Computing

Technology is everywhere and will play a pivotal part in students' lives.

At Berry Hill, we want pupils to be MASTERS of technology and not slaves to it. Therefore, we want to model and educate our pupils on how to use technology positively, responsibly and safely. We want our pupils to be creators not consumers and our broad curriculum encompassing computer science, information technology and digital literacy reflects this. We also understand the accessibility opportunities technology can provide for our pupils. Our knowledge rich curriculum has to be balanced with the opportunity for pupils to apply their knowledge creatively which will in turn help our pupils become skilful digital users.

Intent – We aim to...

Equip pupils with the skills to embrace technology to help create a more diverse and fair society. **Diversity**	Develop pupils' critical abilities to enable them to evaluate their own work and the work of others. **Resilience**	Teach specific skills and knowledge in different areas of computing and enable pupils to make links with prior learning and build on this. **Empowerment**	Give pupils every opportunity to develop their ability, nurture their talent and express their ideas and thoughts. **Ambition**	Enable pupils to be confident using technology safely and appropriately, embodying the concept of 'Be Kind' as a pillar of computing. **Morality**

Implementation – How do we achieve our aims?

"When you learn computing, you're thinking about thinking" Bill Mitchell, Director of Education at BCS: Chartered Institute of IT

Computing elements and progression of skills at the core of projects

Key skills of Computing underpin the projects undertaken in each year group. Projects are grouped under the headings of:

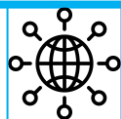- Digital Literacy
- Information Technology
- Computer Science

Within each of these, skills are grouped under the following headings:

- Computing systems and networks, Programming, Creating Media, Data Handling, Online safety

Formal elements of Computing to equip pupils with cultural capital

Within each Key Stage, Computing also consists of a collection of formal elements. This is the knowledge and area of study needed to be able to effectively apply the skills of Computing:

- COMPUTING SYSTEMS & NETWORKS
- PROGRAMMING
- CREATING MEDIA
- DATA HANDLING
- ONLINE SAFETY

The National Curriculum

Key stage 1 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
- to create and debug simple programs
- to use logical reasoning to predict the behaviour of simple programs
- to use technology purposefully to create, organise, store, manipulate and retrieve digital content
- to 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

- **Key stage 2 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
- to use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- to 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
- to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- to 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 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Impact – How will we know we have achieved our aims?

Pupils can articulate and explain what computing is.	Pupils are confident and are able to use technology safely.	Pupils use their imagination and creativity to create their own pieces of work.	Discussions show that pupils have developed key skills year on year and reflect that they can think critically about technology	Pupils use computing in a variety of ways to express their individuality.

FORMAL ELEMENTS

DISCIPLINARY KNOWLEDGE OF A DIGITAL USER

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
COMPUTING SYSTEMS AND NETWORKS		• To know that "log in and log out" means to begin and end a connection with a computer. • To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art. • To know that passwords are important for security. • To know that when we create something on a computer it can be more easily saved and shared than a paper version. • To know some of the simple graphic design features of a piece of online software.	• To know the difference between a desktop and laptop computer. • To know that people control technology. • To know that buttons are a form of input that give a computer an instruction about what to do (output). • To know that computers often work together.	• To know what a tablet is and how it is different from a laptop/desktop computer. • To understand what a network is and how a school network might be organised. • To know that a server is central to a network and responds to requests made. • To know how the internet uses networks to share files. • To know that a router connects us to the internet. • To know what a packet is and why it is important for website data transfer. • To know the roles that inputs and outputs play on computers. • To know what some of the different components inside a computer are e.g. • CPU, RAM, hard drive, and how they work together.	• To understand that software can be used collaboratively online to work as a team. • To know what type of comments and suggestions on a collaborative document can be helpful. • To know that you can use images, text, transitions and animation in presentation slides.	• To know how search engines work. • To understand that anyone can create a website and therefore we should take steps to check the validity of websites. • To know that web crawlers are computer programs that crawl through the internet. • To understand what copyright is. • To know the difference between ROM and RAM.	• To understand the importance of having a secure password and what "brute force hacking" is. • To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2. • To know about some of the historical figures that contributed to technological advances in computing. • To understand what techniques are required to create a presentation using appropriate software.
PROGRAMMING		• To know that an algorithm is when instructions are put in an exact order. • To know that input devices get information into a computer and that output devices get information out of a computer. • To know that decomposition means breaking a problem into manageable chunks and that it is important in computing. • To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'. • To know that the basic functions of a Bee-Bot. • To know that you can use a camera/tablet to make simple videos. • To know that algorithms move a bee-bot accurately to a chosen destination.	• To understand what machine learning is and how that enables computers to make predictions. • To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times. • To know that abstraction is the removing of unnecessary detail to help solve a problem.	• To know that Scratch is a programming language and some of its basic functions. • To understand how to use loops to improve programming. • To understand how decomposition is used in programming. • To understand that you can remix and adapt existing code.	• To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. • To know what a conditional statement is in programming. • To understand that variables can help you to create a quiz on Scratch. • To know that combining computational thinking skills (sequence, abstraction, decomposition etc) can help you to solve a problem. • To understand that pattern recognition means identifying patterns to help them work out how the code works. • To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.	• To know that a soundtrack is music for a film/video and that one way of composing these is on programming software. • To understand that using loops can make the process of writing music simpler and more effective. • To know how to adapt their code while performing their music.	• To know that there are text-based programming languages such as Logo and Python. • To know that nested loops are loops inside of loops. • To understand the use of random numbers and remix Python code.

