Computing Curriculum Skills Map

	Class	
Early Years Foundation Stage	EYFS	• taking a photograph with a camera or tablet • searching for information on the internet • playing games on the interactive whiteboard • exploring an old typewriter or other mechanical toys • using a Beebot • watching a video clip • listening to music

	Class	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Stage 1	Year 1	<u>Computing systems and networks</u> Improving Mouse skills • Use computers more purposefully • Log in and navigate around a computer • Drag, drop, click and control a cursor using a mouse • Use software tools to create art on the computer	<u>Programming 1</u> Algorithms unplugged • Explain what an algorithm is. • Write clear algorithms. • Follow an algorithm. • Explain what inputs and outputs are. • Create an achievable program. • Decompose a design into steps. • Identify bugs in an algorithm and how to fix them.	<u>Skills showcase</u> Rocket to the Moon • Use a computer to make a list. • Explain the benefits of making a list on the computer. • Use a basic range of tools on graphics editing software to design a rocket. • Sequence instructions. • Follow instructions to build their model rocket. • Input data about their rockets into a table or spreadsheet.	<u>Data handling</u> Introduction to data • Represent animal-themed data in different ways, using objects and technology. • Log in and use mouse and keyboard skills to navigate the computer. • Represent the same data as a pictogram and a table or chart. • Collect data about minibeasts using a tally chart and represent data digitally. • Click and drag objects to sort data using a branching database.	<u>Creating media</u> Digital imagery • Plan a pictorial story using photographic images in sequence. • Explain how to take clear photos. • Take photos using a device. • Edit photos by cropping, filtering and resizing. • Search for and import images from the internet. • Explain what to do if something makes them uncomfortable online. • Organise images on the page,	<u>Online safety</u> Online Safety Year 1 • Discuss what the internet is and how it can be used. • Recognise that the internet may affect mood or emotions. • Recognise how internet use can affect and upset others. • Identify which information is appropriate to share and post online and which is not.

					• Consider the types of input used to gather different forms of data when designing an invention.	orientating where necessary.	

	Class	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Stage 1	Year 2	<u>Computing systems and networks 1</u> What is a computer? • Name some computer peripherals and their functions. • Recognise that buttons cause effects. • Explain that technology follows instructions. • Recognise different forms of technology. • Design an invention which includes inputs and outputs. • Explain the role of computers in the world around them.	<u>Programming 1</u> Algorithms and debugging • Decompose a game to predict the algorithms. • Give a definition for 'decomposition'. • Write clear and precise algorithms. • Create algorithms to solve problems. • Use loops in their algorithms to make their code more efficient. • Explain what abstraction is.	<u>Computing systems and networks 2</u> Word processing • Explain which the home row keys are and how to find them when typing. • Use the spacebar and backspace correctly. • Type and make simple alterations to text using buttons on a word processor. • Search for, import and alter appropriate images for a text document.	<u>Programming 2</u> Introduction to block coding • Recognise the smaller steps needed to solve a problem within a game. • Describe simple tasks in games where programming is used. • Identify different blocks and explain their basic use. • Create a simple sequence of instructions using at least three different blocks.	<u>Data handling</u> International Space Station • Create a flip book animation. • Decompose a story into smaller parts to plan a stop motion animation. • Create stop motion animations with small changes between images.	<u>Online safety</u> Online Safety Year 2 • Explain what is meant by online information. • Recognise what information is safe to be shared online. • Explain why we need passwords and what makes a strong password. • Understand that they need to ask permission before sharing content online and explain why. • Understand that they have the right

				• Modify text in a document. • Use copy and paste to copy text from one document to another. • Explain what information is safe to be shared online.	• Recognise that blocks fit together to form a sequence. • Identify a variety of blocks in MakeCode, demonstrating an understanding of their basic functions. • Understand the sequence of steps involved in representing an algorithm. • Arrange code blocks in the correct order to create a working program. • Identify any errors and debug their code effectively.		to deny their permission to information about them being shared online. • Say who they can ask for help with online worries. • Use some strategies to work out if online information is reliable or not.

