Computing at Spring Bank Primary School

Contents

SPRING BANK PRIMARY SCHOOL

Computing Curriculum Intent

At Spring Bank Primary School, we understand that computing is a vital part of children's lives and that we need to prepare our pupils for an unknown technological future. Computing is an integral part of the national curriculum and is a key skill for everyday life. Computing has deep links with literacy, mathematics, science, and design and technology, and provides insights into both natural and artificial systems. At Spring Bank Primary School, we aim to:

- Provide pupils with the opportunity to develop computing skills to enhance and extend their learning in other areas of the curriculum
- Ensure equality of access to computing resources, skills and techniques regardless of Special Educational Needs, race, gender and religion
- Give pupils the opportunity to enjoy computing and to feel proud of their achievements
- Enable pupils to become increasingly confident and skilful users of computing whilst also encouraging their understanding of its limitations and implications for the future
- Ensure pupils understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Support pupils to analyse problems in computational terms, and have repeated practical experience of writing computer programmes in order to solve such problems
- Ensure pupils evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Be responsible, competent, confident and creative users of information and communication technology.

The Computing Programme of Study in the National Curriculum puts a clear emphasis on three areas of learning:

- Computer science - how computers work and how to write algorithms and solve problems to eventually create a computer programme
- Information Technology - how data is represented and managed on computers
- Digital Literacy - how to understand digital information and interact with it safely and appropriately.

At Spring Bank Primary School, KS1 and KS2 pupils are taught computing with specific, timetabled lessons in our ICT suite, covering the objectives from the National Curriculum. These lessons are linked to topic themes wherever possible. Computing can cover many aspects but are not limited to computer use. Many 'unplugged' activities also contribute to their entitlement. Purple Mash is used throughout school and lends itself to cross-curricular aspects of computing that can be used to enhance pupil's learning and experiences. Pupils have the opportunity to use computing within the classroom across a range of subjects using a range of technology resources, such as laptops and iPads.

Lessons are planned using the National Curriculum Programme of Study and enhanced by Purple Mash to promote a greater depth of understanding, developing of skills, contextual application of these skills and the ability to perform reflectively. Pupils will be presented with opportunities to be creative and co-operative and to face challenges and solve problems in all aspects of computing. These may take the form of 'unplugged' activities. They will learn how to think in different ways to suit the different challenges, receiving opportunities to demonstrate their learning across a range of skills, allowing for effective assessment. This assessment will be used to inform planning and promote greater learning.

SPRING BANK PRIMARY SCHOOL

Overview of Units

Predominant Area of Computing covered by unit		
Computer Science	**Information Technology**	**Digital Literacy**

The order of units has been changed in some classes to ensure that the Computing Curriculum is tailored to fit with the needs of the wider curriculum.

Year Group	Purple Mash units being taught 2022-2023								
Rec	Mouse and track pas skills	Keyboard skills	Drawing skills	Robots	Sounds	Photography	Technology around us	Hardware	Safety and privacy
	Quizzes	Using Purple Mash with an individual log in.		Resources are designed to integrate into every day routine in the early years setting.					
Year 1	1.1 Online Safety/Exploring Purple Mash	1.9 Technology outside school	1.2 Grouping and sorting	1.3 Pictograms	1.4 Lego Builders	1.5 Maze Explorers	1.7 Coding	1.6 Animated Story Books	1.8 Spreadsheets
Year 2	2.2 Online Safety	2.6 Creating Pictures	2.1 Coding.	2.5 Effective Searching	2.3 Spreadsheets	2.4 Questioning	2.7 Making Music	2.8 Presenting Ideas	
Year 3	3.2 Online Safety	3.4 Touch Typing	3.5 Email	3.3 Spreadsheets	3.8 Graphing	3.9 Presenting	3.6 Branching Databases	3.1 Coding	3.7 Simulations
Year 4	4.2 Online Safety	4.7 Effective Searching	4.6 Animation	4-3 Spreadsheets	4.5 Logo	4.4 Writing for different purposes	4.8 Hardware Investigated	4.1 Coding	4.9 Making Music
Year 5	5.2 Online Safety	5.1 Coding	5.3 Spreadsheets	5.6 3D Modelling	5.4 Databases	5.5 Games Creator	5.7 Concept Maps	5.8 Word Processing	
Year 6	6.2 Online Safety	6.1 Coding	6.3 Spreadsheets	6.4 Blogging	6.5 Text Adventures	6.6 Networks	6.7 Quizzing	6.8 Understanding Binary	

SPRING BANK PRIMARY SCHOOL

Computing Age Related Expectations

This document lays out an overview of the computing which is taught across school from Reception to Year 6. This include the EYFS, as well as the programmes of study from the National Curriculum that must be taught in KS1 and KS2.

