

**Clifford Road Primary
Long Term Computing Planning**

Term 1 Year 1 Computing	Term 2 Year 1 Computing	Term 3 Year 1 Computing
<u>Improving mouse skills</u> The children will learn: - to log in to a computer and access a website - to develop mouse skills - to use mouse skills to draw and manipulate shapes - to use a range of tools to create desired effects - to understand how to layer shapes to create an image - to use and understand the terms and definitions of: account, clipart, computer, log on/off, password, resize, screen (monitor), software, tools, username. <u>Algorithms unplugged</u> The children will learn: - to understand what an algorithm is - to follow instructions precisely to carry out an action - to understand that computers and devices around us use inputs and outputs - to understand and be able to explain what decomposition is - to know how to debug an algorithm - to use and understand the terms and definitions of: algorithm, bug, computer, debug, decompose, device, input, instructions, output, solution. <u>Online safety lesson 1 and 2</u> The children will learn: - to know what the internet is and how to use it safely - to understand different feelings when using the internet - to use and understand the terms and definitions of: respect, online, communicate, kind, unkind, internet, internet safety, online safety, devices, instructions, connection, predict.	<u>Programming Bee-bots</u> The children will learn: - to explore a new device - to create a demonstration video - to plan and follow a set of instructions precisely - to program a device - to create a program - to use and understand the terms and definitions of: bee-bot, algorithm, code, instructions, controller, judge, explain, explore, destination, mat, inputting, mistake, programming, debug <u>Online safety</u> The children will learn: - to understand how to treat others, both online and in-person - to understand the importance of being careful about what we post and share online - to use and understand the terms and definitions of: internet, connection, predict, respect, online safety, kind, digital footprint, respect	<u>Digital imagery</u> The children will learn: - to understand and create a sequence of pictures - to take clear photos - to edit photos - to search for and import images - to create a photo collage - to use and understand the terms and definitions of: crop, delete, download, drag and drop, editing software, image, import, resize, save as, search engine, sequence, smart device, storage space, visual effects. <u>Introduction to data</u> The children will learn: - to represent data in different ways - to use technology to represent data in different ways - to collect and record data - to sort data - to design an invention to gather data - to use and understand the terms and definitions of: categorise, chart, data, information, label, pictogram, record, sort, table, text.
Learning questions Improving mouse skills How do you log in to a computer and use the mouse and keyboard? How do I create different effects to a piece of artwork? What are the drag and drop techniques? What tools are available to make my artwork more effective? Which tools could be used to draw each facial feature on a portrait? Algorithms unplugged What is an algorithm? Why do they need to be precise and why is the order important? What are inputs and outputs? Where might input and output devices be found? What is decomposition? What is debugging? Online safety What is the internet? What can you do online? How might using the internet affect my mood or emotions?	Learning questions Programming Bee-bots What can buttons on a bee-bot do? What happened when you pressed given buttons? Which are necessary in a sequence of instructions? Can you correct instructions which do not work? What is the most efficient route to get your bee-bot to a specific destination? Online safety How might internet use upset others? Which information is appropriate to share and post online and which information is not?	Learning questions Digital imagery What is sequencing? Why is it important? How do I take a clear photo? What creates a blurred photo? What happens when you zoom in? In what ways can I edit a photo effectively? How do I search and import images? What do I do if I see something online that I don't like? How do I create a photo collage? Introduction to data What does data mean? In what ways can data be represented visually? How can data be collected and recorded? Can data be sorted? What is a branching database?
Key skills and knowledge - Recognising common uses of information technology. - Logging in and saving work on their own account. - Knowing what to do if they have concerns about content or contact online. - Understanding of how to create digital art using an online paint tool. - Learning to locate where keys are on the keyboard. - Developing basic mouse skills. - Understanding how to create algorithms. - Learning that computers need information to be presented in a simple and clear way. - Understanding how to break a computational thinking problem into smaller parts in order to solve it. - Understanding that they need to be kind on the internet, as they would in real life. - Discovering which devices connect to the internet. - Understanding some tips for staying safe and why this is important.	Key skills and knowledge - Learning how to explore and tinker with hardware to find out how it works. - Constructing a series of instructions into a simple algorithm. - Applying computing concepts to real world situation in an unplugged activity. - Understanding some tips for staying safe and why this is important. - Understanding the need to be kind on the internet, as they would in real life.	Key skills and knowledge - Using technology purposefully to create, organise, store, manipulate and retrieve digital content. - Knowing what to do if they have concerns about content or contact online. - Using cameras to take photos. - Using logical reasoning to predict the behaviour of simple programs.
