

Year 7



Term	1	2	3	4	5	6
Topic Title	Introduction to IT/Computing at SJN, basic understanding of the computer	Social Media awareness and Computational Thinking	Suitable passwords. Creating a website for a specific audience	How the web works	Spreadsheet model. Revision and Assessment	Programming using Scratch and Micro bit
Rationale	Learners will be introduced to the SJN network being issued with usernames and passwords in order to access the network and set up their file management system; they will be made aware of the rules for safe and acceptable working practices as detailed in the Acceptable Use Policy. The next stage is to be taught how to use the Office365 utilities to enable learners to access the whole school curriculum. Using the North Lincs Social Media Charter learners will explore the positive and negative aspects of social media; it is important to deliver this early in the academic year as young people may begin to use mobile and online communications more independently as they begin secondary education. It is recommended that this is visited regularly as new developments emerge. Learners will be introduced to the main components of a standard computer system, this will give them a basic understanding of the input, process, output cycle of data. This is followed by a brief history of computing to allow learners to appreciate that computing is the processing of data and how this has developed through the ages.	Using the theme 'Speed Friending' learners will explore social media and how young people can safely make friends and communicate. They will carry out a role play identify what is safe friending and risky behaviours. Learners are introduced to the binary number system, they will be taught that this is how computers store data. Using a conversion table learners will be taught how to convert between Base10 and Base2; more able learners may explore Hexadecimal and be able to do simple conversions. What is an algorithm? Using Computational Thinking learners will explore the process of breaking down a problem using Decomposition, Pattern Recognition and Abstraction in order to be able to write an Algorithm to resolve the problem.	Learners will explore the importance of suitable passwords and their role in keeping data and information secure. They will suggest/ be taught what makes a good password. Learners will design, implement and evaluate a multiple page website. They will learn about what makes a good website e.g. colours, fonts, layout, navigation, audience and purpose. Using storyboards and sketches learners will design the individual webpages, the designs will then be implemented using a range of tools and techniques available in WIX.	Year 7 will learn that the Internet is a global resource that comprises of millions of connected computers and it is this infrastructure that hosts the World Wide Web. Learners will be introduced to Boolean operators to enable them to refine criteria to make searching for information more efficient. They will look at URLs and the different elements that identify the web address and how to ensure they work appropriately by acknowledging sources.	Learners will be introduced to spreadsheet software to allow them to create a spreadsheet model looking at different scenarios. Learners will need to be taught how to set up a spreadsheet, formatting, simple formulae/functions to perform calculations and hyperlinks. Learners to reflect on learning to date. Formal assessment.	Learners will undertake a series of tasks within the theme of Cyberbullying. They will begin to understand the difference between what is called 'banter' and what is 'bullying.' Learners will look at the issue from each gender type to help them gain better understanding. Programming will teach learners how to sequence instructions for specific outcomes. Learners are encouraged to test their scripts and modify it to meet the demands of the task. Learners will be able to transfer the skills to create games to meet their own specifications. Learners are introduced to the MICRO BIT, they will be presented with opportunities to develop code using precise instructions, compile and flash the code to a device. As learners increase in confidence they will be able to create more creative and challenging programs.
Prior knowledge	Learners will have varying experiences of IT and Computing depending on the primary provision, however it is assumed that learners will have encountered some type of computerised equipment.	It is assumed that learners will have some E-Safety knowledge from primary school and are aware of the most common social media platforms. To access the Binary work learners will need to know that we use a base10/decimal system in everyday life. To access the work on Algorithms learners will require a reasonable level of literacy.	This will build on the learning at the beginning of the academic year when learners were issued with username and passwords. It is assumed that learners will know what a website is and have accessed age appropriate sites as part of their learning.	It is assumed that learners will know what a webpage is and will have accessed various websites both in and out of school.	This is an opportunity to revisit all prior learning.	Some learners may have experienced some basic Scratch lessons at primary school; however the unit of work begins with basic instructions/ recap. Scratch is a valuable stepping stone for learners prior to starting work with the Micro bit.
