John Keble CE School

Computing Curriculum

Rooted together in love, growing without limits.

Believing in the worth of every individual, we are a nurturing, Christian sanctuary of learning, where all can flourish. We aspire for everyone to achieve heights of success, to deepen courage and to experience breadth of creativity, knowing the joy of God's love.

Whole school curriculum intent
Our ambitious, knowledge-rich curriculum has been sequenced to equip our pupils with the knowledge and skills to ensure they are happy, healthy global citizens, ready to take their place in modern Britain. The broad and balanced curriculum is creative, coherent and inclusive and, together with our Christian values, enables the pupils to be self-motivated, independent learners.
Subject specific curriculum intent: computing
At John Keble, we desire to give every pupil to understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. They will be able to analyse problems in computational terms and have repeated practical experience of writing computer programs in order to solve such problems. Pupils will evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems. Finally, pupils will be taught to be responsible, competent, confident and creative users of information and communication technology.
Implementation and impact:
The units in The Teach Computing Curriculum have been written to support all pupils. Each lesson is sequenced so that it builds on the learning from the previous lesson and where appropriate, activities are scaffolded so that all pupils can succeed and thrive. Scaffolded activities provide pupils with extra resources, such as visual prompts, to reach the same learning goals as the rest of the class. Exploratory tasks foster a deeper understanding of a concept, encouraging pupils to apply their learning in different contexts and make connections with other learning experiences. As well as scaffolded activities, embedded within the lessons are a range of pedagogical strategies, which support making computing topics more accessible. The Teach Computing Curriculum uses the National Centre for Computing Education's computing taxonomy to ensure comprehensive coverage of the subject. All learning outcomes can be described through a high-level taxonomy of ten strands: algorithms, computer networks, computer systems, creating media, data and information, design and development, effective use of tools, impact of technology, programming and safety and security. At the end of each unit, pupils will be given an end of unit task. This will be an opportunity for the pupils to showcase their learning and what they have understood in a task. Class teachers will be able to use it as a tool to assess the pupils.

Introduction to John Keble's key stage 1 and 2 computing curriculum

Each unit of work is 6 lessons long and designed to last roughly one-half term. The units for key stages 1 and 2 are based on a spiral curriculum. This means that each of the themes is revisited regularly (at least once in each year group) and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme. This style of curriculum design reduces the amount of knowledge lost through forgetting, as topics are revisited yearly. It also ensures that connections are made even if different teachers are teaching the units within a theme in consecutive years.

Year Group	Term	Unit Title	Year Group	Term	Unit Title
1	Autumn 1	Digital painting	2	Autumn 1	Information technology around us
	Autumn 2	Moving robot		Autumn 2	Pictograms
	Spring 1	Digital writing		Spring 1	Robot algorithms
	Spring 2	Programming animations		Spring 2	Digital photography
	Summer 1	Grouping data		Summer 1	Digital music
	Summer 2	Technology around us		Summer 2	Programming quizzes
3	Autumn 1	Connecting computers	4	Autumn 1	The internet
	Autumn 2	Stop-frame animation		Autumn 2	Repetition in shapes
	Spring 1	Sequencing sounds		Spring 1	Data logging
	Spring 2	Branching databases		Spring 2	Repetition in games
	Summer 1	Desktop publishing		Summer 1	Photo editing
	Summer 2	Events and actions in programs		Summer 2	Audio production
5	Autumn 1	The internet (yr 4)	6	Autumn 1	Video production (yr 5)
	Autumn 2	Systems and searching		Autumn 2	Introduction to spreadsheets
	Spring 1	Video production		Spring 1	Sensing movement
	Spring 2	Selection in physical computing		Spring 2	Communication and collaboration
	Summer 1	Flat-file databases		Summer 1	3D modelling
	Summer 2	Introduction to vector graphics		Summer 2	Webpage creation

National Curriculum – Key Stage 1

National Curriculum objectives	Where covered
● Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions	Yr 1 Sp1 , Yr 1 Su2, 2.3, 2.6
● Create and debug simple programs	Yr 1 Sp1 , Yr 1 Su2, 2.3, 2.6
● Use logical reasoning to predict the behaviour of simple programs	Yr 1 Sp1 , Yr 1 Su2, 2.3, 2.6
● Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Yr 1 A1 , Yr 1 A2, Yr 1 Sp2, Yr 1 Su1, Yr 2 A1, 2.2, 2.4, 2.5, 2.6
● Recognise common uses of information technology beyond school	Yr 1 A1 , Yr 1 Sp1 , Yr 2 A1, 2.2
● 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	Yr 1 A1 , Yr 1 Sp2, Yr 1 Su1, Yr 2 A1, 2.2, 2.3, 2.4

National Curriculum – Key Stage 2

National Curriculum objectives	Where covered
• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Yr 3 Sp1, Yr 3 Su2, Yr 4 Sp1, Yr 4 Su2, Yr 5 Sp1, Yr 5 Su2, Yr 6 A1, Yr 6 Sp1, Yr 6 Su2
• use sequence, selection and repetition in programs; work with variables and various forms of input and output	Yr 3 A1, Yr 3 Sp1, Yr 3 Su2, Yr 4 Sp1, Yr 4 Sp2, Yr 4 Su2 , Yr 5 Sp1, Yr 5 Su2, Yr 6 Sp1, Yr 6 Su2
• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Yr 3 Sp1, Yr 3 Su2, Yr 4 Sp1, Yr 4 Sp2, Yr 4 Su2, Yr 5 Sp1, Yr 5 Su2, Yr 6 Sp1, Yr 6 Su2
• 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	Yr 3 A1, Yr 4 A1, Yr 5 A1, Yr 6 A1
• use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content	Yr 3 Su1, Yr 4 A1, Yr 4 A2, Yr 3 Su1, Yr 5 A2, Yr 5 Sp2, Yr 6 A2
• 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	Yr 3 A1, Yr 3 A2, Yr 3 Sp1, Yr 3 Sp2, Yr 3 Su1, Yr 3 Su2, Yr 4 A1, Yr 4 A2, Yr 4 Sp1, Yr 4 Sp2, Yr 3 Su1, Yr 4 Su2, Yr 5 A1, Yr 5 A2, Yr 5 Sp1, Yr 5 Sp2, Yr 3 Su1, Yr 5 Su2, Yr 6 A1, Yr 6 A2, Yr 6 Sp1, Yr 6 Sp2, Yr 3 Su1, Yr 6 Su2,
• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Yr 3 A2, Yr 3 Sp2, Yr 4 A1, Yr 4 Sp1, Yr 3 Su1, Yr 5 A1, Yr 5 A2, Yr 6 A2, Yr 6 Sp1, Yr 3 Su1

Cross curricular lesson objectives are highlighted in the following colours, alongside any cross curricular vocabulary

Art
English
Maths
DT
History
Music
Science
PSHE

Nursery

Term	Computational thinking	Barefoot unit	Learning objectives Pupils will	Vocabulary
Autumn	Logic Pattern Abstraction	Busy Bodies - Parts of our body	● Recognise similarities and differences between bodies ● Use logical reasoning to put body parts together	Ordinal language: first, next, then, after Pattern, sequence, order algorithm, prediction
Spring	Algorithms Decomposition Collaborating	Springtime - seed sequencing	● To follow an algorithm ● To sequence given pictures to create an algorithm	
Summer	Creating pattern logic	Awesome Autumn Garlands Galore	● Create repeating patterns ● Make predictions with patterns ● Spot the difference with similarities	

Reception

Term	Computational thinking	Barefoot unit	Learning objectives Pupils will	Vocabulary
Autumn	Decomposition Algorithms Collaborating	Awesome Autumn Pumpkin Soup	● Follow an algorithm ● Organise given images into an algorithm	Ordinal language: first, next, then, after Pattern, sequence, order algorithm, prediction debugging, mistake / error technology, device
Spring	Abstraction Tinkering Creating Collaborating	Springtime - Junk Scarecrows	● Identify key features of a scarecrow ● Test out different designs. Debugging designs ● Use logical reasoning to predict which methods and materials might be successful	
Summer	Patterns Algorithms	Busy Bodies - Look how we grow	● To spot similarities amongst two groups ● Sequencing stages of growth to create an algorithm	
Summer Transition	Basic skills		● Use technology purposefully - e.g switch on a device, open a game, scan a QR code, begin to touch type.	

