

Year 8

Term	1	2	3	4	5	6
Topic Title	Revisit prior learning: File management, Online Safety, Binary and Algorithms	Graphic Design - Magazine Cover	The Command Line, OS and Internet Connections.	Networks, Introduction to Textual Programming	Programming	Brigg Fun Day
Rationale	The new academic year begins with a reminder of good housekeeping and file management within the computing department. Learners will revisit safe working practices and create their file management structure for the academic year. The Digital Tattoo is an opportunity to revisit online safety. Learners will complete a set of tasks that ask them to reflect on what they post online and how the consequences of inappropriate posts can impact on their future life choices. Learners will revisit Binary numbers, beginning with 4 bits and then gradually progressing to 8 bits. They will complete tasks to convert between binary and denary and vice versa. When learners are confident converting between the number systems they will then learn how to perform calculations in binary. Learners will revisit Algorithms in more detail. They will explore what makes an efficient algorithm and convert their own instructions into an efficient algorithm.	Learners are introduced to designing digital content for a specific audience and purpose. They will be taught how to identify the needs of a specific audience and how to select the most appropriate design feature to meet these needs. Learners will plan their solutions prior to implementation and annotate their work to explain/ justify their design choices. Using the most appropriate software (Fireworks or Publisher) learners will implement their designs using a range of tools and techniques; peer assessment/ feedback will be take place at key points in the project to enable learners to create work to a good standard. Learners will return to ESafety topics with the focus being cyberbullying. They will watch videos relating to the subject to help them to understand the consequences.	Learners will explore the different operating systems which are currently in use, they will find out about the functions of the OS. Learners will be able to compare the use of a Command Line Interface with the more common GUI, identifying the pros and cons of each. Learners will explore how computers can connect to the Internet. They will compare wired vs wireless connections and the speed data travels across the Internet. Learners will further explore the use of social media and online communication. They will be presented with information regarding the sensitive topics of sexual exploitation, pressure from online friends and live streaming information; advice about how to deal with these issues will be available.	Learners will further explore networks by looking at the different Topologies commonly used. They will explore how these are designed and created along with the possible benefits and negatives that come with each design. Learners will identify the different network devices that can be used in a network and be define their purpose within the network. Learners will be introduced to a new method of programming. Using a textual language, specifically Python, they will apply their knowledge of algorithms to create simple programming sequences to solve problems. Learners will also begin to look at identifying and fixing errors that occur when using a textual programming language, they will be asked to identify and fix both syntax and logic errors.	Learners are introduced to textual programming to create simple programs. Using the Python software learners will create their own code to solve problems, they will be introduced to the Python syntax and the need for accuracy. Learners will take part in the Matrix Challenge, this is a challenge set up by the Yorkshire and Humber Regional Cyber Crime Unit with a new and relevant topic each year.	This unit begins with learners undertaking research using Advanced Search techniques to find out what to include in a fun day in their local area; they will document their findings and sources. Using spreadsheet software, learners will create a model to allow them model different scenarios. Learners will need to be taught/ reminded of how to use simple and complex formulae/functions to perform calculations, more advanced features i.e. data validation, conditional formatting, VLOOKUP will be used to create a user friendly model with increased accuracy. When the finances are finalised learners will create a poster to promote the event and a ticket.
Prior knowledge	The units of work this term reinforce what has been learnt in Year 7. Learners should already have some type of file management system in place and will use this as a model for this academic year. Online safety is revisited on many occasions throughout the year, the depth and content changes in line with the age maturity of the learners and the developments in technology especially social media. Learners will require some basic knowledge of binary and algorithms in order to access the tasks.	Learners were introduced to the concept of audience and purpose during the Year 7 website project. They will share their knowledge and ideas of what makes digital content both appropriate and appealing to a range of audiences.	Learners will have a basic knowledge of components of the computer such as input and output; they may be familiar with the terms OS and Android from their experience of mobile computing. Learners will have the experience of using the Internet and will be familiar with the terms Internet Service Provider and router from their own domestic use.	Learners will have been previously asked to define a Local Area Network and looked at examples of such networks. Learners will also be familiar with the devices used in networks. Learners will have experience using visual programming languages, such as Scratch. They will have previously come across logic errors and fixed them within this context.	This unit builds on prior programming experience gained using Scratch and the ability to construct simple and efficient instructions.	Using the Internet appropriately to gather information will enable learners to work efficiently to find information for a specific purpose. The existing software skills and confidence will be transferred to the spreadsheet software.
