



Year 7 Computing Long Term Plan

“Computers are incredibly fast, accurate, and stupid; humans are incredibly slow, inaccurate and brilliant; together they are powerful beyond imagination.” Albert Einstein

Year 7 Intent / End Point:

Y7 students are digitally literate by the end of the year and can navigate the internet, communicate online safely and know some ways computers work. They can load and save files, select appropriate software for tasks and solve some problems independently.

	<u>HT1</u>	<u>HT2</u>	<u>HT3</u>	<u>HT4</u>	<u>HT5</u>	<u>HT6</u>	
<u>Unit title</u>	Using computers safely, effectively and responsibly		Understanding Computers		Programming	Databases	
Principles that underpin the curriculum	Knowledge	<ol style="list-style-type: none"> Files, folders, loading and saving work Email Word processing 	<ol style="list-style-type: none"> Digital platforms E-Safety The internet and reliable sources Keeping data safe 	<ol style="list-style-type: none"> Hardware and software Inputs, processes, outputs Storage and memory Binary Changing technologies 	<ol style="list-style-type: none"> Basics of Python Syntax Commenting Functions 	<ol style="list-style-type: none"> Setting up tables Relationships Validation Forms Running queries 	
	Key terms <small>(subject specific highlighted)</small>	<ol style="list-style-type: none"> File, folder, communicate, network Recipient, contacts, filter, receive, formatting, layout, alignment, review 	<ol style="list-style-type: none"> Digital, Social media, grooming, Internet, source, reliable, accuracy, Phishing 	<ol style="list-style-type: none"> Hardware, software, Input, process, output, device, Fetch, decode, execute, memory, RAM, ROM pits, lands, burn, data, track Binary, conversion, denary, ASCII, code, Convergence 	<ol style="list-style-type: none"> Programming, IDLE, instruction, output Syntax, string Commenting While, operator, function, variable, module 	<ol style="list-style-type: none"> Flat-file database, table, column, record, field, Relational database, primary key, linked tables Validation, verification Macro query, parameter, criterion, criteria, 	
	Cross curricula links	Literacy for writing letters and evaluation, numeracy for binary and programming. Link to PSHCEE with E-safety and British values such as respect, organisational skills, problem solving					
	Middle Stake Testing <small>(Strength and try now tasks)</small>	<ul style="list-style-type: none"> Benchmark check Email challenges 	<ul style="list-style-type: none"> E-Safety project 	<ul style="list-style-type: none"> Binary 	<ul style="list-style-type: none"> Ucom knowledge check 	<ul style="list-style-type: none"> Python challenges 	<ul style="list-style-type: none"> Databases
	High Stake Testing		Assessment 1 on HT1/2				End of Year Assessment
Skills development	Students become independent problem solvers with a range of different scenarios. They develop the confidence to safely operate in a digital world. They are not afraid to find solutions and can use their IT skills across the school and at home.						
Caritas award	In IT, students will need to be independent, resilient problem solvers, in order to complete the Year 7 schemes of work. They will build up their skills set over time and these will become more challenging as they work through them.						

Year 8 Computing Long Term Plan

“Computers are incredibly fast, accurate, and stupid: humans are incredibly slow, inaccurate and brilliant; together they are powerful beyond imagination.” Albert Einstein

Year 8 Intent/End Point: At the end of Year 8 pupils can use a range of different software; from basics such as spreadsheet formulae for simple calculations to more advanced techniques such as using the goal seek functionality to predict profit margins. They also develop independent working skills during the project work and can select appropriate software to solve most problems.

