

Computing Curriculum overview

Kapow Primary offers full coverage of the KS1 and KS2 Computing curriculum, including EYFS.
We have categorised our content into three strands:

- Digital Literacy and Online Safety
- Computational Thinking
- Computers and Hardware

Early Years Foundation Stage - Early years outcomes: Technology You may observe that a child:	Kapow Primary's computing strands	Kapow Primary's units
Completes a simple program on a computer	Digital Literacy and Online Safety	Computing through continuous provision Using a computer
Interacts with age-appropriate computer software	Digital Literacy and Online Safety Computational Thinking	Computing through continuous provision Exploring hardware All about instructions Programming: Bee Bots Using a computer
ELG: Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	Computational Thinking Computers and Hardware	Supporting a child-led project using technology Exploring hardware Programming: Bee Bots Sorting and categorising: Introduction to data Using a computer

Key stage 1 - National Curriculum computing subject content: You may observe that a child:	Kapow Primary's computing strands	Kapow Primary's units
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Computational Thinking	Y1 > Programming: Bee-Bot (alternative unit - Programming: Virtual Bee-Bot), Algorithms unplugged Y2 > What is a computer?, Programming: ScratchJr, Algorithms and debugging, International Space Station
Create and debug simple programs	Computational Thinking	Y1 > Programming: Bee-Bot (alternative unit - Programming: Virtual Bee-Bot), Algorithms unplugged Y2 > Programming: ScratchJr, Algorithms and debugging
Use logical reasoning to predict the behaviour of simple programs	Computational Thinking	Y1 > Programming: Bee-Bot (alternative unit - Programming: Virtual Bee-Bot), Digital imagery Y2 > Programming: ScratchJr, Algorithms and debugging
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Digital Literacy and Online Safety	Y1 > Getting started, Digital imagery, Introduction to data, Rocket to the moon Y2 > Online Safety, Word processing, Programming: ScratchJr, International Space Station, Stop motion using tablet devices (alternative units - Stop motion with cameras and Stop motion devices without cameras)
Recognise common uses of information technology beyond school	Computers and Hardware	Y1 > Getting started, Digital imagery, Introduction to data, Online safety Y2 > What is a computer?, Stop motion using tablet devices (alternative units - Stop motion with cameras and Stop motion devices without cameras), Online Safety
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	Digital Literacy and Online Safety	Y1 > Getting started, Digital imagery, Online safety Y2 > Online Safety, Word processing

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Key stage 2 - National Curriculum computing subject content: You may observe that a child:	Kapow Primary's computing strands	Kapow Primary's units
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Computational Thinking	Y3 > Journey inside a computer, Programming: Scratch Y4 > HTML, Computational thinking, Further coding with Scratch Y5 > Micro:bit, Programming: music - Sonic Pi (Alternative unit - Programming: music - Scratch), Stop motion animation - Stop Motion Studio (Alternative unit - Stop motion animation - with cameras) Y6 > Intro to Python, Skills showcase
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Computational Thinking	Y3 > Programming: Scratch Y4 > HTML, Investigating weather, Computational thinking, Further coding with Scratch Y5 > Micro:bit, Programming: music - Sonic Pi (Alternative unit - Programming: music - Scratch), Stop motion animation - Stop Motion Studio (Alternative unit - Stop motion animation - with cameras) Y6 > Intro to Python, Skills showcase
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Computational Thinking	Y3 > Journey inside a computer, Programming: Scratch Y4 > HTML, Computational thinking, Further coding with Scratch Y5 > Micro:bit, Programming: music - Sonic Pi (Alternative unit - Programming: music - Scratch) Y6 > Intro to Python, Skills showcase
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	Digital Literacy and Online Safety Computers and Hardware	Y3 > Journey inside a computer, Emailing, Networks (archived), Networks and the internet, Online safety Y4 > Collaborative learning, The internet (archived) Y5 > Micro:bit, Search engines, Mars Rover 1 Y6 > Bletchley Park 1, Skills showcase, Big Data 1, Online safety
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Digital Literacy and Online Safety Computers and Hardware	Y3 > Networks and the internet, Online safety, Digital literacy using devices other than iPads (Alternative unit - Digital literacy using iPads) Y4 > The internet (archived) Y5 > Search engines Y6 > Bletchley Park 1, Skills showcase, Online safety

