Computing Key Stage 3

Curriculum Overview

The Rowan Learning Trust

Y7	Week 1 → Week 39					
	Online safety – Digital Literacy	**PC Basics – Computer Science**	**Physical Programming – Computer science**	**Spreadsheets – ICT**	**Networks – Computer science**	**Events that have changed our time – Digital Literacy**
Key content (know that…Know how…)	▪ Understand social networks, personal data and privacy settings ▪ Understand and explain cyberbullying and how to report it ▪ Explain dangers to computers when online and how to avoid these	▪ The role of different hardware components ▪ To identify the different hardware components in a PC ▪ Components make up a computer ▪ Primary storage works ▪ Different types of secondary storage ▪ To explain what happens in each stage of the fetch, decode, execute cycle	▪ Plan and construct an animation on screen with multiple frames using a microbit ▪ Detect user input and modify the input ▪ Use buttons when programming with a microbit ▪ Program with iteration when using a microbit	▪ Spreadsheet functions work and why they are used ▪ Demonstrate the use of IF statements and validation ▪ Conditional formatting is used ▪ Demonstrate thee use of absolute cell referencing ▪ Use of a range of formatting tools and fields	▪ Explain the difference between a LAN and WAN network ▪ How the different pieces of hardware work in a network ▪ Different types of network topology ▪ Explain the different types of network threats ▪ Each layout of given network topologies	▪ A number of evens have changed the way we live ▪ To recognise what you see online is true ▪ To write and complete a blog ▪ Format questions and create an interactive quiz with user controls ▪ To distinguish whether websites are reliable

Prior Knowledge	KS2 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	KS2 - select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	KS2 - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts KS2 - use sequence, selection, and repetition in programs; work with variables and various forms of input and output KS2 - use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	KS2 - select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information Physical programming – use of selection and IF statements	KS2 - understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration PC basics – hardware components	KS2 - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content Online safety - reliability

KS3 National Curriculum Links	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	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	use 2 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	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	understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems	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
Composite	Assessment : explain the dangers online and how to protect yourself *Knowledge assessed: personal information examples, online gaming, tips to stay safe online, digital footprint*	Assessment – end of topic – describe the internal components of a computer and how they work together explain how to FDE cycle works Assessment - multiple choice *Knowledge assessed: hardware,*	Assessment complete a portfolio based on programming challenges Assessment multiple choice questions *Knowledge assessed: main components, CPU, Control Unit, ALU, registers, RAM,*	Assessment :complete the tasks to format the spreadsheet (formula/functions/absolute cell referencing/ Assessment :multiple choice *Knowledge assessed: Functios, basic formula, SUM, AVERAGE, MAX, Conditional formatting, IF, autofill,*	Assessment :- describe the difference hardware needed to connect to a network Assessment :– multiple choice *Knowledge assessed: WAN, LAN, internet, world wide web, hardware*	Assessment :–describe how someone can check if a website is reliable Assessment :multiple choice *Knowledge assessed: reliability, internet, world wide web, search key terms*

		computer system. CPU, RAM, hard drive, input devices, output devices, storage devices, computer storage ,primary storage, secondary storage,	*peripherals, hardware components,*			

Y8	Week 1 → Week 39					
	e-safety – Digital Literacy	Hawkley Travels – Digital Literacy	Computational thinking – Computer Science	Programming – Computer Science	Binary – Computer Science	Spreadsheets_ICT
Key content (know that…Know how…)	▪ to protect myself online ▪ to know what to do when feeling vulnerable online ▪ to recognise what to trust online ▪	▪ To calculate costs involved when planning a trip ▪ Gather information when planning a trip ▪ Evaluate a website for trustworthiness ▪ Create an itinerary ▪ What is meant by the term email etiquette ▪ Able to create a tour guide using online interactive tools (google earth) ▪ Present work using presentation software	▪ Add detail with contrasting connections to keep opinions ▪ Know and use computational thinking terms ▪ Concept of pattern recognition ▪ Complete abstraction as a series of scenarios ▪ Create s flowchart for given scenarios ▪ Construct algorithms	▪ Demonstrate how to output input from a user ▪ Debug a program ▪ Identify data types ▪ Demonstrate the use of an IF with multiple conditions ▪ Apply the concept of selection	▪ instructions are stored and executed within a computer system ▪ data of various types (including text, sounds, and pictures) can be represented and manipulated digitally in the form of binary digits ▪ to convert between binary and decimal and perform simple binary arithmetic	▪ identify columns, rows, cells and cell refences in spreadsheet software ▪ use basic cell references and formulas ▪ analyse data ▪ use the functions of SUMN, COUNTA, MAX and MIN ▪ use conditional formatting
Prior Knowledge	KS2 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact Y7 online safety	KS2 - select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	KS2 - use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs Y7 PC Basics – decomposition Y7 -physical programming – decomposition	KS2 - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Year 7 – microbit – user input, selection, iteration ▪ Year 8 – computational thinking – abstraction, algorithms	KS2 - use sequence, selection, and repetition in programs; work with variables and various forms of input and output Year 7 – PC basics – hardware, CPU	KS2 - select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information ▪ Year 7 – Digital literacy spreadsheets

