Disciplinary knowledge To be computer scientists children need to be able to…..				
Year group	**Connect**	**Create and Communicate**	**Code and Control**	**Collect and Interpret**
2	• Independently log on to the network with a class username and password. • Independently use a range of selected websites and web-based activities. • Explain what to do if something on the computer worries them. • Give examples of personal information. • Know they should keep personal information private when communicating with others via the computer or tablet.	• Confidently use a range of applications and devices to create, explore and communicate. • Develop images using suitable graphics programs such as Tizzy's First Tools, 2DIY and MS Paint. • Change the brush colour and width; use lines, shapes, undo, fill. • Type several sentences using the keyboard. • Type capital letters by holding the Shift key. • Edit their text by using the Backspace, arrow keys and Enter/Return key. • Independently save files; know each filename must be different. Open files and continue working on them.	• Understand that an algorithm is a set of precise instructions to perform a process. • Plan and join blocks or select instructions to write code that solves a problem and to create their own code for a specific purpose. • Attempt to debug code. • Estimate and choose appropriate parameters for distance, and a quarter turn to the left and right. • Apply the concept of a repeated instruction to solve a problem or achieve an effect.	• Collect data by measuring and counting, including tally charts. • Enter data into the computer to make a table and a chart. • Describe what pictograms and block graphs show, using comparative language (e.g. how many more/less). • Create a branching tree database on the computer by asking suitable yes/no questions to classify objects into groups.
4	• Know that websites are on the Internet and that this is located beyond the school. • With support, identify key words and search for specific information using a search engine. • Know that some website content is not suitable for children and that certain websites, such as social media sites, have minimum age rules. • Explain why personal information should not be shared when communicating with others via the computer or tablet. • Know that messages posted online should be respectful. Explain what to do if a message or website worries them. • Know what to do with messages received from people they don't know. • Know features that make a password strong. • Independently log into Google Classroom to access, complete and turn in assignments.	• Use a range of different software and tools. Name some programs/tools suitable for different purposes. • Type paragraphs of text using both hands. • Independently attempt to correct spelling and grammar and use the spell check tool. • Act upon feedback to improve work by editing content. • Independently insert images into work (from files, clipart and by copying and pasting) and resize. • Develop their own images in painting and graphics programs by selecting sections and copying, pasting, resizing and rotating. • Format work by changing e.g.font style, colour, size and bold, italic, underline, justification. • Navigate to specific school network locations to open or save files. • Print work using specific print settings e.g. 2-sided.	• Decompose a problem into key parts. • Plan and create sequences of instructions or blocks to successfully solve a problem or create specific effects or outcomes. • Independently use repetition (Repeat and Forever) and selection (If-Then) conditions to create specific outcomes. • Estimate and choose parameters for distance and turns to the left and right. • Begin to use x and y coordinates, understanding that (0,0) is in the centre and that =/- have opposite effects. • Describe to others what their code does. • Test their code and use the outcome to refine and debug. • Independently spot a bug, identify the location but need help to fix it.	• Collect data and organise into a flat file database or spreadsheet (eg Junior Viewpoint or Excel) • Use search and sort to find answers to specific questions in an educational database (e.g. Junior Viewpoint). • Know that databases can contain errors. Be able to spot obvious errors in a database. • Create a range of charts; describe what their charts show.
6	• Name key internal components of a computer. • Know that data travels using the Internet and that the World Wide Web is web pages stored on servers. • Know that a search engine generates a list of results by using an index. • Identify key words and search for specific information using a search engine, selecting suitable websites from the list generated. • Know that the content on the Internet may be owned by people and this is called copyright. • Explain what kinds of Internet content may be inappropriate and explain what they can do if they come across such content at school or at home. • Explain why they need to communicate respectfully on social networking sites. • Know that pictures and personal information shared on devices and phones can be viewed, saved and passed on by others. State some of the risks of using online communities. Know how to reduce them and how to report problems.	• Choose suitable programs, tools and devices for different purposes. Combine more than one tool to achieve a final outcome. • Type a page of text efficiently. Make attempts to touch type. • Given feedback, improve, extend and reorganise their work. • Arrange and format parameters within different programs (justification, borders etc.) • Use Print Preview and make appropriate choices within the print options. • Know where files are stored on the network; know how to use My Documents and shared network drives for file storage. • Organise their stored files by making folders. Rename files and folders.	• Decompose a problem into key parts and develop a solution in the form of algorithms and/or code. • Create and debug sequences of code incorporating multiple sprites, costume switches, backdrop effects and a variety of inputs • Create and use variables to store values. • Confidently use x and y coordinates, understanding that (0,0) is in the centre and that +/- have opposite effects • Use IF-THEN-ELSE scripts. • Set events to control other events by 'broadcasting' information as a trigger. • Use Boolean (mathematical) operators in scripts or procedures. • Approach debugging systematically. Identify locations of bugs and attempt to fix them.	• Know that databases hold information in an organised way. • Answer questions by searching a database correctly using Boolean operators (<=,>=, AND). • Independently question the reliability of data in a database or spreadsheet. • Format data in a spreadsheet. • Use simple arithmetical formulae, SUM and *fill down* to perform spreadsheet calculations. • Discuss and compare data from charts they have made