Stewards Academy

ICT KS4 Year 10 Spring 2 Blended Learning Booklet

Networks

Name:

Form:

- Use BBC Bitesize for any research you may need to carry out to complete this book.
- You can also use the website www.TeachICT.com

Username: **cm187nq**

Password: python4

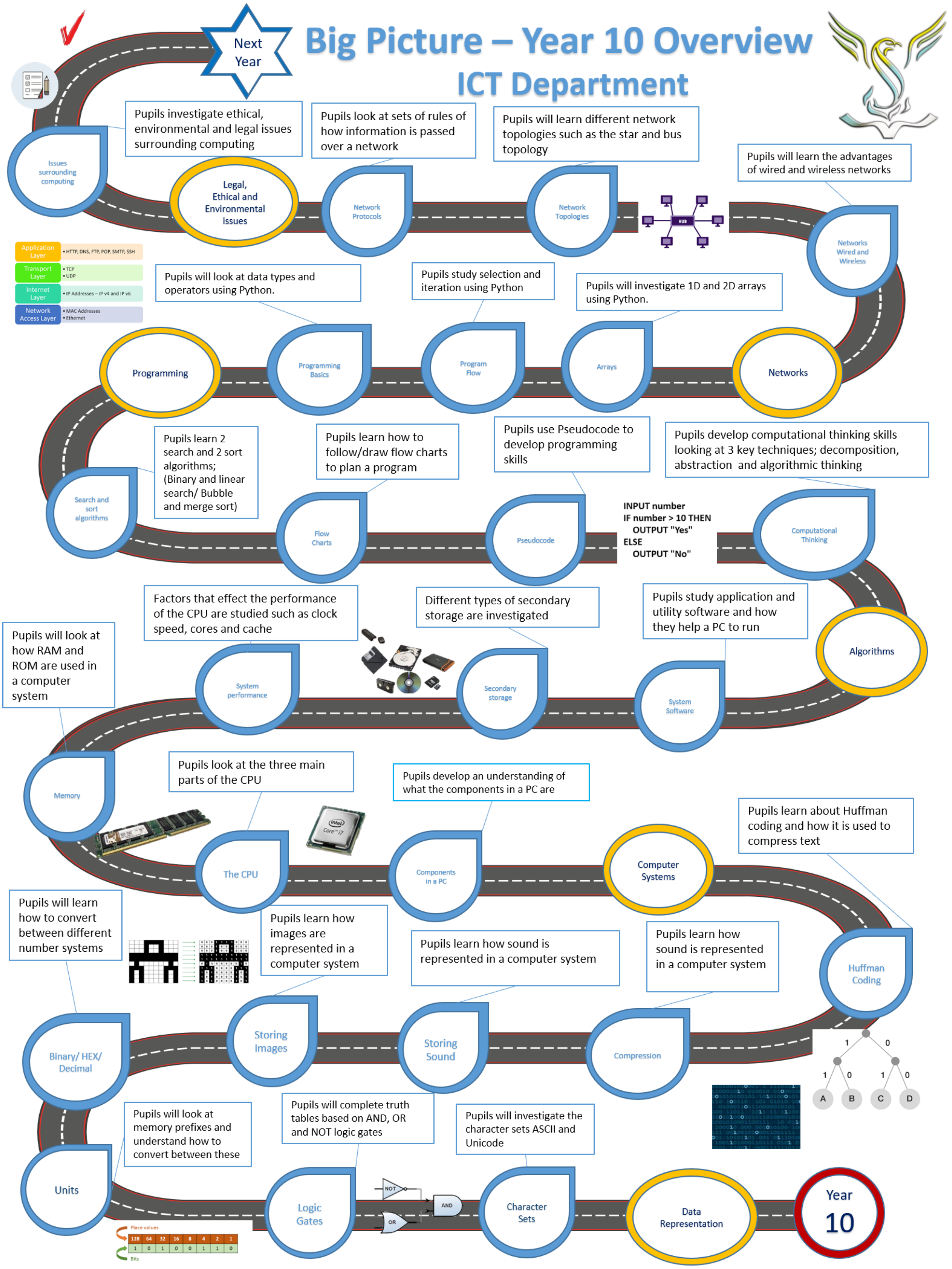
- GCSE POD
- YOU TUBE Channel – AQA Tutor