Text 	Text 	Text
Retrieval Children have looked at 'Childnet - Smartie the Penguin' in EYFS for e-safety. Children have prior knowledge of using a mouse or a trackpad when making choices on the screen. They will be familiar with the space bar and arrow keys. In Reception the children have used bee-bots and so will be familiar with this programming device. Some children may have used a remote control toy.	Retrieval Some children may have played simple games which involve directions around a board or screen. In Reception the children have used bee-bots and so will be familiar with this programming device. Some children may understand positional language linked to instructions e.g., forward, turn, half, backwards. Children have looked at 'Childnet - Smartie the Penguin' in EYFS for e-safety.	Retrieval Children have used an Ipad in EYFS to take photos. They have made choices on a screen. Some children may have sorted objects into groups in Maths and so begin to have an awareness of what data can be collected.
People/events/places Wassily Kandinsky	People/events/places	People/events/places

Term 1 Year 2 Computing	Term 2 Year 2 Computing	Term 3 Year 2 Computing
<u>Digital photography</u> The children will learn: - to make choices when taking a photograph - to describe what makes a good photograph - to decide how photographs can be improved - to use tools to change an image - to recognise that photos can be changed - to use and understand the terms and definitions of: landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format. <u>What is a computer?</u> The children will learn: - to recognise the parts of a computer - to recognise how technology is controlled - to recognise technology - to create a design for an invention - to understand the role of computers - to use and understand the terms and definitions of: battery, buttons, computer, desktop, device, electricity, invention, laptop, technology, wire, peripheral. <u>Online safety</u> The children will learn: - what happens to information posted online - to know how to keep things safe and private online - to use and understand the terms and definitions of: offline, online, information, private, safe, trusted adult.	<u>Information technology</u> The children will learn: - to touch type - to copy and paste photos from the internet - to create a document with words and pictures - to use and understand the terms and definitions of: keyboard, space bar, touch typing, delete, backspace, copy, paste, import, highlight, undo, redo, bold, italics, underline <u>Algorithms and debugging</u> The children will learn: - to decompose a game to predict the algorithms that are used - to understand that computers can use algorithms to make predictions - to plan algorithms that will solve problems - to use and understand the terms and definitions of: algorithm, decomposition, data, loops <u>Online safety</u> The children will learn: - to explain what should be done before sharing information online - to explain why I have the right to say no and deny permission - to use and understand the terms and definitions of: content, permission, share, pressure, trusted adult, accepting, content, private information	<u>Programming Scratchjr</u> The children will learn: - to explore a new animation - to create an animation - to use characters as buttons - to follow an algorithm - to plan and use code to create an algorithm - to use and understand the terms and definitions of: animation, bug, code, debug, imitate, instructions, sequence. <u>Stop motion</u> The children will learn: - to understand what animation is - to understand what stop motion animation is - to add effects to my stop motion - to create a stop motion animation - to use and understand the terms and definitions of: animator, stop-motion, still image, moving image, frames, flip-book, pen tool, onion skinning, debug. <u>Online safety</u> The children will learn: - some strategies that will help them to decide if something they see online is true or not - to use and understand the terms and definitions of: reliable, edit, pop ups, images.
Learning questions Digital photography Can a photograph be taken landscape or portrait? Which is better? What makes a good photograph? How can photographs be improved? What tools can be used to change an image? What is a computer? Can you name different peripherals and explain the functions of each of the parts? How do we know technology is doing what we want it to? What different forms of technology are there? What does the technology do and why is it classed as 'technology'? What is input and output? How is technology used in the real world? Online safety What is meant by online information? What information is safe to be shared online? Why do we need strong passwords? How can we make things private online?	Learning questions Information technology Where are the home row keys? How do I use the spacebar and backspace correctly? How do I make simple alterations to text using buttons on a word processor? How can an image be altered or imported into a document? Algorithms and debugging What is an algorithm? What is meant by decomposition? Why do algorithms need to be clear and precise? What is a loop? How can the use of a loop make the code more efficient? Online safety Why is it important to ask permission before sharing content online? Why is it important to ask a trusted adult before clicking 'accept'?	Learning questions Programming Scratchjr What did the blocks in your code do? What do the different colours of the blocks mean? What is a loop and why is it useful? Why is sequencing important? How can algorithms help us when we're programming? Stop motion What is animation? What is stop motion animation and how do you create one? What is 'onion skinning' and how does this help animators? What is a frame? How do you add/create effects to a stop motion? Online safety How can I check the reliability of information I find online? Why might people post false information online?
