

Developing Knowledge and Skills in Computing

Our school uses the Purple Mash Scheme to help us deliver the essential knowledge and skills of the National Curriculum. This document aims to support staff in understanding the progression and essential knowledge in developing children’s schemata.

Our curriculum priorities the following areas of computing:

We define these categories of knowledge in the following ways:

Predominant Area of Computing*		
Computer Science	Information Technology	Digital Literacy
*Most units will include aspects of all strands.		

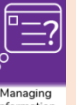
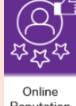
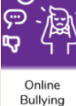
Computer Science	Information Technology	Digital Literacy
Algorithms and programming: fundamentals and language to solve problems; logical reasoning- predicting and comparing; decomposition (breaking it down to small parts); pattern recognition; abstraction (important information) Systems: hardware and networks (the architectures – how computers and digital systems work) Data: how data is represented, grouped, ordered or flows through the system	Using computer systems and software to create, organise and manipulate digital content - Word processing and presentations - Spreadsheets and databases - Multimedia creation - Using digital tools to solve practical problems - Selecting appropriate technologies for different purposes	Safe, responsible, critical and effective use of digital technology Online Safety - Online safety and cybersecurity awareness - Evaluating digital information - Understanding digital communication - Using technology responsibly and ethically - Participating confidently in a digital society

The Essential Knowledge in Each Unit/Biannual Cycle:

Units revisit knowledge and skills (spiral and interleaved). As teachers use the scheme to deliver the essential knowledge they should professionally adapt materials as result of knowing where children are and the essential knowledge expectations over the two years. The overview also includes links to careers in computing which should be highlighted to pupils in the progression of lessons. Online safety is also detailed and staff can deliver this flexibly (attached to computing lesson or another time – staff should ensure coverage but can bring forward units/themes in the year if real scenarios come up and need to be responded to with education.

Purple Mash’s Prior and Future Learning Links Resources are very clear about what units build on and lead to and the knowledge organisers/slides have full information on vocabulary. Information below is organised in the predominant area of computing but most units have aspects that are important in other strands. Teachers will build evidence (in Purple Mash) against essential knowledge and skills to inform a judgement on the overall statement and outcome.

Units of work are delivered as follows in our school (two year curriculum with mixed age classes):

Class Cycle	Autumn Term		Spring Term		Summer Term	
Reception	Using a camera/ipads to take photographs – portraits/activities Logging onto purple mash (avatar creation) Using mini mash – using the mouse pad – click and drag	Mini mash to support our learning Using the computer to draw pictures (Autumn Tree) Click and hold to colour Using To do’s	Technology in our role play – how people that help us use technology Using the computer to draw pictures (Winter Tree) Continue mini mash and 2dos	Programming toys – programmable toys (beebots) and codeapillar Using the computer to draw pictures (Spring Tree) Continue mini mash and 2dos	Logging onto computers independently and beginning to use the keyboard for 1 word captions (knowledge of capitals applied) Continue mini mash and 2dos	Continue mini mash and 2dos Using the computer to draw pictures (Summer Tree) Identifying electrical devices Targeting any key areas ready for Y1.
YR Online Safety (15 min sessions)	 Identify personal information and trusted adults. Identify ways that I can put information on the internet. 	 Give examples of how I (might) use technology to communicate with people I know. Follow simple technology safety rules. 	 I can talk about how to use the internet as a way of finding information online. Identify devices I could use to access information on the internet.	 Describe ways that some people can be unkind online. Offer examples of how this can make others feel.	 Recognise feelings and seek help. Recognise, online or offline, that anyone can say ‘no’ to somebody who makes them feel sad, uncomfortable, embarrassed or upset.	 Know that work I create belongs to me. Name my work so that others know it belongs to me.
Y1/2 Year A	Introduction to Purple Mash 3 lessons This unit introduces Purple Mash, and the essential knowledge and skills required for the Year 1 units. Children will learn about 2Dos, saving work and navigating to key areas. - Logging in and out of Purple Mash - Opening and using 2Dos - Saving work in the Work area Creative Computing 4 lessons Children develop their mouse, keyboard and basic computing skills using creative tools. Children will use the 2DIY tools to paint, create jigsaws and make simple drag and drop games. - Making digital art - Making and sharing jigsaws - Making a drag and drop game	Creating Pictures 5 lessons Digital art creation using 2Paint A Picture. Children learn about famous art styles and how a digital art tool can be used to reproduce art in that style. - Painting in different styles - Learning about famous art styles - Creating a portfolio of digital art Career link: Illustrator: slide28 (pictures) Physical Computing with Microbit Shining Sunbeams (2 – 3 lessons)	Spreadsheets 6 lessons Creating and using spreadsheets with 2Calculate, focusing on how to enter, organise, and manage data in rows and columns. - Understanding rows and columns - Inserting images with values - Using totalling tools - Creating graphs	Animated Stories 6 lessons Children create digital books using the 2Create a Story tool. They learn how to work with images, text and sound. Children also learn how to animate simple objects. - Creating digital art and text - Adding animation to images - Adding sound Career link: digital animator: slide 23 (story books)	Coding 6 lessons Children learn coding using the block coding tool, 2Code. Children will explore simple instructions and relate this to code blocks. By the end of this unit, children will be able to make a simple program. - Using blocks to code - Understanding objects, actions and events - Planning and designing a program Career link: video game designer: slide 2 (Rea Coding)	Coding 6 lessons Builds on the coding skills and knowledge from Year 1. Children will explore, modify and create programs that include the use of timers and button objects. - Understanding algorithms - Introducing sequencing - Coding interaction between objects - Using timers and debugging Career link: video game designer: slide 2 (Rea Coding)
Y1 Online Safety (15 min sessions)	 Keep personal information private. Understand information stays online. 	 Communicate safely with known people. Know, understand and follow rules for safe technology use. 	 Begin searching and evaluating content.	 Understand the importance of being kind and respectful online (and the impact if not).	 Know where to get help online and offline.	 Understand ownership of created work.
Y1/2 Year B	Introduction to Purple Mash 3 lessons This unit introduces Purple Mash, and the essential knowledge and skills required for the Year 1 units. Children will learn about 2Dos, saving work and navigating to key areas. - Logging in and out of Purple Mash - Opening and using 2Dos - Saving work in the Work area Route Explorers 4 lessons Children code using the tool, 2Go. Children learn to build simple algorithms to move a screen turtle along routes. - Considering direction and distance - Creating commands - Building an algorithm	The Internet 4 lessons The fundamentals of the internet, including its purpose, how we access it, and how to use it safely and effectively. - Defining the World Wide Web and the internet - Recognising different hardware - Understanding websites, webpages and browsers Historical figure: Tim Berners-Lee, Making Beats 4 lessons Introducing digital music making. Children will use the tools 2Explore and 2Beat to make their own digital music. - Creating sounds using 2Explore - Combining instruments using 2Beat - Composing digital music Career link: music maker and producer: slide 4	Data Explorers 6 lessons Children use software tools to group and sort recognisable objects. By the end of the unit, children can collect simple data and present it in a pictogram. - Sorting and grouping items - Understanding what data is - Representing data accurately	Questioning 4 lessons Children will explore how to ask questions to collect useful information. They will learn to organise data using tally charts, pictograms, and simple branching databases to help sort and identify objects. - Asking questions to collect data - Using 2Count to present data - Using a branching database Career link: data scientist: slide 9 (Questioning) Technology Around Us 4 lessons Defining and understanding what technology is. Children will relate this to school, home, outside and to its use in the wider world. - Understanding what technology is - Recognising technology in the local environment and wider world	Creating & Following Instructions 3 lessons The basis for understanding simple algorithms and algorithmic thinking. This is a foundational unit, introducing the basis of logical thinking in preparation for coding. - Following instructions - Creating Instructions - Understanding simple algorithms (Physical Computing with Microbit Make a Smile (2 – 3 lessons))	Presenting Ideas 4 lessons Children will learn how to present ideas using the concept mapping tool, 2Connect. They will organise information using the features of a concept map and think about how to present their thoughts clearly to an audience. - Using and making mind maps - Using a mind map as a presentation tool Robotics with Mai-Z MouseBot 4 lessons A Year 1 or Year 2 unit that introduces children to robotics. - Controlling the Mai-Z MouseBot through code - Coding movement, lights and sounds
Y2 Online Safety (15 min sessions)	 Use passwords and keep information private. Know online information can be public and long-lasting. 	 Understand consent and communicating with others online. Use technology safely in different settings. 	 Search effectively and question reliability.	 Understand bullying and how to get help.	 Recognise online risks and support networks.	 Recognise others own online content.

