



GCSE Computer Science: Curriculum map

YEAR GROUP:	Year 11					
RATIONALE:	In the final year of study, year 11 will develop strong explicit links between the various topics studied. They will develop a deep understanding of the main computer science concepts and theory through the revision of key components. The year 11 curriculum should develop pupil confidence to enable them to independently use a range of computational thinking skills to solve complex programming problems. The final year should give pupils the knowledge and skills required to be successful computer scientist and carry out further advanced study. Although a plan is in place the year will be highly responsive to pupil strengths and QLA.					
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
	Topic/Unit: Legislation, ethics, networks	Topic/Unit: Network security, Programming classification, concepts and algorithms	Topic/Unit: Computer Systems, data representation and logic	Topic/Unit: Robust Programming and Guided Revision	Topic/Unit:	Topic/Unit:
Knowledge	Legislation Pupils will build up their knowledge of the different legislations that are significant in computer science including: The DPA(GDRP), The computer misuse act, Copyright, FIO and open source vs proprietary. Ethics : Pupils will develop a basic knowledge of ethical, legal, cultural and environmental concerns associated with computer science technologies and how to approach 8 mark questions Computer Networks Pupils will develop knowledge of the different types of networks, topologies, and protocols	Network Security: Pupils will enhance their knowledge of computer networks investigating key threats and prevention methods. Programming Classification Develop theoretical knowledge of the characteristics and purpose of different levels of programming languages: High-level languages and Low-level languages The purpose of translators. The characteristics of a compiler and an interpreter. Programming Concepts Enhance prior knowledge of programming concepts including understanding the key terminology and reading, writing and debugging programs that consist of: sequence, selection, iteration, a range of data types, sub programs, string manipulation, file handling, random number generators and SQL. Algorithms Identification and interpretation of key searching and sorting algorithms. Recap key computational thinking key terminology.	Computer Systems Enhance prior knowledge of computer systems including the components of the CPU, Characteristics that impact it, the components of it and the von Neumann architecture. Develop knowledge of the different types of memory and storage including the similarities and differences. Enhance knowledge of the different types of systems software, the role of the operating, the different types of utility software and how encryption and compression software work Data Representation Prior knowledge of Data representation will be enhanced as pupils practice number base conversions, binary additions, binary shifts, calculating sound and image file sizes and compression techniques. Boolean Logic Drawing and interpreting more complex logic gates. Completing truth tables for logic gates. Applying logical operators in truth tables to solve problems.	Robust Programming Defensive design considerations and maintainability techniques. Identify syntax and logic errors Selecting and using suitable test data: Normal. Boundary, Invalid. Erroneous Revision will then be guided by individual teachers based on QLA. Otherwise revision will follow the order of: data representation, programming concepts, Algorithms, Computer Systems, Networks, Systems Security and finally ethics. Exam technique best practice will be covered throughout the revision sessions.	First Exam Mid May	
Skills	Evaluation skills will be developed as pupils investigate different legislations and apply them to different scenarios. In addition to pupils comparing and contrasting the different types of computer networks Literacy Skills Pupils literacy skills will be enhanced as they learn to approach the 8 mark extended discussion questions Debate skills As pupils discuss the advantages and disadvantages of different technology they will enhance their ability to carry out debate and form strong articulate arguments.	Programming and problem solving skills will be the focus. As pupils are identifying different code samples and tracing through code analytical skills will be developed in addition to debugging skills which will be developed through identifying and fixing errors in code. As pupils work through a range of challenges they will develop their computational thinking skills and numeracy as they program solutions that use a range of arithmetic. Metacognitive skills will be a large focus as pupils read, interpret and trace through algorithms and solve problems in the most efficient ways as concepts of abstraction and decomposition.	Computational thinking skills will be developed as pupils gain a more in depth understanding how the components of the computer work. Evaluation skills will be developed as pupils compare and contrast different components in terms of the positives and negatives. Literacy skills will be developed as pupils learn how to answer different types of extended answer questions. Exam technique will develop skills such as time management, abstraction and decomposition skills as pupils develop their knowledge of how to read and interpret exam questions.	Exam technique will develop skills such as time management, abstraction and decomposition skills as pupils develop their knowledge of how to read and interpret exam questions.		



	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Assessments: Formative	Formative: 1) 8 Mark ethics question 2) 8 mark ethics question 3) 8 mark ethics question 4) Know it all ninja Ethics quizzes 5) Computer networks teacher made activity- gap fill, match key word to description, multiple choice quiz	Formative: 1) Systems security revision poster 2) Programming a solution to a problem 3) Flowchart design 4) Searching and sorting algorithm knowledge organiser/concept map	Formative: 1) Computer Systems exam questions 2) Data Representation – Microsoft forms quiz 3) Image and sound representation practice questions 4) Logic circuits workbook	Formative 1) Paper 2 walking talking mock examination. 2) Exam questions and quizzing throughout		
Assessments: Summative			Trial Examination: Pupils will sit a paper that consists of questions from both paper 1 and paper 2. Pupils will be given 1 hour 45 minutes to complete the paper, in exam conditions in the school hall.			



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	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Homework	Practice – Pupils given an extended answer question with structure strip to practice exam technique. Extension – Pupils asked to produce a revision resource on the questions they struggled with the most in the walking talking exam paper. Practice and Preparation – Pupils set a know it all ninja assignment ethics, legal issues and computer networks	Preparation and Practice – Pupils given the task to revise for their mock exam. Pupils provided with a revision list. Practice – Pupils given the task to practice their programming Practice – Pupils given a programming challenge to complete that requires them to use sequence, selection, iteration and an array. Practice and Preparation – Pupils set know it all ninja programming theory, programming concepts and algorithms. Pupils need to work through the assignment and answer the supplementary questions Preparation and Practice – Pupils given the task to revise for their trial exam. Pupils provided with a revision list.	Practice and Preparation – Pupils set know it all ninja assignment on systems architecture, networking and security. Pupils need to work through the assignment and answer the supplementary exam questions. Extension – Pupils asked to use the feedback from their trial exam to produce a series of a revision resources on their weakest topics. This will be personal to each pupil. Programming on paper challenges Data representation practice questions	Practice and preparation - Pupils given targeted exam questions based on trial performance to help them to prepare for their final exams.		