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Key stage 2 - National Curriculum computing subject content: You may observe that a child:	Kapow Primary's computing strands	Kapow Primary's units
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	Computational Thinking Computers and Hardware	Y3 > Emailing, Top trumps databases, Digital literacy using devices other than iPads (Alternative unit - Digital literacy using iPads) Y4 > Collaborative learning, Website design, Investigating weather Y5 > Online Safety, Micro:bit, Programming: music - Sonic Pi (Alternative unit - Programming: music - Scratch), Mars Rover 1 Y6 > Bletchley Park 1, Skills showcase, Big Data 1
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Digital Literacy and Online Safety	Y3 > Emailing, Online safety Y4 > Online Safety, Website design, HTML, Investigating weather Y5 > Online Safety, Search engines Y6 > Bletchley Park 1, Skills showcase, Big Data 1, Online safety

EYFS	Description	Curriculum coverage	Links to other areas of learning:
Teacher guidance: Computing through continuous provision Go to guidance	Resourcing your continuous and enhanced provision, and observing computing skills through play.	Computers and Hardware Computational Thinking Guidance for teachers on how to audit the classroom environment to ensure opportunities for the exploration of computers, hardware and computational thinking are being provided. Guidance on undertaking observations of the children at play to ensure computing outcomes are met and developed.	
Teacher guidance: Supporting a child-led project using technology Go to guidance	Using technology to support pupils' learning in other areas and introducing digital safety.	Digital Literacy and Online Safety Modelling how to search for images safely online. When using the internet alongside an adult, or independently, learning what to do if they come across something that worries them or makes them feel uncomfortable. Computers and Hardware Using a camera and/or iPad to take photos. Recognising that a range of technology is used in places such as homes and school.	Communication and language - speaking Physical development - moving and handling CoEL - Playing and exploring
Exploring hardware (5 lessons) Go to unit	Exploring hardware through the use of tinker trays for play and introducing cameras and other technology to record meaningful moments.	Computers and Hardware Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary. Learning how to operate a camera and/or iPad and use them to take photos Recognising that a range of technology is used in places such as homes and schools.	Communication and language - understanding & speaking Mathematics -numbers & shape, space and measures CoEL - Active learning CoEL - Creating and thinking critically
All about instructions (5 lessons) Go to unit	Learning how to follow and give instructions in 'unplugged' practical games and activities, and learning what to do when things go wrong.	Computational Thinking Following instructions as part of practical activities and games and learning to debug when things go wrong. Learning to give simple instructions. Learning that an algorithm is a set of instructions to carry out a task, in a specific order. Using logical reasoning to read simple instructions and predict the outcome	
Programming: Bee Bots (5 lessons) Go to unit	Exploring how Bee Bots work and how to give them simple instructions, using them in child-led play. Acquiring the help of an adult to learn to debug and problem solve when things go wrong.	Computers and Hardware Experimenting with programming a Bee-bot/Blue-bot and learning how to give simple commands. Computational Thinking Learning to debug instructions, with the help of an adult, when things go wrong.	PSED - self-confidence and self-awareness Mathematics - shape, space and measures CoEL - Playing and exploring CoEL - Creating and thinking critically

