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.

Computer science - problem solving

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
- Understand what algorithms are. **(Sp, Su)** - Understand how algorithms are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. **(Sp, Su)**	- Understand what algorithms are. **(Sp, Su)** - Understand how algorithms are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. **(Sp, Su)**	- Design, write and debug programs that accomplish specific goals. **(Sp, Su)** - Solve problems by decomposing them into smaller parts. **(Sp, Su)**	- Design, write and debug programs that accomplish specific goals. **(Sp, Su)** - Solve problems by decomposing them into smaller parts. **(Sp, Su)**	- Design, write and debug programs that accomplish specific goals. **(Su)** - Controlling or simulating physical systems. **(Su)** - Solve problems by decomposing them into smaller parts. **(Au, Su)**	- Design, write and debug programs that accomplish specific goals. **(Su)** - Controlling or simulating physical systems. **(Su)** - Solve problems by decomposing them into smaller parts. **(Sp, Su)**

Computer science - programming

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
- Create and debug simple programs. **(Sp, Su)**	- Create and debug simple programs. **(Sp, Su)**	- Use sequence, selection, and repetition in programs; work with variables. **(Sp, Su)** - Work with various forms of input and output. **(Sp, Su)**	- Use sequence, selection, and repetition in programs; work with variables. **(Sp, Su)** - Work with various forms of input and output. **(Sp, Su)**	- Use sequence, selection, and repetition in programs; work with variables. **(Su)** - Work with various forms of input and output. **(Su)**	- Use sequence, selection, and repetition in programs; work with variables. **(Su)** - Work with various forms of input and output. **(Su)**

Computer science - logical thinking

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
- Use logical reasoning to predict the behaviour of simple programs. **(Sp, Su)**	- Use logical reasoning to predict the behaviour of simple programs. **(Sp, Su)**	- Use logical reasoning to explain how some simple algorithms work. **(Sp)** - Use logical reasoning to detect and correct errors in algorithms and programs. **(Sp)** - Understand computer networks including the internet. **(Su)**	- Use logical reasoning to explain how some simple algorithms work. **(Sp)** - Use logical reasoning to detect and correct errors in algorithms and programs. **(Sp)**	- Use logical reasoning to explain how some simple algorithms work. **(Su)** - Use logical reasoning to detect and correct errors in algorithms and programs. **(Su)** - Understand computer networks including the internet. **(Su)** - Understand how networks can provide multiple services, such as the world wide web. **(Su)**	- Use logical reasoning to explain how some simple algorithms work. **(Su)** - Use logical reasoning to detect and correct errors in algorithms and programs. **(Su)** - Understand computer networks including the internet. **(Su)** - Understand how networks can provide multiple services, such as the world wide web. **(Su)**

Digital literacy - e-safety

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
- Use technology safely and respectfully. **(Au)** - Keeping personal information private. **(Au)** - Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. **(Au)**	- Use technology safely and respectfully. **(Au)** - Keeping personal information private. **(Au)** - Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. **(Au)**	- Use technology safely, respectfully and responsibly. **(Au)** - Recognise acceptable/ unacceptable behaviour. **(Au)** - Identify a range of ways to report concerns about content and contact. **(Au)** - Be discerning in evaluating digital content. **(Au)**	- Use technology safely, respectfully and responsibly. **(Au)** - Recognise acceptable/ unacceptable behaviour. **(Au)** - Identify a range of ways to report concerns about content and contact. **(Au)** - Be discerning in evaluating digital content. **(Au)**	- Use technology safely, respectfully and responsibly. **(Au, Sp)** - Recognise acceptable/ unacceptable behaviour. **(Au, Sp)** - Identify a range of ways to report concerns about content and contact. **(Au, Sp)** - Be discerning in evaluating digital content. **(Sp, Su)** - Understand the opportunities networks offer for communication and collaboration. **(Su)**	- Use technology safely, respectfully and responsibly. **(Au, Su)** - Recognise acceptable/ unacceptable behaviour. **(Au, Su)** - Identify a range of ways to report concerns about content and contact. **(Au, Su)** - Be discerning in evaluating digital content. **(Au, Su)** - Understand the opportunities networks offer for communication and collaboration. **(Au, Su)**

Digital literacy - using IT beyond school

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
- Recognise common uses of information technology beyond school. **(Au)**	- Recognise common uses of information technology beyond school. **(Au)**				

Information technology - creating content

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

- Use technology purposefully to organise, store and retrieve digital content. **(Su)** - Use technology purposefully to create and manipulate digital content. **(Au, Sp)**	- Use technology purposefully to organise, store and retrieve digital content. **(Su)** - Use technology purposefully to create and manipulate digital content. **(Sp, Su)**	- Select, use and combine a variety of software (including internet services) on a range of digital devices. **(Au, Sp, Su)** - Design and create a range of programs, systems and content that accomplish given goals. **(Au, Sp, Su)** - Collecting, analysing, evaluating and presenting data and information. **(Sp)**	- Select, use and combine a variety of software (including internet services) on a range of digital devices. **(Au, Sp, Su)** - Design and create a range of programs, systems and content that accomplish given goals. **(Au, Sp, Su)** - Collecting, analysing, evaluating and presenting data and information. **(Su)**	- Select, use and combine a variety of software (including internet services) on a range of digital devices. **(Au, Sp, Su)** - Design and create a range of programs, systems and content that accomplish given goals. **(Au, Sp, Su)** - Collecting, analysing, evaluating and presenting data and information. **(Au)**	- Select, use and combine a variety of software (including internet services) on a range of digital devices. **(Au, Sp, Su** - Design and create a range of programs, systems and content that accomplish given goals. **(Au, Sp, Su)** - Collecting, analysing, evaluating and presenting data and information. **(Sp)**

Information technology - searching

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		- Use search technologies effectively. **(Au, Sp, Su)** - Appreciate how results are selected and ranked. **(Au)**	- Use search technologies effectively. **(Au, Sp, Su)** - Appreciate how results are selected and ranked. **(Au)**	- Use search technologies effectively. **(Au, Sp, Su)** - Appreciate how results are selected and ranked **(Au)**	- Use search technologies effectively. **(Au, Sp, Su)** - Appreciate how results are selected and ranked. **(Au)**