COMPUTING CURRICULUM

KS2 Progression

Knowledge | Skills | Vocabulary | Year 3 to Year 6

Purpose of this document

A concise overview of how pupils build increasingly connected computing knowledge across KS2. Learning develops from structured use of networks, code, media and data towards independent problem-solving, informed evaluation and confident digital creation.

Progression principles

CONNECTED	INCREASINGLY COMPLEX	PURPOSEFUL	RESPONSIBLE
Pupils link programming, systems, data and digital content.	Sequence develops into selection, repetition, variables and text-based code.	Digital tools are selected and combined to meet a clear goal and audience.	Safety, privacy, reliability and respectful participation are revisited.

Curriculum strands

Computing systems & networks	Programming & computational thinking	Creating media & digital content	Data & information	Purposeful use & evaluation	Digital literacy & online safety

Whole-key-stage thread

Online safety is explicitly revisited through privacy, secure communication, reliable searching, respectful collaboration, reporting concerns, digital wellbeing and critical evaluation of content, including AI- generated material.

Year 3 Computing Curriculum Map

Units, core learning and vocabulary

Year 3 progression

Pupils build foundations in networks, computer components, block coding, safe communication, video creation and structured data.

Half term	Unit	Core learning	Core vocabulary
Autumn 1	Computing systems & networks 1: Networks	Explain how devices are connected; recognise that information is transferred between devices and identify the role of network components.	network, device, server, router, switch, data, connection
Autumn 2	Programming: Scratch	Use decomposition and block coding to create sequences, movement, dialogue and events; test and debug a purposeful program.	Scratch, sprite, block, event, sequence, coordinates, debug
Spring 1	Computing systems & networks 2: Emailing	Compose, send and reply to emails; use attachments and address books; communicate clearly, kindly and safely.	email, inbox, recipient, subject, attachment, reply, spam
Spring 2	Computing systems & networks 3: Journey inside a computer	Identify inputs, outputs, memory and storage; explain how instructions and data move through a computer system.	input, output, CPU, memory, storage, component, instruction
Summer 1	Creating media: Video trailers	Plan for an audience; capture suitable footage and combine clips, text, transitions and sound to create and review a trailer.	storyboard, footage, shot, edit, transition, soundtrack, audience
Summer 2	Data handling: Comparison cards databases	Use fields and records; enter, sort, filter and interpret data; create graphs and select information for a purpose.	database, record, field, spreadsheet, sort, filter, graph

Year 4 Computing Curriculum Map

Units, core learning and vocabulary

Year 4 progression

Pupils develop collaborative working, repetition, selection and variables, webpage design, computational thinking and data analysis.

Half term	Unit	Core learning	Core vocabulary
Autumn 1	Computing systems & networks: Collaborative learning	Work safely in shared files; understand permissions, comments and version history; collaborate to produce and improve digital work.	collaborate, cloud, shared file, permission, comment, version
Autumn 2	Programming 1: Further coding with Scratch	Create programs using repetition, selection and variables; use decomposition and systematic debugging to improve outcomes.	loop, repetition, selection, condition, variable, debug
Spring 1	Creating media: Website design	Plan a website for a purpose and audience; organise pages, add content and hyperlinks, and evaluate navigation and design.	website, webpage, hyperlink, navigation, layout, content, audience
Spring 2	Skills showcase: HTML	Recognise HTML as a text-based language; use simple tags to structure and format a webpage and identify errors in code.	HTML, tag, element, heading, paragraph, browser, source code
Summer 1	Programming 2: Computational thinking	Apply decomposition, pattern recognition, abstraction and algorithms to solve problems and evaluate efficient approaches.	decompose, pattern, abstraction, algorithm, logical, efficiency
Summer 2	Data handling: Investigating weather	Collect and log weather data; use spreadsheets and charts to analyse patterns, compare results and present conclusions.	sensor, data logger, spreadsheet, formula, chart, analyse, pattern

Lower-KS2 thread: Pupils move from explaining familiar systems and following structured processes towards selecting tools, collaborating online and applying core computational-thinking concepts.

Year 5 Computing Curriculum Map

Units, core learning and vocabulary

Year 5 progression

Pupils extend their understanding of search, binary representation, creative programming and physical systems, combining skills in purposeful digital solutions.

