Year 7

Curriculum Overview: Computing

RESPECT
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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. E-safety 2. Word Processing 3. Presentation skills	Students understand the need to be responsible and respectful users of technology, whilst demonstrating an appropriate level of digital literacy. Be able to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem	Your ability to show and explain safe use of the internet, network privileges and social media Ability to present information to a given audience. Write algorithms which include sequences of instructions and decisions.	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.
Spring Term	1. Programming in Scratch 2. Programming in Small Basic	Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation Solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions	The three programming constructs of sequence, selection and iteration. Ability to write programs that use and combine sequence, selection and iteration.	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.
Summer Term	1. Spreadsheets 2. Graphic manipulation 3. Websites	Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	Demonstrate how to use mathematical and relational operators in computer programs Demonstrate how to test, debug and correct errors in computer programs in order to create effective solutions.	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.

Year 8

Curriculum Overview: Computer Science

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. E-safety 2. Computer Networks 3. Web design 3. Binary Digits	Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns. Understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]	E-Safety publication Explanation of how computers communicate Development of a multi-page website Demonstration of binary conversions.	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.
Spring Term	1. Mobile app development 2. Programming in Small Basic	Demonstrate the use of 2 or more programming languages, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions	Development of a multi-page mobile applications. Ability to write basic programs to solve a given problem. Demonstrate the use of variables and data types. Apply appropriate use of selection and iteration	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.
Summer Term	1. Graphics 2. Animation	Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users. Touch up photos, create graphics such as logos or edit images to make something unreal.	Demonstration of digital manipulation techniques, suitable for an audience and purpose.	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.

Year 9

Curriculum Overview: Computing

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. E-Safety 2. Digital artefacts	Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns.	E-Safety publication Your ability to explain the importance of technology on society.	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.
Spring Term	1. Search and sorting algorithms 2. Manipulating images and re-purposing digital artefacts.	Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users Touch up photos, create graphics such as logos or edit images to make something unreal.	Demonstration of how search and sorting algorithms operate Demonstration of digital manipulation	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.
Summer Term	1. Game board design 2. Visual basic quiz	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	Create game characters Creative interactive games	Regularly check your child's learning journey. Evaluate, critique (with kindness) and support your child's homework. Engage with on-line learning material/videos.

Year 9

Curriculum Overview: Digital Information Technology

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. E-Safety 2. Google sketch-up 3. Animation 4. Dreamweaver	Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns. Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability, such as, creating a 3D object using a graphics	E-Safety publication Create a realistic or life like model Demonstrate the use of professional graphics package	Regularly check your child's learning journey. Evaluate, critique (with kindness), and support your child's homework. Engage with on-line learning material/videos.
Spring Term	1. Samsung Challenge 2. Spreadsheets 3. Data science	Evaluate an existing game and create a success criteria Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users	Create a spreadsheet solution to a given problem scenario Demonstrate the use of conditional formatting to display the score in a variety of colours, record a macro to clear the answers from the quiz	Regularly check your child's learning journey. Evaluate, critique (with kindness), and support your child's homework. Engage with on-line learning material/videos.
Summer Term	1. 3D Modelling with Blender. 2. Graphics (digital artefacts) 3. IT & the law	Understand the benefits and use of 2D and 3D models. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Touch up photos, create graphics such as logos or edit images to make something unreal.	Demonstrate that you animate an object using key framing, alter the speed of my animation, and change the quality of my render because I can edit the resolution Demonstrate the use of vertices, edges and faces, change the overall structure of the shape.	Regularly check your child's learning journey. Evaluate, critique (with kindness), and support your child's homework. Engage with on-line learning material/videos.