Y3/4 Year A (27/28)	Introduction to Purple Mash 2 lessons An optional introduction to Purple Mash and the essential skills for beginning the year 3 scheme units. Use with classes who haven't used Purple Mash before or who need a refresher in the basics. Email Children explore electronic communication using 2Email. Children learn how to respond to, compose and add attachments to emails as well as consider the safety aspects of email communication. Composing and replying to emails Opening and sending attachments Using email safely Career link: IT Project Manager: slide 16 Historical figure: Easley	Route Planners 5 lessons Children will plan algorithms and write code that includes angles of turn to create routes for screen turtles, testing them using 2Go. Writing commands using rotation Creating algorithms and writing code Planning routes Repetition in 2Go Career link: all jobs!	Effective Searching 4 lessons This unit teaches children to use search technologies effectively by selecting clear keywords, refining searches for accuracy, and evaluating online content to judge whether it is reliable and trustworthy. Using a search engine Search rankings Reliable searching Search algorithms micro:bit Introducing the micro:bit for coding external devices. Children will explore how to make basic outputs occur from the micro:bit when inputs are detected. The software includes an emulator for use in schools without micro:bits. Using the LED display Sequencing and timing Understanding inputs and outputs Adding sounds and gestures 4 lessons	Coding 6 lessons Children will explore timers, the repeat command and the importance of nesting code. They will build up to using design documentation to code a program. Using flowcharts in 2Chart Using timers Introducing repetition Testing and debugging YEAR 3 & 4 - CYCLE A <table><tr><th>Using Flowcharts</th><th>Timers</th><th>Selection</th><th>Coordinates</th><th>Nesting</th><th>Design Code, Test and Debug</th></tr><tr><td>Year 3 Lesson 1</td><td>Year 3 Lesson 2</td><td>Year 4 Lesson 3</td><td>Year 4 Lesson 1</td><td>Year 3 Lesson 4</td><td>Year 4 Lesson 5</td></tr></table> Career link: video game designer: slide 2 (coding) Historical figure: Babbage (coding)	Using Flowcharts	Timers	Selection	Coordinates	Nesting	Design Code, Test and Debug	Year 3 Lesson 1	Year 3 Lesson 2	Year 4 Lesson 3	Year 4 Lesson 1	Year 3 Lesson 4	Year 4 Lesson 5	Presentations 5 lessons Use of industry standard software to create presentations. Children will explore features of the presentation software then create and present their own slideshow presentations. Adding media Customizing with animations and timings Designing an effective presentation Career link: YouTuber/Vlogger/podcaster: slide 24,3	Spreadsheets 6 lessons Using 2Calculate in Advanced Mode, helping children move beyond basic data entry to explore how spreadsheets can calculate and solve problems. Advanced mode of 2Calculate Understanding cell addresses Using the formula wizard Career link: Data Scientist/digital marketing specialist: slide 11 (spreadsheets)
Using Flowcharts	Timers	Selection	Coordinates	Nesting	Design Code, Test and Debug													
Year 3 Lesson 1	Year 3 Lesson 2	Year 4 Lesson 3	Year 4 Lesson 1	Year 3 Lesson 4	Year 4 Lesson 5													
Y3 Online Safety (15 min sessions)	Protect passwords and personal information. Online Reputation Privacy and Security Consider what is appropriate to share.	Develop trust and safe online friendships. Health, Well-being and Lifestyle Online Relationships Understand age restrictions and screen time impacts.	Improve searching and distinguish fact from opinion. Managing Information Online	Recognise and respond to online bullying. Online Bullying	Understand identity and online personas. Self-Image and Identity	Understand plagiarism and fair use. Copyright and Ownership												
Y3/4 Year B (26/27)	Introduction to Purple Mash 2 lessons An optional introduction to Purple Mash and the essential skills for beginning the year 4 scheme units. Use with classes who haven't used Purple Mash before or who need a refresher in the basics. Animation Digital animation and the common techniques used by animators. Children will use traditional animation methods and compare these methods with using animation software (2Animate). Knowing the types of animation Understanding onion skinning Exploring animation features Using storyboarding Career link: animator, illustrator, comic book maker: slide 23, 28, 29 Historical figure: Jobs and Advark	Logo 4 lessons This unit introduces children to Logo programming, focusing on developing their understanding of basic commands and programming concepts. Children will learn to create shapes and letters using instructions. Using Logo commands Writing commands in a sequence Refining code using repetition and procedures Career link: software engineer: slide 10 Historical figure: Flowers Branching Databases 4 lessons Explore and create branching databases in 2Question. They learn how binary questioning is used to sort data records and about the importance of testing and debugging databases that they create. Asking binary questions Completing branching databases Creating and testing branching databases Career link: Data Scientist: slide 9 (branching databases)	Sound Stories 4 lessons This unit introduces children to 2Cast, an audio recording tool in Purple Mash. Children will explore the features of effective audio books and work as a team to script, record and edit their own. Recording audio content Creating sound effects Post-production editing Composing Beats 4 lessons This unit teaches children to explore the different elements of music, experiment with beats, and compose engaging music using the Purple Mash tool, Busy Beats. Exploring pulse, rhythm and tempo Understanding pitch and texture Composing a melody Career link: All Jobs!	