Half term	Unit	Core learning	Core vocabulary
Autumn 1	Computing systems & networks: Search engines	Explain how search engines crawl, index and rank content; refine searches and evaluate the relevance and reliability of results.	search engine, query, keyword, index, rank, algorithm, reliable
Autumn 2	Programming 1: Music	Use loops, nested structures and variables to compose and refine music; connect algorithms with the code that produces an outcome.	loop, nested loop, variable, function, algorithm, remix
Spring 1	Data handling: Mars Rover 1	Explore binary representation and computer architecture; interpret transmitted data and understand how digital systems support space exploration.	binary, bit, byte, transmission, signal, data, architecture
Spring 2	Programming 2: BBC micro:bit	Program a physical device using inputs, outputs, loops and variables; create, test and improve programs for specific tasks.	micro:bit, input, output, sensor, variable, loop, program
Summer 1	Creating media: Stop motion animation	Develop a concept, storyboard and capture frames with consistency; add effects and sound, then evaluate against an intended audience.	frame rate, onion skinning, storyboard, edit, effect, soundtrack
Summer 2	Skills showcase: Mars Rover 2	Combine programming, data and design skills to plan, build and evaluate a digital solution linked to a real-world context.	prototype, system, input, output, data, test, evaluate

Progression: Upper KS2 strengthens abstraction, data representation and programming. Pupils increasingly combine software, justify choices, consider the reliability and impact of digital systems and create products for a defined user or purpose.

Year 6 Computing Curriculum Map

Units, core learning and vocabulary

Year 6 progression

Pupils apply learning through computing history, AI, Python, large data sets and the design of a digital product for a defined user.

Half term	Unit	Core learning	Core vocabulary
Autumn 1	Computing systems & networks: Bletchley Park and the history of computers	Describe key developments in computing and codebreaking; use ciphers and understand how technology has changed communication and society.	cipher, encryption, codebreaking, computer, machine, history
Autumn 2	Computing systems & networks: Exploring AI	Recognise how AI systems use data and patterns; explore applications, limitations, bias and the need to check AI-generated content.	artificial intelligence, machine learning, data, pattern, bias, prompt
Spring 1	Programming: Intro to Python	Write and debug text-based programs using variables, input, output, selection and repetition; explain how the code works.	Python, syntax, variable, input, output, selection, iteration
Spring 2	Data handling 1: Big Data 1	Understand how barcodes, QR codes and RFID identify objects; collect and interpret large data sets and consider how data is shared.	big data, barcode, QR code, RFID, database, scan, privacy
Summer 1	Data handling 2: Big Data 2	Explore how data is captured by sensors and used in smart systems; analyse patterns and consider accuracy, privacy and ethical use.	sensor, GPS, network, real-time, analyse, accuracy, ethics
Summer 2	Skills showcase: Inventing a product	Identify a user need; design, prototype and present a digital product by combining research, coding, media, data and evaluation.	user, brief, prototype, product, pitch, feedback, evaluate

KS2 Computing Progression at a Glance

Concise progression from Year 3 to Year 6 and readiness for Key Stage 3

Progression focus

The statements identify the essential conceptual journey across KS2 rather than every lesson objective. Assessment should focus on whether pupils retain, explain and apply these ideas with increasing independence.

Strand	Year 3 foundations	Year 4 development	Year 5 extension	Year 6 / end of KS2
Computing systems & networks	Explain basic networks and data transfer. Identify key internal and external computer components.	Collaborate in shared online spaces using permissions and version history. Recognise how websites and browsers communicate.	Explain how search engines index and rank results. Connect binary data and architecture to real systems.	Explain the development and uses of computer systems, networks, AI and data services. Evaluate opportunities, limitations and effects on users and society.
Programming & computational thinking	Create and debug sequences and events in Scratch. Use decomposition to plan a program.	Use repetition, selection and variables. Apply abstraction and pattern recognition to solve problems.	Use nested structures and variables in creative programs. Program physical systems using inputs and outputs.	Write and debug text-based Python using sequence, selection, iteration, variables and input/output. Explain algorithms and correct errors systematically.
Creating media & digital content	Plan, capture and edit video for a clear audience.	Design connected webpages and use simple HTML tags. Make informed layout and navigation choices.	Create and refine stop-motion animation using effects, audio and review.	Select and combine applications to design, prototype and present a product for a defined user.