EYFS	Description	Curriculum coverage	Links to other areas of learning:
Introduction to data (5 lessons) Go to unit	Understanding how to sort and categorise objects and give reasons why, including a play-based exploration of branch databases. Learning to represent data in practical ways and through pictograms.	Digital Literacy and Online Safety Computational Thinking Representing data through sorting and categorising objects in unplugged scenarios. Representing data through pictograms. Exploring branch databases through physical games.	Mathematics -numbers & shape, space and measures CoEL - Active learning CoEL - Creating and thinking critically
Using a computer (5 lessons) Go to unit	Learning the basic skills needed to use a computer, including keyboard and mouse exploration, and using these skills for a purpose.	Digital Literacy and Online Safety Learning to log in and log out. Using a simple online paint tool to create digital art. Computational Thinking Learning what a keyboard is and how to locate relevant keys. Learning what a mouse is and developing basic mouse skills such as moving and clicking.	Physical development - moving and handling CoEL - Playing and exploring CoEL - Active learning

Year 1	Overview	Knowledge	Vocabulary	Cross-curricular links
Getting started (5 lessons) Introducing children to logging in and using technology for a purpose, including creating art Go to unit	Digital Literacy and Online Safety 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. Computers and Hardware Learning to locate where keys are on the keyboard. Developing basic mouse skills.	Keyboard skills – locating the letters of individual names Computer menus - file, open, save, close Using a mouse – click and drag, drag and drop, left/right click, mouse mat	• account • clipart • computer • log on/off • password • resize • screen (monitor) • software • tools • username	Art and design Maths
Programming Bee Bots (5 lessons) Using Bee-Bots to navigate an area and constructing simple algorithms, through the story of The Three Little Pigs Go to unit: • Option 1 • Option 2	Computational Thinking 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.	Bee-Bot – locating the buttons, battery compartment, on/off switch, wheels and speaker Understanding Bee-Bot instructions and button functions – move forwards/backwards, turn left/right, clear, pause, go	• algorithm • Bee-Bot • computing code • computer program • explain • explore • instructions • predict • tinker • video	
Algorithms unplugged (5 lessons) Learning how computers handle information by exploring 'unplugged' algorithms- completing tasks away from the computer Go to unit	Computational Thinking 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.	Planning and execution of an algorithm/set of instructions for a simple activity Basic debugging concepts Decomposition – how to breakdown objects into separate parts and categorise them	• algorithm • bug • computer • debug • decompose • device • input • instructions • output • solution	

Year 1 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Digital imagery (5 lessons) Taking and manipulating digital photographs, including adding images found via a search engine Go to unit	Digital Literacy and Online Safety 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. Computers and Hardware Using cameras or tablets to take photos. Computational Thinking Using logical reasoning to predict the behaviour of simple programs.	How sequences work Camera types and basic photography techniques Tell a trusted adult about any online safety concerns	• crop • delete • download • drag and drop • editing software • image • import • resize • save as • search engine • sequence • smart device • storage space • visual effects	English: reading
Introduction to data (5 lessons) Learning about what data is and how it can be represented and using these skills to show the findings of a mini beast hunt Go to unit	Digital Literacy and Online Safety Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Selecting software appropriately. Computers and Hardware Recognising uses of technology beyond school.	How branching databases work Other ways of collecting data – tally chart, bar graph, line graph, pictogram	• categorise • chart • computer • data • information • label • pictogram • record • sort • table • text	Maths Science
Rocket to the moon (5 lessons) Appreciating the value of computers, understanding that they helped us get to the moon Go to unit	Digital Literacy and Online Safety Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Selecting software appropriately.	Computer files and formats – .jpegs, .txt, folders Using a computer to make a list/drawing and saving the document to a folder How to make a bottle rocket	• computer • program • create • data • digital content • e-document • folder • list • save • sequence • share • spreadsheet	Science D&T Maths History

Year 1 *continued*	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety **(4 lessons)** An introduction to online safety: children learn what it means to be 'online' and how to stay safe whilst treating others with respect. Go to unit	Digital Literacy and Online Safety 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	Know the meaning of 'sharing' and 'posting' in an online context Know the 4 top tips for staying safe online 1) People you do not know are strangers 2) Be nice to people like you would be in the real world 3) Keep your personal information private 4) If you are unsure about anything, then tell an adult you trust	• communicate • connect • devices • digital footprint • emotion • feelings • internet • internet safety • online • personal information • posting • respect • sharing • smart device • strangers • trust • wired • wireless	RSE