Year 9

Curriculum Overview: Computer Science

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1.Gamemaker 2. App development	Demonstrate the use of: The use of variables Constants Operators Assignment Sequence Selection Iteration Graphical User Interfaces. A graphical user interface (GUI) is simply a 'screen' that allows a user to interact with their computer through graphics such as menus and buttons.	Ability to write or refine algorithms Understand the main steps of each algorithm Understand any pre-requisites of an algorithm Apply the algorithm to a data set Identify an algorithm if given the code or pseudocode for it	Regularly check your child's learning journey. Evaluate, critique (with kindness), and support your child's homework. Engage with on-line learning material/videos.
Spring Term	1. Python 2. Web development	Demonstrate the use of: Arrays (or equivalent) when solving problems, including both one and two dimensional arrays Sub programs (functions and procedures) to produce structured code, using data types: integer, real boolean, character and string casting	Practical use of the techniques in a high-level language within the classroom Practical use of the data types in a high-level language within the classroom Ability to choose suitable data types for data in a given scenario Recognise and use operators. Produce a mobile phone application	Regularly check your child's learning journey. Evaluate, critique (with kindness), and support your child's homework. Engage with on-line learning material/videos.
Summer Term	1. Python 2. Computing unplugged	Demonstrate the use of: inputs, variables, string manipulation and outputs in a function, looping through lists. read from a file and write back to it Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Demonstrate: The difference between testing modules of a program during development and testing the program at the end of production Finding syntax errors as errors which break the grammatical rules of the programming Ability to interrogee unexpected output Complete normal test data and boundary testing.	Regularly check your child's learning journey. Evaluate, critique (with kindness), and support your child's homework. Engage with on-line learning material / videos (minimum 1hour in a fortnight)

Year 10

Curriculum Overview: Digital Information Technology

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	Preparation for the Coursework 1. User interface design 2. Accessibly features 3. Interface design 4. Interface evaluation 5. Project Management 6. Modern Teams 7. Different types of networking 8. Benefits/Drawbacks of networks 9. Cloud storage 10. Cloud Computing	A user interface is the piece of software that sits between us and the device we are trying to control. Features of Graphical User Interfaces Accessibility requirements Sensors & Speech interfaces Factors effecting interface performance Ad hoc, PAN, Wi-Fi, LAN Tethering and hotspots Network components	Pearson Pre-set assignment	Practice the Pearson pre-set assignment Practice Microsoft PowerPoint skills Analyse previous coursework paper
Spring Term	1. Benefits and drawbacks of working online. 2. Methods of Communication 3. Security 4. Remote working 5. Understand the motivations that lay behind cyberattacks. 6. Motivation to commit crime 7.Type of threats 8.Types of security measures 9. External Threats 10. Internal Threats	Network availability and access Network threats Benefits v Drawbacks Network Infrastructure Distributed v Dispersed Remote working and Collaboration Accessibility Threats & Ransomware Intellectual Property Denial-of-service, Cyberattack, Malware Different types of Hackers Industrial Espionage Disruption Virus, Phishing, Pharming, Hacking DOS and DDOS	Topics 6-10 (Autum Term) Topics 1-10 (Sprint Term) All elements of Powerful knowledge Recall of facts Application of theory within a scenario	Recall keywords from lessons Work through practice papers Engage with on-line learning material / videos
Summer Term	1. Understand how organisations use information and data flow diagrams 2. Presenting information 3. Flowcharts 4. Data Flow Diagrams Information Flow Diagrams 5. Tabular data 6. Written data 7. Impact of decision making	The main purpose of an information flow diagram visualise the flow and exchange of data between systems. Information Flow Diagrams are also known as “System” diagrams. A flowchart is a diagram that represents an algorithm. We can use flowcharts to plan and demonstrate the flow of data in a solution. The process of creating a Data Flow Diagram	Topics 6-10 (Autum Term) Topics 1-10 (Sprint Term) Topics 1-7 (Summer Term) All elements of Powerful knowledge Recall of facts Application of theory within a scenario Mock exam questions	Recall keywords from lessons Work through practice papers Engage with on-line learning material / videos