Key knowledge/skills development	Learners will be able to recognise what is appropriate language and conduct when communicating online, they will have a clearer understanding of the long term impact of inappropriate online behaviours and how this affects their digital tattoo. Learners will be more familiar with the use of binary numbers in the context of computing, some may be able to convert without the need for the conversion table as they become more confident.	The magazine project will further develop learner's ability to design work to meet the needs of a specific audience and purpose; they will be taught how to plan the content and layout for the product and gather feedback to help them to improve. They should be encouraged to explore the more advanced software features to meet their design needs. Learners will now begin to justify their design choices with links to audience and purpose.	This unit allows the learner to gain a deeper understanding of how a computer works and processes data/ information; they will know the different features of the operating system and how they improve the user experience when using a computer e.g. the GUI has made it possible for general/novice users to access computing facilities.	Looking at topologies will allow learners to gain a deeper understanding of how computers are connected together in a network. This will provide a basis of knowledge on how many of the computing systems, both inside the school and outside, function and are created. Identifying the different, commonly used, network devices will allow the users to begin comprehending more advanced network patterns and understand, on a deeper level, what is happening in a network. Programming in Python provides learners with lots of opportunities to further develop their literacy skills by using accurate syntax in order for programs to work.	Learners will be creating more advanced programmes, utilising decision making logic and iteration. Learners enjoy the problem solving challenges that are presented with this unit of work and have a great sense of achievement when they succeed.	This unit will further develop practical skills using generic software applications; more specific spreadsheet skills will enable users to see a functional software application in practice.
National Curriculum/ specification links	Performs simple operations using bit patterns, e.g. binary addition. Recognises that different algorithms exist for the same problem; designs solutions for a problem.	Recognises the audience when designing and creating digital content, uses criteria to evaluate the quality of solutions, can identify improvements, can justify choice of digital devices.	Understands the difference between hardware and application software and their roles within a computer system; has an understanding of the main function of the operating system.	Knows the difference between physical, wireless and mobile networks. Have practical experience of a textual language.	Understands the difference between and appropriately uses if, then and else statements. Designs, writes and debugs programs.	Collects and organises digital content, creates digital content by combining software applications and internet services. Makes judgments about data, perform more complex formula and functions
Literacy	Why is binary, base 2, called binary, what is meant by the term 'bi'? (with regards to numbers and maths)	Writing out plans for the magazine cover and justifying their choices. Understanding and relating concepts of cyberbullying and E-safety.	Understanding the variability of grammar in the English language and how that is difficult for computers to parse. Understanding and relating concepts of cyberbullying and E-safety.	Identifying the functions of network devices by decomposing the keywords. Looking at root words to determine how the computing language has evolved.	Relating programming syntax with English grammar.	Using appropriate language when creating a poster for a targeted audience.
Numeracy		How numbers and percentages relate to each other when assigning screen (or page) real-estate.	Some recapping of the use of binary when transferring data of wired and wireless networks.	Data comparisons, <, >, !=.	Iteration (counting loops etc.) and its importance to programming.	Use of formula within Excel.
STEM	Understanding and following rules for safe working conditions. Using office software in both an individual and group context.	Getting a look at the development cycle for graphical design and understanding the way designs are targeted by professional graphic designers towards selected target audiences.		Identifying the expected attributes of a network and planning a topology to fulfil them. Identifying the deliverables of basic programming projects and building solutions.	Analysing problems and creatively coming up with programming solutions.	Analysing and modeling different potential scenarios and coming up with creative solutions, which can then be modelled and tested in Excel.
Cross curricular links	Number systems and performing calculations have a close link with the Maths curriculum; sets of instructions and sequences may link with Technology.	Content of magazine could link with English, Drama and History, the design element of the task could link with work from Technology or Art.	There could be some link with Technology and the connections to the Internet and the physical components of the computer.	Data comparisons are taught in maths, there are differences in the symbols used in computing so these will be compared and contrasted across the two subjects.	The use of problem solving and syntax links closely with skills developed in Maths and MFL.	Looking at the local area could link with PSHCE or Geography, the calculations would link with Maths.
Key vocabulary	Digital tattoo, consequence, efficient, instruction.	Audience, purpose, design, justify, layout, software, tools, techniques	Network, OS, GUI, CLI, modem, utility.	Topology, Server, Router, Hub. Syntax, Logic, Bug, Textual, Deliverable.	Shell, syntax, variable, script, condition, concatenation.	Formula, functions, statement, validation, sort, filter. Conditional formatting, graphs.