Coding 6 lessons This unit builds on learning from previous coding units. Children will learn to use selection, co-ordinates, looping and variables. They will use these coding skills to create their own game. Introducing selection Exploring design properties Introducing loops Coding number variables YEAR 3 & 4 - CYCLE B <table><tr><th>Repeats</th><th>Looping Code</th><th>Number Variables</th><th>Design a Program</th><th>Coding a Program</th><th>Making a Playable Game</th></tr><tr><td>Year 3 Lesson 1</td><td>Year 4 Lesson 2</td><td>Year 4 Lesson 3</td><td>Year 3 Lesson 4</td><td>Year 3 Lesson 5</td><td>Year 4 Lesson 6</td></tr></table> Career link: video game designer: slide 2 (coding) Historical figure: Babbage (coding)	Repeats	Looping Code	Number Variables	Design a Program	Coding a Program	Making a Playable Game	Year 3 Lesson 1	Year 4 Lesson 2	Year 4 Lesson 3	Year 3 Lesson 4	Year 3 Lesson 5	Year 4 Lesson 6	Touch Typing 4 lessons Introduce children to touch typing. Children learn correct posture, finger positioning and typing techniques to develop speed and accuracy, while understanding how these skills support safe and effective computer use. Recognising keyboard locations Understanding correct finger positioning Improving accuracy and speed micro:bit This unit introduces children to coding a micro:bit to make simulations of real-world tools such as dice and step counters. Includes an emulator for schools without micro:bits. Exploring sensor inputs and the accelerometer Using variables, inputs and outputs Coding with selection and loops Career link: AR and VR (slide 22, 26 and 27) Historical figure: Sinclair	Introduction to AI 4 lessons This unit introduces pupils to Artificial Intelligence, exploring what it is, what it can do, and how it is used in today's digital world. Exploring how AI works Investigating the positive and negative impacts of AI Considering AI in the future Historical figure: Hoffmann Career link: AI developer slide 7 (logo) Robotics with Mai-Z MouseBot 4 lessons A Year 3 or Year 4 unit that introduces children to robotics. Controlling the Mai-Z MouseBot through code Coding movement, lights and sounds Career link: robotics engineer: slide 6 Historical figure: Englebart
Repeats	Looping Code	Number Variables	Design a Program	Coding a Program	Making a Playable Game													
Year 3 Lesson 1	Year 4 Lesson 2	Year 4 Lesson 3	Year 3 Lesson 4	Year 3 Lesson 5	Year 4 Lesson 6													
Y4 Online Safety (15 min sessions)	Understand privacy, consent and data collection. Online Reputation Privacy and Security Understand how online actions affect reputation.	Build positive online interactions. Health, Well-being and Lifestyle Online Relationships Manage healthy technology use.	Evaluate accuracy, bias and fake news. Managing Information Online	Recognise different forms of cyberbullying. Online Bullying	Compare online and offline identities. Self-Image and Identity	Respect ownership and permissions. Copyright and Ownership												
Y5/6 Year A 27/28	Quizzing 5 lessons The process of designing and creating interactive quizzes using Purple Mash's 2Quiz tool. Evaluating the features of a good quiz Choosing appropriate question types Making use of feedback and titles Testing and editing quizzes Career link: Digital Content Creator, marketing specialist Influencer: slide 1119, 25 Robotics with Mai-Z MouseBot 4 lessons A Year 5 or Year 6 unit that introduces children to robotics. Controlling the Mai-Z MouseBot through code Coding movement, lights and sounds Radio control Career link: Robotics Engineer: slide 6 Historical figure: Turing, Liskov	Word Processing 6 lessons This unit introduces children to word processing by using industry standard software. Children will explore how to edit, format and create their own documents. Creating documents Using images Entering and editing text Using tables and templates Career link: Web Developer: slide 8 (writing for different audiences) Career link: Digital Content Creator/web developer: slide /B19	Graphing 4 lessons This unit explores the benefits of creating common graph types, digitally. Children will create a range of familiar graph types using the 2Graph and 2Calculate tools. Creating a range of graph types Incorporating multiple datasets Using graphs to solve a problem Exporting and importing files 3D Modelling 4 lessons 3D Modelling design using the CAD software, 2Design and Make. It guides children to create, refine and evaluate models with creativity and purpose. Working with viewpoints of 3D objects Adding and editing points on a model Designing for a purpose Career link: AR developer/VR creator: slide22/26	Spreadsheets 6 lessons Industry standard spreadsheets software. Children will explore how to create spreadsheets and use their functionality to support real-world decision-making and problem-solving. Performing calculations Entering and using formulae Presenting data Solving real life problems	Coding 6 lessons Coding cloning and hotspots within programs. Children will use more complex flowcharts to help them test and debug existing simulations and programs.Using functions Understanding flowcharts and control simulations Coding for user input Coding Efficiency <table><tr><th>Simulating a Physical System</th><th>Datatypes</th><th>User Input</th><th>Code Comprehension and Debugging</th><th>Flowcharts and Control Simulations</th></tr><tr><td>Year 5 Lesson 1</td><td>Year 5 Lesson 2</td><td>Year 5 Lesson 3</td><td>Year 6 Lesson 4</td><td>Year 6 Lesson 5</td></tr></table> Career link: Machine Learning Engineer slide 18 Historical figure: Babbage and Lovelace	Simulating a Physical System	Datatypes	User Input	Code Comprehension and Debugging	Flowcharts and Control Simulations	Year 5 Lesson 1	Year 5 Lesson 2	Year 5 Lesson 3	Year 6 Lesson 4	Year 6 Lesson 5	Game Creator 5 lessons Children will design and make their own 3D maze adventure games using the 2DIY3D tool, assessing the effectiveness of their own and others' creations. Exploring the features of a good game Designing and making sprites and the game world Evaluating the playability of games Career link: Video Game Designer: slide 2 Historical figure: Grace Hopper micro:bit 4 lessons Explores the use of the temperature sensor and pins on the micro:bit as well as as sensors and inputs covered previously. Includes an emulator for schools without micro:bits. Exploring sensor inputs and the accelerometer Using selection, variables, inputs and outputs Coding for the micro:bit pins		
