Long Term Plan KS3 Computing - Year 7

Half term	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Link to subject ethos and driver	Anticipated misconceptions	Links to previous KS	Links to future KS	Opportunity for stretch for high prior attainers	SMSC & British Values	Cultural Capital	Career Link
HT1	Getting started	**Know** and **understand** the key concepts and principles of Computing: Know the processes for logging into the academy network and Google Suite for education Know the process for sending and receiving emails Understand how to save, rename and organise files Understand how to access files stored in the cloud Understand the key principles of internet safety Understand the qualities of vector and bitmap graphics	**Apply** knowledge and understanding to the key concepts of Computing: Log into the academy's network and Google Education suite proficiently Send and receive emails successfully, using appropriate language and content Organise files and folders to facilitate ease of access and use Demonstrate safe practices when using the internet Be able to create and	Users are responsible, competent, confident and creative users of information and communication technology	Text talk in emails Differences between files and folders Different types of images - the difference between them What makes a good password	No prior learning is necessary, although it is expected that students will be familiar with computers and will have had some experience using email and word processing software. KS2 NC outcome: Understand computer networks, including the internet; how they can provide multiple services, such as the WWW, and the	The skills learnt during this first half-term will be necessary for a range of subjects (not just computing) where the network is used.	CC and BCC in email - what is the difference? Challenge tasks will be built into all lessons - refer to MTP	Resilience is taught through the lessons when students are pushed to achieve their best, moving out of their perceived limits at times and getting the deserved rewards as a result. Mutual respect for tolerance of those with different levels of understanding and knowledge - peer support. Copyright - rule of law - discussed	We encourage students to read newspapers We encourage students to watch the news Current affairs are incorporated into lessons Make links to 'real life'	Any jobs working with computers will require users to work with files and folders - this will help prepare them for the world of work. NC Link: 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

			manipulate images **Analyse** problems in computational terms: Identify the most appropriate tools to use when editing an image **Develop** confident and responsible use of modern information technologies Demonstrate proficiency in using the academy's network and computing facilities Using image-editing software with confidence			opportunities they offer for communication and collaboration			when using images Rule of Law is taught through lesson themes as well with school rules also being adhered to and considered at all times.		know how to report concerns. Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness and design Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.
HT2	Introducing Spreadsheets	Understand how to write basic formulae in a spreadsheet Understand the concept of replication and the uses of relative and absolute cell referencing Understand how to name cells and ranges within a spreadsheet	Use a range of basic formulae to manipulate data Use conditional formatting Create graphs and charts to represent different types	Solving mathematical problems using IT Analytical skills Data representation	The different operators used / * (different from maths). Selecting relevant data for charts and labelling these appropriately.	Students will need to understand basic arithmetic; addition, subtraction, multiplication and division KS2 NC Link: Select, use	KS4 NC outcome: Develop and apply their analytic, problem-solving, design and computational thinking skills	Challenge tasks will be built into all lessons, but specific functions and skills will be targeted for challenge work from the Y8 spreadsheet unit. For	Mutual respect for each other - peer reviewing and support is encouraged. Resilience is taught through the lessons	We encourage students to read newspapers We encourage students to watch the news Current	Career links: Data controller Analysts Financial jobs such as accountants. Business roles, e.g.

		Understand how to write a range of basic functions, including SUM, AVERAGE, MAX, MIN, COUNT and IF Understand how to use conditional formatting Understand how to use data in spreadsheets to create graphs and charts	of information Identify the most appropriate functions to use when developing spreadsheets for a particular purpose Identify the most appropriate chart of graph to display different types of information Become proficient in the use of spreadsheets to handle data in a variety of situations Interpret data from spreadsheets	Modelling outcomes Trial and error Resilient learners	Why different formulas and functions are used.	and combine a variety of software (including internet services) on a range of digital systems and content that accomplish given goals, including collecting, analysing,evaluating and presenting data and information.	Links to both the IT and Computing curriculums at KS4 and 5.	example EIself_statements	when students are pushed to achieve their best, moving out of their perceived limits at times and getting the deserved rewards as a result. Rule of Law is taught through lesson themes as well with school rules also being adhered to and considered at all times.	affairs are incorporated into lessons Make links to 'real life' examples	management NC Link: Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems 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

| HT3 | Computing past, present and future | Know about important figures in the development of computing

Understand Moore's Law and how computer technology has developed and changed over time