		Physical programming – use of selection and IF statements ▪ Y7 spreadsheets	Y7 – physical programming – abstraction			
KS3 National Curriculum Links	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	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	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 2 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	use 2 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	use 2 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 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	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 Year 7 – ICT project – spreadsheets

			that use procedures or functions			
Assessments	Assessment – identify and give an explanation of the dangers online and how to protect themselves *Knowledge assessed:* *Knowledge assessed: personal information examples, online gaming, tips to stay safe online, digital footprint*	Assessment multiple choice questions Assessment – assessment portfolio *Knowledge assessed, basic use of spreadsheets, cells, reference, working formulas, navigation on websites, hyperlinks, testing*	Assessment - multiple choice questions Assessment – complete a series of challenges to use the constructs of sequence, selection and iterations whilst using the pillars of abstraction and decomposition *Knowledge assessed: pillars of computing, logic approach, planning, testing,*	Assessment multiple choice quiz Assessment – complete a portfolio of programming challenges *Knowledge assessed: Text based programming, inputs, outputs, user interaction, debugging*	Assessment multiple choice questions Assessment – theory assessment – combination of written questions *Knowledge assessed – binary, conversion, decimal, hexadecimal, binary digits*	Assessment multiple choice questions Assessment portfolio *Knowledge assessed – cell references, formulas, absolute cell reference, relative cell references, expressions*
Assessments	Component assessment - - multiple choice questions Assessment combination of written questions	component assessment – multiple choice questions composite assessment – complete a portfolio, combining skills to produce a digital artefact based on a given scenario	b multiple choice questions Composite assessment – create a flowchart for a given scenario and identify the logic errors and syntax errors	Component assessment - - multiple choice questions Composite assessment - combination of written questions	component assessment – multiple choice questions composite assessment – complete a portfolio, completing programming challenges	Component assessment – multiple choice questions Composite assessment – questions based around tasks to manipulate a database.

Y9	Week 1 → Week 39				
	Cyber security- computer science/digital literacy	**Digital imagery – digital literacy**	**Computational thinking – computer science**	**Programming – python – computer science**	**Databases – digital literacy**
Key content (know that…Know how…)	▪ Online reputation is important ▪ Protect ourselves online ▪ Data is vulnerable ▪ To identify fake news ▪ People have the right to access information in the context of online safety concerns ▪	▪ Manipulate images using spot healing brush ▪ Use cloning tools ▪ Move objects around the screen using image editing software ▪ Use appropriate file types ▪ Combine and manipulate images to create a digital artefact for given scenario	▪ Use flowcharts to design an algorithm ▪ Use pseudocode to create an algorithm ▪ Understand the data types ▪ Write sequences of code using looping ▪ Create subroutines	▪ Write programs that display messages that use simple arithmetic expressions ▪ Perform common operations on lists ▪ Use iteration to control the flow of program execution ▪ Perform common operations on lists or strings	▪ Use databases effectively ▪ Store data within a database ▪ To use a flat file and relational database ▪ Retrieve data from a database ▪ Produce queries and reports
Prior Knowledge	computer systems - Describe how the hardware components used in computing systems work together in order to execute programs	KS2 - select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	KS2 - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts Y7 – microbit – selection, iteration Y8 – computational thinking – algorithms	KS2 - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts KS2 - use sequence, selection, and repetition in programs; work with variables and various forms of input and output Year 7 – microbit : user input, selection, iteration	KS2 - select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information Year 7 – ICT project Year 8 – Hawkley travels – Planning trips

		Year 7 – ICT project Year 8 – Hawkley travels – information presentation	Y8 – programming- selection, iteration,	Year 8 – programming – selection, iteration, outputting data	
KS3 National Curriculum Links	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	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	use 2 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 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	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
Assessments	Assessment multiple choice questions Assessment - combination of written questions *Knowledge assessed, cyber security, methods of attack, precautions that can be taken by the user,*	Assessment multiple choice questions Assessment – complete a portfolio, that includes web design principles, promotional material, presentation and word processing document *Knowledge assessed – visual identify, tools of application, aesthetic view, meeting client requirements of a scenario*	Assessment – multiple choice questions Assessment create a flowchart for a given scenario and identify the logic errors and syntax errors *Knowledge assessed – arrays, text based programming,, debugging, testing, abstraction, decomposition*	Assessment – multiple choice questions Assessment complete a portfolio, completing programming challenges *Knowledge assessed – arrays, text based programming,, debugging, testing, abstraction, decomposition, algorithms, flowcharts, pseudocode*	Assessment multiple choice questions Assessment questions based around tasks to manipulate a database. *Knowledge assessed – flat file, relative, operators, data types, queries, reports, output to user*