs using a block based programming language and sequence, selection and iteration.<br>To know a bug is when something unexpected happens in a program. | Variable<br>Selection<br>Sequence<br>Iteration<br>Bug | |
| *Week 9 Assessment* | Computational thinking – Bebras competition | To understand that in Computing “a problem” is any scenario where a solution is being designed.<br>To be able to use learning of computational thinking techniques to support decision making in a range of scenarios. | Assessment point | Abstraction<br>Decomposition<br>Elements<br>Computational thinking | |
| Week 13 | Parts of a PC / Storage devices | To be able to describe devices without using manufacturer specific names.<br>To be able to identify what a device may be from how it looks. | To know output devices send data to the user and/or another device.<br>To know the main internal parts of the computer are PSU, motherboard, CPU, RAM, HDD/SSD and expansion cards. | PSU<br>CPU<br>Motherboard<br>RAM<br>HDD | |
| Week 14 | Hardware and software | To be able to describe software without using manufacturer specific names. | To know hardware is the physical elements of the computer.<br>To know software is data stored on the computer with a purpose. | Software<br>Hardware<br>Applications | |
| Week 15 | LAN and WAN | To be able to identify a network as either a WAN or a LAN. | To know LAN stands for Local Area Network.<br>To know a LAN covers a small geographical area.<br>To WAN stands for Wide Area Network.<br>To know that WANS cover a larger distance and are usually connected by WAN. | LAN<br>WAN<br>ISP | |
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| Week 1-3 | Block based programming – selection and iteration (2nd project) | When coding is running it and is edited it will need to be rerun for the changes to take effect.<br>In block based programming the colours and shapes indicate which blocks can be connected to it and the purpose of that block.<br>A program will only do exactly what you program it to do, it will not adjust based on mistakes. | To know variables are a named storage space in memory for data.<br>To be able to create a range of programs using a block based programming language and sequence, selection and iteration.<br>To know a bug is when something unexpected happens in a program. | Variable<br>Selection<br>Sequence<br>Iteration<br>Bug | |
| Week 4 | The internet | To be able to discuss the WWW and the internet using their names appropriately. | To know the internet is a WAN.<br>To know the WWW is the websites that are stored on the internet. | WWW<br>Internet<br>Web browser | |
| Week 5 | Copyright design and patents act | To know how the Copyright design and patents Act is applied to their lives both at home and in school. | To be able to identify actions that break the Copyright, design and parents Act.<br>To be able to use items that are covered by Copyright legally. | CDPA<br>Author<br>Permission | |
| Week 6 | Assessment Week | | | | |
| Week 7 | Vector images | To be able to create vector images using a range of shapes.<br>To understand how layering will effect the outcome of a vector images final outcome. | To know that images can be saved as lines and shapes. | Point<br>Line<br>Shape<br>Layer | |
| Week 8-9 | Presentation software | To understand how documents may be adapted for different purposes and audiences.<br>To be able to create a presentation for a purpose. | To know a range of keyboard shortcut which support quicker interaction with projects e.g. cut, copy, paste, save, undo. | Shortcut<br>Presentation<br>Audience<br>Purpose | |
| Week 10 | Linear search | To be able to perform a linear search on a list of data. | To know a linear search works from left to right.<br>To know a linear search will check each item in order.<br>To know a linear search will stop when it finds the item it is looking for.<br>To know a linear search will return a message of not found if it reaches the end of the list without finding the item it is looking for. | Algorithm<br>Searching algorithm<br>Comparison<br>Termination | |
| Week 11 | Spreadsheets | Clicking on a cell will give you it's reference.<br>There are multiple ways of using a cell reference in a formula including typing it, clicking the cell or using the keyboard.<br>Cell references can be filled down a column or across a row by dragging the fill handle. | To know a range of keyboard shortcut which support quicker interaction with projects e.g. cut, copy, paste, save, undo.<br>To know spreadsheets have rows and columns.<br>To know basic formula to allow a spreadsheet to perform calculations e.g. totalling, max, min, averages.<br>To know data collection is designed using open and closed questions. | Cell<br>Column<br>Row<br>Sheet<br>Formula<br>Cell reference | |
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| **SUMMER** | | | | | |
| Week 1-2 | Continued Spreadsheet | As above | | | |
| Week 3 | Binary to denary | To be able to convert an 8 bit binary number into denary using a conversion grid. | To know that data sizes are measured in bits.<br>To know that everything is stored on the computer as binary.<br>To know the binary place values upto 8 bits. | Binary<br>Denary<br>Bit<br>Place value | |
| Week 4 | Assessment Week | | | | |
| Week 5-7 | Flowcharts that contain selection, input, output and processing | To be able to create a flowchart for a range of scenarios. | To know the different flowchart shapes for terminators, inputs, outputs and processes.<br>To know a flowchart is complete if all shapes have one flowline in and at least one out with the exception of terminators | Terminator<br>Input<br>Outut<br>Process<br>Decision | |
| Week 8 | Logic gates – AND, OR, NOT | To be able to solve logic circuits using TRUE and FALSE as the inputs and outputs | To know what an AND, OR and NOT gate look like. | Logic gate<br>Input<br>Output | |
