COAL CLOUGH ACADEMY

# Computing Curriculum Map - Year 8

| | | Autumn 1<br>Online Safety | Autumn 2<br>Hardware/Software & Networks | Spring 1<br>Computational Thinking | Spring 2<br>Mobile App Development | Summer 1<br>Programming with Small Basic | Summer 2<br>Python Programming |
|---|---|---|---|---|---|---|---|
| Learning outcomes/ composite knowledge | | To know the dangers of the online world, how they can affect a person and I know how to get help. | Identify and explain the purpose of hardware, software and networks of a personal computer. | Solve problems using Computational Thinking techniques. | Design an App, write the code, evaluate and publish the App. | Create basic programs using a textual programming language. | Program confidently using a textual programming language and create modular programs. |
| Knowledge Components | Declarative – knowing what | I can give examples of the issues online that might make me feel sad, worried, uncomfortable or frightened; I know how I can get help.<br><br>I can recognise dangerous online relationships and know how to get help<br><br>I know how to keep a positive online reputation and report fake news.<br><br>I know what the law says about Cyber bullying and how to report Cyberbullying.<br><br>I know how to behave online and know the types of online comments that can be abusive.<br><br>I know the impact of technology on my health & wellbeing | I can explain the different types of computers and their uses.<br><br>I can explain the purpose of input and output devices and their use<br><br>I can explain the purpose of computer memory and storage<br><br>I can explain the purpose of Bios and the Fetch-decode execute cycle.<br><br>I can explain the purpose of a Motherboard.<br><br>I know how to stay safe when using a computer | I know that Decomposition can be applied to solve problems<br><br>I know problems can be solved using Pattern recognition<br><br>I know that problems can be solved using Abstraction<br><br>I know how to design Algorithms to solve problems<br><br>I know how to write Pseudo code to solve a problem<br><br>I know how to identify and debug errors in Algorithms | I know how to customise GUI elements to meet the needs of the user<br><br>I know Apps can be developed using event driven programming<br><br>I know Variables can hold a value<br><br>I know that programming instructions can be organised in a sequence<br><br>I know that Selection can be used to find information using criteria in a program<br><br>I know how to evaluate my App project | I know that text can displayed using programming commands in small basic<br>I that Variables can be used to hold a value<br><br>I know that the Turtle can be programed to draw shapes using Turtle graphics<br><br>I know that the Turtle can be programed to draw multiple shapes<br><br>I know that custom sized shapes can be programmed using programming commands<br><br>I know that Selection can be added to my program using If statements | I know how to create a basic program using the Print function and know why the correct Syntax should be used<br><br>I know why Variables are used to store and retrieve values in a program<br><br>I know that mathematical calculations can be programmed<br><br>I know how to develop modular programs using Strings, Lists and Dictionaries<br><br>I know why Selection statements are used in a program.<br><br>I know why an Array of data is used in a program. |

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|---|---|---|---|---|---|---|---|
| | | I understand how I can protect myself against viruses and Malware | | | | | |
| | Procedural – knowing how and when | I can report and get help for issues online, which might make me feel sad, worried, uncomfortable or frightened.<br><br>I can get help if I come across a dangerous online relationship<br><br>I can keep a positive online reputation and can report fake news.<br><br>I can report Cyberbullying online offline<br><br>I can report abusive comments online<br><br>I can keep myself healthy and safe when using technology<br><br>I can protect myself against viruses and Malware | I can identify the different types of computers and how they work<br><br>I know how input and output devices are used in computer systems.<br><br>I know how computer memory and storage are used in computers<br><br>I know the purpose of the Bios and how the Fetch-decode execute cycle works.<br><br>I can identify the parts of a Motherboard and their purpose<br><br>I know how to use a computer safely | I can apply Decomposition to a given problem<br><br>I can create solutions to a problem using pattern recognition<br><br>I can solve problems using Abstraction<br><br>I can design Algorithms to solve a problem<br><br>I can write Pseudo code to solve a problem<br><br>I can identify and debug errors in Algorithms | I know how to customise GUI elements to meet the needs of the user<br><br>I can develop an App using event driven programming<br><br>I can move the value of a Variable into a label<br><br>I can use a block based programming language to order instructions in a sequence<br><br>I can use block based programming language to include selection<br><br>I can evaluate the success of my App project | I can display text using programming commands in small basic<br><br>I can program Variables to hold a value<br><br>I can program the Turtle to draw shapes using Turtle graphics<br><br>I can program the Turtle to draw multiple shapes using programming commands<br><br>I can create custom sized shapes using programming commands<br><br>I can use Selection to filter out information from my program | I can create a basic program using the Print function and can use the correct Syntax<br><br>I can use Variables in my program to store and retrieve values in a program<br><br>I can run mathematical calculations in my program<br><br>I can develop modular programs using Strings, Lists and Dictionaries<br><br>I can use Selection statements in my program to filter out information<br><br>I can display information from an Array of data |
| National Curriculum reference | | Understand a range of ways to use technology safely. | Understand the hardware and software components | Understand several key algorithms that | Use two or more programming | Use two or more programming | Use two or more programming |

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| | respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns. | that make up computer systems, and how they communicate with one another and with other systems | reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem. | languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions. | languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions. | languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions. |
| Common misconceptions | Pupils' confidence in staying safe online.<br><br>Digital footprints are deleted, once deleted by the user online. | Pupils confidence in staying safe online<br><br>Digital footprints are deleted, once deleted by the user online | Computational Thinking and Computer Science are two completely different things, and you can successfully teach and use computational thinking without ever touching a computer if you chose to. | Using Spreadsheets and in particular learning to use formulas can be challenging for less able pupils.<br><br>Pupils may also not find a link between the use of Spreadsheets and their future career. | Programming is used for hacking<br><br>Programmers need high technical skills<br><br>People learn programming to hack systems | Python is difficult to learn,<br><br>Programming is boring, all programming languages are the same,<br><br>Programming isn't relevant to my career plans. |
| Exemplar composite Task(s) | What is online identity?<br><br>Does the way some people represent themselves online differ from the way they represent themselves offline?<br><br>Write examples of how people behave offline but then | What is a Computer?<br><br>What is an analogue computer?<br><br>What is a digital computer?<br><br>Describe computer systems<br><br>Describe a supercomputer and a mainframe | What is computational thinking?<br><br>Decomposition task – Making a Jam sandwich<br><br>Decomposition task – solving a crime<br><br>Decomposition task – Drawing a car | Think of a new App which will benefit the world<br><br>Decompose a given problem<br>App lab demonstration<br><br>Create a home screen for an App | What is the correct sequence for frying an egg?<br><br>Programming is a sequence of instructions<br><br>Create a 'Hello world' program<br><br>Find syntax errors in a program | What is Programming?<br><br>Create a 'Hello world' programme<br><br>Find syntax errors in the code<br><br>Add comments to your code<br><br>Explain the code |

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| | change online and then write the risks involved with each<br><br>Scenario based Body image questions | What is an embedded system? | | | | |