Year One and Two:

Unit	Knowledge		Vocabulary	
	Year One	**Year Two**	**Year One**	**Year Two**
Unit One: **Computer Systems and Networks**	**Technology around us** Recognising technology in school and using it responsibly **Computing Strand:** • Computing Systems • Algorithms **In this unit, children will:** • Know examples of technology and how this technology can help society. • Identify the main parts of a computer e.g. mouse, keyboard. • Be able to use a mouse in different ways and to use a keyboard to type. • Know why rules are needed when using technology.	**IT around us** Identifying IT and how its responsible use improves our world in school and beyond. **Computing Strand:** • Networks • Computing Systems **In this unit, children will:** • Recognise different types of information technology used both in school and beyond school. • Describe some uses of computers and information technology. • Explain how choices are made when using information technology and how these can benefit us. • Show how to use technology safely.	Technology, computer mouse/trackpad, draw, click, double-click, click and drag, Input device, keyboard, shift, space bar, capital letter, full stop safely , responsibly,	Information technology (IT), computer, technology, working together, safely, responsibility, choice
Unit Two: **Creating Media**	**Digital Painting** Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.	**Digital photography** Capturing and changing digital photographs for different purposes.	paint program, tool, paintbrush, erase, undo,	Device, camera, photograph, capture, image,

	Computing Strand: • Effective use of tools • Creating Media **In this unit, children will:** • Use a computer to produce a picture, choosing options to achieve a desired effect. • Use basic tools to create an image, including: brush, shapes, lines and colour. • Know that computers can store information, which can be retrieved, edited, re-saved and shared between devices.	**Computing Strand:** • Effective use of tools • Creating Media **In this unit, children will:** • Know that some digital device can capture images using a camera. • Use a device to capture a digital image. • Know that photos are manipulated by the photographer and that some photos can be fake. • Edit photos by recognising what the features of a good photograph are.	primary colours, line tool, shape tool, fill tool, tools, feelings, colour, brush style, brush size	digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter
Unit Three: **Data and Information**	**Digital Writing** Using a computer to create and format text, before comparing to writing non-digitally. **Computing Strand:** • Algorithms • Programming **In this unit, children will:** • Know the features of a keyboard, including how to use: letters, numbers, space keys, shift key (and its purpose) and how to insert punctuation and special characters.	**Making Music** Using a computer as a tool to explore rhythms and melodies, before creating a musical composition. **Computing Strand:** • Creating Media • Design and Development **In this unit, children will:** • Use a computer to create a piece of music. • Appraise and describe pieces of music they have listened to and be able to discuss how music is made from a series of notes.	Word processor, keyboard, keys, letters, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, Microsoft Word, Google Docs	Music, planets, Mars, Venus, war, peace, quiet, loud, feelings, emotions, pattern, rhythm, pulse, tempo, rhythm, notes

	• Manipulate text by: editing, deleting and changing the text to meet a desired outcome. • Know the impact their choices will have on the work produced.	• Create a piece of music using musical sequences to create different effects.		
Unit Four: **Data and Information**	**Grouping data** Exploring object labels, then using them to sort and group objects by properties. **Computing Strand:** • Data and Information • Algorithms **In this unit, children will:** • Collect simple data and know that this collected data can be counted. • Describe the properties of an object and explain that these objects can be grouped by similarities. • Know that information can be presented in different ways.	**Pictograms** Collecting data in tally charts and using attributes to organise and present data on a compute **Computing Strand:** • Data and Information • Effective use of Tools **In this unit, children will:** • Recognise that people, animals and objects can be described by attributes. • Use a computer to view data in different formats. • Use a computer to answer comparison questions (graphs, tables) • Explain, and show, that we can present information using a computer and how some information should not be shared.	Object, label, group, search, image property, label, colour, size, data set	More than, less than, most, least, organise, data, object, tally chart, votes, total, compare, analyse
Unit Five: **Programming A**	**Moving a robot** Writing short algorithms and programs for floor robots, and predicting program outcomes.	**Robot Algorithms** Creating and debugging programs, and using logical reasoning to make predictions.	Forwards, backwards, turn, clear, go,	Instruction, sequence, clear, unambiguous, algorithm,

