

Curriculum Planning – Key skills and knowledge covered in each Year group
Computing

KS2

The teaching sequence over the year must include:

- A review of previous learning
- Independent and group work
- Use of various IT hardware
- Links to other areas of the curriculum

Learning, working and talking like a computer scientist

Being introduced to the key vocabulary that a computer scientist would use; defining the key vocabulary that a computer scientist would use; high expectations of pupils 'talking' like a computer scientist.

Logic	Predicting and analysing
Algorithms	Making Steps and Rules
Decomposition	Breaking down into parts
Patterns	Spotting and using similarities
Abstraction	Removing unnecessary detail
Evaluation	Making judgement

Progression in Computing KS2

Year 3		Year 4		Year 5		Year 6		End of Key Stage Expectations
Theme 1	Connecting Computers – Teachcomputing.org	Theme 1	The Internet – Teachcomputing.org	Theme 1	Code.org – Course E	Theme 1	Video Production – Teachcomputing.org (Cross-curricular)	<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 discerning in evaluating digital content • select, use and combine a variety of software (including internet services) on a range of
Theme 2	Code.org – Course C	Theme 2	Code.org – Course D	Theme 2	Website creation – Teachcomputing.org (Cross-curricular)	Theme 2	Code.org – Course F	
Theme 3	Desktop Publishing – Teachcomputing.org (Cross-curricular)	Theme 3	Photo editing – Teachcomputing.org (Cross-curricular)	Theme 3	Systems and searching – Teachcomputing.org	Theme 3	Communication and collaboration – Teachcomputing.org	
Theme 4	Branching databases – Teachcomputing.org	Theme 4	Data logging – Teachcomputing.org	Theme 4	Flat-file databases – Teachcomputing.org (J2e data)	Theme 4	Introduction to spreadsheets – Teachcomputing.org	

								<p>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</p> <ul style="list-style-type: none"> use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
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Year 3							
Theme 1		Theme 2		Theme 3		Theme 4	
Skills	Knowledge	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge
<p>To identify input and output devices.</p> <p>To explain that a computer system accepts an input and processes it to produce an output.</p> <p>To explain the role of a switch, server, and wireless access point in a network.</p> <p>To explain how a computer network can be used to share information.</p> <p>To identify network devices around me.</p> <p>To explain how networks can be connected to other networks.</p>	<p>To describe what an input is.</p> <p>To explain that a process acts on the input.</p> <p>To explain that an output is produced by the process.</p> <p>To identify how changing the process can affect the output.</p> <p>To recognise that a digital device is made up of several parts.</p> <p>To recognise that computers can be connected to each other.</p> <p>To identify how devices in a network are connected with one another.</p> <p>To recognise that a network is made up of a number of components.</p> <p>To explain how information is passed through multiple connections.</p> <p>To identify the benefits of computer networks.</p>	<p>Develop programs with sequences and simple loops, to express ideas or address a problem.</p> <p>Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.</p> <p>Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.</p> <p>Work respectfully and responsibly with others online.</p> <p>Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks.</p>	<p>Model the way programs store and manipulate data by using numbers or other symbols to represent information.</p> <p>Describe basic hardware and software problems using accurate terminology.</p>	<p>To show that page orientation can be changed.</p> <p>To add text to a placeholder.</p> <p>To organise text and image placeholders in a page layout.</p> <p>To add and remove images to and from placeholders.</p> <p>To edit text in a placeholder.</p> <p>To choose fonts and apply effects to text.</p> <p>To move and resize and rotate images.</p> <p>To review a document.</p>	<p>Recognise how text and images can be used together to convey information.</p> <p>To define landscape and portrait as two different page orientations.</p> <p>To consider how different layouts can suit different purposes.</p> <p>To recognise that Desktop publishing (DTP) pages can be structured with placeholders.</p> <p>To recognise how different font styles and effects are used for particular purposes.</p> <p>To consider the benefits of using a DTP application.</p>	<p>To create questions with yes/no answers.</p> <p>To choose questions that will divide objects into evenly sized subgroups.</p> <p>To repeatedly create subgroups of objects.</p> <p>To identify an object using a branching database.</p> <p>To retrieve information from different levels of the branching database.</p>	<p>To investigate questions with yes/no answers.</p> <p>To identify attributes that you can ask yes/no questions about.</p> <p>To select an attribute to separate objects into two similarly sized groups.</p> <p>To explain that a branching database is an identification tool.</p> <p>To recognise that a data set can be structured using yes/no questions.</p> <p>To explain that a well-structured branching database will enable you to identify objects using fewer questions.</p> <p>To relate two levels of a branching database using AND.</p> <p>To suggest real-world applications for branching databases.</p>
Vocab	Key Concepts	Vocab	Key Concepts	Vocab	Key Concepts	Vocab	Key Concepts
<p>Digital device</p> <p>Input</p> <p>Process</p> <p>Output</p> <p>Secure</p> <p>Program</p> <p>Connection</p> <p>Network</p>	<p>E-safety</p> <p>Logic</p> <p>Decomposition</p>	<p>Algorithm</p> <p>Bug</p> <p>Debugging</p> <p>Program</p> <p>Bug</p> <p>Persistence</p> <p>Programming</p> <p>Loop</p> <p>Repeat</p>	<p>Logic</p> <p>Algorithms</p> <p>Decomposition</p> <p>Patterns</p> <p>Abstraction</p> <p>Debugging</p> <p>Persevering</p> <p>Abstraction</p> <p>Creating</p> <p>Tinkering</p> <p>Collaborating</p> <p>E-safety</p>	<p>Communicate</p> <p>Font</p> <p>Style</p> <p>Orientation</p> <p>Placeholder</p> <p>Template</p> <p>Layout</p> <p>Content</p> <p>Benefits</p>	<p>Creating</p> <p>Decomposition</p> <p>Evaluation</p>	<p>Attribute</p> <p>Value</p> <p>Branching</p> <p>Database</p> <p>Structure</p> <p>Selecting</p> <p>Organise</p> <p>Decision tree</p>	<p>Decomposition</p> <p>Patterns</p> <p>Evaluation</p> <p>Creating</p>
Year 4							
Theme 1		Theme 2		Theme 3		Theme 4	
Skills	Knowledge	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge

