Computing overview

Key concepts

Digital Literacy

Information Technology

Computer Science

EYFS	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Online safety
Unit		**Computing systems and networks**	**Programming 1**	**Computing systems and networks**	**Programming 2**	**Data handling**	
Focus		Using a computer	All about instructions	Exploring hardware	Programming Bee-Bots	Introduction to data	
Overview	**Set up continuous provision in your classroom:**	Learning about the main parts of a computer and how to use the keyboard and mouse. Learning how to log in and out.	The children learn to receive and give instructions and understand the importance of precise instructions.	Tinkering and exploring with different computer hardware and learning to operate a camera.	Children learn about directions, experiment with programming a Bee-bot/Blue-bot and tinker with hardware.	Children sort and categorise data and are introduced to branching databases and pictograms.	
Vocab	Computing through continuous provision	Computer, Computer tower, Monitor, Keyboard, Mouse, Letters, Numbers, Uppercase, Lowercase, Type, Password, Private, Secure, Lock, Personal, Protect, Click, Log in, Log out, Arrow, Cursor, Drag, Drop, Move	Instructions, Blindfold, Step over, Walk around, Turn, Left, Right, To the side, Straight on, Stand still, Stop, Duck, Under, Bend down, Walk, Hop, Tiptoe, Shuffle, Skip, Run, Timer, Describe, Adjective, Two-part instruction, Algorithm, Order, Sequence, Predict, Prediction, Next, Last, First, Second, Third	Mouse, Buttons, Keyboard, Keys, Motherboard, USB stick, System fan, Hard drive, Monitor, Computer, Computer tower, Speaker, Click, Push, Pull, Twist, Under, On top of, Behind, Open, Shut, Larger, Smaller, Electricity, Batteries, Power, Technology, Memory, Dial, Tablet, iPad, Point, Shoot, Image, Picture, Photograph	Forward, back, backwards, right, left, arrow, direction, turn, straight on, directions, route, algorithm, instructions, circle, arrow, program, sequence, debug,	Sort, Categorise, Category, Group, Describe, Texture, Colour, Pattern, Size, Weight, Height, Length, More, Less, Count, In total, Altogether, Share, Divide, Equal, Bigger than, Smaller than, Thicker than, Thinner than,	

Key Learning		**Lesson 1:** To learn what a keyboard is and how to locate relevant keys **Lesson 2** To learn how to log in and log out. To understand why we need to log in and out. **Lesson 3** To learn what a mouse is and to develop basic mouse skills such as moving and clicking. To use a simple online paint tool to create digital art. **Lesson 4** To learn what a mouse is and to develop basic mouse skills such as moving and clicking. To use a simple online paint tool to create digital art. **Lesson 5** To learn what a mouse is and to develop basic mouse skills such as moving and clicking.	**Lesson 1:** To follow instructions as part of practical activities and games **Lesson 2** To follow instructions as part of practical activities and games **Lesson 3** To follow instructions as part of practical activities and games To learn to give simple instructions **Lesson 4** To follow instructions as part of practical activities and games and to learn to debug when things go wrong To learn to give simple instructions To learn that an algorithm is a set of instructions to carry out a task, in a specific order **Lesson 5** To predict the outcome of an algorithm.	**Lesson 1:** To learn how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary **Lesson 2** To learn how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary To recognise that a range of technology is used in places such as homes and schools **Lesson 3** To learn how to operate a camera and/or iPad and use it to take photographs. **Lesson 4** To learn how to operate a camera and/or iPad and use it to take photographs. **Lesson 5** To learn how to operate a camera and/or iPad and use it to take photographs.	**Lesson 1:** To understand the meaning of directional arrows. To follow a simple sequence of instructions **Lesson 2** To experiment with programming a Bee-bot. To explore and tinker with hardware to develop familiarity and introduce relevant vocabulary **Lesson 3** To experiment with programming and debugging a Bee-bot & how to give simple commands **Lesson 4** To learn that an algorithm is a set of instructions to carry out a task, in order. To follow & debug an algorithm as part of an unplugged game **Lesson 5** To experiment with programming and debugging a Bee-Bot and to learn how to give simple commands	