GCSE Elements:	**Networks**	
	Knowledge and Understanding	**Skills**
All knowledge and understanding elements could potentially be on Paper 2 of the exams. The end of unit exam will include elements on other topics such as writing algorithms, binary addition and logic gates.	1. Be able to understand the need for, and importance of network security. 2. Be able to explain the need for, and importance of authentication. 3. Be able to explain the need for, and importance of encryption. 4. Be able to explain the need for, and importance of firewalls. 5. Be able to explain the need for, and importance of MAC address filtering.	Pupils will need to be able to answer exam questions on all these topics. Pupils will need to be able to respond to feedback given to improve knowledge and understanding. Pupils will need to identify areas of improvement and dedicate time to revise on these areas.
	1. Be able to describe the TCP/IP protocol stack. 2. Be able to describe what protocols operate at the different layers of the TCP/IP protocol stack. 3. Be able to describe the advantage of using the TCP/IP protocol stack. 4. Be able to define the term network protocol. 5. Be able to explain the purpose and use of HTTP, HTTPS, FTP, SMTP, IMAP, POP.	
	1. Be able to define the term network protocol. 2. Be able to explain the purpose and use of the Ethernet family of protocols. 3. Be able to describe what a MAC address is. 4. Be able to explain the purpose and use of TCP/IP. 5. Be able to describe what an IP address is. 6. Be able to describe how information is transmitted across a packet-switched network. 7. Be able to explain the purpose and use of UDP.	
	1. Be able to describe a personal area network. 2. Be able to describe a local area network. 3. Be able to describe a wide area network. 4. Be able to explain the bus network topology. 5. Be able to explain the star network topology.	
	1. Be able to define what a computer network is. 2. Be able to discuss the advantages and disadvantages of computer networks. 3. Be able to discuss the network hardware that is required to setup a network. 4. Be able to compare and contrast different wired transmission media. 5. Be able to describe the Wi-Fi and Bluetooth communication protocols. 6. Be able to discuss the benefits and risks of wireless networks as opposed to wired networks.	

Stewards Academy

Big Picture – Year 10 Overview

ICT Department



Pupils investigate ethical, environmental and legal issues surrounding computing

Pupils look at sets of rules of how information is passed over a network

Pupils will learn different network topologies such as the star and bus topology

Pupils will learn the advantages of wired and wireless networks

Application Layer	• HTTP, DNS, FTP, POP, SMTP, SSH
Transport Layer	• TCP • UDP
Internet Layer	• IP Addresses – IP v4 and IP v6
Network Access Layer	• MAC Addresses • Ethernet

Pupils will look at data types and operators using Python.

Pupils study selection and iteration using Python

Pupils will investigate 1D and 2D arrays using Python.

Pupils learn 2 search and 2 sort algorithms; (Binary and linear search/ Bubble and merge sort)

Pupils learn how to follow/draw flow charts to plan a program

Pupils use Pseudocode to develop programming skills

Pupils develop computational thinking skills looking at 3 key techniques; decomposition, abstraction and algorithmic thinking

```
INPUT number
IF number > 10 THEN
   OUTPUT "Yes"
ELSE
   OUTPUT "No"
```

Factors that effect the performance of the CPU are studied such as clock speed, cores and cache