	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
CREATING MEDIA		• To know that holding the camera still and considering angles and light are important to take good pictures. To know that you can edit, crop and filter photographs. To know how to search safely for images online.	• To understand that an animation is made up of a sequence of photographs. • To know that small changes in my frames will create a smoother looking animation. • To know what software creates simple animations and some of its features e.g. onion skinning.	• To know that different types of camera shots can make my photos or videos look more effective. • To know that I can edit photos and videos using film editing software. • To understand that I can add transitions and text to my video.	• To know some of the features of web design software. • To know that a website is a collection of pages that are all connected. • To know that websites usually have a homepage and subpages as well as clickable links to new • pages, called hyperlinks. • To know that websites should be informative and interactive.	• To understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. To know that decomposition of an idea is important when creating stop-motion animations. To know that editing is an important feature of making and improving a stop motion animation.	• To know that radio plays • are plays where the audience can only hear the • action so sound effects are • important. • To know that sound clips • can be recorded using • sound recording software. • To know that sound clips • can be edited
DATA HANDLING		• To know how that charts and pictograms can be created using a computer. • To know that a branching database is a way of classifying a group of objects. • To know that computers understand different types of 'input'.	• To know that you can enter simple data into a spreadsheet. • To know what steps you need to take to create an algorithm. • To know what data to use to answer certain questions. • To know that computers can be used to monitor supplies.	• To know that a database is a collection of data stored in a logical, structured and orderly manner. • To know that computer databases can be useful for sorting and filtering data. • To know that different visual representations of data can be made on a computer.	• To know that computers can use different forms of input to sense the world around them so that they can record and respond to data. This is called 'sensor data'. To know that a weather machine is an automated machine that responds to sensor data. To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.	• To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. • To know what numbers using binary code look like and be able to identify how messages can be sent in this format. • To understand that RAM is • Random Access Memory and acts as the computer's working memory. • To know what simple operations can be used to • calculate bit patterns.	• To know that data contained within barcodes • and QR codes can be used • by computers. • To know that infrared waves are a way of transmitting data. • To know that Radio Frequency Identification • (RFID) is a more private • way of transmitting data. • To know that data is often • encrypted so that even if it • is stolen it is not useful to • the thief.
ONLINE SAFETY		• To know that the internet is many devices connected to one another. • To know that you should tell a trusted adult if you feel unsafe or worried online. • To know that people you do not know on the internet (online) are strangers and are not always who they say they are. • To know that to stay safe online it is important to keep personal information safe. To know that 'sharing online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.	• To know the difference between online and offline. • To know what information I should not post online. • To know how to use techniques for creating a strong password. • To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.' • To know that not everything I see or read online is true.	• To know that not everything on the • internet is true: people share facts, beliefs and opinions online. • To understand that the internet can affect your moods and feelings. • To know that privacy settings limit who can access your important personal information , such as your name, age, gender etc. • To know what social media is and that age restrictions apply.	• To understand some of the methods used to encourage people to buy things online. To understand that technology can be designed to act like or impersonate living things. To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. To understand what behaviours are appropriate in order to stay safe and be respectful online.	• To know different ways we can communicate online. • To understand how online information can be used to form judgements. • To understand some ways to deal with online bullying. • To know that apps require permission to access private information and that you can alter the permissions. • To know where I can go for support if I am being bullied online or feel that my health is being affected by time online.	• To know that a 'digital footprint' means the • information that exists on the internet as a result of a person's online activity. • To know what steps are • required to capture bullying content as evidence. • To understand that it is • important to manage personal passwords effectively. • To understand what it means to have a positive online reputation. • To know some common • online scams.