| Week 9-10 | Word processing | To understand how documents may be adapted for different purposes and audiences.<br>To be able to create a word processed document & a presentation for a purpose.<br>To be able to use search engines for research and judge the results as trustworthiness | To know a range of keyboard shortcut which support quicker interaction with projects e.g. cut, copy, paste, save, undo. | Search engine<br>Word processor<br>Trustworthy<br>Header<br>Footer | |
| Week 11 | Sound sampling | To be able to use samples to be able to draw out a sound wave on a graph. | To know analogue sound is in waves.<br>To know for those waves to be stored on a computer they need to be sampled at regular intervals, the amplitude of the wave is measured and stored as binary. | Sample<br>Interval<br>Binary<br>Amplitude | |
| Week 12 | Bubble sort | To be able to complete a pass on a bubble sort swapping items in pairs.<br>To only swap items that are directly next to each other and work left to right. | To know a bubble sort completes a pass when it has gone from one end to the other by comparing and swapping pairs of data.<br>To know a bubble sort is complete when it has completed a pass without making a swap. | Algorithm<br>Sorting algorithm<br>Bubble sort<br>Pass<br>Flag | |
| Week 13 | Representing text - ASCII | To convert a set of binary values into their ASCII letters. | To be able to state the number of bits used to store ASCII values.<br>To understand that text characters are stored on the computer as binary. | Binary<br>Ascii<br>Character set | |
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| Year 8 | | | | | |
| **AUTUMN** | Unit Overview and Driving Question | Disciplinary Knowledge | Substantive Knowledge | Language | Programs and Software |
| Week 1-2 | Ethics – impact of technology on society | To consider how technology has impact areas of society e.g. farming, self checkout, sports. | To know that the digital divide is where a group of individuals have more/less access to technology. | Society<br>Impact<br>Digital divide | |
| Week 3 | GDPR | To understand how the GDPR applies to data that is stored about them. | To know who a company has to report a data breach to. | Breach<br>GDPR<br>ICO | |

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| Week 4 | Deepfakes and AI | To understand how to merge images together to create a new image using photo editing skills. | To know how deepfakes are created.<br>To know a range of techniques for identifying deepfake and AI images. | Deepfake<br>AI<br>Merge<br>Layers | |
| Week 5 | Impact of algorithms on content feeds e.g. social media | To make informed choices when reacting to content received through social media. | To know the general steps a social media algorithm may use when recommending content to viewers. | Algorithm<br>Social media<br>Interactions | |
| Week 6-7 | Malware | Malware is software — understanding how software is written, executed, and interacts with systems is fundamental in being able to keep data safe. | To know malware is a term to describe many different types of malicious software e.g. keylogger, worm, ransomware.<br>To know a virus spreads via a network and corrupts/deletes data.<br>To know spyware covertly collects data from the user to share without their knowledge. | Malware<br>Virus<br>Spyware<br>Trojan<br>Worm | |
| Week 8 | Denary to binary | To understand that when converting denary values to binary you need to start with the most significant bit.<br>To be able to convert a denary number up to 255 into an 8 bit binary number using a conversion grid. | To know that any binary value ending with a 1 is an odd number. | Bit<br>Most significant bit<br>Binary<br>Denary | |
| Week 9 | Assessment week<br>Computational thinking – Bebras competition | To be able to use learning of computational techniques in a range of scenarios that are more challenging. | Assessment point | Abstraction<br>Decomposition<br>Elements<br>Computational thinking | |
| Week 10 | Input and output devices | To be able to group device by their categories – input, output, internal and external. | To know an input device is used to send different inputs to the computer including sound and UI interactions. | Storage<br>User interface<br>Input<br>Output | |
| Week 11 | Primary and secondary storage | To know a USB is a connection interface and not a device.<br>To be able to group devices by their categories – primary and secondary. | To know RAM stores data temporarily and is primary storage.<br>To know secondary storage is used to store data permanently and to be able to identify devices that fall into this category. | Primary<br>Secondary<br>Interface | |
| Week 12 | PC as a whole linking input, output and storage | To be able to connect a device inside a PC it has to go via the motherboard. | To know that all internal components of the computer are connected via the motherboard which in turn gives them power from the PSU. | PSU<br>Motherboard<br>Internal<br>Hardware | |
| Week 13-14 | Text based programming project including constants (half unit, second half in Summer term) | Key words in the programs library will appear in different colours, this can support creation and debugging.<br>Indentations in code allow the programmer to see what is included inside selection and loops.<br>Setting up a programming environment will support coding as you can see the code while it is running.<br>Using shortcuts to be able to arrange windows in a programming environment.<br>Data structure names should inform the user what data is saved inside of it to support development and maintenance. | To know constants are a named storage space in memory where data is stored that can not be changed while the program is running.<br>To be able to create a range of programs using a text based programming language and sequence, selection and iteration. | Constant<br>Debug<br>Indentation<br>Construct | |

