The National Curriculum for computing states:

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

By the end of EYFS children will be taught to:

Development matters: **References to computing and technology**	Range 4 Reading:	Range 5 Reading: Handles books and touch screen technology carefully and the correct way up with growing competence • Begins to navigate apps and websites on digital media using drop down menu to select websites and icons to select apps	Range 6 Reading: Enjoys an increasing range of print and digital books, both fiction and non-fiction
	Writing: Enjoys drawing and writing on paper, on screen and on different textures, such as in sand or playdough and through using touch-screen technology.	Writing; Shows interest in letters on a keyboard, identifying the initial letter of their own name and other familiar words **What adults might do:** Make paper and digital books with children of activities they have been doing, using photographs of them as illustrations.	Writing: Gives meaning to the marks they make as they draw, write, paint and type using a keyboard or touch-screen technology **What adults might do:** Write stories, poems, jokes, lists, plans, maps etc. together with children on paper and using digital technology so that children they can see authorship and spelling in action.
Development matters Technology: Range 4	A unique child: • Seeks to acquire basic skills in turning on and operating some digital equipment • Operates mechanical toys, e.g. turns the knob on a wind-up toy or pulls back on a friction car • Plays with water to investigate "low technology" such as washing and cleaning • Uses pipes, funnels and other tools to carry/ transport water from one place to another	What adults might do: • Support children in exploring the control technology of toys, e.g. toy electronic keyboard. • Talk about digital and other electric equipment, what it does, what they can do with it and how to use it safely. • Talk to children about "low technologies" such as washing and drying, transporting water and using water to make things "work".	Enabling Environments: • Provide safe equipment to play with, such as torches and walkie-talkies. • Let children use machines like the photocopier to copy their own pictures. • Provide a range of materials for children to "stain" and have a go at washing, rinsing and drying outside in the sunshine. • Provide a range of pipes, funnels, containers, water wheels and water for children to play with.
Development matters Technology: Range 5	A unique child: • Knows how to operate simple equipment, e.g. turns on CD player, uses a remote control, can navigate touch-capable technology with support • Shows an interest in technological toys with knobs or pulleys, real objects such as cameras, and touchscreen devices such as mobile phones and tablets • Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images • Knows that information can be retrieved from digital devices and the internet • Plays with a range of materials to learn cause and effect, for example, makes a string puppet using dowels and string to suspend the puppet	What adults might do: • Support and extend the skills children develop as they become familiar with simple equipment, such as twisting or turning a knob. • Draw young children's attention to pieces of digital apparatus they see or that they use with adult supervision. • Talk to children about their uses of technologies at home and in other environments to begin to understand what they already know about and can do with different technologies. • Ask open-ended questions and have conversations about children's interest in technological toys to enable children to learn about different technologies. • Support children to be curious in grappling with cause and effect, e.g. learning that pulling a string may make a puppet arm lift.	Enabling Environments: • When out in the locality, ask children to help to press the button at the pelican crossing, or speak into an intercom to tell somebody you have come back. • When in the community and on trips to places such as the park, encourage children to take photographs and use mobile apps of things that interest them, ready to revisit later. • Provide a range of materials that enable children to explore cause and effect.
Development matters Technology: Range 6	A unique child: • Completes a simple program on electronic devices	What adults might do: • Encourage children to speculate on the reasons why things happen or how things work.	Enabling Environments: • Provide a range of materials and objects to play with that work in

	• Uses ICT hardware to interact with age appropriate computer software • Can create content such as a video recording, stories, and/or draw a picture on screen • Develops digital literacy skills by being able to access, understand and interact with a range of technologies • Can use the internet with adult supervision to find and retrieve information of interest to them	• In conversation highlight technology in aspects of nature, e.g. encouraging models of birds showing purposes and functions of wing feathers, body feathers, beaks, feet reflecting differences of different kinds of birds. • Support children to coordinate actions to use technology, for example, call a telephone number or create a video recording. • Teach and encourage children to click on different icons to cause things to happen in a computer program. • Talk to children about their actions, and support children to understand different purposes of different technologies. • Retrieve content and use to facilitate discussions, allowing children to recall trips/past events to enable them to connect to their wider community.	different ways for different purposes, for example, egg whisk, torch, other household implements, pulleys, construction kits. • Provide a range of programmable toys for children to play with, as well as equipment involving ICT, such as computers, touchscreen devices and internet-connected toys.
ELG	Children require access to a range of technologies, both digital and non-digital in their early lives. Exploring with different technologies through play provides opportunities to develop skills that children will go on to develop in their lifetimes. Investigations, scientific inquiry and exploration are essential components of learning about and with technology both digitally and in the natural world. Through technology children have additional opportunities to learn across all areas in both formal and informal ways. Technologies should be seen as tools to learn both from and with, in order to integrate technology effectively within early years practice.		