VOCABULARY PROGRESSION OF A DIGITAL USER

	TERM 1	TERM 2	TERM 3
EYFS			
YEAR 1	**Algorithms unplugged** algorithm, automatic, bug, chunks, clear, code, debug, decompose, decomposition, device, directions, input, instructions, manageable, motion, order, organise, output, precise, programming, problem, robot, sensor, sequence, solution, specific, steps, tasks, virtual assistant **Programming Bee-Bots** algorithm, artificial intelligence, Bee-Bot, clear, code, debug, demonstration, filming, inputting, instructions, pause, precise, predict, program, tinker, video, video recording	**Digital imagery** Background, blurred, camera, clear, crop, delete, device, digital camera, download, drag and drop, edit, editing software, filter, image, import, internet, keyword, online, photograph, resize, save as, screen, search engine, sequence, software, storage space, visual effects **Improving mouse skills** account, click, ctrl, cursor, drag, drag and drop, digital photograph, drop, duplicate, keyboard, layers, log on/ in, log out/ off, menu, mouse, mouse pointer, password, right click, screen (monitor), software, tool, username	**Rocket to the moon** annotate, cells, components, create, data, debug, designing, digital content, digital image, document, e-document, edit, editing program, evaluate, folder, input, instructions, log in, photo, program, order, robot, save, sequence, share, software, spreadsheet, table **Introduction to data** bar chart, block graph, branching database, categorise, chart, click and drag, compare, count, data, data collection, data record, data representation, edit, input, keyboard, line graph, mouse, information, label, pictogram, pie chart, process, record, resize, sort, table, tally, values
YEAR 2	**What is a computer?** battery, desktop, digital, digital recorder, electricity, function, laptop, monitor, paying till, scanner, screen, system, technology, video **Algorithms and debugging** abstraction, key features, loop, unnecessary	**Word processing** backspace, bold, copy, copyright, cut, forward button, highlight, home row, home screen, italics, keyboard, keyboard character, layout, navigate, paste, redo, space bar, text, text effects, touch typing, underline, undo, word processing **Scratch Jr** blocks, CGI, computer code, fluid, icon, imitate, 'on tap', Scratch JR	**Stop Motion** Animation, animator, background, digital device, drawing, flipbook, frames, moving images, opinion skinning, still images **International Space Station** astronaut, experiment, galaxy, insulation, interactive map, International Space Centre, International Space Station, interpret, laboratory, planet, satellite, space, temperature, thermometer, water reservoir

VOCABULARY PROGRESSION OF A DIGITAL USER

	TERM 1	TERM 2	TERM 3
YEAR 3	**Networks and the internet** cables, component, connection, corrupted, data, desktop, device, DSL (digital subscriber line), fibre, file, internet, laptop, network, network map, network switch, packets, radio waves, router, server, submarine cables, tablet, text map, The Cloud, web server, website, website trackers, WiFi, wired, wireless, Wireless Access Points, World Wide Web **Scratch** algorithm, animation, application, code, code block, coding application, debug, decompose, interface, game, loop, predict, program, remixing code, repetition code, review, Scratch, sprite, tinker	**Emailing** attachment, bcc (blind carbon copy) cc (carbon copy), compose, cyberbullying, domain, download, email, email account, email address, emoji, fake, genuine, hacker, inbox, link, negative language, positive language, reply, responsible digital citizen, scammer, settings, send, sign in, spam email, subject bar, theme, tone, username, virus **Journey inside a computer** assemble, CPU (central processing unit), disassemble, GPU (graphics processing unit), hard drive, HDD (hard disk drive), memory, microphone, QR code, RAM (random access memory), ROM (read only memory), storage, touchscreen, touchpad	**Video trailers** clip, film editing software, graphics, sound effects, time code, trailer, transition, voiceover **Comparison cards databases** fields , filter, interpret, PDF, questionnaire
YEAR 4	**Collaborative Learning** average, collaboration, conditional formatting, contribution, edited, format, freeze, insert, multiple choice, numerical data, presentations, resolved, reviewing comments, slides, spreadsheets, suggestions, survey, teamwork, themes, transitions# **Further coding with Scratch** broadcast block, conditional, coordinates, features, negative numbers, orientation, parameters, position, script, stage, variables	**Website design** assessment, audience, design, embed, hyperlinks, progress, web page **HTML** CSS, end tag, hacking, heading, headline, hex code, HTML, internet browser, paragraph, remixing, start tag,tags, URL, webpage	**Computational thinking** computational thinking, logical reasoning, pattern recognition **Investigating weather** backdrop, climate zone, cold, condensation, cylinder, degrees, evaporation, extreme weather, forecast, heat sensor, lightning, measurement, pinwheel, presenter, script, sensitive, sensor data, solar panel, tornado, warm, weather, weather forecast, wind

