

Curriculum Assessment Map: Year 7 - Computing

	Autumn Term One	Autumn Term Two	Spring Term One	Spring Term Two	Summer Term One	Summer Term Two
Topic	<u>7.1 Introduction to Computing</u>	<u>7.2 Word Processing Software</u>	<u>7.3 Algorithms 1</u>	<u>7.4 Block base programming</u>	<u>7.5 Spreadsheet Modelling</u>	<u>7.6 Hardware</u>
Key Learning & Skills	<ul style="list-style-type: none"> • Explain the purpose and features of strong passwords. • Explain the difference between the home and shared drives in school. • Create folder structures to allow for structured and orderly storage of files. • Communicate via email using CC, BCC, attachments, importance, flags. • Describe the difference between personal and private information. • Understand the risks that exist online and how to reduce and respond to them. • To be able to explain the 4C's – 	<ul style="list-style-type: none"> • Explain the purpose of various formatting tools. • Use headings to format a document with consistency and create contents tables. • Make use of headers/footers appropriately. • Separate content using bullet points and numbering where appropriate. • Use keyboard shortcuts to optimise working. • Use images and tables to enhance appearance and readability of documents. 	<ul style="list-style-type: none"> • Describe what computational thinking is, and how it is used to solve problems. • Break down problems logically and efficiently and produce useful solutions. • Write detailed algorithms. • Apply flowcharts to help gather thoughts and apply solutions to problems. 	<ul style="list-style-type: none"> • Explain and perform iteration within a program. • Explain and perform selection within a program. • Explain and identify when a sequencing is used within a program. • Identify what a variable is within a program. • Explain what sub-routines are and how to use them. • Explain what operators are and how to use them. 	<ul style="list-style-type: none"> • Identify a cell's location using cell referencing. • Identify a group of cells using a range. • Format and structure data as appropriate in a spreadsheet. • Use formulae to perform calculations. • Use conditional formatting to format certain elements based on a condition. • Sort and search for data within a spreadsheet. • Use graphs and charts to display data in a user-friendly visual format. 	<ul style="list-style-type: none"> • Define the term peripheral, understanding the difference between input, output, and storage peripherals. • Identify the purpose of hardware devices that exist within a computer system. • Explain how certain devices can be used by less able users to assist with their day-to-day lives. • Explain why binary numbers are used by computers. • Convert between binary and denary representation of numbers. • Categorise software based on its purpose (applications vs systems software)



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Key Stage 2

No prior learning is assumed due to variation of teaching amongst primary schools. Desirable prior learning is listed below:

Digital Literacy

- Evaluate digital content.
- Recognise common uses of technology.
- Understand how to seek help online, recognising acceptable and unacceptable behaviour and the reasons why age restrictions are in place.

Information technology

- Creating, opening, saving files within a folder structure
- Basic proficiency in the use of office software
- Use the internet to retrieve and search for information.
- Be able to use a range of software to present data and information in a suitable format.

Computer Science

- Key programming concepts including sequence, selection, iteration, inputs and outputs.
- Design, write and debug programs to achieve a specific goal.
- Writing of simple algorithms
- The use of constant and variable values
- Understand the concept of networking and communication to provide services such as the worldwide web

Curriculum Vision

The computing department at Leasowes High School puts students at the heart of everything we do. We aim to focus on enthusing and engaging students with computer science courses which are on offer through the coverage of varied content at KS3 relating to the computing field. Our curriculum will initially focus on ensuring that students are digitally literate and able to use ICT across the curriculum before embarking upon our key focus of computer science, whereby students are stretched and challenged to use technology to create solutions to given problems.

Curriculum principles

Our curriculum will:

- Ensure that all students are equipped with ICT skills required to use technology across the curriculum and in the workplace.
- Ensure that students can use technology in a safe and respectful manner, recognising the difference between safe and unsafe activities and behaviours online, and understanding how to respond to events that make them feel unsafe or uncomfortable.
- Equip students with an understanding of how computers work, giving them the skills to perform basic fixes to their own devices.
- Develop an understanding of cyber security including the risks, prevention, and remedy methods available amongst our students.
- Develop problem solving skills (abstraction, decomposition, sequence, selection, iteration) which are applicable to a range of other subjects through the solving of problems which are encountered in the computing industry.
- Focus on developing resilient learners who are not ashamed to make mistakes; we only learn from them.
- Introduce students to multiple programming languages to enable students to analyse, design, develop, test and evaluate solutions to problems.
- Be responsive to changes in technology, ensuring that content is reviewed on a regular basis and is relevant to technology being used in society.
- Provide extra-curricular opportunities to engage with computing beyond the classroom through after school clubs, trips and visitors which are relevant to the computing field.
- Explore a range of Ethical, Environmental, Cultural, Privacy and Legal issues related to the development of technology.



