St George's School
Mathematics and Computing Faculty
Year 8 Curriculum Map for COMPUTING

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
THE BIG IDEAS & KNOWLEDGE *Overview of topics or key questions*	**Programming - Introduction to python** Students are introduced to text-based programming with Python. The lessons starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.	**Cybersecurity** Students learn techniques used by cybercriminals to steal data, disrupt systems, and infiltrate networks. Students start by considering the value of their data, then they will look at social engineering techniques used to try to trick users into giving away their personal data. The unit will look at common cybercrimes such as hacking, DDoS attacks, and malware, as well as looking at methods to protect ourselves and our networks.	**Physical computing - BBC Microbit** This unit applies and enhances the learners' programming skills in a new engaging context: physical computing, using the BBC micro:bit. Learners will get acquainted with the host of components built into the micro:bit, and write simple programs that use these components to interact with the physical world.	**Modelling data - Spreadsheets** The spreadsheet unit takes learners from having very little knowledge of spreadsheets to being able to confidently model data. The unit uses engaging activities to progress learners from using basic formulas to writing their own COUNTIF statements. This unit will give learners a good set of skills that they can use in computing lessons and in other subject areas	**Mobile app development** Students familiarise themselves with the - Appshed coding environment and have an opportunity to build on the programming concepts they used in previous units before undertaking their project. Students consider the needs of the user; decompose the project into smaller, more manageable parts; and develop their app. They finish by evaluating the success of the project against the needs of the user.	**Media Animations** Films, television, computer games, advertising, and architecture have been revolutionised by computer-based 3D modelling and animation. In this unit learners will discover how professionals create 3D animations using the software package, Blender. Sessions will take learners through the basics of modelling, texturing, and animating; Links are made throughout to computer science, computational thinking, and the world of work.
SKILLS & STRATEGIES *Procedural knowledge, literacy and numeracy skills*	• Write simple Python programs that display messages, assign values to variables, and receive input • Locate and correct common syntax errors • Describe the semantics of assignment statements • Use simple arithmetic expressions	• Identify what happens to data entered online • Explain the need for 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	• Describe what the micro:bit is • List the input and output devices • Use a development environment to write, execute, and debug a program • Write programs that use the micro:bit's built-in input and output devices	• 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.	• Encourage computational thinking and project planning • Decomposing a larger project into smaller parts • Creating success criteria for the project • Getting user feedback and evaluating projects.	• Add, move, and delete keyframes to make basic animations • Play, pause, and move through the timeline • Create useful names • Use edit and extrude • Apply different parenting colours to different parts of the same model

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FEEDBACK *Noteworthy tasks and assessments*	End of Unit Assessment	End of Unit Assessment	End of Unit Assessment	End of Unit Assessment	End of Unit Assessment	End of Unit Assessment
BREADTH *Opportunities, trips, wider reading, cultural capital*	https://www.w3schools.com/python/default.asp	https://cyberstart.com/	https://microbit.org/	https://www.w3schools.com/EXCEL/index.php	https://appshed.com/ https://appinventor.mit.edu/	
KEY VOCABULARY *Important words and phrases*	Integrated development IDLE, interactive mode, Script mode, variable, string, syntax, assignment statement, augmented assignment operator, data type, integer, float, round, BIDMAS, selection, iteration, syntax error, logic error, debug, binary search, while loop	Hacking, DDoS attacks, malware	Blocks, forever loop, input, basic, pause, string, hex, while loop, inequalities	Cell references, autofill, format, data, add, subtract, divide, multiply, SUM, COUNTA, AVERAGE, MIN, MAX, COUNTIF, sort, filter, conditional	Event handling, sequencing, variables, selection, operators	Move, rotate, scale, colour, animations, light, camera, render, organic modelling