



Ridgmont Lower School

Computing Curriculum

Intent:

Computing is a subject which offers many opportunities in an increasingly digital world. By exploring the subject within themes, children will be able to consider real-life applications for their knowledge and skills. Through the exploration of computer science, children will gain an understanding of how everyday objects in their lives work and identify inputs and outputs. Computer science also encourages children to develop their problem-solving skills and develops resilience to try again if they are unsuccessful to begin with. These skills can then be applied to many other areas of education and life. Our computing curriculum will, therefore, create children who are prepared for the modern world of work, providing them with an understanding of knowledge, concepts and skills. We are also aware of the importance of teaching children of the opportunities and dangers which the digital world provides. Children will explore the potential of the online world, while learning about how to use it safely.

Implementation

- We plan by making links between other subjects so that the learning is real
- Children are able to apply and additionally explore their curriculum knowledge through computing
- Through ensuring personalised access to a range of devices and software appropriate to age and stage, children are challenged to explore, find solutions to, and communicate their understanding of real world problems
- Through developing children's understanding of their online presence and decision making

Impact:

Ridgmont Lower School will have computing technicians who:

- are resilient solution seekers
- recognise the way that technology can, and does, shape and improve our lives
- are able to present and effectively communicate information and ideas in a variety of ways
- know how to use the internet safely and sensibly and know what to do in the event of unacceptable online behaviour.

National Curriculum Coverage

EYFS	KEY STAGE 1	KEY STAGE 2
Within the revised EYFS statutory framework, the ‘Technology’ strand within Understanding the World has been removed. However, there are opportunities within each area of the framework to enable practitioners to effectively prepare children for studying the computing curriculum. Technology is used to enhance other areas of the curriculum. Children are introduced to programmable devices and laptops.	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 • to 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.	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 variable 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.

KS1

FIRST YEAR

	Autumn		Spring		Summer	
Stimulus	DATA & INFORMATION Grouping Data	CREATING MEDIA Digital Writing	PROGRAMMING Programming Animations	COMPUTING SYSTEMS & NETWORKS – IT Around Us	CREATING MEDIA Digital Photography	PROGRAMMING Robot Algorithms
Vocabulary	object label group search image property colour size shape value more less most fewest least the same data set	letters numbers capital letter compare typing writing select word processor keyboard keys type space backspace text cursor toolbar italics bold underline mouse font undo redo format	compare area run predict effect change value instructions design ScratchJr command sprite programming block joining start program background delete reset algorithm Bee-Bot	typing technology computer mouse trackpad keyboard screen double click	photograph landscape portrait light sources flash focus camera device digital capture image framing subject compose lighting background format	forwards backwards turn clear go instructions directions left right route plan Bee-Bot commands algorithm program
Links to Learning & Assessment Points						
What children will have learnt by the end of the topic	DATA & INFORMATION Grouping Data	CREATING MEDIA Digital Writing	PROGRAMMING Programming Animations	COMPUTING SYSTEMS & NETWORKS – IT Around Us	CREATING MEDIA Digital Photography	PROGRAMMING Robot Algorithms