Class 2 Year A	First Lesson	Autumn	Spring		Summer	Online safety Day
Unit	**Online Safety**	**Computing systems and networks**	**Programming 1**	**Programming 2**	**Creating media**	**Online safety**
Focus	Online Safety Contract	Improving mouse skills	Algorithms unplugged	Bee-Bots	Digital imagery	Online safety Y1 (5 lessons)
Overview	Learning to stay safe online by discussing and agreeing clear ground rules, and creating an Online Safety Contract to understand and follow throughout the year.	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	Algorithms, decomposition and debugging are made relatable to familiar contexts, following directions, learning why instructions need to be specific.	Introducing programming through the use of a Bee-Bot and exploring its functions.	Taking and editing photos, searching for and adding images to a project.	Learning how to stay safe online and how to manage feelings and emotions when someone or something has upset us.
Vocab	App, Appropriate device, digital footprint, feelings, going online, in-person interactions internet, kindness offline / online activity online experience online interactions online safety personal information pop-up, posting online report, citizen responsible digital screen time, sharing online stranger, technology trusted adult unkind, website	account click clipart computer drag drag and drop layers log off log on mouse password predict resize screen (monitor) software tool username	algorithm artificial intelligence bug debug decompose directions input instructions order output problem virtual assistant	algorithm Bee-Bot code debug demonstration explain explore filming inputting instructions precise predict program review test tinker video	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	App, Appropriate device, digital footprint, feelings, going online, in-person interactions internet, kindness offline / online activity online experience online interactions online safety personal information pop-up, posting online report, citizen responsible digital screen time, sharing online stranger, technology trusted adult unkind, website

Key Learning	**Lesson 1:** To recognise what the internet is and how to use it safely.	**Lesson 1:** To log in to a computer and access a website. **Lesson 2** To develop mouse skills. **Lesson 3** To use mouse skills to draw and edit shapes. **Lesson 4** To draw a scene from a story using digital tools. **Lesson 5** To create a self-portrait using digital techniques.	**Lesson 1:** To understand what an algorithm is. **Lesson 2** To follow instructions precisely to carry out an action. **Lesson 3** To understand that computers and devices around us use inputs and outputs. **Lesson 4** To understand and be able to explain what decomposition is. **Lesson 5** To know how to debug an algorithm.	**Lesson 1:** To explore a new device. **Lesson 2** To create a demonstration video. **Lesson 3** To plan and follow a precise set of instructions. **Lesson 4** To program a device. **Lesson 5** To create a program that tells a story.	**Lesson 1:** To understand and create a sequence of pictures. **Lesson 2** To take clear photos. **Lesson 3** To edit photos. **Lesson 4** To search for and import images. **Lesson 5** To create a photo collage.	**Lesson 1:** To recognise what the internet is and how to use it safely. **Lesson 2** To identify how people's feelings and emotions can be affected by online content. **Lesson 3** To recognise how to treat others, both online and in person. **Lesson 4** To recognise the importance of being careful when posting and sharing online. **Lesson 5** To discuss ways to balance time spent online and offline.

Class 2 Year B	First Lesson	Autumn	Spring		Summer	Online safety Day
Unit	**Online Safety**	**Computing systems and networks 1**	**Programming 1**	**Programming 2**	**Data handling**	**Online safety**
Focus	Online Safety Contract	What is a computer?	Algorithms and debugging	Introduction to block coding ScratchJr	International Space Station	Online safety Y2 (4 lessons)
Overview	Learning to stay safe online by discussing and agreeing clear ground rules, and creating an Online Safety Contract to understand and follow throughout the year.	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.	Developing an understanding of; what algorithms are, how to program them and how they can be developed to be more efficient, introduction of loops.	Exploring what 'blocks' do' by carrying out an informative cycle of predict > test > review. Programming a familiar story and make a musical instrument.	Learning how data is collected, used and displayed and the scientific learning of the conditions needed for plants and humans, to survive.	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.
Vocab	accepting consent, fake denying permission giving permission offline, online password, permission personal information pop-up, pressure private information real, reliable sharing online source trusted adult	Battery, buttons Computer, desktop electricity input, invention keyboard, laptop mouse, output robot screen (monitor) tablet technology wire	abstraction algorithm artificial intelligence bug, clear correct data debug decompose error key features loop predict unnecessary	Algorithm, animation Blocks, bug Button, CGI computer code code, debug fluid, icon imitate instructions loop, 'on tap' programming repeat ScratchJR sequence sound recording	Algorithm, astronaut Column, data digital content essential experiment Goldilocks zone interactive map International Space Station, input Monitor, row Satellite, sensor Space, spreadsheet survival temperature thermometer	accepting consent, fake denying permission giving permission offline, online password, permission personal information pop-up, pressure private information real, reliable sharing online source trusted adult