	Computing Strand: • Algorithms • Programming **In this unit, children will learn:** • Predict the outcome a command may have on a device. • Know the commands which can be used on a given a device and what these commands do and the outcome of choosing these commands. • Know that program is a set of commands a computer can run and that these commands can be issued before they are enacted. • Program a device using a range of combined commands.	**Computing Strand:** • Algorithms • Programming **In this unit, children will:** • Recall that a series of instructions is a sequence and these can be issued before they are enacted. • Choose a series of words that can be enacted as a sequence. • Use logical reasoning to predict what will happen why they run a program. • Create and debug programs that they have written.	commands, Instructions, directions, left, right, program, device outcome	program, order, commands, Artwork, design, route, mat
Unit Six: **Programming B**	**Introduction to animation** Designing and programming the movement of a character on screen to tell stories. **Computing Strand:** • Programming • Design and development **In this unit, children will learn:** • Predict the outcome a command may have on a device.	**An introduction to quizzes** Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz. **Computing Strand:** • Programming • Design and Development **In this unit, children will learn:**	ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area. block, joining, start block, run, background, delete, reset,	Sequence, command, program, run, star, command, outcome, predict, program, blocks, Design, algorithm, build, match

	• Know the commands which can be used on a given a device and what these commands do and the outcome of choosing these commands. • Know that program is a set of commands a computer can run and that these commands can be issued before they are enacted. • Program a device using a range of combined commands.	• Recall that a series of instructions is a sequence and these can be issued before they are enacted. • Choose a series of words that can be enacted as a sequence. • Use logical reasoning to predict what will happen why they run a program	algorithm, predict	

Year Three and Four:

Unit	Knowledge		Vocabulary	
	Year Three	Year Four	Year Three	Year Four
Unit One: **Computer Systems and Networks**	**Connecting Computers** Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks. **Computing Strand:** • Networks • Computing systems	**The internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content. **Computing Strand:** • Networks • Safety and Security	Digital device, input, output, process connection, network, network switch, WAP	Internet, network, router, network security, Website, web page, web address, router, routing, route tracing, browser,

	In this unit, children will: • Identify input and output devices and explain that a process acts on the inputs. • Explain that a computer systems accepts an input and processes it to produce an output. • Recognise that computing devices are connected and that digital devices are made up of several parts. • Explain the role of a switch, server and wireless access point in network.	**In this unit, children will :** • Describe how networks connect to other networks. • Outline what the WWW is, that it comprises of websites and web pages and how information can be shared via this. • Discuss the benefits and limitations of the WWW. • Evaluate the reliability of content and the consequences of unreliable content.		internet, content, website, web page, links, files, sharing, ownership, permission
Unit Two: **Creating Media**	**Animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story. **Computing Strand:** • Effective use of tools • Creating Media **In this unit, children will:** • Know that an animation is made up of a sequence of images and that these images need to be taken from a device in a fixed position. • Capture images using the onion-skinning tool to review subject position, recognising that smaller movements create a smoother animation.	**Audio Editing** Capturing and editing audio to produce a podcast, ensuring that copyright is considered. **Computing Strand:** • Effective use of tools • Creating media **In this unit, children will:** • Record sound digitally, using devices accurately and how this audio can be stored as a file. • Play back audio as required editing and altering this to achieve a desired sound. • Apply effects and delete sections of audio as required. • Save and export audio files.	Animation, flip book frame, sequence, image, photograph, Setting, character, events, stop-frame animation, onion skinning	Audio, record, playback, microphone, speaker, headphones, input, output sound, record, playback, start, pause, stop, podcast. Save, file

