



Subject: Computing

Year group	National Curriculum	Sticky knowledge	Skills	Area	Key vocabulary
Nursery	<p>Explore how things work</p> <p>Children recognise that a range of technology is used in places such as homes and schools.</p> <p>They will be taught to select and safely use technology for particular purposes.</p>	<ul style="list-style-type: none"> To be able to switch on basic equipment and toys. Make toys and books work by lifting flaps/pressing buttons etc Use cameras/mobile phones etc appropriately in their play Be able to give a peer/adult simple instructions eg how to play a game Be able to capture images and sound using simple equipment Use a simple paint package 	<p>Computational Thinking: Playing and exploring Creating, checking and fixing things Playing and working collaboratively Not giving up Anticipating and explaining Grouping things, comparing, spotting similarities and differences, working out rules Naming and labelling</p>	ALL AREAS	Choices Internet Website Bee-bot Equipment Buttons Movement Screen Mouse Images Keyboard Paint Technology Share Create Collect Photos Count Organise
Rec	<p>Children recognise that a range of technology is used in places such as homes and schools.</p>	<ul style="list-style-type: none"> To navigate known apps/programs on laptops, tables and the interactive whiteboard. To move a Bee-bot – forwards and backwards, left and right To tinker with a range of technology to see how it works Make simple videos Use more features of a simple paint package 	<p>Ignoring what is unimportant Creating a summary Responding to instructions Ordering things Sequencing Working out how to do something Breaking instructions down into steps.</p>		
Y1	<p>Key stage 1 Pupils should be taught to:</p> <ul style="list-style-type: none"> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions 	<ul style="list-style-type: none"> To log in safely. To learn how to find saved work. To become familiar with the icons and types of resources. To start to add pictures and text to work. To learn how to open, save and print. To understand the importance of logging out. 	<p>Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons.</p> <p>Children take ownership of their work and save this in their own private space.</p>	DIGITAL LITERACY	Log in Username Password Avatar Log out Save Notification



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<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • To sort items using a range of criteria. • To sort items on the computer using grouping activities 	<p>Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources.</p>	COMPUTER SCIENCE	Sort Criteria
	<ul style="list-style-type: none"> • To understand that data can be represented in picture format. • To contribute to a class pictogram. • To use a pictogram to record the results of an experiment. 		COMPUTER SCIENCE	Data Collate
	<ul style="list-style-type: none"> • To compare the effects of adhering strictly to instructions to completing tasks without complete instructions. • To follow and create simple instructions on the computer. • To consider how the order of instructions affects the result. 	<p>Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective.</p> <p>They know that an algorithm written for a computer is called a program.</p>	COMPUTER SCIENCE	Instruction Algorithm Computer Program Debug
	<ul style="list-style-type: none"> • To understand the functionality of the direction keys. • To understand how to create and debug a set of instructions (algorithm). • To use the additional direction keys as part of an algorithm. • To understand how to change and extend the algorithm list. • To create a longer algorithm for an activity. • To set challenges for peers. • To access peer challenges set by the teacher 	<p>Children can work out what is wrong with a simple algorithm when the steps are out of order and can write their own simple algorithm.</p>	COMPUTER SCIENCE	Direction Challenge Arrow Undo Rewind Forwards Backwards Right turn Left turn Debug Instruction Algorithm
	<ul style="list-style-type: none"> • To introduce e-books. • To add animation to a story. • To add sound to a story, including voice recording and music the children have composed. • To work on a more complex story, including adding backgrounds and copying and pasting pages. 	<p>Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code.</p>	COMPUTER SCIENCE	Animation E-Book Font File Sound Effect



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		<ul style="list-style-type: none"> To share e-books on a class display board. 	When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program.		
		<ul style="list-style-type: none"> To understand what coding means. To use design mode to set up a scene. To add characters. To use code blocks to make the character perform actions. To use collision detection. To save and share work. To know the save, print, open and new icon. 		COMPUTER SCIENCE	Action Background Button Code block Code design Collision detection Input Design mode Command Coder Scale Properties
		<ul style="list-style-type: none"> To know what a spreadsheet program looks like. How to enter data into spreadsheet cells. To add clipart to cells. To control tools: lock, move cell, speak and count. 	Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources.	INFORMATION TECHNOLOGY	Arrow keys Backspace key Cursor Columns Cells Clipart Delete Rows Spreadsheet
		<ul style="list-style-type: none"> To walk around the local community and find examples of where technology is used. To record examples of technology outside school. 	Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.	DIGITAL LITERACY	Technology



