



Computing Curriculum - units of work and intended learning

Year 1

Taught in...	Unit of work	Intended learning (knowledge)
Autum Term 1	Computing systems and networks	<p>Develop understanding of technology and how it can help. Become more familiar with the different components of a computer by developing keyboard and mouse skills, and also start to consider how to use technology responsibly.</p> <ul style="list-style-type: none">-To identify technology-To identify a computer and its main parts-To use a mouse in different ways-To use a keyboard to type on a computer-To use the keyboard to edit text-To create rules for using technology responsibly
Autum Term 2	Creating media – Digital painting	<p>Explore the world of digital art and its exciting range of creative tools. Empower them to create their own paintings, while getting inspiration from topic being taught in class. (the Arctic) Conclude by asking them to consider their preferences when painting with, and without, the use of digital devices.</p> <ul style="list-style-type: none">-To describe what different freehand tools do-To use the shape tool and the line tools-To make careful choices when painting a digital picture-To explain why I chose the tools I used-To use a computer on my own to paint a picture-To compare painting a picture on a computer and on paper
Spring Term 1	Programming A – Moving a robot	<p>This unit introduces concepts of early programming. Learners will explore using individual commands, both with other learners and as part of a computer program. They will identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. The unit is paced to ensure time is spent on all aspects of programming and builds knowledge in a structured manner. Learners are also introduced to the early stages of program design through the introduction of algorithms.</p> <ul style="list-style-type: none">-To explain what a given command will do-To act out a given word-To combine forwards and backwards commands to make a sequence-To combine four direction commands to make sequences-To plan a simple program-To find more than one solution to a problem

<p>Spring Term 2</p>	<p>Data and information – Grouping data</p>	<p>This unit introduces pupils to data and information. They will begin by using labels to put objects into groups, and labelling these groups. Learners will demonstrate that they can count a small number of objects, before and after the objects are grouped. They will then begin to demonstrate their ability to sort objects into different groups, based on the properties they choose. Finally, pupils will use their ability to sort objects into different groups to answer questions about data.</p> <ul style="list-style-type: none"> -To label objects -To identify that objects can be counted -To describe objects in different ways -To count objects with the same properties -To compare groups of objects -To answer questions about groups of objects
<p>Summer Term 1</p>	<p>Creating media – Digital writing</p>	<p>Understanding of the various aspects of using a computer to create and change text. Learners will familiarise themselves with typing on a keyboard and begin using tools to change the look of their writing, and then they will consider the differences between using a computer and writing on paper to create text.</p> <ul style="list-style-type: none"> -To use a computer to write -To add and remove text on a computer -To identify that the look of text can be changed on a computer -To make careful choices when changing text -To explain why I used the tools that I chose -To compare typing on a computer to writing on paper
<p>Summer Term 2</p>	<p>Programming B - Programming animations</p>	<p>This unit introduces learners to on-screen programming through ScratchJr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms.</p> <ul style="list-style-type: none"> -To choose a command for a given purpose -To show that a series of commands can be joined together -To identify the effect of changing a value -To explain that each sprite has its own instructions -To design the parts of a project -To use my algorithm to create a program

Ongoing skills and concepts being developed throughout the year

- knowledge and understanding of the function and structure of programs
- Effective use of tools
- Safety and security

Year 2

Taught in...	Unit of work	Intended learning (knowledge)
Autum Term 1	Computing systems and networks – IT around us	<ul style="list-style-type: none"> • -To recognise the uses and features of information technology • -To identify the uses of information technology in the school • -To identify information technology beyond school • -To explain how information technology helps us • -To explain how to use information technology safely • -To recognise that choices are made when using information technology •
Autumn Term 2	Creating media – Digital photography	<ul style="list-style-type: none"> • Learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real. • -To use a digital device to take a photograph • -To make choices when taking a photograph • -To describe what makes a good photograph • -To decide how photographs can be improved • -To use tools to change an image • -To recognise that photos can be changed
Spring Term 1	Programming A – Robot algorithms	<p>This unit develops learners’ understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Learners will use given commands in different orders to investigate how the order affects the outcome. They will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them.</p> <ul style="list-style-type: none"> • -To describe a series of instructions as a sequence • -To explain what happens when we change the order of instructions • -To use logical reasoning to predict the outcome of a program • -To explain that programming projects can have code and artwork • -To design an algorithm • -To create and debug a program that I have written

