Computing Key Knowledge Overview

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Unit	Hardware Explorers	Programs and Algorithms	Digital Art	Introduction to Debugging	Writing Algorithms	Internet Explorers
	Key Knowledge	*I know how to use different hardware devices.* *I know how to care for computers.* *I know how to log in/log off.* *I know how to open programs.* *I know what personal information is.* *I know passwords are used to keep devices and information safe.*	*Everyday devices can be programmed through clear and accurate instructions.* *I know what happens if we program a device incorrectly.* *I know the distinction between an algorithm and a program.*	*How to use tools in paint.* *How to create shapes and change colours in Paint.* *How to save.* *How to open files previously saved.* *How to insert text and change its font, colour and size.* *How to create a piece of artwork in Paint.*	*How to follow and use algorithms.* *Know that algorithm errors can make a program not work properly.* *How to identify errors in algorithms and debug them.* *How to evaluate the effectiveness of algorithms and the debugging process.*	*How to write algorithms in a variety of contexts.* *How to use algorithms to record a dance routine.* *How to design instructions for a lego model.* *How to find and correct errors.* *How to plan a journey for a Bee-Bot.* *How to debug algorithms.*	*How to stay safe online.* *Know what personal information is and how to stay safe online.* *Know what is kind and not kind online.* *Know how to search on the internet safely.*
	Vocabulary	*Delete* *Enter* *Password* *Touchpad* *Type* *username*	*Algorithm* *Bee-Bot* *Control* *Instruction* *Precise* *program*	*Digital* *Fill* *Font* *Microsoft* *Paint* *Tool* *touchpad*	*Algorithm* *Command* *Debug* *Error* *Instruction* *test*	*Algorithm* *Debug* *Fake-bot* *Sequence* *Symbol* *Trial and error*	*E-safety* *Offline* *Online* *Personal Information* *SMART* *Kiddle*
Year 2	Unit	Algorithmic Thinking	Internet Awareness	Creating Presentations	Excellent Excel	Learning to Code	Digital Citizens
	Key Knowledge	*How to test different algorithms* *How to assess whether algorithms have achieved their intended goal.* *Know that algorithms need to be clear and unambiguous.* *How to create an algorithm.*	*How to use the internet and search engines to find information and images.* *How to copy and paste information and images into word processing software.* *How to search from reliable content and trusted sites.*	*How to open, edit and save a PowerPoint presentation.* *How to insert text boxes and insert and edit text within them.* *How to insert and manipulate images in PowerPoint – copy or cut and paste.*	*Know what a spreadsheet is and how to present data that has been collected for a specific purpose.* *How to create simple bar charts to present data.* *How to edit spreadsheets.* *How to organise, find and access files.*	*Know that computers speak a specific language.* *How to add and delete a background and sprite in Scratch.* *Know that all scripts need an event so that the program knows when to run.* *Know that code runs from top to bottom (sequence)*	*Know how to keep safe online.* *Know how to be a positive digital citizen.* *Know the importance of regulating screen time.* *Further develop knowledge of what personal information is and how to keep it secure.*

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
		Know how to evaluate my own algorithm – add detail and refine		*How to make an existing PowerPoint more visually appealing.*		*Know the difference between a script and a block.*	*Know what to do if you find upsetting content online.*
	Vocabulary	*Detect* *Error* *Sequential* *Specific* *Efficient* *Purpose* *Ambiguous* *Refine*	*Copy* *Insert* *Internet* *Report* *Search engine* *SMART*	*Folder* *Load* *Media* *PowerPoint* *Slide* *Text box*	*Cell* *Column* *Data* *Excel* *Insert* *row*	*Backdrop* *Block* *Code* *Event* *Script* *sprite*	*Cyberbullying* *Digital* *Footprint* *Digital citizen* *Permission*
Year 3	**Unit**	**Time to Travel**	**Apply our coding Alien at School**	**Networks**	**Communicating Online**	**Branching Databases**	**Presenting My Ideas**
	Key Knowledge	*How to build extended codes using Scratch.* *Know what a network is.* *Understand the concept of inputs/outputs* *Understand sequence, events and debugging.*	*How to code an extended project* *Understand how to work in a loop*	*Know what a network is.* *Know the difference between the internet and the world wide web.* *Know that the internet is a global system of interconnected computer networks that allows communication between networks and digital devices.* *How to navigate webpages to access information.*	*Know different ways people can communicate online and that online communication leaves a digital footprint.* *Know that age restrictions apply to protect children.* *Know that emails are a way to communicate online and that they can be formal or informal, depending on the recipients.* *Know the different protocols when writing an email and how to adapt the language depending on the audience.*	*That a database is similar to an online library where information is sorted and classified.* *Know how to create my own database.* *How to refine internet searches using Boolean search terms.* *Know the difference between search engines and databases.*	*Know what makes a presentation effective and appealing.* *How to use a search engine using word strings.* *How to input research findings into a multimedia presentation.* *How to create presentations that contain transition slides with images, text and audio recordings.* *How to deliver presentations to audiences.*
	Vocabulary	*Code* *Input* *Output* *Upload* *Network*	*Block* *Debug* *Make-test-fix* *Program* *Script* *Trial and error*	*Network* *Rank* *Search engine* *Webpage* *World Wide Web* *Boolean* *HTML*	*Communication* *Cyberbullying* *Digital footprint* *Email* *Emoticons* *software*	*Boolean* *Branching* *Database* *Search engine* *Software* *Tinkercad*	*Insert* *Multimedia* *Presentation* *Snipping tool* *Tools* *Word-string*
Year 4	**Unit**	**Programming**	**Animation Adventures**	**Presenting Data**	**Advertising**	**Making a Quiz**	**Desktop Publishing**
	Key Knowledge	*Know what a repeated pattern is*	*Understand the history of animation and know that*	*How to collect data for a given purpose.*	*Understand the features that make adverts and*	*How to use a selection of variables to code a quiz.*	*How to use desktop publishing programmes.*

