Subject Progression Grid

	Computational Thinking concepts and approaches	computer science	information technology and computer theory	digital literacy
EYFS		**Programming 1 : all about instructions** To follow instructions as part of practical activities and games (lesson 1) To follow instructions as part of practical activities and games (lesson 2) To follow instructions as part of practical activities and games (lesson 3) To learn to give simple instructions (lesson 3) To follow instructions as part of practical activities and games and to learn to debug when things go wrong (lesson 4) To learn to give simple instructions (lesson 4) To learn that an algorithm is a set of instructions to carry out a task, in a specific order (lesson 4) To learn how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary (lesson 5)	**Computer systems and networks: exploring hardware:** To learn how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary (lesson 1) To learn how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary (lesson 2) To recognise that a range of technology is used in places such as homes and schools (lesson 2) To learn how to operate a camera and/or iPad and use it to take photographs.(lesson 3 and 4) **Data Handing:** To understand how to sort and categorise objects. (lesson 1) To explain how items have been sorted and categorised. (lesson 1) To understand how to sort and categorise objects.(lesson 2) To explain how items have been sorted and categorised. (lesson 2) To understand how to sort and categorise objects. (lesson 3)	**Taught though personal, social and emotional development.** To independently see themselves as a valuable individual, with adult support. To build constructive and respectful relationships and think about the perspective of others. To show an understanding of their own feelings and those of others, and begin to regulate their behaviour accordingly. To work and play cooperatively and take turns with others. To form positive attachments to adults and friendships with peers. To show sensitivity to their own and to others' needs. To work and play cooperatively and take turns with others.

		Programming 2: bee-bots To understand the meaning of directional arrows (lesson 1) To follow a simple sequence of instructions (lesson 1) To experiment with programming a Bee-bot/Blue-bot (lesson 2) To explore and tinker with hardware to develop familiarity and introduce relevant vocabulary (lesson 2) To experiment with programming a Bee-bot/Blue-bot and to learn how to give simple commands (lesson 3) To learn to debug instructions, with the help of an adult, when things go wrong (lesson 3) To learn that an algorithm is a set of instructions to carry out a task, in a specific order (lesson 4) To follow an algorithm as part of an unplugged game (lesson 4) To learn to debug instructions, with the help of	To explain how items have been sorted and categorised. (lesson 3) To understand how to sort and categorise objects (lesson 4) To explain how items have been sorted and categorised (lesson 4) To explore and understand the concept of branch databases (lesson 4)	

		an adult, when things go wrong (lesson 4)		
Y1	Patterns Algorithms Logic Programming Persevering Creating Tinkering	Coding -Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions -Create and debug simple programs - Use logical reasoning to predict the behaviour of simple programs'	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	-use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.' Recognise common uses of information technology beyond school -recognise common uses of information technology beyond school.

<div align="center">Learning Objectives</div>

		To follow instructions precisely to carry out an action (lesson 1a and 2a) To understand and be able to explain what	To understand and create a sequence of pictures (lesson 1) To take clear photos (lesson 2) To edit photos (lesson	**Online safety** To know what the internet is and how to use it safely.(lesson 1) To identify how people's feelings and emotions can be affected by online content. (lesson 2)

| | | decomposition is (lesson 3a)
To know how to debug an algorithm (lesson 4a)
To explore a new device (lesson 1b)
To plan and follow a precise set of instructions (lesson 2b)
To program a device (lesson 3b)
To create a program (lesson 4b) | **Computing systems and networks**
Using a computer
To learn what a keyboard is and how to locate relevant keys (lesson 1)
To learn what a keyboard is and how to locate relevant keys. (lesson 2)
To learn how to log in and log out (lesson2)
To understand why we need to log in and out.(lesson 2)
To learn what a mouse is and to develop basic mouse skills such as moving and clicking.(lesson 3)
To use a simple online paint tool to create digital art. (lesson 3)
To learn what a mouse is and to develop basic mouse skills such as moving and clicking (lesson 4)
To use a simple online paint tool to create digital art (lesson 4)
To learn what a mouse is and to develop basic mouse skills such as moving and clicking (lesson 5)
Improving Mouse skills
To log in to a computer and access a website (lesson 1)
To develop mouse skills (lesson 2)
To use mouse skills to draw and edit shapes (lesson 3) | To understand how to treat others, both online and in-person. (lesson 3)
To understand the importance of being careful about what we post and share online. (lesson 4) |