Year 2	Overview	Knowledge	Vocabulary	Cross-curricular links
What is a computer? **(5 lessons)** Children explore what a computer is, learning about inputs and outputs, how computers are used in the wider world and designing an invention Go to unit	Computational Thinking Learning about inputs and outputs and how they are used in algorithms. Computers and Hardware Understanding what a computer is and the role of individual components.	Different types of technology – cameras, phones, torches, microwave, alarm clock, remote control Inputs e.g. keyboard, mouse Outputs e.g. monitor, speakers, printers	• battery • buttons • computer • desktop • device • electricity • invention • laptop • technology • wire	D&T Science
Word processing **(5 lessons)** Using their developing word processing skills, pupils write simple messages to friends and learn why we must be careful about who we talk to online Go to unit	Digital Literacy and Online Safety Using word processing software to type and reformat text. Understanding the importance of staying safe online.	Word processing – fonts, bold, italics, underline, highlight Keyboard skills – delete, enter, spacebar E-books and e-documents	• backspace • copyright • image • import • keyboard character • paste • undo/redo • touch typing	PSHE
Programming: ScratchJr **(5 lessons)** Using 'ScratchJr', pupils programme a familiar story and an animation, make their own musical instruments and follow an algorithm to record a joke Go to unit	Computational Thinking 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. Digital Literacy and Online Safety Using technology purposefully to create, organise, store, manipulate and retrieve digital content.	Coding – Scratch Jr, code blocks, algorithms, sprites/speeds, repeat and loop control blocks, start/finish, direction Blocks – triggering, motion, looks, sound, end, control	• animation • bug • code • debug • icon • imitate • instructions • sequence	

Year 2 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Algorithms and debugging **(5 lessons)** Identifying problems with code using both 'unplugged' and 'plugged' systems to debug (identify and correct) errors in an algorithm Go to unit	Computational Thinking 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.	Zooming in and out of maps on Planet Earth Unplugged algorithms and instructional writing Abstraction/key information Decomposition/smaller chunks	• artificial intelligence (AI) • bug • correct • data • debug • decompose • error • key features • loop • predict • unnecessary	
International Space Station **(5 lessons)** Building on their understanding of how computers sense the world around us, pupils learn how data is collected and used to keep astronauts safe on the I.S.S Go to unit	Digital Literacy and Online Safety Using technology to create and label images and to put data into a spreadsheet. Computational Thinking Consider inputs and outputs to understand how sensors work.	International Space Station – Node 1,2,3, Zvezda, Zarya, Destiny, Columbus, Kibo, survival items, growing plants in space	• approximate • astronaut • data • digital content • experiment • interactive map • laboratory • monitor (verb) • satellite • sensor • space • survival • thermometer	Science
Stop motion **(5 lessons)** Pupils create simple animations, storyboarding their ideas then decomposing it into small parts of action to be captured. Go to unit: • Option 1 • Option 2 • Option 3	Digital Literacy and Online Safety Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Computers and Hardware Understanding how to use tablets or computers to take photos.	Animations – how still images become moving images Use of animation software Sketching and planning	• animator • contraption • decompose • design • download • film review • filming • import • image • plan • sketch • software • stop-motion • storyboard • upload	English

Year 2 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety **(4 lessons)** Pupils learn about how to keep personal information safe online, including their right to give or deny permission for information to be shared online Go to unit	Digital Literacy and Online Safety Identifying how to keep personal information private. Using technology respectfully by asking for permission before sharing about others online.	The difference between 'online' and 'offline.' How to create a strong password. Tell a trusted adult about any online safety concerns	• accept • consent • content • offline • online • password • permission • personal information • terms and conditions • trusted adult	RSE

