West Kirby Grammar School

Curriculum Map – Year 8 – Computing (2021-22)

Topic Name	Term	Skills Developed	Link to NC Subject Content	Next link in curriculum	Other Notes
Introduction to Boolean Logic	*Autumn 1*	• *Boolean Algebra, logical reasoning, Venn diagrams.* • *Understanding of logic gates and circuit diagrams.* • *Truth table and Boolean algebra representation of circuits.* • *Understand and create 2 and 3 input logic circuits.*	• *Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming.*	• *Computational Logic (Year 9 Autumn 1*	*Foundations for GCSE section 2.4* **Links to Prior Learning:** Y7 Computer Systems. Y7 Data Representation,
Programming with Python (Re-visited) 2021-22 Y8 cohort only	Autumn 2	• Simple Python input and output commands • Programs involving user input. • Data types • Sequences • Selection and nested selection.	• *Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems.* • *Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems* • *Understand several key algorithms that reflect computational thinking* • *Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming*	• *Next Steps with Python – Year 8 Spring 2)*	Foundations for GCSE section 2.2 and 2.3 **Links to Prior Learning:** Y7 Introduction to Python.

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Introduction to Computer Networks	*Spring 1*	• Basics of computer networks – Advantages and limitations. • Computer networks – Equipment used. • How the Internet works. • Security threats and encryption. • Network topologies	Understand the hardware and software components that make up computer systems and how they communicate with one another and with other systems.	• Networks (Year 9 – Spring 1/2)	Foundations for GCSE section 1.3 and 1.4 **Links to Prior Learning:** Y7 Computer Systems. Y7 Web Design (some elements)
Searching and sorting algorithms	*Spring 2*	• Understand how the bubble sort and insertion sort work. • Be able to compare the two methods with number sets. • Understand and compare the linear and binary search algorithms for searching through data sets.	• *Understand several key algorithms that reflect computational thinking [for example ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem.*	• Algorithms and Problem Solving (Year 10 Autumn 1)	Foundation for GCSE section 2.1 **Links to Prior Learning:** Y7 Computational Thinking

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Programming with Python – 2	*Spring 2*	• *Iteration – For and While loops. Counter controlled and condition controlled.* • *Use of python list data structures.* *Procedures and Functions*	• *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 use procedures or functions*	• *Programming Techniques (Spring Year 9)*	Foundation for GCSE section 2.2 **Links to Prior Learning:** Y7 Introduction to Python Y7 Computational Thinking
Data Representation – Text/Image and Sound	*Summer 1*	• *Binary representation of text using ASCII/Extended ASCII/Unicode table.* • *Bitmap image representation.* • *Digital representation of sound.* • *File size calculations.* • *Compression algorithms.*	• *Understand how instructions are stored and executed within a computer system.* • *Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.*	• *1.2 Memory and Storage (Year 10 – Spring 1)*	**Links to Prior Learning:** Y7 – Data Representation (binary numbers)
AI and Machine Learning	*Summer 2*	• Concept of artificial intelligence. • Machine learning and its real-world applications including image recognition. • Ethical issues surrounding the growth of AI.	• *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 know how to report concerns.* • *understand the hardware and software components that make up computer*	• *1.6 Ethical, Legal and Cultural Impacts of Computing (Year 11 – Spring 1)*	**Links to Prior Learning:** Y7 – Impacts of Computing

			systems, and how they communicate with one another and with other systems.		