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
		How to create a program with a repeat function *Know how to debug algorithms* *Know how to evaluate algorithms*	*animation can be created using multiple frames that change quickly.* *How to create animation using software technology.* *How to design stick figure animation videos and web-based animations to create a stop-frame animation.* *Modern software can record movement of inserted objects and interacting characters against a backdrop.* *How to coordinate frame transition timing with inserting and moving characters and speech bubbles.*	*How to organise data into tables and present it in a range of graphs and charts.* *How to use hyperlinks to insert data into presentation software.*	*promotional videos effective.* *How to create a storyboard for an advert using text, backgrounds, images, music and voiceovers.* *Understand the principles of filming video footage and recording audio.* *How to import recordings into an editing software.* *How to create a video following a plan.*	*How to decompose a game to understand how it words.* *How to work in a look.*	*Know the difference between PowerPoint and Canva.* *How to resize and crop images in Canva.* *How to remove backgrounds using Canva's background remover tool.* *How to layer and arrange images using forward and backward positioning.*
	Vocabulary	*Block* *If/else* *Repetition* *Variable*	*Animation* *Frame* *Software* *Stop-frame* *Stop-motion* *Storyboard*	*Chart* *Data* *Excel* *Hyperlink*	*Audio* *Communication* *Footage* *Frame* *Planning* *Zooming*	*Code* *Component* *Decomposition* *Selection* *Value* *Variable*	*Crop* *Format* *Layer* *Publishing* *Software* *Transparency* *Tool*
Year 5	**Unit**	**Complex Programming**	**Broadcasting**	**Analysing Data**	**Video Montage**	**Staying Safe Online**	**Repetition and Procedures**
	Key Knowledge	*How to program a sprite to move through a maze game.* *How to use a keyboard to program inputs.* *How to use codes to modify outputs.* *How to use debugging too identify and solve errors.*	*How to create customised and animated sprites.* *How to use broadcast blocs to send messages and prompts to create dialogue between multiple characters.* *How to write block codes.*	*Know how data processing software can be used to collect, organise, present, analyse and evaluate data for a given purpose.* *How to write formulae to manipulate data.* *How to create infographics to present data in more detail, using appropriate software.*	*Know that a montage is a technique of film editing that combines a series or short shots or clips into one sequence (usually set to music).* *Know about different types of camera shots (wide, mid, close up, extreme close up) and the different effects.*	*Understand intellectual property, fair use, distribution, plagiarism and how they impact people's lives.* *Know how our online identity can be copied, modified or altered.* *Know that now all people on the internet are safe to 'connect' with.*	*Understand the importance of writing efficient code.* *How to write efficient codes in logo.* *How to apply efficient code learning in scratch.* *To make links between different programming languages.*

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
			How to refine codes, using debugging to identify and solve errors.		*How to use different filming techniques (static, panning, zooming, camera angle and use of light and colour).* *How to download and save audio clips.* *Know the copyright law.*	*Know how to keep safe on the internet.*	
	Vocabulary	*Debug* *Flowchart* *Repetition* *Sequence* *Selection* *Variable*	*Animation* *Broadcast* *Debug* *Input* *Output* *Sequence*	*Analyse* *Data* *Formula* *Infographic* *Field*	*Audio* *Creative* *Commons* *Frame* *Function* *Montage* *Panning*	*Copyright* *Fair use* *Intellectual* *Property* *Piracy* *Plagiarism* *SMART*	*Efficient* *Function* *Loop* *Procedure* *Repetition*
Year 6	**Unit**	**Meeting a Brief**	**Solving Problems Using Data**	**Internet Fairness & Internet Searches**	**3D Modelling**	**Creating Media**	**Programming to Control a Product**
	Key Knowledge	*Understand the needs of the user.* *How to choose an appropriate platform for building a game.* *How to evaluate a game.*	*How to use Excel to add and multiply amounts and work out averages.* *How to examine, in detail, how bar codes and QR codes work.* *How to generate QR codes.* *How to use Excel to write examples of encryption codes.* *How to collect, organise and present data using Excel formulae, to analyse and evaluate data for specific research purposes.*	*Evaluate the benefits and flaws of technological advances and examine the contributions made to technology from a range of people.* *Understand the idea of unconscious bias.* *Know the importance of self-regulation when posting online.* *Know how social media sites regulate the use of data.* *Know how digital footprints are used to target us with online content and how personal data can be harvested and used to gather information about individuals.*	*To recognise that you can work in 3D on a computer.* *To identify and understand that 3D models can be modified.* *To know how to create a 3D model for a given purpose.* *To know how to create a 3D model to design a logo.*	*To review existing webpages to consider its structure.* *To be able to plan a web page for a given purpose.* *To understand that webpages are made using HTML.* *To know how to create a web page using Microsoft Sway.*	*A micro:bit is a tiny computer that you can give instructions to using a code.* *Selection is making different things happen based on different conditions.* *We can use logic in the form of 'if' and 'then' variables to make different representations appear on the LEDs.* *Know how to use a micro:bit to control a motor.*
	Vocabulary	*Brief*	*Sum*	*Bias*	*Perspective*	*Web page*	*Micro:bit*

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
		Evaluate	*Average* *Cumulative* *Big Data* *Formula/Formula* *RFID (Radio Frequency Identification)*	*Filters* *Interrelated* *Optimise* *Protocol* *System* *Usage* *Web Crawlers*	*Viewpoint* *Handles* *Lift* *Lower*	*Browser* *Media* *Hypertext Markup Language (HTML)*	*LED* *Logic*