	• Be consistent in their approach to allow for a smoother animation, removing and reviewing frames as needed. • Add media to enhance animation.			
Unit Three: **Data and Information**	**Desktop publishing** Creating documents by modifying text, images, and page layouts for a specified purpose. **Computing Strand:** • Effective use of tools • Creating media **In this unit, children will:** • Modify documents by changing orientation and layout. • Recognise that pages can be structured using places holders, organising these placeholders on a document. • Change font sizes, move, resize and rotate images to achieve a given purpose. • Consider the benefits of using a desktop publishing application.	**Photo editing** Manipulating digital images, and reflecting on the impact of changes made. **Computing Strand:** • Effective use of tools • Creating media **In this unit, children will:** • Use a computer to further manipulate images, opening and retrieving images to arrange, crop and cut out parts that are not needed. • Apply changes to a photo by adjusting colours, filters and adding effects. • Recognise that not all photos they see are real and the consequences of changes on the quality of an image.	Text, images, advantages, disadvantages, communicate, Font, font style, communicate, template, Landscape, portrait, orientation, placeholder, template, layout, content	Image, edit, arrange, select, digital, crop, undo, search, save, copyright, composition, edit, pixels, crop, rotate, flip
Unit Four: **Data and Information**	**Branching databases** Building and using branching databases to group objects using yes/no questions.	**Data logging** Recognising how and why data is collected over time.	Attribute, value, questions, table,	Data, table (layout) Input device, sensor,

	Computing Strand: • Data and information • Effective use of tools **In this unit, children will:** • Identify the attributes need to collect data so that they can separate objects into two groups • Retrieve information from different levels of a branching database. • Compare information shown in pictograms with a branching database.	**Computing Strand:** • Computing Systems • Data and information **In this unit, children will:** • Suggests question, which can be answered using a given data set. • Identify that sensors are input devices and use digital devices to collect data automatically. • Explain that a data longer captures data points from sensors over time. • Use programs to sort data by one attribute and export this data where needed.	objects, Branching database, database, attribute, value, questions, objects, equal, even, separate	data logger, data point, interval, Analyse, data set, import, export, review, conclusion
Unit Five: **Programming A**	**Sequence in music** Creating sequences in a block-based programming language to make music. **Computing Strand:** • Programming • Design and development **In this unit, children will learn:** • Explain that programs start because of an input. • Build a sequence of commands, combining these commands in a program.	**Repetition in shapes** Using a text-based programming language to explore count-controlled loops. **Computing Strand:** • Algorithms • Programming **In this unit, children will learn:** • Understand the benefits of loop commands to repeat instructions. • Identify loops and patterns in a sequence, explaining that in programming there are	Programming, Objects, Sprites, Backdrops, Attribtues. Commands Blocks, Create, Respond, Sequence, Build, Coding, Projects	Logo, Commands Read, Write, Code, Patterns, Errors, Algorithms Repetition, Count-controlled loop, Trace, Predict, Modify Value Commands, Chunks.

	• Create a sequence of commands to produce a given outcome; identifying that different sequences can achieve the same output.	indefinite loops and count-controlled loops, creating their own to produce a given outcome. • Plan program that include appropriate loops and recognise tools that allow concurrency. • Create two or more sequences that can run at the same time.		Procedure
Unit Six: **Programming B**	**Events and actions** Writing algorithms and programs that use a range of events to trigger sequences of actions. **Computing Strand:** • Programming • Design and development **In this unit, children will learn:** • Explain that programs start because of an input. • Build a sequence of commands, combining these commands in a program. • Create a sequence of commands to produce a given outcome; identifying that different sequences can achieve the same output.	**Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops. **Computing Strand:** • Programming • Design and development **In this unit, children will learn:** • Understand the benefits of loop commands to repeat instructions. • Identify loops and patterns in a sequence, explaining that in programming there are indefinite loops and count-controlled loops, creating their own to produce a given outcome. • Plan program that include appropriate loops and recognise tools that allow concurrency. • Create two or more sequences that can run at the same time.	Relationship, Event, Action, Keys, Choices, Character, Size, Maze, Extension, Real world, Blocks Bugs, Fix, Identify, Test, Design choice, Evaluate	Scratch, Repetitionm Modify, Infinite loops, Controlled loops, Animation, Model, Design, Build, Evaluate, Repetition, Snippets, Reuse, Loop. Change, Refine