Outcomes: Concept	- To identify that objects can be counted - To recognise that information can be presented - To recognise that information can be presented in different ways	- To recognise that a keyboard is used to enter text into a computer - To recognise that the Shift key changes the output of a key - To recognise that text can be changed - To recognise that text can be edited - To recognise that the appearance of text can be changed - To consider the impact of choices made	- To enact a given word - To recall words that can be enacted - To predict the outcome of a command on a device - To list that commands can be used on a given device - To explain what a given command does - To match a command to an outcome - To recognise how to run a command (press a button) - To choose a command for a given purpose - To understand that a program is a set of commands a computer can run - To recall that a series of instructions can be issued before they are enacted - To build a sequence of commands in steps - To combine commands in a program	- To recognise different types of computers used in school - To identify that a computer is a part of information technology - To recognise the features of information technology - To talk about uses of information technology - To say how rules for using information technology can help us - To explain how information technology benefits us - To recognise that choices are made when using information technology	- To recognise that some digital devices can capture images using a camera - To talk about how to take a photograph - To recognise that photographs can be saved and viewed later - To make choices when composing my photograph - To recognise features of ‘good’ photographs - To identify how a photograph can be improved - To explain the effect of light on a photograph - To recognise that photographs can be changed even after they have been taken - To recognise that some images are not accurate	- To describe that a series of instructions is a sequence - To explain what happens when we change the order of instructions - To recall that a series of instructions can be issued before they are enacted - To recognise that you can predict the outcome of a program
Outcomes: Skill	- To identify some attributes of an object - To collect simple data - To show that collected data can be counted - To describe the properties of an object - To choose an attribute to group objects by - To group objects to answer questions - To explain that objects can be grouped by similarities (attribute) - To describe a group of objects (based on commonality)	- To use letter, number, and Space keys to enter text into a computer - To use punctuation and special characters - To select text - To use the Backspace key to remove text - To position the text cursor in a chosen location - To choose options to achieve a desired effect - To change the appearance of text on a computer - To use Undo	- To choose a series of words that can be enacted as a program - To choose a series of commands that can be run as a program - To run a program on a device	- To recognise different types of computers used in school - To identify that a computer is a part of information technology - To recognise the features of information technology - To talk about the uses of information technology - To explain how information technology benefits us - To say how rules for using information technology can help us - To recognise that choices are made when using information technology	- To capture a digital image - To take photographs in both landscape and portrait format - To view photographs on a digital device - To decide which photographs to keep - To hold the camera still to take a clear photograph - To use zoom to change the composition of a photograph - To consider lighting before taking a photograph - To use simple editing tools to change the appearance of a photograph - To improve a photograph by retaking it	- To choose a series of words that can be enacted as a sequence - To choose a series of instructions that can be run as a program - To create a program - To track a sequence to make a prediction - To run a program on a device - To debug a program that I have written

