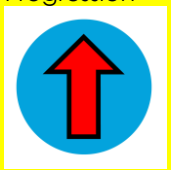
Computing Long Term Plan Hadrian Y2

Y2 Computing	
National Curriculum Objectives KS1	Key Links
By the end of KS1 Pupils should be taught to: • understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	**https://teachcomputing.org/curriculum** **Education for a Connected World links** https://www.knowsleyclcs.org.uk/2018-online-safety-sow/ PW: check emails

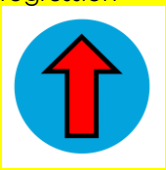
Topics		N.C Objectives	Key skills	Key Vocab
Autumn 1	IT around us	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content • Recognise common uses of information technology beyond school • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• To describe some uses of computers • To identify information technology beyond school • To identify information technology in school • To show how to use information technology safely	Information sources Communication Purposes Website content

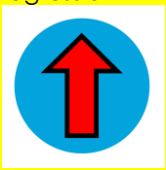
Progression 	This unit progresses learners' understanding of technology and how they interact with it. They will develop this understanding to become familiar with the term information technology and will be able to identify common features of IT. This unit also builds on the learners' understanding of using technology safely and responsibly.			
Teacher Subject Knowledge 	You will need to have a clear understanding of devices that can be described as information technology (IT). For younger learners, IT can be explained as being a computer or something that has been made to work with computers. Examples could include: • Computers: PCs, laptops, tablets • Devices made to work with computers: scanners, barcode scanners, printers., smart speakers You will also need to be aware that as technology continues to develop rapidly, some devices may fit in multiple categories. For example, a multifunction printer has a computer (processor) inside. It can work with a computer or independently. You will need to know where technology can be found in shops and how it can be used. You should also know which devices can work together, for example: • Barcode scanner, till • Bank card, chip and PIN card reader, till • Traffic light, crossing button, crossing signal You can find some useful information and a short video about barcodes at www.waspbarcode.com/buzz/barcode. This unit ties in to key concepts from Education for a Connected World and you should be familiar with this document. You should also be familiar with your schools' online safety policy. You will need to be familiar with the Digital 5 a Day concept. More information on Digital 5 a Day can be found here: www.childrenscommissioner.gov.uk/our-work/digital/5-a-day.			
Cross Curricular Links 	**Education for a Connected World links** **Health, well-being, and lifestyle** I can identify rules that help keep us safe and healthy in and beyond the home when using technology I can give some simple examples I can name my work so that others know it belongs to me			
Autumn 2	Programming A -	• Understand what algorithms are, how	• To choose a series of words	_Forward

	Robot Algorithms	they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	that can be enacted as a sequence • To explain what happens when we change the order of instructions • To choose a series of commands that can be run as a program • To trace a sequence to make a prediction • To test a prediction by running the sequence • To create and debug a program that I have written • To run a program on a device	Backward Right-angle turn Algorithm Sequence Debug Predict
Progression 	In advance of the lessons in this Year 2 unit, pupils should have had some experience of creating short programs and predicting the outcome of a simple program. This unit progresses students' knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Pupils will spend time looking at how the order of commands affects outcomes. Pupils will use this knowledge and logical reasoning to trace programs and predict outcomes.			
Teacher Subject Knowledge 	This unit focuses on developing pupils' understanding of computer programming. It highlights that algorithms are a set of clear, precise, and ordered instructions, and that a computer program is the implementation of an algorithm on a digital device. The unit also introduces reading 'code' to predict what a program will do. Pupils will engage in aspects of program design, including outlining the project task and creating algorithms. When programming, there are four levels that can help describe a project, known as 'levels of abstraction'. Research suggests that this structure can support pupils 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 writing code aids pupils in assessing the achievability of their programs and reduces the cognitive load for pupils during programming. Pupils will move between the different levels throughout the unit, and this is highlighted within each lesson plan.			

Cross Curricular Links 	Maths Science DT			
Spring 1	Creating Media - Digital Photography Creating Media - Making Music	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content • Recognise common uses of information technology beyond school • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• To know what to press or tap to take a picture • To know how to hold a device safely and responsibly • To capture a digital image • To focus • To zoom in and out • To review photographs taken • To delete poor quality images • To edit a photo • To recolour a photo • To crop a photo • To recognise that information on a computer can be stored • To recognise that people around me can view my screen to see my work	Paint effects Templates Animation Documents Index finger typing Enter/return Caps lock Backspace Data Capturing moments Magnified images Questions
Progression 	This unit begins the learners' understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4. Learners should have experience of making choices on a tablet/computer, and they should be able to navigate within an application. Learners should also have some experience of patterns. This unit progresses students' knowledge through listening to music and considering how music can affect how we think and feel. Learners will then purposefully create rhythm patterns and music.			
Teacher Subject Knowledge	You should be familiar with the basic principles of photography, including composition, framing, lighting, and how to reduce blur.			