Year Five and Six:

Unit	Knowledge		Vocabulary	
	Year Five	Year Six	Year Five	Year Six
Unit One: **Computer Systems and Networks**	**Sharing Information** Identifying and exploring how information is shared between digital systems. **Computing Strand:** • Networks • Effective use of tools **In this unit, children will** • Understand how computers can be connected together to form systems and that computers connect with other devices. • Recognise input, processes and outputs in larger computer systems. • Know how information is transferred using agreed protocols. • Know that connections between computers allow us to share files and how internet collaborations can be public and private.	**Communication** Recognising how the WWW can be used to communicate and be searched to find information. **Computing Strand:** • Networks • Effective use of tools **In this unit, children will:** • Effectively use search engines, comparing results from different search engines recognising that different search terms produce different results. • Know the purpose of indexes and that these are different for each search engine and know the role of web crawlers. • Examine the role of the searcher, search engine, and content creator in the searching process and that ranking narrows down the	System, connection, digital, input, process, output, Protocol, address, packet, Chat, explore, slide deck	Search, search engine, Google, Bing, Yahoo!, Swisscows, DuckDuckGo, refine, Index, crawler, bot, Ranking, search engine, search engine optimisation, links, web crawlers, Communication, internet

		search results returned from the index, which makes it more useful. • Identify that results from search engines can include adverts, and that the adverts can be targeted		
Unit Two: **Creating Media**	**Vector Drawing** Creating images in a drawing program by using layers and groups of objects. **Computing Strand:** • Effective use of tools • Creating Media **In this unit, children will:** • Know that a vector drawing comprises of separate objects. • Add, select, delete, modify, duplicate and reposition objects within a vector drawing. • Recognise layering and move objects between layers of drawing, grouping and ungrouping selected objects. • Combing objects to achieve a desired effect and consider the impact of the choices made.	**3D Modelling** Planning, developing, and evaluating 3D computer models of physical objects. **Computing Strand:** • Effective use of tools • Creating media **In this unit, children will:** • Create 3D graphical objects on a computer screen, altering, placing, selecting, repositioning, rotating, resizing, recolouring objects to achieve a desired outcome. • Know that that blank objects must be used as placeholders to create holes • Group multiple objects and modify these where necessary.	Vector, drawing tools, shapes, object, icons, toolbar, object, move, resize, colour, rotate, duplicate/copy, Organise, zoom, select, alignment grid, resize, handles, consistency, modify	2D, 3D, 3D object, 3D space, view, resize, colour, lift, Rotate, position, select, duplicate, Dimensions, placeholder, hole, group, ungroup
Unit Three: **Data and Information**	**Video Editing** Planning, capturing, and editing video to produce a short film.	**Web page creating** Designing and creating webpages, considering copyright, aesthetics, and navigation.	Video, audio, camera, talking head,	Website, web page, browser, media,

	Computing Strand: • Creating media • Design and development **In this unit, children will:** • Review existing video content, identifying the key concepts of composition. • Use a recording device and computer to create a video capturing content correctly, playing back and editing content where needed. • Recognise how the impact choices have on content and how videos can be improved. • Save and export video files, considering copyright and computer safety.	**Computing Strand:** • Creating media • Design and development **In this unit, children will:** • Review existing websites (navigation bars and headers, recognising the relationship between HTML and visual display. • Know that web pages can contain different media types, are written by people and that that a website is a set of hyperlinked web pages. • Create their own blank web pages, adding text, hyperlinks and setting the style to meet a desired outcome. • Embed media within a webpage before adding webpages to a website.	panning, close up, Video camera, microphone, lens, close up, mid-range, long shot, moving subject, side by side, high angle, low angle, normal angle, Static camera, zoom, pan, tilt, storyboard	Hypertext Markup Language (HTML) Web page, website, logo, layout, header, media, purpose, Copyright, fair use, breadcrumb trail, navigation, hyperlink, subpage, implication, external link, embed
Unit Four: **Data and Information**	**Flat-file databases** Using a database to order data and create charts to answer questions. **Computing Strand:** • Data and information • Effective use of tools **In this unit, children will:**	**Spreadsheets** Answering questions by using spreadsheets to organise and calculate data **Computing Strand:** • Effective use of tools • Data and Information **In this unit, children will:**	Database, data, information, record, field, sort, order, group, order, record, field,	Spreadsheet, data, data heading, data set, cells, columns and rows, Data, data item, data set, object, spreadsheet application, format,