Key skills and knowledge - Learning about inputs and outputs and how they are used in algorithms. - Understanding what a computer is and the role of individual components. - Identifying how to keep personal information private. - Use technology purposefully to create, organise, store, manipulate and retrieve digital content. - Recognise common uses of information technology beyond school.	Key skills and knowledge - Using word processing software to type and reformat text. - Using technology respectfully by asking for permission before sharing about others online. - Creating and debugging simple programs. - Using logical reasoning to predict the behaviour of simple programs. - Understanding what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	Key skills and knowledge - Creating and debugging simple programs. - Using logical reasoning to predict the behaviour of simple programs. - Understanding what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. - Using technology purposefully to create, organise, store, manipulate and retrieve digital content.
Text	Text	Text
Retrieval Children will be familiar with taking digital photos on a camera and what a 'good image' means from year 1 digital imagery. They will understand the language of portrait and landscape from Art. Some children may know of names of technology from their home use e.g. tablet as well as devices seen in school. Online safety – links to PSHE Jigsaw and built on from year 1.	Retrieval The children have experienced using a Bee-bot in year 1 and will be familiar with inputting commands to create a desired effect. Within the unit on digital imagery in year 1, the children learnt to import and find pictures. Children will be building on their knowledge of e-safety from year 1.	Retrieval Children will be familiar with algorithm from year 1 and ensuring instructions are precise and in the correct order. They have previously used a bee-bot and now progress to Scratchjr. Some children may have seen animations on TV programmes for example and so will be curious to discover how these are created. Children will be building on their knowledge of e-safety from year 1.
People/events/places	People/events/places	People/events/places

Term 1 Year 3 Computing	Term 2 Year 3 Computing	Term 3 Year 3 Computing
Desktop publishing The children will learn: - to recognise how text and images convey information - to recognise that text and layout can be edited - to choose appropriate page settings - to add content to a desktop publishing publication - to consider how different layouts can suit different purposes - to consider the benefits of desktop publishing - to use and understand the terms and definitions of: text, images, advantages, disadvantages, communicate, font, font style, communicate, template, landscape, portrait, orientation, placeholder, content, Desktop publishing, copy, paste, layout, purpose, benefits. Networks and the internet The children will learn: - to understand what a network is and understand our school network - to understand how information moves around a network and begin to recognise real world networks - to understand how the Internet works and explain a website's journey - to explore the role of routers - to understand the role of packets - to use and understand the terms and definitions of: device, file, internet, network, network map, network switch, router, server, submarine cables, the cloud, wi-fi/wired/wireless, wireless access point Online safety The children will learn: - to understand how the internet can be used to share beliefs, opinions and facts - to understand the effects that some internet use can have on our feelings and emotional wellbeing - to use and understand the terms and definitions of: fact, opinion, belief, internet, search engine, reliability, accuracy, content, device, block and report, privacy settings.	Programming: Scratch The children will learn: - to explore a programming application - to use repetition (a loop) in a program - to program an animation - to program a story - to program a game - to use and understand the terms and definitions of: animation, sprite, application, tinkler, code, code block, debug, decompose, interface, loop, predict, repetition, review Emailing The children will learn: - to understand what email is used for and to send an email - to edit email content and send an attachment - to understand the importance of being kind online and what this looks like - to understand that cyberbullying involves being unkind online - to understand that not all emails are genuine - to use and understand the terms and definitions of: account, password, cyberbullying, spam, attachment, BCC, CC, domain	Comparison cards databases The children will learn: - to understand the terminology around databases - to compare paper and computerised database - to sort, filter and interpret data - to represent data in different ways - to sort data for a purpose - to use and understand the terms and definitions of: categorise, data, database, fields, filter, graphs and charts, information, record, sort, spreadsheet. Video trailers The children will learn: - to plan a book trailer - to take photos or videos to tell a story - to edit a video - to add text and transitions to a video - to evaluate video editing - to use and understand the terms and definitions of: application, voice, desktop, voiceover, digital device, edit, film, film editing software, graphics, import, recording, sound effects, time code. Online safety The children will learn: - to understand the ways personal information can be shared on the internet - to understand the rules for social media platforms - to use and understand the terms and definitions of: social media platforms, age restrictions, digital devices, search functionality, smart devices, autocomplete.