Know how to format documents

Understand the importance of aesthetics when presenting information and have an awareness of factors that can inhibit this | Present knowledge about computing using word processing and presentation software

Use formatting appropriately

Ensure that work has been proofread and spelling and grammar has been checked

Select appropriate text and images for use in presentations

Design presentations to convey information effectively

Use word processing and presentation software to present information effectively. | Users are responsible, competent, confident and creative users of information and communication technology

Formatting skills

Research skills | Rules of formatting work well - presentation skills, e.g. range of fonts, colours, layout etc. | Students will be creating document and presentation files so will need basic file handling skills in order to save and retrieve their work. Students will also benefit from experience creating vector-style graphics which will have been covered in the first half-term in "Getting started". | Links to KS4/5 IT and computing.

KS4 outcome:

develop their capability, creativity and knowledge in computer science, digital media and information technology | Challenge tasks will be built into lessons - refer to MTP, In this unit specific additional formatting skills and delving into the topic deeper will be used. | From an environmental standpoint students are encouraged to understand the ways that computer systems and parts can be recycled, reused and have extended lives. The understanding of environmental impacts is taught through lesson themes.

Democracy is something students will learn about and will know how to treat others fairly and how to make things work for the whole class as well as the individual.

Rule of Law is taught through lesson themes as well with school rules | We encourage students to read newspapers

We encourage students to watch the news

Current affairs are incorporated into lessons

Make links to 'real life' examples | Career links

Many job roles will require students to be able to format and present work well.

NC links:

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, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthines |

| | | | | | | | | | also being adhered to and considered at all times.

Individual Liberty – It is important to have students understand their freedoms as well as knowing how these fit in with the school ethos. Students will know their rights as individuals and will know both what to expect and what is expected of them.

Mutual respect for tolerance of those with different faiths and beliefs, and for those without faith is important

Resilience is taught through the lessons when students are | | s, design and usability |
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									pushed to achieve their best, moving out of their perceived limits at times and getting the deserved rewards as a result.		
HT4	Scratch	Understand the concepts of sequencing, selection and iteration	Develop working programs in Scratch

Analyse the requirements of a program

Identify the processes needed to solve a problem,

Design programs in Scratch to solve specific problems

Use Scratch confidently to solve a range of problems. | Logical reasoning

Computational thinking

can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems | Misconceptions alongside what different blocks of code are used for and the difference between different angles when making shapes and things such as forever and repeat loops. | There is no requirement for students to have used Scratch before, although prior knowledge of Scratch may be useful. Students will be performing calculations in scratch to an understanding of basic arithmetic operators (addition, subtraction, multiplication and division is needed).

KS2: use sequence, selection, and repetition in programs; work with variables and | Programming links to the KS4 computing curriculum.

NC outcomes: develop and apply their analytic, problem-solving, design, and computational thinking skills

develop their capability, creativity and knowledge in computer science, digital media and information technology | Challenge tasks will be built into lessons - refer to MTP,

In this unit, students will be encouraged to show additional skills when they develop their code. | Rule of Law is taught through lesson themes as well with school rules also being adhered to and considered at all times.

Individual Liberty – It is important to have students understand their freedoms as well as knowing how these fit in with the school ethos. Students will know their rights as individuals and will know both what to expect and what is expected of | We encourage students to read newspapers

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Current affairs are incorporated into lessons

Make links to 'real life' examples | Career links:

Software developer roles

Programmers

Mathematicians

NC Links:

use two or more programming languages, at least one of which is textual, 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 |

						various forms of input and output Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems, solve problems by decomposing them into smaller parts.			them. Mutual respect for tolerance of those with different faiths and beliefs, and for those without faith is important Resilience is taught through the lessons when students are pushed to achieve their best, moving out of their perceived limits at times and getting the deserved rewards as a result.		use procedures or functions Design, use and evaluate computational abstractions that model the state and behaviour or real-world problems and physical systems
HT5	Computing components	Know about and understand the function of a range of input and output devices Know about and understand different types of memory and storage and their use	Identify the correct input and output devices to use in a range of different situations.	Evaluation skills Analysis skills Literacy skills Presentation skills Technical knowledge	Devices that are 'all in one' and how these can be classified. Storage sizes and calculations of these.	There is no requirement for students to have had any prior learning about computer components. However, they will need basic arithmetic to convert between different	Links to KS4 IT and Computing curriculums.	Challenge work will be built into all lessons - refer to MTP. In particular students may start to look in more depth at what devices are used for and how technology is emerging so	From an environmental standpoint students are encouraged to understand the ways that computer systems and parts can be recycled, reused and have extended lives. The	We encourage students to read newspapers We encourage students to watch the news Current affairs are incorporated into lessons	Career links: Computer technicians Network managers NC Links: understand the hardware and software components that make up computer

| | | | | | | | storage units and basic spreadsheet skills to create a graph. | | devices are often a mixture of input and output. | understanding of environmental impacts is taught through lesson themes.

