Computing Threshold Concepts and Progression

Computing	1	2	3	4	5	6
Connect	Can use technology safely and respectfully, keeping personal information private. Can identify where to go for help and support when there are concerns about content or contact on the internet or other on-line technologies.		Can use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour, Can identify a range of ways to report concerns about content and contact.		Can use technology respectfully, responsibly and sensitively; recognise and identify potential risks and know how to report them. Can understand the impact of an on-line presence and how to be positive digital citizens.	
	Vocabulary Private/privacy Password Username Appropriate/inappropriate Media Virus Blogs/vlogs Secure Report		**Vocabulary** Copyright Plagiarism Malware Spam Hackers Trolls		**Vocabulary** Cookies Phishing Identity theft	
	Can understand the importance of keeping information, such as usernames and passwords, private and actively demonstrate this in lessons. Ask permission from a trusted adult to use technology and let them know what you are doing online. Know where to go for help (trusted adult) and identify which	Know the implications of inappropriate online searches. Can begin to understand how things are shared electronically such as posting work to a shared area. Can develop an understanding of using email safely.	Can demonstrate the importance of having a secure password and not sharing this with anyone else and can explain the negative implications of failure to keep passwords safe and secure. Can understand the importance of staying safe and the importance of their conduct when using	Can explore and explain key concepts relating to online safety. Can help others to understand the importance of online safety. Can understand the online safety implications associated with the ways the internet can	Can confidently recognise what personal information is and can explain how this can be kept safe. Can explain in some detail how credible a webpage is and the information it contains. Has a secure knowledge of common online safety	Can demonstrate the safe and respectful use of a range of different technologies and online services. Can identify more discreet inappropriate behaviours through developing critical thinking, e.g. looking at the best way to respond.

	situations require adult help. Has understood and signed up to the Valley KS1 Acceptable Use Agreement and understands that this covers the use of technology in school and at home.	Know ways of reporting inappropriate behaviours and content to a trusted adult. Understand what a digital footprint is and that is cannot be erased. Can identify safe search engines appropriate for children.	familiar communication tools such as email. They know more than one way to report unacceptable content and contact. Become familiar with where to report including CEOP. Know that social media has age restrictions on use. Can identify what makes a good Digital Leader to help peers stay safe online. Has understood and signed up to the Valley KS2 Acceptable Use Agreement and understands that this covers the use of technology in school and at home.	be used to provide different methods of communication. Know a range of ways of reporting inappropriate content and contact.	rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Can implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others. Can distinguish between facts and reliable news sources and fake news. Start to understand the legal aspects of online activity such as age restrictions, file sharing and downloads.	Can recognise the value in preserving their privacy when online for their own and other people's safety. Can understand how digital content, online behaviour and social media can affect self-esteem and the wellbeing of themselves and others.

Computing Threshold Concepts and Progression

Communication	Can use technology purposefully to create, organise, store, manipulate and retrieve content and recognise common uses of information technology beyond school. Can safely retrieve digital content.	Can understand computer networks, including the internet. Can use age appropriate search technologies and know how results are selected and ranked. Can understand that not all sources are reliable.	Can understand how computer networks are set up and used and how they provide services and opportunities. Can be discerning when evaluating digital content. Can select a variety of appropriate software across digital devices to create a range of content that accomplishes specific goals.

	Vocabulary Retrieve Input Software Hardware Cursor Device Data		**Vocabulary** Formula Services Networks Collaboration Browser		**Vocabulary** Router Bluetooth Hub	

	Can understand what is meant by technology and can identify a variety of examples both in and out of school. Can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair. Can sort, collate, edit and store simple digital content, e.g. children can	Can demonstrate an ability to organise data using, for example, a database and can retrieve specific data for conducting simple searches. Can edit more complex digital data such as music compositions. Can be confident when creating, naming, saving and retrieving content.	Can list a range of ways that the internet can be used to provide different methods of communication, e.g. social media or blogs. Can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails. They can describe appropriate email	Can recognise the main component parts of hardware which allow computers to join and form a network. Can understand the online safety implications associated with the ways the internet can be used to provide different methods of communication.	Can understand the value of computer networks but are also aware of the main dangers, e.g. viruses can spread to more users. Can recognise what personal information is and can explain how this can be kept safe. Can select the most appropriate form of	Can understand and can explain in some depth the difference between the internet and the World Wide Web. Know what a WAN and LAN are and can describe how they access the internet in school.

