

# Computing – Year 7

	<b>Year 7 – Cycle A</b>	<b>Year 7 – Cycle B</b>	<b>Year 7 – Cycle C</b>	<b>Year 7 – Cycle D</b>
<b>What do we teach?</b>	<b>What are computers?</b> Looking at the definition of a computer system and its main components.	<b>Algorithms and Programming.</b> Flowcharts and Scratch	<b>Digital Citizenship.</b> Being responsible digital citizens, with a focus on E-Safety.	<b>Software Packages-</b> Project on computing Pioneers and previous learning using Presentation Software and Introducing EduBlocks.
<b>How does this meet the National curriculum?</b>	This unit meets points 1 and 2 of the national curriculum's aims. Students are learning to understand the hardware and software computer systems and are starting to undertake creative projects which will combine multiple applications (point 5 and 7 of KS3 NC content).	This unit meets point 1 one of the national curriculum's aims: ensuring that students understand and apply fundamental principles of computer science including logic and algorithms. Students will analyse problems, write programs and begin to evaluate them (point 2 and 3 of KS3 NC content).	This unit meets point 4 of the national curriculum's aims: users will become responsible, competent, confident and creative users of information and communication technology. They will also learn how to report concerns (point 9 of KS3 NC content).	This unit meets point 3 of the national curriculum's aims: helping to develop student's digital literacy. Students will be able to use and express their ideas using information technology. They will be able to undertake a creative digital project for a given audience, paying attention to trustworthiness, design and usability (points 7, 8, 9 of KS3 NC content).
<b>Why does this knowledge matter?</b>	Given the influence of technology across society, it's important that we know: how a computer works; how its performance can be improved; and how it can improve students' performance. Hardware is considered the most important part of the computer- without it, they simply would not work.	The topic is important as it introduces a large sector of computing - coding. It develops several skills in their logical thinking and provides ample opportunities to develop creativity, teamwork and resilience.	In a recent Google survey, cyberbullying was reported as the #1 safety concern by teachers. One in three young people in 30 countries report being cyber bullied with one in five admitting skipping school as a result. It is thus imperative that students are prepared in protecting themselves from these online dangers.	This knowledge helps students research and present their findings- an important skill for further study and many careers. Students will also revisit previous content of the history of computers and important pioneers (which should provide further inspiration and motivation). Thus, this also provides an ideal opportunity for consolidation.
<b>Why do we teach in this sequence?</b>	The first unit is an introduction/overview to computer systems, which is then continually consolidated and built upon.	Concepts are introduced and discussed before students practically apply the concepts to their own programs. Previous content will be regularly referred to and built upon. The chunking and revisiting will allow for maximum understanding and retrieval.	Social media awareness is delivered elsewhere through the school curriculum- e.g. in PSHCE and Being Bold weeks. This unit will develop this knowledge, with students learning what dangers are present online and then how they can prepare themselves. The content will be age appropriate using relevant relatable examples, which will be built upon yearly.	This topic is taught at the end so that students can consolidate previous knowledge and relate this to new content. They should already have experience and skill with some of the software which will then be developed further.
<b>What career links are made?</b>	<ul style="list-style-type: none"> <li>Most jobs use computers, but this unit could be particularly useful for technicians, network and system administrators and engineers.</li> <li>Careers requiring research skills, problem solving, time management.</li> </ul>	<ul style="list-style-type: none"> <li>Careers in Software development, game design, app and web development.</li> <li>Careers requiring adaptability, logical thinking, decision making, analysis and design skills.</li> </ul>	<ul style="list-style-type: none"> <li>Careers in security, or law enforcement, teaching, business. All users in personal and professional lives must be aware of the risks of computers.</li> <li>Careers requiring presentation, extended writing and team work skills.</li> </ul>	<ul style="list-style-type: none"> <li>Careers in research, marketing, advertising.</li> <li>Careers involving public speaking, adaptability, research, presentations and strong communication skills.</li> </ul>

