

Subject :	Computer Science	Year Group:	8
	June - October	October- February	February - June
Scheme title	Data Representation	Small Basic	Hardware and Logic Gates
Purpose of scheme	A high-quality Computer Science education ensures all students: •Are prepared for the future giving them opportunities to gain knowledge and develop skills for the ever changing digital world	A high-quality Computer Science education ensures all students: •Are prepared for the future giving them opportunities to gain knowledge and develop skills for the ever changing digital world.	A high-quality Computer Science education ensures all students: •Are prepared for the future giving them opportunities to gain knowledge and develop skills for the ever-changing digital world.
Knowledge in sequence	Data Representation •Understand the terms of the units bit, nibble, byte, kilobyte, megabyte and terabyte. •Understand what binary is and why it is used. •Convert 8 bit binary numbers into denary. •Add together two binary bytes including overflow handling. •Understand hexadecimal and its conversion to/from binary and denary. •Understand why hexadecimal number representation is used.	Python Programming •Use the print function to display text and numbers in small basic •Can perform calculations e.g. subtract, divide, multiply and add numbers in small basic. •Understands how to store variables using small basic commands •Understand different data types such as string, integer and real/float •Be able to indent code in small basic. •Use the input function to allow interactivity for the user •Uses selection and iteration statements within programs	Hardware and Logic •List different computers •Define input and output •Define storage types •List storage types •Identify and label the inside of a computer •Explain that a network is two or more connected devices and how a network works •What is binary? What do 1 and 0 mean? •Define what a CPU is and how it calculates data •State what RAM and ROM are
Skills	Problem Solving Logical Thinking Skills Real Life Situations Resilience, Teamwork and Independent Skills Number manipulation – Being able to identify how to convert numbers from denary to binary, how to convert between units, bits, kilobytes etc. This transfers to maths. Number bases in hexadecimal in base16 and the numbering system between denary and hex/binary adding to pupil's ability to do mental maths and arithmetic.	Problem solving (algorithmic thinking) is thinking like a computer in a sequence of instructions or a set of rules to get something done. Decomposition is the process of breaking down a task into smaller more manageable parts. Used in every aspect Abstraction is about simplifying things identifying what's important without worrying too much about detail. Programming is the process of design-ing and writing a set of instructions for a computer in a language it can understand. Literacy is also used when using correct syntax.	Problem Solving Logical Thinking Skills Real Life Situations Resilience, Teamwork and Independent Skills Manipulate and use binary arithmetic operations, linking to maths and mental arithmetic. Calculating outputs from Boolean logic can be transferred to Maths in reading graphs and identifying patterns.
Key Words	Denary, Decimal, Binary, Hexadecimal, Bit, Byte, KiloByte, MegaByte, GigaByte, TeraByte, Bitmap Images, Binary Addition, Overflow, ASCII, Characters	Print, input, output, variables, Selection, Iteration, While, For, Command, Integer, Character, program, syntax, Constants, abstraction, decomposition	Computer system, input, output, logic gate, binary, Boolean logic, AND gate, OR gate, NOT gate, CPU, Hard drive, star topology, bus topology, RAM, ROM
End Point	Students are able to convert 8-bit binary numbers into denary and vice versa. Students understand data can be represented and manipulated digitally in the form of binary digits.	Students are able to solve a variety of computational problems and can successfully debug their code.	Students developed a good understanding of hardware components and are able to understand simple boolean logic for example AND OR and NOT.
Assessment method	Final Written Assessment: *Data Representation Exam 50 marks *Mid Unit Reflection Grid 25 marks	Final Written Assessment: *Programming Exam 50 marks *Mid Unit Reflection Grid 25 marks	Final Written Assessment: *Hardware Exam 50 marks *Mid Unit Reflection Grid 25 marks