



Curriculum Intent

Subject: **Computer Science**

Year: **9**

	What?	Why?	National Curriculum Links
Term 1-1	1.1: Systems Architecture The concepts behind the fetch-execute cycle and detail about the purpose and function of the CPU.	Builds upon KS3 topics on Computing Systems. Pupils learn each stage of the fetch (get an instruction), decode (work out instruction), execute (carry it out). Provides foundation to memory and storage.	4.1: develop their capability, creativity and knowledge in computer science, digital media and information technology
	Python Basics: Variables, Casting and IF Statements Learning to write and run basic small programs using variables, sequence and selection.	Builds upon Scratch in Y7 and Python in Y8. Sequence, variables and casting needed in order to code later concepts as they are the foundation to programming and provide skills used in all other programming topics. Prerequisite to Topic 2.2.	4.2: develop and apply their analytic, problem-solving, design, and computational thinking skills
Term 1-2	1.2: Memory and Storage Von Neumann architecture in relation to the fetch-execute cycle, including how data is stored in memory.	Builds upon hardware topics from Y7 (Computing Systems). Von Neumann architecture states instructions and data are stored in the same memory. Builds upon topic in first half term by showing where a CPU fetches instructions from.	4.1: develop their capability, creativity and knowledge in computer science, digital media and information technology
	Python Basics: Strings and Integers Learning the basic data types and how to use them.	Data types needed for all programming topics, both written and practical programming. Needed to use any programs with text and programs that do calculations with numbers. Prerequisite to Topic 2.2.	4.2: develop and apply their analytic, problem-solving, design, and computational thinking skills
Term 2-1	1.2: Data Representation: Binary, Decimal and Hexadecimal Numbers The relationship between data representation and data quality.	Builds upon Y8 Data Representation. Terminal set of knowledge using binary numbers, hex numbers and understanding the concept of compression for Paper 2 topic.	4.1: develop their capability, creativity and knowledge in computer science, digital media and information technology
	Python Basics: For and While Loops Learning the basic loops and how to use them.	Final construct (iteration) first covered in Y7 and then Y8. Foundational to answering programming questions and writing efficient programs. Prerequisite to Topic 2.2.	4.2: develop and apply their analytic, problem-solving, design, and computational thinking skills
Term 2-2	1.2: Data Representation: Text, Images, Sound, Compression The relationship between data representation and data quality.	Builds upon Y8 Data Representation. Major topic of Paper 1 and introduces concepts of compression for Unit 1.5, and builds upon concepts taught in Binary and Memory and Storage in Y9.	4.1: develop their capability, creativity and knowledge in computer science, digital media and information technology
	Python Basics: Lists and Arrays Learning how to store multiple values of data.	Builds upon variables (taught in Y7, Y8 and Y9) and the list topic in Y7 Scratch. Prerequisite to Topic 2.2.	4.2: develop and apply their analytic, problem-solving, design, and computational thinking skills



Term 3-1	1.3: Wireless and Wired Networks Names of hardware e.g. hubs, routers, switches and topologies.	Builds upon Y7 topic. Pupils need to confidently group networks by size (LAN vs WAN), layout (topology) and design (client-server vs peer-to-peer).	4.1: develop their capability, creativity and knowledge in computer science, digital media and information technology
	Python Basics: File Handling Learning to read, write and append files.	New topic, prior variables and loops topics needed to access which are taught in KS3 and start of KS4. Prerequisite to Topic 2.2.	4.2: develop and apply their analytic, problem-solving, design, and computational thinking skills
Term 3-3	1.3: Network Protocols and Layers Data transmission between digital computers over networks, including the internet i.e. IP addresses and packet switching.	Builds upon networking topics from Y7 and prior unit, as well as binary topics. Pupils need technical understanding of how data moves through networks. Paper 1 topic.	4.1: develop their capability, creativity and knowledge in computer science, digital media and information technology
	Python Basics: Subprograms and Random Learning to abstract programs into modular programs.	Maths unit is a prerequisite for this topic. Foundations laid in Y7 Scratch using subroutines. Prerequisite to Topic 2.2.	4.2: develop and apply their analytic, problem-solving, design, and computational thinking skills