Computing in EYFS

Despite Computing not being explicitly mentioned in the Early Years Foundation Stage statutory framework, there are many opportunities for young children to use technology to solve problems and produce creative outcomes. At Spring Bank, we encourage our Reception age children to use a variety of digital devices within their everyday learning. Children are encouraged to explore technology such as Bee-Bots so that they will be ready to take on tasks once they enter Key Stage 1.

Subject Content

Key Stage 1

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 2

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.

SPRING BANK PRIMARY SCHOOL

Key Knowledge

Substantive Knowledge – knowledge of hardware, software, programmes and applications **Disciplinary Knowledge** – knowledge of the practices of computing (how to…)

Year One							
1.1 Online Safety/Exploring Purple Mash Knows how to log in safely. • Knows how to navigate to a document area where saved work by child can be found. • Knows how to use search to locate applications or resources on a platform such as Purple Mash. • Knows how to enhance work by adding multimodal items such as text and images. • Knows how to open, save and print work. • Knows the importance of logging out of an account.	**1.2 Grouping and sorting** Knows how to sort items using a range of criteria • Knows how to use software for grouping items such as tools within Purple mash.	**1.2 Pictograms** • Knows that data can be represented in a picture format e.g. pictogram. • Knows how to contribute to a class pictogram. • Knows how to use a software such as 2Count to record results of an experiment into a pictogram format.	**1.4 Lego Builders** Knows how to compare the effects of adhering strictly to instructions when completing tasks without complete instructions. • Knows how to follow and create simple instructions on the computer. • Knows that the order of instructions affects the end result for a given instructional task.	**1.5 Maze Explorers** Knows the functionality of the direction keys in 2GO. • Knows how to create and debug a set of simple instructions (algorithm). • Knows how to use the additional direction keys within 2Go as part of an algorithm. • Knows how to change and extend the algorithm list in 2Go.	**1.7 Coding** Knows what instructions are and can predict what might happen when they are followed. • Knows how to plan and make a simple computer program e.g. fish moves right, crab moves up. • Knows what objects, actions and backgrounds are within a coding environment. • Knows what an event is and knows how to use an event to control an object. • Beginning to know how code executes when a program is run.	**1.6 Animated Story Books** Knows what e-books are. • Knows of software such as 2Create a Story that allows users to create interactive stories. • Knows how to add animation to an interactive story. • Knows how to add sound, including voice recordings and music to a story they have created using software. • Beginning to know how to work on more complex digital stories, including adding backgrounds, copying and pasted pages. • Knows how to share digital stories with others such as using Digital Display Boards.	**1.8 Spreadsheets** Knows what a spreadsheet program environment looks like including cells, rows and columns. • Knows basically what a spreadsheet program can help do. • Knows how to enter data into spreadsheet cells. • Knows how to add images to cells. • Knows how to use some tools within spreadsheets e.g. with 2Calulate can use lock cell, move cell, speak and count.

SPRING BANK PRIMARY SCHOOL

Year Two							
2.2 Online Safety Knows how searches can be refined when searching digitally and therefore attempts refining when searching. • Knows that digitally created work can be shared with others e.g. Purple Mash Display Boards. • Has knowledge and understanding about sharing more globally on the Internet. • Knows that email is a type of communication tool. • Knows how to open and send simple online communications in the form of email e.g. 2Email (virtual email client). • Knows that there is an appropriate way to communicate with others in an online situation. • Knows that information put online leaves a digital footprint	**2.6 Creating** Pictures • Knows the purpose and benefits of painting software tools such as 2Paint a Picture. • Knows how to recreate Impressionism, surrealism and Pointillism using features within 2Paint a Picture. • Knows how to reproduce the style of William Morris by using repeating patterns, manipulating patterns and adding multiple effects in painting software such as 2Paint a picture.	**2.1 Coding.** • Knows what an algorithm is and can explain that it is a set of instructions and that algorithms follow a sequence. • Knows how to create a computer program using an algorithm. • Knows how to create a computer program from a given design. • Knows that collision detection is an event type in coding. • Knows how to design an algorithm that follows a timed sequence. • Knows that different objects within the coding environment have different properties. • Knows that there are different events in coding and knows what some of these events are. • Knows the	**2.5 Effective Searching** Knows the meaning of key Internet and searching terms. • Knows the basic parts of a web search engine page. • Knows how to navigate a web search results page. • Knows how to search the Internet to some degree for answers to a quiz. • Knows the premise of what effective Internet searching is	**2.3 Spreadsheets** Secures knowledge from prior year when spreadsheets were introduced (See unit 1.8). • Knows how to use prior learning to perform composite task of creating a counting machine using software such as 2Calculate (image, lock move cell, speak and count tools). • Knows how to copy, cut and paste in spreadsheet software such as 2Calculate. • Knows what totalling tools are and how to use them. • Knows how to use a spreadsheet to perform calculations for purpose. For example, adding and totalling money. • Knows how to use some tools within a spreadsheet to	**2.4 Questioning** • Knows that pictograms provide limited information. • Knows that there are other data handling tools that can give more information than pictograms. • Knows how to use yes/no questions to separate information. • Knows how to construct a binary tree to identify items. • Knows how to use a binary tree database (such as 2Question), to answer questions. • Knows how to use a database to answer more complex search questions. • Knows how to use a search feature at a basic level when trying to locate data within a database such as 2Investigate.	**2.7 Making Music** Knows how to make forms of music (digitally) using age appropriate software such as 2Sequence. • Knows how to edit and combine sounds using 2Sequence. • Knows how to refine composed music. • Knows how to upload/import and record sounds beyond the software environment.	**2.8 Presenting Ideas** Know that digital content can be presented in many different forms e.g. stories. • Know how to use presentational or interactive software such as a quiz, making improvements to it based on people feedback. • Know that data can be structured in tables to make it useful for an audience. • Know how to add images such as clipart and photos to presentational software. • Know how to collect, organise and present data and information in digital format.