Spring Term 2	Data and information – Pictograms	<p>This unit introduces the learners to the term 'data'. Learners will begin to understand what data means and how this can be collected in the form of a tally chart. They will learn the term 'attribute' and use this to help them organise data. They will then progress onto presenting data in the form of pictograms and finally block diagrams. Learners will use the data presented to answer questions.</p> <ul style="list-style-type: none"> • -To recognise that we can count and compare objects using tally charts • -To recognise that objects can be represented as pictures • -To create a pictogram • -To select objects by attribute and make comparisons • -To recognise that people can be described by attributes • -To explain that we can present information using a computer
Summer Term 1	Creating media - Digital music	<p>Learners will explore how music can make them think and feel. They will make patterns and use those patterns to make music with both percussion instruments and digital tools. They will also create different rhythms and tunes, using the movement of animals for inspiration. Finally, learners will share their creations and compare creating music digitally and non-digitally.</p> <ul style="list-style-type: none"> • -To say how music can make us feel • -To identify that there are patterns in music • -To experiment with sound using a computer • -To use a computer to create a musical pattern • -To create music for a purpose • -To review and refine our computer work
Summer Term 2	Programming B - Programming quizzes	<p>This unit initially recaps on learning from the Year 1 Scratch Junior unit 'Programming B - Programming animations'. Learners begin to understand that sequences of commands have an outcome and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects.</p> <ul style="list-style-type: none"> • -To explain that a sequence of commands has a start • -To explain that a sequence of commands has an outcome • -To create a program using a given design • -To change a given design • -To create a program using my own design • -To decide how my project can be improved

Ongoing skills being developed throughout the year

- knowledge and understanding of the function and structure of programs
- Effective use of tools
- Safety and security

taught in...	Unit of work	intended learning (knowledge)
Autum Term 1	Computing systems and networks – Connecting computers	<p>Develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. Start by comparing digital and non-digital devices, before introducing them to computer networks that include network infrastructure devices like routers and switches.</p> <ul style="list-style-type: none"> • -To explain how digital devices function • -To identify input and output devices • -To recognise how digital devices can change the way we work • -To explain how a computer network can be used to share information • -To explore how digital devices can be connected • -To recognise the physical components of a network
Autumn Term 2	Creating media - Stop-frame animation	<p>Use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.</p> <ul style="list-style-type: none"> • -To explain that animation is a sequence of drawings or photographs • -To relate animated movement with a sequence of images • -To plan an animation • -To identify the need to work consistently and carefully • -To review and improve an animation • -To evaluate the impact of adding other media to an animation
Spring Term 1	Programming A - Sequencing sounds	<p>This unit explores the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. The final project is to make a representation of a piano. The unit is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner. Learners also apply stages of program design through this unit.</p> <ul style="list-style-type: none"> • -To explore a new programming environment • -To identify that commands have an outcome • -To explain that a program has a start • -To recognise that a sequence of commands can have an order • -To change the appearance of my project • -To create a project from a task description
Spring Term 2	Data and information – Branching databases	<p>develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases</p> <ul style="list-style-type: none"> • -To create questions with yes/no answers • -To identify the attributes needed to collect data about an object • -To create a branching database • -To explain why it is helpful for a database to be well structured

		<ul style="list-style-type: none"> • -To plan the structure of a branching database • -To independently create an identification tool
Summer Term 1	Creating media – Desktop publishing	<p>During this unit, learners will become familiar with the terms ‘text’ and ‘images’ and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Learners will be introduced to the terms ‘templates’, ‘orientation’, and ‘placeholders’ and begin to understand how these can support them in making their own template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.</p> <ul style="list-style-type: none"> • -To recognise how text and images convey information • -To recognise that text and layout can be edited • -To choose appropriate page settings • -To add content to a desktop publishing publication • -To consider how different layouts can suit different purposes • -To consider the benefits of desktop publishing
Summer Term 2	Programming B - Events and actions in programs	<p>This unit explores the links between events and actions, whilst consolidating prior learning relating to sequencing. Learners will begin by moving a sprite in four directions (up, down, left and right). They will then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of pen blocks. Learners are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with learners designing and coding their own maze tracing program</p> <ul style="list-style-type: none"> • -To explain how a sprite moves in an existing project • -To create a program to move a sprite in four directions • -To adapt a program to a new context • -To develop my program by adding features • -To identify and fix bugs in a program • -To design and create a maze-based challenge

Ongoing skills being developed throughout the year

- knowledge and understanding of the function and structure of programs
- Effective use of tools
- Safety and security