Different types of secondary storage are investigated

Pupils study application and utility software and how they help a PC to run

Pupils will look at how RAM and ROM are used in a computer system

Pupils look at the three main parts of the CPU

Pupils develop an understanding of what the components in a PC are

Pupils learn about Huffman coding and how it is used to compress text

Pupils will learn how to convert between different number systems

Pupils learn how images are represented in a computer system

Pupils learn how sound is represented in a computer system

Pupils learn how sound is represented in a computer system

Pupils will look at memory prefixes and understand how to convert between these

Pupils will complete truth tables based on AND, OR and NOT logic gates

Pupils will investigate the character sets ASCII and Unicode

Place values

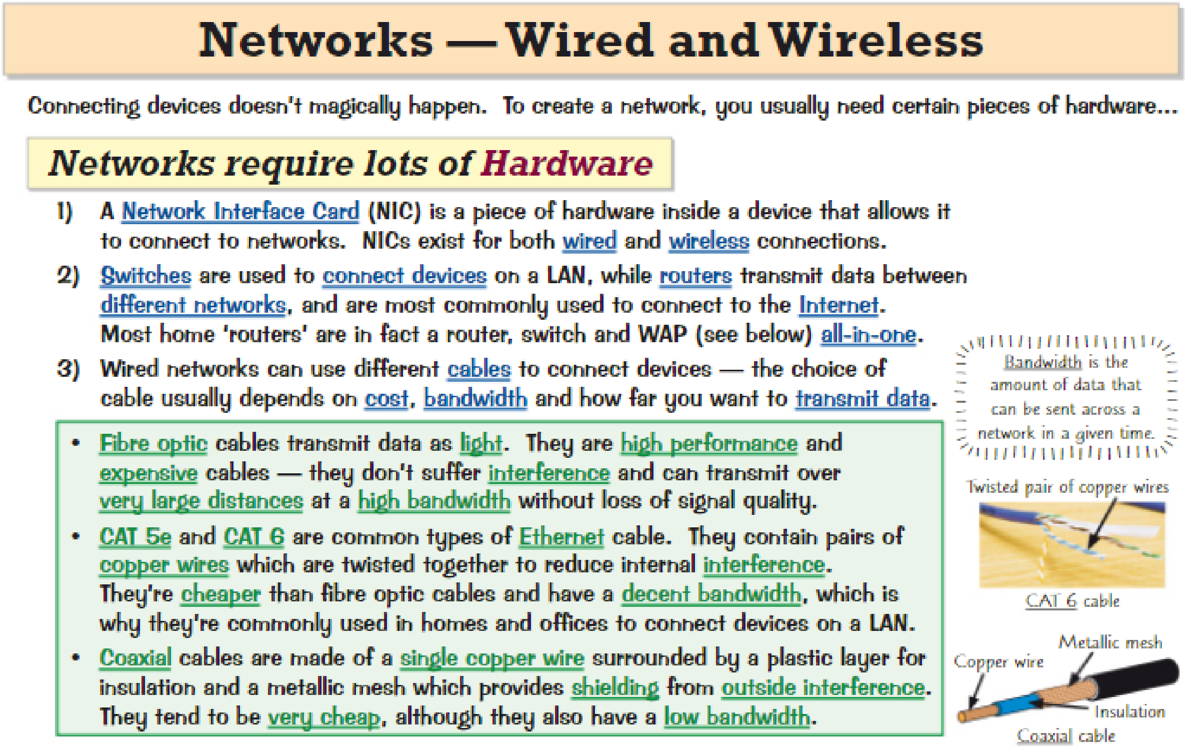
128	64	32	16	8	4	2	1
1	0	1	0	0	1	1	0

Bits

Lesson 1

1. Be able to define what a computer network is.
2. Be able to discuss the advantages and disadvantages of computer networks.
3. Be able to discuss the network hardware that is required to setup a network.
4. Be able to compare and contrast different wired transmission media.
5. Be able to describe the Wi-Fi and Bluetooth communication protocols.
6. Be able to discuss the benefits and risks of wireless networks as opposed to wired networks.

DART



Networks — Wired and Wireless

Connecting devices doesn't magically happen. To create a network, you usually need certain pieces of hardware...

Networks require lots of Hardware

1) A Network Interface Card (NIC) is a piece of hardware inside a device that allows it to connect to networks. NICs exist for both wired and wireless connections.
2) Switches are used to connect devices on a LAN, while routers transmit data between different networks, and are most commonly used to connect to the Internet. Most home 'routers' are in fact a router, switch and WAP (see below) all-in-one.
3) Wired networks can use different cables to connect devices — the choice of cable usually depends on cost, bandwidth and how far you want to transmit data.

- Fibre optic cables transmit data as light. They are high performance and expensive cables — they don't suffer interference and can transmit over very large distances at a high bandwidth without loss of signal quality.
- CAT 5e and CAT 6 are common types of Ethernet cable. They contain pairs of copper wires which are twisted together to reduce internal interference. They're cheaper than fibre optic cables and have a decent bandwidth, which is why they're commonly used in homes and offices to connect devices on a LAN.
- Coaxial cables are made of a single copper wire surrounded by a plastic layer for insulation and a metallic mesh which provides shielding from outside interference. They tend to be very cheap, although they also have a low bandwidth.

Bandwidth is the amount of data that can be sent across a network in a given time.

Twisted pair of copper wires

CAT 6 cable

Metallic mesh

Copper wire

Insulation

Coaxial cable

DIRT - Read the information on the PowerPoint from class charts

What is a network?

What is a **network**?

____

____[1]

What is the **purpose** of a network?

____

____[1]

Give **two advantages** of networking computing devices together?

____

____[2]

Give a **disadvantage** of networking computing devices together.

____

____[1]

Give **two advantages** of networking computers in a secondary school.

____

____

____

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____

_____________________________[4]

Give **two disadvantages** of networking computers within a home.

____

____

____

____

____

____

_____________________________[4]

What piece of **network hardware** is required to allow Wi-Fi devices to connect to a network?

____

____[1]

What is the **purpose** of a network switch?

____

____[1]

Give **two differences** between a switch and a hub.

____

____

____[2]

Give an **advantage** of Ethernet cable over Fibre optic cable.

____

____[1]

A school has two buildings. Both buildings need to have wired networks installed in them. These wired networks will require a lot of cabling and the school hope to utilise the existing phone networks in the buildings. The school also want to connect the two buildings networks together across the playground using a high-speed connection.

Choose cabling for each building and across the playground and **explain why** that cabling was chosen.

____

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____

____

____

____

________________________________[4]

Name **two wireless communication protocols** used in computer networks.

____

____[2]

Give **two advantages** of wireless networks.

____

____[2]

Give **two disadvantages** of a wireless network.

____

____[2]

A busy shopping centre wants to setup guest network so that customers visiting the shopping centre can have a constant and reliable internet connection regardless of where they are in the shopping centre.

Should the shopping centre setup a **wired or wireless network** for their customers to use? Justify your answer.

