Richard Lander School — Computing Curriculum Overview - 7/8/9

BE THE BEST YOU CAN BE

	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
Reporting Y7	CfCs		BfL & LAL				BfL & LAL				BfL & LAL	
Year 7	Basic IT literacy - use of Moodle, O365, Word and PowerPoint. Digital citizenship including online security, best practise when communicating with other.	**Digital Citizenship Assessment**	Data Representation: Boolean logic (AND\OR\NOT). Binary numbering system and its use in Computing. Conversion between binary and decimal. Use of numbers to represent characters in computing	**Data Representation Assessment and DIT**	Programming: Algorithms: basics of decomposition (breaking problems down). Identifying sequences in instructions and potentially programmable parts. Use of flowcharts to represent inputs, outputs, decisions and sub-routines	**Algorithm Assessment and DIT in preparation for programming**	Computer systems: identify different forms of hardware and categories and input, output, storage and process.	**Computer Systems assessment**	Programming: identify key programming terminology. Using input, output variables and iteration in code. Identify common mistakes in basic code.	**Programming Assessment**	End of Year project: Microbit. Using the microbit (an embedded system designed for education) to consolidate the learning on computer systems, programming, algorithms and data representation. Students create programs using either flowchart-style coding interface or python scripted language.	**Curriculum Enrichment Week**
Reporting Y8	CfCs		BfL & LAL				BfL & LAL				BfL & LAL	
Year 8	Computer systems: identify different forms of hardware and categories and input, output, storage and process. Identify different network types - LAN\ WAN, wireless, personal area (bluetooth). The impact of modern systems (eg AI) on computer design and other technologies	**Computer Systems assessment**	Data Representation: binary to represent colours and images in computers. Binary mathematics (add, shifts); Use of the hexadecimal numbering system. Conversion between binary-decimal-hexadecimal. Use of hex in computing - image representation, programming	**Data Representation Assessment and DIT**	Programming: Algorithms: Using flowcharts to solve simple and complex problems. The use of sub-routines to make individually programmable parts. Use of pseudocode as a "fake" programming language which can be applied to multiple programming solutions	**Algorithm Assessment and DIT in preparation for programming**	Programming: identify key programming terminology. Using programming techniques to solve a variety of problems involving sequence, selection, iteration, sub-routines.	**Programming Assessment**	Digital citizenship - more focus on social media (as are or will be 13+). Online fraud, money mules, introduce laws around computer use.	**Digital Citizenship Assessment**	End of Year project: HTML5 game creation. Using aspects of data representation but more closely algorithms and coding to analyse, plan, design, code and test an HTML 5 game using the Construct 2 engine	**Curriculum Enrichment Week**
Reporting Y9	CfCs		BfL & LAL				BfL & LAL				BfL & LAL	
Year 9	Computer systems: identify different forms of hardware and categories and input, output, storage and process. Identify different network types - LAN\ WAN, wireless, personal area (bluetooth). Ethical aspects of computer systems - how they impact on society and the individual as well as the environment. The impact of modern systems (eg AI) on computer design and other technologies. How AI could impact	**Digital Citizenship Assessment**	Data representation: review of hexadecimal and binary; use of compression - lossy and lossless; use of encryption in computing and the role of hexadecimal and binary in this	**Data Representation Assessment and DIT**	Programming: Algorithms: Debugging both flowchart and pseudocode to identify and correct problems. Identifying tasks based on pseudocode - reconstruct scenarios based on flowcharts with sub-routines.	**Algorithm Assessment and DIT in preparation for programming**	Programming: using decomposition, algorithms and programming techniques to analyse, design, code, test and evaluate a program to meet the requirements of a given scenario	**Programming Assessment**	Digital citizenship - focus on more mature content as well as covering the laws governing digital technology - Computer Misuse Act, GDPR, Copyright and Patents Act. Critical debate of aspects such as teenage social media use, the impact of AI on society.	**Programming Assessment**	End of year project: Business with project with strong emphasis on IT skills (presentation, spreadsheet, data collection and analysis)	**Curriculum Enrichment Week**

Richard Lander School — Computing Curriculum Overview - 10/11

BE THE BEST YOU CAN BE

	Autumn 1			Autumn 2				Spring 1				Spring 2			Summer 1			Summer 2		
Reporting Y10			CfCs			BfL & Grades				CfCs			BfL & Grades					BfL & Report		
Year 10	Programming - introduce online IDE repl.it. Basic principles of programming (2.2) - input\output, variables\constants, sequence, selection and iteration. Data types - integer, string, Boolean, array, casting between types. Introduction to IDE (2.5)	1.1 - System architecture, Von Neumann sys architecture, fetch-execute cycle	1.2.1 - Memory - RAM, ROM, Flash 1.2.2 - secondary storage magnetic, optical and solid state	**Assessment on 1.1 and memory\storage aspect of 1.2**	1.2 - sizes, binary, hexadecimal. 1.2 image, sound and character data representation	**Data rep Assessment (bin, hex, sound, image, character)**	Review of topics covered and DIT on assessments	2.1 - algorithms, pseudocode\flowcharts and their relationship to actual code	2.1 - Common algorithms - bubble sort, merge sort, linear search, insertion sort, binary search 2.2 - programming techniques that link to search and sort (arrays - 1D and introduce 2 D)	**Algorithm Assessment - search and sorting**	2.2 and 2.4 - Boolean operators in programming - AND\OR\NOT. Truth tables	Additional programming techniques (2.2) - working with files - open, read, write, close. Use of SQL to interrogate data	Defensive design in programming (2.3) - main ability of code, commenting, documentation, system lifecycle, testing - dry runs and other methods of testing code	2.5 - features of programming languages - low-level high level languages ; features of IDE		1.6 - ethical, legal, cultural and environmental impact of computer science	1.5 - system software including operating systems, common utility software and different operating systems
Reporting Y11			CfCs & Grades			Rep & Grades				CfCs & Grades			BfL & Grades							
Year 11	1.3 - networks: topologies, wired and wireless networks, protocols, network addressing, LAN and WAN, cloud, client-server\peer-to-peer networks.	Topic assessment	1.4 threats to networks - attack methods, network security, the role of the "human" as a weak link. Methods of prevention - software, hardware, policies and methods.	**1.4 Assessment**	Revision lessons (PPE1 prep)	PPEs		Programming project with Paper 2 revision elements			Paper 1 recap with mixed assessments - short programming tasks and "dry runs".	Revision activities - short assessments, recaps, topic based activities, examination practise (walking talking mocks)			**Public Examination**				