. • Knows some steps that can be taken to keep personal data and hardware secure.		function of buttons in the coding environment. • Knows how to interpret and debug simple programs.		support calculations. For example, using the equals tool in 2Calculate to check calculations. • Knows how to create a manual block graph within a spreadsheet from data.			

Year Three								
3.2 Online Safety • Knows what makes a safe password and how to keep it safe. • Knows the main outcomes of not keeping passwords safe. • Knows all the common ways the Internet enables people to effectively communicate. • Know that a blog can be used to help communicate with a wider audience. • Know how to contribute to a blog with clear and appropriate messages.	**3.4 Touch Typing** • Know typing terminology including names of fingers. • Know the home, top and bottom row sections on a keyboard. • Knows the keys typed with left hand. • Knows the keys typed with right hand. • Knows the correct way to sit at a keyboard.	**3.5 Email** • Know the different methods of communication and know the strengths and weaknesses of his form. • Know how to open and responding to email. • Know how to use an address book to write an email. • Know how to use an email environment safely including the importance	**3.3 Spreadsheets** • Know how to create tables of data within a spreadsheet. • Know how to use a spreadsheet program to automatically create charts and graphs from data. • Know how to use various features within a spreadsheet to support solutions to calculations. For example,	**3.8 Graphing** • Know how to set up a graph with a given number of fields using graphing software (2Graph). • Know how to enter data for a graph. • Know how to select the most appropriate chart type for their data and explain reasoning. • Know how to sort data in graphing	**3.9 Presenting** • Know what presentation is and how it can be used. • Know how to add pages/slides, text and shapes to pages, and also format them. • Know how to add media such as images, audio and videos. • Know how to use effects and features such as animations	**3.6 Branching Databases** • Know how to sort objects using just YES/NO. • Know how YES/NO questions are structured and answered. • Know how to complete a branching database. • Know how to edit and adapt a branching database. • Know how to create a	**3.1 Coding** • Knows what a flowchart is and how flowcharts are used in computer programming. • Knows how to use a flowchart to create a computer program. • Knows that there are different types of timers used in coding environments such as 2Code. • Knows which timer should be used for a given purpose. • Know what a repeat command is and how to use the repeat command.	**3.7 Simulations** • Know that a computer simulation can represent real and imaginary situations. • Know advantages and problems of using simulations. • Know how to use a simple simulation to try out different options and test predictions. • Begin to know how to evaluate simulations by comparing them with real simulations and

• Know that some information held on websites may not be accurate or true. • Beginning to know how to search the Internet and how to think critically about the results returned. • Know why there are age restrictions on digital media and devices. • Know where to turn to for help if they see inappropriate content or have inappro		of the draft feature. • Know how to add attachments to an email. • Know what CC	'more than', 'less than', and 'equals'. • Know how to describe a cell location in a spreadsheet. • Know how to find specified locations in a spreadsheet.	software to enable easier analysis.	and slide transitions. • Know how timings can help when presenting and know how to include them in presentations. • Know how to effectively present to an audience using presentation software.	branching database including debugging it.	• Know how to create a range of programs using coding knowledge. • Know how to run, test and debug their own programs. • Know what nesting is and that this should be considered when debugging. • Know how to change attributes/properties of any objects in a pr	considering their usefulness.

