Curriculum Map
Subject: AQA GCSE Computer Science 24-25

Year 10

Term	Unit of Work	Knowledge and Skills	Assessment
1	**Topic: 3.4 Computer Systems**	In year 10 Computer Science, lessons will be split into one theory and one practical programming per week. The majority of lessons will contain revision material creation and exposure to exam style questions. **THEORY:** 3.4 An Introduction to computer systems which delves into how a computer is built up of each component and how they work together. The inner workings of the computer and how their mouse click goes to an event on the computer. 3.4 what's included: • System architecture (CPU, Memory, Storage, cloud, embedded systems)	**Key assessment:** • 3.4 & 3.2 exam style assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** • **Article –** Richest programmers
	Topic: 3.2 Programming	**PROGRAMMING:** 3.2 Programming will be taught and practiced throughout year 10 and 11. This term pupils will explore the theory and their practical understanding of the Python programming language. 3.2 What's included: • Data types • Programming concepts (variable declaration, constant declaration, assignment, selection) • Arithmetic operations (addition, subtraction, multiplication, real division, integer division) • Relational operators • Boolean operators (NOT, AND, OR) • Input and output • Practice on writing programs that solve problems	

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2	**Topic: 3.4 Computer Systems & 3.3 Fundamentals of Data Representation** **Topic: 3.2 Programming**	**THEORY:** 3.4 computer system continuation of learning from Term 1. 3.4 What's included: • Hardware & Software • Software classification • Classification of programming languages and translators • Boolean logic/Expressions • Truth tables **PROGRAMMING:** 3.2 Continuing pupil exploration of the theory and practical understanding through practice of the Python programming language. 3.2 What's included: • Programming concepts (selection, iteration) • Count and condition-controlled iteration • Nested selection and iteration • The importance of meaningful identifier names • Practice on writing programs that solve problems	**Key assessment:** • 3.4 & 3.2 exam style assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** • **Information Sheet** – John Von Neumann
3	**Topic: 3.3 Fundamentals of Data Representation** **Topic: 3.2 Programming**	**THEORY:** 3.3 Pupils will explore how computers store data. The format it takes in the memory and learn to convert data into binary. This data represents that of images, sound, text and general data and information stored on the computer. 3.3 What's included: • Number Bases • Converting between number bases • Units of information • Character encoding • Binary arithmetic • Representing images • Representing sound • Data Compression **PROGRAMMING:** 3.2 Continuing pupil exploration of the theory and practical understanding through practice of the Python programming language. 3.2 What's included: • String handling operations • Random number generation in a programming language • Practice on writing programs that solve problems • Practice on answering programming exam questions	**Key assessment:** • 3.3 & 3.2 exam style assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** • **News article** – What is bitcoin and how does it work?

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4	**Topic: 3.1 Fundamentals of Algorithms** **Topic: 3.2 Programming**	This term will include revision of all learning since September in the build up to the summer mocks. **THEORY & PROGRAMMING:** 3.1 Pupils will learn about decomposition and abstraction, and how algorithms are used to plan for the writing programs. 3.1 What's included: • Representing algorithms (Pseudocode and flowcharts) • Efficiency of algorithms • Practice interpreting algorithms and creating algorithms Algorithms will feed into 3.2 programming by helping pupils break down complex programs, and then writing them. **PROGRAMMING:** 3.2 Continuing pupil exploration of the theory and practical understanding through practice of the Python programming language. 3.2 What's included: • Data Types (integers, real, float, decimal, Boolean, string) • Variables (variables, constants, local vs global variables) • Selection (selection and nested selection) • Iteration (definite and indefinite iteration) • Operations (arithmetic, relational & Boolean) • String handling operations • Random number generation in a programming language • Practice on writing programs that solve problems • Practice on answering programming exam questions	**Key assessment:** • 3.1 & 3.2 exam style assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** • **Information sheet** – Famous Algorithms
5	**Topic: 3.4 Computer Systems** **Topic: 3.2 Programming**	This term will include revision and exam question practice of all learning since September in the build up to the summer mocks (Mock schedule TBC nearer the time – either in term 5 or 6) **THEORY:** 3.4 computer system completion of the topic, continued from Term 2. 3.4 What's included: • Recap Logic/equations and truth tables • Creating, modification and interpreting simple logic circuit diagrams **PROGRAMMING:** 3.2 programming - pupils will continue their programming journey from term 4 and increase the depth of their theoretical and practising understanding of Python and programming in preparation for their mock paper.	**Key assessment:** • 3.1-3.4 exam style mock paper **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:**

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		3.2 What's included: • Data types • Programming concepts (variable declaration, constant declaration, assignment, selection) • Arithmetic operations (addition, subtraction, multiplication, real division, integer division) • Relational operators • Boolean operators (NOT, AND, OR) • Input and output • Programming concepts (selection, iteration) • Count and condition-controlled iteration • Nested selection and iteration • The importance of meaningful identifier names • String handling operations • Random number generation in a programming language • Practice on writing programs that solve problems • Practice on answering programming exam questions	• **News Article** – Using virtual reality to treat pain
6	**Topic: 3.1 Fundamentals of Algorithms** **Topic: 3.2 Programming**	**THEORY & PROGRAMMING:** 3.1 Algorithm completion of learning from this topic. This topic feeds into 3.2 programming. 3.1 What's included: • Representing algorithms (Pseudocode and flowcharts) • Efficiency of algorithms • Practice interpreting algorithms and creating algorithms • Searching algorithms • Sorting algorithms **PROGRAMMING:** 3.2 Continuing pupil exploration of the theory and practical understanding through practice of the Python programming language. 3.2 What's included: • Data structures (Arrays, Lists, Records) • Records • Subroutines (modular programming, procedures, functions and parameters) • Testing algorithms and programming	**Key assessment:** • 3.1-3.4 exam style mock paper **Additional tasks:** • In class exam question practice • Retrieval practice • Homework – this will compliment what they are creating in class and be focused around their project. **Topic Text:** • **CGP Revision Guide** – Programming

