

Scheme of Learning: GCSE Computing

Topic Sequence:

1	2	3	4	5	6
Computational Thinking	Data	Computers	Networks	Issues and Impacts	Programming

Topic Overview:

Computer networks have become an integral part of our daily lives. This unit allows learners to explore how a computer network works from the hardware required to the protocols used for communication

Links:

GCSE Computing Topic 4 - Networks

Lesson Sequence:

Lesson 1 LANs and WANs: Learners will give reasons why computers are connected on a network and be able to differentiate between a LAN and a WAN. Learners will also be able to explain why protocols are needed on a network and describe the purpose of an IP address.

Lesson 2 Network Speed: Learners will define the meanings of the terms 'bandwidth' and 'latency' and explain how bandwidth and latency affect the performance of a network. Learners will use bits per second (bps) to describe network speed.

Lesson 3 Connectivity: Learners will differentiate between wired and wireless connectivity and be able to explain how data are transmitted along copper and fibre-optic cables.

Lesson 4 Wired v Wireless: Learners will describe how devices are connected on a wireless network and will learn how to compare the performance of wired and wireless LANs and give examples of situations where one is preferable to the other.

Lesson 5 Network topologies: Learners will define the term 'topology' and they will describe the characteristics of bus, star and mesh network topologies.

Lesson 6 Malware & anti-malware: Learners will define what is meant by the term 'cyberattack'. They will also be able to describe the financial, reputational and legal damage that a cyberattack can cause. Learners will investigate the characteristics of and threat posed by different types of malware.

Lesson 7 Hackers: Learners will learn why unpatched software is a target for hackers and investigate the function of a firewall. Learners will also be able to explain how ethical hacking and penetration testing help identify vulnerabilities

Lesson 8 Social engineering: Learners will be able to define what is meant by the term 'social engineering' and describe commonly used social engineering tactics (phishing, pretexting, baiting, quid pro quo) used by hackers.

Lesson 9 Data-level protection: Learners can explain how data are protected by encryption and describe how backup and recovery procedures protect against data loss. They will also be able explain how access control helps to protect systems and data.

Lesson 10 Robust software: Learners will learn how a hacker can exploit a code vulnerability and they will be able to describe examples of bad coding practices and secure coding practices.

National curriculum links

Develop their capability, creativity and knowledge in computer science, digital media and information technology

Develop and apply their analytic, problem-solving, design, and computational thinking skills

Sequence of Lessons:

1	LANs and WANS
2	Network Speed
3	Connectivity
4	Wired v. wireless
5	Network topologies
6	Malware & anti-malware
7	Hackers
8	Social engineering
9	Data level protection
10	Robust software

Topic Resources:

Knowledge Map:	Computer Networks Security Protocols Cyber Security	Any other Resources:	
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Assessment:

Knowledge:	Interim assessment after lesson 5 Full assessment after lesson 10
Application of Knowledge:	Mastery Book

Supportive Reading:

Craig n Dave Videos	GCSE (1CP2) EDEXCEL: Topic 4 Networks & network security - YouTube
BBC Bite Size	Networks - Networks - Edexcel - GCSE Computer Science Revision - Edexcel - BBC Bitesize
Revision Guide	Pearson REVISE Edexcel GCSE Computer Science Revision Guide inc online edition - 2023 and 2024 Weidmann, Ann, Selby, Cynthia: 9781292374099: Book