Year 1 - Autumn 1 Digital Painting

- NC objectives: Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- KS1 Art and Design NC objectives: To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form and space
- About the work of a range of artists, craft makers and designers, describing the differences and similarities between different practices and disciplines and making links to their own work

Lesson number	Learning objective	Pupils will:	Vocabulary	
1	To describe what different freehand tools do	● Be introduced to the freehand tools available for digital painting.	paint program tool paintbrush	erase fill undo
2	To use the shape tool and the line tools	● Use the line and shape tool ● Revisit the fill and undo tools used for digital painting. ● Create their own digital painting in the style of an artist.	Piet Mondrian primary colours	line tool fill tool undo tool shape tools
3	To make careful choices when painting a digital picture	● Use a range of shape tools ● Create a painting in the style of an artist.	Henri Matisse shape tool fill tool	
4	To explain why I chose the tools I used	● Increase their understanding of the available paint tools ● Select the best tools to create a digital painting in the style of Wassily Kandinsky.	Wassily Kandinsky tools	feelings colour brush style
5	To use a computer on my own to paint a picture	● Select appropriate colours, brush sizes and brush tools ● Independently create their own image in the style of an artist.	Georges Seurat	pointillism brush size
6	To compare painting a picture on a computer and on paper	● Compare their preferences when creating paintings on computers and on paper.	pictures painting computers	like prefer dislike

Year 1 – Autumn 2- The Moving Robot

- NC objectives: 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
- Recognise common uses of information technology beyond school

Lesson number	Learning objective	Pupils will:	Vocabulary	
1	To explain what a given command will do	● Be introduced to floor robots. ● Talk about what the buttons on a floor robot might do and then try the buttons out. Link an outcome to a button press. ● Consider the direction command buttons, as well as the 'clear memory' and 'run program' buttons.	Forwards backwards turn	clear go commands
2	To act out a given word	● Think about the language used to give directions and how precise it needs to be. ● Work with a partner to give and follow instructions.	Instructions directions	
3	To combine 'forwards' and 'backwards' commands to make a sequence	● Programme a floor robot to move forwards and backwards. ● Understand that the robot moves forwards and backwards a fixed distance. ● Think about starting the robot from the same place each time. ● Use the same starting position with fixed commands ● Predict what a program will do.	Forwards backwards commands	
4	To combine four direction commands to make sequences	● Use 'left turn' and 'right turn' commands along with 'forwards' and 'backwards' commands. ● Create their programs through trial and error. ● Predict where given programs will move the robot to. ● Make predictions by looking at the commands and matching the program steps to movements.	Left right turn commands	
5	To plan a simple program	● Decide what their program will do. ● Create a program and test it on the robot. ● Debug their program.	Plan algorithm program	
6	To find more than one solution to a problem	● Plan routes around a mat ● Write programs for those routes.	Route plan program	

Year 1 – Spring 1 Digital Writing

- NC objectives: Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Use technology safely and respectfully, keeping personal information private
- **English – writing (Y1)**
- Write sentences by: saying out loud what they are going to write about
- composing a sentence orally before writing it
- sequencing sentences to form short narratives
- re-reading what they have written to check that it makes sense

Lesson number	Learning objective	Pupils will:	Vocabulary	
1	To use a computer to write	• Familiarise themselves with a word processor and think about how they might use this application in the future. • Identify and find keys, before adding text to their page by pressing keys on a keyboard.	Word processor keyboard Keys	letters type
2	To add and remove text on a computer	• Familiarise themselves with word processors and how they can interact with the computer using a keyboard. • Add text and will explore more of the keys found on a keyboard. • Use the Backspace key to remove text from the computer.	Numbers space backspace	text cursor
3	To identify that the look of text can be changed on a computer	• Explore the different tools that can be used in word processors to change the look of the text. • Use the Caps Lock key to add capital letters to their writing and will begin thinking about how to use this successfully. • Match simple descriptions to the related keys. • Exploring the different buttons available on the toolbar in more detail and use these to change their own text.	Capital letters toolbar bold	italic underline
4	To make careful choices when changing text	• Understand when it is best to change the look of their text and which tool will achieve the most appropriate outcome. • Begin to use their mouse cursor to select text to enable them to make more efficient changes. • Explore the different fonts available to them and change the font for their lost toy poster.	Mouse select font	
5	To explain why I used the tools that I chose	• Justify their use of certain tools when changing text. • Decide whether the changes that they have made have improved their writing and will begin to use 'Undo' to remove changes. • Consolidate their ability to select text using the cursor, through double-clicking and clicking and dragging. • Explain what tool from the toolbar they have used to change their writing.	Undo redo font format	
6	To compare typing on a computer to writing on paper	• Make comparisons between using a computer for writing and writing on paper. • Discuss how the two methods are the same and different and think of examples to explain this. • Demonstrate making changes to writing using a computer to compare the two methods. Explain which they like best and think about which method would be the best method to use in different situations.	Compare typing writing	

Year 1 – Spring 2 Programming Animations

- NC objectives:
- 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To choose a command for a given purpose	● Become accustomed to the ScratchJr programming environment. ● Discover that they can move characters on-screen using commands and compare ScratchJr to the Bee-Bots used in the previous unit.	ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area
2	To show that a series of commands can be joined together	● Discover that blocks can be joined together in ScratchJr. ● Use a **Start** block to run their programs. ● Learn additional skills such as adding backgrounds and deleting sprites. ● Follow given algorithms to create simple programs.	Block, joining, command, **Start** block, run, program, programming area, background, delete, reset, algorithm, predict
3	To identify the effect of changing a value	● Discover that some blocks in ScratchJr have numbers underneath them. ● Learn how to change these values and identify the effect on a block of changing a value.	Effect, change, value, block
4	To explain that each sprite has its own instructions	● Add and delete sprites in ScratchJr. ● Discover that each sprite has its own programming area and learn how to add programming blocks to give instructions to each of the sprites	Instructions, sprite, delete, program, algorithm
5	To design the parts of a project	● Choose appropriate backgrounds and sprites for a ‘Space race’ project. ● Decide how each sprite will move ● Create an algorithm based on the blocks available in ScratchJr that reflects this.	Sprite, background, appropriate, algorithm
6	To use my algorithm to create a program	● Use their project designs from the previous lesson to create their projects on-screen in ScratchJr. ● Use their project design, including algorithms created in the previous lesson, to make programs for each of their rocket sprites. ● Test whether their algorithms are effective when their programs are run.	Sprite, design, programming blocks, algorithm, programs

Year 1 – Summer 1 Grouping Data

- NC objectives: Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Use technology safely and respectfully

Lesson number	Learning objective	Pupils will:	Vocabulary	
1	To label objects	• understand that objects have many different labels that can be used to put them into groups. • Name different objects and experiment with placing them into different groups. • Label a group of objects and begin to understand that an object can fit into more than one group depending on the context	Object label Group	search image
2	To identify that objects can be counted	• Think about grouping objects based on what the objects are. • Demonstrate the ability to count a small number of objects before they group them. • Show that they can count groups of objects with the same label. • Begin to learn that computers are not intelligent and require input from humans to perform tasks.	Object label Group	image
3	To describe objects in different ways	• Understand that objects can be described in many different ways. • Identify the properties of objects and begin to understand that properties can be used to group objects; for example, objects can be grouped by colour or size. • Demonstrate their ability to find objects with similar properties • Begin to understand the reason that we need to give labels to images on a computer.	Group object property	label colour size shape
4	To count objects with the same properties	• Classify objects based on their properties. • Group objects that have similar properties and will be able to explain how they have grouped these. • Begin to group a number of the same objects in different ways and will demonstrate their ability to count these different groups.	Group object, property value	label colour data set
5	To compare groups of objects	• Choose how they want to group different objects by properties. • Begin to compare and describe groups of objects. • Record the number of objects in each group.	Group object property value label fewest	colour size shape more less most
6	To answer questions about groups of objects	• Decide how to group objects to answer questions. • Compare their groups by thinking about how they are similar or different and they will record what they find. • Share what they have found with their peers.	colour size shape more less most least fewest	Group object property value label fewest data set the same

Year 1 - Summer 2 Technology Around Us

- NC objectives: Recognise common uses of information technology beyond school
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- 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.