	<u>HT1</u>	<u>HT2</u>	<u>HT3</u>	<u>HT4</u>	<u>HT5</u>	<u>HT6</u>	
	Spreadsheets		Websites		Animation	App development	
Principles that underpin the curriculum	Unit Title						
	Knowledge	<ol style="list-style-type: none"> 1. Computer Models 2. Creating a financial model 3. What if scenarios 4. Conditional formatting and Validation 5. Macros and charts 		<ol style="list-style-type: none"> 1. Website Design 2. Introduction to HTML 3. Introduction to CSS 4. Design 5. Development 		<ol style="list-style-type: none"> 1. Frame by frame animation 2. Tweening 3. Text and Buttons (ActionScript) 4. Sound effects 	<ol style="list-style-type: none"> 1. Introduction to apps 2. Home screen 3. Navigation 4. Adding files, links and images 5. Creating a quiz with Blockly.
	Key Terms	<ol style="list-style-type: none"> 1. model, simulation, cell, row, column 2. decimal, integer, currency, formula 3. relative reference, absolute reference, goal seek 4. validation, format, condition 5. macro, pie chart 		<ol style="list-style-type: none"> 1. Colour scheme, review, analyse 2. HTML, tags, attribute, property 3. CSS, inline, internal, embedded, external, style, element 4. text editor, web browser, responsive design 5. navigation, hyperlink, template 		<ol style="list-style-type: none"> 1. Frame, frame-by-frame, frame rate, key frame, 2. tweening, storyboard, symbol, motion tweening, motion path, morphing (shape tweening), 3. stage, timeline, text tool, break apart, button states 4. import, sound effect, audio 	<ol style="list-style-type: none"> 1. App builder, WYSIWYG (What You See Is What You Get), web app, native app, GUI (Graphical User Interface) 2. HTML5, Home Screen, standard screen 3. navigation bar, mock-up 4. pdf, IFrame, server, 5. Blockly, JavaScript, variable, if statement
	Mid Stake Testing (Strength and try now tasks)	Short assessment tasks for each sub topic.		Short assessment tasks for each sub topic.		Short assessment tasks for each sub topic.	Short assessment tasks for each sub topic.
	High Stake Testing			Assessment 1 on HT1/2			End of Year Assessment
	Skills Development	Students become independent problem solvers with a range of different scenarios such as developing computer models and building websites to fit client briefs. They develop the ability to use a wide range of software programs that are used within industry and this gives them a good idea of what type of careers can be pursued in IT.					
	Veritas Award	In IT, students will need to be independent, resilient problem solvers, in order to complete the Year 8 schemes of work. They will build up their skill set over time and these will become more challenging as they work through them.					



Year 9 Computing Long Term Plan

“Computers are incredibly fast, accurate, and stupid; humans are incredibly slow, inaccurate and brilliant; together they are powerful beyond imagination.” Albert Einstein

Year 9 Intent / End Point: They will begin by investigating computational thinking within programming in python. Following an understanding of how computers work and are programmed, they will see how computers and technology are used efficiently in everyday life, within a business setting, as well as investigating the importance of their own personal use of IT, with particular focus on e-safety, manipulation of media and their online presence.

	<u>HT1</u>	<u>HT2</u>	<u>HT3</u>	<u>HT4</u>	<u>HT5</u>	<u>HT6</u>	
<u>Unit title</u>	Python		Digital Detectives		Mayhem Manor		
Principles that underpin the curriculum	Knowledge	1. Strings and Variables 2. Data Types 3. Arithmetic 4. Selection 5. Algorithms 6. Loops 7. Searching		1. Web Browsers 2. Image Manipulation 3. Sound Manipulation 4. Scams 5. E-safety 6. Online Etiquette		1. Project Planning 2. Systems & Control 3. Spreadsheets 4. Marketing 5. Databases 6. IT in Business	
	Key Terms	1. Python, Interactive & Script, Function, Syntax Errors, Commenting 2. Data Types (Strings & Variables, Integers, Floats, Round, Boolean,) Concatenating, Casting 3. Remainder, Indentation	4. Selection (IF, ELIF, ELSE) Comparison 5. Algorithms, Pseudocode, Run time & Logic errors 6. While Loops, Condition, Infinite, Counter, 7. Binary and Linear Searching Execution.	1. Web Browsers, Reliability & Validity. 2. Photoshop, Airbrushing, Cloning, Liquify Destructive/Non-destructive colour adjustment, Masking, Layers	3. Audacity 4/5/6. Phishing, Scams, Scareware, Ransomware, Shoulder Surfing.	1. Inputs, Process, Output, Systems Life Cycle 2. Custom Path Animation 3. Excel, Cell, Cell Reference, Function (SUM, IF statements), Graphs/Charts	4. Advertising, Promotion, Profit, Revenue, Costs. 5. Database, Table Record, Field Queries & Filters, Report, Relational Database, Data Types 6. Branding, logo, slogans, competitors
	Cross Curricular Links	Students will learn how to write reports developing digital literacy skills. Numeracy will also be covered within python and they can understand and use basic calculations within Excel and Access in the final terms.					
	Middle Stake Testing <i>(Strength and try now tasks)</i>	<ul style="list-style-type: none"> Python Skills Test (1) 	<ul style="list-style-type: none"> Python Skills Test (2) 	<ul style="list-style-type: none"> Browser Report 	<ul style="list-style-type: none"> Airbrushing Report 	<ul style="list-style-type: none"> E-safety Project 	<ul style="list-style-type: none"> IT in Business project (databases/excel)
	High Stake Testing			Assessment 1 on HT1/2			End of Year Assessment
	Skills development	Students will understand several key algorithms that reflect computational thinking, which will be applied to programming techniques in python. Following a basic understanding of how programs/computers function, they will understand a range of ways to use technology safely, respectfully, responsibly and securely, paying particular attention to the manipulation of media online. They will then identify how technology is used in day-to-day life, with the use of Microsoft packages (Excel/Word/Access) where concepts will be linked to use of IT in business activity.					

