

THS Year 10 – J277 GCSE (9-1) Computer Science – Theory Topics - Learning Journey 2020-2021

Week	Date	Topic and assessment objectives Key constructs that we cover	What we will learn about each week	Assessment
1	07.09.20	1-1-1 Architecture of CPU	What a computer is, hardware and software, peripherals. Von Neumann Architecture:	Unit Test A: Architecture A01 A02
2	14.09.20		Components of a computer system and the parts inside a CPU. The stored-program concept and the Fetch-Decode-Execute cycle.	
3	21.09.20		1-1-2 CPU Performance	
4	28.09.20	1-1-3 Embedded Systems	What embedded systems are, where they are used, typical components.	
5	05.10.20	1-2-4 Data Storage	Numbers: Binary integers. Adding binary, shifting binary, overflow. Conversions between denary, binary and hexadecimal.	(after half-term) A01 A02
6	12.10.20		Characters: Symbols, character codes and character sets.	
7	19.10.20		Bitmap images: pixels, colour-depth, quality, resolution. Sound: samples, sample-rate, bit-depth, bit-rate, quality and file-size.	
Half Term				
8	02.11.20	1-2-3 Units of Data Storage	Bits, Nibbles, Bytes, KB, MB, GB, TB, PB, conversion between units.	Unit Test B: Data Representation and Storage A01 A02
9	09.11.20	1-2-5 Data Storage: Compression	The need for compression, lossy compression vs loss-less compression.	
10	16.11.20	1-2-1 Primary Storage (Memory)	Differences between RAM and ROM. Purposes of each.	
11	23.11.20		Virtual memory.	
12	30.11.20	1-2-2 Secondary Storage	Primary vs Secondary storage. Need for Secondary storage.	
13	07.12.20		Types of storage (magnetic, solid-state, optical) and devices (HDD, SSD, CD)	
14 ½ week	14.12.20		Characteristics of storage devices: capacity, reliability, portability etc.	
Xmas				
15	04.01.21	1-3-1 Networks and Topologies	LANs and WANs, Client-Server and Peer-to-Peer. Performance of networks.	Unit Test C: Networks and Protocols A01 A02
16	11.01.21		Network hardware: Wireless access points, routers, switches, NICs, transmission media e.g. twisted pair, coax cables, Wi-Fi.	
17	18.01.21		The Internet. Packets of data and routes across the internet. Hosting. The Cloud. Web servers and clients. Domain Name System.	
18	25.01.21	1-3-2 Wi-Fi and , Protocols & Layers	Star and Mesh topologies.	
19	01.02.21		Modes of connection: Ethernet, Wi-Fi and Bluetooth. Encryption.	
20	08.02.21		IP and MAC addressing. Standards, protocols and layers.	
Half Term				
21	22.02.21	2-1-1 Computational Thinking and Algorithms	Computational thinking: abstraction, decomposition and algorithmic thinking.	Unit Test D: Algorithms, Flow- Charts and Pseudo-Code A01 A02 A03
22	01.03.21		Identifying inputs, process and outputs for a problem. Structure diagrams.	
23	08.03.21	2-1-2 Designing, Creating and Refining Algorithms	Flow-chart symbols. Tracing the path of execution through flow-charts.	
24	15.03.21		Pseudo-code: what it is and how it relates to real programming languages.	
25	22.03.21		Identifying common errors in code.	
26 ½ week	29.03.21		Using trace-tables.	
Easter				
27	19.04.21	2-4-1 Boolean Logic	Boolean operations: AND, OR, NOT. Truth tables.	(No test close to exam)
28	26.04.21		Combining operations together. Logic diagrams and logical expressions.	
29 bank hol	04.05.21	Year 10 Exam		
30	10.05.21	Year 10 Exam		
31	17.05.21		Recap exercises.	(No test close to exam)
32	24.05.21	Exam Feedback		
Half Term				
33	07.06.21	2-2-1 Programming Fundamentals	Data-types, variables and constants, casting. Flow of control in a program: Sequence, Assignment, Selection, Iteration.	Unit Test E: Programming A01 A02 A03
34	14.06.21		Generating random numbers. Expressions using common operations: + - / * ^ MOD DIV.	
35	21.06.21		Sub-programs: Procedures and functions. Arguments and return values.	
36	28.06.21		Working with 1D and 2D arrays.	
37	05.07.21		Creating, opening and closing files. Reading and writing data. Records.	
38	12.07.21	Contingency / College Discovery Week		
39	19.07.21	Work Experience		

What do the Assessment Objectives mean?

- A01** Demonstrate knowledge and understanding of the key concepts and principles of Computer Science.
- A02** Apply knowledge and understanding of key concepts and principles.
- A03** Analyse problems in computational terms / make reasoned judgments / design, program, evaluate, refine solutions.

THS Year 10 – J277 GCSE (9-1) Computer Science - Progress Tracker 2020-2021

FLIGHT PATH STICKER	<p align="center">Overview of exam Breakdown of exams, length and weighting</p> <p>Year 11 Programming Project 20 hours at the start of Year 11 – worth 0%</p> <p>Computer Systems Exam Paper 1 (J277/01) 1.5 hours at the end of Year 11 – worth 50%</p> <p>Computational thinking, algorithms and programming Exam Paper 2 (J277/02) 1.5 hours at the end of Year 11 – worth 50%</p>
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Date	Assessment	Flightpath Grade	Action (s) to make progress
	Unit Test A: Architecture		
	Unit Test B: Data Representation and Storage		
	Unit Test C: Networks and Protocols		
	Unit Test D: Algorithms , Flow-charts and pseudo-code		
	Year 10 Exam		
	Unit Test E: Programming		