Lesson number	Learning objective	Pupils will:	Vocabulary	
1	To identify technology and how they help us	● Become familiar with the term 'technology'. ● Classify what is and what is not technology in their school and/or classroom. ● Demonstrate their understanding of how technology helps us in different ways.	Technology	
2	To identify a computer and its main parts	● Know the main parts of a desktop or laptop computer. ● Practise turning on and logging in to a computer. ● Apply their knowledge of the different parts of a computer, to complete a mouse-based task.	Computer mouse trackpad	keyboard screen
3	To use a mouse in different ways	● Build on their mouse skills ● Review images of a computer to explain what each part does. ● Develop an understanding that different computers use different mice, but they perform the same function. ● Use the mouse to open a program and create a simple picture.	Computer mouse, trackpad double-click	
4	To use a keyboard to type on a computer	● Use the computer keyboard for a purpose. ● Understand that writing on a keyboard is called typing and will begin to demonstrate their ability to write their name. ● Save their work using the save icon and understand that this icon is used in lots of different programs.	Computer keyboard mouse typing	
5	To use the keyboard to edit text	● Open a file they have previously created. ● Demonstrate their ability to use a keyboard to edit text, by writing a sentence and then deleting letters. ● Use the keyboard arrow keys to move the text cursor in their textbox.	Keyboard computer	
6	To create rules for using technology responsibly	● Be introduced to the concept of using computers safely, within the context of a school setting. ● Explore why we have rules in school and how those rules help us and then apply this understanding to rules needed for using computer technology safely.	Computer technology	

Year 2 - Autumn 1 Information technology around us

- NC objectives: 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To recognise the uses and features of information technology	● Develop their understanding of what information technology (IT) is. ● Identify devices that are computers ● Consider how IT can help them both at school and beyond. ●	Information technology (IT), computer
2	To identify the uses of information technology in the school	● Consider common uses of information technology in a context that they are familiar with. ● Identify examples of IT and be able to explain the purpose of different examples of IT in the school setting. ●	Information technology (IT)
3	To identify information technology beyond school	● Explore IT in environments beyond school, including home and familiar places such as shops. ● Talk about the uses of IT in these environments ● Explain that IT is used in many workplaces.	Information technology (IT), computer
4	To explain how information technology helps us	● Explore the benefits of using IT in the wider world. ● Focus on the use of IT in a shop and how devices can work together. ● Sort activities based on whether they use IT or not and will be able to say why we use IT.	Information technology (IT), computer, barcode, scanner/scan
5	To explain how to use information technology safely	● Consider how they use different forms of information technology safely, in a range of different environments. ● List different uses of IT and talk about the different rules that might be associated with using them. ● Explain how rules can help keep them safe when using IT.	Information technology
6	To recognise that choices are made when using information technology	● Think about the choices that are made when using information technology and the responsibility associated with those choices. ● Use IT in different types of activities ● Explain that sometimes they will need to use IT in different ways.	Information technology

Year 2 – Autumn 2 Pictograms

- NC objectives: use technology purposefully to create, organise, store, manipulate and retrieve digital content
- 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
- **Maths** Building on Year 1 number and place value:
- Identify and represent numbers using objects and pictorial representations including the number line and use the language of: 'equal to', 'more than', 'less than' ('fewer'), 'most', 'least'
- Year 2: interpret and construct simple pictograms, tally charts, block diagrams and simple tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask and answer questions about totalling and comparing categorical data

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To recognise that we can count and compare objects using tally charts	• Understand the importance of organising data effectively for counting and comparing. • Create their own tally charts to organise data and represent the tally count as a total. • Answer questions comparing totals in tally charts using vocabulary such as 'more than' and 'less than'.	More than, less than, most, least, organise, data, object, tally chart, votes, total
2	To recognise that objects can be represented as pictures	• Become familiar with the term 'pictogram'. • Create pictograms manually and then progress to creating them using a computer. • Understand the advantages of using computers rather than manual methods to create pictograms and use this to answer simple questions.	Pictogram, enter, data, tally chart, compare, more than, less than, objects, count
3	To create a pictogram	• Think about the importance of effective data collection and will consider the benefits of different data collection methods: why, for example, we would use a pictogram to display the data collected. • Collect data to create a tally chart and use this to make a pictogram on a computer. • Explain what their finished pictogram shows by writing a range of statements to describe this.	Tally chart, data, pictogram, explain, more, less, most, least, more common, least common
4	To select objects by attribute and make comparisons	• Think about ways in which objects can be grouped by attribute. • Tally objects using a common attribute and present the data in the form of a pictogram. • Answer questions based on their pictograms using mathematical vocabulary such as 'more than'/'less than' and 'most'/'least'.	Attribute, group, same, different, object, more than/less than, most/least
5	To recognise that people can be described by attributes	• Understand that people can be described by attributes. • Practise using attributes to describe images of people and the other learners in the class. • Collect data needed to organise people using attributes and create a pictogram to show this pictorially. • Draw conclusions from their pictograms and share their findings.	Attribute, compare, tally chart, pictogram, more than, less than, most popular, least popular, conclusion
6	To explain that we can present information using a computer	• Understand that there are other ways to present data than using tally charts and pictograms. • Usa pre-made tally chart to create a block diagram on their device. • Share their data with a partner and discuss their findings. • Consider whether it is always OK to share data and when it is not OK. • Know that it is alright to say no if someone asks for their data and how to report their concerns.	Tally chart, pictogram, block diagram, most, least, common, sharing, data

Year 2 – Spring 1 Robot algorithms

- NC objectives:
- 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To describe a series of instructions as a sequence	● Follow instructions given to them and give instructions to others. ● Consider the language used to give instructions and how that language needs to be clear and precise. ● Combine several instructions into a sequence that can then be issued to another learner to complete. ● Consider a clear and precise set of instructions in relation to an algorithm ● Think about how computers can only follow clear and unambiguous instructions.	Instruction, sequence, clear, unambiguous, algorithm, program
2	To explain what happens when we change the order of instructions	● Focus on sequences ● Consider the importance of the order of instructions within a sequence. ● Create sequences using the same instructions in different orders. ● Test these sequences to see how the different orders affect the outcome.	Sequence, order, algorithm, instructions
3	To use logical reasoning to predict the outcome of a program	● Use logical reasoning to make predictions. ● Follow a program step by step and identify what the outcome will be. ●	Sequence, prediction, program
4	To explain that programming projects can have code and artwork	● Design, create and test a mat for a floor robot	Artwork, design, route, mat
5	To design an algorithm	● Design an algorithm to move their robot around the mat that they designed ● Outline what their task is by identifying the starting and finishing points of a route.	Algorithm
6	To create and debug a program that I have written	● Take on a larger programming task. ● Break the task into chunks and create algorithms for each chunk ● Find and fix errors in their algorithms and programs.	Debugging, algorithm, program, decomposition

Year 2 - Spring 2- Digital photography

- NC objectives:
- **Computing**
- 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
- **Art and design**
- To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form and space

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To use a digital device to take a photograph	● Understand that many devices can be used to take photographs. ● Begin to capture their own photographs. ●	Device, camera, photograph, capture, image, digital
2	To make choices when taking a photograph	● Understand that a photograph can be taken in either portrait or landscape format. ● Explore taking photographs in both portrait and landscape formats ● Explore the reasons why a photographer may favour one over the other.	Landscape, portrait
3	To describe what makes a good photograph	● Discover what constitutes good photography composition ● Compose and capture photos of their own.	Framing, subject, compose
4	To decide how photographs can be improved	● Investigate the effect that good lighting has on the quality of the photos they take. ● Explore what effect using the camera flash and adding an artificial light source have on their photos. ● Learn how the camera autofocus tool can be used to make an object in an image stand out.	Light sources, flash, focus, background
5	To use tools to change an image	● Be introduced to the Pixlr image editing software. ● Use the 'Adjust' tool to change the colour effect of an image.	Editing, filter
6	To recognise that photos can be changed	● Be introduced to a range of images that have been changed in different ways ● Develop an awareness that not all images they see are real. ● Take their best photograph by applying the photography composition skills that they have developed during the unit	Format, framing, lighting, focus, filter

Year 2 – Summer 1 Digital music

- NC objectives: Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Music Play tuned and untuned instruments musically
- Listen with concentration and understanding to a range of high-quality live and recorded music
- Experiment with, create, select and combine sounds using the interrelated dimensions of music

