

**Herschel Grammar School**  
**Curriculum Overview 2025/26**

**Curriculum Intent**

This curriculum intends to develop the learner's knowledge, skills and understanding through key computational concepts and experience. Problem Solving and computational skills is in the centre of what is delivered. It is hoped that students develop an understanding for all the technology that surrounds them by not just understanding how computer systems work, but how to put this knowledge to use by designing, writing, testing, and evaluating creative solutions to problems in a safe manner.

**Curriculum Impact**

Develop digitally literate students, which empowers them to make informed decisions when using digital devices. Be able to apply the computational thinking techniques to solve any problem across different disciplines.

Through education, we have the privilege of engaging directly with children and young people who:

- are passionate about the natural world
- want to do their best to protect it
- can influence their wider communities

Throughout this document, whenever the following icon is used , it indicates that the teaching and learning is linked to one or more of the following:

- nature
- the causes and impacts of climate change
- careers in the green economy
- the importance of sustainability

## Year Group Plans

| Year group                      | Year 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| <b>Rationale for sequencing</b> | <p>This curriculum is designed to give learners a basic introduction to key IT skills through using MS Office tools. This includes writing a formal business letter in MS Word, use of PowerPoint presentation and basic formulas and use of graph in MS Excel.</p> <p>This spiral curriculum is designed to set the foundations of knowledge for both E-Safety and how computers work. It is important for pupils to be aware of the dangers they may face over social media and other forms of online communication due to the speed at which issues can escalate. Computers are often used for social activities but without a greater knowledge of technology that is required, which serves as starting point for all students. The natural progression goes from what computers are to how they can be used to solve problems. Therefore, Algorithms and Data Representation are a natural fit. Ordering of the units was taken into careful consideration, fundamental tasks such as E-Safety and Computers are paramount to further topics and must be covered. Units relating to how computers use data, and the sequencing of the tasks are important themes to be aware of, which are highlighted in the National Curriculum. Due to the content being challenging, we then deliver more practical units in Programming and Vector Graphics design to apply the concepts taught and promote creativity.</p> |

| Term 1                                                                                                                                                                                                                                                                          |                                                                                                      |
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| Half term 1a                                                                                                                                                                                                                                                                    | Half term 1b                                                                                         |
| KS3 Baseline Test<br>Introduction to the School Network<br>Office 365 (Cloud) -Digital Literacy<br>Web awareness<br>Impact of technology <br>Staying Safe Online<br>Malware and the internet | Computer systems - Part 1<br><br>Types of computer Systems<br>Types of Hardware<br>Types of Software |
| Term 2                                                                                                                                                                                                                                                                          |                                                                                                      |
| Half term 2a                                                                                                                                                                                                                                                                    | Half term 2b                                                                                         |
| Computational Thinking                                                                                                                                                                                                                                                          | Fundamentals of Programming using<br>Scratch: Basic input/output                                     |

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| Learning the steps to problem solving using computational thinking methods:<br>Decomposition<br>Abstraction<br>Pattern Matching<br>Algorithmic Thinking                                                       | Use of variables<br>Subroutines<br>Selections<br>Loops |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Term 3                                                                                                                                                                                                        |                                                        |
| Half term 3a                                                                                                                                                                                                  | Half Term 3b                                           |
| Building Scratch games using the following techniques: Basic input/output, variables, Subroutines, Selections, Loops.<br>Use of Game tutorials to demo the use of: variables, Subroutines, Selections, Loops. | Data Representation<br>Images: Vector Graphics         |

| Assessment Plans: |                                                                     |
|-------------------|---------------------------------------------------------------------|
| Term 1            | Baseline tests, classroom assessments 🌐                             |
| Term 2            | Classroom assessments, end of term tests 🌐                          |
| Term 3            | Classroom assessments, Project work assessments, End of year test 🌐 |

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| <b>Year group</b> | <b>8</b> |
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| <b>Rationale for sequencing</b> | As this is a spiral curriculum, students revisit some of the topics studied in year 7 and build a better understanding of computer systems and how data is represented, algorithmic thinking to problem solving and e-safety. Students will be introduced to a text-based programming language which will be used to solve problems. This will allow them to experience how most apps are programmed. |
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| Term 1                    |                        |
|---------------------------|------------------------|
| Half term                 | Half term              |
| Computer Systems - part 2 | Computational Thinking |

