**Computer Science Curriculum Overview**

**Year 7**

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| --- | --- | --- | --- | --- | --- |
| **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Winter Tracking**  | **Spring Tracking** | **Summer Tracking** |
| **ASSESSMENTS** |
| **Digital literacy assessment** | **Inside a computer assessment** |  | **Algorithms assessment** |  | **Programming assessment** |
| **Digital Literacy** | **Inside a computer** | **Computational thinking** | **Algorithms I** | **Scratch Programming** | **Scratch Programming** |
|  |  |  |  |  |  |
| **Knowledge:*** Safe and responsible use of ICT
* Basic use of Microsoft Office Products
* Efficient use of files, folders and an awareness of other storage options
* Choosing the most appropriate software for a given project
* Effective presentation of work using Microsoft Word and Powerpoint
 | **Knowledge:*** Understand the basic operation of a computer and associated hardware for input, process, storage and output.
* Understand why computers use binary for both data and instructions and be able to convert denary numbers into binary and vice-versa.
 | **Knowledge:*** What is computational thinking, why is important, and everyday examples that demonstrate it in action.
* Decomposition, abstraction and algorithms
* Search and sort algorithms
 | **Knowledge:*** Reading and creating flowcharts
 | **Knowledge:*** Scratch introduction, sequencing blocks
* Building scripts in Scratch and creating variables.
* Operators
* Selection and iteration
* Using a range of blocks to program a game independently
 | **Knowledge:*** Learn Scratch, a block-based programming language
* Programming project
 |
| **Skills:*** Safe and sensible use of ICT and online services
* Choosing appropriate software for a particular task
* Effective organisation and safe storage of work
* Basic use of Microsoft Office products
* Design a presention for a given target audience
* Effective use of search engines

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** File
* Folder

**National Curriculum coverage:*** 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
* create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
 | **Skills:*** explain the fetch-decode-execute cycle that a CPU follows
* identify and use a range of input and output devices
* binary and decimal conversions

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Input
* Process
* Storage
* Output
* Binary
* Volatile
* Primary
* Secondary

**National Curriculum coverage:*** understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
* understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
 | **Skills:*** be able to break down a problem and create an appropriate solution
* recommend a particular search or sort algorithm for a given scenario

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Decomposition
* Abstraction
* Algorithm

**National Curriculum coverage:*** design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
 | **Skills:*** use logical reasoning to predict outcomes
* be able to break down a problem and create an appropriate solution in the form of a flowchart

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Process
* Decision
* Variable

**National Curriculum coverage:*** design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
* 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
 | **Skills:*** computational thinking and problem solving

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Stage
* Backdrop
* Palette
* Coding
* Blocks
* Sprite
* Costume
* Script

**National Curriculum coverage:*** design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
* use 2 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
 | **Skills*** computational thinking and problem solving
* creativity and resilience

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Stage
* Backdrop
* Palette
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**National Curriculum coverage:*** design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
* use 2 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
* 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
 |

**Computer Science Curriculum Overview**

**Year 8**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Winter Tracking**  | **Spring Tracking** | **Summer Tracking** |
| **ASSESSMENTS** |
| **Digital literacy assessment** |  | **Programming assessment** |  | **Data representation assessment** | **System security assessment** |
| **Digital Literacy** | **Algorithms II** | **Python Programming** | **Number representation & Logic** | **Data Representation** | **System Security** |
|  |  |  |  |  |  |
| **Knowledge:*** Safe and responsible use of ICT
* Basic and intermediate use of Microsoft Excel
* Efficient use of files, folders and an awareness of other storage options
* Effective documentation of work on Microsoft OneNote
 | **Knowledge:*** Reading and creating pseudocode
 | **Knowledge:*** Learn Python, a high-level text-based programming language
* Programming project
 | **Knowledge:*** Working with binary and hexadecimal number systems
* Boolean operators and logic gates
 | **Knowledge:*** How characters, images and sound can be represented using binary data
* File compression
 | **Knowledge:*** Network security threats and measures
 |
| **Skills:*** Safe and sensible use of ICT and online services
* Effective organisation and safe storage of work
* Basic use of Microsoft Office products
* Intermediate use of Microsoft Excel

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Excel
* Snipping Tool
* File Explorer

**Keywords*** Spreadsheet
* Workbook
* Sheet
* Cell
* Formula
* Function

**National Curriculum coverage:*** 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
* create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
 | **Skills:*** use logical reasoning to predict outcomes
* be able to break down a problem and create an appropriate solution in the form of pseudocode

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Process
* Decision
* Variable

**National Curriculum coverage:*** design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
* 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
 | **Skills:*** computational thinking and problem solving
* creativity and resilience

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* IDLE
* Snipping Tool
* File Explorer

**Keywords*** Python
* IDLE
* Sequence
* Selection
* Iteration
* Variable
* Data Types
* Operators

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* use 2 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
* 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
 | **Skills:*** binary and hexadecimal operations and conversions
* use logical reasoning to predict outcomes
* Be able to solve problems involving logic circuits made up of multiple logic gates

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Binary
* Hexadecimal
* Boolean
* Logic

**National Curriculum coverage:*** 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]
 | **Skills:*** computational thinking and problem solving
* estimate image and sound file sizes
* be able to choose an appropriate file compression method for a given scenario

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Characters
* Character sets
* ASCII
* Unicode
* Pixel
* Colour depth
* Resolution
* Analogue
* Digital
* Sampling
* Compression

**National Curriculum coverage:*** understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
 | **Skills*** understand the advantages of connecting computers in a network
* explain threats that are posed to a network
* explain security measures that make a network safer to use

**Resources:*** Google Chrome
* Microsoft Teams
* Microsoft Outlook
* Microsoft OneNote
* Microsoft Word
* Microsoft PowerPoint
* Snipping Tool
* File Explorer

**Keywords*** Security
* Malware
* Virus
* Worm
* Trojan
* Social Engineering
* Phishing
* Encryption
* Firewall

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