

# Y7 Computer Science

## Under the Hood



<b>Name</b>			
<b>Teacher</b>			
<b>Group</b>		<b>GCSE Target</b>	

TOPIC	GCSE 1-3	GCSE 4-6	GCSE 7-9
<b>7.0 E-safety &amp; File Management</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Can organise work effectively on a computer e.g. sensible file names and directory locations/structure.</li> <li><input type="checkbox"/> Understands what a virus is and how it affects the data on a computer.</li> <li><input type="checkbox"/> Demonstrate that you are a responsible digital citizen.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Understands what different file extensions are used for and how to search for and organise files effectively.</li> <li><input type="checkbox"/> Understands why it is important to use patches and how anti-virus software works.</li> <li><input type="checkbox"/> Can differentiate between low and high level threats and advise others on how to stay safe online.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Can save documents as an appropriate file type</li> <li><input type="checkbox"/> Understand how a firewall works and suggest other preventative security measures.</li> </ul>
<b>7.1 Under the Hood</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Know that computers use binary to represent text, images &amp; sound.</li> <li><input type="checkbox"/> Can describe how computational devices have evolved over time</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Understand basic computer architecture and how memory, the CPU and input and output devices all work together.</li> <li><input type="checkbox"/> Understand the difference between RAM and ROM</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Understand what a quad core processor is</li> <li><input type="checkbox"/> Understands how the CPU speed and memory affect performance.</li> <li><input type="checkbox"/> Understand the important role of the operating system.</li> </ul>
<b>7.2 Think Like a Computer Scientist</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Can convert binary to denary and denary to binary.</li> <li><input type="checkbox"/> Understand that computers are not intelligent and have to be programmed.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Can work with different file sizes</li> <li><input type="checkbox"/> Can do binary addition</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Understand how negative numbers are represented in binary</li> <li><input type="checkbox"/> Be able to apply logical and arithmetic shifts</li> <li><input type="checkbox"/> Understand why overflow errors happen &amp; give an example.</li> </ul>
<b>7.3 Algorithms</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Understand what an algorithm is and be able to give examples</li> <li><input type="checkbox"/> Can create a basic algorithm</li> <li><input type="checkbox"/> Create a simple flowchart, using the correct shapes</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Can independently create a flowchart for a given scenario.</li> <li><input type="checkbox"/> Include inputs, outputs &amp; loops</li> <li><input type="checkbox"/> Identify errors in algorithms and find more efficient solutions</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Test and debug algorithms independently</li> <li><input type="checkbox"/> Use sub-routines</li> <li><input type="checkbox"/> Understand the difference between a flowchart, pseudo-code and programming code.</li> </ul>

<p><b>7.4 Programming</b></p>	<ul style="list-style-type: none"> <li>❑ Understand what an algorithm is and use one to plan a program</li> <li>❑ Can independently create a functioning calculator program in Scratch</li> <li>❑ Can test and debug a program</li> <li>❑ Can create a simple Python program</li> </ul>	<ul style="list-style-type: none"> <li>❑ Use arithmetic operators to perform calculations both in Python &amp; Scratch</li> <li>❑ Use if, elif, else and while loops</li> <li>❑ Understand different error messages in Python and be able to correct syntax errors independently.</li> <li>❑ Use coding conventions such as; meaningful variable names, comments &amp; white space.</li> <li>❑ Understand the difference between a compiler and interpreter</li> </ul>	<ul style="list-style-type: none"> <li>❑ Use sequence, selection &amp; iteration and be able to explain what they are.</li> <li>❑ Understand what a logic &amp; runtime error are and be able to give examples</li> <li>❑ Be able to initialise a score and use a scoring system</li> <li>❑ Use Python libraries e.g. sleep &amp; random</li> <li>❑ Explain the advantages and disadvantages of compiled/interpreted programs.</li> </ul>
<p><b>7.5 How the Web Works</b></p>	<ul style="list-style-type: none"> <li>❑ Can effectively use a web browser</li> <li>❑ Can use basic search criteria &amp; keywords</li> <li>❑ Understands what the parts of a URL represent</li> <li>❑ Understands what phishing, cat-fishing &amp; plagiarism are and how to report online threats</li> </ul>	<ul style="list-style-type: none"> <li>❑ Understands the difference between the internet and the www</li> <li>❑ Can use advanced search criteria, trace web content</li> <li>❑ Can compare and comment on the reliability of sources</li> <li>❑ Can interrogate digital content and comment on the authenticity of a source</li> </ul>	<ul style="list-style-type: none"> <li>❑ Knows a range of ways to report online concerns</li> <li>❑ Has an awareness of digital content and references appropriately sources used.</li> <li>❑ Understands how search engines rank results.</li> <li>❑ Understands internet hardware</li> <li>❑ Understands what different internet protocols are used for</li> </ul>