# Computing – Year 8

	<b>Year 8 – Cycle A</b>	<b>Year 8 – Cycle B</b>	<b>Year 8 – Cycle C</b>	<b>Year 8 – Cycle D</b>
<b>What do we teach?</b>	<b>What are computers?</b> Inside a computer and introducing how they work.	<b>Algorithms and Programming.</b> Recapping Flowcharts and [re] introducing Python and EduBlocks.	<b>Digital Citizenship.</b> Being responsible citizens, focusing particularly on cyber security threats and prevention	<b>Software Project –</b> Project created using spreadsheet software.
<b>How does this meet the National curriculum?</b>	This unit meets points 1 and 2 of the national curriculum's aims. Students recap the hardware and software components of a computer and start to understand how data can be represented, stored and executed within a computer system (point 5 and 6 of KS3 NC).	This unit meets point 1 one of the national curriculum's aims: helping students to understand and apply the fundamental principles of computer science, including logic and algorithms. Students will analyse problems, write programs and evaluate them using a textual programming language (point 1, 2 and 3 of KS3 NC content).	This unit meets point 4 of the national curriculum's aims: this unit continues to ensure that students are responsible, competent, confident and creative users of information and communication technology. (point 9 of KS3 NC content).	This unit meets point 3 of the national curriculum's aims: helping to develop student's digital literacy. Students will be able to use and express their ideas using information technology. They will undertake a creative digital project which collects and analyses data to meet the needs of known users (points 7, 8, 9 of KS3 NC content).
<b>Why does this knowledge matter?</b>	This unit introduces students to binary (a key computing concept, which is further developed in year 9 and again in the GCSE content).	The topic builds on a large sector of computing – coding, this time focusing on a textual programming language. Furthermore, it allows us to develop cross curricular skills, particularly with mathematics.	A Safety Net study found that there is a strong link between high social media use and poor mental health (over 2/3 of children currently experiencing a mental health problem have reported experiencing cyberbullying). This topic thus further develops students' awareness of online risks.	Spreadsheets allow vast information to be kept in one location. Students can easily make several calculations simultaneously and assist with important decision making. The knowledge gained helps students analyse and collate data- an important skill for several careers.
<b>Why do we teach in this sequence?</b>	We follow a consistent model throughout the years, looking at what constitutes a computer, programming, digital citizenship and then a software project. This revisits the year 7 content, before developing the knowledge further to prepare for year 9.	We teach the basics of Python making comparisons between Scratch which they have been previously introduced to. The transition to python should be easier with these comparisons.	We build on the knowledge gained from year seven and the wider school curriculum (PSHCE and Being Bold) and look further into security threats. With this understanding we can explore prevention methods which will be further developed in year 9.	Students follow a consistent model and at this stage will should have a good understanding of the mathematical terms which will be introduced. It also provides opportunities to recap previously taught content.
<b>What career links are made?</b>	<ul style="list-style-type: none"> <li>Many jobs use computers, but this unit could be particularly useful for technicians, network and system administrators, engineer.</li> <li>Careers requiring problem solving, resilience and critical thinking skills.</li> </ul>	<ul style="list-style-type: none"> <li>Careers in Software development, game design, programming, app and web development.</li> <li>Careers requiring team work, problem solving, planning and analysis skills.</li> </ul>	<ul style="list-style-type: none"> <li>Careers in security, or law enforcement, teaching, business. All users in personal and professional lives must be aware of the risks of computers.</li> <li>Careers requiring team work, public speaking and critical thinking skills.</li> </ul>	<ul style="list-style-type: none"> <li>Several careers rely on data and can benefit of spreadsheet modelling particularly in business, administration, science, retail and accountancy.</li> <li>Careers requiring planning, organisation, data analysis and critical thinking.</li> </ul>

