Computing Long Term Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Additional Lessons
EYFS	In the revised EYFS curriculum, the 'Technology' strand in Understanding the World has been removed and not replaced with any new guidance for schools. As technology has become an important part of our daily lives, we have kept it in our Early Years curriculum as it runs across all 7 areas. Computing develops listening and thinking skills, questioning and problem solving. Children use the Characteristics of Effective Learning: Playing and Exploring, Active Learning and Creating and Thinking Critically.						
	What does this look like in Early Years? • A range of technology and resources in both the indoor and outdoor classrooms, including the role play area, that children can access with an adult and independently. • Children will have the opportunity to use the following technology: • IWB, Ipads, Cameras, Beebots and remote-controlled toys Children are also introduced to Online Safety: - Smartie the Penguin – Childnet - Staying Safe Online – CBBC - **Key Themes:** What is the internet? What is it for? Stranger Danger, using age-appropriate resources and seeking help if worried/unsure. **Computing through our topics:** Taking photographs, research on Google, interactive games and e-learning.				**By the end of Reception, I can….** • Say how to stay safe online, including not sharing personal information. • Complete a simple program. • Use a programmable toy. • Find some simple information on the internet. • Select and use technology for a particular purpose. • Talk about technology that is used in the home.		
Year 1	Computing Systems & Networks: Technology around us (6 lessons) Pupils will develop their understanding of technology and how it can help them in their everyday lives. They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Pupils will also consider how to use technology responsibly. 1. To identify technology 2. To identify a computer and its main parts 3. To use a mouse in different ways 4. To use a keyboard to type on a computer	Creating Media: Digital painting (6 lessons) Pupils will develop their understanding of a range of tools used for digital painting. They then use these tools to create their own digital paintings, while gaining inspiration from a range of artists' work. The unit concludes with pupils considering their preferences when painting with and without the use of digital devices. 1. To describe what different freehand tools do 2. To use the shape and line tools 3. To make careful choices when painting a digital	Programming A: Moving a robot (6 lessons) Pupils will be introduced to early programming concepts. They will explore using individual commands, both with other learners and as part of a computer program. They will identify what each command for the floor robot 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. Pupils are also introduced to the early stages of program design through the introduction of algorithms.	Data & Information: Grouping data (6 lessons) Pupils are introduced to data and information. Labelling, grouping, and searching are important aspects. Searching is a common operation in many applications, and requires an understanding that to search data, it must have labels. Pupils will assign data (images) with different labels in order to demonstrate how computers are able to group and present data. 1. To label objects 2. To count and group objects 3. To describe objects in different ways	Creating Media: Digital writing (6 lessons) Pupils will develop their understanding of the various aspects of using a computer to create and manipulate text. They will become more familiar with using the keyboard and mouse to enter and delete text. Pupils will also consider how to change the look of their text and will be able to justify their reasoning in making these changes. Finally, pupils will consider the differences between using a computer to create text, and writing on paper. They will be able to explain which method they prefer and why.	Programming B: Programming animations (6 Lessons) Pupils will be introduced to on-screen programming through ScratchJr. They will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Pupils will also be introduced to the early stages of program design through the introduction of algorithms. 1. To find and use a command to move a Sprite	Online Safety (5 lessons) 1. To know that the internet is many devices connected to one another 2. To know that you should tell a trusted adult if you feel unsafe or worried online 3. To know that people you do not know on the internet (online) are strangers and are not always who they say they are 4. To know that to stay safe online it is important to

	5. To use a keyboard to edit text 6. To create rules for using technology responsibly	picture in the style of an artist 4. To explain why I chose the tools I used 5. To use a computer to paint a picture independently 6. To compare painting a picture on a computer to painting on paper	1. To explain what a given command will do 2. To act out a given word 3. To combine 'forwards and backwards' commands to make a sequence 4. To combine four direction commands to make sequences 5. To plan a simple program 6. To find more than one solution to a problem	4. To count objects with the same properties 5. To compare groups of objects 6. To answer questions about groups of objects	1. To open a word processor and find keys on a keyboard 2. To add and remove text on a computer 3. To identify that the look of text can be changed on a computer 4. To make careful choices when changing text 5. To explain why I used the tools that I chose 6. To compare typing on a computer t writing on paper	2. To show that a series of commands can be joined together 3. To identify the effect of changing a value 4. To explain that each sprite has its own instructions 5. To design a project and create an algorithm for each sprite 6. To use my algorithm to create a program	keep personal information safe 5. To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet
