Fairlands Middle School

We Collaborate, Achieve & Belong

Curriculum Progression Map

Subject: Computing

Year 5	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Systems and searching	Video production	Selection in physical computing	Flat-file databases	Introduction to vector graphics	Selection in quizzes
Skills	Recognising IT systems in the world and how some can enable searching on the internet. explain the input, output, and process aspects of a variety of different real-world systems	Planning, capturing, and editing video to produce a short film capturing, editing, and manipulating video Create a storyboard	Exploring conditions and selection using a programmable microcontroller Create a simple circuit write programs that control real-world objects, like LEDs and motors, using a computer	Using a database to order data and create charts to answer questions Sort and filter data Visually compare data	Creating images in a drawing program by using layers and groups of objects use different drawing tools to help them create images.	Exploring selection in programming to design and code an interactive quiz constructing programs in the Scratch programming environment
Knowledge	Know that computers are connected and can communicate How search engines select and order results	Know about video /visual media, digital media/data That you can reshoot and edit video	Electricity, circuits Sequence and repetition in scratch Know how to use a block-based programming language Understand the concept of input and output in programs	Know that 'database' means 'a collection of organised data that is stored on a computer'. Databases allow people to search and sort large quantities of data to find information. Data can be letters, words,	Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object.	knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if… then… else…' structure can be used to select different outcomes

				numbers, dates, images, sounds, etc		depending on whether a condition is 'true' or 'false'
Key Vocabulary/reading opportunities	Input, output, process, network	Capture, edit, manipulate, story board	Circuit, micro controller, sequence and repetition, input and output	Data, sort and filter, attributes, records, fields	Shape, line, re-size, duplicate, object vector	Selection, repetition, conditons, true, false, If else loops
Stretch and Challenge	Describe the limitations of search engines	Transitions and clear links to storyboard, manipulate video to fit music voice over etc.	Use conditions and evaluate which ones to use in each program	Present knowledge on how and why information is stored in databases and why it is a good way to solve problems	Compare vector drawings to freehand paint drawings and justify the use of both for certain applications	Extend their program further
Links to Modern Britain	Rule of law	Rule of law – copyright/GDPR	Individual ilberty	Rule of law – data	Individual liberty	Individual liberty
Gatsby links	Web engineer, network engineer	Videographer, Film making	Software developer, hardware engineer	Data analyst	Graphic designer, digital illustrator	Software designer game designer/programmer Software engineer
Hinterland Knowledge	That computers use input process output That the internet is a network of computers	That video is a digital process and can be edited and manipulated	Sequence and instructions, What is an algorithm Programs control real-world objects	What a database is, Why they are used	What vector graphics are. That images can be created digitally	Sequencing in scratch programming and how to use repetition and conditions in selection

Year 6	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Communication and collaboration	Webpage creation	Variables in games	Introduction to spreadsheets	3D Modelling	Sensing movement
Skills	Work collaboratively online as a team Identify how data is transferred	Designing and creating webpages, giving consideration to copyright,	Exploring variables when designing and coding a game.	Answering questions by using spreadsheets to organise and calculate data	Planning, developing, and evaluating 3D computer models of physical objects	Designing and coding a project that captures inputs from a physical device

	Microsoft 365	aesthetics, and navigation	Block based programming	how to organise and modify data within spreadsheets	Use of tinkercad	Use of microbit and block based language
Knowledge	Explain the importance of internet addresses and how data is transferred across the web	digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing	where variables can be used and how they can be set and changed through the running of a program	understanding of data, and teaches them	creating 3D graphics using a computer	understanding of sequence, repetition and selection independently within programming
Key Vocabulary/reading opportunities	Packets, IP addresses Header, Payload, network,	copyright, aesthetics, and navigation	Variables, blocks, program, algorithm	Data, pie chart, bar graph, formulas	3D modelling, copyright	sequence, repetition and selection, operators
Stretch and Challenge	Evaluate different methods of online communication and collaboration	User friendly navigation of webpage design – people with disabilities etc.	Multiple variables and use of repetition and conditions	More complex formulas and evaluating the choice of visual representations of data	More complex 3D model	Use of complex operators and selection options
Links to Modern Britain	Respect – Be a respectful internet user	Rule of law -copyright	Individual liberty	Rule of law – data	Respect -use of online services	Individual liberty
Gatsby links	Network engineer, network manager	Web designer	Programmer, software developer, games developer	Data analyst	CAD designer	Hardware engineer, software developer
Hinterland Knowledge	That computers are networked together, the internet, using cloud systems to collaborate using Microsoft 365	That people own content on the web, you need permission to use that content	That variables can change and be set at different time, that variables only hold one piece of data at a time	That people can use spreadsheets to analyse and collate data	That you can use computers to design and build products and 3D print them	What an operator is – greater than equal to less than etc That choises are either true or false and will create outputs based on those inputs