Year 3	Overview	Knowledge	Vocabulary	Cross-curricular links
Emailing (5 lessons) Pupils learn how to send emails, including attachments and how to be responsible digital citizens Go to unit	Digital Literacy and Online Safety Learn about cyberbullying and fake emails. Understanding the purpose of emails.	Keyboard skills - @ symbol Email compose windows – addresses, subjects Be careful with unexpected emails	• account • attachment • BCC • CC • computer • cyberbullying • domain • email • email account • emoji • information • log off/ log on • password • spam • username	English
Journey inside a computer (5 lessons) Children learn about the different parts of a computer through role-play and develop their understanding of how they follow instructions Go to unit	Computers and Hardware Understanding what different components of a computer do. Computational Thinking Understanding that programs execute by following precise and unambiguous instructions.	Computer parts – CPU, GPU, RAM, HDD QR Codes and how to use them Other portable electronic devices	• algorithm • computer • computer program • data • desktop • instructions • ROM • tablet device • trackpad	
Top trumps databases (5 lessons) Developing their understanding of data and databases, children play with and create their own Top Trumps cards, learning how to interpret information by ordering and filtering Go to unit	Digital Literacy and Online Safety Using technology purposefully to create, organise, store, manipulate and retrieve data.	Identifying and reading databases Understanding bar graphs and pie charts	• categorise • data • database • fields • filter • graphs and charts • information • record • sort • spreadsheet	Maths

Year 3 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Digital literacy (5 lessons) Developing their video skills, pupils create a book trailer, storyboarding their trailers before then filming and editing their videos, adding effects such as transitions, music, voice and text. Go to unit; • Option 1 • Option 2	Digital Literacy and Online Safety Using technology purposefully to create, organise, store, manipulate and retrieve digital content, including searching for relevant information.	Digital media – transitions, morph, cross zoom, peel off, dip to black, directional wipe Digital sound waves – viewing and editing	• application • voice • desktop • voiceover • digital device • edit • film • film editing software • graphics • import • key events • laptop • plan • recording • sound effects • time code	English
Programming: Scratch (5 lessons) Using Scratch, with its block-based approach to coding, pupils learn to tell stories and create simple games. Go to unit	Computational Thinking 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.	Scratch – building games and animations Choosing sprites, painting sprites, surprise sprites, uploading sprites Key for Scratch colour coding blocks	• animation • sprite • application • tinker • code • code block • debug • decompose • interface • loop • predict • program • remixing code • repetition code • review	
Networks and the internet (5 lessons) To understand how computers communicate, children learn about networks and the internet, and how they are used to share information. Go to unit	Computers and Hardware Identifying network components and understand how they are used to connect to the internet and how data is transferred. Digital Literacy and Online Safety 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.	Network maps – house, router, ISP, smart phones, web server, cables Internet uses – communication, file sharing, websites, uploading/downloading, streaming media, games	• device • file • internet • network • network map • network switch • router • server • submarine cables • the cloud • wi-fi/wired/wireless • wireless access point	

Year 3 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety **(4 lessons)** Understanding that you can't trust everything you read on the internet. Learning about social media platforms including their age-restrictions and privacy settings. Go to unit	Digital Literacy and Online Safety Learn to distinguish between facts, opinions and beliefs on the internet Learn how to deal with upsetting online content Learn about how to protect our personal information using privacy settings and how to be discerning about what information we share and who with	Know the steps to take when faced with upsetting online content Know the difference between fact, opinion and belief Know age restrictions for popular online platforms	• accurate, • age restricted, • autocomplete, • beliefs, • block, • content, • digital devices, • fact, • fake news, • opinion, • privacy settings, • reliable, • report, • requests, • search engine, • security questions, • smart devices, • social media platforms, • social networking	RSE