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To say how music can make us feel	• Listen to and compare two pieces of music from *The Planets* by Gustav Holst. • Use a musical description word bank to describe how this music generates emotions, i.e. how it makes them feel.	Music, planets, Mars, Venus, war, peace, quiet, loud, feelings, emotions
2	To identify that there are patterns in music	• Explore **rhythm**. • Create patterns and use those patterns as rhythms. • Use untuned percussion instruments and computers to hear the different rhythm patterns that they create.	Pattern, rhythm, pulse
3	To experiment with sound using a computer	• Explore how music can be used in different ways to express emotions and to trigger their imaginations. • Experiment with the pitch of notes to create their own piece of music, which they will then associate with a physical object — in this case, an animal.	Neptune, pitch, tempo, rhythm, notes
4	To use a computer to create a musical pattern	• Develop their understanding of music. • Use a computer to create and refine musical patterns.	Pattern, notes, instrument, tempo
5	To create music for a purpose	• Choose an animal and create a piece of music using the animal as inspiration. • Think about their animal moving and create a rhythm pattern from that. • Create a musical pattern (melody) to go with it.	Create, emotion, pitch, pulse/beat, tempo, instrument, rhythm, notes
6	To review and refine our computer work	• Retrieve and review their work. • Spend time making improvements and then share their work with the class.	Open Edit

Year 2 – Summer 2 Programming quizzes

NC objectives:

- 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain that a sequence of commands has a start	● Recap what they know already about the ScratchJr app. ● Begin to identify the start of sequences in real-world scenarios and learn that sequences need to be started in ScratchJr. ● Create programs and run them in full-screen mode using the **Green flag**.	Sequence, command, program, run, start
2	To explain that a sequence of commands has an outcome	● Discover that a sequence of commands has an 'outcome'. ● Predict the outcomes of real-life scenarios and a range of small programs in ScratchJr. ● Match programs that produce the same outcome when run ● Use a set of blocks to create programs that produce different outcomes when run.	Sequence, command, outcome, predict, program, blocks
3	To create a program using a given design	● Use the **Start on tap** and **Go to page** (**Change background**) blocks. ● Use a predefined design to create an animation based on the seasons. ● Predict what a given algorithm might mean.	Sprite, algorithm, blocks, design, sequence, predict
4	To change a given design	● Look at an existing quiz design and think about how this can be realised within the ScratchJr app. ● Choose backgrounds and characters for their own quiz projects. ● Modify a given design sheet and create their own quiz questions in ScratchJr.	Actions, sprite, project, blocks, design, sequence, modify, change
5	To create a program using my own design	● Create their own quiz question designs including their own choices of question, artwork and algorithms. ● Increase the number of blocks used within their sequences to create more complex programs.	Design, algorithm, build, sequence, blocks, match
6	To decide how my project can be improved	● Compare their projects to their designs. ● Think about how they could improve their designs by adding additional features. ● Modify their designs and implement the changes on their devices. ● Find and correct errors in programs (debug) ● Discuss whether they debugged errors in their own projects.	Compare, design, debug, program, features, evaluate

Year 3 - Autumn 1 Connecting computers

- NC objectives: use sequence, selection and repetition in programs; work with variables and various forms of input and output
- 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
- 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
- **Maths (Lesson 1) Number and place value:** solve number problems and practical problems involving these ideas.
- **Art (Lesson 3)** to improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay]

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain how digital devices function	● Be introduced to the concepts of input, process and output. These concepts are fundamental to all digital devices.	Digital device, input, process, output
2	To identify input and output devices	● Develop their knowledge of the relationship between inputs, processes and outputs ● Apply it to devices and parts of devices that they will be familiar with from their everyday surroundings.	Digital device, input, process, output
3	To recognise how digital devices can change the way that we work	● Apply their learning from Lessons 1 and 2 by using programs in conjunction with inputs and outputs on a digital device. ● Create two pieces of work with the same focus, using digital devices to create one piece of work and non-digital tools to create the other. ● Compare and contrast the two approaches.	Program, digital, non-digital
4	To explain how a computer network can be used to share information	● Explain how and why computers are joined together to form networks.	Connection, network, network switch
5	To explore how digital devices can be connected	● Examine each device's functionality and look at the benefits of networking computers.	Server, wireless access point
6	To recognise the physical components of a network	● Develop their understanding of computer networks. ● Using examples of network infrastructure in a real-world setting, relate them to the activities in Lesson 5.	Network cables, network sockets

Year 3 - Autumn 2 Stop-frame animation

- NC objectives: 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.
- Literacy links: draft and write by: in narratives, creating settings, characters and plot
- proof-read for spelling and punctuation errors
- History: The Roman Empire and its impact on Britain

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain that animation is a sequence of drawings or photographs	• Discuss whether they think a picture can move. • Learn about simple animation techniques • Create their own animations in the style of flip books (flick books) using sticky notes.	Animation, flip book
2	To relate animated movement with a sequence of images	• Develop this knowledge of animation and apply it to make a stop-frame animation using a tablet.	Stop-frame animation, frame, sequence, image, photograph
3	To plan an animation	• Create a storyboard showing the characters, settings and events that they would like to include in their own stop-frame animation.	Setting, character, events, stop-frame animation, onion skinning
4	To identify the need to work consistently and carefully	• Use tablets to carefully create stop-frame animations, paying attention to consistency.	Stop-frame animation, onion skinning, consistency
5	To review and improve an animation	• Evaluate their animations and try to improve them by creating a brand-new animation based on their feedback.	Evaluation, animation, onion skinning, delete, frame
6	To evaluate the impact of adding other media to an animation	• Add other media and effects into their animations, such as music and text.	Animation, media, import, transition

Year 3 – Spring 1 Sequencing sounds

- NC objectives: 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
- 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explore a new programming environment	● Compare Scratch to other programming environments they may have experienced, before familiarising themselves with the basic layout of the screen.	Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop
2	To identify that commands have an outcome	● Create movement for more than one sprite. ● Design and implement their code and then will create code to replicate a given outcome. ● Experiment with new motion blocks.	Sprites, programming blocks, motion, turn, point in direction, go to, glide
3	To explain that a program has a start	● Be introduced to the concept of sequences by joining blocks of code together. ● Learn how event blocks can be used to start a project in a variety of different ways ● Apply principles of design to plan and create a project.	Sequence, event, task, design, code, run the code
4	To recognise that a sequence of commands can have an order	● Experiment with sequences where order is and is not important. ● Create their own sequences from given designs.	Sequence, order, note, chord
5	To change the appearance of my project	● Combine motion and sounds in one sequence. ● Learn how to use costumes to change the appearance of a sprite and backdrops to change the appearance of the stage. ● Apply the skills in Activity 1 and 2 to design and create their own project, including sequences, sprites with costumes and multiple backdrops.	Sprite, stage, costume, backdrop
6	To create a project from a task description	● Create a musical instrument in Scratch. ● Apply the concept of design to help develop programs and use programming blocks. ● Learn that code can be copied from one sprite to another and that projects should be tested to see if they perform as expected.	Design, algorithm, bug, debug

Year 3 – Spring 2 – Branching databases

- NC objectives: 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To create questions with yes/no answers	● Explore questions with yes/no answers and how these can be used to identify and compare objects. ● Create their own yes/no questions, before using these to split a collection of objects into groups.	Attribute, value, questions, table, objects
2	To identify the attributes needed to collect data about an object	● Develop their understanding of using questions with yes/no answers to group objects more than once. ● Learn how to arrange objects into a tree structure and will continue to think about which attributes the questions are related to.	Branching database, database, attribute, value, questions, objects, equal, even, separate
3	To create a branching database	● Develop their understanding of ordering objects/images in a branching database structure. ● Learn how to use an online database tool to arrange objects into a branching database ● Create their own questions with yes/no answers. ● Show that their branching database works through testing.	Branching database, database, attribute, value, questions, objects
4	To explain why it is helpful for a database to be well structured	● Develop their understanding of how to create a well-structured database. ● Use attributes to create questions with yes/no answers and will apply these to given objects. ● Compare the efficiency of different branching databases and will be able to explain why questions need to be in a specific order.	Branching database, attribute, questions, structure, compare, order, organise
5	To plan the structure of a branching database	● Independently plan a branching database by creating a physical representation of one that will identify different types of dinosaur. ● Think about the attributes of objects to write questions with yes/no answers, which will enable them to separate a group of objects effectively. ● Arrange the questions and objects into a tree structure, before testing the structure.	Branching database, attribute, value, question, selecting
6	To independently create an identification tool	● Independently create a branching database to identify different types of dinosaur, based on the paper-based version that they created in Lesson 5. ● Work with a partner to test that their database works, before considering real-world applications for branching databases.	Branching database, attribute, value, questions, information, decision tree

