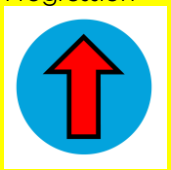
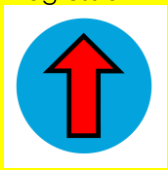
Computing Long Term Plan Hadrian Y3

Y3 Computing	
National Curriculum Objectives KS2	Key Links
By the end of KS2 Pupils should be taught to: • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with 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 • 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.	**https://teachcomputing.org/curriculum** **Education for a Connected World links** https://www.knowsleyclcs.org.uk/2018-online-safety-sow/ PW: check emails

Topics		N.C Objectives	Key skills	Key Vocab
Autumn 1	Connecting	• use sequence, selection, and	• To identify input and output devices	School

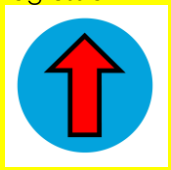
	Computers	repetition in programs; work with variables and various forms of input and output • understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration • select, use and 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	• To explain that a computer system accepts an input and processes it to produce an output • To explain how a computer network can be used to share information • To explain the role of a switch, server and wireless access point in a network • To identify network devices around me • To explain how networks can be connected to other networks	network Devices Computer parts Collaborate Appropriate online communication Search tools Appropriate websites Owner
Progression 	This unit progresses learners' knowledge and understanding of technology by focusing on digital and non-digital devices, and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks.			
Teacher Subject Knowledge 	You will need an understanding of digital and non-digital devices. The key difference between them is that a digital device is capable of some processing, ie it has functions beyond being either on or off. You will also need to be familiar with the concept of input, process, output (IPO), which underpins all digital devices. You will need to understand that devices can have one input that leads to several outputs (eg starting a video leads to outputs from the screen and the speaker) and that many inputs can lead to one output (eg using a mouse and a keyboard to produce a document). You will need a basic understanding of how information (data) flows around a computer network, and how this benefits us. You will also need to know that a network switch manages the way in which data moves around a network. You will need to be familiar with the main parts of a school network, including the server, wireless access points, network switch, router, and output devices such as a printer or copier.			
Cross Curricular Links	**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]**			
Autumn 2	Programming A - Sequence in Music	• 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	• To build a sequence of commands • To combine commands in a program • To order commands in a program • To create a sequence of commands to produce a given outcome	Sequence instructions Sequence debugging Test + improve Logo commands Sequence programming
Progression 	This unit assumes that learners will have some prior experience of programming; the KS1 NCCE units cover floor robots and ScratchJr. However, experience of other languages or environments may also be useful.			
Teacher Subject Knowledge	This unit focuses on developing learners' understanding of sequences in a new programming language. It highlights that the order of sequences is important. This unit also develops learners' understanding of design in programming, using the approach outlined below. When programming, there are four levels which can help describe a project (known as levels of abstraction). Research suggests that this structure can support learners in understanding how to create a program and how it works:			

	• Task - what is needed • Design - what it should do • Code - how it is done • Running the code - what it does Spending time at the task and design levels before engaging in code-writing can aid learners in assessing the 'do-ability' of their programs. It also reduces a learner's cognitive load during programming.			
Cross Curricular Links 	Maths Science DT			
Spring 1	**Creating Media - Animation**	• 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.	• To use a computer to create an animation • To set up a device to capture stop frame photos • To capture a series of images • To use tools to review subject position • To move a subject between captures • To play a sequence of images back • To remove images to improve an animation • To add sound effects • To add text • To playback and review a film • To export a film	Multimedia Presentations Alignment Brush size Repeats Reflections Green screening Amend Copy Paste Questioning animation
Progression 	This unit progresses students' knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. Following this unit, learners will further develop their video editing skills in Year 5.			

Teacher Subject Knowledge 	Teachers will need to understand that animations are a series of still images stitched together to create a motion video. Animations can be created using on-screen or off-screen (flipbooks) images. Teachers need to understand how to create a simple flipbook (see lesson 1 for support) and how to use software to create an on-screen animation (support is provided in the lessons). Teachers will need to have an understanding of using their chosen software. Within the software, teachers will need to be aware of how to take images, 'onion skinning' (showing a part transparent photo to demonstrate the previous frame to make small movements more consistent), deleting frames and saving.			
Cross Curricular Links 	**Literacy links** • Pupils should be taught to: draft and write by: in narratives, creating settings, characters and plot • Pupils should be taught to: proof-read for spelling and punctuation errors **History** • The Roman Empire and its impact on Britain Education for a Connected World links **Managing online information** • I can use key phrases in search engines. • I can use search technologies effectively. **Copyright and ownership** • I can explain why copying someone else's work from the internet without permission can cause problems. • I can give examples of what those problems might be. • When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it. • I can give some simple examples.			
Spring 1. 2	Creating media - Desktop publishing	• 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	• To show that page orientation can be changed • To add text to a placeholder • To organise text and image placeholders in a page layout • To add and remove images to and from placeholders • To edit text in a placeholder • To move resize and rotate images	Multimedia Presentations Alignment Brush size Repeats Reflections Green screening

		programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information	• To choose fonts and apply effects to text • To review a document	Amend Copy Paste Questioning
Progression 	This unit progresses learners' knowledge and understanding of using digital devices to combine text and images building on work from the following units; Digital Writing Year 1, Digital painting Year 1, and Digital Photography Year 2.			
Teacher Subject Knowledge 	This unit focuses on desktop publishing.			
Cross Curricular Links 	English programmes of study links • Pupils should be taught to 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 Education for a Connected World links **Managing online information**			

	• I can use key phrases in search engines • I can use search technologies effectively **Copyright and ownership** • When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it • I can demonstrate the use of search tools to find and access online content which can be reused by others			
Spring 2	Data and information - branching databases	• 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	• To retrieve information from different levels of the branching database • To create questions with yes/no answers	Database Construct Contribute Recording data Data logger Present data
Progression 	This unit progresses students' knowledge and understanding of presenting information. It builds on their knowledge of data and information from key stage 1. They continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information.			
Teacher Subject Knowledge 	This unit focuses on branching databases. A branching database is a collection of data organised in a tree structure using yes/no or true/false questions. In computer science, these are known as binary trees. In the final lesson of this unit, learners will begin to recognise that information can be presented in different ways. Teachers will need to be familiar with pictograms. A pictogram is a pictorial representation of information, usually used to present numerical data, such as common methods of transport amongst a group of people. Teachers will also need to be familiar with the term attributes. An attribute includes its name and a value. For example, a ball will have a colour which might be red. Colour is the attribute name, red is the attribute value. Learners may be familiar with the term property introduced in Year 1 – 'Grouping data'. Property and attribute are interchangeable; however, property has been used with younger			

	children to make it more accessible. Throughout this unit, learners will use the online database tool j2data. You should be familiar with using the 'Branch' tool. Support with navigating the 'Branch' tool can be found at https://www.j2e.com/help/videos/datags3. Teachers would also benefit from having an understanding of the 'Pictogram' tool. Support with navigating the 'Pictogram' tool can be found at https://www.j2e.com/help/videos/ks1datavideo1.			
Cross Curricular Links 	Maths Science			
Summer 1	Programming B - Events and Actions	• 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	• To build a sequence of commands • To combine commands in a program • To order commands in a program • To create a sequence of commands to produce a given outcome	Sequence instructions Sequence debugging Test + improve Logo commands Sequence programming
Progression	This unit assumes that learners will have some prior experience of programming. The key stage 1 National Centre for Computing Education units focus on floor robots and ScratchJr, however experience of other languages or environments may also be useful. The Year 3 —			

	Programming A unit introduces the Scratch programming environment and the concept of sequences.			
Teacher Subject Knowledge 	This unit focuses on the links between 'events' and 'actions' in programming, while also developing learners' understanding of sequencing. It highlights that events cause actions, and that the order of those actions can have an impact on the outcome of a program. This unit also further develops learners' understanding of design in programming, using the approach outlined below. When programming, there are four levels that help to describe the stages of a project, known as levels of abstraction. Research suggests that this structure can support learners in understanding how to create a program and how it works. • Task — this is what is needed • Design — this is what it should do • Code — this is how it is done • Running the code — this is what it does Spending time at the Task and Design levels before engaging in code writing aids learners in assessing the 'do-ability' of their programs and reduces a learner's cognitive load during programming. Learners will move between the different levels throughout the unit. This is highlighted within each lesson plan. Enhance your subject knowledge to teach this unit through the following training opportunities:			
Cross Curricular Links 	Maths DT Science			
Education for a Connected World (Throughout the	My Online Life Y3 What is your online identity?	• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of	• Explain why we need to keep our password safe. • Recognise that digital content belongs to the person who first	Reputation Online Bullying Copyright Self Image

year)	How can you build positive online relationships and be a good digital citizen? How can I create a positive online reputation? What is online bullying and what can I do about it? Do you really know how to use the internet? Can technology impact on your health? How secure are you with your online information and accounts? Who owns the information on the internet?	ways to report concerns about content and contact.	created it, but we can give permission for others to use it. • Recognise when to share personal information and when not to. - • Recognise that some people lie about who they are online. • Are aware that games and films have age ratings	Identity Trust Risks Profile Password Private Empathy
Key texts 	• Tek • #Goldilocks			