By Year 6, pupils should connect computer science, information technology and digital literacy rather than experience them as isolated areas.

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Data & information	Use records and fields; enter, sort, filter, graph and interpret database data.	Collect data with digital tools and use spreadsheets and charts to identify patterns.	Understand binary and interpret data transmitted by digital systems.	Explain how large data sets are captured, stored, shared and analysed. Consider accuracy, privacy and ethical use.
Purposeful use & evaluation	Choose suitable tools and explain simple improvements.	Collaborate and evaluate design, navigation, code and data presentation.	Combine tools and test against a success criterion or audience need.	Analyse a problem, select and combine technologies, test iteratively and justify final decisions.
Digital literacy & online safety	Communicate respectfully; identify suspicious messages and seek help.	Manage permissions, privacy and digital footprints; question online content.	Search critically, respect ownership and respond appropriately to online risks.	Use technology safely, respectfully, responsibly and securely; report concerns and critically evaluate digital and AI-generated content.

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Using the KS2 Progression Document

Teaching, inclusion, assessment and evidence

Assessment principle

Assess secure knowledge, explanation and purposeful application. Evidence may come from pupil talk, saved work, observed processes, code, debugging, data interpretation and evaluation; a polished final product alone does not demonstrate progression.

Simple assessment prompts

RECALL	EXPLAIN	APPLY
Can the pupil retrieve the key concept and use technical vocabulary accurately?	Can the pupil explain how a system, algorithm, program or digital process works?	Can the pupil transfer learning to a new task, tool or context?

DEBUG / REFINE	JUSTIFY	INDEPENDENCE
Can the pupil locate a problem, test changes and improve the outcome?	Can the pupil explain why a tool, method or design choice is appropriate?	Can the pupil select resources, manage files and seek support appropriately?

Possible evidence across KS2

Programming: an algorithm, coded solution, prediction, debugging record or explanation of a variable, loop or condition

Systems & networks: a diagram, technical explanation, search comparison or discussion of AI, network or data processes

Digital content: a website, video, animation, webpage, presentation or product created for a clear audience

Data: a database, spreadsheet, chart, binary task or interpretation of sensor and large-scale data

Online safety: reasoned responses to scenarios and consistently safe, respectful and responsible choices

Inclusive practice

use explicit modelling, worked examples, paired programming, visual algorithms, vocabulary prompts, accessible hardware and reduced-step challenges while retaining the same core computing concept.

End-of-KS2 Readiness for Key Stage 3

Knowledge, application and evidence

End-of-KS2 area	Pupils know…	Pupils can…	Possible evidence
Computer science	Programs use precise algorithms and may include sequence, selection, repetition, variables, inputs and outputs.	Design, write, explain and debug programs that accomplish a goal, including a text-based program and a physical-system task.	Scratch/Python code, micro:bit program, algorithm and debugging explanation
Systems & networks	Networks and the internet provide services; search results are selected and ranked; computers and AI process data in different ways.	Explain key systems, use search effectively and evaluate the reliability, limitations and impact of digital services.	Network or search explanation, AI task, historical comparison
Information technology & data	Software and devices can be combined to create content and collect, analyse, evaluate and present data.	Select and combine tools to create purposeful digital outcomes and analyse information for a given audience or need.	Website, animation, database, spreadsheet, chart or product prototype
Digital literacy & safety	Online behaviour has consequences; privacy, security, ownership, reliability and reporting routes matter.	Use technology safely, respectfully, responsibly and securely; recognise unacceptable behaviour and report concerns.	Scenario response, critical evaluation, observed routines and choices

Transition to KS3

Pupils leave Year 6 ready to deepen their understanding of algorithms, Boolean logic, binary representation, hardware and software, data structures, textual programming and the secure creation and evaluation of digital artefacts.

Aligned to Park Road Academy's KS2 computing sequence, the statutory KS2 Computing programme of study and publicly available Kapow Primary KS2 unit overviews.