CARDINAL NEWMAN CATHOLIC SCHOOL

INTENT: Curriculum Overview Year 8
Subject: Computer Science & ICT T

A learner in Year 8 will know how to work with the following applications: Excel Spreadsheets, Web editing package (Dreamweaver) and Python. They will also learn about some of the legal safeguards regarding computer use, including overviews of the Computer Misuse Act, Data Protection Act and Copyright Law and their implications for computer use. Phishing scams and other email frauds, hacking, "data harvesting" and identity theft are discussed together with ways of protecting online identity and privacy. Health and Safety Law and environmental issues such as the safe disposal of old computers are also discussed.	**A learner in Year 8 will be able** to identify the different benefits and dangers of the internet, they should be able to create a financial model using formulas and functions in Excel, create a website using Dreamweaver, be able to add text, images and multimedia elements on their website and be able to create and program an algorithm

8.1 - Cybersecurity	8.2 Spreadsheets Modelling	8.3 Computational thinking	8.4: HTML and website development	8.4: Introduction to Python

Term 1	8.1 - Cybersecurity	8.2 Spreadsheets Modelling	Autumn % Assessment
	Knowledge: This unit covers some of the legal safeguards regarding computer use, including overviews of the Computer Misuse Act, Data Protection Act and Copyright Law and their implications for computer use. Phishing scams and other email frauds, hacking, "data harvesting" and identity theft are discussed together with ways of protecting online identity and privacy. Health and Safety Law and environmental issues such as the safe disposal of old computers are also discussed. **Skills:** Formative Assessment: o One pit stop task o End of unit assessment **End point:** Students should be able to: o Name the major Acts concerning computer use o Describe briefly some of the dangers of putting personal data on social networking sites o Describe briefly ways of protecting online identity and how to report concerns o Identify some of the signs of fraudulent emails and respond appropriately o Adhere to Copyright Law when using written text, downloading music etc. o List some of the Health and Safety hazards associated with computer use o Describe how to safely dispose of an old computer	**Knowledge**: Students will learn to use Microsoft excel to design a model. They will learn to use formulas and function to the design a booking system model. Skills: o Writing formulas and function in excel o Formatting a spreadsheet o Interrogating a model using *what if* scenarios Formative **Assessment**: o One pit stop task o Pupils will create an Assessment Portfolio showing their final spreadsheet. They will also answer questions on spreadsheet modelling and complete a self-assessment. End point: At the end of this Unit students should be able to: o Explain what is meant by a financial model o Give examples of how computer models are used in the real world o Format a simple spreadsheet model o Use simple formulae and functions o Name cells in a spreadsheet model o Use a simple spreadsheet model to explore different "what if" scenarios o Create a basic pie chart to display results o Justify the formatting they have used in a spreadsheet model o Present information from a spreadsheet model in a variety of formats	Knowledge coverage: Components of 8.1 – Cybersecurity Component of 8.2 Spreadsheets Modelling Skills tested: **Assessment style/questions:** Multiple choice style questions Some extended writing for the higher ability students Assessment is computer based

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Term 2	8.3: HTML and website development	8.4 Computational thinking	Spring % Assessment
	Knowledge: Students will learn the basics of HTML, the programming language fused to create webpages. They will learn about responsive designs and how to create a responsive design which adapts to any size of screen for viewing on, say, a mobile phone or a PC. They will learn how to create text styles and add content, including text, multimedia and graphics, in a specified position on a page, as well as navigation links to other pages on their website and to external websites. Skills: Create a web page using HTML How to insert text, graphics and multimedia on a webpage How to create hyperlinks within and outside to websites Learn to use a web authoring package (Dreamweaver) **Formative Assessment:** Pupils will put evidence of their final website in an Assessment Portfolio. They will also answer questions on HTML, CSS and web design principles in order to demonstrate understanding. It is recommended that regular teacher assessment, including questioning and observation, is used in each lesson in order to reinforce the evidence of understanding in the Assessment Portfolio End point: Students should be able to: ○ Write HTML code to create a simple web page and display it in a browser ○ Write CSS to define the styles used in a web page ○ Create a simple navigation system using HTML ○ Use a design to create a template for a web page using HTML ○ Create their own multi-page website ○ Insert text, images and links on their web pages	**Knowledge:** This unit introduces students to the world of computational thinking and logic. With the help of many unplugged activities, students get to understand the power of problem solving and the different methods that Computer Scientists use to tackle problems. Students will consider the strands of abstraction and decomposition before moving on to solve logic problems and practice logical thinking. Logic gates are considered along with algorithms. Finally, the area of pattern recognition is studied with many practical examples. **Skills:** How to apply computational thinking concepts to the programming tasks to design algorithms **Formative Assessment:** **End point**: Students should be able to: ○ state what is meant by computational thinking ○ state what is meant by an algorithm ○ state what is meant by abstraction ○ state what is meant by decomposition ○ explain how abstraction is used in a given scenario ○ explain how decomposition may be used in an algorithm for a given problem	**Knowledge coverage:** 8.3: HTML and website development Assessment Portfolio 8.4 Computational thinking – End of unit test **Skills tested:** HTML programming skills Understanding and application of computational thinking concept **Assessment style/questions**: Assessment portfolio check list Multiple choice computer-based assessment

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Term 3	3:1: Introduction to Python	Summer % Assessment
	Knowledge: This unit follows on nicely from the previous unit computational thinking. Student are going to learn to use Python, a powerful but easy-to-use high-level programming language. The focus is on getting pupils to understand the process of developing programs, the importance of writing correct syntax, being able to formulate algorithms for simple programs and debugging their programs. They will learn about datatypes in python, how to write basic print statements and the general syntax rules in Python. They will learn to use iteration, selections and iteration within the programming tasks they will be given. **Skills**: ○ use Python programming language to ○ receive input from a user ○ process the user input and ○ output to the screen **Formative Assessment:** Pupils will write and run a program and submit the code and screenshots of the program running in a learning Portfolio. **End point:** ○ Run simple Python programs in Interactive and Script mode ○ Write pseudocode to outline the steps in an algorithm prior to coding ○ Write programs using different types of data (e.g. strings and integers) ○ Correctly use different variable types (e.g. integer and floating point), assignment statements, arithmetic operators ○ Distinguish between syntax and logic errors and be able to find and correct both types of error ○ Describe the purpose of pseudocode in designing algorithms ○ Use comments to document their programs and explain how they work ○ Write an error-free, well-documented program involving sequence, selection and iteration, but with some help given ○ Test and debug their programs, and correct both syntax and logic errors	**Knowledge coverage:** Assessment portfolio Students will be assessed on the basic principles of programming **Skills tested:** Ability to identify an algorithm to solve a problem, program the task in Python and provide evidence in their portfolio of testing an debugging their programs **Assessment style/questions:** Student will write and run a program and submit the code and screenshots of the program running in a learning Portfolio.