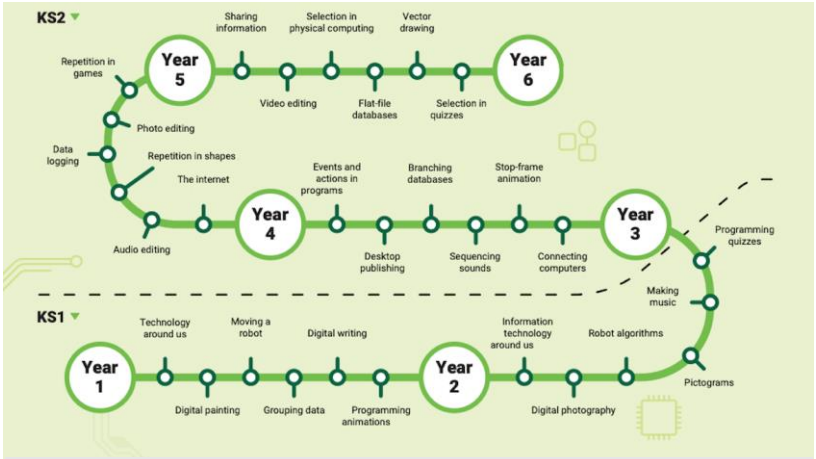
Computing progression Map at Hopton CofE Primary Academy

This progression framework maps the progression of skills and knowledge for the computing curriculum from Year 1 to Year 6 and is used for both planning and monitoring progression. The coverage statements within this framework have been taken from the National Centre Computing Excellence Scheme of Work https://teachcomputing.org/curriculum. Teach Computing is a spiral curriculum that revisits and builds upon the children's previous learning as they move through the school. Pupils are also taught about online safety through Project Evolve www.projectevolve.co.uk



How do units link progressively?

Computing Systems and Networks
Strand Overview

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technology Around Us 6 hrs Recognising technology all around us and beginning to use keyboard and mouse.	**Information Technology Around Us** 6 hrs Recognising that there are peripherals that work with devices.	**Connecting Computers** 6 hrs Understand the IPO model. Recognise computers are connected within a network	**What is the Internet?** 6 hrs Recognising the internet as a network of networks Internet fundamentals	**Sharing Information** 6 hrs How computing systems share information How the internet shares information Collaboration	**Communication** 6 hrs Search Engines Websites Online Communication

Progression strands

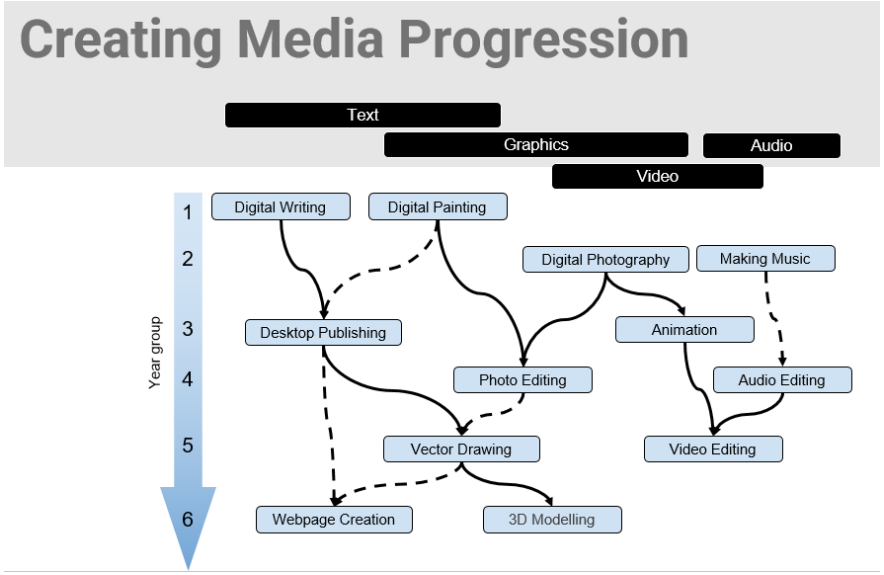
We have split the computing curriculum into 4 areas:

- Computing Systems and Networks
- Creating Media
- Data and Information
- Programming

Computing Systems and Networks

Throughout their time in primary education pupils need to learn the ideas and principals that underpin how digital technology works as well as extend their understanding of how computer networks such as the internet, and the services they provide such as the World Wide Web work. Teachers need to provide practical, fun experiences that allow pupils to make links with existing understanding of the world around them. In doing so, pupils will ultimately become much more effective creators and users of digital content as well as learning how it can influence their behaviour and development and what skills they need to navigate it safely, respectfully and privately and where to go for help should the need arise.

Creating Media



As well as being consumers, pupils need to be creators and develop confidence, competence, and independence to tinker and experiment when using familiar and unfamiliar technologies. They need to have the opportunity to design and create, edit and manipulate media, including text, images, sound, animation, video etc. in a wide variety of contexts and across a wide range of technology to express their own insights and ideas. The internet makes it easy for pupils to work collaboratively online in real-time and can share their work with others for review and comments, just as they have always been able to do in class.