____

____

____

____

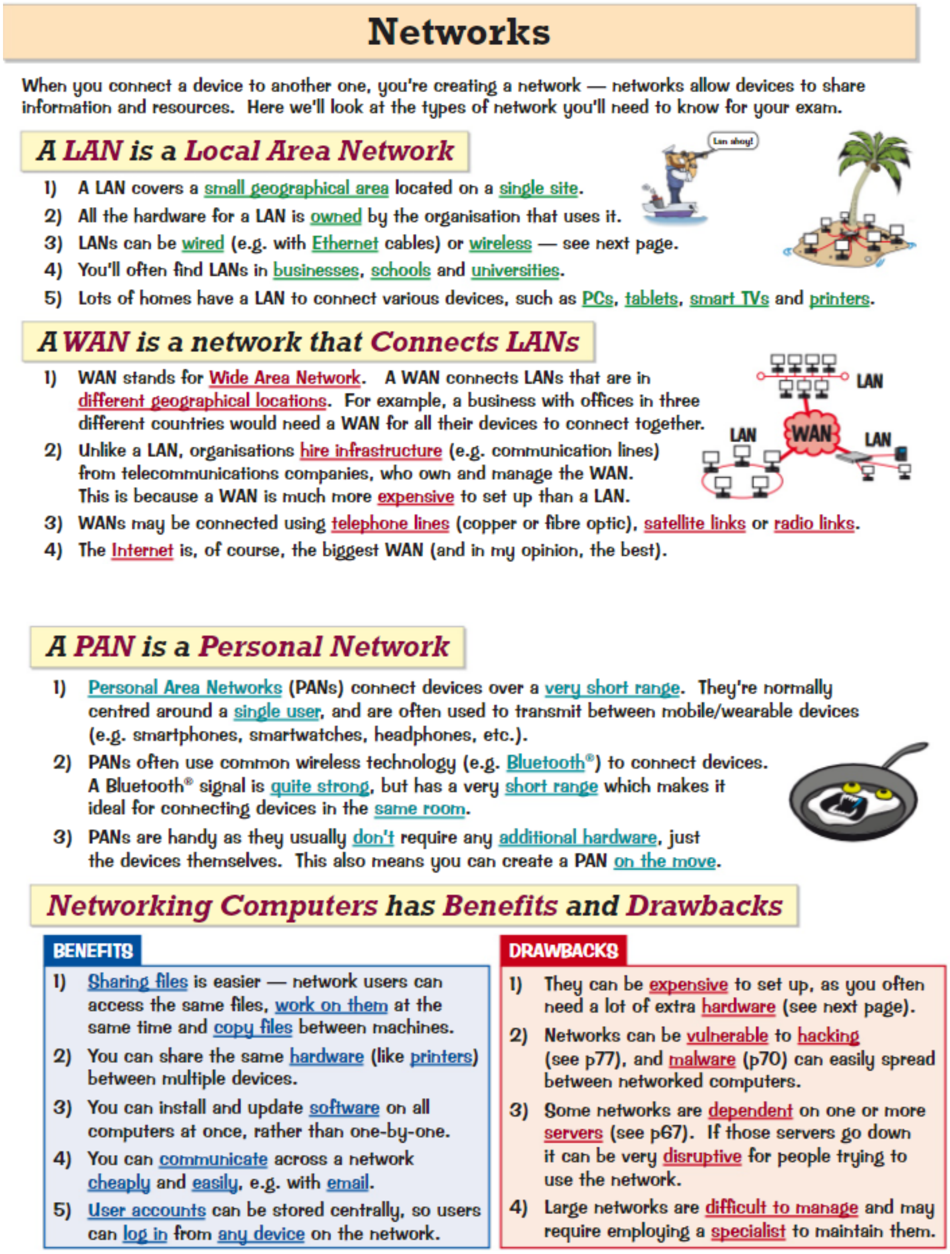
____

_______________________________________[2]

Lesson 2

1. Be able to describe a personal area network.
2. Be able to describe a local area network.
3. Be able to describe a wide area network.
4. Be able to explain the bus network topology.
5. Be able to explain the star network topology.

Video link - https://www.youtube.com/watch?v=DXCNsm4H8f8
Video link - https://www.youtube.com/watch?v=f_JolI-WXQc


Lan ahoy!
LAN
WAN
LAN
LAN

Networks

When you connect a device to another one, you're creating a network — networks allow devices to share information and resources. Here we'll look at the types of network you'll need to know for your exam.

A LAN is a Local Area Network

1) A LAN covers a small geographical area located on a single site.
2) All the hardware for a LAN is owned by the organisation that uses it.
3) LANs can be wired (e.g. with Ethernet cables) or wireless — see next page.
4) You'll often find LANs in businesses, schools and universities.
5) Lots of homes have a LAN to connect various devices, such as PCs, tablets, smart TVs and printers.

A WAN is a network that Connects LANs

1) WAN stands for Wide Area Network. A WAN connects LANs that are in different geographical locations. For example, a business with offices in three different countries would need a WAN for all their devices to connect together.
2) Unlike a LAN, organisations hire infrastructure (e.g. communication lines) from telecommunications companies, who own and manage the WAN. This is because a WAN is much more expensive to set up than a LAN.
3) WANs may be connected using telephone lines (copper or fibre optic), satellite links or radio links.
4) The Internet is, of course, the biggest WAN (and in my opinion, the best).

A PAN is a Personal Network

1) Personal Area Networks (PANs) connect devices over a very short range. They're normally centred around a single user, and are often used to transmit between mobile/wearable devices (e.g. smartphones, smartwatches, headphones, etc.).
2) PANs often use common wireless technology (e.g. Bluetooth®) to connect devices. A Bluetooth® signal is quite strong, but has a very short range which makes it ideal for connecting devices in the same room.
3) PANs are handy as they usually don't require any additional hardware, just the devices themselves. This also means you can create a PAN on the move.