Year Four								
4.2 Online Safety • Know that information put online leaves a digital footprint or trail and can expand on prior years' scope of this fact. • Know some of the ways children can protect themselves from online identity theft.	**4.7 Effective Searching** • Know how to find information from a search results page. • Know how to search effectively to find out information. • Know how to identify if an information	**4.6 Animation** • Know how animations are created by hand. • Know how animations are created using computers • Know what onion skinning is when referring to animation.	**4-3 Spreadsheets** • Know what cell formatting is. • Know how to format cells as currency, percentage, decimal or fraction. • Know how to use formula wizard tools.	**4.5 Logo** • Know the structure of the coding language of Logo. • Know how to input simple instructions in Logo language environment. • Know how to create letter shapes using Logo.	**4.4 Writing for different purposes** • Know how font size and style can affect the impact of a text. • Know how to use a simulated scenario to produce a news report and	**4.8 Hardware Investigated** Know there are key parts that make up a computer. • Know what each of the key parts is called and the function of them.	**4.1 Coding** • Begin to know what selection is in computer programming. • Know how an IF statement works. • Know how to interpret an IF statement and therefore know how to create a program that	**4.9 Making Music** • Know the main elements of music. • Know what rhythm and tempo is and able to use this knowledge to experiment with it. • Know that computers can be used to create music compositions • Know how to apply knowledge of

• Know that information put online by users could be used for identity theft. • Know the main risks and benefits of installing software and applications. • Know that copying work of others and presenting it as their own is plagiarism. • Knows the consequences of plagiarism. • Knows appropriate behaviour when participating or contributing to collaborative online projects for learning. • Know some of the main positive and negative influences technology has on health and the environment. • Knows the importance of balancing screen time with non-screen time.	source is true and reliable.	• Know that animations can be enhanced using features in software such as background and sounds. • Know what 'stop motion' animation is.	• Know how to combine spreadsheet tools to create a purposeful spreadsheet e.g. a timed times table test. • Know how to use a spreadsheet to model a reallife situation e.g. budget planner. • Know how to add a formula to a cell in order to create automatic calculations.	• Know what the repeat function in Logo is and its usefulness. Use it to create shapes such as squares. • Know what procedures are and use this knowledge to build procedures in Logo	campaign using technology.		includes an IF statement. • Know how to use co-ordinates in computer programming. • Know what the 'repeat until' command is. • Know how an IF/ELSE statement works. • Know what a variable is in programming. • Know how to use variables within their programs. • To know how to create a playable game using a block coding environment.	music to create own composition using software.

SPRING BANK PRIMARY SCHOOL

Year Five							
5.2 Online Safety • Know in more detail from prior learning of the impact that sharing digital content can have. • Know how to think critically about information they share online. • Know responsibilities they have for themselves and others regarding online behaviour. • Know and have developed knowledge from prior years about maintaining secure passwords. • Know about image manipulation using software and the advantages or disadvantages of this when shared online. • Know what is meant by appropriate and inappropriate text, photographs and videos. • Know about the impact of sharing media such as	**5.1 Coding** • Begin to know how to simplify code in order to make own programming more efficient. • Know how to create a simple simulation using 2Code. For example, a traffic light sequence. • Know what decomposition and abstraction are in computer science. • Know the need to start coding at a basic level of abstraction to remove superfluous details from own programs. • Know how to use decomposition to make a plan of a real-life situation. • Know what a function is in coding and know how to use a function in own program to make it more efficient. • Know what different variable types are. • Know what strings are and how to use them. • Know how to set and change variable values in code.	**5.3 Spreadsheets** • Know how to use formulae within a spreadsheet to convert measurements of length and distance. • Know how to use more advanced formulae effectively. For example, to use formulae to calculate area and perimeter of shapes. • Know how to create formulae that use text variables. • Know how to use tools within a spreadsheet e.g. 2Calculate and the count tool to answer hypotheses. For example, to answer hypotheses about common letters in use.	**5.6 3D Modelling** • Know what modelling software is and the skills of computer aided design. • Know the effect of moving points when designing. • Know how to design a 3D model to fit certain criteria. • Know how to refine and print a model.	**5.4 Databases** • Know how to search for information within a database. • Know the different ways to search for information in a database. • Know how to add information into a shared database. • Know how to create own database. • Know how to create new records. • Know what fields are and know how to correctly add information. • Know how to phrase questions so they can be correctly answered using a search of database.	**5.5 Games Creator** • Know what some of the main elements are that make a successful game. • Know how to plan a playable game. • Know how to incorporate media such as sound and images. • Know how to manipulate media including adding animation. • Know how to successfully evaluate games.	**5.7 Concept Maps** • Know the need for visual representations when generating and discussing complex ideas. • Know the uses of a 'concept map'. • Know what is meant by 'concept map', 'stage', 'nodes' and 'connections.' • Know how to create a concept map using software such as 2Connect. • Know that concept maps can be used to retell stories and information. • Know how to present a concept map to an audience.	**5.8 Word Processing** Know what a word processing tool is for. • Know how to create a word processing document. • Know how to alter the look of text and navigate around a document. • Know how to alter page layout including heading and columns. • Know how to add and edit images. • Know how to add features to enhance look and usability within a document. For example: textboxes, hyperlinks, contents pages. • Know how to use tables to present information.