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Y2	<p>Key stage 1 Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> To understand what an algorithm is. To design algorithms and then code them. To compare different object types. To use the repeat command. To use the timer command. To know what debugging is and debug programs. 	<p>Children can explain that an algorithm is a set of instructions to complete a task.</p> <p>When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code.</p> <p>Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors,</p>	COMPUTER SCIENCE	<ul style="list-style-type: none"> Action Character Command Algorithm Code block Code design Bug Input Object Repeat Scale Timer Properties
		<ul style="list-style-type: none"> To know how to refine searches using the Search tool. To use digital technology to communicate and connect with others locally. To have some knowledge and understanding about sharing more globally on the Internet. To introduce Email as a communication tool To understand how we should talk to others in an online situation. To open and send simple online communications in the form of email. To understand that information put online leaves a digital footprint or trail. To identify the steps that can be taken to keep personal data and hardware secure. 	<p>Children know the implications of inappropriate online searches.</p> <p>Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board.</p> <p>They develop an understanding of using email safely and know ways of reporting inappropriate behaviours and content to a trusted adult.</p>		DIGITAL LITERACY
		<ul style="list-style-type: none"> To use image, lock, move cell, speak and count tools to make a counting machine. To learn how to copy and paste. To use the totalling tools. To use a spreadsheet for money calculations. To use the equals tool to check calculations. 	<p>Children demonstrate an ability to organise data using, for example, a database and can retrieve specific data for conducting simple searches.</p>	INFORMATION TECHNOLOGY	<ul style="list-style-type: none"> Backspace Count Move Cell Copy Paste



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	<ul style="list-style-type: none"> To collect data and produce a graph. 			Delete Columns Spreadsheet
	<ul style="list-style-type: none"> To learn about data handling tools that can give more information than pictograms. To use yes/no questions to separate information. To construct a binary tree to identify items. To use a binary tree database to answer questions. To use a database to answer more complex search questions. To use the Search tool to find information. 	<p>Their program designs display a growing awareness of the need for logical, programmable steps.</p> <p>Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program.</p>	COMPUTER SCIENCE	Pictogram Collate Binary tree Data Database Question
	<ul style="list-style-type: none"> To understand the terminology associated with searching. To gain a better understanding of searching on the Internet. To create a leaflet to help someone search for information on the Internet. 	<p>Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge.</p>	DIGITAL LITERACY	Internet Search Search Engine
	<ul style="list-style-type: none"> To recreate art and look at the work of artists. To explore surrealism and eCollage 	<p>Children are confident when creating, naming, saving and retrieving content.</p> <p>Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.</p>	INFORMATION TECHNOLOGY	Pallet Share
	<ul style="list-style-type: none"> To make music digitally. To explore, edit and combine sounds To edit and refine composed music. To think about how music can be used to express feelings and create tunes which depict feelings. 	<p>Children are able to edit more complex digital data such as music compositions.</p>	INFORMATION TECHNOLOGY	Soundtrack Composition Tempo Sound effects Digitally Volume



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		<ul style="list-style-type: none"> To upload a sound from a bank of sounds into the Sounds section. To record and upload environmental sounds. To use these sounds to create tunes. 			Bpm
		<ul style="list-style-type: none"> To explore how a story can be presented in different ways. To make a quiz about a story or class topic. To make a fact file on a non-fiction topic. To make a presentation to the class. 	Children use a range of media in their digital content including photos, text and sound.	INFORMATION TECHNOLOGY	Audience Presentation Quiz Narrative Non-fiction Node Concept Map
Year 3	<p>Key stage 2 Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> To consider what simulations are. To explore a simulation. To analyse and evaluate a simulation. 	<p>Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts.</p> <p>Their design shows that they are thinking of the desired task and how this translates into code.</p> <p>Children can identify an error within their program that prevents it following the desired algorithm and then fix it.</p>	COMPUTER SCIENCE	simulation