Networking Computers has Benefits and Drawbacks

BENEFITS

1) Sharing files is easier — network users can access the same files, work on them at the same time and copy files between machines.
2) You can share the same hardware (like printers) between multiple devices.
3) You can install and update software on all computers at once, rather than one-by-one.
4) You can communicate across a network cheaply and easily, e.g. with email.
5) User accounts can be stored centrally, so users can log in from any device on the network.

DRAWBACKS

1) They can be expensive to set up, as you often need a lot of extra hardware (see next page).
2) Networks can be vulnerable to hacking (see p77), and malware (p70) can easily spread between networked computers.
3) Some networks are dependent on one or more servers (see p67). If those servers go down it can be very disruptive for people trying to use the network.
4) Large networks are difficult to manage and may require employing a specialist to maintain them.

DIRT - Read the information on the PowerPoint from class charts

What is a **network**?

____

____________________________________[1]

Describe a **local area network**.

____

____[1]

Describe a **wide area network**.

____

____[1]

Describe a **personal area network**.

____

____[1]

Give **a difference** between a LAN and a WAN.

____

____[1]

Give **another difference** between a LAN and a WAN.

____

____[1]

Give an **example** of a PAN.

____

____[1]

Give an **example** of a WAN.

____

____[1]

Give **an advantage** of a computer network.

____

____[1]

Explain **the difference** between a PAN and a WAN.

____

____[2]

What does a **network topology** describe?

____

____[1]

Describe a **bus topology**. You may use a diagram.

____

____

____

____

____

____

________________________________[1]

Describe a **star topology**. You may use a diagram.

____

____

____

____

____

____

______________________________[1]

Give **an advantage** of the **bus network topology**.

____

____[1]

Give **a disadvantage** of the **bus network topology**.

____

____[1]

Give **an advantage** of the **star network topology**.

____

____[1]

Give **a disadvantage** of the **star network topology**.

____

____[1]

A cinema uses a Local Area Network laid out in a star topology. The LAN is used to connect customer service tills and self-service kiosks to enable staff and customers to book tickets simultaneously.

Give **two reasons** why the cinema may have chosen to use a **star topology**.

____

____

____

____

____

____

_________________[4]

A small company of six employees has decided to set up a LAN in their office.

Give two advantages of the company setting up a LAN.

____

____[1]

Give a difference between a LAN and a WAN.

____

____[1]

Which network topology should the company use to layout their LAN?

____

____[1]

The requirements of the company's network are that:

- Each employee requires their own desktop computer.
- Employees will also have work laptops that will need to be able to connect to the network wirelessly.
- There will be a single internet connection shared by the entire network.
- A file server and two printers are also required.

Draw a diagram showing the topology of the company's network labelling each of the required devices stated above.

Justify your answer.

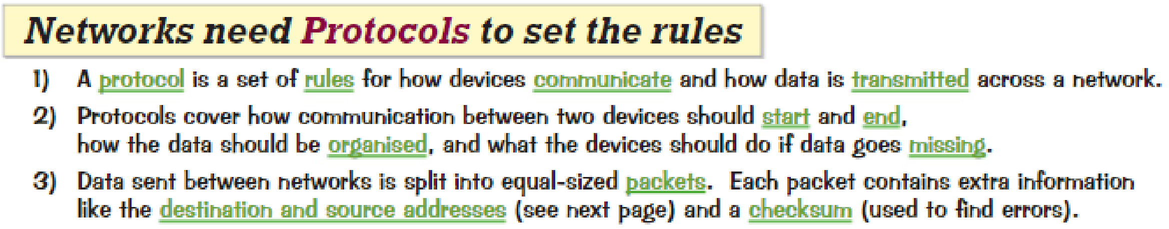
____

____[2]

Lesson 3

1. Be able to define the term network protocol.
2. Be able to explain the purpose and use of the Ethernet family of protocols.
3. Be able to describe what a MAC address is.
4. Be able to explain the purpose and use of TCP/IP.
5. Be able to describe what an IP address is.
6. Be able to describe how information is transmitted across a packet-switched network.
7. Be able to explain the purpose and use of UDP.

DART



Networks need Protocols to set the rules

1) A protocol is a set of rules for how devices communicate and how data is transmitted across a network.
2) Protocols cover how communication between two devices should start and end, how the data should be organised, and what the devices should do if data goes missing.
3) Data sent between networks is split into equal-sized packets. Each packet contains extra information like the destination and source addresses (see next page) and a checksum (used to find errors).

DIRT - Read the information on the PowerPoint from class charts

What is a **network protocol**?

____

____[1]

Explain the use of the **Ethernet family of protocols**.

____

____

_________________________[1]

What is a **Media Access Control address**?

____

____[1]

Why might a computing device have **multiple MAC addresses**?

____

____[1]

A media access control address is represented by **12 hexadecimal digits**.
What do the **first 6 digits** represent?

____

____[1]

What do the **last 6 digits** represent?

____

____[1]

Why can a MAC address **never be changed**?

____

____[1]

What is a **network protocol**?

____

____[1]

Explain the use of the **Transmission Control Protocol** (TCP).

____

____[1]

Explain the use of the **Internet Protocol** (IP).

____

____[1]

Explain the use of **Transmission Control Protocol / Internet Protocol**.