Key knowledge/skills development	Learners will independently log into the SJN network to access a range of resources, they will work safely following the H&S guidelines. Learners will have a basic knowledge of what computing is and can name the input and output devices connected to a standard PC.	Learners will be able to make informed choices when using social media, they will be equipped with the knowledge of how to identify risky behaviour and how to report their concerns. Year 7 will use their new learning to 'crack' binary codes by using simple number conversions. Learners will be able to break down a problem by identifying the key information, using what they have learned they will write a simple plan/ algorithm to create a solution.	Now that learners have had access to SJN Computing facilities both at school and home they will appreciate the need to keep data and information secure. Creating a website will help learners develop an awareness of audience and purpose and the need to have this at the forefront when designing any digital content; they will also understand that a website must be easy to navigate to retain the user interest.	Learners will gain a better understanding of the enormity of the Internet and the WWW. They will be able to search more efficiently using AND, OR, NOT; this will provide an opportunity for learners to see how data travels across the Internet to be delivered to their computer.	Learners will build their confidence of using spreadsheets, something many of them will never have used before. Students will be able to construct formula using the correct formulas / functions so they can understand how the use of spreadsheets can increase productivity. Consolidate all skills/ knowledge acquired throughout the year.	Learners will develop their logical thinking and problem solving as they design and create short sequences to control an on screen avatar or external device.
National Curriculum/ specification links	Know that computers collect data from various input devices and process this to output information. Understand the difference between hardware and software. Uses technology with increasing independence to organise workspace and digital content.	Knows how to be responsible online (good netiquette) and how to report concerns and protect their own online identity; recognises ethical issues surrounding IT beyond school. Knows that digital computers use binary to represent all data. Understands that algorithms are implemented on digital devices as programs; can design simple algorithms	Recognises the audience when designing and creating digital content. Collects, organises and presents data and information in digital content.	Identifies the difference between the Internet and Internet services. Is able to effectively use search engines and understands simple Boolean logic (for example, AND, OR and NOT). Is able to select and use Internet services.	Collecting and analysing data, creates digital content by combining software applications and internet services. Makes judgments about data, perform formula and functions	Learners will create programs that implement algorithms to achieve given goals, they will assign and use variables and operators within a loop and to terminate a program.
Literacy	Researching key figures throughout the history of computing through online extracts and writing up their contributions in their own words.	Exploring the root words behind the different number systems, Hexidecimal (16), Binary (2) and Denery (10) and how those words describe the number systems.		Boolean operators and how a statement can be phrased in such a way that it can be either true or false.		Writing scripts for conflict resolutions.
Numeracy		Binary, Denery and the concept of different number systems.	Relating the size of individual elements on a webpage, links to percentages and ratios.	Boolean operators and logical statements.	Automating and performing calculations using excel code	The relationship between high level code and the binary code that the processor uses.
STEM	Understanding and following rules for safe working conditions. Using office software in both an individual and group context.	Evaluating problems and coming up with creative, logical, solutions in the form of algorithms.	Password standards and safety. The creative design process, specifically relating to websites.	Finding and citing reliable sources by critically evaluating relevant articles on the internet.	Making efficient use of spreadsheet software by analysing problems and creatively coming up with solutions.	
Cross curricular links	Close links with Technology in relation to safe working practices.	Appropriate and safe use of social media has close links with PSHCE/Citizenship. Working with number systems, conversions, addition and subtraction links with Maths.	Audience and purpose links with Technology.	This topic links with most subjects in respect of finding and using appropriate web resources.	Calculations will link with maths	Logical thinking and programming languages has close links with Maths and MFL.
