Computing in Key Stage 1

National Curriculum Learning Objective:	How we do this in **Year 1...**	How we do this in **Year 2...**	Vocabulary	Apps/Software	Notes and links to videos
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Children will be introduced to algorithms, ensuring an understanding of the definition and why they are important. We will do this by: • Activity, IE Sandwich Bot, to reinforce a secure understanding of algorithms. • Building on this understanding to input instructions into a device for a specific aim. With the knowledge of what an algorithm is, Y1 children can use bee-bots, sphero – class teachers to ensure they have a specific aim. Examples: "Program the bee-bot/sphero to navigate around the obstacles." "Program the bee-bot/	Building on knowledge of Y1 to make us more able and able to create complex algorithms. We will do this by: • Refamiliarize children with algorithms by revisiting activities (See Y1 column for guidance). • Using Scratch Jr and Spheros to build on knowledge and increase skills eg: Children are to create algorithms, moving towards a complex completion of a quiz through Scratch. Children to create their own musical algorithm. Class teacher to direct to ensure algorithm has been made successfully – IE	**Year 1** Algorithms, program, digital, Sequencing, computer science. **Year 2** Algorithms, complex, speak , move,	Year 1 Beebot software Scratch Jr Spheros Year 2 Beebot software Spheros Chrome Music Lab	This strand is all about the children thinking 'computationally', and we need to encourage them to do so in everyday contexts. Children will have a more secure understanding of algorithms if they can relate to their own life, for example: • Cake recipe • How to draw a square • How to get changed • Directions to hidden treasure • How to build a paper plane • How to make a Sandwich It is also essential to enable the children to think about debugging in this context. Teacher is to not complete the action on purpose, giving the children time to go back and debug their algorithm. Links to watch to support your teaching:

	sphero to reach the X" CRM he/she can create simple programs – Computer Science He/she can create a series of instructions. – Computer Science	giving a specific order of instruments. CRM he/she can understand what algorithms are and how they are implemented as programs on digital devices – Computer Science he/she can understand that programmes execute by following precise and unambiguous instructions - Computer Science			BBC what is Coding BBC What is an algorithm?
Create and debug simple programs	Children will build on their knowledge of algorithms and be introduced to debugging. Children need to understand that all algorithms can go wrong and the process of rectifying the mistake is called debugging. • Sandwich Bot – Teacher to ensure they are pedantic with movements and follow children's instructions literally. Class teacher to ensure time is allocated to the process of debugging.	With a strengthened understanding of algorithms, children will know the importance of there being no mistakes in order for the sequence to fun smoothly. Children will have the opportunity to build on their debugging capabilities. • Children will have the opportunity to debug and revisit algorithms as they are completing activities (see year 1 column for guidance).	**Year 1** Debug, algorithm, conditional language, sequence, sprite, instructions, blocks, **Year 2**	**Year 1** Beebot software Lego Builders Scracth Jr **Year 2** Beebot software Spheros Scratch Jr	Debugging is a computing skill that is synonymous with algorithms. Children need to be encouraged to be persistent and resilient when debugging their algorithms. Debugging can be applied to real life context (See above for ideas) – ensure with every algorithm activity, unplugged or software, children discuss debugging. Debugging enables great discussion. Encourage children to

	• Bee-Bots. Class teacher is stop children when the bee-bot/sphero has not gone to the desired place and ignite discussion. Possible questions: "Why has the beebot/ sphero bumped into the blocks?" "What do we need to do to ensure the beebot/ sphero doesn't hit the blocks again?" "Why? How do you know?" Similar to how we push for reasoning skills in maths, ensure the same is applied in computing. CRM he/she can create simple programs – Computer Science He/she can create a series of instructions. – Computer Science	• Children will have the opportunity to debug their algorithm activities on Scratch, including CRM he/she can debug simple programs - Computer Science			verbalise their opinion on why their algorithm hasn't worked – ignite strong, computing vocabulary during the lesson. Ensure we ask 'why did it not work?' 'Can you explain further?'. TAs can play a crucial part in supporting how the children reflect on how effective their programming has been. Links to support teaching: BBC What are computing bugs?
use logical reasoning to predict the behaviour of simple programs	Children now have a good level of knowledge of algorithms and debugging and have had the opportunity to consolidate understanding both unplugged and online. Teaching staff are to encourage children to predict the outcome	As children's algorithm and debugging knowledge increases, their logical reasoning should too. Before any programming begins, teaching staff should have the children explain what they think will need to be done in terms of programming.	**Year 1** Algorithm, debugging, conditional language, logical reasoning, programming, instruct, programme	**Year 1** Beebot software Scratch Jr **Year 2** Beebot software Scratch Jr	Every activity, whether unplugged or online, can begin with an element of prediction. With the children's answers, children should be encouraged to use computing vocabulary. In Y2 this could be more formally

