



Computing Curriculum KS2

Key Stage 2

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Year 3/4

Cycle one

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Computing systems and networks - connecting computers	Creating media - Stop-frame animation.	Programming A - Sequencing sounds.	Data and information - Branching databases.	Creating media - Desktop publishing	Programming B - Events and actions in programs.
Knowledge Pupils will ...	be able to identify that digital devices have inputs, processes, and outputs	learn how to capture and edit digital still images to produce a stop-frame animation that tells a story	learn to create sequences in a block-based programming language to make	learn to build and use branching databases to group objects using yes/no questions	learn to create documents by modifying text, images, and page layouts for a	learn write algorithms and programs that use a range of events to trigger sequences of actions



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	<p>understand how devices can be connected to make networks</p> <p>learn how networks can be used to share information</p>	<p>learn to review and improve an animation</p>	<p>music</p> <p>learn that a sequence of commands can have an order and that all commands have an outcome</p>	<p>understand why it is important for a database to be well structured and create their own identification tool</p>	<p>specified purpose</p> <p>learn how to use a publishing application and consider how different layouts suit different purposes</p>	<p>learn to adapt programmes to add features and identify and fix bugs within a programme</p>
<p>Skills</p> <p>Pupils will ...</p>	<p>Work with various forms of output</p> <p>Change input to achieve a different result</p>	<p>Create and edit procedures</p> <p>Refer to their design when programming</p>	<p>Recognise they need to test and check sequences to identify errors</p>	<p>Collect and record data in a database</p> <p>Create a new branching story</p>	<p>Decide in which media to present their work</p> <p>Save information in an appropriate place with some assistance</p>	<p>Create a simple algorithm with a loop</p> <p>Identify problems that could occur with algorithms</p>
<p>Key vocabulary</p>	<p>digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets</p>	<p>animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition</p>	<p>Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code</p>	<p>attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree</p>	<p>text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits</p>	<p>motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions</p>



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Cycle two						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Computing systems and networks - The internet. <ul style="list-style-type: none"> • To describe how networks physically connect to other networks. • To recognise how networked devices make up the internet. • To outline how websites can be shared via World Wide Web (WWW) • To describe how content can be added and accessed on the World Wide Web (WWW). • To recognise how the content of the WWW is created by people. • To evaluate the consequences of 	Creating media - Audio production. <ul style="list-style-type: none"> • To identify that sound can be recorded. • To explain that audio recordings can be edited. • To recognise the different parts of creating a podcast project. • To apply audio editing skills independently. • To combine audio to enhance my podcast project. • To evaluate the effective use of audio. 	Programming A - Repetition in shapes. <ul style="list-style-type: none"> • To identify that accuracy in programming is important. • To create a program in a text-based language. • To explain what 'repeat' means. • To modify a count-controlled loop to produce a given outcome. • To decompose a task into small steps. • To create a program that uses count-controlled loops to produce a given outcome. 	Data and information - Data logging. <ul style="list-style-type: none"> • To explain that data gathered over time can be used to answer questions. • To use a digital device to collect data automatically. • To explain that a data logger collects 'data points' from sensors over time. • To recognise how a computer can help us analyse data. • To identify the data needed to answer questions. • To use data from sensors to answer questions. 	Creating media - Photo editing. <ul style="list-style-type: none"> • To explain that the composition of digital images can be changed. • To explain that colours can be changed in digital images. • To explain how cloning can be used in photo editing. • To explain that images can be combined. • To combine images for a purpose. • To evaluate how changes can improve an image. 	Programming B - Repetition in games. <ul style="list-style-type: none"> • To develop the use of count-controlled loops in a different programming environment. • To explain that in programming there are infinite loops and count controlled loops. • To develop a design that includes two or more loops which run at the same time. • To modify an infinite loop in a given program. • To design a project that includes repetition. • To create a project that includes repetition.