What children will have learnt by the end of the topic	How to match objects to groups How to describe objects using labels How to identify the label for a group of objects How to count objects How to group objects How to count a group of objects How to describe an object How to describe the property of an object How to fins objects with similar properties How to group similar properties How to group objects in more than one way How to count how many objects share a property How to choose how to group objects How to describe a group of objects How to record how many objects are in a group How to decide how to group objects to answer a question How to compare a group of objects How to record and share what they have found	How to open a word processor How to recognise keys on a keyboard How to identify and find keys on a keyboard How to enter text into a computer How to use letter, number and space keys How to use the backspace key to remove text How to type capital letters To explain what the keys they have already learnt do How to identify the toolbar and use, bold, italic and underline How to select a word by double-clicking How to select all of the text by clicking and dragging change the font How to say what tool they used to change text To decide if their changes had improved their writing How to use ‘undo’ to remove changes How to make changes to text on a computer To explain the differences between typing and writing To share why they prefer typing or writing	How to find the commands to move a sprite How to use commands to move a sprite How to compare different programming tools How to use more than one block by joining them together How to use a Start block in a program How to run their program How to find blocks that have numbers How to change the value How to explain what happens when they change a value How to show that a project can include more than one sprite How to delete a sprite How to add blocks to each of their sprites How to choose appropriate artwork for their project How to decide how each sprite will move How to create an algorithm for each sprite How to use sprites that match their design How to add programming blocks based on their algorithm How to test the programs they have created	How to identify examples of computers How to describe some uses of computers How to identify that a computer is a part of IT How to identify examples of IT How t sort school IT by what it is used for How to identify that some IT can be used in more than one way Cite examples of information technology How to sort IT by where it is found How to talk about uses of information technology How to recognise common types of technology Be able to demonstrate how IT devices work together? Be able to explain why we use IT Cite different uses of information technology Be able to talk about different rules for using IT How rules can help keep them safe How to explain the choices they make when using IT How to use IT for different types of activities How there is need to use IT in different ways	How to recognise what devices can be used to take photographs How to talk about how to take a photograph How to explain what they did to capture a digital photo How to explain the process of taking a good photograph How to take photos in landscape and portrait format To be able to explain why a photo looks better in portrait or landscape format How to identify what is wrong with a photograph Be able to discuss how to take a good photograph Be able to improve a photograph by retaking it Be able explore the effects that light has on a photo How to experiment with different light sources Why a picture may be unclear To recognise that images can be changed How to use a tool to achieve a desired effect How to apply a range of photography skills to capture a photo How to recognise which photos have been changed How to identify which photos are real and which have changed	To follow a set of instruction given by someone else To choose a series of words that can be acted out as a sequence To be able to give clear instruction To use the same instructions to create different algorithms To use an algorithm to program a sequence on a floor robot To show the difference in outcomes between two sequences that consist of the same instructions To follow a sequence To predict the outcome of a sequence To compare their prediction to the program outcome To explain the choices that are made for a mat design To identify different routes around a mat To test a mat to make sure it is usable To explain what an algorithm should achieve To create an algorithm to meet a goal To use an algorithm to create a program To test and debug each part of a program To plan algorithms for different parts of a task To put together the different parts of a program
Cross Curricular Links		❖ English	❖ Maths	❖ Maths ❖ PSHE	❖ Art	❖ Maths