In order to achieve and sustain this by the end of KS1 children will be taught to:

1.1 understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
1.2 create and debug simple programs
1.3 use logical reasoning to predict the behaviour of simple programs
1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content
1.5 recognise common uses of information technology beyond school
1.6 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

By the end of KS2 children will be taught to:

2.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output
2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
2.4 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
2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
2.6 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
2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Naming simple parts of a computer e.g. screen, mouse, keyboard, speaker. These skills could be developed through vocabulary developing sessions and access to computing equipment during CIL Awesome autumn unit	Painting drawing and recognising basic shapes Barefoot Winter warmers unit *Scarves for snowmen lesson*	Understanding and giving instructions/'algorithms' and debugging to solve problems Barefoot Springtime unit	Recognising pattern, comparing, grouping and finding similarities and differences Barefoot Super space unit	Recognition of letters both upper and lower case and basic writing skills These skills would be developed though phonics and writing sessions Barefoot Busy bodies unit	Understanding and giving instructions/'algorithms' and debugging to solve problems Barefoot Boats ahoy unit Summer fun unit
	Computational thinking questioning (prompt cards available) to support children to begin to develop problem solving through computational thinking.					
Year 1	Technology around us Recognising technology in school and using it responsibly 1.4 1.5 1.6	Digital painting Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally. 1.4	Moving a robot Writing short algorithms and programs for floor robots, and predicting program outcomes. 1.1 1.2 1.3 1.5	Grouping data Exploring object labels, then using them to sort and group objects by properties. 1.4 1.5	Digital writing Using a computer to create and format text, before comparing to writing non-digitally. 1.4 1.5	Programming animations Designing and programming the movement of a character on screen to tell stories. 1.1 1.2 1.3 1.4 1.6
Year 2	Information technology around us Identifying IT and how its responsible use improves our world in school and beyond. 1.4 1.5 1.6	Digital photography Capturing and changing digital photographs for different purposes. 1.4 1.5	Robot algorithms Creating and Debugging programs, and using logical reasoning to make predictions. 1.1 1.2 1.3	Pictograms Collecting data in tally charts and using attributes to organise and present data on a computer. 1.4 1.6	Making Music Using a computer as a tool to explore rhythms and melodies, before creating a musical composition. 1.4	Programming Quizzes Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz. 1.1 1.2 1.3 1.4
Year 3	Connecting computers Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks. 2.2 2.4 2.6	Stop-frame animation Capturing and editing digital still images to produce a stop-frame animation that tells a story. 2.6	Sequencing sounds Creating sequences in a block-based programming language to make music. 2.1 2.2 2.3 2.6	Branching databases Building and using branching databases to group objects using yes/no questions. 2.6	Desktop publishing Creating documents by modifying text, images, and page layouts for a specified purpose. 2.5 2.6	Events and actions in programs Writing algorithms and programs that use a range of events to trigger sequences of actions. 2.1 2.2 2.3 2.6

	Computing systems and networks	Creating media	Programming	Data and Information	Creating media	Programming
Year 4	**The internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content. 2.4 2.5 2.6 2.7	**Audio editing** Capturing and editing audio to produce a podcast, ensuring that copyright is considered. 2.5 2.6 2.7	**Repetition in shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes. 2.1 2.2 2.3 2.6	**Data logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation. 2.2 2.6	**Photo editing** Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled. 2.5 2.6 2.7	**Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game. 2.1 2.2 2.3 2.6
Year 5	**Sharing information** Identifying and exploring how information is shared between digital systems. 2.1 2.1 2.4 2.6 2.7	**Video editing** Planning, capturing, and editing video to produce a short film. 2.5 2.6 2.7	**Selection in physical computing** Exploring conditions and selection using a programmable microcontroller. 2.1 2.2 2.3 2.6	**Flat-file databases** Using a database to order data and create charts to answer questions. 2.5 2.6	**Vector drawing** Creating images in a drawing program by using layers and groups of objects. 2.6	**Selection in quizzes** Exploring selection in programming to design and code an interactive quiz. 2.1 2.2 2.3 2.6
Year 6	**Internet communication** Recognising how the WWW can be used to communicate and be searched to find information. 2.1 2.4 2.5 2.6	**Webpage creation** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation. 2.5 2.6 2.7	**Variables in games** Exploring variables when designing and coding a game. 2.1 2.2 2.3 2.6 2.7	**Introduction to spreadsheets** Answering questions by using spreadsheets to organise and calculate data. 2.6	**3D modelling** Planning, developing, and evaluating 3D computer models of physical objects. 2.6 2.7	**Sensing** Designing and coding a project that captures inputs from a physical device. 2.1 2.2 2.3 2.6

Computing systems and networks	Programming	Data and Information	Creating media