Year 10 Computer Science Long Term Plan

“Computers are incredibly fast, accurate, and stupid; humans are incredibly slow, inaccurate and brilliant; together they are powerful beyond imagination.” Albert Einstein

Year 10 Intent/End Point: By the end of Year 10 learners will have developed a solid understanding of programming, important algorithms and the fundamentals for how a computer works and represents different digital items. They will also have a solid understanding of how to approach a problem and the stages they should work through to design a solution. A good Computer Science student in Year 10 will have developed problem solving skills and resilience to try and try again when they are faced with tough challenges. They will have a solid understanding of algorithm design and will know examples of common, yet efficient, search and sorting algorithms.

	HT1	HT2	HT3	HT4	HT5	HT6	
Unit Title	Re-introduction to Python.	Unit 5 Algorithms	Unit 6 Programming	Unit 7 Logic and Languages	Unit 8 Data Representation	Practical Programming	
Principles that underpin the curriculum	Knowledge	<ol style="list-style-type: none"> Input/output String manipulation Functions Selection Iteration Lists File Handling 	<ol style="list-style-type: none"> Computational Thinking Searching algorithms Sorting algorithms Flow diagrams Pseudocode Trace tables 	<ol style="list-style-type: none"> Programming concepts Sequence and selection Iteration Arrays Sub routines File Handling 	<ol style="list-style-type: none"> Logic diagrams Truth tables Defensive design Errors and testing Translators 	<ol style="list-style-type: none"> Units Numbers Characters Images Sound Compression 	<ol style="list-style-type: none"> Analysing a problem Designing a solution Implementing a solution Reviewing the success
	Key Terms	<ol style="list-style-type: none"> Data types (int, string, Boolean, float/real), Variable, Errors (syntax, runtime, logic), Debug Concatenation, slicing Function/procedure, Parameter Selection (if, elif, else), For/while/repeat until, condition, count controlled. Array, 2d arrays, list Open, write, read, close 	<ol style="list-style-type: none"> abstraction, decomposition, algorithm, binary search, linear search bubble sort, merge sort, insertion sort pseudocode flow diagram trace table, output 	<ol style="list-style-type: none"> Data type, integer, real, float, Boolean, character, string, variable, constant, concatenation, assignment Selection, comparison operators Iteration, arithmetic operators, Boolean operators Data structure, array, record Subroutine, procedure, function, parameter File, open, write, read, close 	<ol style="list-style-type: none"> Binary, logic gate, NOT, AND, OR Truth table, logic circuit, logic statement Validation, sanitisation, authentication Maintenance, testing syntax error Compiler, interpreter, assembler, source code, object code, machine code 	<ol style="list-style-type: none"> Bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte Denary, overflow, hexadecimal Character set, ASCII, Unicode Metadata, pixel, colour depth, resolution Sound sampling, playback Lossy, lossless, compression 	<ol style="list-style-type: none"> Criteria, analyse, abstraction, decomposition. Pseudocode, flow diagram, ocr reference language Data types, variable, errors, debug, concatenation, selection, for/while/repeat until, array, 2d arrays, function/procedure, parameter Success criteria, review, brief
	Mid Stake Testing (Purposeful practice)	Problem solving tasks.	Short assessment tasks for each sub topic.	Short assessment tasks for each sub topic.	Short assessment tasks for each sub topic.	Short assessment tasks for each sub topic.	Short assessment tasks for each sub topic.
	High Stake Testing			Assessment 1 on HT1/2			End of Year Assessment
Skills Development	Students will have a solid understanding of programming and will have learnt the development process that can be followed when presented with a problem to solve. They will also have covered common, important algorithms and should be able to apply these to perform tasks and solve problems from memory. They will also have a good fundamental knowledge of how computers represent digital items with the use of binary and should be able to use and understand different number systems such as hexadecimal and denary.						



