Subject	Computing	Year Group	8			
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**
Scheme title	**Computer Systems**	**Manipulating Data using Spreadsheets**	**Sound and Vision**	**Introduction to text based programming**	**Solving problems**	**Algorithms - Searching and Sorting**
Knowledge in sequence	Why binary? Why do we store data and how? Representing 1 and 0s Storage Devices Storing and processing instructions - The CPU.	What is a spreadsheet? How do you automate calculations? How to you arrange data? What are functions and how are they implemented?	How do computers store sound? Binary image consolidation. Bitmaps Vs Vector graphics Creating vector logos in Illustrator	How do computers store instructions and why do we need text based programming? Inputs and Outputs Selection Conditional Statements Selection. Introducing if.. elif While Loops	What is abstraction? How can abstraction make problems easier to solve? What is decomposition? Applying abstraction and decomposition.	How do we structure data? What is a list? What is a sorting algorithm? Bubble Sort Merge Sort
Purpose of scheme	To explore how and why computer systems store data. To explore how computer systems work.	To introduce students to spreadsheets. To develop a student's ability to manipulate and model data using a spreadsheet. Investigate where spreadsheets skills can be used an applied outside of school (Why are we learning this?)	To consolidate knowledge of how computers store data in binary. To explore how sound is stored in Computers. To be introduced to vector images. To be able to create simple vector images.	To introduce text based programming (Python). To consolidate sequence, selection and looping.	To develop student's computational thinking skills. To apply programming skills of sequence, selection and looping.	To explore how and why algorithms are used to arrange data. To be introduced into data structures.
Skills	Convert binary into denary and viceversa. Be demonstrate that 1 and 0s can be represented in different ways. To be able to explain how the FDE cycle is used.	To be able to independently constuct a spreadsheet. To be able to implement formulae and functions and make decisions on which ones are the correct ones to apply.. To be able to represent data in a user friendly manner including the use of graphs/charts.	To be able to complete a sample of a sound wave. To be able to calculate file sizes for bitmaps and sounds files. To be able to create simple vector graphics using the pen tool in Illustrator.	To be able to write programs with inputs, outputs and variables. To be able to fix syntax and logic errors. To be able to contruct simple conditional statements. To be able to evalute conditional statements as True or False To be able to construct a conditional loop.	To be able to abstract information from a scenario. To be able to decompose a problem.	Data structures - lists Bubble Sort Merge Sort Insertion Sort Linear search Vs Binary Search
Key words	Data / Information Binary / Denary Storage / Memory CPU	Spreadsheet. Cell, row, columns. Formula / function Model / nanipulate	Amplitude, Frequency, sample rate Bit depth Pixels, resolution, colour depth Bitmap / Vector	Python Translator / Editor Syntax Sequence, selection, looping Boolean statements Conditional statements	Abstraction / Decomposition Sequence, Selection, Looping	Data Structure List/Array Algorithm Searching / Sorting
End point	Students will be able to explain the role of various hardware components. Students will understand the purpose the CPU and how the FDE cycle works. Students will understand how and why information is stored in Computer Systems.	To be able to implement several spreadsheet tools including formulae, functions and graphs/charts. Explain how spreadsheets work and what they are used for.	Students will be able to calculate file sizes for simple binary reprentations. Students will be able to state the advantages of vector graphics. Students will be able to create simple vector graphics.	Students will be able to creat simple programs that run without errors. Students will be able to evaluate conditonal statements in If statements and loops.	Students will apply abstraciton and decomposition using a variety of programming techniques in different scenarios.	Students will be able to implement various algorithms on data. E.g. Carry out a bubble sort using cards. Students will be able to create lists in Python and will demonstrate list methods.
Assessment Methods	Knowledge checks each lesson. End of unit assessment online.	Skills are teacher assessed.	End of unit assessment online. Key skills - teacher assessed	Skills are teacher assessed.	End of unit assessment online. Key skills - teacher assessed	End of unit assessment online. Key skills - teacher assessed