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Year 11

Term	Unit of Work	Knowledge and Skills	Assessment
1	**Topic: 3.5 Fundamentals of computer networks** **Revision: 3.1 Algorithms, 3.2 Programming & 3.4 Computer Systems**	In year 11 Computer Science, lessons will be split into one theory, one practical programming and revision/exam questions per week. **THEORY:** 3.5 Pupils will explore Computer Networks. They will learn how all networks work from simple Bluetooth on their phones through to the internet. 3.5 What's included: • Types of computer network • Wired/Wireless networks • Network topologies • Network protocol • Network security • Four-layer TCP/IP model Pupils will also be recapping Topic 3.4 Computer Systems from a year 10. **PROGRAMMING:** 3.1 & 3.2 This year all programming lessons will be to retrieve the learning from year 10, ensure that pupils have mastered the practical side including writing programs on an exam paper and the theory of programming.	**Key assessment:** • 3.5 exam style assessment • 3.1 & 3.2 knowledge assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** • **CGP Revision Guide** – Programming & Theory
2	**Topic: 3.6 Fundamentals of Cyber Security**	This term will include revision and exam question practice from topics 3.1 Algorithms and 3.2 Programming in the build up to the Paper 1 mock paper (Mock schedule TBC nearer the time). **THEORY:** 3.6 Pupils will explore the importance of keeping information, data and programs secure. Types of security threats and how to protect your computer system from these threats. Types of social engineering, how to recognise them and more importantly how to protect themselves against them. 3.6 What's included: • Cyber security threats • Penetration testing • Social engineering • Malicious code	**Key assessment:** • Y11 3.1 & 3.2 Past Paper Mock 1 • 3.6 exam style assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** • **News Article** – Stolen test data

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	Topic: Recap – 3.1 & 3.2 Algorithms & Programming	• Methods to detect and prevent cyber security threats **PROGRAMMING:** 3.1 & 3.2 Programming lessons will be to retrieve the learning from year 10, ensure that pupils have mastered the practical side including writing programs on an exam paper and the theory of programming. There will be specific lessons to prepare them for their mock. When mocks the Computer Science mock is completed, time will be spent in class covering areas of the mock that pupils need to improve.	
3	**Topic: 3.7 Relational databases and Structured query language** **Topic: Recap – 3.1 & 3.2 Algorithms & Programming**	**THEORY:** 3.7 Pupils will be learning about databases and structured query language. There will be a deeper understanding of how and where databases are used in the world. • Relational databases • Database concepts: table, record, field, primary and foreign key • Structured query language **PROGRAMMING:** 3.1 & 3.2 This year all programming lessons will be to retrieve the learning from year 10, ensure that pupils have mastered the practical side including writing programs on an exam paper and the theory of programming. This term will include revision and exam question practice from topics 3.3-3.6 in the build up to the Paper 2 mock paper (Mock schedule TBC nearer the time).	**Key assessment:** • 3.7 exam style assessment • 3.1 & 3.2 knowledge assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** • **News Article** – Why broken phones are shipped to Europe
4	**Topic 3.8 Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy**	**THEORY:** 3.8 Pupils will study the ethical, legal and environmental issues caused by our use of technology. Pupils will explore each topic in turn and be using real world examples to add depth to their learning. The topics covered are: • Cyber security • Mobile technologies • Wireless networking • Cloud storage • Hacking (unauthorised access to a computer system) • Wearable technologies • Computer based implants • Autonomous vehicles	**Key assessment:** • 3.3-3.7 Past Paper Mock 2 • 3.8 exam style assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** • **News Article** – Driverless Cars

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	Topic: Recap – 3.1 & 3.2 Algorithms & Programming	**PROGRAMMING:** 3.1 & 3.2 This year all programming lessons will be to retrieve the learning from year 10, ensure that pupils have mastered the practical side including writing programs on an exam paper and the theory of programming.	
5	**Topics: 3.1-3.8 Revision Programme in preparation for external assessments. Re-cap and reteach**	All topics to be revised and/or retaught with a focus on gap areas or not yet mastered topics. Possible topics to be covered are: **Topic 1 Algorithms** Algorithms, Decomposition, abstraction and creating algorithms (small), Trace tables (creation and interpretation), creating algorithms (complex) **Topic 2 Programming** Sequence, Selection & iteration **Topic 3 Data Representation** Number bases, conversions, binary addition, binary shift, Character encoding, images data compression & Representing sound **Topic 4 Computer Systems** System architecture, Boolean logic, Software classification, Memory and storage **Topic 5 Computer Networks** Computer networks, types, wired, wireless, topologies - star and bus. Network protocol, common network protocols, network security, 4 layer model **Topic 6 Cyber Security** Cyber security, security threats, social engineering, Malicious code, methods of detection and protection **Topic 7 Relational Databases** Relational databases, Database concepts: table, record, field, primary and foreign key & Structured query language **Topic 8 Ethical, legal and environmental impact** Cyber security, Mobile technologies, Wireless networking, Cloud storage, Hacking (unauthorised access to a computer system), Wearable technologies, Computer based implants & Autonomous vehicles	**Key assessment:** • 3.3-3.7 Past Paper Mock 2 • 3.8 exam style assessment **Homework:** • Will be set once a week • Tasks will be varied and focus on either retrieval, revision skills and/or prior learning. • Exam question practice **Topic Text:** None