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	<p>with variables and various forms of input and output</p> <ul style="list-style-type: none"> • 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 resending data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 	<ul style="list-style-type: none"> • To understand what a flowchart is and how flowcharts are used in computer programming. • To understand that there are different types of timers and select the right type for purpose. • To understand how to use the repeat command. • To understand the importance of nesting. • To design and create an interactive scene. 	<p>Children demonstrate the ability to design and code a program that follows a simple sequence.</p> <p>They experiment with timers to achieve repetition effects in their programs.</p> <p>Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects.</p> <p>Children understand how variables can be used to store information while a program is executing.</p> <p>Children’s designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, ‘if’ statements, repetition and variables.</p> <p>They make good attempts to ‘step through’ more complex code in order to identify errors in algorithms and can correct this.</p> <p>They can ‘read’ programs with several steps and predict the outcome accurately.</p>	<p>COMPUTER SCIENCE</p>	<p>Action Alert Algorithm Background Blocks of Command Button Collision Detection Detecting Command Debug/Debugging Develop Event Execute Flowchart Nesting Object Output Plan Predict Procedure Properties Scene Sound Test Timer Values</p>
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		<ul style="list-style-type: none"> To think about different methods of communication. To open and respond to an email using an address book. To learn how to use email safely. To add an attachment to an email. To explore a simulated email scenario. 	<p>Children can list a range of ways that the internet can be used to provide different methods of communication.</p> <p>They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails</p> <p>They can describe appropriate email conventions when communicating in this way.</p>	COMPUTER SCIENCE	Attachment Address book Save to draft Password CC Communication Compose Email Send Report to the teacher Formatting
		<ul style="list-style-type: none"> To introduce typing terminology. To understand the correct way to sit at the keyboard. To learn how to use the home, top and bottom row keys. To practise typing with the left and right hand. 	<p>Children can carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine</p>	INFORMATION TECHNOLOGY	Posture Top row keys Home row keys Bottom row keys Space bar
		<ul style="list-style-type: none"> To sort objects using just 'yes' or 'no' questions. To complete a branching database To create a branching database of the children's choice. 	<p>Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database, using graphs.</p>	INFORMATION TECHNOLOGY	Branching database Database Data Question
		<ul style="list-style-type: none"> To enter data into a graph and answer questions. To solve an investigation and present the results in graphic form. 			Bar chart Block graph Column Data Field Graph Line graph Pie chart Row



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		<ul style="list-style-type: none"> • To understand the purpose of the Slides tool (Google Slides) or Powerpoint. • To add slides to presentations. • To add media to presentations. • To format text appropriately. • To add shapes and lines to enhance a presentation. • To use the skills learnt to design and create an engaging presentation. 	<p>Children can consider what software is most appropriate for a given task.</p> <p>They can create purposeful content to attach to emails.</p>	INFORMATION TECHNOLOGY	<ul style="list-style-type: none"> Animation Audio Design Templates Entrance Animation Font Media Presentation Presentation Program Slide Slideshow Stock image Text box Text formatting Transition WordArt
		<ul style="list-style-type: none"> • To use the symbols more than, less than and equal to, to compare values. • To collect data and produce a variety of graphs. • To learn about cell references. 			<ul style="list-style-type: none"> < > = Copy and Paste Advance mode Key Vocabulary Columns Cells Delete key Equals tool Move cell tool Rows Spin Tool Spreadsheet



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		<ul style="list-style-type: none"> • To know what makes a safe password. • To learn methods for keeping passwords safe. • To understand how the Internet can be used in effective communication. • To understand how a blog can be used to communicate with a wider audience. • To consider the truth of the content of websites. • To learn about the meaning of age restrictions symbols on digital media and devices. 	<p>Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure.</p> <p>They understand the importance of staying safe and the importance of their conduct when using familiar communication tools.</p> <p>They know more than one way to report unacceptable content and contact.</p>	DIGITAL LITERACY	Concept map Blog Password Internet Website Webpage Username PEGI rating Spoof website
Year 4	<p>Key stage 2 Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • To begin to understand selection in computer programming. • To understand how an IF statement works. • To understand how to use co-ordinates in computer programming. • To understand the 'repeat until' command. • To understand how an IF/ELSE statement works. • To understand what a variable is in programming. • To use a number variable. • To create a playable game. 	<p>When turning a real-life situation into an algorithm, the children's design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition.</p> <p>Children make more intuitive attempts to debug their own programs</p>	COMPUTING SCIENCE	Action Alert Background Button Code Block Command Co-ordinates Debug/Debugging Execute Flowchart If (command) If/Else (command) Nesting Number Variable Object Types Predict Prompt



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	<p>opportunities they offer for communication and collaboration</p> <ul style="list-style-type: none">• 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			<p>Prompt for Input Properties Repeat Repeat Until Selection Timer Variable Variable Value</p>
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digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and resending data and information

- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

- To learn the structure of coding language.
- To input simple instructions (coding).
- To create letter shapes.
- To use the Repeat function to create shapes.
- To use and build procedures (coding).

Children's use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs.