Simulating a Physical System	Datatypes	User Input	Code Comprehension and Debugging	Flowcharts and Control Simulations														
Year 5 Lesson 1	Year 5 Lesson 2	Year 5 Lesson 3	Year 6 Lesson 4	Year 6 Lesson 5														
Y5 Online Safety (15 min sessions)	Create strong passwords and understand app permissions. Online Reputation Privacy and Security Understand how digital footprints shape perceptions.	Participate safely in online communities. Health, Well-being and Lifestyle Online Relationships Balance technology use and wellbeing.	Critically evaluate information, adverts and hoaxes. Managing Information Online	Recognise, report and challenge bullying. Online Bullying	Make responsible choices about online identity. Self-Image and Identity	Know when and how content can be reused legally. Copyright and Ownership												
Y5/6 Year B 26/27	Networks 4 lessons This unit allows children to learn more about what networks are, what they do and how they connect devices. Children also consider the safety aspects of networks. Identifying examples of networks Recognising types of networks Understanding internet services Discussing positive and negative use of networks Concept Maps 4 lessons In this unit, children explore how concept maps can be used to organise, develop and present ideas using 2Connect. They will learn to create their own structured concept maps based on non-fiction topics and present their work clearly to an audience. Creating concept maps Presenting from a concept map Making collaborative concept maps	Databases 4 lessons Using table-based databases. Children will create their own databases as well as query existing databases to find information that they are being asked for. Understanding records and fields Creating a collaborative database Searching databases Analysing data Career link: Data Scientist: slide 9 Career link: Data Scientist, E Commerce Manager: slide 9, 20 (and relevant to all) Historical figure: Katherine Johnson micro:bit 4 lessons Use of micro:bits to collect data on environmental conditions. Children will create programs that use the micro:bit's pin input to create outputs. Using the micro:bit as a data logger Measuring, recording and analysing environmental data Collecting data and exporting to graphical software Johnson Career link: Computing Teacher: slide 30 Historical figure: Hamilton	Spreadsheets 6 lessons Through measurement conversions, graphing, weather analysis, budgeting, and planning a holiday, children learn how spreadsheets support real-world decision-making. Using formulae Exploring measurement conversions Predicting results and identifying patterns Career link: E-Commerce Manager: slide 20	Coding 6 lessons Coding cloning and hotspots within programs. Children will use more complex flowcharts to help them test and debug existing simulations and programs.Using functions Understanding flowcharts and control simulations Coding for user input Using Cloning <table><tr><th>Using Hotspots</th><th>Decomposition and Abstraction</th><th>Functions</th><th>Using Program Design Documents</th><th>Test - Based Adventure</th></tr><tr><td>Year 6 Lesson 1</td><td>Year 6 Lesson 2</td><td>Year 5 Lesson 3</td><td>Year 6 Lesson 4</td><td>Year 6 Lesson 5</td></tr></table> Career link: AI developer, software engineer: slide 7, 10 Historical figure: Boole, Van Rossum	Using Hotspots	Decomposition and Abstraction	Functions	Using Program Design Documents	Test - Based Adventure	Year 6 Lesson 1	Year 6 Lesson 2	Year 5 Lesson 3	Year 6 Lesson 4	Year 6 Lesson 5	Introduction to Python 4 lessons Introducing text-based Python coding using the Python in Pieces platform. Python in Pieces translates between block-code and Python. Comparing block and text code views Coding for text output Working with different data types Coding repetition in Python Data Detectives 4 lessons Exploration of 'big data' using Data Detectives; an interactive set of databases challenges. Children will interpret information being requested and query databases to find the information. Filtering and sorting data Grouping data Linking tables Career link: Data Scientist: slide 9 Historical figure: CODD Career link: Mobile App Developer: slide 12	Blogging 4 lessons Children explore blogs and their features, including how they can be used to engage an audience effectively. Planning the theme, content and structure Writing, editing and publishing a blog post Understanding blog moderation Reviewing and commenting on blog posts Career link: Digital Content Creator, Vlogger, podcaster: slide 19, 24, 3 Career link: YouTuber/Vlogger/Influencer: slide 24/25 Cyber security Analyst slide 5		
Using Hotspots	Decomposition and Abstraction	Functions	Using Program Design Documents	Test - Based Adventure														
Year 6 Lesson 1	Year 6 Lesson 2	Year 5 Lesson 3	Year 6 Lesson 4	Year 6 Lesson 5														
Y6 Online Safety (15 min sessions)	Use advanced security and privacy measures. Online Reputation Privacy and Security Build and protect a positive online reputation.	Understand impact of sharing and respecting boundaries. Health, Well-being and Lifestyle Online Relationships Manage pressures and persuasive design online.	Analyse search results, misinformation and disinformation. Managing Information Online	Gather evidence and report bullying. Online Bullying	Challenge harmful stereotypes and seek support. Self-Image and Identity	Reference and acknowledge sources correctly. Copyright and Ownership												