			3)	
Programmes /resources		Bee bot Scratch jr	Barefoot computing	1 decision + Kapow
Y2	Patterns Algorithms Logic Programming Persevering Creating Tinkering Sequencing	Coding -Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions -Create and debug simple programs -Use logical reasoning to predict the behaviour of simple programs	-use technology purposefully to create, organise, store, manipulate and retrieve digital content	-use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. -Recognise common uses of information technology beyond school
			Learning Objectives	
		To decompose a game to predict the algorithms that are used (lesson 1a) To understand that computers can use algorithms to make predictions (machine learning) (lesson 2a) To understand what abstraction is (lesson 3a) To understand what debugging is (lesson 4a)	**Devices without cameras option** To understand what animation is (lesson 1) To understand what stop motion animation is (lesson 2) To add effects to my stop motion (lesson 3) To create a stop motion animation (optional) **Computer systems and networks**	**Online safety** To decide which information is safe to share online. (lesson 1) To practise keeping information safe and private online. (lesson 2) To recognise when to deny permission online. To recognise that not everything online is true.

		To explore a new application (lesson 1b) To create an animation (lesson 2b) To follow an algorithm (lesson 3b) To plan and use code to create an algorithm (lesson 4b)	To recognise the parts of a computer (lesson 1) To recognise how technology is controlled (lesson 2) To understand the role of computers (lesson 3)	
Programmes		Scratch Scratch jr	Scratch jr	1 decision + Kapow
Y3	Creating Debugging Evaluation Decomposition Abstraction Collaborating Logic Persevering Debugging Creating Computer networks Computer systems Internet services Search technologies	Coding -Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs -Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	-understand computer networks including the internet -select, use and combine a variety of software (formatting: font, colour, pictures)	-Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. -Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting,

				analysing, evaluating and presenting data and information

Learning Objectives

		To explore a programming application (lesson 1) To use repetition (a loop) in a program (lesson 2) To program an animation (lesson 3) To program a story (lesson 4) To program a game (lesson 5) Scratch	**Until we have cameras** **Information technology:** I can type text into different programmes and change its style by applying a range of front effects I can create documents and posters by combining text boxes with inserted images I can explore tools to edit photos (interim until we have cameras) I can create a photo collage. When we have cameras… To plan a book trailer (lesson 1) To take photos or videos to tell a story (lesson 2) To edit a video (lesson 3) To add text and transitions to a video (lesson 4)	**Online safety** To understand how the internet can be used to share beliefs, opinions and facts. (lesson 1) To explain what should be done before sharing information online. (lesson 2) To identify the effects that the internet can have on people's feelings. (lesson 3) To understand the ways personal information can be shared on the internet. (lesson 4) To understand the rules for social media platforms. (lesson 5) **Computer systems and networks** To understand what a network is and understand our school network (lesson 1) To understand how the Internet works and explain a website's journey (lesson 2) To understand the role of packets (lesson 3) To recognise basic inputs and outputs (lesson 4) if materials are available To decompose a laptop (lesson 5) To decompose a tablet computer (lesson 6)
Programmes		Scratch	Unplugged activities Word and PowerPoint	1 decision + Kapow

Y4	Selection Programming Variables Inputs Programming Computer systems Creating Collaborating Internet service Computer systems Search technologies	Coding -Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts -Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	-multiple services provided by networks and the internet, such as the world wide web - select, use and combine a variety of software (excel spread sheet for data collection and creating a chart; using word to evaluate the data/create a report.)	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
Learning Objectives				

		To understand how a Scratch game works by using decomposition to identify key features (lesson 1) To understand what a variable is and how to make one (lesson 2) To understand how to make a variable in Scratch (lesson 3) To understand that computational thinking is made up of four key strands (lesson 4) To understand what decomposition is and how to apply it to solve problems (lesson 5) To understand what pattern recognition and abstraction mean (lesson 6) To understand how to create an algorithm and what it can be used for (lesson 7)	Computer theory: I can understand the main hardware components of a computer system. I can understand the functions of different input and output devices. I can understand how the internet works (how it is structured and how data travels along it). I can understand how search engines operate (including ranked results) **Information technology:** To log data taken from online sources within a spreadsheet (lesson 1) To design an automated machine to respond to sensor data (lesson 2) To understand how weather forecasts are made (lesson 3) To use tablets or digital cameras to present a weather forecast (lesson 4) In addition: I can create an online multiple choice quiz. I can create a word collage.	**Online safety** To describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy. (Lesson 1) To describe some of the methods used to encourage people to buy things online. (lesson 2) To explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true. (lesson 3) To explain how technology can be a distraction and identify when I might need to limit the amount of time spent using technology. (lesson 4) To explain how technology can be a distraction and identify when I might need to limit the amount of time spent using technology. (lesson 5) **Computer systems and networks** To understand that software can be used collaboratively online to work as a team (lesson 1) To understand how to create effective presentations (lesson 2) To understand how to create and share Google Forms (lesson 3)

