Y9 Computing Curriculum Progression Map

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Dates	Wednesday, 1 September –	Monday, 1 November –	Wednesday, 5 January – Friday, 18	Monday, 28 February –	Monday, 25 April – Friday, 27	Monday, 6 June – Friday, 15 July
Weeks	8	7	7	6	5	6
Lessons	8	7	7	6	5	6
Inset						
Unit Title	**CyberSecurity** This unit takes the learners on an eye-opening journey of discovery about techniques used by cybercriminals to steal data, disrupt systems, and infiltrate networks	**Complete Cybersecurity in Term 2** **Start Data Science** In this unit, learners will be introduced to data science, and by the end of the unit they will be empowered by knowing how to use data to investigate problems and make changes to the world around them.	**Complete Data Science** **3D Graphics/Animation** In this unit learners will discover how professionals create 3D animations using the industry-standard software package, Blender.	**3D Graphics/Animation** In this unit learners will discover how professionals create 3D animations using the industry-standard software package, Blender.	**Privacy and Security – Online safety /** **Python programming** with sequences of data	**Python programming / Representations: going audio-visual**
Sequence	Explain the difference between data and information Critique online services in relation to data privacy Identify what happens to data entered online Explain the need for the Data Protection Act Recognise how human errors pose security risks to data Implement strategies to minimise the risk of data being compromised through human error Define hacking in the context of cyber security Explain how a DDoS attack can impact users of online services Identify strategies to reduce the chance of a brute force attack being successful Explain the need for the Computer Misuse Act List the common malware threats Examine how different types of malware causes problems for computer systems Question how malicious bots can have an impact on societal issues Compare security threats against probability and the potential impact to organisations Explain how networks can be protected from common security threats Identify the most effective methods to prevent cyberattacks Complete Cybersecurity start of Term 2. .	Define data science Explain how visualising data can help identify patterns and trends in order to help us gain insights Use an appropriate software tool to visualise data sets and look for patterns or trends Recognise examples of where large data sets are used in daily life Select criteria and use data set to investigate predictions Evaluate findings to support arguments for or against a prediction Define the terms 'correlation' and 'outliers' in relation to data trends	**Complete Data Science** Identify the steps of the investigative cycle Solve a problem by implementing steps of the investigative cycle on a data set Use findings to support a recommendation Identify the steps of the investigative cycle Identify the data needed to answer a question defined by the learner Create a data capture form Describe the need for data cleansing Apply data cleansing techniques to a data set Visualise a data set Analyse visualisations to identify patterns, trends, and outliers Draw conclusions and report findings **3D Graphics /Animation** What is a 3D Graphic? Create 3d graphics	**Animation** Add, delete, and move objects Scale and rotate objects Use a material to add colour to objects Use editing tools Add, move, and delete keyframes to make basic animations Play, pause, and move through the animation using the timeline Create useful names for objects Join multiple objects together using parenting Use edit mode and extrude Use loop cut and face editing Apply different colours to different parts of the same model Use proportional editing Compare different render modes	Privacy and Security – Online safety Internet use monitored (e.g. by my school or internet service provider) How the security of devices connected to the internet may be compromised e.g. webcams, monitors, phones or toys - I can demonstrate actions I can take to minimise such compromise (e.g. covering cameras on computers when not in use). Change my browser settings to make my online browsing more secure (e.g. cookie permissions, do-not-track-me, password storage, incognito). I can explain app permissions and analyse them to make informed choices on which apps I use. Write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements Use selection (if-elif-else statements) to control the flow of program execution Locate and correct common syntax errors Create lists and access individual list items Perform common operations on lists or individual items	Complete Python Programming Use iteration (while statements) to control the flow of program execution.Perform common operations on lists or individual items Perform common operations on strings or individual characters. Use iteration (for statements) to iterate over list items Perform common operations on lists or strings Use iteration (for loops) to iterate over lists and strings. Use variables to keep track of counts and sums. Combine key programming language features to develop solutions to meaningful problems Describe how digital images are composed of individual elements. Recall that the colour of each picture element is represented using a sequence of binary. Define key terms such as 'pixels', 'resolution', and 'colour depth'. Describe how an image can be represented as a sequence of bits. Describe how colour can be represented as a mixture of red, green, and blue, with a sequence of bits representing each colour's intensity. Compute the representation size of a digital image, by multiplying resolution (number of pixels) with colour depth (number of bits used to represent the colour of individual pixels). Describe the trade-off between representation size and perceived quality for digital images. Recall that bitmap images and pulse code sound are not the only binary representations of images and sound available. Define 'compression', and describe why it is necessary