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Theoretical Computing – Throughout study students will develop their understanding of the technology used to power the modern-day systems which we rely on. Developing understanding of networking, security, inner workings, and the storage of data. In addition to this we provide extensive understanding surrounding the origins of computing and a breadth of history.

Programming – Students will develop their ability to recognise a problem, extract important information, design a solution to a problem, implement code, test and evaluate fully. Students will be introduced to concepts including variables, sequence, arithmetic operators, Boolean operators, selection, iteration, file handling, regular expressions, time handling, random numbers, subroutines and functions.

Literacy - Deliberate practice of keywords proves invaluable in enhancing literacy skills. By highlighting specific vocabulary and terminology, educators can enrich students' understanding and communication abilities. Actively encouraging students to engage with and employ these keywords in their work facilitates vocabulary expansion and cultivates a deeper comprehension of the subject matter. Mastery of key terms empowers students to express their ideas effectively and analyse academic resources within their respective fields.

SMSC in computer science

Spiritual development in Computer Science

Students are continually reflecting on their own lives and the lives of others as they look at various Computing case studies. Students debate and formulate their own set of values and beliefs through case studies as they share their own experiences. Computing is an area of rapid development and change; this provides students with the opportunity to reflect upon this progress and potential new technologies which will be developed in time.

Moral development in computer science

Within computing, it is important to consider many areas of the human impact technology has. Society is not only becoming more reliant on technology, but the increasing rate in which computers are updated causes substantial waste, as well as increased carbon footprint in line with their increased production. Students will investigate the use of social-networking and cyber bullying, whilst learning about the legal implications of immoral acts undertaken online. Students will consider where boundaries should lie and the impact of computing on the environment.

Social development in Computer science

Computing can also help all students to express themselves clearly and to communicate. As students progress through their learning, they will consider more complex social needs and are encouraged to research and work to find appropriate solutions to issues that may affect particular groups within society.

Cultural development in Computer Science

With the increased use of social media sites, people are becoming more culturally aware due to the diversity of content posted online for all of the world to see. Computational thinking encourages problem solving and thinking about how to solve an issue from another perspective – a valuable transferable skill that translates to many aspects of life. Students will consider the positive and negative effects of computing upon various groups of people.



Curriculum Assessment Map: Year 8 - Computing

	Autumn Term One	Autumn Term Two	Spring Term One	Spring Term Two	Summer Term One	Summer Term Two
Topic	<u>8.1 E-safety & Cyber Security</u>	<u>8.2 Representing Data</u>	<u>8.2 Representing Data (Cont.)</u>	<u>8.3 Algorithms 2</u>	<u>8.4 Python 1</u>	<u>8.4 Python 1 (cont.)</u>
Key Learning & Skills	<ul style="list-style-type: none"> Builds on unit 7.1 Recognise the safety related risks when communicating online. Explain how to practice respectful communication when online. Recognise how to distinguish between real and fake news using a range of sources. Explain the differences between types of malwares. Describe threats other than malware that could compromise a computer system. Explain the different methods of protecting a computer system from malware and other threats. Explain the role and purpose of encryption. Perform the 	<ul style="list-style-type: none"> Explain why binary numbers are used by computers. Convert between binary and denary representation of numbers. To perform binary addition on 2 8-bit binary numbers. Explain what an overflow error is and when it occurs. Explain the need for hexadecimal numbers. Convert between hexadecimal, binary and denary numbers. 	<ul style="list-style-type: none"> Explains how images & sound are stored in a computer system and the factors that affect quality and file size. Explain the purpose of character sets in a computer system. Compare and contrast ASCII and UNICODE. Explain why UNICODE replaced ASCII in modern computer systems. To perform the AND, OR and NOT gates. 	<ul style="list-style-type: none"> Perform bubble, insertion and merge sorts on data. Compare sorting algorithms; justifying which ones are best used in certain situations. Design algorithms using basic pseudocode and flowcharts Design algorithms which incorporate sequence, selection and iteration. 	<ul style="list-style-type: none"> Create programs to solve problems in a text-based language. Use variables and inputs to take user entry and store it for later use in a program. Output data to the shell using print. Describe the difference between data types (Integer, Float, String). Identify the correct data type to be used for a variable. Plan, design and create programs which solve mathematical problems. Use selection (if statements) to decide which code to run based on a condition. Recognise errors when running code and correct them. Recognise Iteration is and using for and while loop. Recognise selection within a program and when to use it. Recognise sequencing within a program? Recognise sub-routines within a program and how to use them. 	