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| <p>Recap the parts of the computer and types of software - Computer Systems Part 1</p> <p>Introduction to embedded systems and modern machines. 🌐</p> <p>How does the computer process information (Fetch Execute Cycle)?</p> <p>Online Safety</p> <p>Legislation and understanding the consequences of computing. 🌐</p> | <p>Designing Flowcharts for simple problems</p> <p>Introduction to Python Programming</p> <p>Designing Code Annotation with evidence</p>                                                                                                  |
| <b>Term 2</b>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                           |
| <b>Half term</b>                                                                                                                                                                                                                                                                                                         | <b>Half term</b>                                                                                                                                                                                                                          |
| <p>Python Programming - Part I</p> <p>Developing solutions to simple problems using Python.</p> <p>Variables</p> <p>Input and output</p> <p>Sequence</p> <p>Selection</p> <p>Iteration</p> <p>Designing Code Annotation with evidence</p>                                                                                | <p>Python Programming - Part I</p> <p>Developing solutions to simple problems using Python.</p> <p>Variables</p> <p>Input and output</p> <p>Sequence</p> <p>Selection</p> <p>Iteration</p> <p>Designing Code Annotation with evidence</p> |
| <b>Term 3</b>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                           |
| <b>Half term</b>                                                                                                                                                                                                                                                                                                         | <b>Half Term</b>                                                                                                                                                                                                                          |
| <p>Data Representation</p> <p>Representing numbers and text in the computer.</p> <p>Performing arithmetic operations on numbers.</p> <p>Logic Gates</p> <p>Building Logic Circuits</p>                                                                                                                                   | <p>Website Development</p> <p>HTML &amp; CSS</p> <p>with a project to create a website.</p>                                                                                                                                               |

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| <b>Key Assessment Plans:</b> |                                                                              |
| Term 1                       | Classroom assessments, H/w tasks, End of term test 🌐                         |
| Term 2                       | Classroom assessments, H/w tasks, Programming test (end of topic), Quizzes 🌐 |
| Term 3                       | Classroom assessments, project-based assessments, end of year tests 🌐        |

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| <b>Year group</b> | <b>9</b> |
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| <b>Rationale for sequencing</b> | The topics chosen are in-line with previous topics and content taught in year 7 and 8. Students will get an opportunity to further enhance their practical knowledge about latest technology and the internet of things. They will learn about science underpinning the technological advancements around them. The curriculum will further enhance their computational thinking and problem-solving skills. |
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| <b>Term 1</b>                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |
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| <b>Half term</b>                                                                                                                                                                                                                                       | <b>Half term</b>                                                                                                                                                                                                                            |
| <b>Computer Systems - 3 Networking </b><br><br>-Computer Networks and Protocols<br>-Network Hardware<br>-Wired and Wireless Networks<br>-What is the Internet<br>-IoT | <b>Python programming - Part II</b><br><br>-Recap programming concepts<br>-Computational thinking<br>-Loops - For Loops and While Loops<br>-Lists<br>-Combine key programming language features to develop solutions to meaningful problems |
| <b>Term 2</b>                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |
| <b>Half term</b>                                                                                                                                                                                                                                       | <b>Half term</b>                                                                                                                                                                                                                            |
| <b>Cyber Security</b><br>- You and your Data<br>- Social Engineering<br>- Computer Misuse Act<br>- Malware<br>- Cyber risks                                                                                                                            | <b>Data Representation - Images and Sound</b><br>-Describe how digital images are composed of individual elements<br>-Image Resolution<br>-Image Editing<br>- Representing sound<br>- Sound editing                                         |
| <b>Term 3</b>                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |
| <b>Half term</b>                                                                                                                                                                                                                                       | <b>Half Term</b>                                                                                                                                                                                                                            |
| <b>Intro to Artificial intelligence (AI) and Machine learning (ML)</b>                                                                                                                                                                                 | <b>Mobile App Development</b>                                                                                                                                                                                                               |

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| <ul style="list-style-type: none"> <li>- What is AI?</li> <li>- How computers learn from data</li> <li>- Bias in, bias out</li> <li>- Decision trees</li> <li>- Solving problems with ML models</li> <li>- Model cards and careers</li> </ul> | <b>Tappy Tap App</b> |
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| <b>Key Assessment Plans:</b> |                                                                |
|------------------------------|----------------------------------------------------------------|
| Term 1                       | Classroom assessments, H/w tasks, End of term test 🌐           |
| Term 2                       | Classroom assessments, Project assessment (end of topic) 🌐     |
| Term 3                       | Classroom assessments, end of year tests, project assessment 🌐 |