Year 4

Taught in...	Unit of work	Intended learning (knowledge)
Autum Term 1	Computing systems and networks – The Internet	<p>Apply knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. This unit requires devices with an internet connection. Chrome Music Lab is used in one lesson to demonstrate content which can be produced on the World Wide Web.</p> <ul style="list-style-type: none"> • -To describe how networks physically connect to other networks • -To recognise how networked devices make up the internet • -To outline how websites can be shared via the World Wide Web (WWW) • -To describe how content can be added and accessed on the World Wide Web (WWW) • -To recognise how the content of the WWW is created by people • -To evaluate the consequences of unreliable content
Autumn Term 2	Creating media - Audio production	<p>identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers.</p> <ul style="list-style-type: none"> • -To identify that sound can be recorded • -To explain that audio recordings can be edited • -To recognise the different parts of creating a podcast project • -To apply audio editing skills independently • -To combine audio to enhance my podcast project • -To evaluate the effective use of audio

<p>Spring Term 1</p>	<p>Programming A – Repetition in shapes</p>	<p>This unit is the first of the two programming units in Year 4, and looks at repetition and loops within programming. Pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.</p> <ul style="list-style-type: none"> • -To identify that accuracy in programming is important • -To create a program in a text-based language • -To explain what ‘repeat’ means • -To modify a count-controlled loop to produce a given outcome • -To decompose a task into small steps • -To create a program that uses count-controlled loops to produce a given outcome
<p>Spring Term 2</p>	<p>Data and information – Data logging</p>	<p>In this unit, pupils will consider how and why data is collected over time. Pupils will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Pupils will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Pupils will spend time using a computer to review and analyse data. Towards the end of the unit, pupils will pose questions and then use data loggers to automatically collect the data needed to answer those questions.</p> <ul style="list-style-type: none"> • -To explain that data gathered over time can be used to answer questions • -To use a digital device to collect data automatically • -To explain that a data logger collects ‘data points’ from sensors over time • -To recognise how a computer can help us analyse data • -To identify the data needed to answer questions • -To use data from sensors to answer questions
<p>Summer Term 1</p>	<p>Creating media – Photo editing</p>	<p>Learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices.</p> <ul style="list-style-type: none"> • -To explain that the composition of digital images can be changed • -To explain that colours can be changed in digital images • -To explain how cloning can be used in photo editing • -To explain that images can be combined • -To combine images for a purpose • -To evaluate how changes can improve an image •
<p>Summer Term 2</p>	<p>Programming B – Repetition in games</p>	<p>This unit explores the concept of repetition in programming using the Scratch environment. It begins with a Scratch activity similar to that carried out in Logo in Programming unit A, where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.</p> <ul style="list-style-type: none"> • -To develop the use of count-controlled loops in a different programming environment • -To explain that in programming there are infinite loops and count controlled loops • -To develop a design that includes two or more loops which run at the same time

- -To modify an infinite loop in a given program
- -To design a project that includes repetition
- -To create a project that includes repetition

Ongoing skills being developed throughout the year

- knowledge and understanding of the function and structure of programs
- Effective use of tools
- Safety and security

Year 5

Taught in...	Unit of work	Intended learning (knowledge)
Autum Term 1	Computing systems and networks - Systems and searching	<p>To develop understanding of computer systems and how information is transferred between systems and devices. Learners will consider small-scale systems as well as large-scale systems. They will explain the input, output, and process aspects of a variety of different real-world systems. Learners will also take part in a collaborative online project with other class members and develop their skills in working together online.</p> <ul style="list-style-type: none"> • -To explain that computers can be connected together to form systems • -To recognise the role of computer systems in our lives • -To experiment with search engines • -To describe how search engines select results • -To explain how search results are ranked • -To recognise why the order of results is important, and to whom
Autumn Term 2	Creating media - Video production	<p>This unit gives learners the opportunity to learn how to create short videos in groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. Active learning is encouraged through guided questions and by working in small groups to investigate the use of devices and software. Learners are guided with step-by-step support to take their idea from conception to completion. At the teacher's discretion, the use of green screen can be incorporated into this unit. At the conclusion of the unit, learners have the opportunity to reflect on and assess their progress in creating a video.</p> <ul style="list-style-type: none"> • -To explain what makes a video effective • -To identify digital devices that can record video • -To capture video using a range of techniques • -To create a storyboard • -To identify that video can be improved through reshooting and editing • -To consider the impact of the choices made when making and sharing a video