Data and Information

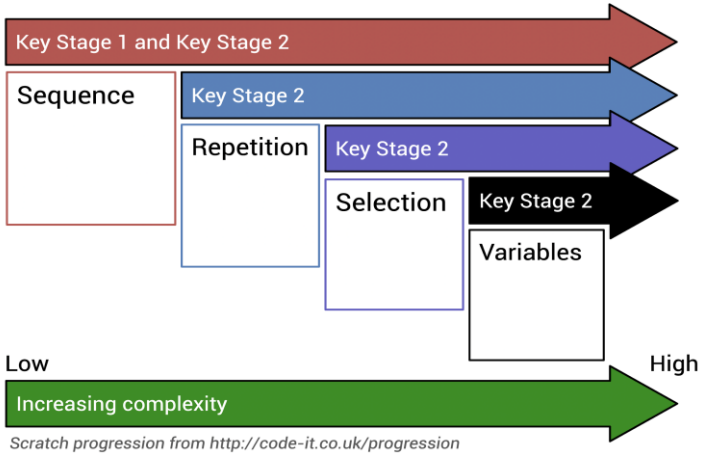
Just like creating media, pupils need to work with numerical data and experience working with both small and large datasets, some of which can be generated by them or wider across the curriculum**.** They need to be able to collect, analyse, evaluate and present data and information across a wide range of technology and in a variety of contexts in order to prepare them for the future.

Programming

This strand covers computational thinking as well as plugged, unplugged and physical programming. Computational thinking is about looking at a problem in a way in which a computer can help us to solve it. This is a two-step process; first, we think about the steps needed to solve a problem, then, we use our technical skills to get the computer working on the problem. Programming encourages creativity; logical thought, precision and problem-solving, and helps foster the personal, learning and thinking skills required in the school curriculum.

*Key Stage 2 National Curriculum Objective: Use **sequence**, **selection**, and **repetition** in programs; work with **variables** and various forms of **input** and **output***





Desirable Function skills

Also integral to our computing curriculum are a set of key computing skills that we have identified as may not have been fully developed due to the Coronavirus pandemic. These skills are to be taught discreetly within existing computing lessons or in a cross-curricular manner with regular keyboard typing practice. These are:

Year 1	**Year 3**	**Year 5**
How to log on to the school network. Know the letters on the keyboard Know the Enter key on the keyboard. Know Backspace key on the keyboard. Use spacebar key (1 space between words) Use full stops Use the fill tool	How to copy and paste Resize and/or crop a picture Use WordArt Change font, font size and style (bold, italics etc) Move an object. Insert a text box. Save work to a specific location Use the spell check	Insert a table Add/delete rows & columns Split and merge cells Move files from one location to another Learn keyboard shortcuts Use the snipping tool Insert hyperlinks Use the thesaurus
Year 2	**Year 4**	**Year 6**
How to print work. Use shift key for capital letters (not Caps Lock!) Use delete key Insert a picture. Open a file Open a folder Save work by naming it Use basic punctuation	Use Order (front and back) Use group/ungroup Align left, right, centre and justify Insert a border Change background Find a file by searching for it Wrap text an image	Use more advanced punctuation (top row) Use Headers and footers Use word count Password protect a document Use maths symbols Use find and replace

	Computing Systems and Networks	Data and Information	Programming A	Programming B	Creating Media	Creating Media
Year 1	Technology Around Us	Grouping Data	Moving a Robot	Introduction to animation	Digital Painting	Digital Writing
Year 2	Information Technology Around Us	Pictograms	Robot algorithms	Quizzes	Digital Photographs	Making Music
Year 3	Connecting Computers	Branching Databases	Sequence in music	Events and actions	Desktop Publishing	Stop Frame Animation
Year 4	The Internet	Data Logging	Repetition in shapes	Repetition in games	Audio Editing	Photo Editing
Year 5	Sharing Information	Flat-file Databases	Selection in physical computing	Selection in quizzes	Vector Drawing	Video Editing
Year 6	Communication	Spreadsheets	Variables in games	Sensing	3D Modelling	Web Page Design

Progression at Hopton CofE Primary Academy
Computing

Year 1

Key Performance Indicators

- Understands what algorithms are e.g. using them to program a toy
- Creates simple programs – using a simple set of instructions
- Uses technology safely and Keeps personal information private and know how to keep myself safe
- Recognises common uses of information technology beyond school
- Uses technology purposefully to create digital content
- Use technology purposefully to store digital content

Use technology purposefully to retrieve digital content

	Context	National Curriculum Links	Essential Coverage	Vocabulary
Autumn	Computing systems and networks – Technology around us	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• Identify technology • Identify a computer and its main parts • Use a mouse in different ways • Use a keyboard to type on a computer • Use the keyboard to edit text • Create rules for using technology responsibly	• Technology • Computer • Mouse • Trackpad • Keyboard • Screen • Double-click • Typing
	Creating media – Digital painting	• use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Describe what different freehand tools do • Use the shape tool and the line tools • Make careful choices when painting a digital picture • Explain why I chose the tools I used • Use a computer on my own to paint a picture • Compare painting a picture on a computer and on paper	• Paint program • Tool • Paintbrush • Erase • Fill • Undo • Henri Matisse • Shape Tool • Fill Tool • Wassily Kandinsky • Feelings • Colour • Brush style • Georges Seurat