	• Navigate a flat-file database. Explaining how a computer program can be used to organise data. • Design and create their own flat-file database, considering which attribute to sort data by. • Explain and show how we can present information to communicate messages. • Choose suitable ways to present information taken from a flat-file database to share with other people.	• Propose simple, relevant questions that can be answered using data. • Outline that there are different software tools to work with data and explain that formulas can be used to produce calculated data. • Recognise that data can be calculated using different operations and that changing inputs also changes outputs. • Apply formulas to data, including duplication.	graph, chart, axis, compare, filter	common attribute, Formula, calculation, data, spreadsheet, input, output. Cells, cell reference, Propose, question, data set, data, organised, formula
Unit Five: **Programming A**	**Selection in physical computing** Exploring conditions and selection using a programmable microcontroller. **Computing Strand:** • Programming • Computing systems **In this unit, children will:** • Count-controlled loops contain conditions, that conditions can only be true or false, and that the loop will stop when the condition is met.	**Variables in games** Exploring variables when designing and coding a game. **Computing Strand:** • Programming • Design and development **In this unit, children will:** • Define 'variable' as something that is changeable and identify examples of information that is variable, eg a football score during a match. • Explain that a variable is something that we can use in a program, eg 'score' and define a	Crumble, Input, Output, LEDs, Motors, Flow, Repetition, Conditions, Sparkle, Conditions, Microcontrollers, Selection, Algorithm, Evaluate	Games, Scratch, Project, Variables. Changes, Placeholder, Memory, Improve, Enhance, Variety, Project, Builds, Algorithmic, Code, Test, Rhythm, Add.

	• Create their own condition-controlled loop- using if and then statements to start and action. • Explain how selection can be used to branch the flow of a program and to use selection to switch the program flow in one of two ways. • To use a condition in an if…then...else statement to produce a given outcome.	program variable as a placeholder in memory for a single value. • Identify a variable in an existing program and experiment with the value of an existing variable. • Use a variable in a conditional statement to control the flow of a program		
Unit Six: **Programming B**	**Selection in quizzes** Exploring selection in programming to design and code an interactive quiz. **Computing Strand:** • Algorithms • Programming **In this unit, children will:** • Define that conditions statements are used in computer programs and that conditional statements connect a condition to an outcome and that this condition can be true or false. • With confidence, children will work with count controlled loops and event control loops to produce a given outcome.	**Sensing** Designing and coding a project that captures inputs from a physical device **Computing Strand:** • Programming • Computer systems **In this unit, children will:** • Define 'variable' as something that is changeable and identify examples of information that is variable, eg a football score during a match. • Explain that a variable is something that we can use in a program, eg 'score' and define a program variable as a placeholder in memory for a single value. • Identify a variable in an existing program and experiment with the value of an existing variable.	Selection, Algorithm, Construction, Program, Conditions, Repetition, Modify, Infinite loop, Controlled loop, Flow, Branch, If… Then… Else.. Two way, Input, Output Share, Evaluate	Sensing, Micro:bit, Programming, Explore, Statements, MakeCode, Accelerometer, Test, Transfer, Controllable, Run, Statement, Flow program, Input, Output, Value, Conditions, Conditional statement, Operand, Design, Controllable, Test. Find,

		Use a variable in a conditional statement to control the flow of a program		Fix, Bugs, debug.