They understand 'if statements' for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables.

Children can make use of user inputs and outputs such as 'print to screen'.

Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. e.g. traffic light algorithm.

COMPUTING SCIENCE

LOGO
Moves:
BK
FD
RT
LT
REPEAT
SETPC
SETPS
PU
PD



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		<ul style="list-style-type: none"> To understand the different parts that make up a computer. To recall the different parts that make up a computer. 	<p>They can 'read' programs with several steps and predict the outcome accurately.</p> <p>Children recognise the main component parts of hardware which allow computers to join and form a network.</p> <p>Their ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.</p>		<p>Motherboard</p> <p>CPU</p> <p>RAM</p> <p>Graphics card</p> <p>Network card</p> <p>Monitor</p> <p>Speakers</p> <p>Keyboard and mouse</p>
		<ul style="list-style-type: none"> To locate information on the search results page. To use search effectively to find out information. To assess whether an information source is true and reliable. 	<p>Children understand the function, features and layout of a search engine.</p> <p>They can appraise selected webpages for credibility and information at a basic level.</p>	INFORMATION TECHNOLOGY	<p>Easter egg</p> <p>Internet</p> <p>Internet browser</p> <p>Search</p> <p>Search engine</p> <p>Spoof website</p> <p>Website</p>
		<ul style="list-style-type: none"> To format cells as currency, percentage, decimal to different decimal places or fraction. To use the formula wizard to calculate averages. To combine tools to make spreadsheet activities such as timed times tables tests. To use a spreadsheet to model a real-life situation. To add a formula to a cell to automatically make a calculation in that cell. 	<p>Children make informed software choices when presenting information and data.</p>	INFORMATION TECHNOLOGY	<p>Average</p> <p>Advance mode</p> <p>Copy and Paste</p> <p>Cells</p> <p>Columns</p> <p>Charts</p> <p>Equals tool</p> <p>Formula</p> <p>Formula Wizard</p> <p>Move cell tool</p> <p>Random tool</p> <p>Spin Tool</p>



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					Rows Spreadsheet Timer
		<ul style="list-style-type: none"> To identify and discuss the main elements of music. To understand and experiment with rhythm and tempo. To create a melodic phrase. To electronically compose a piece of music. 	Children are able to make improvements to digital solutions based on feedback.	INFORMATION TECHNOLOGY	Pitch Rhythm Pulse Tempo Dynamics Texture Melody Rippler House music
		<ul style="list-style-type: none"> To explore how font size and style can affect the impact of a text. To use a simulated scenario to produce a news report. To use a simulated scenario to write for a community campaign. 	Children make informed software choices when presenting information and data.	INFORMATION TECHNOLOGY	Font Bold Italic Underline
		<ul style="list-style-type: none"> To discuss what makes a good animated film or cartoon. To learn how animations are created by hand. To find out how animations can be created in a similar way using the computer. To learn about onion skinning in animation. To add backgrounds and sounds to animations. To be introduced to 'stop motion' animation. To share animation on the class display board and by blogging. 	<p>They create linked content using a range of software.</p> <p>Children share digital content within their community, i.e. using Virtual Display Boards.</p>	INFORMATION TECHNOLOGY	Animation Flipbook Frame Onion skinning Background Play Sound Stop motion Video clip
		<ul style="list-style-type: none"> To understand how children can protect themselves from online identity theft. 	Children can explore key concepts relating to online safety using concept mapping.	DIGITAL LITERACY	Digital footprint Copyright Computer virus Cookies



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		<ul style="list-style-type: none">• To understand that information put online leaves a digital footprint or trail and that this can aid identity theft.• To identify the risks and benefits of installing software including apps.• To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism.• To identify appropriate behaviour when participating or contributing to collaborative online projects for learning.• To identify the positive and negative influences of technology on health and the environment.• To understand the importance of balancing game and screen time with other parts of their lives.	<p>They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact.</p>		<p>Identity theft Malware computer system. Phishing Email Plagiarism Spam</p>
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<p>Year 5</p>	<p>Key stage 2 Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> To begin to simplify code. To create a playable game. To understand what a simulation is. To program a simulation using code To know what decomposition and abstraction are in computer science. To a take a real-life situation, decompose it and think about the level of abstraction. To understand how to use friction in code To begin to understand what a function is and how functions work in code. To understand what the different variables types are and how they are used differently. To understand how to create a string. To understand what concatenation is and how it works. 	<p>Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts.</p> <p>Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures.</p> <p>When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">COMPUTER SCIENCE</p>	<p>Action Abstraction Algorithm Button Called Co-ordinates Decomposition Event Function If Repeat Run Repeat Score Sequence Simplify/Simplified Simulation Tab Timer Variable Nesting Object Physical System Properties writing code</p>
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	<p>discerning in evaluating digital content</p> <ul style="list-style-type: none">• 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 resending data and information• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	<ul style="list-style-type: none">• To plan a game.• To design and create the game environment.• To design and create the game quest.• To finish and share the game.• To self and peer evaluate.	<p>Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code.</p> <p>They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.</p>	COMPUTER SCIENCE	Animation Customise Evaluation Image Instructions Screenshot Texture Perspective Playability
		<ul style="list-style-type: none">•			