Learning questions Desktop publishing How do text and images convey information? What are the advantages and disadvantages of both? How can text and the layout of a document be edited? What do the terms 'templates', 'orientation' and 'placeholders' mean? How do you add content to a template? What are the different layouts and how can they suit different purposes? What are the benefits of desktop publishing? Networks and the internet Why are networks used? Why are they used for? What examples of real-life networks are there? What problems might occur in a network and how are these dealt with? How are networks connected to the internet? What is a website? What is a router? What do they have to do? How could websites load more quickly? What are packets? Online safety What is fake news? How do I check to see whether a source of information is reliable? What are the key tips for dealing with upsetting online content?	Learning questions Programming: Scratch What happens when certain blocks are added to the code? What is a loop? What does it do? Why would we want to use a loop? How do different blocks create specific effects? Why is it important to choose appropriate blocks? How do I debug my coding? What does 'decompose' and 'algorithm' mean? Emailing What is an email and why do we use them? What type of file would be useful to attach to an email? Why is it important to be kind online? In what ways can we deal with cyberbullying? How can you tell if an email is real or fake?	Learning questions Comparison cards databases What is meant by field, record and data? What are the advantages and disadvantages of computerised and paper databases? How can you sort the data so that you can quickly find what you are looking for? Why might you need to filter results? What are the advantages and disadvantages of creating graphs and charts? Why are online databases useful? Video trailers What does 'abstraction' mean? What effects can be created by different frame shots? How can a video be edited? What are transitions in films and how can these be incorporated in a video? What makes a successful video? Online safety What digital devices can be used to share personal information amongst each other? How do devices communicate with the internet to provide information and data? How can we protect ourselves and our personal information on social media platforms?
Key skills and knowledge - 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. - Identifying network components and understand how they are used to connect to the internet and how data is transferred. - Understanding 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. - Learn to distinguish between facts, opinions, and beliefs on the internet. - Learn how to deal with upsetting online content.	Key skills and knowledge - Using logical reasoning to explain how simple algorithms work. - Designing, writing and debugging programs that accomplish specific goals, including controlling or simulating physical systems. - Solving problems by decomposing them into smaller parts. - Using sequence, selection, and repetition in programs. - Working with variables and various forms of input and output. - Learn about cyberbullying and fake emails. - Understanding the purpose of emails.	Key skills and knowledge - Using technology purposefully to create, organise, store, manipulate and retrieve digital content, including searching for relevant information. - Learn about how to be discerning about what information we share and who with.
Text	Text 	Text
Retrieval Desktop publishing progresses children's knowledge and understanding of using digital devices to combine text and images building on work from year 2 term 1 unit on digital photography as well as year 1 term 3 unit digital imagery. Children will have saved work to the shared area on the network. Children are aware of the term 'internet'. Children will be building on their knowledge of e-safety from KS1.	Retrieval Building on the use of the 'ScratchJr' application in year 2, children will be familiar with blocks and creating a simple algorithm. Children have used Google classroom before during lockdown and understand the importance of keeping safe online. Children will have the skills to use the @ symbol when typing their email address.	Retrieval Children will be familiar with the terms 'graphs' and 'charts' from Maths. They will be building on their experiences of sorting data from year 1 term 3 introduction to data. Video trailers is expanding children's knowledge from year 1 term 3 digital imagery as well as year 2 term 3 stop motion unit, particularly with filming and editing. Children will be building on their knowledge of e-safety from KS1. PSHE Jigsaw links
People/events/places	People/events/places Tim Berners-Lee	People/events/places

Term 1 Year 4 Computing	Term 2 Year 4 Computing	Term 3 Year 4 Computing