	TERM 1	TERM 2	TERM 3
YEAR 5	**Search Engines** appropriate, credit, data leak, deceive, fair, inappropriate, incorrect, index, keywords, privacy, rank, real, TASK, web crawler **Programming music** beat, bugs, coding, command, melody, mindmap, music, performance, pitch, play, rhythm, tempo, timbre, tutorials	**Mars Rover 1** 8-bit binary, addition, ASCII, binary code, boolean, byte, construction, CPU, data transmission, decimal numbers, discovery, distance, hexadecimal, Mars Rover, moon, radio signal, RAM, research, scientist, signal, simulation, subtraction, transmit **Micro:bit** app, bluetooth, load, Micro:bit, outputs, pairing, pedometer, polling, reset, sabotage, scoreboard, systematic, tinkering, USB	**Stop motion animation** animator, character, flip book, fluid movement, frame, model, still image, thaumatrope, zoetrope **Mars Rover 2** 3D, binary image, CAD, compression "Fetch, decode, execute", ID card, JPEG, online community, operating system, pixels, RAM, responsible, RGB, ROM, safe
YEAR 6	**Bletchley Park** acrostic code, brute force hacking, caesar cipher, chip and pin system, cipher, combination, contribute, convince, date shift cipher, hero, Nth Letter Cipher, Pig Latin, Pigpen cipher, present, scrambled, secret, technological advancement, trial and error **Intro to Python** Indentation, random, remix, shape	**Big Data 1** barcode, brand, chips, commuter, contactless, encrypted, infrared, MagicBand, proximity, QR scanner, RFID, systems/data analyst, transmission, **History of computers** background noise, FX, gigabyte,, hardware, kilobytes, megabyte, memory storage, overlay, processor, radio play, RAM, Raspberry Pi, reverb, sound, terrabytes, touch screen, track, trackpad,	**Big Data 2** energy, GPS, improve, Internet of Things, revolution, SIM, Smart city, Smart school, threat **Inventing a product** adapt, advert, debugging, electronic, evaluate, facts, image rights, influence, inputs, manipulation, opinions, product, screenshot, selection, structures