____

____[1]

What is an **Internet Protocol address**?

____

____[1]

Give **two differences** between IP addresses and MAC addresses.

____

____

_________________________[2]

Below is an **algorithm** for sending data between two devices connected to a network using TCP/IP.

Order the algorithm into the correct order. [6]

Order	Algorithm instruction
	Packets are independently sent across the network
	A connection is formed between the sending and receiving device
	Packets are assigned the IP address of the destination device
	Packets are reassembled into the original data
	Packets are error checked on arrival at their destination a) If the packet passes the error check, an acknowledgment is sent to the sending device b) Is the packet fails the error check, a request to resend the packet is sent to the sending device
	Data being sent is divided into packets

What is a **network protocol**?

____

____[1]

Name **four data transmission protocols**.

____

____

____[4]

What are **data transmission protocols**?

____

____[1]

Explain the use of the **Transmission Control Protocol** (TCP).

____

____[1]

Explain the use of the **User Datagram Protocol** (UDP).

____

____[1]

Give **two differences** between TCP and UDP.

____

____

_________________________[2]

What is a **network packet**?

____

____[1]

What is the purpose of each of the **basic parts of a TCP/IP packet header**?

Source address.

____

____[1]

Destination address.

____

____[1]

Sequence number.

____

____[1]

Error check.

____

____[1]

Describe a **packet-switched network**.

____

____[1]

What is **packet switching**?

____

____

_________________________[1]

Lesson 4

1. Be able to define the term network protocol.
2. Be able to explain the purpose and use of HTTP, HTTPS, FTP, SMTP, IMAP, POP.

Video link
https://www.youtube.com/watch?v=IKFVRoCH0fg&list=RDCMUC0HzEBLlJxlrwBAHJ5S9JQg&start_radio=1&t=295

DIRT - Read the information on the PowerPoint from class charts

What is an **application protocol**?

____

____[1]

What does **HTTP** stand for?

____

____[1]

What does **HTTPS** stand for?

____

____[1]

Explain the purpose of **HTTP**.

____

____[1]

Explain **the difference** between **HTTP and HTTPS**.

____

____[1]

What does **FTP** stand for?

____

____[1]

Explain is the purpose of **FTP**.

____

____[1]

What does **SMTP** stand for?

____

____[1]

Explain the purpose of **SMTP**.

____

____[1]

What does **POP** stand for?

____

____[1]

Explain the purpose of **POP**.

____

____[1]

What does **IMAP** stand for?

____

____[1]

Explain the purpose of **IMAP**.

____

____[1]

Explain **the difference** between **POP and IMAP**.

____

____

____

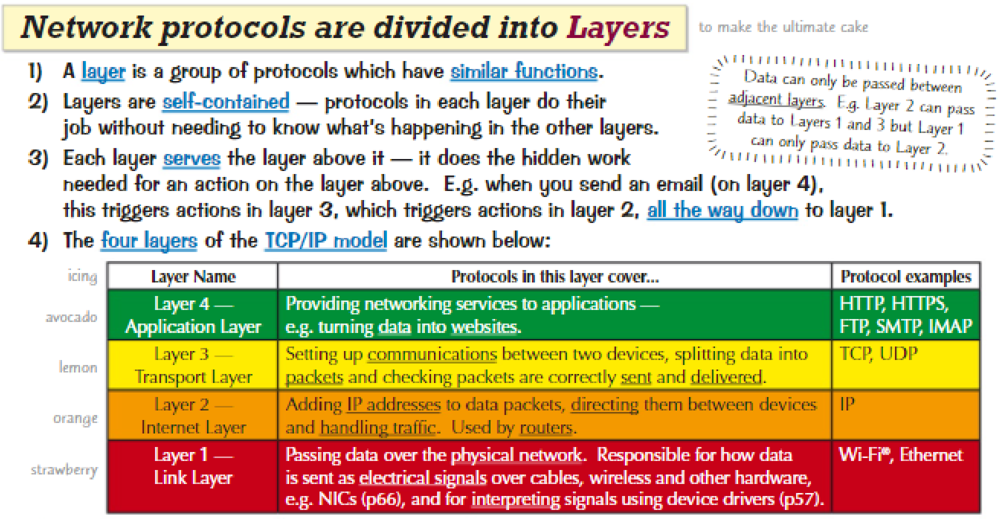
____[1]

Read the information on network protocols. Take the Test on this topic.

https://www.bbc.co.uk/bitesize/guides/zp9jpv4/revision/6

Lesson 5

1. Be able to describe the TCP/IP protocol stack.
2. Be able to describe what protocols operate at the different layers of the TCP/IP protocol stack.
3. Be able to describe the advantage of using the TCP/IP protocol stack.