Below shows the progression using NC Statements and Outcomes for each year group.

EYFS	To understand technology needs to be programmed and relate this to giving clear instructions for everyday tasks e.g. simple instructions, timed repetition; task to count of 10 To be able to use a range of technologies e.g. laptop, programmes in purple mash, codepillars, ipads, sound tins, cameras, other programmable toys	To use technology in their role play e.g. phones, computers, shop tills/scanners, printers/photocopiers To type name and one word captions To be familiar with keyboard (lower case – capitals – numbers – space bar – full stop – back space – delete). To develop mouse skills e.g. click to select, drag & drop	To be able to log onto the computer and purple mash with a simple username and password. To begin to have a basic understanding of why they have this. To know why they have a digital picture (avatar) of themselves.
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Year 1 - Computing



National Curriculum Statement	Computer Science			Information Technology	Digital Literacy	
	Understand what algorithms are how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Create and debug simple programs.	Use logical reasoning to predict the behaviour of simple programs.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	Recognise common uses of information technology beyond school.	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.
Outcome	Children understand that an algorithm is a set of ordered instructions that is used to solve a problem or achieve an objective. When they code, they understand that they are using an algorithm and turning it into something that the computer can interpret. Unit Coverage - Creating & Following Instructions - Coding	Children can create simple instructions for someone to follow, building up to creating a simple program that a computer can follow by arranging code blocks. They will recognise simple errors in a program such as the way an object is moving and attempt to debug in a purposeful way. Unit Coverage - Creating & Following Instructions - Coding	When looking at simple programs, children use logical reasoning based upon their understanding of the desired algorithm and their knowledge of code blocks to predict outcomes. They focus on objects and their actions and the events that initiate these actions. Unit Coverage Coding	Children can name, save and retrieve their work and follow simple instructions to access online resources. They create and combine digital content such as images, sound and text with a purpose. Unit Coverage - Introduction to PM - Creative Computing - Data Explorers - Animated Stories - Making Beats	Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can comment on the specific purpose of technology examples they encounter. Unit Coverage Technology Around Us	See 2BeSafe for breakdown Unit Coverage Technology Around Us

Year 2 - Computing



National Curriculum Statement	Computer Science			Information Technology	Digital Literacy	
	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Create and debug simple programs.	Use logical reasoning to predict the behaviour of simple programs.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	Recognise common uses of information technology beyond school.	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.
Outcome	Children can create a computer program from an algorithm they have made, turning each step into code. They recognise that outputs from an on-screen program or physical device are directly attributed to the instructions they have coded. Unit Coverage - Route Explorers - Coding	Children can create programs that include more than one object type. They can alter attributes of objects purposefully and predict and observe the effect. They vary the flow of sequences through the use of timer commands. They can program buttons to initiate events in programs. They know that unexpected errors in their programs are due to the code they have created. They attempt to debug using logical reasoning, interpreting each line of code in sequence. Unit Coverage - Route Explorers - Coding	Children can identify the parts of a program that respond to specific events and initiate specific actions. Using a design plan or simple written algorithm, they can compare this against how a program is executing when in play mode. Unit Coverage - Route Explorers - Coding	Children know how to access digital content they have created or have been assigned. They use a range of software to create digital content and manipulate it with purpose. For example, creating spreadsheets to organise data, merging digital artifacts from different sources into a file. They know how to save and edit work. Unit Coverage - Creating Pictures - Spreadsheets - Questioning - Presenting Ideas - Making Music	Children identify a range of devices that connect to the internet and explain that the internet is used to access websites and find information. They can carry out simple keyword searches to find specific information. Unit Coverage The Internet	See 2BeSafe for breakdown Unit Coverage - The Internet 2Be Safe

