

**Subject: Computing      Year 9      Ability Mixed**

	<b>Unit 3</b>	<b>Unit 4</b>
<b>Topic</b>	Networking & the Internet	Spreadsheet Project
<b>Topic overview Pupils will learn...</b>	Pupils will learn how computer networks enable devices to communicate and share data, including the differences between LAN and WAN networks. They will explore the key hardware involved, how data is transmitted using packets, and how systems such as IP addressing and DNS allow devices and websites to be identified. Pupils will also develop an understanding of how the internet and web technologies work, alongside the importance of basic network security and staying safe online	Combine a range of IT knowledge to design a digital product that meets a specific brief, focused on predicting and modelling data
<b>Components</b>	<ul style="list-style-type: none"> <li>Understand the purpose of computer networks (resource sharing, communication)</li> <li>Identify and describe different types of networks (LAN, WAN, PAN)</li> <li>Explore network hardware: routers, switches, access points, servers</li> <li>Understand how data is broken into packets and transmitted</li> <li>Learn about IP addresses (IPv4 basics) and DNS</li> <li>Understand how the World Wide Web works (web servers, clients, HTTP/HTTPS)</li> <li>Recognise common network security threats (malware, phishing, brute force attacks)</li> <li>Explore methods of protection (passwords, encryption, firewalls)</li> </ul>	<ul style="list-style-type: none"> <li>Identify a real-world application for a spreadsheet system (purpose and audience)</li> <li>Determine a set of data to be captured by a system, and methods of modelling data</li> <li>Identify and utilise spreadsheet knowledge from previous units that can be used to achieve specific aims</li> <li>Use the design cycle to plan, develop, test and evaluate a digital product</li> </ul>
<b>What pupils should already know (Prior learning components)</b>	<p>From <b>Year 7 Computing</b>, students should have been taught to –</p> <ul style="list-style-type: none"> <li>Use school networks to log in and access shared resources</li> <li>Understand basic safe use of the internet</li> <li>Identify simple hardware components (e.g. desktop computer parts)</li> </ul> <p>From <b>Year 8 Computing</b>, students should have been taught to –</p> <ul style="list-style-type: none"> <li>Understand how data is represented and stored digitally (binary basics)</li> <li>Use cloud-based systems and understand shared environments</li> <li>Apply basic cybersecurity awareness (password safety, phishing awareness)</li> </ul>	<p>Through <b>Year 7 Computing</b> (Introducing Spreadsheets) and <b>Year 8</b> (Advanced Spreadsheets) students have been taught to –</p> <ul style="list-style-type: none"> <li>explore the real-world application of spreadsheets in order to understand how software is used to capture and model data for a range of purposes</li> </ul> <p>Students will have also have been taught to -</p> <ul style="list-style-type: none"> <li>undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users</li> <li>create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability</li> </ul>