Year 3 –Summer 1- Desktop publishing

- NC objectives: 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
- English: draft and write by: in non-narrative material, using simple organisational devices [for example, headings and subheadings]
- Evaluate and edit by assessing the effectiveness of their own and others' writing and suggesting improvements
- Proofread for spelling and punctuation errors

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To recognise how text and images convey information	● Become familiar with the terms 'text' and 'images'. ● Understand that text and images need to be used carefully to communicate messages clearly. ● Give advantages and disadvantages of using text, images, or both text and images to communicate messages effectively.	Text, images, advantages, disadvantages, communicate
2	To recognise that text and layout can be edited	● Think about how to make careful choices regarding font size, colour and type in an invitation. ● Explore the use of the Return, Backspace and Shift keys ● Type age-appropriate punctuation marks.	Font, font style, communicate, template
3	To choose appropriate page settings	● Bbe introduced to the terms 'templates', 'orientation' and 'placeholders' within desktop publishing software. ● Create their own magazine template, which they will add content to during the next lesson.	Landscape, portrait, orientation, placeholder, template, layout, content
4	To add content to a desktop publishing publication	● Add their own content (text and images) to the magazine templates they created in lesson 3. ● Copy the information for the front of their magazine from a prewritten document and paste it into the chosen place on their magazine cover. ● Add images from within the search facility in Adobe Spark.	Desktop publishing, copy, paste
5	To consider how different layouts can suit different purposes	● Think about the different ways information can be laid out on a page. ● Look at a range of page layouts such as letters and newspapers. ● Think about the purpose of each of these.	Layout, purpose
6	To consider the benefits of desktop publishing	● Explain what desktop publishing means in their own words. ● Think about how desktop publishing is used in the wider world and consider the benefits of using desktop publishing applications.	Desktop publishing, benefits

Year 3 – Summer 2 Events and actions in programs

- NC objectives: 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
- 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain how a sprite moves in an existing project	● Investigate how characters can be moved using 'events'. ● Analyse and improve an existing project and apply what they have learned to their own projects. ● Extend their learning to control multiple sprites in the same project.	Motion, event, sprite, algorithm, logic
2	To create a program to move a sprite in four directions	● Program a sprite to move in four directions: up, down, left and right. ● Begin by choosing a sprite and sizing it to fit in with a given background. ● Create the code to move the sprite in one direction before duplicating and modifying it to move in all four directions. ● Consider how their project could be extended to prove that their sprite has successfully navigated a maze.	Move, resize, algorithm
3	To adapt a program to a new context	● Use the pen down block to draw lines, building on the movement they created for their sprite in Lesson 2. ● Decide how to set up their project every time it is run.	Extension block, pen up, set up
4	To develop my program by adding features	● Use additional **Pen** blocks. ● Predict the functions of new blocks and experiment with them, before designing features to add to their own projects. ● Add these features to their projects and test their effectiveness.	Pen, design, event, action, algorithm
5	To identify and fix bugs in a program	● Review an existing project against a given design and identify bugs within it. ● Correct the errors, gaining independence as they do so. ● Develop their projects by considering which new setup blocks to use.	Debugging, errors, setup
6	To design and create a maze-based challenge	● Design and create their own projects. ● Use a template to move a sprite around a maze, with the option to leave a pen trail showing where the sprite has moved.	Design, code, setup, test, debug, actions, events

Year 4 - Autumn 1 The internet

- NC objectives:
- 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.
- **PSHE (Lesson 6)** Evaluating content for honesty and accuracy

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To describe how networks physically connect to other networks	• Explore how a network can share messages with another network to form the internet. • Consider some of the network devices involved in this, such as routers and will also discuss what should be kept in and out of a network to keep safe.	Internet, network, router, network security
2	To recognise how networked devices make up the internet	• Describe the parts of a network and how they connect to each other to form the internet. • Use this understanding to help explain how the internet lets us view the World Wide Web • Recognise that the World Wide Web is part of the internet which contains websites and web pages.	Network switch, server, wireless access point (WAP), router
3	To outline how websites can be shared via the World Wide Web (WWW)	• Explore what can be shared on the World Wide Web and where websites are stored. • Explore how the World Wide Web can be accessed on a variety of devices.	Website, web page, web address, router, routing, web browser
4	To describe how content can be added and accessed on the World Wide Web (WWW)	• Analyse a website and identify the key parts. • Consider what content can be added to websites and what factors they should consider before adding content to a website. • Use a website which enables them to create their own content online.	World Wide Web, internet, content, website, web page, links, files
5	To recognise how the content of the WWW is created by people	• Explore who owns the content on the World Wide Web • Explore a variety of websites and investigate what they can and cannot do with the content on them. • Relate this to principles of ownership and sharing in the real world.	Website, use, content, download, sharing, ownership, permission
6	To evaluate the consequences of unreliable content	• Gain an appreciation of the fact that not everything they see on the internet is true, honest, or accurate. • Review images and decide whether or not they are real, before looking at why web searches can return ambiguous (and sometimes misleading) results. • Complete a practical activity, demonstrating how quickly information can spread beyond their control.	Information, sharing, accurate, honest, content, adverts

Year 4 – Autumn 2 - Repetition in shapes

- NC objectives: 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
- 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To identify that accuracy in programming is important	• Learn the basic Logo commands • Use their knowledge of them to read and write code.	Program, Turtle, Commands, Code snippet
2	To create a program in a text-based language	• Create algorithms (a precise set of ordered instructions, which can be turned into code) for their initials. • Implement these algorithms by writing them in Logo commands to draw the letter. • Debug their code by finding and fixing any errors that they spot.	Algorithm, design, debug, logo
3	To explain what 'repeat' means	• Look at examples of patterns in everyday life. • Recognise where numbers, shapes and symbols are repeated and how many times repeats occur. • Create algorithms for drawing a square, using the same annotated diagram as in Lesson 2. • Use this algorithm to program a square the 'long' way and recognise the repeated pattern within a square. • Use the repeat command within Logo to program squares the 'short' way.	Pattern, repeat, repetition, count-controlled loop, algorithm, value
4	To modify a count-controlled loop to produce a given outcome	• Work with count-controlled loops in a range of contexts. • Think about a real-life example, then they will move on to using count-controlled loops in regular 2D shapes. • Trace code to predict which shapes will be drawn • Modify existing code by changing values within the code snippet.	Repeat, repetition, count-controlled loop, trace, value
5	To decompose a task into small steps	• Break down everyday tasks into smaller parts and think about how code snippets can be broken down to make them easier to plan and work with. • Learn to create, name and call procedures in Logo, which are code snippets that can be reused in their programming.	Repeat, Count-controlled loop, Decompose, Procedure
6	To create a program that uses count-controlled loops to produce a given outcome	• Apply the skills that they have learnt in this unit to create a program containing a count-controlled loop. • Design wrapping paper using more than one shape, which they will create with a program that uses count-controlled loops. • Create the algorithm, either as an annotated sketch, or as a sketch and algorithm and then implement it as code. • Debug their work throughout and evaluate their programs against the original brief.	Count-controlled loop, Procedure, Debug, program

Year 4 – Spring 1 Data logging

- NC objectives: Use sequence, selection and repetition in programs; work with variables and various forms of input and output
- 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
- **Science – Lower key stage 2/Year 4**: Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from their own observations and measurements, using notes, simple tables and standard units and help to make decisions about how to record and analyse this data.