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	<ul style="list-style-type: none"> To use formulae within a spreadsheet to convert measurements of length and distance. To use the count tool to answer hypotheses about common letters in use. To use a spreadsheet to model a reallife problem. To use formulae to calculate area and perimeter of shapes. To create formulae that use text variables. To use a spreadsheet to help plan a school cake sale. 	<p>Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">INFORMATION TECHNOLOGY</p>	<p>Average Advance mode Copy and Paste Cells Columns Charts Equals tool Formula Formula wizard Move cell tool Random tool Spin Tool Rows Spreadsheet Timer</p>
	<ul style="list-style-type: none"> To learn how to search for information in a database. To contribute to a class database. To create a database around a chosen topic. 	<p>They objectively review solutions from others.</p> <p>Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">INFORMATION TECHNOLOGY</p>	<p>Avatar Binary tree Charts Collaborative Data Database Find Record Statistics and reports Table</p>
	<ul style="list-style-type: none"> To be introduced to skills of computer aided design. To explore the effect of moving points when designing. To design a 3D Model to fit certain criteria. To refine and print a model. 	<p>Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">INFORMATION TECHNOLOGY</p>	<p>CAD – Computer aided Design Modelling 3D 3D Printing Points Key Vocabulary Viewpoint Polygon 2D</p>



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		<ul style="list-style-type: none"> To understand the need for visual representation when generating and discussing complex ideas. To understand the uses of a 'concept map'. To understand and use the correct vocabulary when creating a concept map. To create a concept map. To understand how a concept map can be used to retell stories and information. To create a collaborative concept map and present this to an audience. 	They are able to use several ways of sharing digital content, i.e. Display boards and email.	INFORMATION TECHNOLOGY	Audience Collaboratively Concept Concept Map Connection Idea Node Thought Visual
		<ul style="list-style-type: none"> To know what a word processing tool is for. To add and edit images to a word document. To know how to use word wrap with images and text. To change the look of text within a document. To add features to a document to enhance its look and usability. To use tables within word processing software to present information. To introduce children to templates. To consider page layout including heading and columns. 	Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief.	INFORMATION TECHNOLOGY	Copyright Cursor Document Font In-built styles Merge cells Text formatting Text wrapping Word Art Readability Template Word processing tool
		<ul style="list-style-type: none"> To gain a greater understanding of the impact that sharing digital content can have. To review sources of support when using technology and children's responsibility to one another in their online behaviour. To know how to maintain secure passwords. To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this. 	Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Children implicitly relate appropriate online behaviour to their right to personal privacy and	DIGITAL LITERACY	Smart rules SMART Online safety Shared image Password Encryption Reputable Identity theft Citations Plagiarism



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		<ul style="list-style-type: none"> To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online. To learn about how to reference sources in their work. To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. To ensure reliability through using different methods of communication. 	<p>mental wellbeing of themselves and others.</p> <p>Children search with greater complexity for digital content when using a search engine.</p> <p>They are able to explain in some detail how credible a webpage is and the information it contains.</p> <p>Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe.</p> <p>Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. Display Boards.</p>	<p>INFORMATION TECHNOLOGY</p> <p>COMPUTER SCIENCE</p>	Reference Bibliography
Year 6	<p>Key stage 2 Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> To find out what a text adventure is. To plan a story adventure. To make a story-based adventure. To introduce an alternative model for a text adventure which has a less sequential narrative. To use written plans to code a map-based adventure. 	<p>Children are able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs.</p> <p>Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic</p>	COMPUTER SCIENCE	Text-based adventure Concept map Debug Sprite Function



