SUBJECT: COMPUTING

Year Group	YEAR 9					
Rationale	The Y9 computing curriculum is designed to give pupils a broad range of experiences. It is designed to develop the cultural capital of our pupils to enable them to confidently speak about a range of different computer science concepts and formulate opinions on the impact that computer science technologies have had on society from legal, cultural, ethical and environmental perspectives. In addition to this for those learners that decide not to pursue computing further the curriculum is designed to give them very strong foundations in the subject that they can use throughout life. Finally, the year 9 curriculum is designed to give pupils experiences in topics that relate to KS4 options to enable them to make informed choices whether to opt for one of our subjects jjj.					
	Autumn Term 1	**Autumn Term 2**	**Spring Term 1**	**Spring Term 2**	**Spring Term 1**	**Summer Term 2**
Topic/Unit	Cyber Security	Create Code	Python Programming		Impact on Society	Practical Algorithms
Knowledge	**Digital Literacy** This unit has been built around the Government cyber security campaign. Pupils will complete a range of problem solving challenges themed around cyber security whilst developing knowledge of a range of security methods used in industry such as; cryptography, hidden in plain sight, code injection, trial and error etc. Pupils will develop knowledge of hacking and will be able to recognise the difference between ethical hackers and non-ethical hackers.	This unit will bring together the three different strands taught within computing. As part of this unit pupils will undertake a creative project. Pupils will develop knowledge of design concepts and design a simple game/app. Pupils will develop their knowledge of how to market/promote the game/app before splitting the team up into key roles such as graphic designers (cover/promo material), story boarders and coders etc. Whilst completing this pupils will develop knowledge of a range of pre-production documents and their uses	This unit will be split across two half terms. This unit will build upon the programming concepts knowledge gained during small basic in Y8 and Microbit in Y7.

This unit will revisit the key programming techniques that pupils have used within Microbit, Small Basic, and practical algorithms. Pupils will develop further knowledge of text based programming and the importance of adhering to the syntax of the python programming language.

They will develop further knowledge of the main programming concepts and will create programs that consist of the following: Variables & constants, Inputs & outputs, Selection, Iteration (for and while), Arrays, Modules, File manipulation and Functions.

Pupils will develop further knowledge of what makes code efficient and robust and will learn how to select the correct programming technique for a given scenario. | | Pupils will develop knowledge on the impact that a range of different computer based technologies have on society from general points of view and more specific legal, ethical, cultural and environmental issues.

Pupils will focus on a range of technologies including the positives and negatives of: Mobile & Wearables, Automation & AI, Surveillance & CCTV, Big data Copyright, piracy and streaming. | Pupils will develop **Computer Science** This unit will build upon the knowledge developed throughout the computer science units from the previous 2 years. Pupils will be able to recognise what an algorithm is, understand the concepts of abstraction, decomposition and be able to apply these techniques to a range of real life game problems. Pupils will develop their knowledge of pseudocode including reading and writing it for given problems. Additionally pupils will develop knowledge of what makes an efficient algorithm and will be able to analyse key searching and sorting algorithms. |