	Autumn		Spring		Summer	
Stimulus	DATA & INFORMATION Pictograms	CREATING MEDIA Digital Music	PROGRAMMING Programming Quizzes	COMPUTING SYSTEMS & NETWORKS – Technology Around Us	CREATING MEDIA Digital Painting	PROGRAMMING Moving a Robot
Vocabulary	more than less than most least common popular organise data object tally chart votes total pictogram enter compare objects count explain attribute group same different conclusion sharing block diagram	music quiet loud feeling emotions pattern notes create instrument open edit rhythm pulse pitch tempo beat	sequence command run start outcome predict design actions project modify change build match compare features evaluate program blocks sprite algorithm debug decomposition code	technology computer mouse trackpad keyboard screen double-click typing	erase colour pictures painting computers paint program tool paintbrush fill undo tool brush style brush size	forwards backwards turn clear go commands instructions directions left right route plan Bee-Bot algorithm program
Links to Learning & Assessment Points						
	DATA & INFORMATION Pictograms	CREATING MEDIA Digital Music	PROGRAMMING Programming Quizzes	COMPUTING SYSTEMS & NETWORKS – Technology Around Us	CREATING MEDIA Digital Painting	PROGRAMMING Moving a Robot
Outcomes: Concept	- To use a tally chart to collect data - To compare objects that have been grouped by attribute - To suggest appropriate headings for tally charts and pictograms - To construct (compete) a given comparison question, e.g. <i>Are there more__balls than __balls?</i> - To use a computer program to present information in different ways - To explain that we can present information using a computer - To give simple examples of why some information should not be shared	- To identify that computers can be used to play sounds of different instruments - To identify that the same pattern can be represented in different ways - To compare playing music on instruments with making music on a computer	- To describe a series of instructions as a ‘sequence’ - To recall that a series of instructions can be issued before they are enacted - To use logical reasoning to predict the outcome of a program	- To explain that technology is something that can help us - To identify examples of technology - To explain how examples of technology help us - To recognise that a computer is an example of technology - To recognise that choices are made when using technology - To explain why rules are needed when using technology	- To explain what different freehand tools do - To recognise computers can be used to create art - To recognise a tool can be adjusted to suit my need - To decide when it's appropriate to use each tool - To consider impact of choices made - To compare painting using a computer with painting using brushes	- To recall words that can be enacted - To explain what a given command does - To match a command to an outcome - To understand that a program is a set of commands that a computer can run - To recall that a series of instructions can be issued before they are enacted
Outcomes: Skill	- To show I can enter data onto a computer - To recognise that people, animals and objects can be described by attribute - To use a computer to view data in different formats - To use pictograms to answer single-attribute questions - To use a computer to answer comparison questions (graphs, tables)	- To experiment with musical patterns on a computer - To experiment with different sounds on a computer - To use a computer to create a musical pattern - To use a computer to compose a rhythm and a melody on a given theme - To use a computer to play the same music in different ways (e.g. tempo) - To evaluate a musical composition created on a computer - To improve a musical composition created on a computer	- To choose a series of words that can be enacted as a sequence - To explain what happens when we change the order of instructions - To choose a series of commands that can be run as a program - To trace a sequence to make a prediction - To test a prediction by running the sequence - To create and debug a program that I have written - To run a program on a device	- To choose a piece of technology to do a job - To recognise that some technology can be used in different ways - To identify the main parts of a computer - To use a mouse in different ways - To use a keyboard to type - To use the keyboard to edit text - To show how to use technology safely	- To create a picture using freehand tools - To use shape and line tools when precision is needed - To use a range of paint colours - To use the fill tool to colour an enclosed area - To use the undo button to correct a mistake - To combine a range of tools to create a piece of artwork	- To enact a given word - To predict the outcome of a command on a device - To list which commands can be used on a given device - To run a command on a floor robot - To choose a command for a given purpose - To choose a series of words that can be enacted as a program - To choose a series of commands that can be run as a program - To build a sequence of commands in steps - To combine commands in a program - To run a program on a device
Cross Curricular Links	Math	Music	Maths	PSHE Art	Art	Art