Year 2	Computing Systems & Networks: Information technology around us (6 lessons) Pupils will develop their understanding of what information (IT) is and will begin to identify examples. They will discuss where they have seen IT is school and beyond, in settings such as shops, hospitals, and libraries. Pupils will investigate how IT improves our world, and they will learn about the importance of using IT responsibly. 1. To recognise the uses and features of information technology 2. To identify the uses of information technology in the school	Creating Media: Digital Photography (6 lessons) Pupils 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. 1. To use a digital device to take a photograph 2. To make choices when taking a photograph – landscape or portrait 3. To describe what makes a good photograph 4. To describe how photographs can be improved – light and focus	Programming A: Robot algorithms (6 lessons) Pupil's understanding of instructions in sequences and the use of logical reasoning to predict outcomes will be developed. Pupil's will use given commands in different orders to investigate how the order affects the outcome. They will also learn about design programming. They will develop artwork and test it for use in the program. They will design algorithms and then test those as programs and debug them. 1. To describe a series of instructions as a sequence 2. To explain what happens when we change the order of instructions 3. To predict the outcome of a program 4. To explain that programming projects	Data & Information: Pictograms (6 lessons) Pupils will begin to understand what the term data means and how data 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. Leaners will use the data presented to answer questions. 1. To record data on a tally chart and compare totals 2. To recognise that objects can be represented as pictures 3. To create a pictogram 4. To select objects by attribute and make comparisons	Creating Media: Digital Music (6 lessons) Pupils will be using a computer to create music. They will listen to a variety of pieces of music and consider how music can make them think and feel. Pupils will compare creating music digitally and non-digitally. They will look at patterns and purposefully create music. 1. To say how music can make us feel 2. To create a rhythm pattern and play an instrument following it 3. To experiment with sound using a computer 4. To use a computer to create a musical pattern 5. To create music for a purpose	Programming B: Programming quizzes (6 lesson) Pupils 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, pupils will evaluate their work and make improvements to their programming projects. 1. To start a sequence of commands using the green flag 2. To explain that a sequence of commands has an outcome	Online Safety (5 lessons) 1. To understand the difference between online and offline 2. To understand what information I should not post online 3. To know what the techniques are for creating a strong password 4. To know that you should ask permission from others before sharing about them online and that they have the right to say 'no' 5. To understand that not everything

	3. To identify information technology beyond school 4. To explain how information technology helps us 5. To explain how to use information technology safely 6. To recognise that choices are made when using information technology	5. To use simple image editing tools to change an image 6. To recognise that photos can be changed	can have code and artwork 5. To design an algorithm 6. To create and debug a program I have written	5. To recognise that people can be described by attributes 6. To use a computer to present information	6. To review and refine our computer work	3. To create a program using a given design 4. To modify a given design to create their own quiz questions 5. To create a program using my own design 6. To improve my project and debug my program	they see or read online is true
Year 3	Computing Systems & Networks: Connecting computers (6 lessons) Pupils will develop their understanding of digital devices, with an initial focus on inputs, processes and outputs. They will also compare digital and non-digital devices. Next, pupils will be introduced to computer networks, including devices that make up a networks' infrastructure, such as wireless access points and switches. Finally, pupils will discover the benefits of connecting devices in a network. 1. To explain how digital devices function 2. To identify the input and output devices 3. To recognise how digital devices can change the way we work 4. To explain how a computer network can	Creating Media: Stop-frame animation (6 lessons) Pupils will 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 pupils adding other types of media to their animation, such as music and text. 1. To explain that animation is a sequence of drawings or photographs by creating a flip book 2. To relate animated movement with a sequence of images to create stop-frame animation using a tablet 3. To plan an animation using a storyboard 4. To create stop-frame animations using	Programming A: Sequencing sounds (6 lessons) Pupils will explore 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. Pupils will also apply stages of program design through this unit 1. To explore a new programming environment 2. To identify that commands have an outcome 3. To explain how event blocks can be used to start a program	Data & Information: Branching databases (6 lessons) Pupils will 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. Pupils will create physical and on-screen branching databases. Pupils will then create an identification tool using a branching database, which they will test by using it. They will also consider real world applications. 