Key vocabulary	Network, password, secure, social media, input, output, process, banter, frape, catfish	Social media, platform, report, appropriate, binary, denary, convert, algorithm, problem, decomposition, pattern recognition, abstraction, solution	Secure, hacking, audience, purpose, layout, fonts, navigation.	Internet, Server, Web browser, Network, World wide web, Hypertext Mark-up Language, Protocol	Formula, function, formatting, pull handle	Code, sprite, script, loop, variable, avatar, sequence, compile, flash,

Year 8

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Topic Title	Revisit prior learning: File management, Online Safety, Binary and Algorithms	Graphic Design - Magazine Cover	The Command Line, OS and Internet Connections.	Radio advert	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 plan and create a radio advert for a specific purpose. They will explore existing adverts to help with their design; planning plays a key role in this unit of work as learners are have to ensure they have the timing correct as well as the content. They will create a script that meets the need of the audience and purpose, collect and create own sound files. This will the be combined using the Audacity software.	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 s 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 then 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 have experience of using the Internet for research purposes and acquiring information. Skills using generic software applications will give learners confidence when using the Audacity software.	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.	The radio advert project will further develop learner ability to identify audience needs and provide solutions to meet these. They will be able to extend their practical skills using specific audio software.	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 also 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	Recognises the audience when designing and creating digital content. Undertakes creative projects and creates digital content to achieve a given goal by combining different software applications and Internet services to communicate with a wider audience.	Understands the difference between and appropriately uses if, then and else statements. Designs, writes and debugs programs. Has practical experience of a textual language.	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.	Use of language when targeting specific audiences.	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.	Binary and it's relation to bit rate and bit depth.	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.		Analysing existing adverts and creatively coming up with their own ways of representing their specific purpose.	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.	Creating scripts and work with adverts will link with English and Drama, it may be useful work with departments to create the content for the advert.	The use of problem solving and syntax links closely with skills developed in Maths and MFL.	Looking at the local area could link with PSHE 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.	Sound, scripts, frames, bytes.	Shell, syntax, variable, script, condition, concatenation.	Formula, functions, statement, validation, sort, filter. Conditional formatting, graphs.

Year 9



Term	1	2	3	4	5	6
Topic Title	Revisit prior learning: File management, Online Safety and Binary	Creating a comic	Extended Spreadsheet Project	Creating a Digital Showcase (multimedia)	Creating Digital Graphics	Internet Past, Present and Future
Rationale	At the beginning of the academic year it is important to revisit the rules for the Computing rooms and the AUP. Learners check their file management and set up their folder structure for the year. Returning to Online Safety, learners will complete work around the topic of 'selfies'; using information from CEOP and ThinkYouKnow; year 9 will be guided to make informed choices when taking/sharing selfies using social media. Learners will return to Binary numbers and look at the topic from a machine level with 1/0 being on/off state, this leads to ASCII code where learners will explore the need for a code to be used for transferring data electronically; they will also explore how data can be compressed. Finally, learners will learn about the ancient art of cryptography and how this has developed within computing.	Using the comic life software, students will create a comic for a given scenario relating to online safety. A story board will be created to plan the comic before using the software to create graphics and complete the project. Scripts, elements and photos will be created to add to either a template or using a blank canvas which could be used to stretch students further.	Learners are presented with a vocational scenario, they will explore the use of spreadsheets which leads to the design and creation of a multi page model. Initially learners should be given a sample spreadsheet where they identify and describe the features which have been used, explaining how they improve the accuracy and usability of the spreadsheet. Working within the same scenario, learners will be given the client brief; they are required to design the spreadsheet using a range of features. The task will allow for the most simple of spreadsheet formula and functions to perform calculations, graphs and charts to present information, validation rules to improve accuracy and formatting features for presentation; more able learners will use LOOKUP tables.	This creative unit of work requires learners to design a product which meets the needs of their specified audience and purpose. They will be presented with an 'open' scenario where they will identify their own subject and audience; and therefore develop their own success criteria. This task draws on planning skills requiring learners to create detailed sketches and mood boards. Time should be timetabled to collect assets as identified in the planning stages; learners are encouraged to document their findings in line with Copyright guidelines; they should also use this time to repurpose any assets. Using their chosen software learners will implement their designs using a range of multimedia and software features to create a product which is aesthetically pleasing, accurate and interactive.	This unit will begin with extensive research of how graphics are used in everyday items, Learners will find a range of graphic products which have been created for different audience and purposes; they will analyse the graphic explaining the features and designs used to make the graphic product suitable. Learners will be presented with the scenario of working for a smartphone company where they have been tasked to design create a suitable advert and user guide for a new smartphone. This task requires learners to work with both bitmap and vector graphics and be taught the differences between them.	Primarily a research task, this unit will ask learners to explore the 'evolution' of the modern day Internet. They will be presented with key dates where they will create a visual timeline that details the significant events. An extension of this task is to explain the reasons for the Internet growth given a number of key factors that have lead to this. Bringing learners up to the present day they will be asked to evidence the current Internet features and how they are used now AND how they may evolve further as technology and demands increase.