Year 11

Curriculum Overview: Digital Information Technology

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. Characteristics of data & information? 2. Text, Numbers, Tables 3. Graphs, charts & infographics 4. Methods of collecting data 5. Quality & reliability of the data 6. Modern Teams 7. Different types of networking 8. Benefits/Drawbacks of networks 9. Cloud storage 10. Cloud Computing	Manipulation of data (sum, average, matrix/pivot tables) Development of an information dashboard is not biased, misunderstood or used to make inaccurate decisions? Make appropriate recommendations based on data analysis Ad hoc, PAN, Wi-Fi, LAN Tethering and hotspots Network components	Pearson Pre-set assignment	Encourage your child to: Practice the Pearson pre-set assignment Practice Microsoft PowerPoint skills Analyse previous coursework papers
Spring Term	1. Benefits and drawbacks of working online. 2. Methods of Communication 3. Security 4. Remote working 5. Understand the motivations that lay behind cyberattacks. 6. Motivation to commit crime 7.Type of threats 8.Types of security measures 9. External Threats 10. Internal Threats	Network availability and access Network threats Benefits v Drawbacks Network Infrastructure Distributed v Dispersed Remote working and Collaboration Accessibility Threats & Ransomware Intellectual Property Denial-of-service, Cyberattack, Malware Different types of Hackers Industrial Espionage Disruption Virus, Phishing, Pharming, Hacking DOS and DDOS	Topics 6-10 (Autum Term) Topics 1-10 (Spring Term) All elements of Powerful knowledge Recall of facts Application of theory within a scenario	Encourage your child to: Recall keywords from lessons Analyse previous coursework papers Engage with on-line learning material / videos
Summer Term	1. Understand how organisations use information and data flow diagrams 2. Presenting information 3. Flowcharts 4. Data Flow Diagrams Information Flow Diagrams 5. Tabular data 6. Written data 7. Impact of decision making	The main purpose of an information flow diagram visualise the flow and exchange of data between systems. Information Flow Diagrams are also known as “System” diagrams. A flowchart is a diagram that represents an algorithm. We can use flowcharts to plan and demonstrate the flow of data in a solution. The process of creating a Data Flow Diagram	Topics 6-10 (Autum Term) Topics 1-10 (Spring Term) Topics 1-7 (Summer Term) All elements of Powerful knowledge Recall of facts Application of theory within a scenario Mock exam questions	Encourage your child to: Recall keywords from lessons Analyse previous coursework papers Engage with on-line learning material / videos

Year 10

Curriculum Overview: GCSE Computer Science

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. Systems Architecture 2. Von Neumann architecture 3. Common CPU components 4. The FDE Cycle 5. Characteristics of CPUs 6. Embedded systems 7. RAM and ROM 8. Secondary Storage 9. Algorithms 10. Python challenges (1-10)	Define, explain and give examples of: MDR (Memory Data Register) Program Counter Accumulator ALU (Arithmetic Logic Unit) CU (Control Unit) Cache Memory Optical, magnetic and solid-state storage Discuss the characteristic of storage devices Sequence, selection and iteration. Bubble, merge and inset sorts Binary and Linear Search techniques.	All elements of Powerful knowledge Recall of facts Application of theory within a scenario Topics 1-8 (Autum Term) via homework Topics 9- 10 (Autum Term) via practical exercises	Encourage your child to: Recall keywords from lessons Work through practice papers from 2018-2022 Engage with on-line learning material / videos Practice python programming every week
Spring Term	1. Types of Networks 2. Performance factors 3. Network Hardware 4. Client Server v P2P networks 5. Internet Protocols 6. Virtual Networks 7. Python challenges (11-20) 8. Producing Robust Programs 9. Computational Logic	Define, explain and give examples of: Local (LAN) and wide area networks (WAN) Wireless Access Points, Routers and Switches Network Interface Cards Different types of transmission media How a Doman Name Server (DNS) works Cloud technologies Wi-Fi frequencies Protocols: TCP/IP, HTTP, HTTPS, FTP, POP, IMAP, SMTP The concept of layers Packet switching. Abstraction, decomposition File actions (open, close, read and write)	All elements of Powerful knowledge Recall of facts Application of theory within a scenario Topics 1-8 (Autum Term) via homework Topics 1-6 (Spring Term) via homework Topics 9- 10 (Autum Term) via practical exercises Topics 7- 10 (Spring Term) via practical exercises	Encourage your child to: Recall keywords from lessons Work through practice papers from 2018-2022 Engage with on-line learning material / videos Practice python programming every week
Summer Term	1. System Security 2. Network Threats 3. Preventing vulnerabilities 4. Operating system software 5. Utility Systems software 6. Ethical, legal, cultural and environmental concerns 7. Python challenges (20-30) Year 10 Mock exams preparation.	Threats posed to networks: Malware, phishing, social engineering brute force attacks, denial of service attacks data interception and theft, the concept of SQL injection poor network policy Identifying and preventing vulnerabilities: penetration testing network forensics & network policies anti-malware software Firewalls, user access levels, passwords and encryption.	All elements of Powerful knowledge Recall of facts Application of theory within a scenario Topics 1-8 (Autum Term) via homework Topics 1-6 (Spring Term) via homework Topics 1- 6 (Summer Term) via homework Topics 9- 10 (Autum Term) via practical exercises Topics 7- 10 (Spring Term) via practical exercises Topics 7 (Summer Term) via practical exercises All of Component 1 via the Year 10 Mock Exam	Encourage your child to: Work through practice papers from 2018-2022 Engage with on-line learning material / videos Practice python programming every week