				• Pointillism • Brush Size • Pictures • Painting • Computers • Like • Prefer • Dislike
Spring	Programming A – Moving a robot	• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • recognise common uses of information technology beyond school	• Explain what a given command will do • Act out a given word • Combine forwards and backwards commands to make a sequence • Combine four direction commands to make sequences • Plan a simple program • Find more than one solution to a problem	• Forwards • Backwards • Turn • Clear • Go • Commands • Instructions • Directions • Left • Right • Plan • Algorithm • Program • Route
	Data and information – Grouping data	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• Label objects • Identify that objects can be counted • Describe objects in different ways • Count objects with the same properties • Compare groups of objects • Answer questions about groups of objects	• Object • Label • Group • Search • Image • Object • Property • Colour • Size • Shape • Value • Group • Data set • More • Less • Most • Fewest • Least • The same
Summer	Creating media – Digital writing	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • use technology safely and	• Use a computer to write • Add and remove text on a computer • Identify that the look of text can be changed on a	• Word Processor • Keyboard • Keys • Letters

		respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	computer • Make careful choices when changing text • Explain why I used the tools that I chose • Compare typing on a computer to writing on paper	• Type • Numbers • Space • Backspace • Text • Cursor • Capital letters • Toolbar • Bold • Italic • Underline • Mouse • Select • Font • Undo • Redo • Format • Compare • Typing • Writing
	Programming B – Introduction to animation	• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Choose a command for a given purpose • Show that a series of commands can be joined together • Identify the effect of changing a value • Explain that each sprite has its own instructions • Design the parts of a project • Use my algorithm to create a program	• ScratchJr • Bee-Bot • Command • Sprite • Compare • Programming • Programming Area • Block • Joining • Start Block • Run • Program • Background • Delete • Reset • Algorithm • Predict • Effect • Change • Value • Instructions • Appropriate • Design • Programming Blocks •

Year 2

Key Performance Indicators

- Understands that algorithms are implemented as programs on digital devices
- Debugs simple programs – finding errors and amending errors when needed, can test and amend a set of instructions.
- Uses logical reasoning to predict the behaviour of simple programs.
- Uses technology respectfully
- Identifies where to go for help and support when they have concerns
- Know how technology is used inside and outside of school
- Use technology purposefully to organise digital content
- Use technology purposefully to manipulate digital content

Use technology purposefully to retrieve digital content – for example using the web to complete simple searches

	Context	National Curriculum Links	Essential Coverage	Vocabulary
Autumn	Computing systems and networks – IT around us	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• Recognise the uses and features of information technology • Identify the uses of information technology in the school • Identify information technology beyond school • Explain how information technology helps us • Explain how to use information technology safely • Recognise that choices are made when using information technology	• Information Technology – IT • Computer • Barcode • Scanner • Scan
	Creating media – Digital photography	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• Use a digital device to take a photograph • Make choices when taking a photograph • Describe what makes a good photograph • Decide how photographs can be improved • Use tools to change an image • Recognise that photos can be changed	• Device • Camera • Photograph • Capture • Image • Digital • Landscape • Portrait • Framing • Subject • Compose • Light Sources • Flash • Focus • Background • Editing • Filter • Format • Lighting • Focus

Spring	Programming A – Robot algorithms	• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Describe a series of instructions as a sequence • Explain what happens when we change the order of instructions • Use logical reasoning to predict the outcome of a program (series of commands) • Explain that programming projects can have code and artwork • Design an algorithm • Create and debug a program that I have written	• Instruction • Sequence • Clear • Unambiguous • Algorithm • Program • Order • Algorithm • Prediction • Artwork • Design • Route • Mat • Debugging • Decomposition
	Data and information – Pictograms	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• Recognise that we can count and compare objects using tally charts • Recognise that objects can be represented as pictures • Create a pictogram • Select objects by attribute and make comparisons • Recognise that people can be described by attributes • Explain that we can present information using a computer	• More Than • Less Than • Most • Least • Organise • Data • Object • Tally chart • Votes • Total • Pictogram • Enter • Compare • Count • Explain • More • Less • More common • Least common • Attribute • Group • Same • Different • Most popular • Least popular • Conclusion • Block diagram • sharing
Summer	Creating media – Making	• use technology purposefully to create, organise, store, manipulate	• Say how music can make us feel • Identify that there are patterns in music	• Music • Planets

	music	and retrieve digital content	• Show how music is made from a series of notes • Show how music is made from a series of notes • Create music for a purpose • Review and refine our computer work	• Mars • Venus • War • Peace • Quiet • Loud • Feelings • Emotions • Pattern • Rhythm • Pulse • Neptune • Pitch • Tempo • Notes • Instrument • Create • Beat • Open • Edit
	Programming B – An introduction to quizzes	• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs	• Explain that a sequence of commands has a start • Explain that a sequence of commands has an outcome • Create a program using a given design • Change a given design • Create a program using my own design • Decide how my project can be improved	• Sequence • Command • Program • Run • Start • Outcome • Predict • Blocks • Sprite • Algorithm • Blocks • Design • Actions • Project • Modify • Change • Project • Compare • Debug • Features • Evaluate •

