



Inspire • Challenge • Achieve

# Progression for Computing

## **Purpose of Study:**

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

## **Aims:**

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

## **Attainment Targets:**

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Year Group	Objectives	I can statements	
Pre-School & Reception	<p><b>Technology</b></p> <p>Early Learning Goal Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.</p>	<b>Younger Year Group</b>	<b>Older Year Group</b>
		<p style="text-align: center;"><b>30-50 Months</b></p> <ul style="list-style-type: none"> <li>• knows how to operate simple equipment, e.g. turns on CD player and uses remote control.</li> <li>• Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.</li> <li>• Shows skill in making toys work by pressing parts of lifting flaps to achieve effects such as sound, movements or new images.</li> <li>• Knows information can be retrieved from computers.</li> </ul>	<p style="text-align: center;"><b>40-60+ Months</b></p> <ul style="list-style-type: none"> <li>• Completes a simple program on a computer.</li> <li>• Uses ICT hardware to interact with age-appropriate computer software.</li> </ul>
Year 1 & Year 2	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</li> <li>• create and debug simple programs</li> <li>• use logical reasoning to predict the behaviour of simple programs</li> <li>• use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> </ul>	<p><u>Algorithms and programming</u></p> <ul style="list-style-type: none"> <li>• I can create a series of instructions.</li> <li>• I can plan a journey for a programmable toy.</li> </ul> <p><u>Information technology</u></p> <ul style="list-style-type: none"> <li>• I can create digital content</li> <li>• I can store digital content</li> <li>• I can retrieve digital content</li> <li>• I can use a web site</li> <li>• I can use a camera</li> <li>• I can record sound and play back.</li> </ul>	<p><u>Algorithms and programming</u></p> <ul style="list-style-type: none"> <li>• I can use a range of instructions (e.g. direction, angles, turns).</li> <li>• I can test and amend a set of instructions.</li> <li>• I can find errors and amend. (debug)</li> <li>• I can write a simple program and test it.</li> <li>• I can predict what the outcome of a simple program will be (logical reasoning).</li> <li>• I understand that algorithms are used on digital devices.</li> <li>• I understand that programmes require precise instructions.</li> </ul>

	<ul style="list-style-type: none"> <li>• recognise common uses of information technology beyond school</li> <li>• 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.</li> </ul>	<u>Digital literacy</u> <ul style="list-style-type: none"> <li>• I can use technology safely</li> <li>• I can keep personal information private</li> </ul>	<u>Information technology</u> <ul style="list-style-type: none"> <li>• I can organise digital content.</li> <li>• I can retrieve and manipulate digital content.</li> <li>• I can navigate the web to complete simple searches.</li> </ul> <u>Digital literacy</u> <ul style="list-style-type: none"> <li>• I can use technology respectfully</li> <li>• I know where to go for help if I am concerned</li> <li>• I know how technology is used in school and outside of school.</li> </ul>
<p><b>Year 3 &amp; Year 4</b></p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• 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</li> <li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• design, write and debug programs that accomplish specific goals, including controlling or simulating</li> </ul>	<u>Algorithms and programming</u> <ul style="list-style-type: none"> <li>• I can design a sequence of instructions, including directional instructions.</li> <li>• I can write programs that accomplish specific goals.</li> <li>• I can work with various forms of input.</li> <li>• I can work with various forms of output.</li> </ul> <u>Information technology</u> <ul style="list-style-type: none"> <li>• I can use a range of software for similar purposes.</li> <li>• I can collect information.</li> <li>• I can design and create content.</li> <li>• I can present information.</li> <li>• I can search for information on the web in different ways.</li> </ul>	<u>Algorithms and programming</u> <ul style="list-style-type: none"> <li>• I can experiment with variables to control models.</li> <li>• I can give an on-screen robot specific instructions that takes them from A to B.</li> <li>• I can make an accurate prediction and explain why I believe something will happen (linked to programming).</li> <li>• I can de-bug a program</li> </ul> <u>Information technology</u> <ul style="list-style-type: none"> <li>• I can select and use software to accomplish given goals.</li> <li>• I can collect and present data.</li> <li>• I can produce and upload a pod cast.</li> </ul>

	<p>physical systems; solve problems by decomposing them into smaller parts</p> <p><b>E-safety:</b></p> <ul style="list-style-type: none"> <li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>	<ul style="list-style-type: none"> <li>• I can manipulate and improve digital images.</li> </ul> <p><u>Digital literacy</u></p> <ul style="list-style-type: none"> <li>• I use technology respectfully and responsibly.</li> <li>• I know different ways I can get help if I am concerned.</li> <li>• I understand what computer networks do and how they provide multiple services.</li> <li>• I can discern where it is best to use technology and where it adds little or no value.</li> </ul>	<p><u>Digital literacy</u></p> <ul style="list-style-type: none"> <li>• I recognise acceptable and unacceptable behaviour using technology.</li> </ul>
<p><b>Year 4 &amp; Year 5</b></p>	<ul style="list-style-type: none"> <li>• 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</li> <li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluation digital content.</li> </ul>	<p><u>Algorithms and programming</u></p> <ul style="list-style-type: none"> <li>• I can experiment with variables to control models.</li> <li>• I can give an on-screen robot specific instructions that takes them from A to B.</li> <li>• I can make an accurate prediction and explain why I believe something will happen (linked to programming).</li> <li>• I can de-bug a program</li> </ul> <p><u>Information technology</u></p> <ul style="list-style-type: none"> <li>• I can select and use software to accomplish given goals.</li> <li>• I can collect and present data.</li> <li>• I can produce and upload a pod cast.</li> </ul>	<p><u>Algorithms and programming</u></p> <ul style="list-style-type: none"> <li>• I can combine sequences of instructions and procedures to turn devices on and off.</li> <li>• I can use technology to control an external device.</li> <li>• I can design algorithms that use repetition and 2 – way selection.</li> </ul> <p><u>Information technology</u></p> <ul style="list-style-type: none"> <li>• I can analyse information.</li> <li>• I can evaluate information.</li> <li>• I understand how search results are selected and ranked.</li> <li>• I can edit a film.</li> </ul> <p><u>Digital literacy</u></p> <ul style="list-style-type: none"> <li>• I can discuss the risks of online use of technology</li> </ul>

	<ul style="list-style-type: none"><li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li></ul> <p><b>E-safety:</b></p> <ul style="list-style-type: none"><li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li></ul>	<p><u>Digital literacy</u></p> <ul style="list-style-type: none"><li>• I recognise acceptable and unacceptable behaviour using technology.</li></ul>	<ul style="list-style-type: none"><li>• I can identify how to minimise risks.</li></ul>
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