# Computing – Year 9

	Year 9 – Cycle A	Year 9 – Cycle B	Year 9 – Cycle C	Year 9 – Cycle D
<b>What do we teach?</b>	<p><b>What are computers?</b> How computers work and store data with a focus on data representation.</p>	<p><b>Algorithms and Programming.</b> Recapping Algorithms and Python.</p>	<p><b>Digital Citizenship.</b> Being responsible citizens, recapping cyber security threats, prevention and introducing legislation.</p>	<p><b>Software Project – Advanced Algorithms and Python Programming</b> Continuing to develop previous knowledge, looking at sorting algorithms and introducing machine learning.</p>
<b>How does this meet the National curriculum?</b>	<p>This unit meets points 1 and 2 of the national curriculum's aims. Students recap the components of a computer, how data is represented and begin to learn simple Boolean logic with its uses in programming. They will carry out similar operations on binary numbers (points 4, 5 and 6 of KS3 NC content).</p>	<p>This unit meets point 1 one of the national curriculum's aims: students keep developing their understanding and application of fundamental principles of computer science, including logic and algorithms. Students continue to analyse, write and evaluate solutions to a range of problems (point 1, 2 and 3 of KS3 NC content).</p>	<p>This unit meets point 4 of the national curriculum's aims: this unit continues to ensure that students are responsible, competent, confident and creative users of information and communication technology (point 9 of KS3 NC content).</p>	<p>This unit also meets 1 and 2 as well as point 3 of the national curriculum's aims: evaluating and applying information technology and thinking analytically to solve problems. Students will be able to undertake creative projects which involves collecting and analyzing data to meet the needs of known users (points 7, 8, 9 of KS3 NC content).</p>
<b>Why does this knowledge matter?</b>	<p>This unit further recaps students' understanding on hardware and software (essential computer components). It has strong links with cross curricula subjects, especially mathematics and it prepares students well for the number unit covered at GCSE.</p>	<p>The European Commission urges people to learn coding and warns that a lack of coding skills could lead to Europe facing skills shortage by 2020. This topic continues to develop such skills, developing logical thinking and creativity.</p>	<p>Last year the GDPR replaced the Data Protection Act and as of February 2019, it was revealed that GDPR breaches and fines have already topped over 10,000 in the UK. This unit continues to internet safety, with a greater focus on personal data and the different legislation students must be aware of.</p>	<p>Typically, companies use just a fraction of the data they collect and store. This unit allows us to explore and appreciate the analysis of data and its practical applications. Per PWC, 'AI will contribute \$15.7 trillion dollars to the global economy by 2030'. With the increasing dependence on technology it seems particularly relevant to develop students' understanding and appreciation of these real life applications.</p>
<b>Why do we teach in this sequence?</b>	<p>This knowledge continues to build and develop their understanding of what makes up a computer, which should make new content more accessible. This also helps prepare them for the next cycle.</p>	<p>Previously students have learnt the basics of programming. This is continuously developed, challenging students further and helping prepare for the GCSE requirements. They can also apply knowledge from cycle A.</p>	<p>This cycle allows students to demonstrate and build on skills and knowledge previously taught. It introduces some concepts ready for Cycle D and for the GCSE.</p>	<p>This unit allows for consolidation and further development of programming skills taught. It further prepares and allows for a smooth transition for the algorithm and programming content taught at GCSE.</p>
<b>What career links are made?</b>	<ul style="list-style-type: none"> <li>Several jobs use computers, but this unit could be particularly useful for technicians, network and system administrators, engineer.</li> <li>Careers requiring the use of problem solving, logical, critical thinking and analytical skills.</li> </ul>	<ul style="list-style-type: none"> <li>Careers in Software development, game design, programming, app and web development.</li> <li>Careers requiring critical thinking, resilience, team work, design and analysis skills.</li> </ul>	<ul style="list-style-type: none"> <li>Careers in security, or law enforcement, teaching, business. All users in personal and professional lives must be aware of the risks of computers.</li> <li>Careers requiring public speaking, team work, presentation and leadership skills.</li> </ul>	<ul style="list-style-type: none"> <li>Several careers will analyse and retrieve data, such as jobs in retail, business, recruitment and schools.</li> <li>Careers requiring critical thinking, problem solving skills and data analysis, manipulation and presentation.</li> <li>Careers using AI/Machine learning.</li> </ul>