Key Learning	**Lesson 1:** To recognise what the internet is and how to use it safely.	**Lesson 1:** To recognise the parts of a computer. **Lesson 2** To recognise how technology is controlled. **Lesson 3** To recognise technology. **Lesson 4** To create a design for an invention. **Lesson 5** To understand the role of computers.	**Lesson 1:** To decompose a game to predict the algorithms that are used. **Lesson 2** To understand that computers can use algorithms to make predictions (machine learning). **Lesson 3** To plan algorithms that will solve problems. **Lesson 4** To understand what abstraction is. **Lesson 5** To understand what debugging is.	**Lesson 1:** To explore a new application. **Lesson 2** To create an animation. **Lesson 3** To use characters as buttons. **Lesson 4** To follow an algorithm. **Lesson 5** To plan and use code to create an algorithm.	**Lesson 1:** To locate features on an interactive map. **Lesson 2** To create a digital drawing. **Lesson 3** To input data in a spreadsheet. **Lesson 4** To create algorithms for healthy plant growth. **Lesson 5** To retrieve data from a spreadsheet.	**Lesson 1:** To decide which information is safe to share online. **Lesson 2** To practise keeping information safe and private online. **Lesson 3** To recognise when to deny permission online. **Lesson 4** To recognise that not everything online is true.

Class 3 Year A	First Lesson	Autumn		Spring		Summer	Online safety Day
Unit	**Online Safety**	**Computing systems and networks 1**	**Programming**	**Computing systems and networks 3**		**Creating media**	**Online safety**
Focus	Online Safety Contract	Networks	Programming: Scratch	Journey inside a computer		Video trailers Using iPads	Online safety Y3 (5 lessons)
Overview	Learning to stay safe online by discussing and agreeing clear ground rules, and creating an Online Safety Contract to understand and follow throughout the year.	Learning what a network and how devices communicate and share information.	Exploring the programme Scratch, following the predict > test > review cycle. Learning about 'loops' and programming an animation, story and game.	Assuming the role of computer parts and creating paper versions of computers to consolidate understanding of how a computer works.		Developing digital video skills to create trailers, with special effects and transitions.	Learning: the difference between fact, opinion and belief; and how to deal with upsetting online content. Knowing how to protect personal information online.
Vocab	accurate age restrictions autocomplete belief, charity content, digital device fact, fake news hoax, internet internet of things opinion online emotions organisation permission privacy settings reliable, search search engine, share smart devices social media platforms	device file internet network network switch packet data router server the cloud user wi-fi wired wireless wireless access point	algorithm animation application code, code block debug decompose game, interface loop, predict program remixing code repetition code review, Scratch sprite, tinker	Algorithm, assemble CPU (central processing unit) Data, decompose Desktop, disassemble GPU (graphics processing unit) hard drive, HDD (hard disk drive), infinite loop, input, keyboard laptop, memory, microphone, monitor, mouse, output, photocopier, program, QR code, RAM, ROM, storage, tablet device, technology		application camera angle, clip cross blur, cross fade cross zoom, desktop digital device dip to black directional wipe edit, film film editing software graphics, import key events, laptop music, photo plan, recording sound effects storyboard time code, trailer transition, video	accurate age restrictions autocomplete belief, charity content, digital device fact, fake news hoax, internet internet of things opinion online emotions organisation permission privacy settings reliable, search search engine, share smart devices social media platforms