Photo editing (links with Art) The children will learn to: • explain that digital images can be changed • change the composition of an image • describe how images can be changed for different uses • make good choices when selecting different tools • recognise that not all images are real • evaluate how changes can improve an image • use and understand the terms and definitions of: image, edit, arrange, select, digital, crop, undo, copyright, composition, pixels, rotate, flip, adjustments, effects, retouch, clone, magic wand, adjust, sharpen, brighten, fake, real, background, publication Data handling - Investigating weather (links with Geography) The children will learn to: • log data taken from online sources within a spreadsheet • design a weather station • design an automated machine to respond to sensor data • understand how weather forecasts are made • use green screen technology in a video to present a weather forecast • use and understand the terms and definitions of: algorithm, temperature, automated machine, calculate, device, log data, sensor, source, spreadsheet. Online safety The children will learn to: • describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy • describe some of the methods used to encourage people to buy things online • explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true • use and understand the terms and definitions of: search results, fact, opinion, belief, reliability, sponsored, influencer, reliable, snippets, accuracy.	Collaborative Learning: Google The children will learn: • to understand that software can be used collaboratively online to work as a team • to understand how to contribute to someone else's work effectively • to understand how to create effective presentations • to understand how to create and share Google Forms • to understand how to use a shared spreadsheet to explore data • to use and understand the terms and definitions of: software, collaborative, online, teamwork, email account, document, link, edit, spreadsheet, presentation, share, icon Data Logging (links with Science sound) The children will learn: • to explain that data gathered over time can be used to answer questions • to use a digital device to collect data automatically • to explain that a data logger collects 'data points' from sensors over time • to use data collected over a long duration to find information • to identify the data needed to answer questions • to use collected data to answer questions • to use and understand the terms and definitions of: data, table, input device, sensor, data logger, data point, interval, analyse, import, export, collection, review, conclusion.	Further coding with Scratch The children will learn: • to recall the key features of Scratch • to understand how a Scratch game works by using decomposition to identify key features • to understand what a variable is and how to make one • to understand how to make a variable in Scratch • to use knowledge of how variables work to create a quiz • to use and understand the terms and definitions of: code, code block, conditional statement, decompose, direction, feature, icon, orientation, position, program, project, variable. Computational thinking The children will learn: • to use and understand the terms and definitions of: abstraction, algorithm, design, code, code blocks, decompose. • to understand that computational thinking is made up of four key strands • to understand what decomposition is and how to apply it to solve problems • to understand what pattern recognition and abstraction means • to understand how to create an algorithm and what it can be used for • to combine computational thinking skills to solve a problem Online safety The children will learn: • to explain that technology can be designed to act like or impersonate living things • to explain how technology can be a distraction and identify when I might need to limit the amount of time spent using technology • to use and understand the terms and definitions of: distractions, screen time, bot, chatbot, risks, advantages, implications.
Learning questions Photo editing How can digital images be changed? What is a composite image and how can one be created? Why might images be changed? What is a 'retouched' image? What are the advantages and disadvantages of this? What is a 'fake' image and how can one be recognised? What makes a successful publication? Data handling - Investigating weather How can I use the web to search for accurate data? How do I gather and record sensor data? How can selection be used to respond to sensor data? How is weather predicted? Which forecasts are the most accurate? How does green screen work when presenting forecasts? Online safety Why do search engines offer different search results? What methods are used to persuade people to buy online? What is the difference between fact, opinion and belief and how can I check the reliability of a statement online?	Learning questions Collaborative Learning: Google Why is it important to be thoughtful when working on a collaborative document? How can comments and suggestions make it easier to collaborate on a document? How can transitions and animations make a presentation more interesting? How do you create a Google Form? How do you export data to a spreadsheet? What features are available on Google Spreadsheets? Data Logging What data can be collected? In what ways can data gathered over time be useful? How can data be collected automatically using a data logger? How changeable will the data collected be? How can data be analysed? What questions can be answered using tools within the data logger software?	Learning questions Further coding with Scratch How do you create a script in Scratch? How do you change a Sprite and stop it from rotating? What actions make a quiz game work? What is a variable? Why might we need 'variables' in a program, such as Scratch? How can a variable be used to record a score? Computational thinking What are the core strands of computational thinking? What do different code blocks do? What is pattern recognition and abstraction? How can computational skills be used to solve a problem? Online safety What is a bot? Can you give examples of different bots? What are the positive and negative distractions of using technology? What strategies can we use to reduce the amount of time spent on technology?