1. To create questions with yes/no answers 2. To identify the attributes needed to collect data about an object 3. To create a branching database 4. To explain why it is	Creating Media: Desktop publishing (6 lessons) Pupils 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 1. To recognise how text and images convey information	Programming B: Events and actions in programs (6 lessons) This unit explores the links between events and actions, while consolidating prior learning relating to sequencing. Pupils begin by moving a sprite in four directions (up, down, left, and right). They then explore movement within the context of a maze, using design to choose an appropriately sized sprite. Pupils are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with them designing and coding their own maze-tracing program. 1. To explain how a sprite moves in an existing project 2. To create a program to move a sprite in four directions	Online Safety (4 lessons) 1. To know that not everything on the internet is true: people share facts, beliefs and opinions online 2. To understand that the internet can affect your moods and feelings 3. To know that privacy settings limit who can access your important personal information such as your name, age etc. 4. To know what social media is and that age restrictions apply

	be used to share information 5. To explore how digital devices can be connected 6. To recognise the physical components of a network	onion skinning, and reviewing and my work 5. To review and improve an animation 6. To evaluate the impact of adding other media to an animation	4. To recognise that a sequence of commands can have an order 5. To change the appearance of my project 6. To create a project from a task description and implement my algorithm as code	helpful for a database to be well structured 5. To plan the structure of a branching database 6. To independently create an identification tool	2. To edit text and recognise that layout can be edited 3. To choose appropriate page settings and create a template for a purpose– orientation, placeholders 4. To add context to a desktop publishing publication 5. To consider how different layouts can suit different purposes 6. To consider the benefits of desktop publishing	3. To adapt a program to a new context 4. To develop my program by adding features – using pen blocks 5. To identify and fix bugs in a program – debug 6. To design and create a maze-based challenge	
Year 4	Computing Systems & Networks: The Internet (6 Lessons) Children will apply their 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. 1. To describe how networks physically	Creating Media – Audio Production (6 lessons) Pupils will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. They will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, pupils will 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. 1. To identify that sound can be recorded and	Programming A: Repetition in shapes (6 lessons) Pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. 1. To identify that accuracy in programming is important 2. To create a program in a text-based language 3. To explain what 'repeat' means and use count-controlled loops 4. To modify a count-controlled loop to produce a given outcome 5. To decompose a task into small steps and can use a procedure in a program 6. To create a program that uses count-controlled loops to produce a given	Data & Information: Data Logging (6 lessons) Pupils will consider how and why data is collected over time. They will consider the sense 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, sets, and logging intervals. They will also pose questions and then use data loggers to automatically collect the data needed to answer those questions. 1. To explain that data gathered over time can be used to answer questions	Creating Media: Photo editing (6 lessons) Pupils 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. 1. To explain that the composition of digital images can be changed – rotating and cropping 2. To explain that colours can be changed in digital images and effect of them 3. To use cloning in photo editing 4. To combine images using a range of tools and consider why	Programming B: Repetition in games (6 lessons) Pupils will explore the concept of repetition in programming using the Scratch environment. The unit begins with a Scratch activity similar to that carried out in Logo. Pupils will 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. 1. To develop the use of count-controlled loops in a different	Online Safety (5 lessons) 1. To describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy 2. To understand some of the methods used to encourage people to buy things online 3. To explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true 4. To understand that technology can be designed to