Year 3 - Computing



National Curriculum Statement	Computer Science				Information Technology		Digital Literacy
	Design, write and debug programs that accomplish specific goals; controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	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.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children's ability to plan algorithms is increasingly detailed including identifying the logical steps towards a solution with stages of decomposition of the overall task. e.g. planning the route of turtle. Their familiarity with coding structures such as sequences and timers allows them to 'read' a program. Unit Coverage - Route Planners - Coding - micro:bits	Children can design and code simple sequential programs, using timers to create delay effects. They can use a repeating program structure as an efficient alternative to a sequence e.g. when drawing simple shapes with a turtle object. Unit Coverage - Route Planners - Coding - micro:bits	Children use logical reasoning and their understanding of algorithms to read and create simple flowcharts for planned or existing programs. They use these to support their efforts at debugging logically. They are beginning to consider how the nesting of code affects the program flow. Unit Coverage - Route Planners - Coding - micro:bits	Children know the ways people can communicate with each other (digital and non-digital). They explore the use of emails and know how they can be exchanged. They are able to read, compose and send their own emails. Unit Coverage Email	See 2BeSafe Breakdown Unit Coverage Email	Children can identify suitable software for a given task from the suite of Purple Mash Tools. For example, choosing 2Calculate to make a spreadsheet, 2Email to send messages online or 2Question for branching databases. They can create simple databases, spreadsheets to perform calculations and present information. Unit Coverage - Email - Branching Databases - Spreadsheets - Presentations - Touch Typing	See 2BeSafe Breakdown Unit Coverage Email

Year 4 - Computing



National Curriculum Statement	Computer Science				Information Technology		Digital Literacy
	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	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.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children can independently design, code, test, and debug a simple program. Their ability to decompose a task into smaller parts in order to code or interpret programs allows them greater understanding of how to achieve desired effects with code. They begin to consider efficiency when structuring code. Unit Coverage - Logo - Coding - micro:bits	Children understand how to structure a program to use selection through the use of if and if/else statements. Their understanding of program structures enables them to code more complex algorithms that use sequencing, selection and repeat. They can explain the function of a variable and create number variables to keep track of things in a program such as scoring. Unit Coverage - Logo - Coding - micro:bits	Children can read multi-step programs and accurately predict outcomes. They show more logical approaches to debugging, recognising how different parts of the code interact. Unit Coverage - Logo - Coding - micro:bits	Children develop their understanding of search engines and how they are used to find relevant information. They obtain focused results from a search query using clear keywords and refined searching techniques such as quotation marks. Unit Coverage - Effective Searching - Unpacking Hardware	See 2BeSafe Breakdown Unit Coverage - Effective Searching - AI	Children can effectively use a greater range of software tools and select tools for a purpose. For example, audio books using 2Cast, digital animations using 2Animate or Musical compositions using a range of music tools. They can combine digital products such as inserting music they have composed into an animation they create. Unit Coverage - Animation - Sound Stories - Composing Beats - Unpacking Hardware - AI	See 2BeSafe Breakdown Unit Coverage Effective Searching

Year 1 - 2BeSafe Breakdown



National Curriculum Statement relating to Computing: 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.							
2BeSafe Themes							
Copyright and Ownership	Health, Wellbeing and Lifestyle	Managing Online Information	Online Bullying	Online Relationships	Online Reputation	Privacy and Security	Self-Image and Identity
Children begin to explain why their creations belong to them, for example "I designed it" or "I filmed it." They learn how to save their work with a clear name so it is recognised as theirs. They also understand that work created by other people does not belong to them, even if they save a copy.	Children begin to explain the rules that help them stay safe when using technology, both at home and in other places.	Children are introduced to simple ways of finding information using digital tools like search engines or voice assistants. They learn that the internet contains all kinds of content — things they like, things they don't like, and things that may be real or make-believe. They also practise asking a trusted adult for help if they see something that upsets or worries them.	Children learn how to behave online in positive ways that do not upset others. They practise giving examples of kind and respectful behaviour.	Children learn that they should ask permission before doing things online and understand why this is important. They practise communicating with people they know, with adult support, and begin to explore why it matters to be kind, considerate, and respectful to others online - even if people don't always find the same things funny or upsetting.	Children start to understand that information shared online can stay there and be copied by others. They learn that some information should not be shared without checking with a trusted adult first.	Children are introduced to the idea of passwords and how they help protect information, accounts, and devices. They learn to recognise more detailed personal information, such as where they live or go to school, and are taught that they should always ask a trusted adult before sharing any of this online.	Children start to recognise that, just like in real life, there may be people online who could upset or embarrass them. They learn when and how to tell a trusted adult if something worries them and understand that adults can help keep them safe.

Year 2 - 2BeSafe Breakdown



National Curriculum Statement relating to Computing: 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.							
2BeSafe Themes							
Copyright and Ownership	Health, Wellbeing and Lifestyle	Managing Online Information	Online Bullying	Online Relationships	Online Reputation	Privacy and Security	Self-Image and Identity
Children learn that content found online often belongs to other people. They begin to explain why it is important to respect that ownership.	Children learn that technology is used in many different environments, such as at home or in public places. They discuss simple guidance to keep themselves and others safe when using devices in these settings.	Children begin using simple keywords in search engines and practise navigating web pages using links, tabs, and buttons. They learn that voice assistants (like Alexa or Siri) are not real people. They also discuss the difference between "real" and "made up" information and learn that not everything they find online is true	Children are introduced to the concept of bullying. They learn what bullying is, how it can happen online, and how it can affect people's feelings. Importantly, they are taught that anyone being bullied is not to blame and that help is always available	Children start to understand that people may use technology to communicate with strangers, and why this can be risky. They learn about asking permission before sharing information, how to say "no" or "I'm not sure," and why it's important to respect other people's choices. They are encouraged to always ask a trusted adult before agreeing to anything online and to seek help if something happens without their consent.	Children find out that once information is online, it can last a long time and be seen by others. They are encouraged to ask for help if something is shared without consent or if the information is wrong.	Children develop their understanding of passwords and learn rules for keeping personal information private. They talk about what it means for something to be "private," practise creating and protecting passwords, and learn that many devices in the home are connected to the internet, such as toys, TVs, or even fridges.	Children begin to notice that people may look or behave differently online than they do in person. They talk about situations online that might feel worrying or upsetting and learn clear steps they can take to ask for help.

