COMPUTING
KEY STAGE ONE - YEAR A/YEAR B

	AUTUMN 1	AUTUMN 2	SPRING 1
Description	The children will learn to program a Beebot with a simple algorithm.	The children will continue to develop their understanding of more complex algorithms.	The children will learn the basics of how to use Google Docs and begin to learn typing skills
NC Objectives	• 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	• 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 • 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 common uses of information technology beyond school
Substantive Knowledge	• Children will learn what an algorithm is • Children will learn how to create a simple algorithm • Children will learn that the sequence of algorithms is important • Children will learn to debug simple algorithms • Children will learn that algorithms are implemented as programs on digital devices	• Children will learn what an algorithm is • Children will learn how to create a simple algorithm • Children will learn that the sequence of algorithms is important • Children will learn to debug simple algorithms • Children will learn that algorithms are implemented as programs on digital devices	• Children will learn what Google Docs is • Children will learn how to use the cursor to navigate • Children will learn how to open Google Docs, create and name a new document • Children will learn how to type information into a Google Doc • They will learn how to copy and paste information and images
Disciplinary Skills	• Understand that pressing the up arrow on a BeeBot will move it forward one space. • Understand that pressing the down arrow on a BeeBot will move it backwards one space. • Understand that pressing the right arrow on a BeeBot will spin the BeeBot to the right from the same tile. • Understand that pressing the left arrow on a BeeBot will spin the BeeBot to the left from the same tile. • Understand that sliding the power button to 'on' will give power to my device.	• Understand that pressing the up arrow on a BeeBot will move it forward one space. • Understand that pressing the down arrow on a BeeBot will move it backwards one space. • Understand that pressing the right arrow on a BeeBot will spin the BeeBot to the right from the same tile. • Understand that pressing the left arrow on a BeeBot will spin the BeeBot to the left from the same tile. • Understand that sliding the power button to 'on' will give power to my device.	• Understand how to navigate the Google Suite and select Google Docs • Understand how to use the return key to start a new line • Understand how to use the space bar key to add a space between words • Understand how to use arrow keys to move the text cursor • Understand that the 'flashing line' means I am ready to type
Vocabulary	algorithm, debug, forward, backwards, left, right, code, input, pause, predict, program, clear	algorithm, debug, forward, backwards, left, right, code, input, pause, predict, program, clear	Google Doc, cursor, keyboard, return key, space bar, copy and paste
Assessment	Can the child make a simple algorithm with at least four commands and include at least one turn.	Can the child make a more complex algorithm? Can they navigate around a given object and move from point **A** to point **B**?	Can the child create a Google Doc which is named and contains copied information

	SPRING 2	SUMMER 1	SUMMER 2
Description	The children will learn the basics of how to use Google Slides and begin to learn typing skills	The children will learn to program Scratch Junior with a simple algorithm.	The children will learn to program Scratch Junior with a simple algorithm.
NC Objectives	• 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 common uses of information technology beyond school	• 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	• 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
Substantive Knowledge	• Children will learn what Google Slides is • Children will learn how to use the cursor to navigate • Children will learn how to open Google Slides, create and name a new slide • Children will learn how to type information into a Google Slides • They will learn how to copy and paste information and images	• Children will learn what an algorithm is • Children will learn how to create a simple algorithm • Children will learn that the sequence of algorithms is important • Children will learn to debug simple algorithms • Children will learn that algorithms are implemented as programs on digital devices	• Children will learn what an algorithm is • Children will learn how to create a simple algorithm • Children will learn that the sequence of algorithms is important • Children will learn to debug simple algorithms • Children will learn that algorithms are implemented as programs on digital devices
Disciplinary Skills	• Understand how to navigate the Google Suite and select Google Slides • Understand how to open multiple tabs in one window to manage information • Understand how to use the right click function to copy and paste information from the internet	• Understand how to drag and drop directional inputs to make an algorithm • Know how to add a sprite and background to Scratch Jr • Know how to edit the sprite and background on Scratch Jr	• Understand how to drag and drop directional inputs to make an algorithm • Understand why the sequence of an algorithm is important • Understand how to debug an algorithm on Scratch Jr
Vocabulary	Google Slides, right click, tabs, information	algorithm, animation, blocks, button, code, debug, loop, instructions, repeat, Scratch Jr, sequence, edit	algorithm, animation, blocks, button, code, debug, loop, instructions, repeat, Scratch Jr, sequence, edit
Assessment	Can the child create a Google Slide which is named and contains copied information	Can the child edit their sprite and background before making a simple algorithm on Scratch Jr	Can the child create and debug an algorithm on Scratch Jr

