Computing Overview Years 1 – 6

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**We are painters** The children explore the features of 2 paint a picture to help to create a self-portrait and then help them to create illustrations for stories. Expectations • Use the web safely to find ideas for an illustration. • Select and use appropriate painting tools to create and change images on the computer. • Understand how this use of ICT differs from using paint and paper. • Create an illustration for a particular purpose. • Know how to save, retrieve and change their work. • Reflect on their work and act on feedback received.	**We are celebrating** The children will have the opportunity to create a digital greetings card, which could be used for a religious festival such as Diwali or Christmas, pupils' birthdays, or simply to say thank you or good luck. Expectations • Develop basic keyboard skills, through typing and formatting text. • Develop basic mouse skills. • Use the web to find and select images. • Develop skills in storing and retrieving files. • Develop skills in combining text and images. • Discuss their work and think about whether it could be improved.	**We are treasure hunters** The children will program a toy to move around a map to find buried treasure. They will start by thinking of algorithms for their routes, then input these as stored programs for the robot. They predict how the robot will move and will debug their programs. Expectations • Understand that a programmable toy can be controlled by inputting a sequence of instructions. • Develop and record sequences of instructions as an algorithm. • Program the toy to follow their algorithm. • Debug their programs. • Predict how their programs will work.	**We are TV chiefs** The children enjoy themselves making healthy snacks. They explore algorithms and also to decompose a complex problem into smaller parts – an important idea from computer science. Expectations • Break down a process into simple, clear steps, as in an algorithm. • Use different features of a video camera. • Use a video camera to capture moving images. • Develop collaboration skills. Discuss their work and think about how it could be improved.	**We are collectors** The children will use web search engines to collect pictures of different types of animals or plants and then explore ways in which those pictures can be organised. Expectations • Find and use pictures on the web. • Know what to do if they encounter pictures that cause concern. • Group images on the basis of a binary (yes/no) question. • Organise images into more than two groups according to clear rules. • Sort (order) images according to some criteria. • Ask and answer binary (yes/no) questions about their images.	**We are storytellers** The children create a talking book that they can share with others. Expectations • Use sound recording equipment to record sounds. • Develop skills in saving and storing sounds on the computer. • Develop collaboration skills as they work together in a group. • Understand how a talking book differs from a paper-based book. • Talk about and reflect on their use of ICT. • Share recordings with an audience.
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Year 2	**We are astronauts Programming on screen**	**We are researchers**	**We are Detectives**	**WE are zoologists**		**We are photographers**
	The children will build on work from Unit 1.1 – We are treasure hunters to program a sprite (such as a spaceship) to move around the screen.	The children research a topic – safely, effectively and efficiently – using a structured approach (mind mapping). They share their findings with others through a short multimedia presentation.	The children are challenged to solve a mystery by reading, sending and replying to emails, and by listening to a witness statement. They use a fact file sheet to create a table and identify the culprit.	The children go on a bug hunt, recording and identifying the small animals they find. They then organise the data they have collected, record it using a graphing package, and interpret the graph to answer questions about the animals.		The children review photos online, practise using a digital camera, take photos to fit a given theme, edit their photos, and then select their best images to include in a shared portfolio.
	Expectations	Expectations	Expectations	Expectations		Expectations
	• Have a clear understanding of algorithms as sequences of instructions. • Convert simple algorithms to programs. • Predict what a simple program will do. • Spot and fix (debug) errors in their programs.	• Develop collaboration skills through working as part of a group. • Develop research skills through searching for information on the internet. • Improve note-taking skills through the use of mind mapping. • Develop presentation skills through creating and delivering a short multimedia presentation.	• Understand that email can be used to communicate. • Develop skills in opening, composing and sending emails. • Gain skills in opening and listening to audio files on the computer. • Use appropriate language in emails. • Develop skills in editing and formatting text in emails. • Be aware of online safety issues when using email.	• Sort and classify a group of items by answering questions. • Collect data using tick charts or tally charts. • Use simple charting software to produce pictograms and other basic charts. • Take, edit and enhance photographs. • Record information on a digital map.		• Consider the technical and artistic merits of photographs. • Use a digital camera or camera app. • Take digital photographs. • Review and reject or rate the images they take. • Edit and enhance their photographs. • Select their best images to include in a shared portfolio.
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Year 3	**We are programmers**	**We are bug fixers**		**We are communicators**	**We are opinion pollsters**	**We are presenters**
	The children create an animated cartoon using characters they design. They then create an animation by translating a storyboard into a series of scripted instructions (program) for graphic objects Expectations • Create an algorithm for an animated scene in the form of a storyboard. • Write a program in Scratch to create the animation. • Correct mistakes in their animation programs.	The children work with Scratch projects to explain how the scripts work, finding and correcting errors in them, and explore creative ways of improving them. The children learn to recognise some common types of programming error, and practise solving problems through logical thinking. Expectations • Develop a number of strategies for finding errors in programs. • Build up resilience and strategies for problem solving. • Increase their knowledge and understanding of Scratch. • Recognise a number of common types of bug in software.		This unit allows the children to learn about a number of online safety matters in a positive way. They will work with a partner in another class, learning how to use email safely Expectations • Develop a basic understanding of how email works. • Gain skills in using email. • Be aware of broader issues surrounding email, including 'netiquette' and online safety. • Work collaboratively with a remote partner. • Experience video conferencing.	The children create their own opinion poll, seek responses, and then analyse the results. Expectations • Understand some elements of survey design. • Understand some ethical and legal aspects of online data collection. • Use the web to facilitate data collection. • Gain skills in using charts to analyse data. • Gain skills in interpreting results.	The children will make a short narrated video of themselves practising camera shots and video editing. Expectations • Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing. • Edit video, including adding narration and editing clips by setting in/out points. • Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length.