<p>To describe how networks connect to other networks. To outline how information can be shared via the World Wide Web. To describe how to access the World Wide Web. To explain how the content of the World Wide Web is created, owned, and shared by people. To evaluate the reliability of content and the consequences of unreliable content.</p>	<p>To explain that the global interconnection of networks is the Internet. To recognise the need for security on the Internet. To recognise that the World Wide Web is part of the Internet. To describe the types of content/media that can be added, created, and shared on the World Wide Web. To describe the current limitations of World Wide Web media. To explain the benefits of the World Wide Web.</p>	<p>Describe how internal and external parts of computing devices function to form a system. Create programs that use variables to store and modify data. Create programs that include sequences, events, loops, and conditionals. Decompose (break down) problems into smaller, manageable sub problems to facilitate the program development process. Modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features. Take on varying roles when collaborating with peers during the design, implementation and review stages of program development. Create programs that include sequences, events, loops, and conditionals.</p>	<p>Model how computer hardware and software work together as a system to accomplish tasks. Discuss real-world cybersecurity problems and how personal information can be protected. Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. Observe intellectual property rights and give appropriate attribution when creating or remixing programs. Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.</p>	<p>To recognise that digital images can be manipulated. To recognise that digital images can be changed for different purpose. To choose the most appropriate tool for a particular purpose. To consider the impact of changes made on the quality of the image.</p>	<p>To use an application to change the whole of a digital image. To use an application to change part of a digital image. To change the composition of a digital image by rotating and flipping. To change the composition of a digital image by cropping. To adjust colours of a digital image. To apply filters and effects to a digital image. To select part of a digital image. To use clone, copy, and paste to change the composition of a digital image. To use cloning to retouch a digital image. To add text to a digital image.</p>	<p>To use a digital device to collect data automatically. To choose an appropriate timeframe when collecting data automatically. To use a set of logged data to find information. To use a computer program to sort data by one attribute. To export information in different formats.</p>	<p>To suggest questions that can be answered using a table of data. To identify data that can be logged over time. To identify that sensors are input devices. To recognise that a sensor can be used as an input device for data collection. To explain that a sata logger captures 'data points' from sensors over time.</p>
<p>Vocab</p>	<p>Key Concepts</p>	<p>Vocab</p>	<p>Key Concepts</p>	<p>Vocab</p>	<p>Key Concepts</p>	<p>Vocab</p>	<p>Key Concepts</p>
<p>Router Server Content Download Ownership Permission Honest</p>	<p>Logic Decomposition E-safety</p>	<p>Bug Debugging Loop Programming Algorithm Frustrated Persistence Program Event Code</p>	<p>Logic Algorithms Decomposition Patterns Abstraction Debugging Persevering Abstraction Creating Tinkering Collaborating E-safety</p>	<p>Crop Adjustments Effects Hue Saturation Sepia Retouch Clone Combine</p>	<p>Creating Evaluation Tinkering Persevering</p>	<p>Sensor Logger Interval Analyse Dataset Collection Review Conclusion</p>	<p>Patterns Evaluation Collaborating</p>