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| Week 15 (continues into next term) | Components of wired and wireless networks | To be able to identify different network devices by how they look.<br>To be able to choose a server for a given requirement.<br>To be able to identify and connect devices in a network.<br>To be able to identify the full names of network acronyms NIC, WAP and ISP to aid with knowledge retention. | To know the roles of the NIC, router, switch, ethernet cables and firewall.<br>To know the role of a WAP.<br>To know a range of roles a server can provide.<br>To know how to connect devices in a network so they can all share the connection.<br>To know the internet connection is provided by an ISP.<br>To know that the cloud is still a physical location that is connected to via the internet. | NIC<br>Router<br>Switch<br>Ethernet<br>Firewall | |
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| **SPRING** | | | | | |
| Week 1 | Components of wired and wireless networks | As above | | | |
| Week 2-4 | Creating flowcharts including repetition | To be able to create programs using flowcharts that loop so may not have a terminator. | To know the flowchart shape for decision is a diamond. | Decision<br>Diamond<br>Loop / Iteration | |
| Week 5-6 | Spreadsheet formula for budgeting | To be able to create formula that will help interrogate data and predict budgeting requirements. | To know that spreadsheets will update their calculations automatically whenever a change is made. | Forecast<br>Budget<br>Formula<br>Automatically | |
| Week 7 | Assessment Point | | | | |
| Week 8-9 | Abstraction and decomposition using spreadsheets and databases. | To be able to use database searches to interrogate data to draw conclusions.<br>The operators <= and >= will include the number in the search, otherwise it will be disregarded. | To know decomposition and abstraction can be used to investigate data and draw conclusions.<br>To know spreadsheets will change the results based on formula. | Database<br>Conclusion<br>Operator<br>Interrogate | |
| Week 10 | Sound – bit depth and sample rate | To be able to use samples to be able to draw out a sound wave on a graph.<br>To be able to label the graph with it's bit depth and sample rate using relative sizes. | To know the effects on a sound when the sample rate and/or the bit depth increases or decreases.<br>To know the quality of sound can be effected by the sample rate and the bit depth.<br>To understand why the quality of sound is important. | Bit depth<br>Sample rate<br>Quality | |
| Week 11 (continues into next term) | Presentation for a purpose using master pages | To be able to create a master slide for a presentation that is suitable for a designated target audience. | To know using master pages provides uniformity within a presentation. | Master page<br>Uniformity<br>Target audience<br>Presentation | |
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| **SUMMER** | | | | | |
| Week 1 | Presentation for a purpose using master pages | As above | | | |
| Week 2 | Mail merge in a word processed document | To be able to adjust the headers & footers of a document to make it formal.<br>To be able to use mail merge to create a letter with different intended recipients. | To know headers & footers provides uniformity within a word processed document. | Mail merge<br>Word processor<br>Header | |

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| | | | To know mail merges are used to create personalised, near identical documents | Footer | |
| Week 3-4 | Bitmap images | To be able to create a bitmap image using squares.<br>To be able to convert a bitmap image into it's binary form. | To understand that images are stored as binary.<br>To know that bitmap images are made up of pixels. | Pixels<br>Resolution<br>Colour depth<br>Meta data | |
| Week 5 | Text based programming project including constants (continues from Autumn Term) | As autumn Term | | | |
| Week 6 | Assessment Point | | | | |
| Week 7 | Text based programming project including constants (continues from Autumn Term) | As autumn Term | | | |
| Week 8 | Logic gate truth tables | To be able to complete truth tables using binary to represent TRUE and FALSE.<br>To be able to create a truth table for each gate. | To know what the truth tables for an AND, OR and NOT gate look like. | Logic gate<br>Truth table<br>Boolean | |
| Week 9-10 | HTML | To be able to create a basic webpage using HTML. | To know that HTML uses tags.<br>To know a range of basic HTML tags and their uses. | Tag<br>HTML<br>Hyperlink | |
| Week 11 | Merge sort | To be able to use a merge sort on a sample set of data. | To know that merge sort first splits the elements of data into individual lists.<br>To know that merging and sorting the sub lists happens at the same time.<br>To know the order in which the sort would take, first splitting, then merging. | Element<br>List<br>Sub list<br>Data set | |
| Week 12 | Binary search | To be able to perform a binary search on an even and odd size data set. | To know a binary search only works when the list is in order.<br>To know a binary search will start by selecting the middle value.<br>To know a binary search will compare the item it is looking for against the middle value.<br>To know a binary search will stop if the searched item is the same as the middle item.<br>To know a binary search when not finding the item it is looking for will discard the half of the list and the middle item where the item will not be.<br>To know a binary search then repeats this process until the item is found or the list is size 1 and the item not found. | Algorithm<br>Searching algorithm<br>Binary Search<br>Discard | |
| Week 13 | Unicode | To compare the data storage of letters when stored in ASCII and Unicode.<br>To explore the values that can not be stored in ASCII. | To understand the need for Unicode.<br>To be able to state the number of bits used to store a Unicode value. | Character set<br>Unicode<br>ASCII<br>Bits | |

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