			I can type and design a variety of documents, posters and leaflets using ICT. I can learn rules for creating neat word processed work. I can create a simple excel spread sheet (for data collection and creating a chart)	To understand how to use a shared spreadsheet to explore data (lesson 4) If time... To create a webpage as part of a collaborative class website (lesson 5) To plan and create a website (lesson 6) To create and evaluate a website (lesson 7)
Programmes		Scratch	Unplugged activities Excel spread sheet	1 decision + Kapow
Y5	Creating Debugging Evaluation Decomposition Abstraction Collaborating Logic Persevering Debugging Creating Computer networks Internet services Search technologies Computer systems Control Simulation	Coding -Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output -Use logical reasoning to explain how some simple	- including collecting, analysing, evaluating and presenting data and information (formula 1?) - use range of digital devices to design and create a range of programs, systems and content that accomplish given goals (designing) – lack of range of devices to for fill this	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content appreciate how results are selected, appreciate how results are ranked, select, use and

		algorithms work and to detect and correct errors in algorithms and programs		combine a variety of software (including internet services)
		Attainment expectations		
		To tinker with Scratch music elements (lesson 1) To create a program that plays themed music (lesson 2) To plan a soundtrack program (lesson 3) To program a soundtrack (lesson 4) To understand what animation is (lesson 1b) To understand what stop motion animation is (lesson 2b) To plan my stop motion video, thinking about the characters I want to use (lesson 3b) To create a stop motion animation (lesson 4b)	To identify how and why data is collected from space (lesson 1) To read and calculate numbers using binary code (lesson 2) To represent binary as text (lesson 3)	**Online safety** To understand how apps can access our personal information and how to alter the permissions (lesson 1) To discover ways to overcome bullying (lesson 2) To understand how technology can affect health and wellbeing. (lesson 3) **Computing systems and networks** To understand what a search engine is and how to use it (lesson 1) To be aware that not everything online is true (lesson 2) To search effectively (lesson 3) To create an informative poster (lesson 4)

Programmes			Scratch	Word, PowerPoint and excel Designing software (? To research)	1 decision + Kapow
Y6	Selection Programming Variables Inputs Programming Computer systems Creating Collaborating Internet service Computer systems Control Simulation Search technologies		**Coding:** **using a scripting language and creating on programmes** **(not condensed-all lessons)** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	-select, use and combine a variety of software (including internet services) - use range of digital devices to design and create a range of programs, systems and content that accomplish given goals (edited pictures and films) - including collecting, analysing, evaluating and presenting data and information	use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
Attainment expectations					

| | | To tinker with a new piece of software (lesson 1)
To understand nested loops (lesson 2)
To understand basic Python commands (lesson 3)
To use loops when programming (lesson 4)
To understand the use of random numbers (lesson 5) | To tinker with sound (lesson 1)
To understand how computers have changed and the impact this has had on the modern world (lesson 2)
To research one of the computers that changed the world and present information about it to the class (lesson 3)
To design a computer of the future (lesson 4) | **Online safety**
To describe issues online that give us negative feelings and know ways to get help (lesson 1)
To think about the impact and consequences of sharing online (lesson 2)
To be able to describe how to capture bullying content as evidence (lesson 3)
To be aware of strategies to help be protected online. (lesson 4)
Computing systems and networks
To understand there are many different types of secret codes (lesson 1)
To understand the importance of having a secure password (lesson 2)
To understand the importance of Bletchley Park to the World War II war effort (lesson 3) |
| **Programmes** | | Python (turtle) | Word, PowerPoint and excel
GIMP (photo crediting software) | 1 decision + Kapow |