COMPUTING
LOWER JUNIORS - YEAR A/YEAR B

	AUTUMN 1	AUTUMN 2	SPRING 1
Description	The children will learn how to use their emails and Google drive	The children will create a game using coding software Scratch.	To create a game using the coding software Scratch.
NC Objectives	● 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 ● Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	● 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.	● To 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.
Substantive Knowledge	● I understand that a username and password is required to log into my laptop. ● I understand how to use the typing cursor (I) to start typing. ● I understand that the 'flashing line' is required to begin typing. ● I understand that I can use the 9 dots to access different apps in the G-suite. ● I understand how to access my school email account and send an email.	● Understand how to make an algorithm or use when programming. ● Understand how to decompose tasks (such as animations) into separate steps to create an algorithm ● Understand abstraction is focusing on important information ● Identify patterns in an algorithm. Use repetition in algorithms. ● Use logical reasoning to detect and correct errors in programs.	● Understand how to make an algorithm to use when programming ● Understand how to decompose tasks into separate steps to create an algorithm ● Understand abstraction is focusing on important information ● Identify patterns in an algorithm and use repetition in algorithms ● Use logical reasoning to detect and correct errors in programs.
Disciplinary Skills	● I will be able to access my email, create a draft and send this to a friend. ● I will understand that once an email is sent, there is no way to get this back and what to do if someone says something unkind to you.	● To write a complex algorithm to create a game. ● To decompose tasks and debug my algorithm.	● Be able to write a complex algorithm independently to create a designed game ● To be able to decompose tasks and debug my algorithm
Vocabulary	Attachment, BCC (blind carbon copy), Cc (carbon copy), compose, email, email account, email address, inbox, link, password, responsible digital citizen.	algorithm, animation, application, code, code block, coding application, debug, decompose, interface, game, loop, predict, program, remixing coe, repetition code, review, scratch, sprite, tinker	Algorithm, animation, application, code, code block, coding application, debug, decompose, interface, game, loop, predict, program, remixing code, repetition code, review, scratch, sprite, tinker
Assessment	I will have an email thread that has been sent to a friend using BCC and CC.	To make a game using the skills learned from 'The Magic Carpet'.	To design and create a game using similar code to 'The Magic Carpet'.

	SPRING 2	SUMMER 1	SUMMER 2
Description	To use Google Slides to create a hyperlinked slideshow about volcanoes with Mote voice recording.	To use micro:bit software to animate a sprite using a count-control loop.	To use micro:bit software to create a times table tester.
NC Objectives	• To 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 responsibility; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• 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.	• 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.
Substantive Knowledge	• To edit the style and effect of my text and images to make my document more engaging and eye-catching. • To confidently and regularly use text shortcuts such as cut, copy and paste and delete to organise text. • To use font sizes appropriately for audience and purpose. • To use index fingers on keyboard home keys (f/j), use left fingers for a/s/d/f/g and use right fingers for h/j/k/l.	• To use directional commands to create a simple algorithm • Write increasingly more precise algorithms for use when programming • Use simple selection in algorithms • Use logical reasoning to detect and correct errors in programs • Decompose tasks (such as animations) into separate steps to create an algorithm	• Use directional commands to create a simple algorithm • Write increasingly more precise algorithms for use when programming • Use simple selection in algorithms • Use logical reasoning to detect and correct errors in programs • Decompose tasks (such as animations) into separate steps to create an algorithm.
Disciplinary Skills	• To create a Google slides presentation with hyperlinks to other pages. • To create a Mote voice recording link and talk about the information on my Slides presentation.	• To create a count control loop independently • To debug a count control loop that has been given to me by an adult	• To debug a complex algorithm that has been given to me by an adult • To adapt code that has been provided by an adult to change the outcome
Vocabulary	Animations, average, collaboration, comment, contribution, edited, email account, icon, images, insert, link, presentations, resolved, reviewing comments, share, slides, suggestions, teamwork, themes, transitions	Broadcast block, code blocks, conditional, coordinates, decomposition, features, game, information, negative numbers, orientation, parameters, position, program, project, script, sprite, stage, tinker, variables/algorithm, code, computational thinking, decomposition, input, logical reasoning, output, pattern recognition, script, sequence, variable.	Code blocks, coordinates, decomposition, negative numbers, orientation, parameters, position, program, script, sprite, stage, tinker, variables/algorithm
Assessment	Can the child make a simple algorithm with at least four commands and include at least one turn.	Animate a sprite using a count-control loop using micro:bit software.	To create my own times tables tester.