Spring Term 1	Programming A – Selection in physical computing	<p>In this unit, learners will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program components (including output devices- LEDs and motors) through the application of their existing programming knowledge. Learners are introduced to conditions as a means of controlling the flow of actions and make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the if, then structure).</p> <ul style="list-style-type: none"> • -To control a simple circuit connected to a computer • To write a program that includes count-controlled loops • -To explain that a loop can stop when a condition is met • -To explain that a loop can be used to repeatedly check whether a condition has been met • -To design a physical project that includes selection • -To create a program that controls a physical computing project
Spring Term 2	Data and information – Flat-file databases	<p>This unit looks at how a flat-file database can be used to organise data in records. Pupils use tools within a database to order and answer questions about data. They create graphs and charts from their data to help solve problems. They use a real-life database to answer a question, and present their work to others.</p> <ul style="list-style-type: none"> • -To use a form to record information • -To compare paper and computer-based databases • -To outline how you can answer questions by grouping and then sorting data • -To explain that tools can be used to select specific data • -To explain that computer programs can be used to compare data visually • -To use a real-world database to answer questions
Summer Term 1	Creating media – Introduction to vector graphics	<p>In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work. This unit is planned using the Google Drawings app, other alternative pieces of software are available.</p> <ul style="list-style-type: none"> • -To identify that drawing tools can be used to produce different outcomes • -To create a vector drawing by combining shapes • -To use tools to achieve a desired effect • -To recognise that vector drawings consist of layers • -To group objects to make them easier to work with • -To apply what I have learned about vector drawings
Summer Term 2	Programming B – Selection in quizzes	<p>In this unit, pupils develop their knowledge of selection by revisiting how conditions can be used in programs and then learning how the If... Then... Else structure can be used to select different outcomes depending on whether a condition is true or false. They represent this understanding in algorithms and then by constructing programs using the Scratch programming environment. They use their knowledge of writing programs and using selection to control outcomes to design a quiz in response to a given task and implement it as a program.</p> <ul style="list-style-type: none"> • -To explain how selection is used in computer programs • -To relate that a conditional statement connects a condition to an outcome

- -To explain how selection directs the flow of a program
- -To design a program which uses selection
- -To create a program which uses selection
- -To evaluate my program

Ongoing skills being developed throughout the year

- knowledge and understanding of the function and structure of programs
- Effective use of tools
- Safety and security

Year 6

Taught in...	Unit of work	Intended learning (knowledge)
Autum Term 1	Computing systems and networks - Communication and collaboration	<p>In this unit learners explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet. Note: Some of the content in this unit was previously included in the Year 5 – ‘Computer systems and networks’ unit, so some learners may have already completed similar activities. Where this is the case, the context for the activity has been changed.</p> <ul style="list-style-type: none"> • -To explain the importance of internet addresses • -To recognise how data is transferred across the internet • -To explain how sharing information online can help people to work together • -To evaluate different ways of working together online • -To recognise how we communicate using technology • -To evaluate different methods of online communication •
Autumn Term 2	Creating media – Web page creation	<p>This unit introduces learners to the creation of websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.</p> <ul style="list-style-type: none"> • -To review an existing website and consider its structure • -To plan the features of a web page • -To consider the ownership and use of images (copyright) • -To recognise the need to preview pages • -To outline the need for a navigation path • -To recognise the implications of linking to content owned by other people
Spring Term 1	Programming A – Variables in games	<p>This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a</p>

		<p>simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, learners experiment with variables in an existing project, then modify them, before they create their own project. In Lesson 4, learners focus on design. Finally, in Lesson 6, learners apply their knowledge of variables and design to improve their games in Scratch.</p> <ul style="list-style-type: none"> • To define a 'variable' as something that is changeable • -To explain why a variable is used in a program • -To choose how to improve a game by using variables • -To design a project that builds on a given example • -To use my design to create a project • -To evaluate my project
Spring Term 2	Data and information - Introduction to Spreadsheets	<p>This unit introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.</p> <ul style="list-style-type: none"> • -To create a data set in a spreadsheet • -To build a data set in a spreadsheet • -To explain that formulas can be used to produce calculated data • -To apply formulas to data • -To create a spreadsheet to plan an event • -To choose suitable ways to present data
Summer Term 1	Creating media – 3D Modelling	<p>Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building</p> <ul style="list-style-type: none"> • -To recognise that you can work in three dimensions on a computer • -To identify that digital 3D objects can be modified • -To recognise that objects can be combined in a 3D model • -To create a 3D model for a given purpose • -To plan my own 3D model • -To create my own digital 3D model •
Summer Term 2	Programming B - Sensing movement	<p>This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'). It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.</p>

- | | | |
|--|--|--|
| | | <ul style="list-style-type: none">• -To create a program to run on a controllable device• -To explain that selection can control the flow of a program• -To update a variable with a user input• -To use a conditional statement to compare a variable to a value• -To design a project that uses inputs and outputs on a controllable device• -To develop a program to use inputs and outputs on a controllable device |
|--|--|--|

- | |
|---|
| <ul style="list-style-type: none">• <u>knowledge and understanding of the function and structure of programs</u>• <u>Effective use of tools</u>• <u>Safety and security</u> |
|---|