Year 3

Key Performance Indicators

- Writes programs that accomplish specific goals e.g. design a sequence of instructions including directional instructions
- Uses sequences in programs that accomplish specific goals
- Works with various forms of input and output
- Uses technology responsibly and respectfully
- Uses a variety of software to accomplish given goals e.g. present information, search for information, and alter images.
- Identifies a range of ways to report concerns about contact

Can present information and improve the quality of digital images

	Context	National Curriculum Links	Essential Coverage	Vocabulary
Autumn	Computing systems and networks – Connecting computers	• use sequence, selection, and repetition in programs; work with variables and various forms of input and output • 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 • 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	• Explain how digital devices function • Identify input and output devices • Recognise how digital devices can change the way we work • Explain how a computer network can be used to share information • Explore how digital devices can be connected • Recognise the physical components of a network	• Digital device • Input • Process • Output • Program • Digital • Non-digital • Connection • Network • Network switch • Server • Wireless access point • Network Cables • Network sockets
	Creating media – Animation	• 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Explain that animation is a sequence of drawings or photographs • Relate animated movement with a sequence of images • Plan an animation • Identify the need to work consistently and carefully • Review and improve an animation • Evaluate the impact of adding other media to an animation	• Animation • Flip Book • Stop-frame animation • Frame • Sequence • Image • Photography • Setting • Character • Events • Onion skinning • Consistency • Evaluation • Delete • Media • Import • Transition
Spring	Programming A – Sequence	• design, write and debug programs that accomplish specific goals, including	• Explore a new programming environment • Identify that commands have an outcome	• Scratch • Programming

	in music	controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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	• Explain that a program has a start • Recognise that a sequence of commands can have an order • Change the appearance of my project • Create a project from a task description	• Blocks • Commands • Code • Sprite • Costume • Stage • Backdrop • Programming blocks • Motion • Turn • Point in direction • Go to • Glide • Sequence • Event • Task • Design • Run the code • Order • Note • Chord • Algorithm • Debug • Bug
	Data and information – Branching databases	• 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	• Create questions with yes/no answers • Identify the object attributes needed to collect relevant data • Create a branching database • Explain why it is helpful for a database to be well structured • Identify objects using a branching database • Compare the information shown in a pictogram with a branching database	• Attribute • Value • Questions • Table • Objects • Branching database • Database • Equal • Even • Separate • Structure • Compare • Order • Organise • Selecting • Information • Decision tree
Summer	Creating media – Desktop	• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• Recognise how text and images convey information • Recognise that text and layout can be edited	• Text • Images • Advantages • Disadvantages

	publishing	• 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	• Choose appropriate page settings • Add content to a desktop publishing publication • Consider how different layouts can suit different purposes • Consider the benefits of desktop publishing	• Communicate • Font • Font style • Communicate • Template • Landscape • Portrait • Orientation • Placeholder • Layout • Content • Desktop publishing • Copy • Paste • Purpose • Benefits
	Programming B – Events and actions	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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	• Explain how a sprite moves in an existing project • Create a program to move a sprite in four directions • Adapt a program to a new context • Develop my program by adding features • Identify and fix bugs in a program • Design and create a maze-based challenge	• Motion • Event • Sprite • Algorithm • Logic • Move • Resize • Algorithm • Extension block • Pen up • Set up • Pen • Design • Action • Debugging • Errors • Setup • Code • Test

Year 4

Key Performance Indicators

- Designs programs that accomplish specific goals e.g. design a sequence of instructions including directional instructions

• Debugs programs that accomplish specific goals • Appreciates how search results are selected • Identifies a range of ways to report concerns about content • Recognises acceptable / unacceptable behaviour when communicating electronically - knowing how to report poor behaviour • Selects a variety of software to accomplish given goals Presents data in effective ways, appropriate to the given audience				
	Context	**National Curriculum Links**	**Essential Coverage**	**Vocabulary**
Autumn	Computing systems and networks – The Internet	• 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 • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Describe how networks physically connect to other networks • Recognise how networked devices make up the internet • Outline how websites can be shared via the World Wide Web (WWW) • Describe how content can be added and accessed on the World Wide Web (WWW) • Recognise how the content of the WWW is created by people • Evaluate the consequences of unreliable content	• Internet • Network • Router • Network • Security • Network switch • Server • Wireless access point (WAP) • Router • Website • Web page • Web address • Routing • Web browser • World Wide Web • Content • Links • Files • Use • Download • Sharing • Ownership • Permission • Information • Accurate • Honest • Adverts •
	Creating media – Audio editing	• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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	• Identify that sound can be digitally recorded • Use a digital device to record sound • Explain that a digital recording is stored as a file • Explain that audio can be changed through editing • Show that different types of audio can be combined and played together • Evaluate editing choices made	• Audio • Microphone • Speaker • Headphones • Input device • Output device • Sound • Podcase • Edit • Trim