Key skills and knowledge • Be discerning in evaluating content by learning about the techniques that companies use to advertise online. • Use technology safely and responsibly by considering the risks of screen-time and technology. • Using search technologies effectively, appreciating how results are selected and ranked. • Understanding why some sources are more trustworthy than others. • Understanding the role of inputs and outputs in computerised devices. • 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.	Key skills and knowledge • Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals and presenting data and information. • Understanding opportunities offered by the World Wide Web for communication and collaboration. • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	Key skills and knowledge • Using logical reasoning to explain how simple algorithms work. • Designing, writing and debugging programs that accomplish specific goals, including controlling or simulating physical systems. • Solving problems by decomposing them into smaller parts. Using sequence, selection and repetition in programs. • Working with variables and various forms of input and output. • Understand what decomposition is and how it facilitates problem solving. • Understand abstraction and patterns recognition. • Use technology safely and responsibly by considering the risks of screen-time and technology.
Text	Text 	Text
Retrieval Photo editing skills will build on year 2 term 1 unit on digital photography where children will have developed an understanding of how photos are captured and how they can be manipulated for different purposes. Children will have had experience of making choices on a computer. They should be able to navigate within an application. Children are aware of the term 'spreadsheet' from year 3 term 3 comparison cards databases. Children will be furthering their knowledge of e-safety from year 3.	Retrieval The children have a good understanding of Google classrooms and are familiar with logging in to their Gmail accounts. The children will be able to apply what they have learnt about inputting email addresses and sending messages in previous year 3 unit on 'Emailing'. All children know the importance of collaborating offline and so these rules can be applied to online learning. Children will be familiar with ways to record data from Maths e.g. in tables or graphs and how it can be collected over time to answer questions. It builds on the concepts of answering questions with data which is introduced in KS1. Children have learnt the term input and what devices are recognised as inputs in year 3 'Network and the internet' so most will see a sensor as an input.	Retrieval The word decomposition and algorithm will be familiar. Children have used Scratch in year 3 as well as introduced to programming in KS1. They will know what happens when you add different blocks of code and how this affects the outcome. Children will be furthering their knowledge of e-safety from year 3.
People/events/places	People/events/places Ada Lovelace and Grace Hopper (science week)	People/events/places

Term 1 Year 5 Computing	Term 2 Year 5 Computing	Term 3 Year 5 Computing
<u>Search engines</u> The children will learn: - to understand what a search engine is and how to use it - to be aware that not everything online is true - to search effectively - to create an informative poster - to understand how search engines work - to use and understand the terms and definitions of: algorithm, company logo, data leak, data privacy, inaccurate information, index, keywords, network, online, page rank, web crawler, WWW, TASK. <u>Online safety</u> The children will learn: - to understand how apps can access our personal information and how to alter the permissions - to be aware of the positive and negative aspects of online communication - to use and understand the terms and definitions of: strong password, applications, apps, private and personal information, in app purchases, app permissions, technology, online communication, emojis, memes, positive contributions, trusted adults, advice, organisations. <u>Flat-file databases</u> The children will learn: - to use a form to record information - to compare paper and computer-based databases - to outline how grouping and then sorting data allows us to answer questions - to explain that tools can be used to select specific data - to explain that computer programs can be used to compare data visually - to apply my knowledge of a database to ask and answer real-world questions - to use and understand the terms and definitions of: database, data, information, record, field, sort, order, group, value, search, criteria, graph, chart, axis, compare, filter, presentation.	<u>Programming: Selection in physical computing</u> The children will learn: - to control a simple circuit connected to a computer - to write a program that includes count-controlled loops - to explain that a loop can stop when a condition is met - to conclude that a loop can be used to repeatedly check whether a condition has been met - to design a physical project that includes selection - to create a controllable system that includes selection - to use and understand the terms and definitions of: crumble controller, LED, sparkle, connect, motor, repetition, infinite loop, output devices, program, condition, design <u>Online safety</u> The children will learn: - to understand how online information can be used to form judgements - to discover ways to overcome bullying - to understand how technology can affect health and wellbeing - to use and understand the terms and definitions of: online, technology, application, bullying, trusted adult, real world, private, personal, judgment, summarise, opinion.	<u>Programming music Scratch</u> The children will learn: - to tinker with Scratch music elements - to create a program that plays themed music - to plan a soundtrack program - to program a soundtrack - to program music - to use and understand the terms and definitions of: basic commands, tinker, bug/debug, code, error, live loop, program language. <u>Stop motion animation</u> The children will learn: - to understand what animation is - to understand what stop motion animation is - to plan my stop motion video, thinking about the characters I want to use - to create a stop motion animation - to edit and assess my stop motion animation - to use and understand the terms and definitions of: animation, animator, background, decompose, duplicate, editing, frame, illusion, onion skinning, stop-motion, upload.