Year 5

Theme 1		Theme 2		Theme 3		Theme 4	
Skills	Knowledge	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge
<p>Modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.</p> <p>Create programs that include sequences, events, loops, and conditionals.</p> <p>Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.</p> <p>Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.</p>	<p>Discuss real-world cybersecurity problems and how personal information can be protected.</p> <p>Work respectfully and responsibly with others online.</p> <p>Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.</p>	<p>To review an existing website (navigation bars, header).</p> <p>To create a new blank web page.</p> <p>To add text to a web page.</p> <p>To set the style of text on a web page.</p> <p>To embed media in a web page.</p> <p>To add web pages to a website.</p> <p>To insert hyperlinks between pages.</p> <p>To insert hyperlinks to another site.</p>	<p>To recognise that web pages can contain different media types.</p> <p>To recognise that web pages are written by people.</p> <p>To recognise that a website is a set of hyperlinked web pages.</p> <p>To recognise components of a web page layout.</p> <p>To consider the ownership and use of images (copyright).</p> <p>To recognise the need to preview pages (different screens / devices).</p> <p>To recognise the need for a navigation path.</p> <p>To recognise the implications of linking to content owned by others.</p>	<p>To describe the input and output of a search engine.</p> <p>To demonstrate that different search terms produce different results.</p> <p>To evaluate the results of search terms.</p>	<p>To recognise that a system is a set of interconnected parts which work together.</p> <p>To explain that computers can be connected together to form IT systems.</p> <p>To identify that data can be transferred between IT systems.</p> <p>To recognise inputs, processes, and outputs in large IT systems.</p> <p>To describe the role of a particular IT system in their lives.</p> <p>To explain the role of web crawlers in creating an index.</p> <p>To explain how search results are selected.</p> <p>To explain how ranking is determined by rules, and that different search engines use different rules.</p>	<p>To choose different ways to view data.</p> <p>To choose which attribute and value to search by to answer a given question (operands).</p> <p>To ask questions that need more than one attribute to answer.</p> <p>To choose which attribute to sort data by to answer a given question.</p> <p>To choose multiple criteria to search data to answer a given question (AND and OR).</p> <p>To select an appropriate graph to visually compare data.</p> <p>To choose suitable ways to present information to other people.</p>	<p>To explain that a computer program can be used to organise data.</p> <p>To explain that tools can be used to select data to answer questions.</p> <p>To outline how operands can be used to filter data.</p> <p>To outline how ordering data allows us to answer some questions.</p> <p>To outline how 'AND' and 'OR' can be used to refine data selection.</p> <p>To explain that computer programs can be used to compare data visually.</p> <p>To explain that we present information to communicate a message.</p>
Vocab	Key Concepts	Vocab	Key Concepts	Vocab	Key Concepts	Vocab	Key Concepts
<p>Behaviour</p> <p>Sprite</p> <p>Loop</p> <p>Repeat</p>	<p>Logic</p> <p>Algorithms</p> <p>Decomposition</p> <p>Patterns</p> <p>Abstraction</p> <p>Debugging</p> <p>Persevering</p> <p>Abstraction</p> <p>Creating</p> <p>Tinkering</p> <p>Collaborating</p> <p>E-safety</p>	<p>Website</p> <p>Web Page</p> <p>Layout</p> <p>Copyright</p> <p>Fair Use</p> <p>Evaluate</p> <p>Breadcrumb Trail</p> <p>Evaluate</p> <p>Embed</p>	<p>Creating</p> <p>Tinkering</p> <p>Logic</p> <p>Evaluation</p> <p>E-safety</p>	<p>System</p> <p>Connection</p> <p>Storage</p> <p>Search Engine</p> <p>Refine</p> <p>Index</p> <p>Ordering</p> <p>Search Engine Optimisation (SEO)</p> <p>Web Crawler</p> <p>Ranking</p>	<p>Logic</p> <p>Algorithms</p> <p>Decomposition</p> <p>Evaluation</p>	<p>Database</p> <p>Data</p> <p>Information</p> <p>Record</p> <p>Field</p> <p>Sort</p> <p>Order</p> <p>Group</p> <p>Search</p> <p>Value</p> <p>Criteria</p> <p>Compare</p> <p>Filter</p>	<p>Creating</p> <p>Logic</p> <p>Patterns</p> <p>Evaluation</p> <p>Abstraction</p>

