

KS3 : Networks							
Name:					TARGET		
HWK Mark		Assessment Result:	SBE	BE	E	AE	SAE
KEYWORDS			Unit Description				
Internet	Protocol	peer-to-peer network	<p>This is a theoretical unit covering the basic principles and architecture of local and wide area networks. Pupils will learn that the World Wide Web is part of the Internet, and how web addresses are constructed and stored as IP addresses. Client-server, peer-to-peer networks and the concept of cloud computing are all described. Ways of keeping data secure and simple encryption techniques are also covered.</p> <p>Homework is given for each lesson. These consist of a mixture of short, factual questions assessing knowledge in isolation and longer questions in which students are asked to analyse a situation or justify their answer to questions.</p> <p>In the final lesson, pupils will sit a multiple choice test which will form the Unit assessment.</p>				
World Wide Web	wide area network	cloud computing					
domain name	local area network	encryption					
IP address	data packets	decryption					
client-server network	packet switching	plaintext					
URL (Uniform Resources Locator)		cipher text					
NATIONAL CURRICULUM LINK							
<ul style="list-style-type: none"> Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems Understand a range of ways to use technology safely, respectfully, responsibly and securely 							

Please Tick off Criteria that you have met during this cycle of work		✓
7-9	Describe the concept of cloud computing and some of the benefits it brings to individuals and organisations	
	Design a network layout for their school, using icons to represent server, hub, switch, router, Internet, workstation, printer	
	Compare the uses of peer-to-peer networks and client-server networks	
6 - 7	Identify some of the extra hardware components used in a LAN	
	Explain the meaning and significance of bandwidth	
	Explain what is meant by buffering and why it is used	
5	State the advantages and disadvantages of different network topologies	
	Design a simple network layout	
	State why some transmissions are encrypted, and use a simple algorithm to encrypt and decrypt a message	
	Describe what is meant by a client-server network and state some of its advantages	
4	Explain the basic principle of packet switching	
	Define the meaning of the terms "domain name", http protocol	
	State that the Internet is a wide area network and the world wide web is part of the Internet	
	State three different network topologies	
	Give examples of LANs and WANs	
PREVIOUS LEARNING		
<i>No previous learning is necessary with this unit.</i>		

KS3 : Data Representation							
Name:					TARGET		
HWK Mark		Assessment Result:	SBE	BE	E	AE	SAE

KEYWORDS			Unit Description			
Binary	Hexadecimal	Right Shift	<p>In this unit you will explore how computers use binary to represent binary. You will perform some conversions from Denary to Binary & Hexadecimal and look at how images & sound are represented in binary.</p> <p>Homework is given for each lesson. These consist of a mixture of short, factual questions assessing knowledge in isolation and longer questions in which students are asked to analyse a situation or justify their answer to questions.</p> <p><u>Assessment will be based on an end of unit test</u></p>			
Compression	Sound	Left Shift				
Lossey	Lossless	Images				
Denary	Convert	0 1				
NATIONAL CURRICULUM LINK						
<ul style="list-style-type: none"> 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; be able to convert between binary and decimal, and perform simple binary arithmetic 						

Please Tick off Criteria that you have met during this cycle of work		✓
7-9	Explain how different file compression systems work and how they affect the sound quality	
	Add two 8-bit binary integers and explain overflow errors which may occur	
6 - 7	Explain how each pixel is represented in binary	
	Explain the term character set and the use of binary codes to represent characters	
5	Understand that the number of bits per pixel determines the number of available colours for an image	
	Explain the use of hexadecimal numbers to represent binary numbers	
	Explain the relationship between file size and image resolution	
4	Convert positive denary whole numbers (0-255) into 8-bit binary numbers and vice versa	
	Convert between binary and hexadecimal equivalents of the same number	

PREVIOUS LEARNING	
<p>Students have gained some prior knowledge from the understanding computer unit. They have a basic understanding of binary and its use to represent text and images from previous years. They may also have an understanding of input and output devices and their role in the Input – Process – Output sequence.</p>	

KS3 : Modelling in Small Basic							
Name:					TARGET		
HWK Mark		Assessment Result:	SBE	BE	E	AE	SAE

KEYWORDS			Unit Description			
Syntax	Function	Loop	<p>The unit covers the topic of Modelling, using a programming language designed to make programming easy and approachable for beginners. After covering the rudiments of Small Basic and its programming environment, pupils start to write small programs which will eventually become subroutines in their Lemonade Stand model. The pupils will discuss some of the different areas in which models are used, from climate change to business enterprises, and the limitations of their own model.</p> <p>Homework is given for each lesson. These consist of a mixture of short, factual questions assessing knowledge in isolation and longer questions in which students are asked to analyse a situation or justify their answer to questions.</p> <p>Pupils will need an extra period to complete an assessment portfolio at the end of the Unit. They will answer questions on Modelling, paste in evidence of their model and complete a brief self-assessment</p>			
Programming environment	Arithmetic operator	Increment				
Intellisense	Assignment statement	Subroutine				
Variable	Comparison operator	Random number generation				
String	Logical operator	Modelling				
Concatenation	Selection	Footfall				
NATIONAL CURRICULUM LINK						
<ul style="list-style-type: none"> Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. Use two or more programming languages, one of which is textual, to solve a variety of computational problems; make appropriate use of data structures; design and develop modular programs that use procedures and functions 						