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| <b>Year group</b> | <b>10</b> |
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| <b>Rationale for sequencing</b> | This curriculum intends to develop the learner's knowledge, skills and understanding through key computational concepts and experience. Problem Solving and computational skills is in the centre of what is delivered. It is hoped that students develop an understanding for all the technology that surrounds them by not just understanding how computer systems work, but how to put this knowledge to use by designing, writing, testing, and evaluating creative solutions to problems in a safe manner. |
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| <b>Term 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>Half term</b>                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Half term</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>Computer Systems<br/>Hardware, Software, System Architecture</p> <p>Programming:<br/>Classification of programming languages</p> <p>Computational Thinking<br/>Algorithms (Flowchart, Pseudocode)</p> <p><b>Specification:</b><br/>3.4.4 Classification of programming languages and translators<br/>3.2 Programming Techniques<br/>3.4.1 &amp; 3.4.3 Hardware and Software and Software classification<br/>3.4.5 Systems Architecture</p> | <p>Data Representation:<br/>Representing Numbers, Text, Images and Sound in the computer</p> <p>Programming:<br/>Basics using a language. Understand the programming constructs of selection, iterations.</p> <p><b>Specification</b><br/>3.2.8 - 3.2.9<br/>String Manipulation &amp; Random number generation<br/>3.2.2 Iteration<br/>3.4.2 Boolean Logic<br/>3.3 Fundamentals of Data Representation (Numbers, Text, and Images)</p> |
| <b>Term 2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Half term</b>                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Half term</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>Data Representation:<br/>Compression and storage of data</p> <p>Algorithms and Programming:<br/>Structured programming<br/>Subroutines</p>                                                                                                                                                                                                                                                                                                 | <p>Algorithmic Thinking and developing robust and secure programs.</p> <p>Basics of data structures -1D and 2D arrays.</p>                                                                                                                                                                                                                                                                                                             |

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| <b>Specification</b><br>3.2 Programming Techniques<br><br>3.2.10 Subroutines and Structured Programming<br><br>3.3 Fundamentals of Data Representation – Sound, Compression. | <b>Specification</b><br><br>3.2.10 & 3.2.11 contd. (Programming Practice)<br>3.2.6 Data Structures<br>Data Structures – 1 D arrays |
| <b>Term 3</b>                                                                                                                                                                |                                                                                                                                    |
| <b>Half term</b>                                                                                                                                                             | <b>Half Term</b>                                                                                                                   |
| <b>Fundamentals of Networking</b><br><b>Programming Practice - 2D arrays</b><br><br><b>Specification</b><br>3.5 Fundamentals of networks<br>3.2.6 Data Structures            | Recap and practice of all the concepts learnt                                                                                      |

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| <b>Key Assessment Plans:</b> |                                                                                             |
| Term 1                       | Teacher observation, homework, and classwork activities 🌐                                   |
| Term 2                       | Topic tests along with teacher observation, classwork, and homework activities 🌐            |
| Term 3                       | End of year assessment along with teacher observation, classwork, and homework activities 🌐 |

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| <b>Year group</b> | <b>11</b> |
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| <b>Rationale for sequencing</b> | It develops from the topics covered in Year 10. Students get an opportunity to practice their problem-solving skills for more complex problems. They will gain an understanding of how the data can be stored and manipulated in a database. They will also learn exam techniques and train to sit the final examination. |
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| <b>Term 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>Half term</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Half term</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p>Python Programming</p> <ul style="list-style-type: none"> <li>-Robust and Secure Programming</li> <li>-Practice</li> <li>-File handling/Records</li> <li>-Understanding the software development lifecycle</li> </ul> <p>Fundamentals of Data bases using SQL.</p> <p><b>Specification</b></p> <p>3.5 Robust and Secure Programming</p> <p>3.7.1- Relational Databases</p> <p>File handling in python programming.</p> <p>Continuing with programming and algorithmic thinking challenges</p> | <p>Fundamentals of Cybersecurity</p> <p>Sorting and Searching Algorithms</p> <p>Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy</p> <p>Practice Programming challenges</p> <p><b>Specification</b></p> <p>3.6 Fundamentals of Cyber Security</p> <p>3.1.3 Searching algorithms</p> <p>3.1.4 Sorting algorithms</p> <p>3.8 Impacts (legal, ethical and environmental)</p> <p>NEA style programming challenge involving all the programming concepts learnt.</p> <p>Mock Exam 1</p> |
| <b>Term 2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Half term</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Half term</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p>Revision</p> <p>Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy</p> <p>3.1.2 Efficiency of algorithms</p> <p>Recall and Practice</p>                                                                                                                                                                                                                                                                                             | <p>Revision – Recall and Practice</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| Term 3     |            |
|------------|------------|
| Half term  | Half Term  |
| Final exam | Final exam |

| Key Assessment Plans: |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| Term 1                | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐                |
| Term 2                | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐<br>Mock Exam1  |
| Term 3                | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐<br>Mock Exam 2 |