Year 6

Theme 1		Theme 2		Theme 3		Theme 4	
Skills	Knowledge	Skills	Knowledge	Skills	Knowledge	Skills	Knowledge
<p>To use different camera angles.</p> <p>To use pan, tilt and zoom.</p> <p>To identify features of a video recording device or application.</p> <p>To combine filming techniques for a given purpose.</p> <p>To determine what scenes will convey your idea.</p> <p>To decide what changes I will make when editing.</p> <p>To choose to reshoot a scene or improve later through editing.</p> <p>To use split, trim and crop to edit a video.</p>	<p>To explain the features of video as a visual media format.</p> <p>To recognise which devices can and can't record a video.</p> <p>To explain the purpose of a storyboard.</p> <p>To recognise that filming techniques can be used to create different effects.</p> <p>To recognise the need to regularly review and reflect on a video project.</p> <p>To explain the limitation of editing video on a recording device.</p> <p>To identify that videos can be edited on a recording device or on a computer.</p> <p>To identify videos can be improved through reshooting or editing.</p> <p>To recognise projects need to be exported to be shared.</p>	<p>Create programs that include sequences, events, loops, and conditionals.</p> <p>Modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.</p> <p>Compare and refine multiple algorithms for the same task and determine which is the most appropriate.</p> <p>Create programs that use variables to store and modify data.</p> <p>Decompose (break down) problems into smaller, manageable sub problems to facilitate the program development process.</p> <p>Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.</p>	<p>Discuss real-world cybersecurity problems and how personal information can be protected.</p> <p>Discuss computing technologies that have changed the world and express how those technologies influence, and are influenced by, cultural practices.</p> <p>Brainstorm ways to improve the accessibility and usability of technology products for the diverse needs and wants of users.</p> <p>Describe choices made during program development using code comments, presentations, and demonstrations.</p>	<p>To outline methods of communicating and collaborating using the internet.</p> <p>To choose methods of internet communication and collaboration for given purposes.</p> <p>To evaluate different methods of online communication and collaboration.</p> <p>To decide what you should and should not share online.</p>	<p>To recognise that data is transferred across networks using agreed protocols (methods).</p> <p>To recognise that connections between computers allow access to shared stored files.</p> <p>To explain that data is transferred in packets.</p> <p>To recognise computers connected to the internet allow people in different places to work together.</p> <p>To discuss the opportunities that technology offers for communication and collaboration.</p> <p>To explain which types of media can be shared through the internet.</p> <p>To explain that communicating and collaboration using the internet can be public or private.</p>	<p>To calculate data using a formula for each operation.</p> <p>To use functions to create new data.</p> <p>To use existing cells within a formula.</p> <p>To choose suitable ways to present spreadsheet data.</p>	<p>To identify questions that can be answered using spreadsheet data.</p> <p>To explain what an item of data is in a spreadsheet.</p> <p>To outline that there are different software tools to work with data.</p> <p>To explain how the data type determines how a spreadsheet can process the data.</p> <p>To explain that formulas can be used to produce calculated data.</p> <p>To recognise cells can be linked.</p> <p>To explain why data should be organised in a spreadsheet.</p> <p>To recognise that a cell's value automatically updates when the value in a linked cell is changed.</p> <p>To evaluate results in comparison to the question asked.</p>
Vocab	Key Concepts	Vocab	Key Concepts	Vocab	Key Concepts	Vocab	Key Concepts
<p>Panning</p> <p>close up</p> <p>lens</p> <p>mid-range</p> <p>long shot</p> <p>moving subject</p> <p>angle (high, low, normal)</p> <p>static</p> <p>tilt</p> <p>split</p> <p>trim</p> <p>clip</p>	<p>Creating</p> <p>Tinkering</p> <p>Persevering</p> <p>Collaborating</p> <p>Decomposition</p> <p>Abstraction</p> <p>Evaluation</p>	<p>Sprite</p> <p>User</p> <p>Algorithm</p> <p>Behaviour</p> <p>Program</p> <p>Event</p> <p>Variable</p> <p>Prompt</p> <p>Input</p>	<p>Logic</p> <p>Algorithms</p> <p>Decomposition</p> <p>Patterns</p> <p>Debugging</p> <p>Persevering</p> <p>Abstraction</p> <p>Creating</p> <p>Tinkering</p> <p>Collaborating</p> <p>E-safety</p>	<p>protocol</p> <p>Internet Protocol (IP)</p> <p>Domain Name Server (DNS)</p> <p>packet</p> <p>data payload</p> <p>slide deck</p> <p>collaboration</p> <p>oneway</p> <p>two-way</p> <p>one-to-one</p> <p>one-to-many.</p>	<p>Logic</p> <p>Evaluation</p> <p>Decomposition</p> <p>Collaborating</p> <p>E-safety</p>	<p>spreadsheet</p> <p>cell reference</p> <p>data item</p> <p>format</p> <p>formula</p> <p>spreadsheet</p> <p>operation</p> <p>range</p> <p>duplicate</p> <p>sigma</p> <p>propose</p> <p>data set</p>	<p>Logic</p> <p>Algorithms</p> <p>Decomposition</p> <p>Patterns</p> <p>Evaluation</p> <p>Creating</p>