

Cycle 1/2: Year 7: Using Computers safely, effectively and responsibly

Reading : https://www.thinkuknow.co.uk/11_13/

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

KEYWORDS			Unit Description									
Folder/ subfolder	cyberbullying	email provider	<p>This is a theoretical unit covering the necessary basic knowledge to use computers safely, effectively and responsibly. Pupils begin by looking at file management and security. The unit then moves on to e-safety (cyber-bullying, phishing etc.), and online profiles to give pupils a better understanding and awareness of using social media. The functionality and operation of email and search engines and how to use them effectively are covered, and a final lesson includes a multiple choice test on the contents of the unit and basic computer use.</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>The final assessment is a multiple choice set of questions covering content from this unit of study.</p>									
root folder/directory	online profile	salutation										
Recycle bin	privacy settings	email signature										
Backup	phishing	Carbon Copy (CC)										
shortcut key	hacking	Blind Carbon copy										
backup	biometrics	Attachment										
zip	encryption	search engine										
social networking	virus	server										
NATIONAL CURRICULUM LINK												
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												

Please Tick off Criteria that you have met during this cycle of work		✓
7-9	describe why the information they find may not be accurate	
	use the advanced features of a search engine	
	describe guidelines for keeping their identity secure on the Internet	
6 - 7	manage a Contacts list efficiently for email	
	use an email signature	
	describe what is meant by identity theft and how to minimize the risks of this	
5	identify a probable phishing email and deal with it appropriately	
	describe how to minimize the danger of having their computer infected by a virus	
	explain the advantages and disadvantages of email as a method of communication	
	use basic file management techniques to create folders, save, copy, move, rename and delete files and folders and make backup copies of files	
	send and reply to emails, send attachments	
4	use a search engine to find information	
	keep their files in well organised and appropriately named folders	
	explain what constitutes a "strong" password for an online account	
	list some possible responses to cyberbullying	
	list some of the dangers and drawbacks of social networking sites	
PREVIOUS LEARNING		
All pupils will have a basic knowledge of using a computer, creating and managing files. They may already have their own email accounts and be able to send and receive emails, and will have used a search engine such as Google.		

Cycle 2/3 Year 7: Understanding Computers
 Reading: <https://www.bbc.co.uk/bitesize/topics/zmpsgk7>

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

KEYWORDS			Unit Description				
Input	decode	ASCII	It is a theoretical unit covering the basic principles of computer architecture and use of binary. Pupils will revise some of the theory on input and output covered in previous learning and continue to look at the Input-Process-Output sequence and the Fetch-Decode-Execute cycle through practical activities. Pupils will then look at some simple binary to decimal conversion and vice versa, and learn how text characters are represented using the ASCII code. This will be followed by some simple binary addition. Pupils will learn more in depth how storage devices represent data using binary patterns and physically save these patterns. Finally, they will look at a brief history of communication devices, how new technologies and applications are emerging and the pace of change.				
Process	execute	Code					
Output	binary	Pits					
Device	conversion	Lands					
Hardware	memory	Burn					
Software	RAM	Read					
Fetch	ROM	write					
Input	Denary	data					
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 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		P
7-9	Use an ASCII reference chart to convert a character into binary and its decimal equivalent	
	Explain how characters are encoded using the ASCII system	
	Identify input and output devices for more complex scenarios	
6 - 7	Perform simple binary arithmetic	
	Describe briefly how data is stored on a CD	
	Explain the impact of future technologies	
5	State strengths and weaknesses of different storage devices	
	Distinguish between hardware and software	
	Suggest appropriate input and output devices for a simple scenario	
	Show how numbers and text can be represented in binary	
4	Give examples of computer hardware and software	
	Explain what RAM and ROM are used for	
	Name different types of permanent storage device	
	Draw a block diagram showing CPU, input, output and storage devices	
PREVIOUS LEARNING		
No previous learning is necessary with this unit. Many pupils may 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.		

Cycle 4 Year 7: Spreadsheet Modelling

Reading: <https://www.bbc.co.uk/bitesize/guides/zdydmp3/revision/1>

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

KEYWORDS			Unit Description
Model	Format	relative reference	<p>This unit is a practical, skills-based unit covering the principles of creating and formatting basic spreadsheets to produce and use simple computer models. It is suitable for pupils who have a basic knowledge of spreadsheets including cell references, simple formulae and formatting, although these topics are revised in the first lesson, making it also suitable for pupils new to spreadsheets. The unit is centred on creating a financial model for a TV show. Pupils start by looking at different types of model and then use basic spreadsheet techniques to create and format a simple financial model to calculate the expected income from viewers' voting. The model is then extended to include sales from merchandising, with the introduction of "what if" scenarios. Finally the pupils create a seating plan, book seats and calculate income from seat sales. Spreadsheet features covered include SUM, MAX, IF and COUNTIF functions, cell naming for absolute referencing, conditional formatting, validation, charting and simple macros.</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 create an Assessment Portfolio showing their final spreadsheet. They will also answer questions on spreadsheet modelling and complete a self-assessment.</p>
Simulation	Decimal	absolute reference	
Cell	Integer	validation	
Row	Currency	macro	
Column	Formula	Pie chart	
NATIONAL CURRICULUM LINK			
Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and			