Skills	**Analytical** skills will be developed as pupils spend time analysing text in order to come up with a solution. **Resilience** will be developed as pupils spend time solving some complex problems that require multiple attempts. **Programming** skills will be developed as pupils attempt to solve problems using a range of different programing techniques. **Evaluation** skills will be developed as pupils reflect on the challenges faced and hacking methods used.	This unit largely focusses on developing pupils **creative thinking** skills and **design** skills as they produce a range of designs for game/app using a range of different planning techniques. In addition to this **IT** skills will be developed as pupils use a range of different software platforms to present information. The **teamwork and communication** skills will be developed as pupils work in a group. **Presentation** skills will be developed as pupils deliver their proposals to the class.	**Programming** and **problem solving skills**. As pupils are identifying different code samples **analytical** skills will be developed in addition to **debugging** skills which will be developed through identifying and fixing errors in code. As pupils work through a range of challenges they will develop their **computational thinking** skills and **numeracy** as they program solutions that use a range of arithmetic. **Resilience** and **metacognitive** skills will be enhanced throughout this unit as pupils spend time debugging complex programming problems.	This unit will develop pupil **oracy** and **literacy** skills through debates and written work. In addition to this pupils will develop their **analytical and evaluation** skills as they write reports and reflect on the impact that a range of technologies have had on society from positive and negative points of view.	Develop **abstraction** and **decomposition** skills when analysing problems to solve. Use **logical reasoning** skills to compare the utility of alternative algorithms for the same problem. Reflect on key algorithms using **computational thinking** skills. Develop **problem solving** skills to identify efficient ways to produce a solution **Resilience, independence** and **metacognitive skills** will be enhanced throughout this unit.
Assess-ments	**Practical** This will be done throughout the unit, teachers will keep a record of how many challenges are being solved. **News Article:** Pupils will find a news article linking to a cyber security attack and produce a written report on this. **End of unit test** Summative test on the computer consisting of multiple choice and open-ended questions on the topic of e-safety, this will assess understanding of key terms, different cyber security techniques and problem solving.	**Practical** Pupils will deliver a presentation in their groups/ individually proposing what their game/app would be and showcase any planning material. This will assess the overall quality of the idea/ game/app, the planning/design and the delivery of the presentation.	**Practical:** Pupils will complete a small programming project where they will be expected to code a solution for a given problem, selecting the most appropriate programming techniques to produce an efficient solution. Pupils will get teacher feedback on this and have the opportunity to improve their code. **End of unit test-** Summative test on the computer consisting of multiple choice and open-ended questions on the topic of python. Pupils will be expected to know what the different programming techniques are, how they work. They will be expected to be able to read code, identify errors and evaluate what the outcome would be. They will also be assessed on their ability to understand key programming terminology. There will also be 10 questions from the Cyber Security, and create code unit.	**Written essay** Pupils will complete a written report on one of the key topic areas mentioned above. This will be assessed using GCSE exam marking criteria. **End of unit test** Summative test on the computer consisting of multiple choice and open-ended questions on the key concepts of this topic. There will also be 15 questions from the Cyber Security, create code and python unit	**Practical** – Apply the concepts of abstraction and decomposition to solve a problem and write an algorithm for a given problem. **End of unit test** Summative test on the computer consisting of multiple choice and open-ended questions on the topic of practical algorithms, this will assess pupil understanding of key terms, their ability to read and write algorithms and their ability to practically solve problems. There will also be 20 questions from the other year 9 units.

Homework					
	Application – Pupils will be asked to complete challenges using the cyber discovery/crypto hack platform to practice their ethical hacking skills. **Application and integration -** Pupils will extend their knowledge further by writing a report on a recent cyber security issue from the news. Bringing together their literacy and presentation skills together with their knowledge of various cyber security issues. **Preparation and Practice –** Pupils given the task to improve on their sway presentations based on teacher feedback and to use it as a tool to prepare and revise for their summative assessment.	**Research and preparation** Pupils given the tasks to find, download and use 3 new mobile apps that each have a different purpose and make some notes ready for discussions in lesson. **Integration -** On-going task of presenting a portfolio of designs for the mobile app that pupils are creating	**Practice –** Pupils given a Microsoft forms quiz to consolidate their understanding of key programming terminology and their practical understanding of some common programming concepts. **Practice –** Pupils given a piece of code with errors and asked to debug the code and fix the errors **Preparation and Practice –** Pupils given the task to revise for their end of topic summative assessment. Suggested revision strategies provided to pupils and a knowledge organiser to aid revision.	**Research and Extension –** Pupils asked to conduct additional research into the impact of computer technology on society. This can be done through reading news articles, books or watching documentaries (suggested sources provided) **Preparation and Practice –** Pupils given the task to revise for their end of topic summative assessment. Suggested revision strategies provided to pupils and a knowledge organiser to aid revision.	**Extension –** Pupils asked to complete at least one iDEA award badge per week or 7 over the term.