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain that data gathered over time can be used to answer questions	● Consider what data can be collected and how it is collected. ● Think about data being collected over time. ● Think about questions that can and can't be answered using available data ● Reflect on the importance of collecting the right data to answer questions.	Data, table, layout
2	To use a digital device to collect data automatically	● Build on the idea of collecting data over time and be introduced to the idea of collecting data automatically using computers such as data loggers. ● Be introduced to the concept that computers can capture data from the physical world using input devices called 'sensors'. ● Establish that sensors can be connected to data loggers, which can automatically collect data while not attached to a computer.	Input device, sensor, data logger
3	To explain that a data logger collects 'data points' from sensors over time	● Explore how data loggers work. ● Record data at set moments in time and draw parallels with the data points that a data logger captures at regular intervals. ● Use data loggers away from a computer, then they will connect the loggers to a computer and download the data.	Data logger, logging, data point, interval
4	To recognise how a computer can help us analyse data	● Open an existing data file and use software to find out key information. ● Analyse a data file which is a five-hour log of hot water cooling to room temperature.	Analyse, data set, import, export
5	To identify the data needed to answer questions	● Think about questions that can be answered using collected data. ● Choose a question to focus on and then plan the data logging process that they need to complete. ● Set up the data loggers to check that their plan will work.	Data, data logger, logged, collection
6	To use data from sensors to answer questions	● Access and review the data that they have collected using a data logger. ● Use the data collected to answer the question that they selected in the previous lesson. ● Reflect on the benefits of using a data logger.	Analyse, review, conclusion

Year 4 – Spring 2 Repetition in games

- NC objectives: 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
- 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To develop the use of count-controlled loops in a different programming environment	● Look at real-life examples of repetition and identify which parts of instructions are repeated. ● Use Scratch, a block-based programming environment, to create shapes using count-controlled loops. ● Consider what the different values in each loop signify. ● Use existing code to modify and create new code. ● Work on reading code and predicting what the output will be once the code is run.	Scratch, programming, sprite, blocks, code, loop, repeat, value
2	To explain that in programming there are infinite loops and count-controlled loops	● Look at different types of loops: infinite loops and count-controlled loops. ● Practise using these within Scratch and think about which might be more suitable for different purposes.	Block, repeat, forever, infinite loop, count-controlled loop, costume
3	To develop a design that includes two or more loops which run at the same time	● Create designs for an animation of the letters in their names. ● Program the animations in Scratch. ● Evaluate their work, considering how effectively they used repetition in their code.	Repetition, forever, infinite loop, count-controlled loop, animate, costume, event block, duplicate
4	To modify an infinite loop in a given program	● Look at an existing game and match parts of the game with the design. ● Make changes to a sprite in the existing game to match the design. ● Look at a completed design and implement the remaining changes in the Scratch game. ● Add a sprite, re-use and modify code blocks within loops and explain the changes made.	Block, repeat, forever, infinite loop, modify, design
5	To design a project that includes repetition	● Look at a model project that uses repetition. ● Design their own games based on the model project, producing designs and algorithms for sprites in the game. ● Share these designs with a partner and have time to make any changes to their design as required.	Infinite loop, count-controlled loop, repetition, design, sprite, algorithm
6	To create a project that includes repetition	● Build their games, using the designs they created in Lesson 5. ● Follow their algorithms, fix mistakes and refine designs in their work as they build. ● Evaluate their work once it is completed and showcase their games at the end.	Repetition, design, algorithm, duplicate, debug, refine, evaluate

Year 4 – Summer 1 Photo editing

- NC objectives: 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain that the composition of digital images can be changed	● Introduce learners to the concept of editing images. ● Explore when we need to rotate and crop an image as well as how to use an image editor to make these changes. ● Discuss image composition.	Image, edit, digital, crop, rotate, undo, save
2	To explain that colours can be changed in digital images	● Look at the effect that different colours and filters can have on an image. ● Choose appropriate effects to fit a scenario and explain how they made their choices. ● Edit the images using different effects to suit two different scenarios.	Image, adjustments, effects, colours, hue, saturation, sepia, vignette
3	To explain how cloning can be used in photo editing	● Be introduced to the cloning tool and its use in both changing the composition of a photo and photo retouching. ● See how parts of a photo can be removed or duplicated using cloning. ● Consider what parts of an image can be retouched and learn techniques to make this as unnoticeable as possible. ● Consider when it is necessary to edit photographs in this way.	Image, edit, retouch, clone
4	To explain that images can be combined	● Learn how to use different tools to select areas of an image. ● Copy and paste within one image and between two images to produce a combined image. ● Consider when it's appropriate to edit an image and discuss some of the ethics around retouching photos.	Image, edit, select, copy, paste, combine
5	To combine images for a purpose	● Apply all the skills they have learnt in the unit so far. ● Review some images and consider what makes an image look real or made up. ● Plan their own image. ● Choose from a selection of images, open them and edit them to create their own project.	Image, made up, real, composite, cut, copy, paste, alter, background, foreground
6	To evaluate how changes can improve an image	● Review the image that they created in Lesson 5. ● Make changes to their image based on their review. ● Add text to their image to complete it as a publication.	Rotate, crop, zoom, clone, select, copy, paste, undo, font

Year 4 - Summer 2 Audio production

- NC objectives: 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
- **Science – Year 4 (Lesson 2) Sound:** Find patterns between the volume of a sound and the strength of the vibrations that produced it
- **Sound:** Recognise that sounds get fainter as the distance from the sound source increases
- **English – Years 3 and 4 (Lesson 3)**
- **Writing – composition:** Plan their writing by discussing and recording ideas
- **Writing – draft and write by:** In non-narrative material, using simple organisational devices [for example, headings and subheadings]
- **Writing:** Read aloud their own writing, to a group or the whole class, using appropriate intonation and controlling the tone and volume so that the meaning is clear

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To identify that sound can be recorded	• Identify the input devices used to record sound and output devices needed to listen to it. • Record their voices using a computer and reflect on what makes a good audio recording. • Consider ownership and copyright issues related to recordings.	Audio, microphone, speaker, headphones, input device, output device
2	To explain that audio recordings can be edited	• Record and re-record their voices to improve their recordings. • Edit the recordings, removing long pauses and mistakes. • Listen to a range of podcasts and identify the features of a podcast.	Audio, sound, podcast, edit, trim, align
3	To recognise the different parts of creating a podcast project	• Record their voices and then import and align sound effects to create layers in their recordings. • Learn how to save their work so it remains editable. • Plan their own podcast which they will work on in future lessons.	Audio, sound, layer, import
4	To apply audio editing skills independently	• Record the voice tracks for their podcast. • Review their recordings and re-record if necessary. • Edit, trim and align their voice recordings. • Save their project so they can continue working on it in the next lesson.	Audio, sound, record, playback, edit, selection
5	To combine audio to enhance my podcast project	• Add content such as sound effects and background music. • export their recording as an audio file.	Audio, sound, load, import, save, export, MP3
6	To evaluate the effective use of audio	• Evaluate their own podcasts and that of others. • Decide if they can improve their podcast and then make any changes they have chosen.	Export, MP3, audio, editing, evaluate, feedback

Year 5 - Autumn 2 Systems and searching - Autumn 2 2023 only

- NC objectives: 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain that computers can be connected together to form systems	● Be introduced to the concept of a system. ● Begin to understand that components can work together to perform a task. ● Explore how digital systems can work and learn about physical and electronic connections.	System, connection, digital, input, process, output
2	To recognise the role of computer systems in our lives	● Consider how larger computer systems work. ● See how devices and processes are connected and reflect on how computer systems can help them.	System, connection, digital, input, process, output
3	To identify how to use a search engine	● Be introduced to a range of search engines. ● Be given the opportunity to explain how to search, before they write and test instructions. ● Learn that searches do not always return the results that someone is looking for and refine their searches accordingly. ● Be introduced to the two most common methods of searching: using a search engine and using the address bar.	Search, search engine, refine
4	To describe how search engines select results	● Gain an understanding of why search engines are necessary to help them find things on the World Wide Web. ● Conduct their own searches and break down, in detail, the steps needed to find things on the web. ● Emulate web crawlers to create an index of their own classroom. ● Consider why some searches return more results than others.	Index, crawler, bot, search engine
5	To explain how search results are ranked	● Create paper-based webpages on a topic that they are familiar with. ● Discover how their webpages would rank when searching for keywords relating to their content.	Ordering, ranking, search engine, links, algorithm, search engine optimisation (SEO)
6	To recognise why the order of results is important and to whom	● Explore how someone performing a web search can influence the results that are returned ● Understand how content creators can optimise their sites for searching. ● Explore some of the limitations of searching and discuss what cannot be searched.	Searching, search engine, web crawler, content creator, selection, ranking