Please Tick off Criteria that you have met during this cycle of work		✓
7-9	Add code to their programs to enhance the lemonade stand model; e.g. to allow the user to run the model as many times as they like in a single run, to allow the user to enter ranges of temperature or footfall at runtime, etc.	
	Write a modular program involving several subroutines to model a real-life scenario	
	Amend a model to make it perform better	
6 - 7	Write a simple program involving at least two subroutines	
	Devise alternative algorithms for modelling a situation to give a realistic outcome	
5	Name some of the relevant factors and measurements involved in the Lemonade Stand model	
	Use a While loop and a For loop in a program	
	Divide up a list of tasks into discrete subtasks which could be written as subroutines	
	Use Logical operators AND and OR	
4	Run and record results from the model	
	Name some applications of modelling	
	Use comparison operators =, >, <, >=, <=, <>	
	Complete the Lemonade Stand model with some help	
	Find and correct syntax errors in a program	
	Write and run a program in Small Basic	
PREVIOUS LEARNING		
<p><i>Pupils should have completed an introductory unit covering basic programming techniques in a textual language such as Python or Small Basic before starting this unit. Familiarity with using selection (If...Then...Else) and iteration (For and While loops) will be very helpful.</i></p>		

KS3 : Sound Editing in Audacity

Name:		TARGET						
HWK Mark		Assessment Result:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">SBE</td> <td style="width: 15%;">BE</td> <td style="width: 15%;">E</td> <td style="width: 15%;">AE</td> <td style="width: 15%;">SAE</td> </tr> </table>	SBE	BE	E	AE	SAE
SBE	BE	E	AE	SAE				

KEYWORDS	Unit Description		
<u>Vocabulary associated with sound editing</u>	<p>In this unit pupils will learn how sound is digitized and stored on computers. They will learn basic sound editing techniques and how to add sound effects and mix tracks. Ways of creating different sound effects (the job of a “foley artist”) are described. Pupils will undertake a creative project to analyse, plan, record and edit a short sound file. This could take the form of a radio advertisement or short podcast</p> <p>Homework is given for each lesson. These consist of a mixture of short, factual questions assessing knowledge in isolation and longer questions in which students are asked to analyse a situation or justify their answer to questions.</p> <p>Assessment will be by means of an Assessment Portfolio, to include a description, critical review and evidence of an advertisement planned and recorded by the pupil, and a self-evaluation.</p>		
Trim		Envelope	Mono
Effects		Ducking	stereo
Noise		Import	audio track
Pitch		Export	time shift
<u>Vocabulary associated with sound storage:</u>			
Sampling		Frequency	digital
Amplitude		Wavelength	bitrate
sound wave		sampling frequency	diegetic and non-diegetic sound
NATIONAL CURRICULUM LINK			
<ul style="list-style-type: none"> Understand how data of various types (including sounds) can be represented and manipulated digitally, in the form of binary digits 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 			

Please Tick off Criteria that you have met during this cycle of work		✓
7-9	include a range of suitable techniques and effects to produce an effective product that meets specification	
	plan and create a project with the minimum of assistance	
6 - 7	use more sophisticated editing techniques	
	explain how their product meets the given brief	
	combine speech, music and sound effects from different sources into one end product	
5	select appropriate material for a specific audience	
	work collaboratively to give and receive feedback on work done by others	
	use basic editing techniques to produce a sound file	
4	select suitable materials for a project	
	explain how sound is digitized	
	use input and output devices to record and play sounds	

PREVIOUS LEARNING

Pupils should be aware that computers work digitally, and use numbers rather than analogue data. Pupils should be aware from science lessons that sound is transmitted by waves.

KS3 : Practical Programming in Python							
Name:					TARGET		
HWK Mark		Assessment Result:	SBE	BE	E	AE	SAE

KEYWORDS			Unit Description			
IDLE	Round	Syntax error	<p>Although this unit assumes that students have had some exposure to programming in Python, all the basics are covered and students with no experience should quickly be able to catch up.</p> <p>Students are given numerous examples of how to write Python programs to solve different types of problem along with some of the most common programming techniques used, such as validating data entry and creating a menu system with separate functions for each of the menu options.</p> <p>Homework is given for each lesson. These consist of a mixture of short, factual questions assessing knowledge in isolation and longer questions in which students are asked to analyse a situation or justify their answer to questions.</p> <p>Assessment of this work is intended to be formative throughout, with a variety of worksheets and homework tasks to provide feedback to the teacher.</p>			
Variable	BIDMAS,	Logic error				
String	Selection	Debug				
Syntax	Iteration	Procedure				
Assignment statement	Two-dimensional list	Regular expression				
Data type	List	Call				
Integer	Function	Argument				
Float	Text file	Parameter				
NATIONAL CURRICULUM LINK						
<ul style="list-style-type: none"> Use two or more programming languages, one of which is textual, to solve a variety of computational problems; make appropriate use of data structures; design and develop modular programs that use procedures and functions 						

Please Tick off Criteria that you have met during this cycle of work		✓
7-9	Write error-free programs that extend advanced techniques (e.g. using 2D arrays)	
	Use modular programming techniques to break down a problem into its component parts and write well-structured programs using separate functions called from a main program	
6 - 7	Write error-free, well-documented programs	
	Write, test and debug programs to solve simple problems	
5	Read from, write to and append simple text files	
	Create, manipulate and interrogate lists	
4	Use a regular expression to validate an input	
	Use basic programming structures of sequence, selection and iteration	
	Create simple Input / Output messages	
PREVIOUS LEARNING		
<p>Students should have some previous experience of Python programming, including basic inputs and outputs, converting inputs to numbers, selection (if-elif-else statements), loops (both while and for loops) and modules (e.g. random numbers). These skills may have been acquired through the units 'Introduction to Python' and 'Python: Next Steps'</p>		