Curriculum Progression in Computing
National Curriculum Focus

Purpose of Study	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.
Aims	The national curriculum for computing aims to ensure that all pupils: • can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation • can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems • can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems • are responsible, competent, confident and creative users of information and communication technology.

Key Stage One

Pupils should be taught to:

- 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.
- recognise common uses of information technology beyond school.
- 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.

Key Stage Two

Pupils should be taught to:
- 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 algorithms work and to detect and correct errors in algorithms and programs.
- 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.
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
- 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.
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Links to EYFS – Educational Programme for Computing

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

Computing Reception (Sunflowers Class)

Digital Literacy	Information Technology	Computer Science	ESafety
- have created shapes and text using digital tools - used technology to show learning - talk about different kinds of information such as pictures, words, video and sound - create simple compositions and record/playback audio - begin to understand that software and tools can be used to communicate through text, images and sound - find information using a basic search	- use a keyboard to make choices - use the mouse or touch to select icons and items - move onscreen objects - talk about the technology used at home and in school - operate digital equipment - use technology and digital content to play and learn - begin to understand that computers can be used to represent real life and imaginary situations - explore simple computer models and talk about what happens if...	- Give and follow simple instructions in order (algorithms) - create a short sequence of instructions (algorithms) - change instructions to create a different outcome (algorithms) - make a programmable toy move (programming) - use simple software and tools to make something planned happen - make choices on-screen about buttons and icons to select - create, recreate and continue patterns - sort a set of objects according to criteria - construct simple pictograms - know that pictures on a pictogram represent numerical values	- know to ask an adult before going online - know to tell an adult if they find anything worrying online - know that they should not talk to anyone they do not know online - be kind to friends - be able to talk about how much time they spend using computers and devices - be careful using computers and devices - share the use of computers and devices

	Progression By national Curriculum Strand					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital Literacy	• I can move around a website using buttons and image links • I can find answers to simple questions using a website • I can use drawing and text tools to give information	• I can enter the address (URL) of a website with support • I can identify some links within web content and move around them with purpose • I am starting to use a range of apps and devices without help • I can talk about how useful particular websites have been • I can use email to talk and work with someone else	• I can find information by moving around a web page using hyperlinks and the back button • I can confidently type web addresses into a web browser • I can question the reliability of information I found online • I can create bookmarks/favourites and use them to access websites • I can print web pages and copy and paste information into other applications • I can describe how I use technology at school and at home • I can judge my own and other peoples work and talk about how they could be made better	• I understand that a computer network means connected computers • I understand that you can use the internet for activities other than web browsing • I can confidently enter URLs into the address bar of a browser • I know that not all information online is reliable and that it needs to be checked	• I can use search technology to find things out • I can suggest a number of activities you can use the internet for (e.g. online gaming, voice over internet, email etc) • I can cross-check information provided on one website against multiple alternative sources • I can create digital content for specific purposes	• I can communicate and collaborate using technology and online services • I can create web content using basic HTML • I know that internet search engines use algorithms to find web content (e.g. web crawling) • I know that search engines are organised in order of popularity • I can use search technology and clear search terms to view web pages and obtain information and data • I can use a number of internet services (e.g. email, voice over internet etc) • I can create digital content for specific purposes and audiences • I can use feedback to improve digital content

Computer Science						
	• read a set of instructions and usually predict the correct outcome • produce a set of instructions that others can usually follow • understands that computers follow • instructions given in a precise way	• produce a sequence of instructions that result in planned outcomes. • program a short a sequence of commands that results in a planned effect • program and test a simple program • create algorithms to solve simple problems	• plan a sequence of instructions • give a sequence of instructions, some of which are repeated (repetition) and involve choices (selection) e.g. to make things happen • program a sequence of commands that results in a planned effect • program and test a simple program • demonstrate that a network is two or more devices connected • identify different devices within a network • understand that connections can be wired or wireless • understand each device on a network has its own address • model how information travels through a network using switches and routers.	• plan a sequence of instructions • give a sequence of instructions, some of which are repeated (repetition) and involve choices (selection) e.g. to make things happen • program a sequence of commands that results in a planned effect • program and test a simple program	• Write and amend computer programs • Program a number of algorithms that achieve a specific outcome • Use repetition, variables and conditional statements in computer programs • Test computer programs and correct any errors • use search technology to find things out • know that the World Wide Web consists of many websites and that web pages can be accessed using the internet. • Know that web pages are formatted using a type of 'code'	• write and amend more complex computer programs to create a variety of outcomes • decompose 'problems' by splitting them into smaller 'problems' and designing solutions for each part • use iteration(repeats and loops), variables and conditional statements in computer programs • test computer programs and correct most errors • Know that the internet is an example of a computer network • Use search technology to find things out and check for reliability • Know that internet search engines list search results in order of popularity
Information Technology	• I can enter simple sentences using a keyboard • I can use a mouse or touch to select and drag objects around a screen • I can select icons and items • I can print work	• I can use software, computers and devices to make simple presentations and create things. • I can compose and send a simple email. • I can save, print and retrieve work.	• I can combine graphics with text • I can use appropriate effects and re-size graphics • I can copy text from one place to another • I can copy images	• I can use the more advanced features of applications (e.g. word processing or presentation software) to help me match my work to an audience	• I understand that information in the form of text, sound and pictures can be combined to create digital content and communicate with an audience • I recognise the audience when designing and	• I can plan, design and create digital content that incorporates text, images and sound and communicates with an audience • I can discuss the rationale behind my designs. • I can develop and refine digital content

	• I can save work with help • I can talk about how I have used a computer to create things	• I can use a mouse or touch input to make selections and move objects. • I can enter sentences using keyboard or touch.	• I can save and retrieve work to/from a network location	• I can send an email • I can reply to an email	creating digital content • I can create digital content that incorporates text and images • I can create 3D graphical objects and group them to create models • I can duplicate, move, resize, and rotate graphical objects • I can zoom in and out to add detail to graphical objects	
E-Safety	• I can give a few examples of information that is personal (E.g. hobbies) • I can usually point out what it is about someone that makes me not trust them • I know that personal information should only be given to people I trust	• I can give lots of examples of what information is private • I can talk about some of the ways to use computers safely • I ask permission before using email clients or apps	• I can tell you why we need passwords and that they should be kept safe. • I can follow some e-safety rules. • I can point out an online advert	• I can tell you about why I should use secure passwords and why I need to keep them private. • I can use ICT to communicate, talk about some of the risks and act to avoid them. • I can tell you why information found online needs to be checked. • I can give examples about what types of things online I might need permission to use.	• I can tell you why personal information should only be given to trusted sources. • I know that some information on the internet may be misleading or inaccurate and I check information I find. • I can use technology and online services to communicate and collaborate, identify some of the risks and act to minimise them. • I can give good and bad example of behaviour online. • I can talk about different ways people are bullied online.	• I can use digital tools to communicate and collaborate effectively online • I can identify some of the risks associated with work and leisure in a digital society and act to minimise them

Progression in Computing: By unit of work

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
iSafe						
iAlgorithm	✓					
iProgram	✓	✓	✓	✓	✓	✓
iWrite	✓					
iData	✓		✓	✓		✓
iModel	✓				✓	✓
iDraw	✓				✓	
iSearch		✓				
iAnimate		✓		✓		
iPub		✓				
iBlog		✓				
iMail		✓	✓	✓		
iSimulate			✓			
iNetwork			✓			✓
iConnect			✓			
iPodcast			✓			
iCrypto					✓	
iWeb					✓	
iApp						✓