photographs and videos online. • Know about the importance of citing content online from others and know how to do this. • Know how to select keywords and search techniques to find relevant information to increase reliability.	• Know some of the common ways that text variables can be used in programming. • Know and use concatenation in own programs.						

Year Six							
6.2 Online Safety • Know the benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. • Know what secure sites are. • Know that secure sites will have industry standard seals of approval. • Build on knowledge of Digital Footprints. For example, know how and why people use their information. • Build on knowledge of appropriate online behaviours and how this	**6.1 Coding** • Know how to implement a game which includes timers and a score. • Know what the launch command is. • Build on knowledge of functions. • Know how to use multiple functions in own program. • Know how to arrange code in multiple tabs. • Know how to develop creativity when coding to generate novel effects.	**6.3 Spreadsheets** • Know how to create a spreadsheet to help answer a mathematical question relating to probability. • Know how to take 'copy' and 'paste' shortcuts. • Know how to problem solve during mathematical investigations when using spreadsheets by using tools such as the 'Count tool'. • Know	**6.4 Blogging** • Know the purpose of writing a blog. • Know the features of successful blog writing. • Know how to plan a blog. • Know how to write a blog. • Know how to write a blog post. • Know that the way information is presented within a blog has an impact upon the audience.	**6.5 Text Adventures** • Know what a text based adventure is. • Know how to convert a simple story with 2 or 3 levels of decision making into a logical design. • Know how to use the functionality of 2Create a Story Adventure mode to create, test and debug using plans. • Know the difference between a map-based game and a	**6.6 Networks** • Know the difference between the World Wide Web and the Internet. • Know what a WAN and LAN is and the key differences between them. • Know how a school network accesses the Internet. • Know the history of the Internet. • Know some of the major changes in technology which	**6.7 Quizzing** • Know how to use create activities for younger children using software such as 2DIY. • Know about different question types within quizzing software tools such as 2Quiz. • Know how to give and respond to feedback based on quizzes made. • Know how to create their own grammar games. • Know how to use	**6.8 Understanding Binary** • Know that all data in a computer is saved in the computer memory in a binary format. • Know that binary uses only the integers 0 and 1. • Know that we can relate 0 as an 'off' switch and 1 to an 'on' switch. • Know how to count up from 0 in binary using visual aids if required. • Know that bits are related to computer storage.

can protect themselves and others from possible online dangers. For example, the dangers of promoting inappropriate content online. • Have greater knowledge of how to make more informed choices of how free time is used. • Know the effects on individual health when having too much screen time.	• Know the different options of generating user input in 2Code. • Know how to attribute variables to user input. • Know the need to code for all possibilities when using user inputs. • Know how 2Code can be used to make a text-based adventure game. • Know with improving understanding of how they can alter existing programs to reflect their own ideas. • Building on existing knowledge of debugging, children know how to debug more effectively.	how to create a spreadsheet to produce computational models. For example, creating a spreadsheet that works out discounts and final price sales. Children will know how to use advanced formula to assist with this. • Know how to use a spreadsheet to help plan actions. For example, create a spreadsheet to plan how to spend pocket money and the effect of saving.	• Know how to contribute to others' blogs. • Know the importance of having an approval process when creating blog content or modifying it. • Know from Online Safety knowledge that content within blogs applies. For example, children know the issues surrounding inappropriate posts and cyberbullying.	sequential story-based game. • Know how to use written plans to code a map-based adventure using 2Code. • Know how to recall existing knowledge to support coding a map-based adventure game. For example, using functions, two-way selection (IF/ELSE statements) and repetition.	have taken place in their lifetime.	multiple pieces of software to enhance a quiz. For example, creating a quiz that requires children to look up information on a database.	• Know how to convert numbers to binary using the division by two method. • Know how to use a converter tool to check binary conversions.