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Year 4	**We are software developers**	**We are musicians**		**We are co-authors**	**We are HTML editors**	**We are meteorologists**
	The pupils start by playing and analysing educational computer games, identifying those features that make a game successful. They then plan and design a game, with a clear target audience in mind. They create a working prototype, and then develop it further to add functionality and improve the user interface. They test their game and make any necessary changes. Expectations • Develop an educational computer game using selection and repetition. • Understand and use variables. • Start to debug computer programs. • Recognise the importance of user interface design, including consideration of input and output.	The children produce Music online suitable for any purpose they choose. Expectations • Use one or more programs to edit music. • Create and develop a musical composition, refining their ideas through reflection and discussion. • Develop collaboration skills. • Develop an awareness of how their composition can enhance work in other media.		The children collaborate to create a 'mini Wikipedia'. They then go on to add or amend content on the real Wikipedia. Expectations •Understand the conventions for collaborative online work, particularly in wikis. • Be aware of their responsibilities when editing other people's work. • Become familiar with Wikipedia, including potential problems associated with its use. • Practise research skills. • Write for a target audience using a wiki tool. • Develop collaboration skills. • Develop proofreading skills.	The children learn about the history of the web, before studying HTML (hypertext mark-up language), the language in which web pages are written. They learn to edit and write HTML, and then use this knowledge to create a web page. Expectations • Understand some technical aspects of how the internet makes the web possible. • Use HTML tags for elementary mark up. • Use hyperlinks to connect ideas and sources. • Code up a simple web page with useful content. • Understand some of the risks in using the web	This unit brings together data measurement, analysis and presentation, as the children take on the role of meteorologists and weather presenters. Expectations • Understand different measurement techniques for weather, both analogue and digital. • Use computer-based data logging to automate the recording of some weather data. • Use spreadsheets to create charts • Analyse data, explore inconsistencies in data and make predictions • Practise using presentation software and, optionally, video
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Year 5	We are bloggers	WE are cryptographers		We are Web developers	We are game developers	WE are artists
	The children create a media-rich blog, comment on blogs and respond to comments. Expectations • Become familiar with blogs as a medium and a genre of writing. • Create a sequence of blog posts on a theme. • Incorporate additional media. • Comment on the posts of others. • Develop a critical, reflective view of a range of media, including text.	The pupils learn more about communicating information securely through an introduction to cryptography (the science of keeping communication and information secret). They investigate early methods of communicating over distances, learn about two early ciphers, and consider what makes a secure password. Expectations • Be familiar with semaphore and Morse code. • Understand the need for private information to be encrypted. • Encrypt and decrypt messages in simple ciphers. • Appreciate the need to use complex passwords and to keep them secure. • Have some understanding of how encryption works on the web.		In this unit, the pupils work together to create a website explaining e-safety and responsible online behaviour. Expectations • Develop their research skills to decide what information is appropriate. • Understand some elements of how search engines select and rank results. • Question the plausibility and quality of information. • Develop and refine their ideas and text collaboratively. • Develop their understanding of online safety and responsible use of technology.	The pupils plan their own simple computer game. They design characters and backgrounds, and create a working prototype, which they develop further based on feedback they receive. Expectations • Create original artwork and sound for a game. • Design and create a computer program for a computer game, which uses sequence, selection, repetition and variables. • Detect and correct errors in their computer game. • Use iterative development techniques (making and testing a series of small changes) to improve their game.	The children use vector and turtle graphics to explore geometric art, taking inspiration from the work of Escher, Riley and traditional Islamic artists. Expectations • Develop an appreciation of the links between geometry and art. • Become familiar with the tools and techniques of a vector graphics package. • Develop an understanding of turtle graphics. • Experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers. • Develop some awareness of computer-generated art, in particular fractal-based landscapes.
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Year 6	**We are game developers (y5 unit)** The pupils plan their own simple computer game. They design characters and backgrounds, and create a working prototype, which they develop further based on feedback they receive. Expectations • Create original artwork and sound for a game. • Design and create a computer program for a computer game, which uses sequence, selection, repetition and variables. • Detect and correct errors in their computer game. • Use iterative development techniques (making and testing a series of small changes) to improve their game.	**We are advertisers y6** The children review existing adverts or promotional films, create a storyboard, shoot original footage, source other media and edit a final version of their movie. Expectations • Think critically about how video is used to promote a cause • Storyboard an effective advert for a cause • Work collaboratively to shoot original footage and source additional content • Acknowledge intellectual property rights • Work collaboratively to edit the assembled content to make an effective advert.		**We are computational Thinkers SOC3** The children participate in some hands-on unplugged activities which help them to develop an understanding of some important algorithms. They also investigate these when implemented as Scratch programs. Expectations • develop the ability to reason logically about algorithms • understand how some key algorithms can be expressed as programs • understand that some algorithms are more efficient than others for the same problem • understand common algorithms for searching and sorting a list	**We are Connected SOC 3** In this unit, pupils use the school's blogging platform (Google Classroom) to explore issues related to social media. Expectations • About appropriate rules or guidelines for a civil online discussion • How search results are selected and ranked • How to argue their point effectively, supporting their views with sources • How to counter someone else's argument while showing respect and tolerance • How to judge the reliability of an online source • Some strategies for dealing with online bullying.	**We are publishers Year book SOC 3** The children produce a class yearbook or school magazine using desktop publishing tools. They source, write, edit and combine images and text from a range of sources. Expectations • Manage or contribute to large collaborative projects, facilitated using online tools • Write and review content • Source digital media while demonstrating safe, respectful and responsible use • Design and produce a high-quality print document.
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