Key Building Blocks	Profiling Data Protection Act Computer Misuse Act Hacking Malware Protection methods such as firewalls, anti-malware, and password authentication	This unit focuses on concepts surrounding data science. In particular, you should be familiar with how to use the visualisation tools used in the unit: • gapminder.org • codap.concord.org • www.datawrapper.de	Looking into the industry use of animation Film This unit focuses on using TinkerCad to create animations and 3D graphics.	Looking into the industry use of animation Film This unit focuses on using TinkerCad to create animations and 3D graphics.	use two or more programming languages, at least one of which is textual, to solve a variety of computational problems understand how instructions are stored and executed within a computer system understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	alternative (symbolic) representations for images and sound, such as vector graphics and MIDI music. They will also be introduced to what compression is and why it is necessary. Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms, and data representation Analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
Retrieval Practices	Summative assessment at the end of unit Do now, Demonstrating skills, presentations. Recap of skills to ensure understanding of task each lesson Demonstration using examples in the real world (careers) and where it applies to task AB Tutor Computer Control to ensure understanding and re-cap/VF VF throughout every lesson	Summative assessment at the end of unit Do now, Demonstrating skills, presentations. Recap of skills to ensure understanding of task each lesson Demonstration using examples in the real world (careers) and where it applies to task AB Tutor Computer Control to ensure understanding and re-cap/VF VF throughout every lesson	Low stakes quiz, Do now, Demonstrating skills, presentations. Recap of skills to ensure understanding of task - Demonstration using examples in the real world (careers) and where it applies to task - AB Tutor Computer Control to ensure understanding and re-cap/VF - VF throughout	Project Rubrick Assessment Do now, Demonstrating skills, presentations. Recap of skills to ensure understanding of task - Demonstration using examples in the real world (careers) and where it applies to task - AB Tutor Computer Control to ensure understanding and re-cap/VF - VF throughout	Each lesson includes a set of worksheets that can be used for formative assessment. A collection of questions for assessment is also provided that can be used as a summative assessment quiz at the end of the unit. Demonstrating skills, presentations. Recap of skills to ensure understanding of task - Demonstration using examples in the real world (careers) and where it applies to task - AB Tutor Computer Control to ensure understanding and re-cap/VF - VF throughout	Assessment question and answer documents for this unit. Demonstrating presentations. Recap and demonsrtation of skills to ensure understanding - Demonstration using examples in the real world (careers) and where it applies to task - AB Tutor Computer Control to ensure understanding and re-cap/VF - VF throughout
Key Skills	Language & Vocabulary Written communication Planning Analysis Evaluation	Language & Vocabulary Written communication Planning Analysis Evaluation	Language & Vocabulary Written communication Planning Analysis Evaluation	Language & Vocabulary Written communication Planning Analysis Evaluation	Language & Vocabulary Written communication Planning Analysis Evaluation	Language & Vocabulary Written communication Planning Analysis Evaluation