Network protocols are divided into Layers

to make the ultimate cake

1) A layer is a group of protocols which have similar functions.
2) Layers are self-contained — protocols in each layer do their job without needing to know what's happening in the other layers.
3) Each layer serves the layer above it — it does the hidden work needed for an action on the layer above. E.g. when you send an email (on layer 4), this triggers actions in layer 3, which triggers actions in layer 2, all the way down to layer 1.
4) The four layers of the TCP/IP model are shown below:

Data can only be passed between adjacent layers. E.g. Layer 2 can pass data to Layers 1 and 3 but Layer 1 can only pass data to Layer 2.

icing	Layer Name	Protocols in this layer cover...	Protocol examples
avocado	Layer 4 — Application Layer	Providing networking services to applications — e.g. turning data into websites.	HTTP, HTTPS, FTP, SMTP, IMAP
lemon	Layer 3 — Transport Layer	Setting up communications between two devices, splitting data into packets and checking packets are correctly sent and delivered.	TCP, UDP
orange	Layer 2 — Internet Layer	Adding IP addresses to data packets, directing them between devices and handling traffic. Used by routers.	IP
strawberry	Layer 1 — Link Layer	Passing data over the physical network. Responsible for how data is sent as electrical signals over cables, wireless and other hardware, e.g. NICs (p66), and for interpreting signals using device drivers (p57).	Wi-Fi®, Ethernet

DIRT – Read the information on the PowerPoint on Class Charts.

What is the **TCP/IP protocol stack**?

____

____[1]

How many layers does the TCP/IP protocol stack have?

____

____[1]

What is **an advantage** of separating network communication over different **layers**?

____

____

____[1]

In the table below enter each of the **four layers** of the TCP/IP protocol stack, the **protocols that each layer uses**, and the **purpose of each layer**.

Layer	Protocols	Purpose

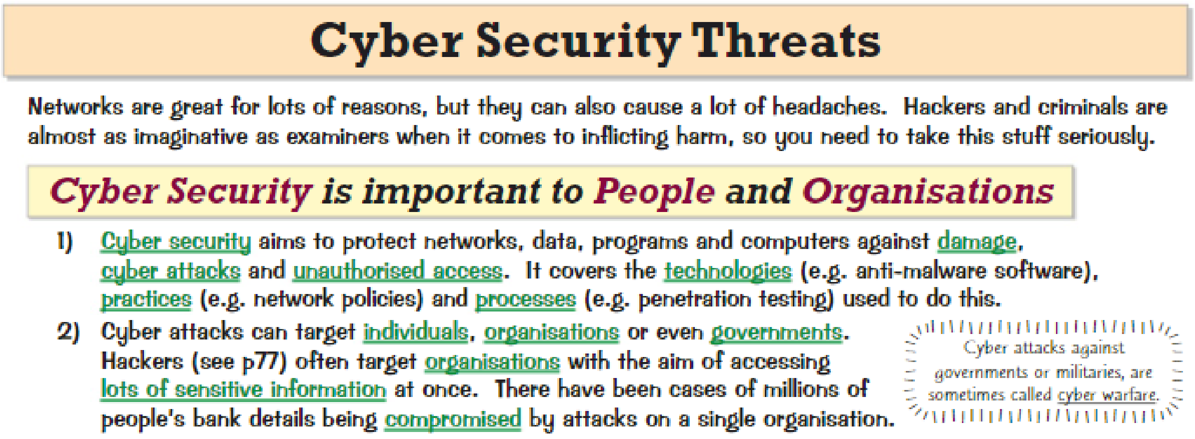
[8]

Lesson 6

6. Be able to understand the need for, and importance of network security.
7. Be able to explain the need for, and importance of authentication.
8. Be able to explain the need for, and importance of encryption.
9. Be able to explain the need for, and importance of firewalls.
10. Be able to explain the need for, and importance of MAC address filtering.

Video link - https://www.youtube.com/watch?v=_Mu6kunFAAE

DART



Cyber Security Threats

Networks are great for lots of reasons, but they can also cause a lot of headaches. Hackers and criminals are almost as imaginative as examiners when it comes to inflicting harm, so you need to take this stuff seriously.

Cyber Security is important to People and Organisations

1) Cyber security aims to protect networks, data, programs and computers against damage, cyber attacks and unauthorised access. It covers the technologies (e.g. anti-malware software), practices (e.g. network policies) and processes (e.g. penetration testing) used to do this.

2) Cyber attacks can target individuals, organisations or even governments. Hackers (see p77) often target organisations with the aim of accessing lots of sensitive information at once. There have been cases of millions of people's bank details being compromised by attacks on a single organisation.

Cyber attacks against governments or militaries, are sometimes called cyber warfare.

DIRT – Read the information on the PowerPoint on Class Charts.

What **kind of networks** require security?

____

____[1]

Name **four common types of software security** used by computer networks.

____

____[4]

What is a **firewall**?

____

____[1]

What is the purpose of a **firewall**?

____

____[1]

What is a **Media Access Control address**?

____

____[1]

What is **MAC address filtering**?

____

____[1]

How can MAC address filtering help to **protect a computer network**?

____

____[1]

What is **network security**?

____

____[1]

Give **two examples of physical security** techniques that could be used to protect networks.

____

____[1]

What is the purpose of **network authentication**?

____

____[1]

Give **a form of authentication** used by computer networks.

____

____[1]

Give the **definition of encryption**.

____

____[1]

Describe **symmetric encryption**.

____

____[1]

Describe **asymmetric encryption**.