Year 4	Overview	Knowledge	Vocabulary	Cross-curricular links
Collaborative learning (5 lessons) Learning to work collaboratively in a responsible way using tools including Google Docs and Sheets Go to unit	Digital Literacy and Online Safety Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals. Understanding opportunities offered by the World Wide Web for communication and collaboration.	Collaborative online documents Presentation skills	• collaborate • comment • e-Document • edit • email • icon • insert (file) • link • presentation software • presentation • reply • reviewing comments • share • spreadsheet • transition	
Further coding with Scratch (5 lessons) The coding program Scratch is explored further by revisiting key features and introducing the children to the crucial concept and execution of using 'variables' in code scripts. Go to unit	Computational Thinking 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.	Scratch coding blocks – motion, sound, looks, events, control, operators, sensing, variables, my blocks Scratch sprites	• code • code block • conditional statement • decompose • direction • feature • icon • orientation • position • program • project • stage • tinker • variable	
Website design (5 lessons) Pupils design and create their own websites, considering content and style, as well as understanding the importance of working collaboratively Go to unit	Digital Literacy and Online Safety Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals. Understanding opportunities offered by the World Wide Web for communication and collaboration.	Websites – making a new site, building a new page, add text boxes, inserting files, changing themes, embedding links	• collaboration • content • create • design • edit • embed • feature • header • hyperlink • insert (file) • online • plan • tab • website • WWW	

Year 4 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
HTML **(5 lessons)** Pupils explore the language behind well-known websites, while developing their understanding of how to change the core characteristics of a website using HTML and CSS Go to unit	Digital Literacy and Online Safety Recognising that information on the internet might not be true or correct. Using technology safely, by recognising acceptable/ unacceptable behaviour. Knowing what to do when they have concerns about content or contact online. Computational Thinking 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.	HTML code CSS code HTML tags – head, body, ordered lists, list items, image, line break	• code • content • copyright • CSS • hacker • hex code • internet browser • permission • script • URL • web page	
Investigating weather (5 lessons) Children investigate the role of computers in forecasting and recording weather as well as how technology is used to present forecasts Go to unit	Digital Literacy and Online Safety Understanding why some sources are more trustworthy than others. Computational Thinking Understanding the role of inputs and outputs in computerised devices.	Weather station – sensors, anemometer, probes, data recording, solar panel, rain gauge Weather satellites – altimeter, GPS, solar array, data transmission Green screen – how a subject can placed in a different background (chroma key)	• algorithm • automated machine • calculate • climate • device • forecast • log data • predict • record • sensor • source • spreadsheet • temperature • weather	Science Geography
Computational thinking (5 lessons) Through developing their understanding of the four pillars of computational thinking, children learn to identify them in different contexts Go to unit	Computational Thinking Understand what decomposition is and how it facilitates problem solving. Designing, writing and debugging programs that accomplish specific goals. Understand abstraction and patterns recognition.	Decomposition - data without any identification, order or sequence Sequencing and pattern recognition	• abstraction • algorithm • design • code • code blocks • computer • decompose • problem	

Year 4 *continued*	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety **(6 lessons)** Pupils develop their understanding of how to identify trustworthy information online and consider the implications of technology. Go to unit	Digital Literacy and Online Safety 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.	Chat bots Advertising- snippets, pop-ups, influencers The difference between facts, opinions and beliefs online	• ad/ advertisement • accuracy • alter • belief • bot • chatbot • fact • fake • gaming • in-app purchases • influencer • implication • judgement • live streaming • opinion • pop ups • reliable • respectful • search engine • social media • snippet • sponsored	RSE

Year 5	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety **(5 lessons)** Considering online communication and the effects on mental health and wellbeing. Go to unit	Computers and Hardware Understanding permissions required by apps to access personal information. Digital Literacy and Online Safety Considering online judgements that people make and how they treat others online.	Forms of online communication- memes, gifs, emojis The importance of creating strong passwords Online bullying- what it is and what to do about it.	• application 'app' • anonymity • bullying • emoji • gif • hacked • interpreted • judgement • meme • mental health • misinterpreted • permissions • reliable • reputation	RSE
Micro:bit **(5 lessons)** Programming a small device called a micro:bit to display animations or messages on its simple LED display using block coding Go to unit	Computational Thinking Using block coding to program a device. To explore variables and different forms of input. Computers and Hardware Understand how external devices can be programmed by a separate computer.	BBC Micro:bit – front and back features that can be included as part of an algorithm Code blocks key – basic, input, music, LED, radio, loops, logic, variables, math(s)	• .hex file • .zip file • bluetooth • code blocks • decompose • emulator • feature • loop • pedometer • predict • systematic • tinker • variable	
Search engines **(5 lessons)** To enable children to quickly and accurately find information and become independent learners, they need to develop their searching skills and learn how to identify trustworthy sources Go to unit	Digital Literacy and Online Safety Recognising that information on the internet might not be true or correct. Know how to use keywords to quickly find accurate information.	Search Engines – search bar, company logo, hyperlink, keywords, fake news	• algorithm • company logo • data leak • data privacy • inaccurate information • index • keywords • network • online • page rank • TASK • web crawler • website • WWW	