Literacy	Written & Oral communication Tier 2 & 3 vocab development	Written & Oral communication Tier 2 & 3 vocab development	Written & Oral communication Tier 2 & 3 vocab development	Written & Oral communication Tier 2 & 3 vocab development	Written & Oral communication Tier 2 & 3 vocab development	Written & Oral communication Tier 2 & 3 vocab development
Tier 2	Computing, accounts, describe, passwords, discuss, data , advantages, disadvantages	Data sets identify capture	Evaluate criteria cycle support patterns trends	Input output devices	Operations loops strings counts sums problems compromise	Graphic sound bitmap vector colour binary depth
Tier 3	cybercrime criminal technology cyber enabled crimes multiplayer compromised intrusion hackers hijacked	Predictions implementing correlation	Outliers investigate visualise analyse	Functionality audience wirelessly	Incognito, browser, security, permissions Python sequence Programming	Representations compression
Numeracy	Number of attacks per day using threat map Identify most attacks through graph	Charts - data sets	Data	Broadband speeds and WiFi	Variables and use of numeracy in simple calculating programs	Pixels DPI Binary 5x5 LED Display Pins
Formative Assessment	Verbal feedback throughout each lesson Re-cap of task and assignment using Computer Control monitoring software	Verbal feedback throughout each lesson Re-cap of task and assignment using Computer Control monitoring software	Verbal feedback throughout each lesson Re-cap of task and assignment using Computer Control monitoring software	Verbal feedback throughout each lesson Re-cap of task and assignment using Computer Control monitoring software	Verbal feedback throughout each lesson Re-cap of task and assignment using Computer Control monitoring software	Verbal feedback throughout each lesson Re-cap of task and assignment using Computer Control monitoring software

Summative Assessment	Multiple choice tests Yacapaca Tests	Assessment rubric document for this unit along with assessment question and answer documents for end of unit	Assessment rubric document for this unit.	A set of worksheets is provided in every lesson that can be used for formative assessment. A project assessment rubric is provided for evaluating different aspects of the physical computing projects, along with a summative assessment quiz for assessing individual learning at the end of the unit..	Each lesson includes a set of worksheets that can be used for formative assessment. A collection of questions for assessment is also provided that can be used as a summative assessment quiz at the end of the unit.	Assessment question and answer documents for this unit.
Spiritual		All units - Students have opportunities to self/peer-assess and reflect/evaluate their work. Students consider their own progress and support the progress of others, whilst also building relationships.		All units - Students have opportunities to self/peer-assess and reflect/evaluate their work. Students consider their own progress and support the progress of others, whilst also building relationships.	Students experience fascination and express their creativity by creating a design followed by a program in Python programming language which develops a solution to a problem. Students consider their own progress and support the progress of others, whilst also building relationships.	Students express their creativity by creating an image and understanding the use of colour in images for moods
Moral	Students learn about safe and responsible use of digital technology . Laws covered Students gain an understanding of the laws surrounding storing people's information, this is related to the Data Protection Act. We give examples including police databases and hospital databases.	Students learn about safe and responsible use of digital technology . Also linked to laws surrounding DATA and information Privacy	To always ensure that you ensure any products created could not offend.	Looking at project work meaning being able to understand the need for working with others and the responsibility that brings	Moral use of computers VS Hacking and stealing of information through programming	Understand the need for graphics images not to offen / or why graphics do and can offend

Social	Responsibility for staying safe when using digital technology Being able to help members of the family in staying safe.	Social Media, communicating online,	Film making and how animation has played its part in the development of films and gaming.	Film making and how animation has played its part in the development of films and gaming. Computing clubs and online forums for similar like-minded individuals	Computing clubs and online forums for similar like-minded individuals	Working together on graphics as part of a team
Cultural	Learners will appreciate that I.T. contributes to the development of our culture and is becoming increasingly central to our highly technological future.	Learners will appreciate that I.T. contributes to the development of our culture and is becoming increasingly central to our highly technological future.			Learners will appreciate that I.T. contributes to the development of our culture and is becoming increasingly central to our highly technological future.	Learners will appreciate that I.T. contributes to the development of our culture and is becoming increasingly central to our highly technological future.
British Values	Mutual respect, the rule of law	Mutual respect, the rule of law	Mutual respect	The rule of law, mutual respect	Mutual respect, the rule of law	Mutual respect
Gatsby 4	Gaming industry, Police, Online safety e.g. CEOP	Ethical Hacker Data Protection	Animator Graphic Design Production	Animator Graphic Design Production Digital graphics designer, Web content creator. Hardware and Software Tester	Programmer Data Analyst	Digital graphics designer, Web content creator