Learning questions Search engines What is a search engine? How are search engines used to find information and websites? Which words do and don't need to be included in a search query? How can you validate information you see on a website? Why are keywords important? What does TASK stand for? What do the terms 'copyright' and 'fair use' mean? What is the role of web crawlers? Online safety Why do passwords need to be strong? What are 'app permissions'? What different forms of online communication are there? What are the positive and negative forms of communication? Flat-file databases How can a form be used to record information? What are the differences between paper and computer-based databases? In what ways can data be grouped and sorted? What tools are used to select specific data? How can data be compared visually? What examples of databases are there in real life?	Learning questions Programming: Selection in physical computing What is a crumble controller and how do I connect this to a computer? What are count – controlled loops and how does this link to repetition? How do I connect additional devices to the controller? What is a 'condition' and how can this be controlled? What is 'selection'? How can this be used when designing a project? How might selection be used in real-world situations? What is important to remember when testing and writing algorithms? Online safety Are all judgements made about others online always true? If not, why? What are the similarities and differences between online and real-world bullying? What are the top tips you can give to someone being bullied? Who can the victims of bullying go to for advice and help? What are the positive and negative effects on our health and wellbeing when using online technology?	Learning questions Programming music Scratch What sounds are you able to make in Scratch? Can you change the pitch or pace of a particular sound in Scratch? What are the code blocks needed to create a loop? What is a 'soundtrack'? Why could loops be useful in creating a rhythm? What programming commands do I need to create a soundtrack? Stop motion animation What is animation? What different forms of animation are there? What is 'stop motion animation'? How can animations be created? What different factors do I need to consider in my animation? Why is it important to edit your animation?
Key skills and knowledge - Recognising that information on the internet might not be true or correct. - Know how to use keywords to quickly find accurate information. - Understanding permissions required by apps to access personal information. - 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.	Key skills and knowledge - Considering online judgements that people make and how children treat others online. - To program a device to achieve a specific goal, to 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.	Key skills and knowledge - Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals. - Using programming language to create music. Including use of loops. - Using technology purposefully to create, organise, store, manipulate and retrieve digital content. - Understanding how to use cameras to take photos. - Consider sequence and selection of frames when editing work.
Text	Text 	Text/ video/music
Retrieval Children will have searched and imported images online using a search engine and so will be used to this term. Flat-file databases progresses children's knowledge and understanding of how a database can help us display data visually, and how real-life databases can be used to help us solve problems. This builds on from year 1 term 3 introduction to data, year 3 term 3 comparison cards databases and year 4 term 2 data logging. Online safety – building knowledge from previous year groups.	Retrieval Children will have prior experience of programming using block-based construction (e.g., Scratch) and understand the concept repetition. Some children may have programmable toys which require inputs and outputs. Online safety - building knowledge from previous year groups.	Retrieval Programming music Scratch – children will have been introduced to this type of code when studying year 3 term 2 programming Scratch unit. Also, children will have used a similar style workspace in year 2 term 3 stop motion when creating animations. From their learning in Music, children will be used to the terms pitch, tempo, and pace.