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| <b>Year group</b> | <b>12</b> |
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| <b>Rationale for sequencing</b> | <p>The Computer Science curriculum is designed to equip students with the essential skills and knowledge required to progress into higher education or thrive in the modern workplace. It aligns with the exam board's structure while incorporating pedagogical refinements that enhance conceptual understanding and practical competence.</p> <p>Our intent is to develop students who are:</p> <ul style="list-style-type: none"> <li>• <b>Confident problem-solvers</b> with strong computational thinking skills.</li> <li>• <b>Proficient in software development</b>, capable of designing and implementing effective solutions.</li> <li>• <b>Digitally literate</b>, with a deep understanding of IT systems and their applications in real-world contexts.</li> </ul> <p>The curriculum is structured around the two exam papers, with thoughtful adjustments to the sequence of topics to support deeper understanding:</p> |
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| Term 1                                                                                                                                                                                                                                                                                                                |                                                                                                                                         |
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| Half term                                                                                                                                                                                                                                                                                                             | Half term                                                                                                                               |
| <p>Components of a computer system and their uses</p> <p>1.1.3: Input Output and Storage</p> <p>1.1.1: Structure and function of the processor</p> <p>1.1.2 Types of processors</p> <p>Programming Techniques</p> <p>1.2.4 Types of Programming Languages – a, b</p> <p>2.2.1 Programming techniques –a, c, d, e.</p> | <p>1.4.1 Data Types (Data Representation)- a to j.</p> <p>2.2.1 - Programming Techniques –a, c, d</p> <p>1.4.2 Data Structures - a</p>  |
| Term 2                                                                                                                                                                                                                                                                                                                |                                                                                                                                         |
| Half term                                                                                                                                                                                                                                                                                                             | Half term                                                                                                                               |
| <p>1.2.3 Software Development –a, b</p> <p>1.4.3: Boolean Algebra –a to e</p> <p>NEA – proposal</p>                                                                                                                                                                                                                   | <p>1.2.1 Systems Software a- h</p> <p>NEA – Analysis</p> <p>1.2.4 Types of Programming Language /2.2.1 Programming techniques (e-f)</p> |

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| Term 3                                                                                                                                                   |                                                                       |
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| Half term                                                                                                                                                | Half Term                                                             |
| 1.2.4 Types of Programming Language –c, d.<br>(OOP)<br>NEA – Design<br><br>1.3.1 Compression, Encryption and Hashing<br>a, b, c, d.<br><br>Year 12 Mocks | 1.3.4 Web Technologies –a-d<br><br>1.3.2 Databases –a, b, c, d, e, f. |

| Key Assessment Plans: |                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| Term 1                | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐                     |
| Term 2                | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐                     |
| Term 3                | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐<br>End of year exam |

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| <b>Year group</b> | <b>13</b> |
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| <b>Rationale for sequencing</b> | <p>The Year 13 curriculum is a natural progression from the concepts introduced in Year 12, aligning closely with the structure and requirements of the OCR specification. Students continue to develop a robust understanding of advanced computing principles, particularly through a more in-depth exploration of algorithmic complexity and efficiency. Students complete the NEA, creating a software solution to a problem of their choice. They work independently through all stages of the Software Development Lifecycle, showcasing technical skill, creativity, and clear documentation. Overall, they are equipped with the critical thinking and practical skills necessary for success in higher education and tech-oriented careers. The curriculum not only reinforces theoretical knowledge but also cultivates a mindset geared toward innovation, precision, and resilience in problem-solving.</p> |
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| Term 1                                                                                                                                           |                                                                                                                                                                                       |
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| Half term                                                                                                                                        | Half term                                                                                                                                                                             |
| 1.4.2 Data Structures – b, c<br><br>2.2.1 Programming techniques – b.<br><br>2.3.1 Algorithms - a to f<br><br>NEA - Initial development Review 🌐 | 1.3.3 Networks – a, b, c, d, e.<br><br>1.2.2 Applications Generation<br>a, b, c, d, e, f.<br><br>2.2.2 Computational methods – a to f<br><br>NEA - Final Development and Testing<br>🌐 |
| Term 2                                                                                                                                           |                                                                                                                                                                                       |
| Half term                                                                                                                                        | Half term                                                                                                                                                                             |
| 1.5.1 Computing related legislation<br>1.5.2 Moral and ethical Issues<br>NEA Evaluation and report writing<br><br>Final Submission 🌐             | Revision - Exam Papers 🌐                                                                                                                                                              |
| Term 3                                                                                                                                           |                                                                                                                                                                                       |
| Half term                                                                                                                                        | Half Term                                                                                                                                                                             |

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| Final Exams |  |
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| <b>Key Assessment Plans:</b> |                                                                                                             |
| Term 1                       | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐                     |
| Term 2                       | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐                     |
| Term 3                       | Class Exercises, Topic Tests, Teacher Observation, Homework and Classwork activities. 🌐<br>End of year exam |