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	<p>work and to detect and correct errors in algorithms and programs</p> <ul style="list-style-type: none"> 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 resending data and information use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 	<ul style="list-style-type: none"> To design a playable game with a timer and a score. To plan and use selection and variables. To understand how the launch command works. To use functions and understand why they are useful. To understand how functions are created and called. To use flowcharts to create and debug code. To create a simulation of a room in which devices can be controlled. To understand how user input can be used in a program. To understand how Code can be used to make a text-adventure game. 	<p>approach to try to identify a particular line of code causing a problem.</p> <p>Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other.</p> <p>Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions.</p>	<p>COMPUTER SCIENCE</p>	<p>Button Called Command Co-ordinates Action Alert Algorithm Background Debug/Debugging Decomposition Developer Nested Object Predict Procedure Prompt Properties Repeat Run Scene A Selection Simulation String Tab Timer User Input Variable Event Flowchart Function Get Input If/Else</p>
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Subject: Computing

					A conditional command. Launch Command Number Variable
		<ul style="list-style-type: none"> To use a spreadsheet to investigate the probability of the results of throwing many dice. To use a spreadsheet to calculate the discount and final prices in a sale. To use a spreadsheet to plan how to spend pocket money and the effect of saving money. To use a spreadsheet to plan a school charity day to maximise the money donated to charity. 	They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.	INFORMATION TECHNOLOGY	Average Advance mode Copy and Paste Cells Columns Charts Count (how many) Dice Move cell tool Random tool Spin Tool Rows Spreadsheet Timer Formula Function wizard
		<ul style="list-style-type: none"> To create a picture-based quiz for young children. To learn how to use the question types. To explore the grammar quizzes. To make a quiz that requires the player to search a database. To make a quiz to test your teachers or parents. 	They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.	INFORMATION TECHNOLOGY	Audience Collaboration Concept map Database Quiz



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		<ul style="list-style-type: none">• To examine how whole numbers are used as the basis for representing all types of data in digital systems.• To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems).• To understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics.	Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole.	COMPUTER SCIENCE	Base 10 Base 2 Binary Key Vocabulary Bit Byte Decimal Denary Digit Gigabyte (GB) Integer Kilobyte (KB) Integer
		<ul style="list-style-type: none">• To know what a spreadsheet looks like.• To navigate and enter data into cells.• To introduce some basic data formulae in Excel for percentages, averages and max and min numbers.• To demonstrate how the use of Excel can save time and effort when performing calculations.• To use a spreadsheet to model a real-life situation.• To demonstrate how Excel can make complex data clear by manipulating the way it is presented.• To create a variety of graphs in Excel.• To apply spreadsheet skills to solving problems.		COMPUTER SCIENCE	Alignment Calculate Column Function Range Style Sum Text Wrapping Cell Cell reference Chart Row Spreadsheet Value Workbook



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		<ul style="list-style-type: none"> • To learn about what the Internet consists of. • To find out what a LAN and a WAN are. • To find out how the Internet is accessed in school. • To research and find out about the age of the Internet. • To think about what the future might hold. 	<p>Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.</p>	COMPUTER SCIENCE	Internet World Wide Web Network Local area network (LAN) Wide area network (WAN) Router Network cables wireless
		<ul style="list-style-type: none"> • To identify the purpose of writing a blog. • To identify the features of a successful blog. • To plan the theme and content for a blog. • To understand how to write a blog and a blog post. • To consider the effect upon the audience of changing the visual properties of the blog. • To understand how to contribute to an existing blog. • To understand how and why blog posts are approved by the teacher. • To understand the importance of commenting on blogs. 	<p>Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the internet.</p> <p>They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.</p>	INFORMATION TECHNOLOGY	Audience Blog Blog page Blog post Collaborative Icon



Subject: Computing

		<ul style="list-style-type: none">• To identify benefits and risks of mobile devices broadcasting the location of the user/device.• To identify secure sites by looking for privacy seals of approval.• To identify the benefits and risks of giving personal information.• To review the meaning of a digital footprint.• To have a clear idea of appropriate online behaviour.• To begin to understand how information online can persist.• To understand the importance of balancing game and screen time with other parts of their lives.• To identify the positive and negative influences of technology on health and the environment.	<p>Children demonstrate the safe and respectful use of a range of different technologies and online services.</p> <p>They identify more discreet inappropriate behaviours through developing critical thinking.</p> <p>They recognise the value in preserving their privacy when online for their own and other people's safety.</p>	DIGITAL LITERACY	Digital footprint PEGI rating Phishing Spoof website Password Screen time
			<p>Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains.</p> <p>They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy.</p> <p>Children use critical thinking skills in everyday use of online communication.</p>	INFORMATION TECHNOLOGY	