

# COMPUTER SCIENCE (GCSE 9 – 1 specification)

Topics for revision for January 'pre-mock' mock exam and February mock exam

Computer Science				
				
Paper 2 topics				
<b>2.1.1</b> Computational thinking	Principles of computational thinking:			
	<input type="radio"/> abstraction			
	<input type="radio"/> decomposition			
	<input type="radio"/> algorithmic thinking			
<b>2.1.2</b> Designing, creating and refining algorithms	<input type="radio"/> Identify the inputs, processes, and outputs for a problem			
	<input type="radio"/> structure diagrams			
	<input type="radio"/> Create, interpret, correct, complete, and refine algorithms using:			
	<input type="radio"/> Pseudocode			
	<input type="radio"/> Flowcharts			
	<input type="radio"/> reference language/high-level programming language			
	<input type="radio"/> Identify common errors			
	<input type="radio"/> Trace tables			
<b>2.1.3</b> searching and sorting algorithm	standard searching algorithms:			
	<input type="radio"/> binary search <input type="radio"/> linear search			
	standard sorting algorithms:			
	<input type="radio"/> bubble sort <input type="radio"/> merge sort <input type="radio"/> insertion sort			
<b>2.2.1</b> programming fundamentals	the use of variables, constants, operators, inputs, outputs and assignments			
	the use of the three basic programming constructs used to control the flow of a program:			
	<input type="radio"/> sequence <input type="radio"/> selection <input type="radio"/> iteration (count and condition-controlled loops)			
	the common arithmetic operators			
	the common Boolean operators AND, OR, and NOT			
<b>2.2.2</b> Data types	The use of data types:			
	<input type="radio"/> Integer <input type="radio"/> Real <input type="radio"/> Boolean			
	<input type="radio"/> Character and string <input type="radio"/> Casting			
<b>2.2.3</b> Additional programming techniques	the use of basic string manipulation			
	the use of basic file handling operations:			
	<input type="radio"/> open <input type="radio"/> read <input type="radio"/> write <input type="radio"/> close			
	the use of records to store data			
	the use of SQL to search for data			
	the use of arrays (or equivalent) when solving problems, including both one-dimensional and two-dimensional arrays			
	comments <input type="radio"/> indentation			
	identify syntax and logic errors			
<b>2.4.1</b> Boolean logic	<input type="radio"/> simple logic diagrams using the operations AND, OR and NOT			
	<input type="radio"/> truth tables			
	<input type="radio"/> combining Boolean operators using AND, OR and NOT			
	<input type="radio"/> applying logical operators in appropriate truth tables to solve problems			

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<b>2.6 Data representation</b>	<b>Units:</b>			
	bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte			
	how data needs to be converted into a binary format to be processed by a computer.			
	<b>Numbers:</b>			
	how to convert positive denary whole numbers (0–255) into 8 bit binary numbers and vice versa			
	how to add two 8 bit binary integers and explain overflow errors which may occur			
	binary shifts			
	how to convert positive denary whole numbers (0–255) into 2 digit hexadecimal numbers and vice versa			
	how to convert from binary to hexadecimal equivalents and vice versa			
	check digits			