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	unreliable content.					
Knowledge Pupils will ...	<p>recognise the internet as a network of networks including the WWW, and why we should evaluate online content</p> <p>learn how the WWW is created by people and how to safely use the internet both at school and at home</p>	<p>learn how to capture and edit audio to produce a podcast, ensuring that copyright is considered</p> <p>learn to recognise the different parts of making a podcast and will be able to plan to include all of these parts with support</p>	<p>learn to use a text-based programming language to explore count-controlled loops when drawing shapes</p> <p>learn what repeat means and how this process can be used to produce a given outcome</p>	<p>learn to recognise how and why data is collected over time, before using data loggers to carry out an investigation</p> <p>learn how computers can help us analyse data and use this to answer questions</p>	<p>learn to manipulate digital images, and reflect on the impact of changes and whether the required purpose is fulfilled</p> <p>learn to clone images, merge images, edit colour and composition to reach a desired outcome</p>	<p>learn to use a block-based programming language to explore count-controlled and infinite loops when creating a game</p> <p>learn to develop their own design ensuring this includes repetition.</p>
Skills Pupils will ...	<p>Recognise that not everything on the internet is accurate</p> <p>Evaluate the quality of a website's content</p>	<p>Experiment with effects available from multimedia packages</p> <p>Give examples of information which can be copied because permission has been given</p>	<p>Create a simple algorithm with a loop</p> <p>Explain why repetition makes programs more efficient</p>	<p>Discuss information gathered on a data logger</p> <p>Discuss information gathered on a data logger</p>	<p>Experiment with effects available from multimedia packages</p>	<p>Create a simple algorithm with a loop</p> <p>Give instructions involving repetition</p>
Key vocabulary	internet, network, router, security, switch, server, wireless access point	audio, microphone, speaker, headphones, input device, output	logo (programming environment), program, turtle, commands, code	data, table, layout, input device, sensor, logger, logging, data point, interval,	image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue,	scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop,



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	(WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts	device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback	snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure	analyse, dataset, import, export, logged, collection, review, conclusion	saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font	count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate
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Year 5/6						
Cycle one						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Computing systems and networks - Systems and searching <ul style="list-style-type: none"> To explain that computers can be connected together to form systems. To recognise the role of computer systems in our 	Creating media - Video production <ul style="list-style-type: none"> To explain what makes a video effective. To identify digital devices that can record video. To capture video using a range of techniques. To create a 	Programming A - Selection in Physical computing <ul style="list-style-type: none"> To control a simple circuit connected to a computer. To write a program that includes count-controlled loops. To explain that a loop can stop 	Data and information - Flat- file databases. <ul style="list-style-type: none"> To use a form to record information. To compare paper and computer-based databases. To outline how you can answer questions by 	Creating media - Introduction to vector graphics. <ul style="list-style-type: none"> To identify that drawing tools can be used to produce different outcomes. To create a vector drawing by combining shapes. 	Programming B - Selection in quizzes. <ul style="list-style-type: none"> To explain how selection is used in computer programs. To relate that a conditional statement connects a condition to an outcome. To explain how



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	<p>lives.</p> <ul style="list-style-type: none"> • To experiment with search engines. • To describe how search engines select results. • To explain how search results are ranked. • To recognise why the order of results is important, and to whom. 	<p>storyboard.</p> <ul style="list-style-type: none"> • To identify that video can be improved through reshooting and editing. • To consider the impact of the choices made when making and sharing a video. 	<p>when a condition is met.</p> <ul style="list-style-type: none"> • To explain that a loop can be used repeatedly to check whether a condition has been met. • To design a physical project that includes selection. • To create a program that controls a physical computing project. 	<p>grouping and then sorting data.</p> <ul style="list-style-type: none"> • To explain that tools can be used to select specific data. • To explain that computer programs can be used to compare data visually. • To use a real world database to answer questions. 	<ul style="list-style-type: none"> • To use tools to achieve a desired effect. • To recognise that vector drawings consist of layers. • To group objects to make them easier to work with. • To apply what I have learned about vector drawings. 	<p>selection directs the flow of a program.</p> <ul style="list-style-type: none"> • To design a program which uses selection. • To create a program which uses selection. • To evaluate my program.
<p>Knowledge Pupils will ...</p>	<p>learn about different systems and searching</p> <p>recognise IT systems in the world and how some can enable searching on the internet</p> <p>show an understanding of how search engine results are ranked and how to get the</p>	<p>learn how to use video production</p> <p>learn to plan, capture and edit videos to produce a short film</p> <p>learn how to create a storyboard and show an understanding of the impact of choices made when editing and producing a</p>	<p>learn selection in physical computing</p> <p>learn to explore conditions and selection using a programmable microcontroller</p> <p>learn to design a physical project that includes selection</p>	<p>learn about flat-file databases</p> <p>learn to use a database to order data and create charts to answer questions</p> <p>compare paper and computer databases to understand why computer databases are used</p>	<p>learn an introduction to vector graphics</p> <p>create images in a drawing program by using layers and groups of objects</p> <p>learn that vector drawing consist of layers and use different drawing tools to achieve a desired effect</p>	<p>learn about selection in quizzes</p> <p>explore selection in programming to design and code an interactive quiz</p> <p>plan, make and evaluate their programme using what they have learnt throughout the unit</p>