Year 3 - 2BeSafe Breakdown



National Curriculum Statement relating to Computing: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.							
2BeSafe Themes							
Copyright and Ownership	Health, Wellbeing and Lifestyle	Managing Online Information	Online Bullying	Online Relationships	Online Reputation	Privacy and Security	Self-Image and Identity
Children explore why copying someone else's work from the internet without permission is unfair and can cause problems.	Children explore the idea that spending too much time using technology can sometimes affect health, mood, sleep, or relationships. They learn to recognise both positive and negative online activities that can take up lots of time. They also discuss why some online content has age restrictions and why it is important to follow them, including what to do if they feel pressured to access something inappropriate.	Children practise using key phrases in search engines and learn about features like autocomplete. They discover how the internet can be used to buy and sell things, and they begin to understand the difference between beliefs, opinions, and facts. They also talk about how to get help if they see something upsetting online.	Children discuss why it is important to behave appropriately towards others online. They look at different ways bullying behaviour may appear online and identify how someone can seek support if it happens.	Children explore how people with similar interests can meet online and think about the difference between "knowing" someone online and knowing them in real life. They learn that trusting someone online is not the same as liking them, and that it is okay to change their mind if they feel unsure. They also discuss the importance of permission when sharing things online, just as they would when sharing offline.	Children learn how to search for information about people online and think about what is safe or not safe to share about themselves. They understand the importance of being careful with personal details and know to ask for guidance if they are unsure.	Children practise simple strategies for creating and keeping passwords secure. They discuss why information should only be shared with people they know and trust, and that if they feel unsure or pressured, they should always tell an adult. They also begin to understand how connected devices can collect and share personal information.	Children are introduced to the idea of identity. They explore how people can show themselves in different ways online, such as through gaming characters, avatars, or social media profiles, and think about why someone might do this.

Year 4 - 2BeSafe Breakdown



National Curriculum Statement relating to Computing: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.							
2BeSafe Themes							
Copyright and Ownership	Health, Wellbeing and Lifestyle	Managing Online Information	Online Bullying	Online Relationships	Online Reputation	Privacy and Security	Self-Image and Identity
Children learn to think carefully about who owns content they find online, such as music, images, or videos, and whether they have the right to use it. They are introduced to simple examples of things they must not reuse without permission.	Children begin to recognise how technology can sometimes distract them from other activities. They talk about situations where it may be helpful to limit screen time and discuss simple strategies to manage this.	Children learn to judge whether online information is accurate and why it's important to make their own decisions. They explore different online spaces such as social media, video sites, or image platforms, and think about how advertising and popups encourage people to buy things. They also learn about fake news, how technology can imitate people (like bots), and why lots of people sharing the same opinion doesn't necessarily make it true.	Children begin to judge whether online information is hurt, or angry online. They learn that bullying can happen through different types of media such as images, videos, texts, or chats. They also explore how what they post can affect others' feelings and how it might impact their own reputation.	Children learn strategies for enjoying online social environments safely, such as gaming or livestreaming. They practise recognising respectful and unhealthy behaviour, and they reflect on how content that seems unimportant to one person may hold real meaning or feelings for others	Children continue to explore how information about people can be found online. They learn that information may have been created, copied, or shared by others, and not always by the person themselves.	Children explore different strategies for keeping personal information private in a range of situations. They learn that internet use is never fully private and may be monitored. They also begin to understand how online services may ask for consent to collect or store information, what the "digital age of consent" means, and when to ask an adult for help.	Children reflect on how their online identity might be different from their offline identity. They learn about positive online interactions and how being kind and respectful shapes how others see them. They also begin to understand that people online can pretend to be someone else - even a friend - and discuss possible reasons why.

Year 5 - Computing



National Curriculum Statement	Computer Science				Information Technology		Digital Literacy
	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	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.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children can consider a range of program structures when turning tasks into algorithms. They understand what simulating a physical system means and write programs that decompose these systems and model parts through code. They understand how they are using levels of abstraction and decomposition. Unit Coverage - Coding - micro:bits - External Devices	Children include sequence, selection and repetition in programs. They recognise when the use of a function will improve the efficiency and readability of their code and can create and use functions in coding. They understand how both string and number variables can utilise the system memory to hold information used by the program. Unit Coverage - Coding - External Devices	Children have increased understanding and familiarity with a variety of coding structures allows them to 'read' code at a high level and focus logically on the parts they need to debug when something doesn't execute as designed. They use a mixture of logical reasoning and trial and testing to identify and fix bugs. Unit Coverage - Coding - External Devices	See Year 4 for previous outcome and Year 6 for progressive outcome.	See 2BeSafe Breakdown	Children refine their ability to select and use a growing range of software for a purpose. They create and use a range of digital products including databases, spreadsheets and word processing software. They use software to collect data, manipulate, interrogate and produce information based on a specification (query). Unit Coverage - Quizzing - Databases/Spreadsheets - Word Processing - Concept Maps	See 2BeSafe Breakdown