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Lower Key Stage 2	Year 3	**Computing systems and networks 1** Networks • Recognise that a network is two or more devices connected and its purpose. • Identify key components that make up the school's network. • Explain the difference between wired and wireless connections. • Recognise that files are saved on a server. • Understand the role of the server in a network when	**Programming** **Scratch** • Explain what some of the blocks do in Scratch. • Explain what a loop is and include one in their program. • Suggest possible additions to an existing program by remixing code. • Recognise where something on screen is controlled by code. • Use a systematic approach to find bugs. • Understand the definitions of decomposition and algorithm and how they	**Computing systems and networks 2** Emailing • Log in and out of email. • Send a simple email with a subject plus 'To' and 'From' in the body of the text. • Edit an email. • Type in the email address correctly and send the email. • Add an attachment to an email. • Write an email using positive language, with an awareness of how it will make the recipient feel.	**Computing systems and networks 3** **Journey inside a computer** • Recognise inputs and outputs and that the computer sends and receives information. • Explain that the parts of a laptop work together and the purpose of each part. • Explain what an algorithm is. • Suggest what memory is for inside a computer. • Make comparisons between different	**Data handling** **Comparison cards databases** • Explain what is meant by **field**, **record** and **data**. • Compare paper and computerised databases. • Put values into a spreadsheet. • Sort, filter and interpret data in a spreadsheet. • Create a graph. • Explain the purpose of visual representations of data. •	**Online safety** **Online Safety Year 3** • Differentiate between fact, opinion and belief online. • Explain how to deal with upsetting online content. • Recognise that digital devices communicate with each other to share personal information. • Explain what social media platforms are used for. • Recognise why social media platforms are age-restricted. •

		requesting a website. • Identify parts of a website's journey to reach your computer. • Recognise that routers connect to send information. • Understand that data is broken into packets.	are used to create accurate code.	• Recognise unkind behaviour online and know how to report it. • Offer advice to victims of cyberbullying. • Recognise when an email may be fake and explain how they know.	types of computer.		

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	Year 4	<u>Computing systems and networks</u> Collaborative learning • Understand the need to be thoughtful when working on a collaborative document. • Use comments to suggest changes to a document and understand how to resolve comments. • Use a variety of different slide styles to convey information, including images and transitions. • Create a Google Form with a range of different question types that will provide different types of answers, e.g. text, multiple choice or numerical values.	<u>Programming 1</u> Further coding with scratch • Understand how to create a simple script in Scratch. • Add or change a sprite and prevent it from rotating. • Use decomposition to identify key features and understand how to decipher actions that make the quiz game work. • Understand what a variable is and how to use the 'say' and 'ask' blocks. • Create a variable and be able to use a variable to record a score. • Understand what a variable is and how it works within a program.	<u>Creating media</u> Website design • Use most of the tabs (e.g. insert, pages, themes) on Google Sites on their website. • Create a clear plan for their web page and begin to create it. • Create a professional looking web page with useful information and a clear style, which is easy for the user to read and find information from. • Create a clear plan by referring back to their checklist. • Create four web pages with a range of features on their website.	<u>Skills showcase</u> HTML • Recognise the role of HTML in a web page. • Add text between the heading and paragraph tags. • Explore a web page using the inspect tool. • Explain how they altered the HTML to create their posters. • Alter the basic elements within a web page using the inspect tool. • Replace the text and images in a webpage.	<u>Data handling</u> Investigating weather • Search the web efficiently to find temperatures of different cities and record this accurately. • Design a weather station that gathers and records sensor data, explaining how it works and the units of measurement it would use. • Design an automated machine that uses selection to respond to sensor data. • Search for and record weather forecast information in a spreadsheet and explain how this data is collected. • Create a video which includes	<u>Online safety</u> Online Safety Year 4 • Describe how to search over multiple platforms and be aware of the accuracy of the results presented. • Describe some of the methods used to persuade people to buy online. • Explain the difference between fact, opinion and belief and recognise these online. • Explain what a bot is and give examples of different bots. • Explain some positive and negative distractions of using technology and small strategies for reducing the time

		• Export data to a spreadsheet, highlighting data, using conditional formatting and calculating averages and sums of numbers.				weather forecast information.	spent on technology.