Prior knowledge	Although no prior knowledge is required for file management and Esafety, some knowledge binary would be advantageous.	Having prior knowledge of comic layouts would be advantageous as well as the purpose of a comic.	Learners would benefit from basic spreadsheet experience, entering data, formatting and creating formula.	It is expected that learners will have some experience of using presentation software in order to be able to author the product, they will also draw on their prior knowledge of meeting the needs of a specific audience and performing advanced internet searches.	Learners will have some graphics experience gained in the Year 8 curriculum which will create a good foundation for this unit, they should be familiar with BITMAP images.	The ability to use the Advanced Search facility will help learners to carry out research efficiently. They should also draw on their knowledge of Copyright when using secondary sources.
Key knowledge/skills development	Learners should now be competent with their file management therefore enabling them to work efficiently. They will deepen their knowledge of binary and look at how it is used in the context of computing.	This unit of work will introduce learning to the process of creating a comic using the comic life software to meet the needs of a specific audience and purpose.	Learners will increase their confidence of using spreadsheets, they will be able to construct formula using the correct operators, they will understand how the use of spreadsheets increases their accuracy and productivity and how to carry out challenging formulas and functions	This unit of work will introduce learners to the more advanced features of the presentation software, they will develop confident software skills as they select the tools and techniques suited to their needs.	This unit builds on learners ability to design something to meet the needs of a specific audience and purpose. It will widen their knowledge of how graphics are used in everyday objects.	This will build a good knowledge of how the Internet has evolved and how we have come to rely on it.
National Curriculum/ specification links	Understands how bit patterns represent numbers and images; understands the relationship between resolution and colour depth, including the effect on file size.	Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users	Collecting and analysing data, creates digital content by combining software applications and internet services. Makes judgments about data, perform formula and functions	Undertake creative projects that involve selecting, using, and combining multiple applications. Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Undertake creative projects that involve selecting, using, and combining multiple applications. Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	
Literacy	Writing scripts that represent mock online safety PSA's. Writing mock emails offering advice with dealing with the repercussions of sending inappropriate selfies.	Writing scripts that, together with the visuals, represent a chosen scenario.	Why is a cell called a cell? Syntax used in spreadsheets has different rules to grammar but has a similar concept to the word used in English.	Use of appropriate language in multimedia solutions, to correctly target their chosen audience.	Use of appropriate language in multimedia solutions, to correctly target their chosen audience.	Researching development of the internet (analysis of online articles) and attempting comprehension of more technical sources.
Numeracy	Cryptography. Recapping Binary and introducing the Hexadecimal number system.	Storyboard in numerical order, sequencing events (time)	Use of formula within excel to combine and represent data. Creation of graphs and charts.	Timetables, Gantt charts	Vectors & how images can be represented through them.	
STEM	Understanding and following rules for safe working conditions. Using office software in both an individual and group context.	Creatively representing scenarios through the use of a sequence of images.	Critical analysis of existing spreadsheets. Creative additions to improve usability within the client brief.	Identifying their own target audiences and then creatively targeting those demographics using problem solving and critically evaluating existing solutions.	Critical analysis of existing solutions. Creative problem solving to appeal to identified market.	Analysis and research of past developments in networks. Creative speculation on the future of the internet through the analysis of cutting edge innovation.
Cross curricular links	Binary has links with what is learnt in Maths, the Esafety curriculum links with PSHCE in terms of keeping safe and being responsible citizens.	Writing a storyboard will have links with English. Creating characters and digital graphics will link technology and art	Working with numerical data has links with Maths	Depending on the subject chosen for the Digital Showcase there will be links with many subjects.	Working with graphics has close links with Art especially when looking at that composition of a graphic product.	Creating timelines will link with work completed in History and explain significant events.
Key vocabulary	ASCII, lossy, lossless, compressions	Template, panel layout, script, user interface, element wall,	Formula, function, format, validate, LOOKUP, Macro, absolute	Animation, transition, multimedia, rolling text box	Bitmap, vector	Internet, protocol, online, TCP/IP, network.