	connect to other networks 2. To recognise how networked devices make up the internet 3. To explain how websites can be shared via the World Wide Web (WWW) and describe where they are stored 4. To describe how content can be added and accessed on the World Wide Web (WWW) 5. To explain that websites and their content are created by and owned by people 6. To evaluate the consequences of unreliable content	identify the input and output devices used to record and play it 2. To edit an audio recording 3. To recognise the different parts of creating a podcast project 4. To apply audio editing skills independently 5. To combine audio to enhance my podcast project 6. To evaluate the and improve an audio recording/podcast	outcome and debug when appropriate	2. To use a digital device to collect data automatically 3. To explain that a data logger collects 'data points' from sensors over time 4. To recognise how a computer can help us analyse data 5. To identify the data needed to answer questions 6. To use data from sensors to answer questions	images might be edited 5. To combine images for a purpose 6. To review and make changes to improve my image	programming environment 2. To develop the use of count-controlled loops in a different programming environment 3. To develop a design that includes two or more loops which run at the same time 4. To modify an infinite loop in a given program 5. To design a project that includes repetition 6. To create a project that includes repetition	act like or impersonate living things 5. To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology
Year 5	Computing Systems & Networks: Systems & searching (6 lessons) Pupils develop their understanding of computer systems and how information in transferred between devices. Pupils consider small-scale systems as well as large-scale systems. They explain the input and output, and process aspects of a variety of different real-world systems. Pupils discover how information is found on the World Wide Web, through learning how search engines word (including how they select and rank results) and what influences searching, and	Creating Media: Video Production (6 lessons) Pupils will learn how to create short videos by working in pairs or 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. Pupils are guided with step-by-step support to take their idea from conception to completion. They then have the opportunity to reflect on and assess their	Programming A: Selection in physical computing (6 lessons) 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 it to control components (including output devices — LEDs and motors). Learners will be introduced to conditions as a means of controlling the flow of actions in a program. Learners will make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the 'if...then...' structure) and write algorithms and programs that	Data & Information: Flat-file databases (6 lessons) Pupils will look at how a flat-file database can be used to organise data in records. Pupils will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others. 1. To use a form to record information	Creating Media: Introduction to vector graphics (6 lessons) Pupils start to create vector drawings. They learn how to use different drawing tools to help them create images. Pupils recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. They layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work. 1. To identify that drawing tools can be	Programming B: Selection in quizzes (6 lessons) Pupils will develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, 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 in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control	Online Safety (5 lessons) 1. To understand how apps can access our personal information and how to alter the permissions 2. To be aware of the positive and negative aspects of online communication 3. To understand how online information can be used to form judgements

	through comparing different search engines. 1. To explain that computers can be connected together to form systems 2. To recognise the role of computers systems in our lives 3. To explain how to use a search engine 4. To describe how search engines select results 5. To explain how search results are ranked 6. To recognise why the order of results is important, and to whom	progress in creating a video. 1. To explain what makes a video effective 2. To use a digital device to record video and experiment with different camera angles 3. To capture video using a range of techniques 4. To create a storyboard 5. To identify that video can be improved through reshooting and editing 6. To consider the impact of the choices made when making and sharing a video	utilise this concept. To conclude the unit, learners will design and make a working model of a fairground carousel that will demonstrate their understanding of how the microcontroller and its components are connected, and how selection can be used to control the operation of the model. Throughout this unit, learners will apply the stages of programming design. 