Key Learning	**Lesson 1:** To recognise what the internet is and how to use it safely.	**Lesson 1:** To recognise what a network is. **Lesson 2** To demonstrate how information moves around a network. **Lesson 3** To demonstrate how a website works. **Lesson 4** To explore the role of a router. **Lesson 5** To identify the role of packet data.	**Lesson 1:** To explore a programming application. **Lesson 2** To use repetition (a loop) in a program. **Lesson 3** To program an animation. **Lesson 4** To program a story. **Lesson 5** To program a game.	**Lesson 1:** To recognise basic inputs and outputs. **Lesson 2** To identify the components inside a laptop. **Lesson 3** To understand the purpose of computer parts. **Lesson 4** To understand the purpose of computer parts. **Lesson 5** To decompose a tablet computer.	**Lesson 1:** To plan a book trailer. **Lesson 2** To take photos or videos that tell a story. **Lesson 3** To edit a video. **Lesson 4** To add text and transitions to a video. **Lesson 5** To evaluate video editing.	**Lesson 1:** To understand how the internet can be used to share beliefs, opinions and facts. **Lesson 2** To explain what should be done before sharing information online. **Lesson 3** To identify the effects that the internet can have on people's feelings. **Lesson 4** To understand the ways personal information can be shared on the internet. **Lesson 5** To understand the rules for social media platforms.

Class 3 Year B	First Lesson	Autumn		Spring		Summer	Online safety Day
Unit	**Online Safety**	**Computing systems and networks**		**Programming 1**	**Programming 2**	**Data handling**	**Online safety**
Focus	Online Safety Contract	Collaborative Learning Microsoft Office 365		Further coding with Scratch	Computational thinking	Investigating weather	Online safety Y4 (5 lessons)
Overview	Learning to stay safe online by discussing and agreeing clear ground rules, and creating an Online Safety Contract to understand and follow throughout the year.	Learning how to work collaboratively and exploring a range of collaborative tools.		Revisiting the key features and beginning to use 'variables' in code scripts.	Solving problems effectively using the four areas of abstraction, algorithm design, decomposition and pattern recognition.	Researching and storing data on spreadsheets and designing a weather station.	Searching for information and making a judgement about the probable accuracy; recognising adverts and pop-ups; understanding that technology can be distracting.
Vocab	Accuracy, ad advantage advertisement belief, bot computer disadvantage distraction, fact, hashtag, implications in-app purchases influencer, opinion program recommendation reliable, risk screen time search results snippets, sponsored trustworthy	Average, collaborate Comment, data, data representation edit, e-document email, insert (file) multiple choice numerical data online, presentation rating, reply, resolve reviewing comments share, slide, spreadsheet, suggestion, survey teamwork transition		code block conditional statement coordinates decompose feature information negative number orientation position program project script sprite stage tinker variable	abstraction algorithm code computational thinking decomposition input logical reasoning output pattern recognition script sequence variable	Accurate, climate zone Condensation. cylinder degree Celsius evaporation extreme weather filming, forecast heat sensor lightning measurement pinwheel, presenter rain, satellite, script, sensor data, solar panel, temperature thermometer tornado, weather weather forecast wind speed	Accuracy, ad advantage advertisement belief, bot computer disadvantage distraction, fact, hashtag, implications in-app purchases influencer, opinion program recommendation reliable, risk screen time search results snippets, sponsored trustworthy

