

## COMPUTING

## YEAR 7

	Topic	Knowledge What will students know by the end of this unit?	Skills What skills will students have developed by the end of this unit?	Big Idea What are the essential ideas which students could not leave school without?	Cross Curricular What links to other subjects / enrichment might be made?
Term 1	Online Safety	Students will gain knowledge of how to prevent and act upon causes of concern when online. They will be able identify scenarios where they could be at risk and raise awareness of such scenarios	Students will be able to determine how to stay safe when online. Students will communicate their knowledge through the form of an animation. Developing skills in aiming information at a specific audience and purpose.	<p>An online presence is every growing and constantly changing. In June 2019, new guidance for teaching online safety in schools was released and this SOW works closely with the aims of that report.</p> <p>Misuse of technology, especially when online, can have life changing impacts if used incorrectly. This has to be thought about and revised on an ongoing basis if we truly want to stay safe in an online world.</p>	This topic will have cross curricular links with <b>citizenship</b> (taking a look at the technical side of e-safety). I have worked closely with the head of citizenship to ensure Y7 are given a broad range of information and skills.
Term 2	Animal Shelter ICT Topic	Students will be able to effectively search and select relevant information to inform decisions in their project. Students will go onto develop their understanding of corporate identity through branding ie. Creating a logo which will inform their house style guide. Students will know how to manage a budget for this project and different ways to engage with an audience.	Students will acquire the skills to be able to perform boolean searches within search engines, as well as using a range of sources which will help to validate their decisions. Time management will be a skill which the students will develop in order to complete their project. Software skills will include using vector graphic design, modelling with excel, advanced word processing and presentation skills. Students will be evaluating throughout via formative 'buddy feedback' and a summative evaluation.	Essential ideas will be the overall project management skills to run a successful project and transferable IT skills which will be invaluable within any future career.	This topic will be cross curricular with <b>business</b> (marketing and organisation structures), <b>Maths</b> (advanced excel formula), <b>English</b> (choice of wording and copy writing), <b>art &amp; DT</b> (designing and creating vectors)
Term 3	Programming with Scratch	Students will develop and understand how to think both logically and computationally. Students will be able to decompose and abstract problems to create programmed solutions using sequence, selection and iteration. Problem solving is the main area of knowledge throughout this topic.	Students will demonstrate this knowledge through the programming language of scratch. Skills will include implementing sequence, selection and iteration to this programming language, a vital skill which is used throughout computer science. They will use their knowledge of audience and design from previous topics to design a game fit for the intended purpose and client.	Programming teaches Students how to think logically. This skill is transferable to most careers and also to day to day living. Students will begin to know how to program which is currently a gap in the workforce across the world.	This topic will have cross curricular links with <b>Maths</b> (sequence, iteration, problem solving, working with numbers), <b>art</b> (design of scratch game), <b>junior science</b> (understanding of testing and control)

**COMPUTING**
**YEAR 8**

	Topic	Knowledge What will students know by the end of this unit?	Skills What skills will students have developed by the end of this unit?	Big Idea What are the essential ideas which students could not leave school without?	Cross Curricular What links to other subjects / enrichment might be made?
<b>Half Term 1</b>	My Digital World How the internet works and computer scientist project	Students will gain knowledge of how computers work outside of the realms of a standalone computer. They will learn how they connect to other devices and how information is shared across different platforms. They will also understand how web content is created and what to look out for with legitimate websites.  Staying safe online with looking at cyber abuse	Students will acquire the skills to analyse a website in order to keep them safe when online. They will also have the skills to discuss how a basic network works and how data and information is shared across the world.	People use the internet every day for a variety of measures. It is important that students have a basic understanding of how this technology works, just as it is important that they know how the human body works.	Science – links to how data is passed in the form of electricity.
<b>Half Term 2</b>	My Digital World Website design	Students will gain a greater insight of how websites are created and how they are accessed on a computer. They will understand what makes a good website and be able to apply this to their own. There will be a careers section within this topic where students look at different careers within computer science. This is where the topic of their website will come from.	Students will gain the skills to be able to code a basic website using HTML. They will then transfer their knowledge of what makes a good website to design a website using Photoshop and Marvel App to create a demonstration of a website based on a career within computer science.	Students use websites every day, so it is important that students know how these are made and what makes a good website.  It is also very important that students know about the different career paths within computer science. This is an industry where there is a massive shortage of female workers.	Art - designing of a website  Careers - linking to Gatsby benchmarks.
<b>Half Term 2 end</b>	Famous faces in computer science	Students will gain knowledge of different historical people in the work of computer science and the impact they have had on the subjects progression through the years.	Pupils will be researching their chosen computer scientist, therefore gaining skills in being able to research effectively. The projects are to be created as a physical piece, so pupils will also be practising creative skills in terms of layout and ensuring information is legible and eye-catching.	Linking to diversity and inclusion, this topic brings the variety of people who are part of computer science to the forefront. We look at key figures such as Katherine Johnson, Ada Lovelace and Hetty Lamarr.  This topic ensures that everyone in the class can relate to someone computer science and, hopefully, gives them the added confidence to go into the industry if they so wished.	History – pupils will be researching people of history within computer science  Art – pupils will be using mixed media to produce their physical projects.
<b>Half Term 3 &amp; 4</b>	Media	Students will have an understanding, of how the media works and how it affects the mass population. They will understand how we can be influenced by the media, including body image.  Students will understand what makes an effective video and image and how they can be used to evoke certain emotions.	Students will have the skills to analyse images and apply their knowledge of this to decide if a piece of media is true or not. They will also learn some basic photoshop skills to restore some old film images.  The Students will also acquire the skills to plan a professional looking film trailer and use key camera and editing techniques to recreate a certain emotion to fit in with the genre of a chosen book.	Students need to have the knowledge of how the media can affect our judgement and from this decide if a piece of media is trustworthy. This is important in a society where multiple types of media are constantly pushed onto the devices, we use every day.	Citizenship - fake news, body image  Art - designing storyboards  Drama - acting within the film trailers
<b>Half Term 5 &amp; 6</b>	Programming with Python	Students will know the importance of programming in the workplace in modern day life. They will also know how to break down a problem to create a solution.  Students will know how to create simple programs using the three basic programming constructs.  Our aim is not to 'teach Python', it is to teach students how to program with the use of Python to apply this knowledge.	Students will be confident at programming, using sequence and iteration. Their skills will be shown by using Python to create simple programs to solve problems.  They will be able to think logically and use this skill to help them decompose a problem in order to create the solution.  Maths will be required as a skill in order to make shapes within Turtle.	Programming is a skill which is needed for a lot of jobs in the modern world. Not only this, the skills to think logically can be applied to a lot of careers and also life skills.	Maths - calculations and angles when using turtle  Careers - the career prospects open to students through having the skill of programming