	of programs, using logical reasoning and prior knowledge of successful and unsuccessful algorithms. • ~Do you think this will work? What makes you think that? What would we need to change to make it work?" CRM he/she can create simple programs – Computer Science He/she can create a series of instructions – Computer Science	Children are to explain why, using logical reasoning. CRM he/she can use logical reasoning to predict the behaviour of simple programs - Computer Science			recorded in a simple word processing document • What we think will happen? • What actually happened al? • Changes we made to improve things BBC Programming Robots to Play football
use technology purposefully to create, organise, store, manipulate and retrieve digital content	KS1 children are to use their cohort tablets to take photograms themselves, and learn how to manipulate and organise the digital content by: • Using iPad photo app to create albums. Class teacher to ensure children have the opportunity to go back and find the album at a later date (manipulate). • Use pic collage apps to organise their photos in a certain way (organise). • Apply a photo to a piece of	Y2 will build on skills instilled in children from Y1, including using cohort tablets and the camera app. Children will increase their ability by: • Creating and manipulating pictures to include simple voice clips. • Cropping photos and screenshots effectively and for a purpose (manipulate). • Using video, in addition to photos. • Organising photos into	**Year 1** e-book, album, create, collage, organise, store, save, retrieve **Year 2** manipulate, crop, screen shot, video, organise, sort, multi-media, presentation,	**Year 1** iPad camera app. iPad collage paintz.app **Year 2** iPad camera and app paintz.app pixir.com	Children should be given the opportunity to become accustomed with a camera (KS1 – iPads) and be taught how to use it. Create – Taking photos, making documents (leaflets) with own digital content. Organise – arranging photos into categories (see column for guidance). Store – saving their own work and photos. Manipulate – being able to arrange photos and digital content into

	text, possibly linked to topic work – IE reports or non-chronological reports (retrieve). Children will also have the opportunity to develop this skill further during computing lessons. • Grouping and Sorting. Children are to group and sort text and photos into certain categories. • Multimedia presentation – children have the opportunity to complete a presentation based on their topic. This is a chance to assess topic knowledge, as well as testing computing skills and fluency. CRM he/she can use technology purposefully to create, organise and store digital content Information Technology He/she can find and use websites to help them Information Technology He/she can find and open files and digital technology. Information Technology	categories (organise). Children will also have the opportunity to develop other skills: • Children will have the opportunity of sorting and organising data into categories and graphs. • Children will be able to use search engines to retrieve data and make a leaflet. • Multimedia presentation - children have the opportunity to complete a presentation based on their topic. CRM he/she can use technology purposefully to retrieve and manipulate digital content – Information Technology		collages. Retrieve digital content – retrieving saved work. Topic work can be linked well to this LO. Regardless of the topic, children can create reports, reports, post-cards and use digital content within it.

Recognise common uses of information technology beyond school	Children are to understand what is meant by technology and what technology is used outside of school – children can be encouraged to think of personal and wider community. • Children to be able to record four different types of technology, drawing upon previous taught skill of retrieving and manipulating digital content. CRM he/she can use technology safely and respectfully Digital Literacy He/she can find and open files and digital technology. Digital Literacy	Children are to understand what is meant by technology and what technology is used outside of school – children can be encouraged to think of personal and wider community. Children to be able to record six different types of technology, drawing upon previous taught skill of retrieving and manipulating digital content. CRM he/she can use technology purposefully to retrieve and manipulate digital content - Information Technology he/she can describe common uses of information technology beyond school – Digital Literacy	Y1: Paintz.app Y2: Paintz.app	E-Safety can be linked into this LO. Creating a discussion around technology inside the school, wider community and at home. Do the children realise what is technology and what isn't? Xbox game and a board game? BBC How computer data is stored BBC what is the internet? Creating a technology eBook that is an ongoing project will allow for exploring and explaining different uses of technology.
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when	Each unit begins with Internet Safety – this will act as a refresher. Every first computing lesson of a half term will also act as a refresher for the term ahead. Our children will be internet safe by: • Internet Safety assembly. • Pupil interviews and surveys.	Each unit begins with Internet Safety – this will act as a refresher. Every first computing lesson of a half term will also act as a refresher for the term ahead. Our children will be internet safe by: • Internet Safety assembly. • Pupil interviews and surveys.	Y1: NCCE online safety Y2: NCCE Online safety	Internet Safety is a big focus. The first unit of work every year is internet safety. The 4 lessons are essential and will remind the children of the importance after the summer holiday. Each new unit will also begin with a small focus on internet safety. Internet safety is not to be taught only as stand alone, it

they have concerns about content or contact on the internet or other online technologies.	Internet Safety will also link to PSHE and general classroom rules. Children to be encouraged to be kind online and safe. Continually reinforcing the SMART rules. CRM he/she can use technology safely and respectfully Digital Literacy	Internet Safety will also link to PSHE and general classroom rules. Children to be encouraged to be kind online and safe. Continually reinforcing the SMART rules. Y2 there will be a focus on questioning the content that they see online and how to keep their personal information safe. CRM he/she keeps personal information private when using technology - Digital Literacy he/she knows they should ask for help if they feel unsure about any online content or contact and who to ask - Digital Literacy			should be an ongoing focus and class teachers should look out for learning opportunities within lessons. IE: Mini plenaries – stopping the children and asking what the best thing child x could do in this situation, and why. Any concerns should be raised immediately.