Year 5 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Programming Music **(5 lessons)** Composing music using code through Sonic Pi or Scratch pupils can compose simple tunes culminating in a 'battle of the bands' using loops of music Go to unit: • Option 1 • Option 2	Digital Literacy and Online Safety Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals. Computational Thinking Using programming language to create music, including use of loops.	Sonic Pi interface – play controls, editor controls, information and help controls, code editor, scope, log viewer Live loop, simple melody, selecting sounds	• basic commands • bug/debug • code (computer and verb) • error • live loop • loop • pitch • program language • rhythm • soundtrack • tempo • timbre • tinker	Music
Mars Rover 1 **(5 lessons)** Pupils explore inputs and outputs as well as Binary numbers to understand how the Mars Rover transmits and receives data and how scientists are able to control it to explore another planet! Go to unit	Digital Literacy and Online Safety 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. Computers and Hardware Using search technologies effectively, appreciating how results are selected and ranked, and be discerning in evaluating digital content. Recognising that computers transfer data in binary and understand simple binary addition.	Mars Rover – distance and time travelled Binary numbers and equivalent decimal values	• binary code • signal • data • computer simulation • data transmission • discovery • space (astronomy) • distance • input • moon • numerical data • output • planet • radio signal • scientist • sequence	
Mars Rover 2 **(5 lessons)** Children learn how the Mars Rover is able to send images all the way back to Earth and experiment with online CAD software to design new tyres for it Go to unit	Digital Literacy and Online Safety Developing their CAD skills. Computers and Hardware Understanding how image data is transferred.	Digital Images – a series of programmed pixels RGB colour mode – produces a spectrum of colours	• algorithm • binary image • bit • bit pattern • CAD • data • encode • image • JPEG • memory computer • operating system • pixels	

Year 5 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Stop motion animation **(5 lessons)** Collaboratively creating a stop-motion animation by sharing and then decomposing their ideas . Pupils will develop their ability to edit and improve their creations. Go to unit: • Option 1 • Option 2	Digital Literacy and Online Safety Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Computers and Hardware Understanding how to use tablets or computers to take photos. Computational Thinking Consider sequence and selection of frames when editing work.	How animations developed over time. How still images become animations. Option 1: Use of animation software. Option 2: Use of editing software. How to take a good photo.	• animation • animator • background • decompose • design • digital device • duplicate • editing • frame • illusion • onion skinning • stop-motion • storyboard • upload	Art

Year 6	Overview	Knowledge	Vocabulary	Cross-curricular links
Bletchley Park 1 & 2 (10 lessons) Children learn about the history of Bletchley Park, including: key historical figures, how the first modern computers were created at as part of a WWII code breaking team and consider how computers have evolved over time. They then go on to investigate secret codes and how they are created, exploring 'brute force' hacking and learn how to make passwords more secure Go to unit: • BP1 • BP2	Digital Literacy and Online Safety Understanding the importance of secure passwords and using searching and word processing skills to create a presentation. Computational Thinking Using programming software to understand hacking, relating this to computer cracking codes in WWII.	Demographic and amount of workers, The Colossus, encrypted messages, date shift cypher, first electronic programmable computer	• acrostic code • brute force hacking • Caesar cipher • cipher • encrypt • invention • Nth letter cipher • password • pigpen cipher • technological advancement • trial and error	History Maths
	Digital Literacy and Online Safety Editing sound recordings for specific purpose. Computers and Hardware Learning about the history of computers and how they evolved over time.	Y Service locations – British wireless intercept stations. Operators tuning in to enemy messages. Memory sizes – KB, MB, GB, TB	• background noise • byte • computer • CPU • memory storage • mouse • OS • radio play • RAM • ROM • sound effects • touch screen • trackpad	English
Intro to Python **(5 lessons)** Building on their knowledge of coding from previous years, children are introduced to the text-based programming language Python, which is the language behind many apps and programs, such as Dropbox Go to unit	Computational Thinking 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.	Python code – indentation, variable, loop Teaches computers to think for themselves - AI Algorithm – making a cup of tea	• algorithm • code (computer) • computer command • decompose • import • loop • nested loop • random numbers • remix • script libraries • variable	Art and design Maths