	Lesson 5 uses an online photo editing tool, Pixlr, and knowledge of using photo editing software to apply filters to images is required to use this effectively; you should also be familiar with saving and downloading images.			
Cross Curricular Links 	**Art and design** • To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space **Education for a Connected World links** • To identify that some images are not real (fake) **Music national curriculum links** • Play tuned and untuned instruments musically • Listen with concentration and understanding to a range of high-quality live and recorded music • Experiment with, create, select and combine sounds using the inter-related dimensions of music **Education for a Connected World links** **Copyright and ownership** • I know that work I create belongs to me.			
Spring 2	Data and information - Pictograms	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or	• To show I can enter data onto a computer • To recognise that people, animals and objects can be described by attributes • To use a computer to view data in different formats • To use pictograms to answer single-attribute questions • To use a computer to answer comparison questions (graphs, tables)	Pictogram Digitally collection Graphs Charts Save Retrieve

		other online technologies	•	
Progression 	This unit progresses students' knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to structure data according to different object attributes.			
Teacher Subject Knowledge 	This unit builds on prior learning from the Year 1 unit 'Grouping data'. Teachers should understand how tally charts and pictograms are created, and the benefits of organising data in those formats. These different formats allow data to be presented in different ways and will suit different purposes.. Teachers will need to understand how people, animals and objects can be described using different attributes.			
Cross Curricular Links 	**Maths** Building on Year 1 number and place value: • Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: 'equal to', 'more than', 'less than' ('fewer'), 'most', 'least' Year 2 • interpret and construct simple pictograms, tally charts, block diagrams and simple tables • ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • ask and answer questions about totalling and comparing categorical data Notes and guidance: Pupils record, interpret, collate, organise and compare information (for example, using many-to-one correspondence in pictograms with simple ratios 2, 5, 10). **Education for a Connected World links** **Self image and identity** • I can recognise that I can say 'no'/'please stop'/'I'll tell'/'I'll ask' to somebody who asks me to do something that makes me feel sad, embarrassed or upset • I can explain how this could be either in real life or online • If something happens that makes me feel sad, worried, uncomfortable, or frightened I can give examples of when and how			

	to speak to an adult I can trust **Health, wellbeing and lifestyle** • I can identify rules that help keep us safe and healthy in and beyond the home when using technology • I can give some simple examples **Privacy and security** • I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location) • I can describe the people I can trust and can share this with; I can explain why I can trust them • I can recognise more detailed examples of information that is personal to me (e.g. where I live, my family's names, where I go to school)			
Summer 1	Programming B - An introduction to quizzes	• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs	• To choose a series of words that can be enacted as a sequence • To explain what happens when we change the order of instructions • To choose a series of commands that can be run as a program • To trace a sequence to make a prediction • To test a prediction by running the sequence • To create and debug a program that I have written • To run a program on a device	Forward Backward Right-angle turn Algorithm Sequence Debug Predict Quiz
Progression 	This unit progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.			
Teacher Subject Knowledge	This unit focuses on developing learners' understanding of computer programming. It highlights that algorithms are a set of clear, precise, and ordered instructions, and that a computer program is the implementation of an algorithm on a digital device. The unit also introduces reading 'code' to predict what a program will do. Learners will engage in aspects of program design, including outlining the project task and creating algorithms.			

	When programming, there are four levels that 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 aids learners in assessing the achievability of their programs, and reduces a learner's cognitive load during programming.			
Cross Curricular Links 	Maths DT Science			
Education for a Connected World (Throughout the year)	My Online Life Y2 Self Image and Identity Can you trust everyone you meet online? Online Relationships How do you use the internet to communicate? Online Reputation Do you always think before you post or comment online? Online Bullying Do you understand the terms online bullying and the consequences of it? Managing Online	Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• To show how to use technology safely	Reputation Online Bullying Copyright Self Image Identity Trust Risks Profile Password Private Empathy

	information Can you believe everything you read online? Health, Wellbeing and Lifestyle How should I behave online? Privacy and Security How can we make our online lives secure Copyright and Ownership Who owns the information on the internet?			
Key texts 	Hello Ruby Collection Penguin Pig Look inside how computers work			