Please Tick off Criteria that you have met during this cycle of work		✓
7-9	Evaluate the effectiveness of a computer model	
	Customise a chart to present information effectively	
	Create a macro and assign it to a button on the spreadsheet	
6 - 7	Present information from a spreadsheet model in a variety of formats	
	Justify the formatting they have used in a spreadsheet model	
	Use a spreadsheet model to predict and test the outcomes for different scenarios	
5	Use conditional formatting	
	Use conditional functions in calculations	
	Format, construct and manipulate a simple spreadsheet model using formulae	
	Explain the advantages of naming cells in a spreadsheet model	
	Use a simple spreadsheet model to explore different "what if" scenarios	
4	Create a basic pie chart to display results	
	Use simple formulae and functions	
	Give examples of how computer models are used in the real world	
	Format a simple spreadsheet model	

PREVIOUS LEARNING

The tasks in this unit assume that most pupils will have some experience of creating basic spreadsheets from Key Stage 2.

Cycle 5 Year 7: Introduction to Python
Reading: <https://www.bbc.co.uk/bitesize/guides/zts8d2p/revision/1>

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

KEYWORDS		
data type	logic error	IDLE
integer	debug	interactive mode
float	binary search	Script mode
round	Variable	String
BIDMAS	Syntax	Sequence
Selection	Iteration	syntax error

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 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.

Unit Description
<p>The unit is an introduction to Python, a powerful but easy-to-use high-level programming language. Although Python is an object-oriented language, at this level the object-oriented features of the language are barely in evidence and do not need to be discussed. 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. The pupils' final programs are put into a learning portfolio with evidence of correct running, for assessment purposes.</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>For the assessment Pupils will write and run a program and submit the code and screenshots of the program running in a learning Portfolio.</p>

Please Tick off Criteria that you have met during this cycle of work							✓
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7-9	Devise their own algorithms to solve reasonably complex problems, e.g. a binary search	
	Test and debug their programs, and correct both syntax and logic errors	
	Make allowances in their programs for user input errors, ensuring that the program still runs to a successful conclusion – which may include printing an error message and stopping the run	
6 - 7	Write an error-free, well-documented program involving selection and iteration	
	Explain the advantages of a binary search over a linear search for an ordered list	
	Distinguish between syntax and logic errors and be able to find and correct both types of error	
	Use relational operators to control the order in which program statements are executed and in what order (if and while statements)	
5	Describe how a binary search is carried out	
	Correctly use different variable types (e.g. integer and floating point), assignment statements, arithmetic operators	
	Write pseudocode to outline the steps in an algorithm prior to coding	
4	Write programs using different types of data (e.g. strings and integers)	
	Use comments to document their programs and explain how they work	
	Run simple Python programs in Interactive and Script mode	

PREVIOUS LEARNING

*No previous learning is necessary with this unit. Pupils may have had some experience of using variables and with a variety of relational operators such as **If** and **Repeat** in graphical block-based languages such as Scratch. Applying this knowledge will help their understanding of a text-based language such as Python.*

Cycle 6 Year 7: Computational Thinking & Logic
Reading: <https://www.bbc.co.uk/bitesize/topics/z7tp34j>

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

KEYWORDS			Unit Description				
Logical thinking	Sequence	network	<p>This unit introduces students to the world of computational thinking and logic. Students get to understand the power of problem solving and the different methods that Computer Scientists use to tackle problems.</p> <p>This unit includes many novel activities to introduce key topics. For example, logical deductions and logical puzzles are used to show logical thinking, water pipes are used to introduce logic gates, network topology is used to show how mazes can be solved and phone messaging is used to demonstrate decomposition.</p> <p>Homework is given for each lesson. These consist of a mixture of short, factual questions and longer problems that need to be solved.</p> <p>Assessment: Takes place in the form of a final multiple-choice test of 40 questions.</p>				
Logic	Venn diagram	decomposition					
Boolean operators	truth table	pixels					
AND, OR, NOT	circuit	ASCII					
logic gates	loop	Nodes					
AND gate	nested loop	Edges					
OR gate	instructions	Packets					
NOT gate	binary tree	Source					
Algorithm	abstraction	Destination.					
NATIONAL CURRICULUM LINK(s)							
<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 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 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 Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal] 							

Please Tick off Criteria that you have met during this cycle of work		✓
7-9	Understand how networks are used to make an abstraction of a maze	
	Understand how decomposition can be used to break down problems into more manageable components	
	Be able to break down a large Computing problem into its parts and understand: how images and text are converted to binary	
6-7	Understand how abstractions are used in everyday life	
	Understand how Boolean operators can be represented in written expressions and Venn diagrams	
	Understand how logic is used in different situations	
5	Be able to complete truth tables for logic gates and circuits with up to three inputs	
	Understand how loops can be used to reduce the amount of code required for a solution	
	Be able to refine algorithms to reduce the number of instructions required	
	Understand the difference between lossy and lossless compression	
	Create a sequence of instructions to achieve a goal	
4	Know the different logic gates including: AND OR & NOT	
	Know the common Boolean operators: AND OR & NOT	
	Be able to ask logical questions to solve problems	

PREVIOUS LEARNING

Students should have studied algorithms and computational thinking topics either at Key Stage 2 or Key Stage 3. Some knowledge or experience with Scratch will be advantageous but is not essential. This unit assumes no specific prior knowledge