Year 6 .continued	Overview	Knowledge	Vocabulary	Cross-curricular links
Big Data 1 **(5 lessons)** Children learn how data is collected and stored by exploring barcodes, QR codes and RFID chips, and investigate how collecting big data can be used to help people in a variety of different scenarios Go to unit	Digital Literacy and Online Safety Understanding how learning can be applied to a real world context. Selecting, using and combining a variety of software to design and create a range of programs, systems and content to collect, analyse, evaluate and present data. Computers and Hardware Understanding that computer networks provide multiple services Understanding how barcodes and QR codes work.	Infrared light, barcodes – how they work and their uses	• barcode • boolean • brand • commuter • contactless • data • data privacy • encrypt • infrared waves • NFC • QR code • radio waves • RFID • signal • systems *or* data • analyst • transmission	Science
Big Data 2 **(5 lessons)** Children learn the difference between mobile data and WiFi and how data is transferred and use their understanding of big data to design their own smart school Go to unit	Digital Literacy and Online Safety Selecting, using and combining a variety of software to design and create a range of programs, systems and content to collect, analyse, evaluate and present data.	Wireless data transfer – barcodes, QR codes, NFC, Bluetooth, RFID What 100MB looks like – real life examples (e.g. one 30 minute TV show)	• big data • bluetooth • corrupt data • digital revolution • GPS • infrared waves • IoT • QR code • SIM • computer simulation • smart school/city	
Skills showcase **(5 lessons)** Reflecting on and showcasing their computing skills, pupils create an entire project around a specific theme Go to unit	Digital Literacy and Online Safety Showcasing their digital literacy skills. Computational Thinking Demonstrating their computational thinking skills by designing and debugging programs, using different inputs and outputs. Computers and Hardware Understanding how search engines work and knowing how to use them safely and effectively.	Extended vocabulary for this unit: • adapt • advertisement • algorithm • bug • CAD • computer code • code (verb) • design • edit • electronic components • image rights • image,	• input • information • invention • loop • output • photo • program • repetition • screenshot • selection (programming) • sequence • variable • WWW	

Year 6 .continued	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety **(6 lessons)** Learning about the impact and consequences of sharing information online; exploring how to develop a positive online reputation that will benefit the children in the long term; capturing evidence techniques and methods to combat online bullying Go to unit	Digital Literacy and Online Safety 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	Know the steps to take if you witness online bullying How to capture a screen grab on various devices	• anonymity • anti-virus software • digital footprint • digital personality • malware • online reputation • peer-pressure • permission • phishing • privacy settings • report • scammers • screengrab • selfie • software update • two-factor authentications	RSE

Team edit (copy and paste) sheet:

Digital Literacy and Online Safety

Computational Thinking

Computers and Hardware

Digital Literacy and Online Safety

Computational Thinking

Computers and Hardware



Colour reference:

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Title

Sub-cell

Link

Year X	Overview	Knowledge	Vocabulary	Cross-curricular links
Title **(5 lessons)** Desc Go to unit			•	
Title **(5 lessons)** Desc Go to unit			•	
Title **(5 lessons)** Desc Go to unit			•	