Year 7	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Clear messaging in digital media	Networks: from semaphores to the internet. (IP addresses/packets)	Using media: gaining support for a cause	Programming essentials in Scratch: part I	Programming essentials in Scratch: part II	Modelling data: spreadsheets.
Skills	Combining the use of digital tools and online collaboration to produce media.	Drawing network maps Breaking down web addresses to gather information about the website	Creating a digital product for a real-world cause. Use a formatting software Referencing sources Check reliability of sources online	Applying the programming constructs of sequence, selection, and iteration in Scratch.	Using subroutines to decompose a problem that incorporates lists in Scratch Use sub-routines	Sorting and filtering data and using formulas and functions in spreadsheet software
Knowledge	How to use a range of web applications system to create digital artefacts. Online safety, being a respectful and safe user of online platforms	Recognising networking hardware and explaining how networking components are used for communication How computers communicate over a network	Know about blogging Licensing and legal issues online Formatting software	How to structure instructions How to connect blocks in Scratch Using the x and y axis for movement	How to debug issues in programs How to decompose a problem	Know how to insert, filter and sort data What is data What is a formula What is a function
Key Vocabulary/reading opportunities	Format, Hex colour codes	Hub, Network cable, IP address, packets Header, payload	Licensing, reference, reliability	Sequence, selection, iteration, program, algorithm, variables	Sub-routines, lists and plug-ins for scratch, program, algorithm	Data, cells, columns, rows, formula, functions
Stretch and Challenge	Clear branding choices and good information about issues	That the internet is a network of computers and how satellites fit into networks	Ensure all details are correctly referenced and identify likely outcomes to legal issues online	Modifying programmes to extend the use of it	Modifying programmes to extend the use of it	Count If – if formulas
Links to Modern Britain	Rule of law - copyright	Respectful use of the internet	Individual liberty – opinion/ Rule of law	Individual liberty	Individual liberty	Rule of law data

Gatsby links	Graphic design, branding/marketing specialist	Hardware engineer, Network engineer	Journalism, writer, blogger/ vlogger	Programmer/ developer	Programmer/ developer	Data analyst, accountant
Hinterland Knowledge	Good poster design/ branding – powerpoint skills	Ip addresses How computers are networked How packets are sent	What a blog is That people gain followers based on what they write about	How to arrange blocks in scratch, All the different scratch blocks and settings	Sequence selection and iteration	That they have seen a spreadsheet before That they know you can get the spreadsheet to deal with data for you

Year 8	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Developing for the web (Webpage creation)	Representations: from clay to silicone	Mobile app development (Html and CSS, programming concepts)	Media: Vector graphics (Introduction to vector graphics)	Layers of computing systems (Need to know about binary/data representation and web searches)	Introduction to python programming (programming concepts)
Skills	Using HTML and CSS to create webpages. Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Representing numbers and text using binary digits. Converting between binary and denary number systems Converting binary to letters using ASCII	Using event-driven programming to create an online gaming app using app lab Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	Inkscape software Create logos using vector graphics for a particular target audience Creating vector graphics through objects, layering, and path manipulation.	Exploring the fundamental elements that make up a computer system Using a logic gates with binary	Applying the programming constructs of sequence, selection, and iteration in Python to create basic functional programs Problem solving Decomposition, debugging,
Knowledge	What is HTML, What is CSS	What is binary Understand how instructions are stored	Html CSS Design principles	Know what vector graphic are, what they	Knowing about different software we use	Know how to use Loops - iteration, Selection – if else

	How webpages are scripted The use of tags How search engines work What web crawlers do How web pages are ranked	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	Client Brief Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems	are used for and what a design brief is Know how to create complex shapes and logos using simple shapes as a basis Know what a path, stroke, fill means	Knowing about the operating system and what its role is in the computer system Know how each of the hardware devices work and communicate with each other What is a logic gate	Variables, operators and arrays Know how to write and debug a simple program in a text-based programming language
Key Vocabulary/reading opportunities	HTML, CSS, Tag, Angled bracket, Hex codes, AND OR and NOT	Binary, Denary, ASCII Hexadecimal	HTML CSS, Event handling, Sequencing Variables, Selection Operators, Decomposition	Path, stroke, fill, nodes, target audience, client brief, raster, vector, illustration	CPU Ram Hard drive Solid state, Operating system, AND OR and NOT, XOR,	Iteration, sequence, selection, variables, Syntax
Stretch and Challenge	More complex tags use of hex codes for colours, Introduction of data tables	Converting binary and denary to hexadecimal Binary addition, subtraction, and multiplication	Arrays, fully functional app	More complex designs	Von Neumann architecture	Arrays, sub-routines
Links to Modern Britain (Tolerance, respect, democracy, rule of law, individual liberty)	Copyright law, being a respectful user of the internet	Data protection – Rule of law	Respect – user of the internet Individual liberty	Individual liberty	Rule of law – Data protection	Rule of law – Penetration testing vs hacking
Gatsby links (Careers)	Web designer, UX designer, Full stack developer	Data scientist, data engineer, Cyber security	Web/ app Developer, UX designer	Illustrator, Graphic designer	Computer hardware engineer	Programmer, Cyber security specialist, software developer
Hinterland Knowledge (not making assumptions about prior experiences)	Webpages, the internet, That webpages are scripted in HTML and CSS	Number systems in maths, how files exist as data	Apps, the internet, HTML CSS, programming languages – block based	Digital drawing, illustrations logo design	How the input process output system work, The different between hardware and software	Selection, Sequence, iteration, Basic programming concepts, python is a text-based programming

						language, Syntax word meaning