

Year 10: GCSE Computer Science (Edexcel 1CP2)

Paper	Title	Exam Type
1	Principles of Computer Science	Written Paper
2	Application of Computational Thinking	On-Screen Programming Exam

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topics	Paper 1 Understanding binary and hexadecimal Foci: - Units of data - Number Systems - Unsigned Binary - Hexadecimal	Paper 1 Binary Arithmetic & negative numbers Foci: - Signed binary (two's complement) - Binary addition - Logical shifts - Arithmetic shifts	Paper 1 Representing data in binary Foci: Representing: - Text - Images - Sound	Paper 1 Stored program concept Foci: - CPU, RAM, buses - Fetch, decode, execute cycle - Secondary storage	Paper 1 Systems software Foci: - OS Purpose - OS functions - Utility software	Paper 1 Networks Foci: - Types - Topologies - Speeds - Internet Structure - Wired v Wireless
	Paper 2 Algorithms Foci: - Input & Output - Variables - Arithmetic operators - Sequence - Selection - Iteration - Abstraction - Decomposition	Paper 2 Python: Sequence Foci: - input() & print() - Output formatting - Variables - Types & Casting - Operators - Lists - Random integers - Errors & testing - Program design cycle	Paper 2 Python: Selection Foci: - if statements - Indentation - Relational Operators - Boolean Operators - else Clause - elif Clause	Paper 2 Python: Iteration Foci: - for loops - while loops - Terminal loops - Loop patterns	Paper 2 Python: String manipulation Foci: - Index notation - Strings & for loops	Paper 2 Python: Subroutine Foci: - In algorithms - Built-in subroutines - User-defined subroutines - Return Values - Global vs Local variables - Parameters
Assessments	Paper 1 Topic Test (Written)	Paper 1 Topic Test (Written)	Paper 1 Topic Test (Written)	Paper 1 Topic Test (Written)	Paper 1 Topic Test (Written) Y10 Mock (Written)	Paper 1 Topic Test (Written)
		Paper 2 On-screen test (Python Sequence)	Paper 2 On-screen test (Python Selection)	Paper 2 On-screen test (Python Iteration)	Paper 2 On-screen test Y10 On-screen Mock	Paper 2 On-screen test
All assessments will include elements of content learned previous to the current topic and assessed away from the point of learning						
Building on Prior Learning	<p>Substantive Knowledge – From Year 9 students will draw on knowledge of hardware components, software and the binary number system. The year 10 programme of study then builds on this showing how binary links all aspects of the inner workings of computers and the networks they connect to.</p> <p>Disciplinary/procedural Knowledge – From Year 9, students will be familiar with the pillars of logical problem solving and key algorithmic / programming concepts and structures using visual block-based languages. The year 10 programme of study then builds on this by introducing the use of all of these aspects using textual language in Python. They will also learn effective methods for solving logical problems using decomposition and abstraction.</p>					
Cultural Capital	<p>There is cultural capital in abundance in this programme of study: Given the relative youth of Computer Science as a discipline, cultural capital is usually a mix of computing history alongside identification and explanation of related personal experience to a given topic. For example, a networking topic might look historically at the influence of the cold war when designing the built-in resilience and redundancy of the internet, but equally relevant would be the day-to-day experience of using the internet that verifies the topologies and architectures learned in class.</p>					
Mastery	<p>In terms of mastery: Mastering programming involves much more than simply learning the syntax/semantics of a programming language. It also involves learning strategies for problem solving, embracing mistakes as opportunities to learn, mastering a few simple tools and working together with others to achieve goals.</p>					
Development of Character	<p>A wide range of virtues are covered through the teaching of Computing: For example, through programming students learn creativity, open mindedness to alternative solutions, persistence through debugging, bravery in seeing mistakes positively and the appreciation of beauty in the simplicity of a solution.</p>					
Extra-Curricular opportunities	<p>In School: Coding Club / STEM Club Outside of School: Bletchley Park</p>					
Metacognitive Learning	<p>Students will learn, through expert modelling, how and when to use computational thinking methods such as decomposition and abstraction when approaching logical problems. They will also learn through practice, different methods promoting knowledge retention and effective revision techniques and how these apply to different levels of examination question.</p>					