Key Learning	**Lesson 1:** To recognise what the internet is and how to use it safely.	**Lesson 1:** To understand that software can be used to work online collaboratively. **Lesson 2** To understand how to contribute to someone else's work effectively. **Lesson 3** To understand how to create a digital survey. **Lesson 4** To create and share a Microsoft Form. **Lesson 5** To analyse data.	**Lesson 1:** To recall the key features of Scratch. **Lesson 2** To understand how a Scratch game works by using decomposition to identify key features. **Lesson 3** To recognise what a variable is. **Lesson 4** To understand how to make a variable in Scratch. **Lesson 5** To create a quiz using variables.	**Lesson 1:** To understand that computational thinking is made up of four key strands. **Lesson 2** To understand what decomposition is and how to apply it to solve problems. **Lesson 3** To understand what pattern recognition and abstraction mean. **Lesson 4**To understand how to create an algorithm and what it can be used for. **Lesson 5** To combine computational thinking skills to solve a problem.	**Lesson 1:** To log data taken from online sources in a spreadsheet. **Lesson 2** To design a weather station. **Lesson 3** To design an automated machine to respond to sensor data. **Lesson 4** To understand how weather forecasts are made. **Lesson 5** To use tablets or digital cameras to present a weather forecast.	**Lesson 1:** To describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy. **Lesson 2** To describe some of the methods used to encourage people to buy things online. **Lesson 3** To explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true. **Lesson 4** To explain that technology can be designed to act like or impersonate living things. **Lesson 5** To explain how technology can be a distraction and identify when I might need to limit the amount of time spent using technology.

Class 4 Year A	First Lesson	Autumn	Spring		Summer	Online safety Day
Unit	**Online Safety**	**Computing systems and networks**	**Data handling**	**Programming 2**	**Creating media**	**Online safety**
Focus	Online Safety Contract	Search engines	Mars Rover 1	Micro:bit	Stop motion animation Stop motion studio	Online safety Y5 (5 lessons)
Overview	Learning to stay safe online by discussing and agreeing clear ground rules, and creating an Online Safety Contract to understand and follow throughout the year.	Learning about how page rank works and how to identify inaccurate information.	Learning about the Mars Rover, exploring how and why it transfers data including instructions, and how messages can be sent using binary code.	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.	Creating animations, storyboard ideas and decomposing a story into small parts before putting together to create the illusion of a moving image.	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.
Vocab	Accuracy, ad advantage advertisement belief, bot computer disadvantage distraction, fact, hashtag, implications in-app purchases influencer, opinion program recommendation reliable, risk screen time search results snippets, sponsored trustworthy	algorithm copyright credit fake news inaccurate index keywords online page rank search engine TASK web crawler website www	8-bit binary Addition, ASCII binary code Boolean, byte CPU, data data transmission decimal numbers discovery, distance hexadecimal input, Mars Rover Moon, numerical data Output, planet radio signal, RAM scientist, sequence signal, simulation space, subtraction	Algorithm, animation App, blocks, bluetooth code block, connection create, debug decompose, designing desktop, device download, images input, instructions laptop, load loop, Micro:bit outputs, pairing pedometer polling, predict repetition	Animation, animator background character decomposition design, digital device edit, evaluate flipbook fluid movement frames, model moving images onion skinning still images stop motion storyboard thaumatrope zoetrope	Accurate, advice App, application app permissions biography, bullying communication, emojis, health, in-app purchases, information judgement, meme mental health mindfulness negative contribution opinion, organisation password, personal information positive contribution

Key Learning	**Lesson 1:** To recognise what the internet is and how to use it safely.	**Lesson 1:** To understand what a search engine is and how to use it. **Lesson 2** To be aware that not everything online is true. **Lesson 3** To search effectively. **Lesson 4** To create an informative poster. **Lesson 5** To understand how search engines work.	**Lesson 1:** To identify how and why data is collected from space. **Lesson 2** To read and calculate numbers using binary code. **Lesson 3** To identify the computer architecture of the Mars Rovers. **Lesson 4** To use simple operations to calculate bit patterns. **Lesson 5** To represent binary as text.	**Lesson 1:** To tinker with a new piece of software. **Lesson 2** To program an animation. **Lesson 3** To recognise coding structures. **Lesson 4** To create a program for a specific task. **Lesson 5** To create a program.	**Lesson 1:** To understand what animation is. **Lesson 2** To understand what stop motion animation is. **Lesson 3** To plan a stop motion video. **Lesson 4** To create a stop motion animation. **Lesson 5** To edit my stop motion animation.	**Lesson 1:** To understand how apps can access personal information and how to alter the permissions. **Lesson 2** To be aware of the positive and negative aspects of online communication. **Lesson 3** To understand how online information can be used to form judgements. **Lesson 4** To discover ways to overcome bullying. **Lesson 5** To understand how technology can affect health and wellbeing.