Rule of Law is taught through lesson themes as well with school rules also being adhered to and considered at all times.

Individual Liberty – It is important to have students understand their freedoms as well as knowing how these fit in with the school ethos. Students will know their rights as individuals and will know both what to expect and what is expected of them.

Resilience is | Make links to 'real life' examples | systems, and how they communicate with one another and with other systems

Understand how instructions are stored and executed within a computer system

Understand a range of ways to use technology safely, respectfully and responsibly, including protecting their online identity and privacy |

									taught through the lessons when students are pushed to achieve their best, moving out of their perceived limits at times and getting the deserved rewards as a result.		
HT6	Program ming in Python: Sequenc e	Understand a range of basic programming constructs in Python\n\nKnow how to print to the screen, perform calculations, take inputs and store them in suitably named variables	**Develop** working programs in Python to solve specific problems.\n\n**Analyse** the requirements of a program\n\n**Identify** the processes needed to solve a problem\n\n**Design** programs in Python to solve specific problems\n\n**Use** Python to confidently write simple programs	Logical reasoning\n\nComputati onal thinking\n\ncan analyse problems in computatio nal terms, and have repeated practical experience of writing computer programs in order to solve such problems	Syntax and logical errors\n\nStudents should be encouraged to 'find' errors in their work and test regularly	There is no requirement for students to have used Python before, although prior knowledge of code may be useful.\n\nStudents will be performing calculations in Python so an understandin g of basic arithmetic operators (addition, subtraction, multiplication and division is needed).\n\nIn Y7 the students will	Programming links to the KS4 computing curriculum.\n\nNC outcomes: develop and apply their analytic, problem-solvi ng, design, and computationa l thinking skills\n\ndevelop their capability, creativity and knowledge in computer science, digital media and information technology	Challenge tasks will be built into lessons - refer to MTP,\n\nIn this unit, students will be encouraged to show additional skills when they develop their code.	Rule of Law is taught through lesson themes as well with school rules also being adhered to and considered at all times.\n\nIndividual Liberty – It is important to have students understand their freedoms as well as knowing how these fit in with the school ethos. Students will know their rights as individuals	We encourage students to read newspapers\n\nWe encourage students to watch the news\n\nCurrent affairs are incorporated into lessons\n\nMake links to 'real life' examples	Computer programmer\n\nNC Link\n\nUse two or more programming languages, a least one of which is textual, to solve a variety of computational problems.\n\nMake appropriate use of data structures (for example, lists, tables or arrays)

| | | | | | | | have used scratch (block based coding)

KS2: use sequence, selection, and repetition in programs; work with variables and various forms of input and output

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems, solve problems by decomposing them into smaller parts | | | and will know both what to expect and what is expected of them.

Mutual respect for tolerance of those with different faiths and beliefs, and for those without faith is important

Resilience is taught through the lessons when students are pushed to achieve their best, moving out of their perceived limits at times and getting the deserved rewards as a result. | | |

Skills developed throughout the programme

Cognitive skills
● Non-routine problem solving – expert thinking, metacognition, creativity.
● Systems thinking – decision making and reasoning.
● Critical thinking – definitions of critical thinking are broad and usually involve general cognitive skills such as analysing, synthesising and reasoning skills.
● ICT literacy – access, manage, integrate, evaluate, construct and communicate.

Interpersonal skills
● Communication – active listening, oral communication, written communication, assertive communication and non-verbal communication.
● Relationship-building skills – teamwork, trust, intercultural sensitivity, service orientation, self-presentation, social influence, conflict resolution and negotiation.

● Collaborative problem solving – establishing and maintaining shared understanding, taking appropriate action, establishing and maintaining team organisation.

Intrapersonal skills
● Adaptability – ability and willingness to cope with the uncertain, handling work stress, adapting to different personalities, communication styles and cultures, and physical adaptability to various indoor and outdoor work environments.
● Self-management and self-development – ability to work remotely in virtual teams, work autonomously, be self-motivating and self-monitoring, willing and able to acquire new information and skills related to work.