Year 11

Curriculum Overview: GCSE Computer Science

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	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
Autumn Term	1. Systems Architecture 2. Von Neumann architecture 3. Common CPU components 4. The FDE Cycle 5. Characteristics of CPUs 6. Embedded systems 7. RAM and ROM 8. Secondary Storage 9. Algorithms 10. Python challenges (1-10)	Define, explain and give examples of: MDR (Memory Data Register) Program Counter Accumulator ALU (Arithmetic Logic Unit) CU (Control Unit) Cache Memory Optical, magnetic and solid-state storage Discuss the characteristic of storage devices Sequence, selection and iteration. Bubble, merge and inset sorts Binary and Linear Search techniques.	All elements of Powerful knowledge Recall of facts Application of theory within a scenario Topics 1-8 (Autum Term) via homework Topics 9- 10 (Autum Term) via practical exercises	Encourage your child to: Recall keywords from lessons Work through practice papers from 2018-2022 Engage with on-line learning material / videos Practice python programming every week (a minimum of 1.5 hours per week)
Spring Term	1. Types of Networks 2. Performance factors 3. Network Hardware 4. Client Server v P2P networks 5. Internet Protocols 6. Virtual Networks 7. Python challenges (11-20) 8. Producing Robust Programs 9. Computational Logic	Define, explain and give examples of: Local (LAN) and wide area networks (WAN) Wireless Access Points, Routers and Switches Network Interface Cards Different types of transmission media How a Doman Name Server (DNS) works Cloud technologies Wi-Fi frequencies Protocols: TCP/IP, HTTP, HTTPS, FTP, POP, IMAP, SMTP The concept of layers Packet switching. Abstraction, decomposition File actions (open, close, read and write)	All elements of Powerful knowledge Recall of facts Application of theory within a scenario Topics 1-8 (Autum Term) via homework Topics 1-6 (Spring Term) via homework Topics 9- 10 (Autum Term) via practical exercises Topics 7- 10 (Spring Term) via practical exercises	Encourage your child to: Recall keywords from lessons Work through practice papers from 2018-2022 Engage with on-line learning material / videos Practice python programming every week (a minimum of 1.5 hours per week)
Summer Term	1. System Security 2. Network Threats 3. Preventing vulnerabilities 4. Operating system software 5. Utility Systems software 6. Ethical, legal, cultural and environmental concerns 7. Python challenges (20-30) Year 10 Mock exams preparation.	Threats posed to networks: Malware, phishing, social engineering brute force attacks, denial of service attacks data interception and theft, the concept of SQL injection poor network policy Identifying and preventing vulnerabilities: penetration testing network forensics & network policies anti-malware software Firewalls, user access levels, passwords and encryption.	All elements of Powerful knowledge Recall of facts Application of theory within a scenario Topics 1-8 (Autum Term) via homework Topics 1-6 (Spring Term) via homework Topics 1- 6 (Summer Term) via homework Topics 9- 10 (Autum Term) via practical exercises Topics 7- 10 (Spring Term) via practical exercises Topics 7 (Summer Term) via practical exercises All of Component 1 via the Year 10 Mock Exam	Encourage your child to: Work through practice papers from 2018-2022 Engage with on-line learning material / videos Practice python programming every week .