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**COMPUTING**
**YEAR 9**

	Topic	Knowledge What will students know by the end of this unit?	Skills What skills will students have developed by the end of this unit?	Big Idea What are the essential ideas which students could not leave school without?	Cross Curricular What links to other subjects / enrichment might be made?
Half Term 1	Cybersecurity	Students will have an understanding about how cyber security is an ever growing field within computer science and why it is important that out data is kept secure.	Students will be gain skills to think logically by breaking cyphers using a variety of techniques. Students will also recap binary from Y7 and develop this to understand how hexadecimal can represent numbers and characters. Students will be able to indicate potential security vulnerabilities in computer systems and have the knowledge of how to prevent or recover from a cyber-attack.	As much as it is important that students are taught how to be safe when out in the physical world, now the digital world is becoming ever more prominent it is important that students know how to keep their data safe and secure. There is also a huge job shortage of jobs within the cyber security field.	Maths - strong links with cyphers and code breaking  History - reference to WWII and Alan Turing
Half Term 2	Artificial Intelligence	Students will have an understanding, of how AI is becoming part of society in modern day; ethics around self-driving cars for instance. They will understand the basics of AND, OR and NOT gates and how they work within a computer system. They will also apply this knowledge to physical programming with the use of Micro: Bits and robots.	Students will practise their discussion skills when looking at the ethics of AI in society. Using logic gates and being able to draw truth tables. They will be able to link to how this is important within computer science. Students will acquire the skills to program for a physical output of a robot. They will use their knowledge of how simple self-driving cars work and apply this to their own working version.	Ethics of AI and the way in which data is shared is something that is going to become a more normal part of everyday life as the years pass. Drawing on logical thinking skills again from the programming section of the topic.	Psychology and RS - ethics of AI  Maths - logic gates
Half Term 4 & 6	Inside a computer and ethics	Pupil will gain a greater understanding of the basic components inside a computer and how they come together to perform the foundations of computing; input, storage, processing and outputting.  Linking from this, we will be looking at the ethical impact of computer components; looking at how they are made and how they are disposed of. We will also link this to the digital divide.	Students will develop their research skills as they research about the components and ethical debates. They will also develop their ability to become involved in debate and discussion based around the ethics is computers.	Having a basic understanding of the components of a computer to enable them to understand the power of computers.  Be able to hold an educated conversation regarding technology and its future.	Geography – digital divide. Citizenship – ethics
Half Term 4 & 6	Python v2	There will be a recap of knowledge from Y8 and a slight overlap of teaching previous techniques to ensure their knowledge is at a standard to which every student can progress this topic. Students will gain greater knowledge about programming, looking more in-depth at iteration and lists. The end of the unit will involve physical programming with Micro: Bits	Students will acquire the skills to think logically and apply this logic to create a computational solution using programming techniques used in lessons.	Programming is a skill which is needed for a lot of jobs in the modern world. Not only this, the skills to think logically can be applied to a lot of careers and also life skills. This is a continuation of what students study in Y8. As programming is a functional skill, it is important that it is revisited before GCSE studies.	Maths - use of operators and logic  Science - electronics and simulations discussed and used