Class 4 Year B	First Lesson	Autumn		Spring		Summer	Online safety Day
Unit	**Online Safety**	**Computing systems and networks**	**Computing systems and networks**		**Data handling**	**Programming**	**Online safety**
Focus	Online Safety Contract	Bletchley Park and the history of computers	Exploring AI		Big data 1	Intro to Python	Online safety Y6 (6 lessons)
Overview	Learning to stay safe online by discussing and agreeing clear ground rules, and creating an Online Safety Contract to understand and follow throughout the year.	Discovering the history of Bletchley Park, historical figures and the importance of code breaking and passwords. Designing a computer of the future and creating an audio advert for their designs.	Exploring what AI is and how it generates text, images and code. Learning about creating and refining prompts to improve AI responses while also considering the ethical implications of AI and its potential to replace human roles.		Identifying how barcodes and QR codes work. Learning how infrared waves are used for the transmission of data while recognising the uses of RFID.	Using the programming language 'Python' to create designs and art. Learning how to create loops and nested loops to make their code more efficient.	Learning to deal with issues online; about the impact and consequences of sharing information online; how to develop a positive online reputation; combating and dealing with online bullying and protective passwords.
Vocab	Anonymity, antivirus Biometrics, block Consent, digital footprint, financial information, hacking Inappropriate, malware, online bullying, online reputation, password personal information phishing, privacy settings, report, respect, scammers screen grab, selfie, screenshot, secure	acrostic code audio advert brute force hacking Caesar cipher chip and PIN system cipher, combination date shift cipher discovery, invention Nth letter cipher Password, pigpen cipher, scrambled Script, secret, secure technological advancement trial and error	AI, AI-generated image, AI-generated text, algorithm applications authenticity code, considerations debate, ethical fake, generate HTML, implications instructions modify, output prompt, refine response trained		algorithm barcode, boolean brand, chip commuter, contactless data, encrypt infrared, proximity QR code, QR scanner radio waves RFID, signal spreadsheet systems analyst transmission wireless	algorithm code command design, import indentation input instructions loop output patterns random remix repeat shape	Anonymity, antivirus Biometrics, block Consent, digital footprint, financial information, hacking Inappropriate, malware, online bullying, online reputation, password personal information phishing, privacy settings, report, respect, scammers screen grab, selfie, screenshot, secure

Key Learning	**Lesson 1:** To recognise what the internet is and how to use it safely.	**Lesson 1:** To understand there are many different types of secret codes. **Lesson 2** To understand the importance of having a secure password. **Lesson 3** To recognise the importance of the history of computers and create a well-researched presentation. **Lesson 4** To design a computer of the future. **Lesson 5** To create an audio advert for a future computer.	**Lesson 1:** To explore the basics of AI. **Lesson 2** To recognise how AI processes and responds to text prompts. **Lesson 3** To recognise how AI can be used to explore and generate images. **Lesson 4** To apply AI-generated HTML code to the website Trinket. **Lesson 5** To debate the ethical implications of AI.	**Lesson 1:** To identify how barcodes and QR codes work. **Lesson 2** To know how infrared waves transmit data. **Lesson 3** To recognise how RFID is used. **Lesson 4** To input and analyse real-world data. **Lesson 5** To analyse and evaluate data.	**Lesson 1:** To tinker with a new piece of software. **Lesson 2** To understand nested loops. **Lesson 3** To understand basic Python commands. **Lesson 4** To use loops when programming. **Lesson 5** To understand the use of random numbers.	**Lesson 1:** To describe online issues that give us negative feelings and know how to get help. **Lesson 2** To explore the impact and consequences of sharing online. **Lesson 3** To know how to create a positive online reputation. **Lesson 4** To describe how to capture bullying content as evidence. **Lesson 5** To manage personal passwords effectively. **Lesson 6** To be aware of strategies that help protect people online.