		and presenting data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		• Align • Layer • Import • Record • Playback • Selection • Load • Save • Export • MP3 • Editing • Evaluate • Feedback •
Spring	Programming A – Repetition in shapes	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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	• Identify that accuracy in programming is important • Create a program in a text-based language • Explain what 'repeat' means • Modify a count-controlled loop to produce a given outcome • Decompose a task into small steps • Create a program that uses count-controlled loops to produce a given outcome	• Program • Turtle • Commands • Code snippet • Algorithm • Design • Debug • Pattern • Repeat • Repetition • Count-controlled loop • Value • Trace • Decompose • Procedure • Forward • Backwards • Left • Right • Clear screen • Pen up • Pen down • Home
	Data and information – Data logging	• use sequence, selection, and repetition in programs; work with variables and various forms of input and output • select, use and combine a variety of software (including internet services) on a range of digital devices to design and	• Explain that data gathered over time can be used to answer questions • Use a digital device to collect data automatically • Explain that a data logger collects 'data points' from sensors over time	• Data • Table • Layout • Input device • Sensor • Data logger

		create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	• Use data collected over a long duration to find information • Identify the data needed to answer questions • Use collected data to answer questions	• Analyse • Data set • Import • Export • Logged • Collection • Analyse • Review • Conclusion
Summer	Creating media – Photo editing	• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Explain that digital images can be changed • Change the composition of an image • Describe how images can be changed for different uses • Make good choices when selecting different tools • Recognise that not all images are real • Evaluate how changes can improve an image	• Image • Edit • Digital • Crop • Rotate • Undo • Save • Adjustments • Effects • Colours • Hue • Saturation • Sepia • Vignette • Retouch • Clone • Select • Copy • Paste • Combine • Made up • Real • Composite • Cut • Alter • Background • Foreground • Zoom • Font •
	Programming B – Repetition in games	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in	• Develop the use of count-controlled loops in a different programming environment • Explain that in programming there are infinite loops and count controlled loops • Develop a design that includes two or more	• Scratch • Programming • Sprite • Blocks • Code • Loop

		programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	loops which run at the same time • Modify an infinite loop in a given program • Design a project that includes repetition • Create a project that includes repetition	• Repeat • Value • Forever • Infinite loop • Count-controlled loop • Costume • Repetition • Animate • Event block • Duplicate • Modify • Design • Define • Algorithm • Debug • Refine

Year 5

Key Performance Indicators

- Designs and creates programs which include repetition as well as procedures for turning things on and off.
- Uses logical reasoning to detect and correct errors in programs
- Controls or simulates physical systems
- Understand the opportunities computer networks offer for communication – using these safely to communicate when needed
- Is discerning in evaluating digital content – e.g. ranking search results
- Selects, uses and combines software on a range of digital devices

Evaluates data, including the way that it is presented

	Context	National Curriculum Links	Essential Coverage	Vocabulary
Autumn	Computing systems and networks – Sharing information	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • 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 • 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	• Explain that computers can be connected together to form systems • Recognise the role of computer systems in our lives • Recognise how information is transferred over the internet • Explain how sharing information online lets people in different places work together • Contribute to a shared project online • Evaluate different ways of working together online	• System • Connection • Digital input • Process • Output • Search • Search engine • Refine • Index • Crawler • Bot • Ordering • Ranking • Links • Algorithms • Search engine optimisation (SEO)

		content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		• Searching • Web crawler • Content creator • Selection
	Creating media – Video editing	• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Explain what makes a video effective • Identify digital devices that can record video • Capture video using a range of techniques • Create a storyboard • Identify that video can be improved through reshooting and editing • Consider the impact of the choices made when making and sharing a video	• Video • Audio • Camera • Talking head • Panning • Close up • Video camera • Microphone • Lens • Mid range • Long shot • Moving subject • Side by side • High angle • Low angle • Normal angle • Static camera • Zoom • Pan • Tilt • Storyboard • Filming • Review • Import • Split • Trim • Clip • Reshoot • Delete • Reorder • Export • Share
Spring	Programming A – Selection in physical computing	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	• Control a simple circuit connected to a computer • Write a program that includes count-controlled loops	• Microcontroller • Components • Connection • Infinite loop • Output component

		• use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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	• Explain that a loop can stop when a condition is met • Explain that a loop can be used to repeatedly check whether a condition has been met • Design a physical project that includes selection • Create a program that controls a physical computing project	• Motor • Repetition • Count-controlled loop • Microcontroller • Crumble controller • Switch • LED • Sparkle • Crocodile clips • Connect • Battery box • Program • Condition • Input • Output • Selection • Action • Debug •
	Data and information – Flat-file databases	• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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	• Use a form to record information • Compare paper and computer-based databases • Outline how grouping and then sorting data allows us to answer questions • Explain that tools can be used to select specific data • Explain that computer programs can be used to compare data visually • Apply my knowledge of a database to ask and answer real-world questions	• Database • Data • Information • Record • Field • Sort • Order • Group • Search • Value • Criteria • Graph • Chart • Axis • Compare • Filter • Presentation
Summer	Creating media – Vector drawing	• 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	• Identify that drawing tools can be used to produce different outcomes • Create a vector drawing by combining shapes • Use tools to achieve a desired effect • Recognise that vector drawings consist of layers • Group objects to make them easier to work	• Vector • Drawing tools • Object • Toolbar • Vector drawing • Move • Resize • Colour

			with • Evaluate my vector drawing	• Rotate • Duplicate • Copy • Zoom • Select • Align • Modify • Layer • Order • Paste • Group • Ungroup • Reuse • Reflection
	Programming B – Selection in quizzes	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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	• Explain how selection is used in computer programs • Relate that a conditional statement connects a condition to an outcome • Explain how selection directs the flow of a program • Design a program which uses selection • Create a program which uses selection • Evaluate my program	• Selection • Condition • True • False • Count-controlled loop • Outcomes • Conditional statement • Algorithm • Program • Debug • Question • Answer • Task • Design • Input • Implement • Test • Run, Setup

