

Computing

Essential Opportunities Key Stage 1		Essential Opportunities Key Stage 2		
<ul style="list-style-type: none"> Understand what algorithms are, and how they are made using digital devices. Create simple algorithms and programs that follow a sequence of instructions. Write and test simple programs. Use logical reasoning to predict the behaviour of simple programs. Organise, store, manipulate and retrieve data in a range of digital formats. Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school. Recognise common uses of computer technology beyond school. 		<ul style="list-style-type: none"> Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence (ordering) and repetition (repeated instructions) in programs; work with variables (if...then...) and various forms of input and output; generate appropriate inputs and predicted outputs to test programs. Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs (debugging) 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. Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely. Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information. 		
Essential Learning Objectives	Milestone 1 End of Year 2	Milestone 2 End of Year 4	Milestone 3 End of Year 6	
Programming (using Scratch Jnr, Scratch, Kodu and Drone Day)	Motion	<ul style="list-style-type: none"> Use specified screen coordinates to control movement (Scratch) 	<ul style="list-style-type: none"> Set IF conditions for movements. Specify types of rotation giving the number of degrees (Kodu) 	
	Looks	<ul style="list-style-type: none"> Add text strings, show and hide objects and change the features of an object (Scratch Jnr) 	<ul style="list-style-type: none"> Change the position of objects between screen layers (send to back, bring to front) Set the appearance of objects in a program and create sequences of changes (Kodu) 	
	Sound	<ul style="list-style-type: none"> Select sounds and control when they are heard, their duration and volume (Scratch Jnr) 	<ul style="list-style-type: none"> Create and edit sounds. Control when they are heard, their volume, duration and rests (Scratch and Kodu) 	<ul style="list-style-type: none"> Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation (Podcasting)
	Draw	<ul style="list-style-type: none"> Control when drawings appear and set the pen colour, size and shape (Scratch Jnr) 	<ul style="list-style-type: none"> Control the shade of pens (Scratch) 	<ul style="list-style-type: none"> Combine the use of pens with movement to create interesting effects
	Events	<ul style="list-style-type: none"> Specify user inputs (such as clicks) to control events (Scratch Jnr) 	<ul style="list-style-type: none"> Specify conditions to trigger events (Scratch) 	<ul style="list-style-type: none"> Set events to control other events by 'broadcasting' information as a trigger (Scratch, Kodu)
	Control	<ul style="list-style-type: none"> Specify the nature of events (such as a single event or a loop) (Scratch Jnr, Bee Bots) 	<ul style="list-style-type: none"> Use IF THEN conditions to control events or objects (Scratch) 	<ul style="list-style-type: none"> Use IF THEN ELSE conditions to control events or objects (Kodu)
	Sensing	<ul style="list-style-type: none"> Create conditions for actions by waiting for a user input (Scratch Jnr) 	<ul style="list-style-type: none"> Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions) (Scratch) 	<ul style="list-style-type: none"> Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions (Scratch, Kodu)
	Operators	<ul style="list-style-type: none"> From Year 5 onwards 		<ul style="list-style-type: none"> Use a range of formula in excel to represent changes in data between cells Use the following operations for formula in excel () + () () - () () * () () / () to perform calculations in excel
Communicate	<ul style="list-style-type: none"> Understand online risks and the age rules for sites (E-Safety) Send and receive emails as a class Use a range of applications and devices in order to communicate ideas, work and messages (Email, school blog, Group call, Face Time) 	<ul style="list-style-type: none"> Contribute to blogs that are moderated by teachers (Send to Mr G for school blog) Give examples of the risks posed by online communications Understand the term 'copyright' Understand that comments made online that are hurtful or offensive are the same as bullying Understand a range of online services and how they work 	<ul style="list-style-type: none"> Collaborate with others online on sites approved and moderated by teachers (Google Sites) Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder Understand the effect of online comments and show responsibility and sensitivity when online Understand how simple networks are set up and used Choose the most suitable applications and devices for the purposes of communication 	
Create	<ul style="list-style-type: none"> Generate content for myself Generate content for an audience 	<ul style="list-style-type: none"> Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally 	<ul style="list-style-type: none"> Use many of the advanced features in order to create high quality, professional or efficient communications 	
Collect	<ul style="list-style-type: none"> Use excel to record information in areas across the curriculum 	<ul style="list-style-type: none"> Record and present numerical data using any software designed for this purpose – such as Excel – in areas across the curriculum. 	<ul style="list-style-type: none"> Select appropriate software, such as Excel, to devise, construct and manipulate data and present it in an effective and professional manner 	