KEY STAGE 1

	TERM 1	TERM 2	TERM 3
YEAR 1	**Algorithms unplugged** Algorithms, decomposition and debugging are made relatable to familiar contexts, following directions, learning why instructions need to be specific. LQs What is an algorithm? Why do you have to follow instructions precisely to carry out an action? What is an input and output? What is decomposition? How do you debug an algorithm? **Programming Bee-Bots** Introducing programming through the use of a Bee-Bot and exploring its functions. LQs What is Bee-Bot? How do you create a demonstration video? What instructions does a Bee-Bot need to follow precise instructions? How do you program a Bee-Bot precisely? How do you create your own program for a Bee-Bot?	**Digital imagery** Taking and editing photos, searching for and adding images to a project. LQs How do you create a sequence of pictures? How do you take clear photographs? How do you edit photographs? How do you search and import images? How do you create a photo collage? **Improving mouse skills** Learning how to login and navigate around a computer; developing mouse skills; learning how to drag, drop, click and control a cursor to create works of art LQs How do you log into a computer and access a website? How do you use a mouse? How do you use a mouse to draw and edit shapes? How do you draw a scene using digital tools? How do you edit a picture using digital techniques?	**Rocket to the moon** Learning how to login and navigate around a computer; developing mouse skills; learning how to drag, drop, click and control a cursor to create works of art. LQs How do you add data to a table? **Introduction to data** Learning what data is and the different ways it can be represented. Learning why data is useful and the ways it can be gathered and recorded. LQs How do you represent data in different ways? How do you use technology to represent data in different ways? How do you collect and record data? How do you sort data? How do you gather data?
	Longitudinal Unit of Study: Online Safety Learning how to stay safe online and how to manage feelings and emotions when someone or something has upset us.		
YEAR 2	**What is a computer?** Exploring what a computer is by identifying how inputs and outputs work and how computers are used in the wider world to design their own computerised invention. LQs What are the different parts of the computer? How is technology controlled? What are different technology devices? What would make a good invention? What is the role of a computer? **Algorithms and debugging** Developing an understanding of; what algorithms are, how to program them and how they can be developed to be more efficient, introduction of loops. LQs How do you decompose a game? How do computers make algorithms to make predictions? How do algorithms solve problems? What is abstraction? What is debugging?	**Word processing** Exploring what a computer is by identifying how inputs and outputs work and how computers are used in the wider world to design their own computerised invention. LQs Where are the keys on the keyboard? How does word processing work? What are safe sources from the internet? What happens to the information posted online? **Scratch Jr** Exploring what 'blocks' do by carrying out an informative cycle of predict > test > review. Programming a familiar story and make a musical instrument. LQs What is Scratch Jr? How do you create an animation? What characters can be buttons? How do you follow an algorithm? How do you plan and code to create an algorithm?	**Stop Motion** Learning how to create simple animations from storyboarding creative ideas. LQs What is animation? What is top motion animation? What needs to go into a plan for a stop motion animation? How do you create a stop motion animation? **International Space Station** Learning how data is collected, used and displayed and the scientific learning of the conditions needed for plants and humans, to survive. LQs How can computers help humans survive in space? How do you create a digital drawing? What are the role of sensors on the ISS? How do you create an algorithm for growing a plant in space? How do you interpret data?
	Longitudinal Unit of Study: Online Safety Learning: how to keep information safe and private online; who we should ask before sharing things online and how to give, or deny permission online.		

LOWER KEY STAGE 2

COMPUTING SEQUENCING

	TERM 1	TERM 2	TERM 3
YEAR 3	**Networks and the internet** Learning what a network and how devices communicate and share information. LQs What is a network and how does our school network work? How does information move around a network? How does the Internet work? What is the role of a router? What is the role of packets? **Scratch** Exploring the programme Scratch, following the predict > test > review cycle. Learning about 'loops' and programming an animation, story and game. LQs What is Scratch? How do you use a repetition in a program? How do you program an animation? How do you program for a story? How do you create a game on Scratch?	**Emailing** Sending emails with attachments / understanding cyberbullying. LQs How do you communicate with technology? How do you send an email? How do you add an attachment on emails? How are we kind online? How do you spot fake emails? **Video trailers** Developing digital video skills to create trailers, with special effects and transitions. LQs What is a video trailer? How do you capture photographs that tell a story? How do you edit a video? How do you add text and transitions to a video? How do you evaluate a video?	**Journey inside a computer** Assuming the role of computer parts and creating paper versions of computers to consolidate understanding of how a computer works. LQs What are the basic inputs and outputs? How do you decompose a laptop? What are the purpose of different computer parts? How do you decompose a tablet computer? **Comparison cards databases** Learning about records, fields and data and sorting and filtering data. LQs What are the terminology around databases? What are the similarities and differences between paper and computerised databases? How do you sort, filter and interpret data? How do you represent data in different ways? How do you sort data purposefully?
	Longitudinal Unit of Study: Online Safety Learning: the difference between fact, opinion and belief; and how to deal with upsetting online content. Knowing how to protect personal information online.		
YEAR 4	**Collaborative Learning** Learning how to work collaboratively and exploring a range of collaborative tools. LQs How can software be used online to work collaboratively? Ow do you contribute to someone else's work effectively? How do you create a digital survey? How do you create and share a Microsoft Form? How do you analyse data? **Further coding with Scratch** Revisiting the key features and beginning to use 'variables' in code scripts. LQs What are the features of Scratch? How does a Scratch game work? What is a variable? How do you make a variable in Scratch? How can you use variables to create a quiz?	**Website design** Learning how web pages and sites are created and how to embed media and links. LQs What is Microsoft Sway? How do you add features on Microsoft Sway? What does a website need to be successful? How do you create a website? **HTML** Learning about the markup language behind a webpage; becoming familiar with HTML tags, changing HTML and CSS code to alter images and 'remix' a live website. LQs What are HTML tags? How do you code HTML for a specific purpose? How do you change the HTML and CSS to alter the appearance of an object on the web? What are the more complex components of a web page? How do you alter key elements on a webpage including text and images?	**Computational thinking** Solving problems effectively using the four areas of abstraction, algorithm design, decomposition and pattern recognition. LQs What are the four key strands of computational thinking? How can decomposition solve problems? What are pattern recognition and abstraction? What can an algorithm be used for? How can computational thinking solve a problem? **Investigating weather** Researching and storing data on spreadsheets and designing a weather station. LQs How do you log data from online sources within a spreadsheet? How do you design a weather station? How do you design an automated machine to respond to sensor data? How can you present a weather forecast?
	Longitudinal Unit of Study: Online Safety Searching for information and making a judgement about the probable accuracy; recognising adverts and pop-ups; understanding that technology can be distracting.		