Year 6

Key Performance Indicators

- Solves problems by decomposing them into smaller parts
- Uses selection in programs
- Works with variables
- Understands the opportunities computer networks offer for collaboration – using these safely to communicate.
- Is discerning in evaluating digital content
- Designs and create systems
- Uses a range of technology for a specific content.
- Makes effective use of a range of software and digital devices to accomplish given goals

Can discuss the use of technology – identifying risks – and how to minimise risk when using them

	Context	National Curriculum Links	Essential Coverage	Vocabulary

Autumn	Computing systems and networks – Communication	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • 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 • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Identify how to use a search engine • Describe how search engines select results • Explain how search results are ranked • Recognise why the order of results is important, and to whom • Recognise how we communicate using technology • Evaluate different methods of online communication	• Communication • Protocol • Data • Address • Internet Protocol (IP) address • Packet • Header • Data payload • Domain name Server (DNS) • Chat • Explore • Slide deck • Reuse • Remix • Collaboration • Internet • Public • Private • One-way • Two-way • One-to-one • One-to-many
	Creating media – Web page creation	• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Review an existing website and consider its structure • Plan the features of a web page • Consider the ownership and use of images (copyright) • Recognise the need to preview pages • Outline the need for a navigation path • Recognise the implications of linking to content owned by other people	• Website • Web page • Browser • Media • Hypertext Markup Language (HTML) • Logo • Layout • Header • Purpose • Copyright • Fair use • Home page • Preview • Evaluate • Device • Google Sites • Breadcrumb trail • Navigation • Subpage • Hyperlink

				• Implication • External link • Embed
Spring	Programming A – Variables in games	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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	• Define a 'variable' as something that is changeable • Explain why a variable is used in a program • Choose how to improve a game by using variables • Design a project that builds on a given example • Use my design to create a project • Evaluate my project	• Variable • Change • Name • Value • Variable • Set • Design • Event • Algorithm • Code • Task • Artwork • Program • Project • Code • Test • Debug • Improve • Evaluate • Share
	Spreadsheets	• 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	• organise data into columns and rows to create their own data set. • understand the importance of formatting data to support calculations. • use formulas and begin to understand how these can be used to produce calculated data. • apply formulas which include a range of cells and apply formulas to multiple cells by duplicating them. • use spreadsheets to plan an event and answer questions. • create graphs and charts and evaluate their results in comparison to questions asked.	• Spreadsheet • Data • Data heading • Data set • Cells • Columns • Rows • Data item • Object • Spreadsheet application • Format • Common attribute • Formula • Calculation • Input • Output • Cell reference • Calculate • Operation • Range • Duplicate • Sigma

				• Propose • Question • Organised • Graph • Chart • Evaluate • Results • Comparison • Software • Tools
Summer	Creating media – 3D Modelling	• 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Use a computer to create and manipulate three-dimensional (3D) digital objects • Compare working digitally with 2D and 3D graphics • Construct a digital 3D model of a physical object • Identify that physical objects can be broken down into a collection of 3D shapes • Design a digital model by combining 3D objects • Develop and improve a digital 3D model	• 2D • 3D • Shapes • Select • Move • Perspective • View • Handles • Resize lift • Recolour • Rotate • Duplicate • Group • Cylinder • Placeholder • Hollow • Choose • Combine • Construct • Evaluate • Modify
	Programming B – Sensing	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • select, use and combine a variety of software (including internet services) on	• Create a program to run on a controllable device • Explain that selection can control the flow of a program • Update a variable with a user input • Use a conditional statement to compare a variable to a value • Design a project that uses inputs and outputs on a controllable device • Develop a program to use inputs and outputs on a controllable device	• Microbit • MakeCode • Input • Process • Output • Flashing • USB trace • Selection • Condition • If then else • Variable • Random • Sensing • Accelerometer

		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		• Value • Compass • Direction • Navigation • Design • Task • Algorithm • Step counter • Plan • Create • Code • Test • Debug

Curriculum Coverage

National Curriculum Coverage – Years 1 and 2	1.1 Technology around us	1.2 Digital painting	1.3 Moving a robot	1.4 Grouping data	1.5 Digital writing	1.6 Programming animations	2.1 Information technology around us	2.2 Digital photography	2.3 Robot algorithms	2.4 Pictograms	2.5 Making music	2.6 Programming quizzes
Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions			✓			✓			✓			✓
Create and debug simple programs			✓			✓			✓			✓
Use logical reasoning to predict the behaviour of simple programs			✓			✓			✓			✓
Use technology purposefully to create, organise, store, manipulate, and retrieve digital content	✓	✓		✓	✓		✓	✓		✓	✓	✓
Recognise common uses of information technology beyond school	✓		✓				✓	✓				
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	✓			✓	✓		✓	✓	✓	✓		