Stimulus	Autumn		Spring		Summer	
	DATA & INFORMATION Branching databases	CREATING MEDIA Desktop Publishing	PROGRAMMING – Events & Actions in Programs	COMPUTING SYSTEMS & NETWORKS – The Internet	CREATING MEDIA Audio Production	PROGRAMMING Repetition in Shapes
Vocabulary	attribute value questions table objects equal even separate structure compare order organise selecting information branching database decision tree	advantages disadvantages communicate landscape portrait orientation content purpose benefits text images font style place holder template layout desktop publishing copy paste	event logic move pen design action motion sprite algorithm resize extension block pen up set up debugging errors code test debug	network security switch routing content link file use download sharing ownership permission information accurate honest content adverts internet router server wireless access point (WAP) website web page web address web browser World Wide Web	sound edit trim align layer import record playback selection load save export evaluate feedback audio microphone speaker headphones input device output device podcast MP3	commands code snippet design pattern repeat repetition loop value trace procedure Logo (programming environment) program turtle algorithm debug count-controlled decompose
Links to Learning & Assessment Points						
	DATA & INFORMATION Branching databases	CREATING MEDIA Desktop Publishing	PROGRAMMING Events & Actions in Programs	COMPUTING SYSTEMS & NETWORKS – The Internet	CREATING MEDIA Audio Production	PROGRAMMING Repetition in Shapes
Outcomes: Concept	- To investigate questions with yes/no answers - To indentify attributes that you can ask yes/no questions about - To select an attribute to separate - Objects into two similarly sized groups - To explain that a branching database is an identification tool - To recognise that a data set can be structured using yes/no questions - To explain that a well-structured branching database will enable you to identify objects using fewer questions - To relate two levels of a branching database using AND - To suggest real-world applications for branching databases	- To recognise how text and images can be used together to convey information - To define landscape and portrait as two different page orientations - To consider how different layouts can suit different purposes - To recognise that DTP pages can be structured with placeholders - To recognise how different font styles and effects are used for particular purposes - To consider the benefits of using a DTP application	- To explain that programs start because of an input - To explain what a sequence is - To identify that a program includes sequences of commands - To identify that the sequence of a program is a process - To explain that the order of commands can affect a program’s output - To identify that different sequences can achieve the same output - To identify that different sequences can achieve different outputs	- To describe how networks connect to other networks - To outline how information can be shared via the World Wide Web - To recognise that the World Wide Web is part of the internet - To explain that the global interconnection of networks is the internet - To recognise the need for security on the internet - To describe how to access the World Wide Web - To describe the types of content/media that can be added, created, and shared on the World Wide Web - To explain how the content of the World Wide Web is created, owned, and shared by people - To explain that the internet enables us to view the World Wide Web - To explain that the World Wide Web comprises of websites and web pages - To describe the current limitations of World Wide Web media - To evaluate the reliability of content and the consequences of unreliable content - To explain the benefits of the World Wide Web	- To identify that sound can be recorded - To identify that an input device is needed to record sound - To identify that output devices are needed to play audio - To recognise that recorded audio can be stored on a computer - To recognise that sound can be represented visually as a waveform - To recognise that audio can be edited - To recognise that audio can be layered so that multiple sounds can be played at the same time - To consider the results of editing choices made	- To relate what ‘repeat’ means - To identify everyday tasks that include repetition as part of a sequence eg brushing teeth, dance moves - To explain that we can use a loop command in a program to repeat instructions - To identify patterns in a sequence - To identify a loop within a program - To explain that in programming there are indefinite loops and count-controlled loops - To explain that an indefinite loop will run until the program is stopped - To explain that you can program a loop to stop after a specific numbers of times - To identify patterns in a sequence eg ‘step 3 times’ means the same as ‘step, step, step’ - To justify when to use a loop and when not to - To explain the importance of instruction order in a loop - To recognise that not all tools enable more than one process to be run at once
Outcomes: Skill	- To create questions with yes/no answers - To choose questions that will divide objects into evenly sized subgroups - To repeatedly create subgroups of objects - To identify an object using a branching database - To retrieve information from different levels of the branching database	- To show that page orientation can be changed - To add text to a placeholder - To organise text and image placeholders in a page layout - To add and remove images to and from placeholders - To edit text in a placeholder - To move resize and rotate images - To choose fonts and apply effects to text - To review a document	- To build a sequence of commands - To combine commands in a program - To order commands in a program - To create a sequence of commands to produce a given outcome	There are no skills concepts for this unit	- To record sound using a computer - To play recorded audio - To import audio into a project - To delete a section of audio - To change the volume of tracks in a project	- To list an everyday task as a set of instructions including repetition - To use an indefinite loop to produce a given outcome - To use a count-controlled loop to produce a given outcome - To plan a program that includes appropriate loops to produce a given outcome - To recognise tools that enable more than one process to be run at the same time (concurrency) - To create two or more sequences that run at the same time
Cross Curricular Links	Maths	English	Maths	English, geography, History	Music	Maths