UPPER KEY STAGE 2

COMPUTING SEQUENCING

		TERM 1	TERM 2	TERM 3
YEAR 5		**Search Engines** Learning about how page rank works and how to identify inaccurate information. LQs How do search engines work? How do you know if it is true when you read something online? How do you search effectively? **Programming music** Building-on programming and music skills to create different sounds, beats and melodies which are put to the test with a Battle of the Bands performance! LQs What is Sonic Pi? How do you create a program that plays themed music? How do you add a soundtrack to a program? How do you program a soundtrack? How do you program music for a specific purpose?	**Stop motion animation** Creating animations, storyboard ideas and decomposing a story into small parts before putting together to create the illusion of a moving image. LQs What is animation? What is stop animation? What do I need to include in a stop motion video? How do I create a stop motion animation? How do I edit and assess my stop motion? **Micro:bit** Creating algorithms and programs that are used in the real world. Using the 'predict, test and evaluate' cycle to create and debug programs with specific aims. LQs What is Micro:bit? How do you program Micro:Bit? What are the coding structures? How do you create a program with Micro:Bit?	**Mars Rover 1** Learning about the Mars Rover, exploring how and why it transfers data including instructions, and how messages can be sent using binary code. LQs **Mars Rover 2** Creating algorithms and programs that are used in the real world. Using the 'predict, test and evaluate' cycle to create and debug programs with specific aims. LQs How do bit patterns represent images as pixels? How is data for digital images compressed? What is the 'fetch, decode, execute' cycle? How do you create a safe online profile? What is CAD software?
	Longitudinal Unit of Study: Online Safety			
	Learning about app permissions; the positive and negative aspects of online communication; that online information is not always factual; how to deal with online bullying and managing our health and wellbeing.			
YEAR 6		**Bletchley Park** Discovering the history of Bletchley and learning about code breaking and password hacking. Demonstrating digital literacy skills by creating presentations. LQs What are the different types of secret codes? Why do we need secure passwords? What is the importance of Bletchley Park? Who are some of the historical figures that contributed to technological advances in computing? How do you research accurately? **Intro to Python** Using the programming language 'Python' to create designs and art. Learning how to create loops and nested loops to make their code more efficient. LQs What is python software? What are nested loops? What are the basic python commands? How do we use loops when programming? What do you think of Piet Mondrian's artwork?	**Big Data 1** Identifying how barcodes and QR codes work. Learning how infrared waves are used for the transmission of data while recognising the uses of RFID. LQs How do barcodes and QR codes work? How do infrared waves transmit data? How is RFID used? How do you input and analyse real-world data? What have you learned from the data? **History of computers** Writing, recording and editing radio plays set during WWII, learning about how computers have evolved. LQs How does sound work on a computer? How do you record, edit and add sound effects to radio play? How have computers changed and what impact they have on the modern world? Which technology has changed the world the most? What technology will be designed next?	**Big Data 2** Further developing understanding of how networks and the Internet are able to share information. Learning how big data can be used to design smart buildings. LQs How can data be transferred safely? How can you investigate the data usage of online activities? How can data analysis improve city life? How can we turn a school into a smart school? **Inventing a product** Designing a product, pupils: evaluate, adapt and debug code to make it suitable for their needs and designing products in CAD and creating a website and video. LQs How can you design an electronic product? How do you code and debug a program? How do you create a website? How do you create and edit a video? How do you advertise a product?
	Longitudinal Unit of Study: Online Safety			
	Learning to deal with issues online; about the impact and consequences of sharing information; how to develop a positive online reputation; combating and dealing with online bullying and protective passwords.			