2BeSafe Breakdown



National Curriculum Statement(s) relating to Computing: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.							
2BeSafe Themes							
Copyright and Ownership	Health, Wellbeing and Lifestyle	Managing Online Information	Online Bullying	Online Relationships	Online Reputation	Privacy and Security	Self-Image and Identity
Children begin to assess when it is acceptable to use someone else's work and when it is not. They also learn how to find content that is allowed to be reused, such as resources labelled for sharing.	Children develop a deeper understanding of how tech can affect health and wellbeing, both positively (such as through fitness or mindfulness apps) and negatively. They learn practical tips for healthy technology use, explore benefits and risks of online health information, and understand the importance of checking things with trusted adults or professionals. They also learn about in-app purchases, loot boxes, and why they should always ask permission before spending money online.	Children explore the benefits and limitations of different search technologies, such as voice search. They begin to understand what it means to be sceptical and how to decide whether content is trustworthy. They learn about adverts, targeted content, and sponsorship, and how stereotypes can be spread online. They also explore how hoaxes and fake news can influence people's feelings and behaviour, and why it's important to think carefully before sharing.	Children deepen their understanding by exploring how online bullying can be different from bullying in real life. They think about how joking or "banter" can sometimes be experienced as hurtful or bullying. They learn strategies for getting help, including how to report bullying, block abusive users, and access helplines such as Childline or The Mix.	Children explore more forms of online communication, such as emojis, memes, and GIFs. They learn that while online communities can be positive, there are also people who may want to cause harm, and this is never the child's fault. They consider how to collaborate positively online, how to support others, and when it is important to seek help from a trusted adult.	Children develop the skills to search for information about individuals online and summarise what they find. They also learn that online information can be used by others to form judgements about a person - and why those judgements may not always be fair or correct.	Children learn what makes a strong password and how to create one. They begin to understand that many free apps and services can collect and share private information, such as contacts, photos, or location. They are also introduced to app permissions and what they mean.	Children learn that online identities can be copied, changed, or altered. They start to think about the choices they make when creating their own online identity and how to do this responsibly, depending on the situation.

Year 6 - Computing



National Curriculum Statement	Computer Science				Information Technology		Digital Literacy
	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	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.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children understand the advantage of coding from program design documentation and do this at a deeper level of abstraction enabling them to produce accurate algorithms to code. They follow flowcharts to design and debug programs. Children use decomposition & abstraction more confidently to simplify and break down tasks. Unit Coverage - Coding - Python	Children have both coding structure understanding and knowledge of a greater range of coding components that enable them to make use of variables, user inputs, cloning and hotspots to add complexity and user interactivity to their programs. They are able to translate skills and understanding gained through the use of block coding programs to text-based coding in Python. Unit Coverage - Coding - Python	Children default to a logical approach when debugging. They begin debugging at the program design and algorithm stage of tasks so their coding becomes more effective with less reliance on a try and test approach at the early stages of coding a program. They can then use a step-by-step approach to step through parts of code. Unit Coverage - Coding - Python	Children can explain the function of networks and the difference between a LAN and a WAN with relevant examples. They understand the difference between the internet and the World Wide Web and can name some services as examples of each. Unit Coverage Networks	See 2BeSafe Breakdown	Children's use of a range of digital tools demonstrates their transferrable skills between tools both within Purple Mash and to industry standard software. They use tools with a greater level of sophistication. For example, including their own digital artefacts within their blogs, graphs within written pieces and application of data analysis. Unit Coverage - Graphing - Blogging - Data Detectives - Spreadsheets 3D Modelling	See 2BeSafe Breakdown

Year 6 - 2BeSafe Breakdown



National Curriculum Statement(s) relating to Computing: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.							
2BeSafe Themes							
Copyright and Ownership	Health, Wellbeing and Lifestyle	Managing Online Information	Online Bullying	Online Relationships	Online Reputation	Privacy and Security	Self-Image and Identity
Children practise using search tools to find content that can be reused by others. They also learn how to give credit by referencing and acknowledging the sources they have used from the internet.	Children learn about systems that regulate age-related content (such as PEGI ratings for games or BBFC ratings for films) and why these are important. They explore how technology can create pressures, including persuasive designs that keep people online for longer. They also learn strategies to protect their health, such as taking breaks, using night-shift mode, sitting correctly, and balancing screen time with sleep, diet, and exercise.	Children learn in more depth how search engines work and how results are ranked. They practise evaluating information for reliability and learn how opinions may sometimes be presented as facts. They discuss persuasion, manipulation, and targeted advertising, and how persuasive design can influence people's choices. They also explore the difference between misinformation and disinformation, why repeated information may still be untrue,	children learn practical strategies to deal with online bullying, such as how to capture evidence (screenshots, URLs, profiles) and share it with trusted adults. They also explore how to report bullying in different online contexts.	Children think critically about the impact of sharing online, both positive and negative. They learn the importance of respecting boundaries when sharing about others and understand that even private sharing (such as screenshots) can have unintended consequences. They also discuss the risks of taking or sharing inappropriate images and learn how to get help if they or someone else feels worried.	Children explore how to build and protect a positive online reputation. They discuss strategies for safeguarding their digital identity, including the use of privacy settings and understanding different levels of anonymity.	Children learn strategies for managing and protecting passwords, including what to do if one is lost or stolen. They explore why keeping software up to date is important and how privacy settings can increase protection online. They also learn about online scams and phishing, with strategies to recognise and avoid them, and they begin to understand that all online services have terms and conditions that govern their use.	Children look more critically at online content and discuss how some representations - for example about gender, race, religion, or disability can be harmful or unfair. They learn why it is important to challenge stereotypes and reject inappropriate content. They also revisit how to get help if something online makes them feel upset or unsafe, and why it's important to keep asking until they get the support they need.