name, save and retrieve own work and follow simple instructions to access online resources. Can take ownership of work and save this in a designated space.	Can use a range of media in digital content including photos, text and sound. Can effectively retrieve relevant, purposeful digital content using a search engine, can apply this learning of effective searching beyond the classroom and can share this knowledge. Can make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.	conventions when communicating in this way. 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 engines. Can collect, analyse, evaluate and present data and information using a selection of software, e.g. creating graphs or branching databases. Can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails.	Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level, e.g. check the URL, check who wrote the information, double check with other sources. Can make improvements to digital solutions based on feedback. Can make informed software choices when presenting information and data. Can create linked content using a range of software (e.g. add sound effects to a video) and share digital content within their community, i.e. using virtual display boards.	online communications contingent on audience and digital content. Can search with greater complexity for digital content when using a search engine. Can explain in some detail how credible a webpage is and the information it contains. Can make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. Can objectively review solutions from others. Can collaboratively create content and solutions using digital features within software such as collaborative mode.	Can readily apply filters when searching for digital content. Can explain in detail how credible a webpage is and the information it contains. Can compare a range of digital content sources and can rate them in terms of content quality and accuracy. Can use critical thinking skills in everyday use of online communication. Can make clear connections to the audience when designing and creating digital content. Can design and create their own blogs to become a content creator on the internet. Can use criteria to evaluate the quality of digital solutions and are able to identify

				They are able to use several ways of sharing digital content, e.g. email, blogs.	improvements, making some refinements.

Coding	Can understand what algorithms are and that programs execute by following precise and unambiguous instructions. Can create and debug simple programmes and use logical reasoning to predict the behaviour of simple programs.		Can write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Can solve problems by decomposing into smaller parts. Can use sequence, selection and repetition in programs as well as working with variables. Can use logical reasoning and begin to use some computational language to explain how simple algorithms work.		Can design, write, debug and refine programs that accomplish specific goals. Can use sequence, selection and repetition in programs including variables and inputs or outputs. Can use logical reasoning and computational language to explain how algorithms work and their impact on the running of a program.	
	Vocabulary Sequence Algorithm Predict Debug/bug Code Loop		**Vocabulary** Developer Abstraction Function Variable Composition/decomposition		**Vocabulary** Refine Initialisation Parameter Array/index	
	Can understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. Know that an algorithm written for a computer is called a program. Can read code one line at a time and make good attempts to envision,	Can explain that an algorithm is a set of instructions to complete a task. Can show an awareness of the need to be precise with algorithms so that they can be successfully converted into code.	Can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code.	When turning a real-life situation into an algorithm, the design shows consideration of the required task and how to accomplish this in code using coding structures for selection and repetition.	Can attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. Can test and debug own programs as they go and can use logical methods to identify the approximate cause	Can 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

interpret or predict the bigger picture of the overall effect of the program. Can work out what is wrong with a simple algorithm when the steps are out of order. Can recognise that an unexpected outcome is due to the code and then make logical attempts to fix the code.	Can create a simple program that achieves a specific purpose. Can identify and correct some errors. Children's program designs display a growing awareness of the need for logical, programmable steps. 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.	Can identify an error within their program that prevents it following the desired algorithm and then fix it. Can demonstrate the ability to design and code a program that follows a simple sequence. Can experiment with timers to achieve repetition effects in their programs. Begin to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. Can understand how variables can be used to store information while a program is executing. Designs for their programs show that they are thinking of the structure of a	Can make more intuitive attempts to debug their own programs, e.g. know where to check first. Can use timers to achieve repetition effects which are integrated into program designs. Can 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, children can use and manipulate the value of variables. Can make use of user inputs and outputs	of any bug but may need some support identifying the specific line of code. 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. Can combine sequence, selection and repetition with other coding structures to achieve their algorithm design. Begin 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.	Can test and debug own program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem. Can translate algorithms that include sequence, selection and repetition into code and own designs show consideration of how to accomplish the set task in code utilising such structures, including nesting structures within each other. 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.

| | | | program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables.

Can make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this.

Can 'read' programs with several steps and predict the outcome accurately. | 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.

Can trace code and use step through methods to identify errors in code and make logical attempts to correct this.

Can 'read' programs with several steps and predict the outcome accurately. | | Can 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. |