Year 11 Computer Science Long Term Plan

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Year 11 Intent/End Point: The intention of Year 11 is to cover the remaining content and to allow time to revisit previous learning from Year 10 to revise. Students will complete many practice exam questions so that they are prepared for the exam as best as possible. A good Computer Science student will have a solid understanding of the fundamentals in Computer Science with topics such as understanding the purpose of a CPU in system architecture and being comfortable with the difference between LAN and WAN in networking. They will be competent problem solvers who can show resilience and determination when faced with a tough challenge.

	<u>HT1</u>	<u>HT2</u>	<u>HT3</u>	<u>HT4</u>	<u>HT5</u>	<u>HT6</u>
Unit Title	Unit 1 System Architecture	Unit 2 Wired and Wireless Networks	Unit 3 System Software and Security	Unit 4 Ethical, legal, cultural and environmental implications	Revision	
Principles that underpin the curriculum	Knowledge	<ol style="list-style-type: none"> The CPU Function and characteristic of the CPU Memory Storage 	<ol style="list-style-type: none"> The internet Local area networks Wireless networking Client server/ peer to peer Protocol and layers 	<ol style="list-style-type: none"> Network threats Identifying and preventing vulnerabilities Operating system software Utility software 	<ol style="list-style-type: none"> Ethical and cultural issues Computers in the modern world Legislation and privacy 	All content covered, starting with units covered in year 10.
	Key Terms	<ol style="list-style-type: none"> CPU, fetch, decode, execute, program counter (PC), memory address register (MAR), memory data register (MDR), Control Unit, Arithmetic-Logic Unit (ALU), accumulator, instructions, embedded Memory, clock speed, cache, core, RAM, ROM Virtual memory, flash memory, input devices, output devices Secondary storage, optical, magnetic, solid state, pits, lands, capacity, speed, portability, durability, reliability. 	<ol style="list-style-type: none"> LAN, WAN, topology, star, mesh Hub, switch, router Wireless access point, NIC, MAC address, packet, protocol, layer, encryption, hosting, Cloud, Ethernet, frequency, channels, WAP Internet, broadband, www, peer-to-peer, client-server http, https, FTP, POP, IMAP, SMTP, TCP, IP addressing, domain name, DNS server 	<ol style="list-style-type: none"> Malware, phishing, brute force attack, denial of service attack, data interception, SQL injection, network policy Penetration testing, network forensics, firewall, user access level Operating system, user interface, memory management, multi-tasking, peripheral management, interrupt Defragmentation, data compression, symmetric encryption, asymmetric encryption, private key, public key, cypher text, plaintext, full back up, incremental back up; 	<ol style="list-style-type: none"> Ethical issues, legal issues, cultural issues, environmental issues, Privacy issues, Data protection act 2018, computer misuse act 1990, copyright and patents act 1988, software licences, open source, proprietary. 	As per rest of plan.
Mid Stake Testing (purposeful practice)	Mini topic assessments	Mini topic assessments	Mini topic assessments	Mini topic assessments	Exam questions practise	
High Stake Testing		Practice Exam 1		Practice Exam 2		
Skills Development	Students will develop an in depth knowledge of the theory elements from the course, they will learn all about the internal parts of a computer and how they work as well as the ins and outs of different types of networks (LAN and WAN). They will sit two exams for the course in the Summer term, so throughout the whole year we will be completing exam questions and building up a bank of resources that they can use for revision.					