

KS3 Computing Overview

	1	2	3	4	5	6
Year 7	<u>Computer Systems #1</u> <ul style="list-style-type: none"> • What is a computer system? • Embedded system. • Computer components. • Input and output devices. • The human computer (hardware) 	<u>HTML</u> <ul style="list-style-type: none"> • Head & Body tags • Text tags • Formatting tags • Colour tags • Image tags 	<u>Algorithms</u> <ul style="list-style-type: none"> • Computational thinking • Writing algorithms in flowcharts. • Writing algorithms in flowcharts. • Search algorithms. • Sort algorithms. • Extension : pseudocode 	<u>Python #1</u> <ul style="list-style-type: none"> • Data types • Operators • Constants and variables. • Strings • Program flow (IF THEN ELSE) 	<u>Data Representation</u> <ul style="list-style-type: none"> • Logic • Units • Binary numbers • Hexadecimal numbers • ASCII 	<u>Computer Hardware</u> <ul style="list-style-type: none"> • The CPU • Fetch, decode, and execute cycle. • Memory – RAM/ROM • CPU Performance
Year 8	<u>Computer Systems #2</u> <ul style="list-style-type: none"> • Hex • Logic Gates • Storage (RAM / ROM; Types of Storage & Characteristics) 	<u>Hardware & Software</u> <ul style="list-style-type: none"> • Hardware Recap • Operating system • Application software • Utility software <p><i>(Take Entry Level Exams)</i></p>	<u>Python #2</u> <ul style="list-style-type: none"> • Nested ifs • Switch CASE • COUNT-controlled loops • Condition-controlled loops • Boolean in conditions • Arrays 	<u>Python Programming Project</u> <p><i>(Entry Level Specimen Task)</i></p>	<u>Ethical & Cultural</u> <ul style="list-style-type: none"> • Environmental • Health • Privacy • Energy Use • Legal <p><i>(Entry Level Specimen Task)</i></p>	<u>Networks</u> <ul style="list-style-type: none"> • Lan • WAN • Topologies • Network Hardware • Client-Server • P2P

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	<u>Topic 1.1 Systems</u> <ul style="list-style-type: none"> - The Purpose of the CPU - Von Neumann Architecture - CPU Components 	<u>Topic 1.1 Systems</u> <ul style="list-style-type: none"> - Function of the CPU - Characteristics of the CPU - Embedded Systems 	<u>Topic 2.2 Programming & Topic 2.3 Robust Programs</u> <ul style="list-style-type: none"> - The use of variables, constants, operators, inputs and assignments - The use of basic programming constructs: Sequence, Selection, Iteration (count and condition controlled loops) - The use of basic string manipulation - The use of base file handling operations - The use of records to store data - The use of SQL to search for data - The use of arrays (or equivalent) - How to use sub programs (functions & procedures) 		<u>Topic 1.2 Memory</u> <ul style="list-style-type: none"> - Difference between RAM and ROM - Purpose of ROM - Purpose of RAM - Virtual Memory - Flash Memory 	<u>Topic 1.4 Wired / Wireless</u> <ul style="list-style-type: none"> - LAN & WAN - Factors that affect Network performance - Roles in Client-Server / Peer to Peer - Hardware needed for a LAN - The Internet - Virtual Network
	<u>Topic 2.1 Algorithms</u> <ul style="list-style-type: none"> - Computational Thinking - Standard Searching Algorithms - Standard Sorting Algorithms 	<u>Topic 2.1 Algorithms</u> <ul style="list-style-type: none"> - Producing Algorithms with flow diagrams - Producing Algorithms with Pseudocode - Interpreting, Correcting or Completing Algorithms 	<ul style="list-style-type: none"> - The use of data types - The common arithmetic operators - The common Boolean operators - Defensive design considerations - Maintainability - The purpose of testing - Types of testing - Syntax & Logic Errors - Selecting and using suitable test data 		<u>Topic 1.3 Storage</u> <ul style="list-style-type: none"> - Data capacity - Calculations of data capacity requirements - Common types of storage - Suitable storage devices looking at the different characteristics 	<u>Topic 1.5 Network Topologies</u> <ul style="list-style-type: none"> - Star & Mesh Topologies - Wifi - The uses of IP addressing, MAC addressing and Protocols - Concept of layers - Packet Switching

Year 2	Topic 1.1 – 1.5 Recap	<u>Topic 1.6 System Security</u> <ul style="list-style-type: none"> - Forms of attack - Threats posed to networks - Identifying and preventing vulnerabilities - 	<u>Topic 1.7 System Software</u> <ul style="list-style-type: none"> - Purpose and functionality of systems software - Operating systems - Utility system software 	<u>Topic 2.5 Translators and Facilities of Languages</u> <ul style="list-style-type: none"> - Characteristics and purpose of different levels of programming language - Purpose of translators - Characteristics of an assembler, a compiler and an interpreter 	Practice NEA	Practice NEA
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	Python Challenges	Python Challenges	<u>Topic 1.8 Ethical, Legal Cultural & Environmental Concerns</u> <ul style="list-style-type: none"> - Ethical issues - Legal issues - Cultural issues - Environmental issues - Privacy issues - Key stakeholders affected by technologies - Open source vs proprietary issues - Data Protection Act 1998 - Computer Misuse Act 1990 - Copyright Designs and Patent Act 1988 - Creative Commons Licensing - Freedom of Information Act 2000 	<u>Topic 2.4 Computational Logic & Topic 2.6 Data Representation</u> <ul style="list-style-type: none"> - Why data is in binary - Logic diagrams using AND, OR and NOT - Truth tables - Applying computing-related mathematics - Binary addition - Converting to Hex - Character sets - ASCII - Images with data - Sound with data - Compression 	Practise NEA	Practice NEA
Year 3	Prep for NEA	NEA	NEA	Revision & Recap	Revision & Recap	Revision & Recap