COMPUTING
UPPER JUNIORS - YEAR A/YEAR B

	AUTUMN 1	AUTUMN 2	SPRING 1
Description	Children will learn about podcasts and create and edit their own	Children will use Google Sheets and understand how to use formulae to solve calculations	Children will learn to code and debug on Crumble
NC Objectives	● 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, 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.	● 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 ● Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content	● 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
Substantive Knowledge	● Children will learn how to create a podcast ● They will learn how to edit their podcast by snipping ● They will create transitions in their podcast	● Children will learn how to create a Google Sheet that calculates the sum and total ● Children will be able to format data that has been collected using conditional formatting	● Children will learn to create a moving product that meets the design specification ● Children will be able to program the Crumble microchip to create a simple movement
Disciplinary Skills	● Children will learn how to add music and sound effects to their films ● Children will learn how to add animated titles and transitions ● Children will sequence clips of mixed media in a timeline and record a voiceover ● Children will trim and cut film clips and add titles ● Children will disable audio clips	● Children will understand how data is collected ● Children will understand how to use simple formulae ● Children will understand how to edit and form different cells in a spreadsheet ● Children will understand how to write spreadsheet formula ● Children will understand how data is collected	● Children understand how to use a range of sequences, selections and repletion commands combined with variables as required ● Children understand how to write generic codes ● Children critically evaluate their work and suggest improvements ● Children understand how to use conditions in repetition commands ● Children understand how to create programs that control physical systems
Vocabulary	Website, web page, browser, media, Hypertext Markup Language (HTML), layout, header, media, purpose, copyright, fair use, evaluate, preview, device, breadcrumb, trail, navigation, subpage, implication, embed	3D Algorithm Binary image CAD Compression CPU Data Drag and drop Fetch, decode, execute ID card Input JPEG Memory Online community Operating system Output Pixels RAM Responsible RGB ROM Safe	Input, process, output, flashing, USB, selection, condition, if… then… else, variable, random, navigation, design, task, step counter, plan, create, code, test, debug
Assessment	Children create their own podcast about the Ancient Greeks	Children create their own formula and formatting on Google Sheets	Can children program the Crumble microchip to create a simple movement

	SPRING 2	SUMMER 1	SUMMER 2
Description	Children will learn to code and debug on Crumble	Children will learn to code and debug on Crumble	Children will learn to use Tinkercad to create 3D digital designs of WW2 bunkers
NC Objectives	• 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	• 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 • Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Substantive Knowledge	• Children will learn to debug their algorithm • Children will learn to program the Crumble microchip to create a simple movement	• Children will learn to debug their algorithm • Children will learn to program the Crumble microchip to create a simple movement	• Children will learn to manipulate multiple tools in Tinkercad to create a WW2 bunker 3D model
Disciplinary Skills	• Children understand how to use a range of sequences, selections and repletion commands combined with variables as required • Children understand how to write generic codes • Children critically evaluate their work and suggest improvements • Children understand how to use conditions in repetition commands • Children understand how to create programs that control physical systems	• Children understand how to use a range of sequences, selections and repletion commands combined with variables as required • Children understand how to write generic codes across multiple projects • Children critically evaluate their work and suggest improvements • Children understand how to use conditions in repetition commands • Children understand how to create programs that control physical systems	• Children understand how to edit a picture to remove items, add backgrounds and merge photos • Children understand how to use a 3D drawing app to create a realistic representation of a world object • Children evaluate and discuss images, explaining effects and filters that have been used to enhance media • Children understand how to access a template
Vocabulary	Input, process, output, flashing, USB, selection, condition, if… then… else, variable, random, navigation, design, task, step counter, plan, create, code, test, debug	Input, process, output, flashing, USB, selection, condition, if… then… else, variable, random, navigation, design, task, step counter, plan, create, code, test, debug	3D Algorithm Binary image CAD Compression CPU Data Drag and drop Fetch, decode, execute ID card Input JPEG Memory Online community Operating system Output Pixels
Assessment	Can children program the Crumble microchip to create a simple movement	Can children program the Crumble microchip to create a simple movement	Can children use Tinkercad to create a realistic 3D model of a WW2 bunker