LKS2

SECOND YEAR

	Autumn		Spring		Summer	
Stimulus	DATA & INFORMATION Data Logging	CREATING MEDIA Photo Editing	PROGRAMMING Repetition in Games	COMPUTING SYSTEMS & NETWORKS Connecting Computers	CREATING MEDIA Stop Frame Animation	PROGRAMMING Sequencing Sound
Vocabulary	data table layout input device sensor logger logging data point interval analyse dataset import export logged collection review conclusion	image edit digital crop rotate undo save adjustments effects colours hue saturation sepia vignette retouch clone select combine made up real composite cut copy paste alter background foreground zoom undo font	Scratch Programming sprite blocks code loop repeat value infinite loop count-controlled loop costume repetition forever animate event block duplicate modify design algorithm debug refine evaluate	internet network router security switch server wireless access point (WAP) website web page web address routing web browser World Wide Web content links files use download sharing ownership permission information accurate honest content adverts	animation flip book stopframe frame sequence image photograph setting character events onion skinning consistency evaluation delete media import transition	Scratch programming blocks commands code sprite costume stage backdrop motion turn point in direction go to glide sequence event task design run the code order note chord algorithm bug debug code
Links to Learning & Assessment Points						
	DATA & INFORMATION Data Logging	CREATING MEDIA Photo Editing	PROGRAMMING Repetition in Games	COMPUTING SYSTEMS & NETWORKS Connecting Computers	CREATING MEDIA Stop Frame Animation	PROGRAMMING Sequencing Sound
Outcomes: Concept	- To suggest questions that can be answered using a table of data - To identify data that can be logged over time - To identify that sensors are input devices - To recognise that a sensor can be used as an input device for data collection - To explain that a data logger captures ‘data points’ from sensors over time	- To use an application to change the whole of a digital image - To use an application to change part of a digital image - To use an application to add to the composition of a digital image - To change the composition of a digital image by rotating and flipping - To change the composition of a digital image by cropping - To adjust colours of a digital image - To apply filters to a digital image - To apply effects to a digital image - To select part of a digital image - To use clone, copy and paste to change the composition of a digital image - To use cloning to retouch a digital image - To add text to a digital image	- To relate what ‘repeat’ means - To identify everyday tasks that include repetition as part of a sequence, e.g. brushing teeth, dance moves - To explain that we can use a loop command in a program to repeat instructions - To identify patterns in a sequence - To identify a loop within a program - To explain that in programming there are indefinite loops and count-controlled loops - To explain that an indefinite loop will run until the program is stopped - To explain that you can program a lop to stop after a specific number of times - To identify patterns in a sequence, e.g. ‘step 3 times’ means the same as ‘step, step, step’ - To justify when to use a loop and when not to - To explain the importance of instruction order in a loop - To recognise that not all tools enable more than one process to be run at once	- To describe what an input is - To explain that a process acts on the inputs - To explain that an output is produced by the process - To identify how changing the process can affect the output - To recognise that a digital device is made up of several parts - To explain how computer systems can change the way that we work - To recognise that computers can be connected to each other - To identify how devices in a network are connected with one another - To recognise that a network is made up of a number of components - To explain how information is passed through multiple connections - To identify the benefits of computer network	- To explain that an animation is made up of a sequence of images - To identify that a capturing device needs to be in a fixed position - To recognise that smaller movements create smoother animation - To explain the need for consistency in working - To explain the impact of adding other media to animation - To explain that a project must be exported so it can be shared	- To explain that programs start because of an input - To explain what a sequence is - To identify that a program includes sequences of commands - To identify that the sequence of a program is a process - To explain that the order of commands can affect a program’s output - To identify that different sequences can achieve the same output - To identify that difference sequences can achieve different outputs
Outcomes: Skill	- To use a digital device to collect data automatically - To choose an appropriate timeframe when collecting data automatically - To use a set of logged data to find information - To use a computer program to sort data by one attribute - To export information in different formats	- To recognise that digital images can be manipulated - To recognise that digital images can be changed for different purposes - To choose the most appropriate tool for a particular purpose - To consider the impact of changes made on the quality of the image	- To list an everyday task as a set of instructions including repetition - To use an indefinite loop to produce a given outcome - To use a count-controlled loop to produce a given outcome - To plan a program that includes appropriate loops to produce a given outcome - To recognise tools that enable more than one process to be run at the same time (concurrently) - To create two or more sequences that run at the same time	- To identify input and output devices - To explain that a computer system accepts an input and processed it to produce an output - To explain how a computer network can be used to share information - To explain the role of a switch, server and wireless access point in a network - To identify network devices around me - To explain how networks can be connected to other networks	- To set up the work area with an awareness of what will be captured - To plan an animation using a storyboard - To capture an image - To use the onion skinning tool to review subject position - To move a subject between captures - To review a captured sequence of frames as an animation - To remove frames to improve an animation - To add media to enhance an animation - To review a completed project	- To build a sequence of commands - To combine commands in a program - To order commands in a program - To create a sequence of commands to produce a given outcome
Cross Curricular Links	Maths		Maths			