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	<p>Caesar and keyword ciphers to encrypt and decrypt data.</p> <ul style="list-style-type: none"> • Compare and contrast the Caesar and keyword ciphers. • Explain the features that make a good keyword for encryption purposes. 					
End points	Online assessment	Online assessment	Online assessment	Online assessment	Online assessment	Online assessment
Informal (formative) Assessment	<ul style="list-style-type: none"> • Class/GRIT Tasks • Do Now Activities • Q&A • Class quiz 	<ul style="list-style-type: none"> • Class/GRIT Tasks • Do Now Activities • Q&A • Class quiz 	<ul style="list-style-type: none"> • Class/GRIT Tasks • Do Now Activities • Q&A • Class quiz 	<ul style="list-style-type: none"> • Class/GRIT Tasks • Do Now Activities • Q&A • Class quiz 	<ul style="list-style-type: none"> • Class/GRIT Tasks • Do Now Activities • Q&A • Class quiz 	<ul style="list-style-type: none"> • Class/GRIT Tasks • Do Now Activities • Q&A • Class quiz
Formal (summative) Assessment	<ul style="list-style-type: none"> • End of unit assessment 	<ul style="list-style-type: none"> • End of unit assessment 	<ul style="list-style-type: none"> • End of unit assessment 	<ul style="list-style-type: none"> • End of unit assessment 	<ul style="list-style-type: none"> • End of unit assessment 	<ul style="list-style-type: none"> • End of unit assessment

Curriculum encompassing literacy, careers and enrichment as well as interconnectivity with other subjects



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Curriculum Vision

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- Develop an understanding of cyber security including the risks, prevention, and remedy methods available amongst our students.
- Develop problem solving skills (abstraction, decomposition, sequence, selection, iteration) which are applicable to a range of other subjects through the solving of problems which are encountered in the computing industry.
- Focus on developing resilient learners who are not ashamed to make mistakes; we only learn from them.
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Curriculum Assessment Map: Year 9 - Computing

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Topic	<u>9.1 – Python 2</u>	<u>9.2 Business Unit</u>	<u>9.3 Interactive product</u>	<u>9.4 – Networking</u>	<u>9.5 Graphic unit</u>	<u>9.6 – Website development</u>
Key Learning & Skills	<ul style="list-style-type: none"> • Explain key features of IDEs which benefit programmers. • To use iteration to solve a variety of problems in Python. • To create programs which use iteration (For & while loops) to improve code efficiency. • Use if statements to create branching paths in your programs. • To explain how subroutines make code easier to create and improve efficiency. • To explain the difference between functions and procedures and use return values to improve programs. • To be able to manipulate data from a list. 	<ul style="list-style-type: none"> • To be able to identify key business studies concepts. • Finding the needs of customers and demonstrating how a business fulfils those needs to increase sales. • To be able to perform marketing research i.e the process of collecting, analysing and interpreting data. • To explain the difference between primary and secondary research. • Name the market segmentation and explain each segment. • Explain what customer profile is and why it is important in business. • To explain different types of sampling methods and to identify them. • Explain what target market, qualitative, quantitative data is. • To be able to explain what competition is in a business setting. • To collect all the necessary research in order to create a business for a specific target audience. 	<ul style="list-style-type: none"> • To create a multimedia presentation to a specific target audience relating to unit 9.2. <ul style="list-style-type: none"> • To be able to create, duplicated, and deleted slides in a presentation. • Have applied themes to presentations. • Have edited the layout and formatting of the master slide in a presentation. • Have identified features of well-designed slides in a presentation. • Have developed a suitable master slide for a given purpose. • Have applied transitions between slides in a presentation. • Have applied entrance, emphasis and exit animations to content in a presentation. • Incorporated multimedia elements into the presentation • Used hyperlinks to create links between slides in the presentation. 	<ul style="list-style-type: none"> • Explain the difference between the internet and the WWW. • Explain how networks are categorised by scale (PAN, LAN, WAN, WLAN) • Explain the purpose and role of key hardware when building a network (NIC, WAP, Switch, Router, Ethernet, Client, Server) • Explain what a network topology is and the advantages and disadvantages of each. • To compare connection methods and explain how they are currently evolving (Coaxial cable, fibre optic cable, FTTC, FTTP, ADSL) • To explain the purpose of key protocols (HTTP, HTTPS, FTP, DNS, SMTP, IMAP). 	<ul style="list-style-type: none"> • Explain the difference between bitmap and vector graphic. • Explain the purpose and dangers of editing images. • To use various tools to combine images. • To explain how various tools can be used to enhance colour in an image. • To export files to appropriate file types based on their use. 	<ul style="list-style-type: none"> • Explain the features of a well-designed website. • Explain what a house style is and how it can be tailored to a brand. • To create basic HTML pages including the use of head, body, headings, hyperlinks, listed elements. • Explain the purpose of and implement CSS to a webpage.



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