National curriculum coverage - Years 3 and 4	3.1 Connecting computers	3.2 Stop-frame animation	3.3 Sequencing sounds	3.4 Branching databases	3.5 Desktop publishing	3.6 Events and actions in programs	4.1 The internet	4.2 Audio production	4.3 Repetition in shapes	4.4 Data logging	4.5 Photo editing	4.6 Repetition in games
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts			✓			✓			✓			✓
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	✓		✓			✓			✓	✓		✓
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			✓			✓			✓			✓
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	✓						✓					
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content					✓		✓	✓			✓	
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		✓		✓			✓	✓			✓	

National curriculum coverage - Years 5 and 6	5.1 Sharing information	5.2 Video production	5.3 Selection in physical computing	5.4 Flat-file databases	5.5 Vector drawing	5.6 Selection in quizzes	6.1 Internet communication	6.2 Webpage creation	6.3 Variables in games	6.4 Introduction to spreadsheets	6.5 3D modelling	6.6 Sensing
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts			✓			✓	✓		✓			✓
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output			✓			✓			✓			✓
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			✓			✓			✓			✓
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	✓						✓					
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content		✓		✓				✓				
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	✓	✓						✓	✓		✓	

Progression in Computing Vocabulary

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing systems and networks. (Technology around us)	**Computing systems and networks – IT around us**	**Computing systems and networks – connecting computers**	**Computing systems – The Internet**	**Computing systems and networks – Sharing information**	**Computing systems and networks - Communication**
• Technology • Computer • Mouse • Trackpad • Keyboard • Screen • Double-click • Typing	• Information Technology – IT • Computer • Barcode • Scanner • Scan	• Digital device • Input • Process • Output • Program • Digital • Non-digital • Connection • Network • Network switch • Server • Wireless access point • Network Cables • Network sockets	• Internet • Network • Router • Network • Security • Network switch • Server • Wireless access point (WAP) • Router • Website • Web page • Web address • Routing • Web browser • World Wide Web • Content • Links • Files • Use • Download • Sharing • Ownership • Permission • Information • Accurate • Honest • Adverts	• System • Connection • Digital input • Process • Output • Search • Search engine • Refine • Index • Crawler • Bot • Ordering • Ranking • Links • Algorithms • Search engine optimisation (SEO) • Searching • Web crawler • Content creator • Selection	• Communication • Protocol • Data • Address • Internet Protocol (IP) address • Packet • Header • Data payload • Domain name Server (DNS) • Chat • Explore • Slide deck • Reuse • Remix • Collaboration • Internet • Public • Private • One-way • Two-way • One-to-one • One-to-many

Creating Media – Digital painting	**Creating media - Digital photography**	**Creating media - Animation**	**Creating media – Audio editing**	**Creating Media - Vector drawing**	**Creating media – 3D Modelling**
• Paint program • Tool • Paintbrush • Erase • Fill • Undo • Henri Matisse • Shape Tool • Fill Tool • Wassily Kandinsky • Feelings • Colour • Brush style • Georges Seurat • Pointillism • Brush Size • Pictures • Painting • Computers • Like • Prefer • Dislike	• Device • Camera • Photograph • Capture • Image • Digital • Landscape • Portrait • Framing • Subject • Compose • Light Sources • Flash • Focus • Background • Editing • Filter • Format • Lighting • Focus	• Animation • Flip Book • Stop-frame animation • Frame • Sequence • Image • Photography • Setting • Character • Events • Onion skinning • Consistency • Evaluation • Delete • Media • Import • Transition	• Audio • Microphone • Speaker • Headphones • Input device • Output device • Sound • Podcase • Edit • Trim • Align • Layer • Import • Record • Playback • Selection • Load • Save • Export • MP3 • Editing • Evaluate • Feedback	• Vector • Drawing tools • Object • Toolbar • Vector drawing • Move • Resize • Colour • Rotate • Duplicate • Copy • Zoom • Select • Align • Modify • Layer • Order • Paste • Group • Ungroup • Reuse • Reflection	• 2D • 3D • Shapes • Select • Move • Perspective • View • Handles • Resize lift • Recolour • Rotate • Duplicate • Group • Cylinder • Placeholder • Hollow • Choose • Combine • Construct • Evaluate • Modify

Creating Media – Digital writing	Creating media – Making music	Creating Media – Desktop Publishing	Creating media – photo editing	Creating Media – Video editing	Creating Media – Web page creation
• Word Processor • Keyboard • Keys • Letters • Type • Numbers • Space • Backspace • Text • Cursor • Capital letters • Toolbar • Bold • Italic • Underline • Mouse • Select • Font • Undo • Redo • Format • Compare • Typing • Writing	• Music • Planets • Mars • Venus • War • Peace • Quiet • Loud • Feelings • Emotions • Pattern • Rhythm • Pulse • Neptune • Pitch • Tempo • Notes • Instrument • Create • Beat • Open • Edit	• Text • Images • Advantages • Disadvantages • Communicate • Font • Font style • Communicate • Template • Landscape • Portrait • Orientation • Placeholder • Layout • Content • Desktop publishing • Copy • Paste • Purpose • Benefits	• Image • Edit • Digital • Crop • Rotate • Undo • Save • Adjustments • Effects • Colours • Hue • Saturation • Sepia • Vignette • Retouch • Clone • Select • Copy • Paste • Combine • Made up • Real • Composite • Cut • Alter • Background • Foreground • Zoom • Font	• Video • Audio • Camera • Talking head • Panning • Close up • Video camera • Microphone • Lens • Mid range • Long shot • Moving subject • Side by side • High angle • Low angle • Normal angle • Static camera • Zoom • Pan • Tilt • Storyboard • Filming • Review • Import • Split • Trim • Clip • Reshoot • Delete • Reorder • Export • Share	• Website • Web page • Browser • Media • Hypertext Markup Language (HTML) • Logo • Layout • Header • Purpose • Copyright • Fair use • Home page • Preview • Evaluate • Device • Google Sites • Breadcrumb trail • Navigation • Subpage • Hyperlink • Implication • External link • Embed