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Upper Key Stage 2	Year 5	<u>Computing systems and networks</u> Search engines • Explain what a search engine is, suggest several search engines to use and explain how to use them to find websites and information. • Suggest that things online are not always true and recognise what to check for. • Explain why keywords are important and what TASK stands for, using these strategies to search effectively. • Recognise the terms 'copyright' and 'fair use' and combine text and images in a poster. • Make parallels between book	<u>Programming 1</u> Programming music • Iterate ideas, testing and changing throughout the lesson. Explain what the basic commands do. • Explain how their program links to the theme. Include a loop in their work. Correct their own simple mistakes. • Explain their scene in the story. Link musical concepts to their scene. Include a repeat and explain its function to enhance music. • Code a piece of music that combines a variety of structures. Use loops in their programming. • Recognise that programming music	<u>Data handling</u> Mars Rover 1 • Identify some types of data the Mars Rover could collect (for example, photos). • Explain how the Mars Rover transmits the data back to Earth and the challenges involved. • Read any number in binary, up to eight bits. • Identify input, processing and output on the Mars Rovers. • Read binary numbers and grasp the concept of binary addition. • Relate binary signals (Boolean) to a simple character-based language, ASCII.	<u>Programming 2</u> Micro:bit • Clip blocks together and predict what will happen. Make connections with previous programming interfaces they've used, e.g. Scratch. • Create their own images to make the animation and recognise the difference between 'on start' and 'forever'. • Recognise blocks they've used previously, identifying inputs and outputs used and make predictions about how variables work. • Choose appropriate blocks to complete the program and attempt the	<u>Skills showcase</u> Mars Rover 2 • Create a pixel picture, explaining that a pixel is the smallest element of a digital image and that binary is used to code and transfer this data. • Save a JPEG as a bitmap and recognise the difference in file size as well as explaining how pixels are used to transfer image data. • Explain the 'fetch, decode, execute' cycle in relation to real-world situations. • Create a profile with a safe and suitable username and password and begin to use 3D design tools.	<u>Online safety</u> Online Safety Year 5 • Understand that passwords need to be strong and that apps require some form of password. • Recognise some types of online communication and know who to go to if they need help with any communication matters online. • Search for simple information about a person, such as their birthday or key life moments. • Know what bullying is and that it can occur both online and in the real world. • Recognise when health and well-being are being affected in either a positive or negative

		searching and internet searching, explaining the role of web crawlers and recognising that results are rated to decide rank.	is a way to apply their skills		challenges independently. • Break a program down into smaller steps, suggesting appropriate blocks and match the algorithm to the program.	• Independently take tutorial lessons, applying what they have learnt to their design and understand the importance of using an online community responsibly.	way through online use. • Offer some advice and tips to combat the negative effects of online use.

	Class	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Year 6	<u>Computing systems and networks</u> Bletchley Park and the History of Computers • Explain that codes can be used for a number of different reasons and decode messages. • Explain how to ensure a password is secure and how this works. • Explain the importance of historical figures and their contribution towards computer science. • Present information about their historical figures in an interesting and engaging manner. • Develop an idea for a computer of the future and create a simple design.	<u>Data handling</u> Big data 1 • Understand why barcodes and QR codes were created. • Create (and scan) their own QR code using a QR code generator website. • Explain how infrared can be used to transmit a Boolean type signal. • Explain how RFID works, recall a use of RFID chips, and type formulas into spreadsheets. • Take real-time data and enter it effectively into a spreadsheet. • Presenting the data collected as an answer to a question. • Recognising the value of analysing real-time data.	<u>Programming</u> Intro to Python • Iterate ideas, testing and changing throughout the lesson and explain what their program does. • Use nested loops in their designs, explaining why they need two repeats. • Alter the house drawing using Python commands; use comments to show a level of understanding around what their code does. • Use loops in Python and explain what the parts of a loop do. • Recognise that computers can choose random numbers; decompose the	<u>Data handling</u> Big data 2 • Recognise that data can become corrupted within a network and that data sent in packets is more robust, as well as identify the need to update devices and software. • Recognise differences between mobile data and WiFi and use a spreadsheet to compare and identify high-use data activities and low-use data activities. • Make links between the Internet of Things and Big Data and give a basic example of how data analysis/analytics can lead to	<u>Skills showcase</u> Inventing a product • Evaluate code, understand what it does and adapt existing code for a specific purpose. • Debug programs and make them more efficient using sequence, selection, repetition or variables. • Design appropriate housing for their product using CAD software, including any input or output devices needed to make it work. • Create an appealing website for their product aimed at their target audience, which explains what their product is and what it does using persuasive language.	<u>Online safety</u> Online Safety Year 6 • Discuss various issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and can describe numerous ways to get help. • Explain how sharing online can have both positive and negative impacts. • Be aware of how to seek consent from others before sharing material online and describe how content can still be shared online even if it is set to private. • Explain what a digital reputation is and what it can consist of. • Understand the importance of

		• Produce a simple audio advert with simple edits, which demonstrate an understanding of how to use the software.	• Analyse and evaluate transport data and consider how this provides a useful service to commuters.	program into an algorithm and modify a program to personalise it.	improvement in town planning. • Explain ways that Big Data or IoT principles could be used to solve a problem or improve efficiency within the school and prepare a presentation about their idea, considering the privacy of some data. • Present their ideas about how Big Data/IoT can improve the school and provide feedback to others on their presentations.	• Create an edited video of their project, articulating the key benefits. • Describe and show how to search for information online and be aware of the accuracy of the results presented.	capturing evidence of online bullying and demonstrate some of these methods on the devices used at school. • Describe ways to manage passwords and strategies to add extra security, such as two-factor authentication. • Explain what to do if passwords are shared, lost or stolen. • Describe strategies to identify scams. • Explain ways to increase their privacy settings and understand why it is important to keep their software updated.