Year 5 - Spring 1 Video production Spring 1 2024 only

- NC objectives: 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain what makes a video effective	● Be introduced to video as a media format. ● See examples of videos featuring production and editing techniques that they will work towards using their own videos. ● Begin by explaining what the medium of video is before analysing and comparing examples of videos.	Video, audio, camera, talking head, panning, close up
2	To use a digital device to record video	● Explore the capabilities of a digital device that can be used to record video. ● Experiment with different camera angles, considering how different camera angles can be used for different purposes.	Video camera, microphone, lens, close up, mid range, long shot, moving subject, side by side, high angle, low angle, normal angle
3	To capture video using a range of techniques	● Use a storyboard to explore a variety of filming techniques, some of which they will use in their own video project later in the unit. ● Evaluate the effectiveness of these techniques before offering feedback on others' work.	Static camera, zoom, pan, tilt, storyboard
4	To create a storyboard	● Plan a video by creating a storyboard. Their storyboard will describe each scene and will include a script, camera angles and filming techniques. ● Use their storyboards to film the first scene of their videos.	Storyboard, filming, review
5	To identify that video can be improved through reshooting and editing	● Film the remaining scenes of their video and then import their content to video editing software. ● Explore key editing techniques and decide whether sections of their video can be edited or need to be shot again.	Import, split, trim, clip, edit, reshoot
6	To consider the impact of the choices made when	● Complete their video by removing unwanted content and reordering their clips. ● Export their finished video and evaluate the effectiveness of their edits. ● Consider how they could share their video with others.	Delete, trim, reorder, export, evaluate, share

	making and sharing a video		

Year 5 – Spring 2 selection in physical computing - Spring 2 2024 only

- NC objectives: 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
- 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
- Science: Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Design and Technology: Design: Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- Make: Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
- Evaluate: Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Technical knowledge: Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- Apply their understanding of computing to program, monitor and control their products

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To control a simple circuit connected to a computer	• Become familiar with the Crumble controller and the programming environment used to control it. • Connect a Sparkle to a Crumble and then program the Crumble to make the Sparkle flash different colour patterns. • Use infinite loops, which were introduced to the learners in the previous school year.	Microcontroller, components, connection, infinite loop
2	To write a program that includes count-controlled loops	• Connect a Sparkle and a motor to the Crumble controller. • Design sequences of actions for these components. • Apply their understanding of repetition by using count-controlled loops when implementing their design as a program.	Microcontroller, output component, motor, repetition, count-controlled loop
3	To explain that a loop can stop when a condition is met	• Be introduced to conditions and how they can be used in programs to control their flow. • Identify conditions in statements, stating if they are true or false. • Be introduced to a Crumble switch and learn how it can provide the Crumble controller with an input that can be used as a condition. • Explore how to write programs that use an input as a condition.	Microcontroller, Crumble controller, components, switch, motor, LED, Sparkle, crocodile clips, connect, battery box, program, condition
4	To explain that a loop can be used to repeatedly check whether a condition has been met	• Develop their understanding of how the flow of actions in algorithms and programs can be controlled by conditions. • Be introduced to selection and then represent conditions and actions using the 'if…then…' structure. • Create algorithms that include selection. • Use their algorithms to guide their program writing. • See that infinite repetition is required to repeatedly check if a condition has been met.	Input, output, selection, condition, action
5	To design a physical project that includes selection	• Apply their understanding of microcontrollers and selection when designing a project to meet the requirements of a given task. • Identify how selection might be used in real-world situations. • Consider how they can apply this knowledge to design their project. • Produce design sketches to show how their model will be made and how they will connect the microcontroller to its components.	Selection, condition, action, repetition

6	To create a program that controls a physical computing project	● Identify how they are going to use selection before writing an algorithm to meet the requirements of the given task. ● Implement their algorithms as code. ● Run their programs to identify any bugs and then return to the code or algorithm to debug it where necessary. ● Evaluate their designs.	Selection, condition, action, repetition, debug

Year 5 – Summer 1 Flat-file databases Summer 1 2024 only

- NC objectives: 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To use a form to record information	● Create a paper version of a record card database. ● Create a data set, with each learner creating eight to ten cards linked to a theme, e.g. animals. ● Complete records for each of the animals in their database and then they will physically sort the cards to answer questions about the data.	Database, data, information, record, field, sort, order, group
2	To compare paper and computer-based databases	● Examine how data can be recorded and viewed. ● Learn that a database consists of 'records' and that each record contains 'fields'. ● Order records in different ways and compare this database to the paper database they created in Lesson 1.	Database, data, field, record, sort, order
3	To outline how you can answer questions by grouping and then sorting data	● Investigate how records can be grouped, using both the paper record cards created in Lesson 1 and a computer-based database from J2E. ● Use 'grouping' and 'sorting' to answer questions about the data.	Database, record, field, group, search, sort, order
4	To explain that tools can be used to select specific data	● Develop their search techniques to answer questions about the data. ● Use advanced techniques to search for more than one field and will practise doing this through both unplugged methods (without using computers) and using a computer database.	Database, record, field, value, search, criteria
5	To explain that computer programs can be used to compare data visually	● Consider what makes a useful chart and how charts can be used to compare data. ● Create charts from their data in order to answer questions about it.	Database, record, field, graph, chart, axis, compare, filter
6	To use a real-world database to answer questions	● Use a real-life database to ask questions and find answers in the context of a flight search based on set parameters. ● Take on the role of a travel agent and present their findings, showing how they arrived at their chosen options. ● Presentations may be given between groups of learners, or by each group to the whole class, depending on the time available	Database, field, record, graph, chart, presentation

Year 5 – Summer 2 Introduction to vector graphics - Summer 2 2024 only

- NC objectives: 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.

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To identify that drawing tools can be used to produce different outcomes	● Be introduced to vector drawings and begin to understand that they are made up of simple shapes and lines. ● Use the main drawing tools within the Google Drawings application to create their own vector drawings. ● Discuss how vector drawings differ from paper-based drawings.	Vector, drawing tools, object, toolbar
2	To create a vector drawing by combining shapes	● Identify the shapes that are used to make vector drawings. ● Explain that each element of a vector drawing is called an object. ● Create their own vector drawing by moving, resizing, rotating and changing the colours of a selection of objects. ● Duplicate the objects to save time.	Vector drawing, object, move, resize, colour, rotate, duplicate/copy
3	To use tools to achieve a desired effect	● Increase the complexity of their vector drawings and use the zoom tool to add detail to their work. ● Be shown how grids and resize handles can improve the consistency of their drawings. ● Use tools to modify objects to create a new image.	Zoom, select, rotate, object, align, resize, modify
4	To recognise that vector drawings consist of layers	● Gain an understanding of layers and how they are used in vector drawings. ● Discover that each object is built on a new layer and that these layers can be moved forwards and backwards to create effective vector drawings.	Layers, object, order
5	To group objects to make them easier to work with	● Select and duplicate multiple objects at a single time. ● Develop this skill further by learning how to group multiple objects to make them easier to work with. ● Use this knowledge to group and ungroup objects, in order to make changes to and develop their vector drawings.	Copy, paste, group, ungroup, duplicate, object, vector drawing, reuse
6	To apply what I have learned about vector drawings	● Use the skills they have gained in this unit to create a vector drawing for a specific purpose. ● Reflect on the skills they have used to create the vector drawing and think about why they used the skills they did. ● Begin to compare vector drawings to freehand paint program drawings.	Reflection, vector drawing

Year 6 – Autumn 2 Introduction to spreadsheets

- NC objectives: 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
- Maths: **Number – addition, subtraction, multiplication and division:** Solve problems involving addition, subtraction, multiplication and division
- **Statistics:** Interpret and construct pie charts and line graphs and use these to solve problems
- Calculate and interpret the mean as an average

