

Criteria	End of KS 2	Year 7	Year 8	Year 9	Year 10	Year 11
Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	I can design a simple computational model to represent a real-world problem or system.	I can design computational models to represent more complex real-world problems or systems.	I can evaluate and improve the computational models I have designed to ensure they accurately represent the problem or system.	I can design and evaluate computational models to solve complex real-world problems or systems.	Develop computational models using appropriate abstractions to represent real world problems and physical systems; evaluate the effectiveness of these models in representing the problem or system	I should be able to identify and understand how computational abstractions can be used to represent real-world problems and physical systems. I should be able to design and create my own computational abstractions and evaluate their effectiveness in representing the problem or system.
Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem	I can identify and explain the purpose of simple algorithms, such as those for sorting and searching.	I can use logical reasoning to compare the utility of alternative algorithms for the same problem.	I can design and implement more complex algorithms to solve a range of computational problems.	I can critically evaluate the efficiency and effectiveness of the algorithms I have designed and implemented.	Study and understand several algorithms, such as sorting and searching algorithms; analyze and compare the utility of alternative algorithms for the same problem	I should be able to identify and understand several key algorithms, including ones for sorting and searching. I should be able to compare the utility of different algorithms and choose the most appropriate one for a given problem. I should be able to implement these algorithms in at least two programming languages.

<p>Use two or more programming 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</p>	<p>I can write simple programs using visual or block-based languages to solve computational problems.</p>	<p>I can write programs using textual languages to solve computational problems, making appropriate use of data structures such as lists, tables, or arrays.</p>	<p>I can design and develop modular programs that use procedures or functions to solve more complex computational problems.</p>	<p>I can critically evaluate and refactor programs to improve their readability, maintainability, and efficiency.</p>	<p>Use at least two programming languages, including one textual language, to solve computational problems; implement appropriate data structures like lists, tables or arrays; develop modular programs that use procedures or functions</p>	<p>I should be able to use at least two programming languages to solve a variety of computational problems, making appropriate use of data structures such as lists, tables, or arrays. I should be able to design and develop modular programs that use procedures or functions, making use of abstraction to simplify the program structure.</p>
<p>Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]</p>	<p>Understand and apply simple Boolean logic, binary numbers and operations in basic circuits and programming</p>	<p>I can use Boolean operators to solve simple problems; I can convert decimal numbers to binary and vice versa and perform basic binary operations</p>	<p>I can apply Boolean logic and binary operations to create more complex programs; I can identify how binary operations relate to computer hardware</p>	<p>I can use Boolean logic to solve problems and create efficient algorithms; I can demonstrate a clear understanding of binary numbers and how they relate to digital storage and processing</p>	<p>Learn and understand Boolean logic, including its uses in circuits and programming; understand how numbers can be represented in binary and perform basic operations on binary numbers like binary addition and conversion between binary and decimal</p>	<p>I should be able to understand the concepts of Boolean logic and how they are used in circuits and programming. I should be able to represent numbers in binary and carry out simple operations on binary numbers, such as binary addition and conversion between binary and decimal.</p>

<p>Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems</p>	<p>Understand the basic components of a computer system and how they work together; understand how networks enable communication between devices and systems</p>	<p>I can identify and describe the basic components of a computer system and their functions; I can explain how data is transferred between devices in a network</p>	<p>I can explain how software interacts with hardware to perform tasks; I can describe the difference between LANs and WANs and how they function</p>	<p>I can compare and contrast different hardware components and their capabilities; I can design and configure a basic network</p>	<p>Study and understand the different components that make up a computer system, including hardware and software components, and how they interact with each other and other systems</p>	<p>I should be able to understand the different components that make up a computer system and how they communicate with each other and with other systems. I should be able to identify and explain the function of key hardware components, such as the CPU, memory, and input/output devices, as well as key software components, such as the operating system and applications.</p>
<p>Understand how instructions are stored and executed within a computer system</p>	<p>Understand the basic structure of a computer program and how instructions are executed by a computer</p>	<p>I can explain how instructions are stored and executed within a computer program; I can create basic programs using a visual programming language</p>	<p>I can create more complex programs using a textual programming language; I can debug programs by identifying and correcting errors</p>	<p>I can design and develop modular programs using procedures and functions; I can optimise programs for efficiency and readability</p>	<p>Learn and understand how instructions are stored and executed within a computer system</p>	<p>I should be able to understand how instructions are stored and executed within a computer system. I should be able to explain the fetch-decode-execute cycle and understand the role of the CPU in executing instructions.</p>

<p>Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits</p>	<p>Understand how digital data is represented and manipulated using binary digits</p>	<p>I can identify and describe different types of digital data; I can explain how text, sound and images are stored and manipulated digitally</p>	<p>I can manipulate digital data using binary digits to create simple programs; I can explain how different file formats store digital data</p>	<p>I can create programs that manipulate different types of digital data; I can explain the impact of file compression on digital data quality and storage.</p>	<p>Understand how different types of data can be represented and manipulated digitally using binary digits</p>	<p>I should be able to understand how data of various types can be represented and manipulated digitally in the form of binary digits. I should be able to identify and explain different file formats, compression techniques, and image and sound processing algorithms.</p>
<p>Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users</p>	<p>Select and use appropriate software/apps to accomplish given tasks.</p>	<p>Select and use multiple applications to achieve a given goal</p>	<p>Create and combine multiple applications to achieve a given goal</p>	<p>Independently select and combine multiple applications to achieve a given goal</p>	<p>Select, use and combine multiple applications, preferably across a range of devices, to complete creative projects that involve collecting and analyzing data and meeting the needs of known users</p>	<p>I should be able to undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals. I should be able to collect and analyze data and meet the needs of known users while taking into account usability and accessibility.</p>

<p>Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability</p>	<p>Create and share digital content with appropriate audiences while considering design and usability principles.</p>	<p>Create and share digital content with appropriate audiences while considering design and usability principles.</p>	<p>Revise and re-purpose digital content to address specific audience needs while considering design, usability and trustworthiness principles.</p>	<p>Create, revise and re-purpose digital content to address specific audience needs while considering design, usability and trustworthiness principles.</p>	<p>Create, re-use, revise and re-purpose digital artefacts, such as websites or multimedia projects, for a specific audience with attention to design, usability, and trustworthiness</p>	<p>I should be able to create, reuse, revise, and repurpose digital artifacts for a given audience, with attention to trustworthiness, design</p>
<p>Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns</p>	<p>Recognize the importance of digital safety, privacy and security and take necessary precautions while using technology.</p>	<p>Understand and implement appropriate strategies for using technology safely, respectfully, responsibly and securely while protecting their online identity and privacy. Recognize and report inappropriate content, contact and conduct to responsible parties.</p>	<p>Understand and implement appropriate strategies for using technology safely, respectfully, responsibly and securely while protecting their online identity and privacy. Recognize and report inappropriate content, contact and conduct to responsible parties.</p>	<p>Understand and implement appropriate strategies for using technology safely, respectfully, responsibly and securely while protecting their online identity and privacy. Recognize and report inappropriate content, contact and conduct to responsible parties. Participate in discussions and debates about digital safety, privacy and security issues.</p>	<p>Learn about safe, respectful, responsible and secure use of technology, including protecting online identity and privacy; recognize and report inappropriate content, contact and conduct</p>	<p>I will learn about different ways to protect my online identity and privacy, and how to recognize and report inappropriate content, contact, and conduct. I will understand the importance of being responsible and respectful when using technology and will practice safe and secure online behaviors. I will also learn about cyber security risks and legal and ethical issues related to the use of technology.</p>