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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Computing systems and networks - Communication and collaboration <ul style="list-style-type: none"> • To explain the importance of internet addresses. • To recognise how data is transferred across the internet. • To explain how sharing information online can help people to work together. • To evaluate different ways of working together online. • To recognise how we communicate using technology. • To evaluate different methods of online communication. 	Creating media - Web page creation. <ul style="list-style-type: none"> • To review an existing website and consider its structure. • To plan the features of a web page. • To consider the ownership and use of images (copyright). • To recognise the need to preview pages. • To outline the need for a navigation path. • To recognise the implications of linking to content owned by other people. 	Programming A - Variables in games. <ul style="list-style-type: none"> • To define a 'variable' as something that is changeable. • To explain why a variable is used in a program. • To choose how to improve a game by using variables. • To design a project that builds on a given example. • To use my design to create a project. • To evaluate my project. 	Data and information - spreadsheets. <ul style="list-style-type: none"> • To create a data set in a spreadsheet. • To build a data set in a spreadsheet. • To explain that formulas can be used to produce calculated data. • To apply formulas to data. • To create a spreadsheet to plan an event. • To choose suitable ways to present data. 	Creating media - 3D Modelling. <ul style="list-style-type: none"> • To recognise that you can work in three dimensions on a computer. • To identify that digital 3D objects can be modified. • To recognise that objects can be combined in a 3D model. • To create a 3D model for a given purpose. • To plan my own 3D model. • To create my own digital 3D model. 	Programming B- Sensing movement
Knowledge	learn about	learn to design and	learn to explore	learn to answer	learn that you can	learn to design and



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Pupils will ...	<p>communication and collaboration</p> <p>explore how data is transferred by working collaboratively online</p> <p>learn different ways people can work together online and how to do this safely</p>	<p>create web pages, giving consideration to copyright, aesthetics, and Navigation</p> <p>learn why there is a need to preview pages and why web pages need a navigation path</p>	<p>variables when designing and coding a game</p> <p>build on project that has been given as an example and learn to improve a game using variables</p> <p>understand how to evaluate their project and that of their peers</p>	<p>questions by using spreadsheets to organise and calculate data</p> <p>learn to use formulas to produce calculated data and explore suitable ways to present data in their own project</p>	<p>work in three dimensions on a computer and that these objects can be modified</p> <p>learn to plan, develop and evaluating 3D computer models of physical objects</p>	<p>code a project that captures inputs from a physical device</p> <p>apply their knowledge of the programming constructs and use their design to create their own micro: bit-based step counter</p>
Skills Pupils will ...	<p>Work collaboratively with someone</p> <p>Communicate and share with others using appropriate online tools</p>	<p>Recognise that material on the internet is the property of someone</p> <p>Recognise you do not have to have the copyright symbol on work for it to be copyright</p>	<p>Introduce a variable into their program</p> <p>Design programs that achieve specific goal</p>	<p>Collect and present data in a spreadsheet</p> <p>Explain in simple terms how a basic spreadsheet works</p>	<p>Store work in appropriate files/folders</p>	<p>Combine a variety of digital devices to produce their work</p> <p>Design programs that achieve specific goals</p>
Key vocabulary	<p>communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck,</p>	<p>website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page,</p>	<p>variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share,</p>	<p>data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation,</p>	<p>TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid,</p>	<p>Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction,</p>



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	reuse, remix, collaboration, internet, public, private, oneway, two-way, one-to-one, one-to-many	preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed	assign, declare	range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools	sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify	navigation, design, task, algorithm, step counter, plan, create, code, test, debug
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