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To create a data set in a spreadsheet	● Collect and organise data in a format of their choice. ● Explore how data can be structured in a table. ● Input data into a spreadsheet.	Data, collecting, table, structure, spreadsheet
2	To build a data set in a spreadsheet	● Develop their understanding of the structure of a spreadsheet. ● Be introduced to cell references, data items and the concept of formatting cells. ● See data items formatted in different ways, they will then choose formats for data items before applying formats in their own spreadsheet.	Cell, cell reference, data item, format
3	To explain that formulas can be used to produce calculated data	● Begin to use formulas to produce calculated data. ● Understand that the type of data in a cell is important (e.g. numbers can be used in calculations whereas words cannot). ● Create formulas to use in a spreadsheet using cell references and identify that changing inputs will change the output of the calculation.	Formula, calculation, data, spreadsheet, input, output, cells, cell reference
4	To apply formulas to data	● Calculate data using the operations of multiplication, subtraction, division and addition. ● Use these operations to create formulas in a spreadsheet. ● Begin to understand the importance of creating formulas that include a range of cells and the advantage of duplicating in order to apply formulas to multiple cells.	Data, calculate, operation, formula, cell, range, duplicate, sigma
5	To create a spreadsheet to plan an event	● Plan and calculate the cost of an event using a spreadsheet. ● Use a predefined list to choose what they would like to include in their event and use their spreadsheet to answer questions on the data they have selected. ● Be reminded of the importance of organising data. ● Create a spreadsheet using formulas to work out costs for their event.	Propose, question, data set, data, organised, formula
6	To choose suitable ways to present data	● Gain skills to create charts in Google Sheets. ● They will evaluate the results from their charts to answer questions. ● Show they understand that there are different software tools available within spreadsheet applications to present data.	Chart, evaluate, results, comparison, questions, software, tools, data

Year 6 – Spring 1 Sensing movement

- NC objectives: 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
- 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
- TK: Apply their understanding of computing to program, monitor and control their products

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To create a program to run on a controllable device	● Be introduced to the micro:bit as an input, process, output device that can be programmed. ● Familiarise themselves with the device itself and the programming environment, before creating their own programs. ● Run their programs on the device.	Micro:bit, MakeCode, input, process, output, flashing, USB, trace
2	To explain that selection can control the flow of a program	● Explore how if, then, else statements are used to direct the flow of a program. They will initially relate if, then, else statements to real-world situations, before creating programs in MakeCode. ● Apply their knowledge of if, then, else statements to create a program that features selection influenced by a random number to create a micro:bit fortune teller project	Micro:bit, MakeCode, input, process, output, flashing, USB, trace
3	To update a variable with a user input	● Use the buttons to change the value of a variable using selection. ● Develop their programs to update the variable by moving their micro:bit using the accelerometer to sense motion. ● Learn that a variable's value remains the same after it has been checked by the program.	Input, selection, condition, variable, sensing, accelerometer, value
4	To use an conditional statement to compare a variable to a value	● Apply their understanding of the importance of order in programs. ● Use operands in selection to determine the flow of a program. ● Modify a program which will enable the micro:bit to be used as a navigational device. To code this, they will adapt the code they completed to make a basic compass.	Compass, direction, variable, navigation
5	To design a project that uses inputs and outputs on a controllable device	● Pick out features of a step counter, a piece of technology with which they are likely to be familiar. ● Relate those features to the sensors on a micro:bit. ● Pupils will design the algorithm and program flow for their step counter project.	Micro:bit, design, task, algorithm, variable, step counter
6	To develop a program to use inputs and outputs on a controllable device	● Design that they have created in Lesson 5 to make a micro:bit-based step counter. ● Review their plans, followed by creating their code. ● Test and debug their code, using the emulator and then the physical device.	Plan, create, code, test, debug

Year 6 - Spring 2 communication and collaboration

- NC objectives: 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
- 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

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To explain the importance of internet addresses	● Explore what is necessary for effective communication and the importance of agreed protocols. ● Apply this understanding to IP addresses and the rules (protocols) that computers have for communicating with one another. ● Use a Domain Name Server (DNS) to translate web addresses into IP addresses.	Communication, protocol, data, address, Internet Protocol (IP) address, Domain Name Server (DNS)
2	To recognise how data is transferred across the internet	● Be introduced to the concept of packets. ● Complete an activity based on transferring an image across the internet, to see that as well as messages (text), other types of data (images, video and audio) are also transferred over the internet. ● Gain an understanding of the key parts of a packet: the header and the data payload.	Packet, header, data payload
3	To explain how sharing information online can help people to work together	● Consider how people can work together when they are not in the same location. ● Discuss ways of working and complete a collaborative online project.	Chat, explore, slide deck
4	To evaluate different ways of working together online	● Be introduced to another approach to online working: reusing and modifying work done by someone else.	Reuse, remix, collaboration
5	To recognise how we communicate using technology	● Deepen their understanding of the term ‘communication’. ● Explore different methods of communication, before they consider internet-based communication in more detail. ● Evaluate which methods of communication suit particular purposes.	Communication, internet
6	To evaluate different methods of online communication	● Use information provided in the lesson and their own prior knowledge to categorise different forms of internet communication. ● Choose which method(s) they would use for the scenarios discussed in the previous lesson. ● Explore issues around privacy and information security.	Communication, public, private, one-way, two-way, one-to-one, one-to-many

Year 6 – Summer 1 3D modelling

- NC objectives: 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
- Art and design: To improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials
- Design technology: Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- Mathematics: Recognise, describe and build simple 3D shapes, including making nets

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To recognise that you can work in three dimensions on a computer	• Be introduced to the concept of 3D modelling by creating a range of 3D shapes that they select and move. • Examine shapes from a variety of views within the 3D space.	2D, 3D, shapes, select, move, perspective, view
2	To identify that digital 3D objects can be modified	• Manipulate 3D objects digitally. • Resize objects in one, two and three dimensions. • Lift and lower 3D objects relative to the workplane • Combine two 3D objects to make a new shape. • Recolour 3D objects.	Handles, resize, lift, lower, recolour
3	To recognise that objects can be combined in a 3D model	• Develop their understanding of manipulating digital 3D objects. • Rotate objects in three dimensions, duplicate objects and then use grouping and ungrouping to manipulate many objects at once. • Combine these skills to create their own 3D name badge. • Consider the practicality of 3D printing the objects they have made.	Rotate, duplicate, group
4	To create a 3D model for a given purpose	• Be introduced to the dimensions of shapes in Tinkercad which will enable them to accurately resize and move shapes. • Be introduced to placeholders which can be used to create holes in objects. • Duplicate, then resize multiple objects to create a meaningful 3D object.	Cylinder, placeholder, hollow
5	To plan my own 3D model	• See how computer-based 3D design is used in architecture to plan buildings. • Explode 3D models of buildings to see what shapes they comprise of. • Look at real world structures and identify the shapes that they include. • Plan their own 3D building design.	3D shapes, choose, combine
6	To create my own digital 3D model	• Create a computer 3D model based on their design. • Evaluate their model and that of another learner, before modifying their own model to improve it.	Construct, evaluate, modify

Year 6 - Summer 2 Webpage creation

- NC objectives: 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.
- English: Writing composition: Identifying the audience for and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own.

Lesson number	Learning objective	Pupils will:	Vocabulary
1	To review an existing website and consider its structure	● Explore and review existing websites and evaluate their content. ● Understand that websites are created by using HTML code.	Website, web page, browser, media, Hypertext Markup Language (HTML)
2	To plan the features of a web page	● Look at the different layout features available in Google Site. ● Plan their own web page on paper.	Web page, website, logo, layout, header, media, purpose
3	To consider the ownership and use of images (copyright)	● Become familiar with the terms 'fair use' and 'copyright'. ● Gain an understanding of why they should only use copyright-free images and will find appropriate images to use in their work from suggested sources.	Copyright, fair use
4	To recognise the need to preview pages	● Revise how to create their own web page in Google Sites. ● Create their own web page/home page. ● Preview their web page as it will appear on different devices and suggest or make edits to improve the user experience on each device.	Web page, home page, preview, evaluate, device, Google Sites
5	To outline the need for a navigation path	● During this lesson learners will begin to appreciate the need to plan the structure of a website carefully. They will plan their website, paying attention to the navigation paths (the way that pages are linked together). They will then create multiple web pages for their site and use hyperlinks to link them together as detailed in their planning.	Website, web page, breadcrumb trail, navigation, hyperlink, subpage
6	To recognise the implications of linking to content owned by other people	● Consider the implications of linking to content owned by other people ● Create hyperlinks on their own websites that link to other people's work. ● Evaluate the user experience when using their own website and that of another learner.	Hyperlink, evaluate, website, web page, implication, external link, embed