1. To control a simple circuit connected to a computer 2. To write a program that includes count-controlled loops 3. To explain that a loop can stop when a condition is met 4. To explain that a loop can be used to repeatedly check whether a condition has been met 5. To design a physical project that includes selection 6. To create a program that controls a physical computing project	2. To compare paper and computer-based databases 3. To explain how you can answer questions by grouping and then sorting data 4. To explain that tools can be used to select specific data 5. To explain that computer programs can be used to compare data visually 6. To use a real-world database to answer questions	used to produce different outcomes 2. To create a vector drawing by combining shapes 3. To use tools to achieve a desired effect 4. To recognise that vector drawings consist of layers 5. To group objects to make them easier to work with 6. To apply what I have learnt about vector drawings	the outcomes based on the answers given. use this knowledge to design a quiz in response to a given task and implement it as a program. Pupils then evaluate their program by identifying how it meets the requirements of the task and how it can be improved. 1. To explain how selection in used in computer programs 2. To relate that a conditional statement connects a condition to an outcome 3. To explain how selection directs the flow of a program 4. To design a program that uses selection 5. To create a program that uses selection 6. To evaluate my program	4. To know ways to overcome bullying 5. To understand how technology can affect health and wellbeing
Year 6	Computing Systems & Networks: Communication & collaboration (6 lessons) Pupils 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	Creating Media: Web page creation Learners will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website. Throughout the process, learners pay specific attention to	Programming A: Variables in games (6 lessons) Pupils explore the concept of variables in programming through games in Scratch. They will 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 simulation of a scoreboard. Pupils experiment with	Data & Information: Introduction to spreadsheets (6 lessons) Pupils will be introduced to spreadsheets. They will organise data into columns and rows to create their own data set. Pupils will be taught the importance of formatting data to support calculations, while also being introduced to	Creating Media: 3D modelling (6 lessons) Pupils will develop their knowledge and understanding of using a computer to produce 3D models. They will familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders	Programming B: Sensing movement (6 lessons) This unit brings together elements of all the four programming constructs: sequence, repetition, and variables. It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also	Online Safety (6 lessons) 1. To describe issues online that give us negative feelings and know ways to get help 2. To understand the impact and consequences of sharing online

	communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn to communicate responsibly by considering what should and should not be shared on the internet. 1. To explain the importance of internet addresses 2. To recognise how data is transferred across the internet 3. To explain how sharing online can help people work together 4. To evaluate the different ways of working together online 5. To recognise how we communicate using technology 6. To evaluate different methods of online communication	copyright and fair use of media, the aesthetics of the site, and navigation paths. 1. To review an existing website and consider its structure 2. To plan the features of a web page 3. To consider the ownership and use of images (copyright) 4. To recognise the need to preview pages 5. To explain what a navigation path is and make multiple web pages and link them using hyperlinks 6. To recognise the implications of linking to content owned by other people	variables in an existing project, then modify them, before they create their own project. Pupils then design, create and evaluate their own project by applying their knowledge of variables. 1. To define a 'variable' as something that is changeable 2. To explain why a variable is used in a program 3. To choose how to improve a game by using variables 4. To design a project that builds on a given example 5. To use my design to create a project 6. To evaluate my project	formulas. Pupils will learn how to apply formulas to a range of cells and apply formulas to a range of cells by duplicating them. Pupils will then use spreadsheets to plan an event and answer questions. Finally, they will create charts, and evaluate their results in comparison to the questions asked. 1. To create a data set in a spreadsheet 2. To build a data set in a spreadsheet 3. To explain that formulas can be used to produce calculated data 4. To apply formulas to data 5. To create a spreadsheet to plan an event 6. To choose suitable ways to present data	and combine multiple objects to create a model of a desk tidy. Finally, pupils 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. 1. To recognise that you can work in three dimensions on a computer 2. To identify that digital 3D objects can be modified – resize, lift/lower and recolour 3. To recognise that objects can be combined in a 3D model – rotate, duplicate and group 4. To create a 3D model for a given purpose 5. To plan my own 3D model 6. To create my own digital 3D model	utilising a physical device — the micro: bit. 1. To create a program to run on a controllable device 2. To explain that selection can control the flow of a program 3. To update a variable with a user input 4. To use a conditional statement to compare a variable to a value 5. To design a project that uses inputs and outputs on a controllable device 6. To develop a program to use inputs and outputs on a controllable device	3. To know how to create a positive online reputation 4. To be able to describe how to capture bullying content as evidence 5. To manage personal passwords effectively 6. To be aware of strategies to help be protected online