People/events/places	People/events/places Mars Rover Project	People/events/places

Year 6 Computing Term 1	Year 6 Computing Term 2	Year 6 Computing Term 3
Bletchley Park (links with History) The children will learn: - to understand that there are lots of different types of secret codes - to understand the importance of having a secure password - to understand the importance of Bletchley Park to the World War II war effort - to understand about some of the historical figures that contributed to technological advances in computing - to research and present information about historical figures in computing - to use and understand the terms and definitions of: acrostic code, brute force hacking, Caesar cipher, cipher, encrypt, invention, Nth letter cipher, pigpen cipher, technological advancement, trial and error. History of Computers The children will learn: - to tinker with sound - to record, edit and add sound effects to a radio play - to understand how computers have changed and the impact this has had on the modern world - to research one of the computers that changed the world and present information about it to the class - to design a computer of the future - to use and understand the terms and definitions of: background noise, byte, CPU, memory storage, OS, radio play, RAM, ROM, sound effects, touch screen, trackpad. Online safety The children will learn: - to describe issues online that give us negative feelings and know ways to get help - to think about the impact and consequences of sharing online - to use and understand the terms and definitions of: online, report, block, privacy settings, consent, privacy, screengrab, respect, inappropriate.	Introduction to Python The children will learn: - to tinker with the programme Logo - to understand nested loops - to understand basic Python commands - to use loops when programming - to use and understand the terms and definitions of: loop, code, command, patterns, instruction, shape, repeat, input, import, design. Online safety The children will learn: - how to create a positive online reputation - to be able to describe how to capture bullying content as evidence - to manage personal passwords effectively - to be aware of strategies to help be protected online - to use and understand the terms and definitions of: reputation, online reputation, digital footprint, digital personality, anonymity, screen grab, screenshot, copy, block and report, hacking, secure, two factor authentication, scammers, phishing, malware, antivirus.	Spreadsheets The children will learn: - to identify questions which can be answered using data - to explain that objects can be described using data - to explain that formulas can be used to produce calculated data - to apply formulas to data, including duplicating - to create a spreadsheet to plan an event - to choose suitable ways to present data - to use and understand the terms and definitions of: spreadsheet, data, data heading, data set, cells, columns, rows, format, common attribute, formula, calculation, input, output, duplicate, propose, evaluate, results, comparison, questions, software, tools. Sensing The children will learn: - to create a program to run on a controllable device - to explain that selection can control the flow of a program - to update a variable with a user input - to use an conditional statement to compare a variable to a value - to design a project that uses inputs and outputs on a controllable device - to develop a program to use inputs and outputs on a controllable device - to use and understand the terms and definitions of: Micro:bit, MakeCode, process, USB, selection, condition, variable, random, sensing, compass, direction, navigation, design, algorithm, step counter, plan, create, code, test, debug.
Learning questions Bletchley Park Why are secret codes important? How do brute force attacks work and how can they be avoided? Why was there a need to build electronic thinking machines to solve cipher codes? Who worked at Bletchley during the war? Who made a significant contribution towards computer science? Why was this person important? History of Computers How do you record sounds and add in sound effects over the top? What are the important features of a radio play? What are the main features that have changed in computers over the years? How have devices impacted on each other and led to a chain reaction of hardware development? What features would we expect a computer to have? How might computers change in the future? Online safety How might my feelings be affected by online issues? How do I get help both online and offline? What are the positive and negative impacts of sharing online?	Learning questions Introduction to Python What is a loop and what is it used for? Why did you decide to loop that section of code? What do you think would happen if you put another loop into the code? What do parts of your code do? What programming commands have you used? What will happen if you change different values in your code? Online safety What do we mean by online reputation? How can our reputation be shaped in a positive way? Why is it important to capture evidence of online bullying? How do you create a strong password? How can you manage these securely and safely? Can you describe strategies to identify scams? Why are privacy settings important?	Learning questions Spreadsheets What is a spreadsheet? How can spreadsheets be modified? What is a 'formula'? How do these link to calculating data? What are the uses of a spreadsheet? How is data presented in different ways? Sensing What is a micro:bit? How can selection be used to control the flow of a program? How can the value of a variable be changed using selection? What is a conditional statement? What are the inputs and outputs on a controllable device?
Key skills and knowledge - Understanding the importance of secure passwords and using searching and word processing skills to create a presentation. - Using programming software to understand hacking, relating this to computer cracking codes in WWII. - Editing sound recordings for specific purpose. - Learning about the history of computers and how they evolved over time.	Key skills and knowledge - Understanding that websites can be altered by exploring the code beneath the site. - Designing, writing and debugging programs that accomplish specific goals. - Solving problems by decomposing them into smaller parts. - Learning about online reputations and how to go about creating a positive one. - Being aware of the threats that face us online such as scammers and phishing emails and how to identify them.	Key skills and knowledge - 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. - 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.
 Text	Text 	Text
Retrieval Children will be able to use their knowledge from History to assist with their learning in these units. They will be able to use their knowledge of online safety from previous units.	Retrieval The children will have covered programming and loops in years 2, 3 and 5 and this is a term used in Music planning for years 4 and 5. They will be able to use their knowledge of online safety from previous units.	Retrieval Children will have experienced data in tables and charts in year 4 term 2 data logging and when learning about branching databases. Children will be aware of the four programming constructs: sequence, repetition, variables, and selection. Children will be able to apply these constructs to a new physical device.
People/events/places Alan Turing, Margaret Hamilton, Steve Jobs, Tommy Flowers	People/events/places Dorothy Vaughan, Mary Jackson, Katherine Johnson, Christine Darden (Hidden figures – Science Week); Space Race, NASA	People/events/places