Data and information – Grouping Data	Data and Information - Pictograms	Data and information – Branching databases	Data and information – Data logging	Data and information – flat-file database	Data and information - Spreadsheets
• Object • Label • Group • Search • Image • Object • Property • Colour • Size • Shape • Value • Group • Data set • More • Less • Most • Fewest • Least • The same	• More Than • Less Than • Most • Least • Organise • Data • Object • Tally chart • Votes • Total • Pictogram • Enter • Compare • Count • Explain • More • Less • More common • Least common • Attribute • Group • Same • Different • Most popular • Least popular • Conclusion • Block diagram • sharing	• Attribute • Value • Questions • Table • Objects • Branching database • Database • Equal • Even • Separate • Structure • Compare • Order • Organise • Selecting • Information • Decision tree	• Data • Table • Layout • Input device • Sensor • Data logger • Analyse • Data set • Import • Export • Logged • Collection • Analyse • Review • Conclusion •	• Database • Data • Information • Record • Field • Sort • Order • Group • Search • Value • Criteria • Graph • Chart • Axis • Compare • Filter • Presentation	• Spreadsheet • Data • Data heading • Data set • Cells • Columns • Rows • Data item • Object • Spreadsheet application • Format • Common attribute • Formula • Calculation • Input • Output • Cell reference • Calculate • Operation • Range • Duplicate • Sigma • Propose • Question • Organised • Graph • Chart • Evaluate • Results • Comparison • Software • Tools

Programming A – Moving a robot	Programming A – Robot algorithms	Programming A – Sequence in music	Programming A – Repetition in shapes	Programming A – selection in physical computing	Programming A – Variable in a game
• Forwards • Backwards • Turn • Clear • Go • Commands • Instructions • Directions • Left • Right • Plan • Algorithm • Program • Route	• Instruction • Sequence • Clear • Unambiguous • Algorithm • Program • Order • Algorithm • Prediction • Artwork • Design • Route • Mat • Debugging • Decomposition	• Scratch • Programming • Blocks • Commands • Code • Sprite • Costume • Stage • Backdrop • Programming blocks • Motion • Turn • Point in direction • Go to • Glide • Sequence • Event • Task • Design • Run the code • Order • Note • Chord • Algorithm • Debug • Bug	• Program • Turtle • Commands • Code snippet • Algorithm • Design • Debug • Pattern • Repeat • Repetition • Count-controlled loop • Value • Trace • Decompose • Procedure • Forward • Backwards • Left • Right • Clear screen • Pen up • Pen down • Home	• Microcontroller • Components • Connection • Infinite loop • Output component • Motor • Repetition • Count-controlled loop • Microcontroller • Crumble controller • Switch • LED • Sparkle • Crocodile clips • Connect • Battery box • Program • Condition • Input • Output • Selection • Action • Debug	• Variable • Change • Name • Value • Variable • Set • Design • Event • Algorithm • Code • Task • Artwork • Program • Project • Code • Test • Debug • Improve • Evaluate • Share

Programming B – Introduction to animation	Programming B – An introduction to quizzes	Programming B – Events and actions	Programming B – Repetition in games	Programming B – Selection in quizzes	Programming B Microbit- Sensing
• ScratchJr • Bee-Bot • Command • Sprite • Compare • Programming • Programming Area • Block • Joining • Start Block • Run • Program • Background • Delete • Reset • Algorithm • Predict • Effect • Change • Value • Instructions • Appropriate • Design • Programming Blocks	• Sequence • Command • Program • Run • Start • Outcome • Predict • Blocks • Sprite • Algorithm • Blocks • Design • Actions • Project • Modify • Change • Project • Compare • Debug • Features • Evaluate •	• Motion • Event • Sprite • Algorithm • Logic • Move • Resize • Algorithm • Extension block • Pen up • Set up • Pen • Design • Action • Debugging • Errors • Setup • Code • Test •	• Scratch • Programming • Sprite • Blocks • Code • Loop • Repeat • Value • Forever • Infinite loop • Count-controlled loop • Costume • Repetition • Animate • Event block • Duplicate • Modify • Design • Define • Algorithm • Debug • Refine	• Selection • Condition • True • False • Count-controlled loop • Outcomes • Conditional statement • Algorithm • Program • Debug • Question • Answer • Task • Design • Input • Implement • Test • Run • Setup	• Microbit • MakeCode • Input • Process • Output • Flashing • USB trace • Selection • Condition • If then else • Variable • Random • Sensing • Accelerometer • Value • Compass • Direction • Navigation • Design • Task • Algorithm • Step counter • Plan • Create • Code • Test • Debug