<b>Transferrable knowledge (skills)</b>	<ul style="list-style-type: none"> <li>• Being able to access computer systems, navigate to specific files and organise work in a logical structure.</li> <li>• Being able to use multiple pieces of software (such as a web browser, spreadsheet software and cloud computing systems) in quick succession to create and refine design projects</li> <li>• Use of articulation to decide upon, use and justify the use of specific tools and skills to solve a wide computational problem</li> <li>• Being able to predict the outcome when using specific skills and identify / correct errors when they occur</li> <li>• Being able to check the accuracy of arithmetic calculations carried out electronically</li> </ul>	<ul style="list-style-type: none"> <li>• Being able to access computer systems, navigate to specific files and organise work in a logical structure.</li> <li>• Being able to use multiple pieces of software (such as a web browser, spreadsheet software and cloud computing systems) in quick succession to create and refine design projects</li> <li>• Being able to break down a large problem into smaller aspects and remove unnecessary details to identify key aspects</li> <li>• Being able to predict the outcome when using specific skills and identify / correct errors when they occur</li> <li>• Being able to model outcomes based on predictions</li> </ul>
<b>Key vocabulary pupil will know and learn</b>	Network, LAN, WAN, PAN, Router, switch, server, client, NIC (network interface card), access point, Internet, World Wide Web (WWW) Packet, data transmission, bandwidth, latency, IP address, IPv4, DNS HTTP, HTTPS, URL, browser, web server, Cybersecurity, malware, phishing, brute force attack, encryption, firewall	Spreadsheet, cell, row, column, cell reference, formula, brackets, functions - SUM, AVERAGE, MAX, MIN, IF, VLOOKUP, COUNT, formatting, data validation, conditional formatting, charts, incomings, outgoings, budgeting
<b>Assessment activities</b>	<ul style="list-style-type: none"> <li>• Regular low stakes testing at the end of each lesson to check knowledge.</li> <li>• Practical lesson activities which will self-mark students' work is correct, with cells turning green when students enter the correct answer.</li> <li>• Do Now tasks which test previous learning and build recall on key terms and applying them to specific contexts</li> </ul>	<ul style="list-style-type: none"> <li>• Regular low stakes testing at the end of each lesson to check knowledge.</li> <li>• Practical lesson activities with digital activities assessed by teachers</li> <li>• Do Now tasks which test previous learning and build recall on key terms and applying them to specific contexts</li> </ul>
<b>Resources available</b>	KS3 NC information <a href="https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/67222/national-curriculum-computing-key-stages-3-and-4.pdf">National Curriculum - Computing key stages 3 and 4 (publishing.service.gov.uk)</a> BBC Bitesize reference for Spreadsheets <a href="https://www.bbc.com/bitesize/guides/z9nqj/revision/1/1/1">How spreadsheets work - Spreadsheets - KS3 ICT Revision - BBC Bitesize</a>	KS3 NC information <a href="https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/67222/national-curriculum-computing-key-stages-3-and-4.pdf">National Curriculum - Computing key stages 3 and 4 (publishing.service.gov.uk)</a> BBC Bitesize reference for Spreadsheets <a href="https://www.bbc.com/bitesize/guides/z9nqj/revision/1/1/1">How spreadsheets work - Spreadsheets - KS3 ICT Revision - BBC Bitesize</a> BBC Bitesize – working within a budget <a href="https://www.bbc.com/bitesize/guides/z9nqj/revision/1/1/1">Working within a budget - Budgeting - National 4 Application of Maths Revision - BBC Bitesize</a>
<b>Notes</b>  <b>Why this topic is important...</b>	<p>This topic provides students with a <b>fundamental understanding of how modern digital systems operate</b>, forming the backbone of all online communication. By learning how networks function, students gain insight into how data is transferred globally, which underpins everything from social media to cloud computing.</p> <p>Understanding networking is essential for progression into <b>GCSE Computer Science</b>, where knowledge of network architecture, protocols, and security is required. It also supports students pursuing <b>vocational pathways</b> such as BTEC Digital IT and Enterprise, where cloud systems and data sharing are integral.</p> <p>Additionally, this unit promotes <b>digital literacy and online safety</b>, helping students recognise risks such as phishing and malware while developing strategies to protect themselves. In an increasingly connected world, this knowledge equips students to be <b>informed, responsible users of technology</b> and builds awareness of potential careers in networking, cybersecurity, and IT infrastructure</p>	<p>This end of topic project will combine research skills (to obtain data from multiple web sources) and knowledge of spreadsheets to plan, design and test a budgeting spreadsheet. This is a skill used by many people, and enables them to track their incomings and outgoings in order to manage personal finances and make good decisions. Student voice from SMSCD events indicates that students would like to spend time on learning how to budget; this unit will explore the concept of budgeting, and introduce many students to a variety of incomings (salary, savings) and outgoings (utility bills, food, rent). Through this unit, students will consider how to balance incomings and outgoings through use of a developed spreadsheet system.</p> <p>This unit utilises knowledge from with <b>Year 7</b> (Introducing Spreadsheets) and <b>Year 8</b> (Advanced Spreadsheets) as well as the key web research skills required as a core component of IT skill / digital literacy. This, combined with a range of spreadsheet knowledge, will enable students to build a system that can model budgeting scenarios and present the best choices for a person to make when saving money for the future. It will also support students that select a range of BTEC options, such as <b>BTEC Digital Information Technology</b> (which contains a significant spreadsheet</p>

project to complete) and **BTEC Enterprise** (which requires students to model a business budget). The syntax of spreadsheet formulae and functions also translates well to programming used within **GCSE Computer Science**.