____

____[1]

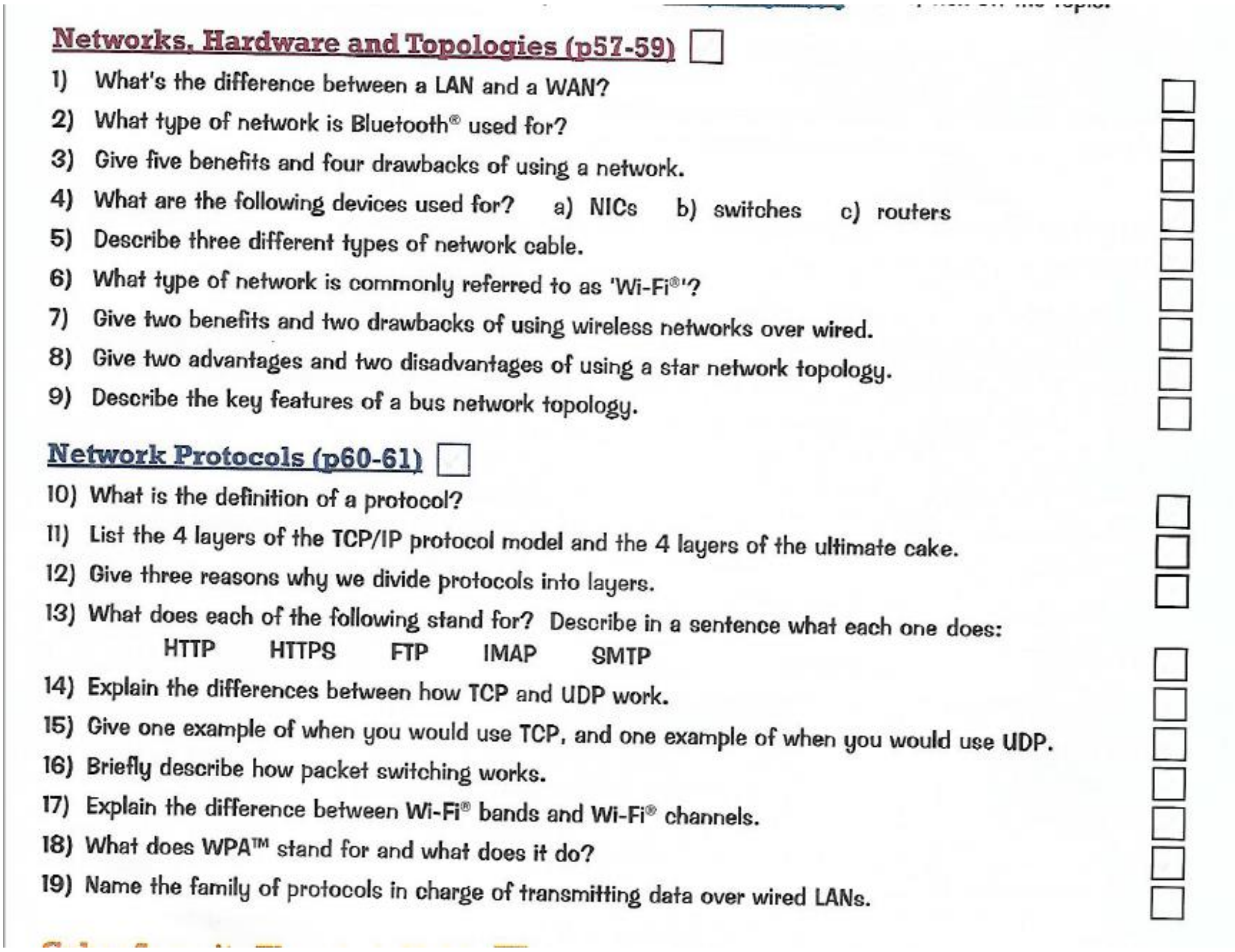
What are the names of the **keys used by asymmetric encryption**?

____

____[1]

Lesson 7

Questions revision



Networks, Hardware and Topologies (p57-59) □

1) What's the difference between a LAN and a WAN? □
2) What type of network is Bluetooth® used for? □
3) Give five benefits and four drawbacks of using a network. □
4) What are the following devices used for? a) NICs b) switches c) routers □
5) Describe three different types of network cable. □
6) What type of network is commonly referred to as 'Wi-Fi®'? □
7) Give two benefits and two drawbacks of using wireless networks over wired. □
8) Give two advantages and two disadvantages of using a star network topology. □
9) Describe the key features of a bus network topology. □

Network Protocols (p60-61) □

10) What is the definition of a protocol? □
11) List the 4 layers of the TCP/IP protocol model and the 4 layers of the ultimate cake. □
12) Give three reasons why we divide protocols into layers. □
13) What does each of the following stand for? Describe in a sentence what each one does:
    HTTP HTTPS FTP IMAP SMTP □
14) Explain the differences between how TCP and UDP work. □
15) Give one example of when you would use TCP, and one example of when you would use UDP. □
16) Briefly describe how packet switching works. □
17) Explain the difference between Wi-Fi® bands and Wi-Fi® channels. □
18) What does WPA™ stand for and what does it do? □
19) Name the family of protocols in charge of transmitting data over wired LANs. □

Extra Learning

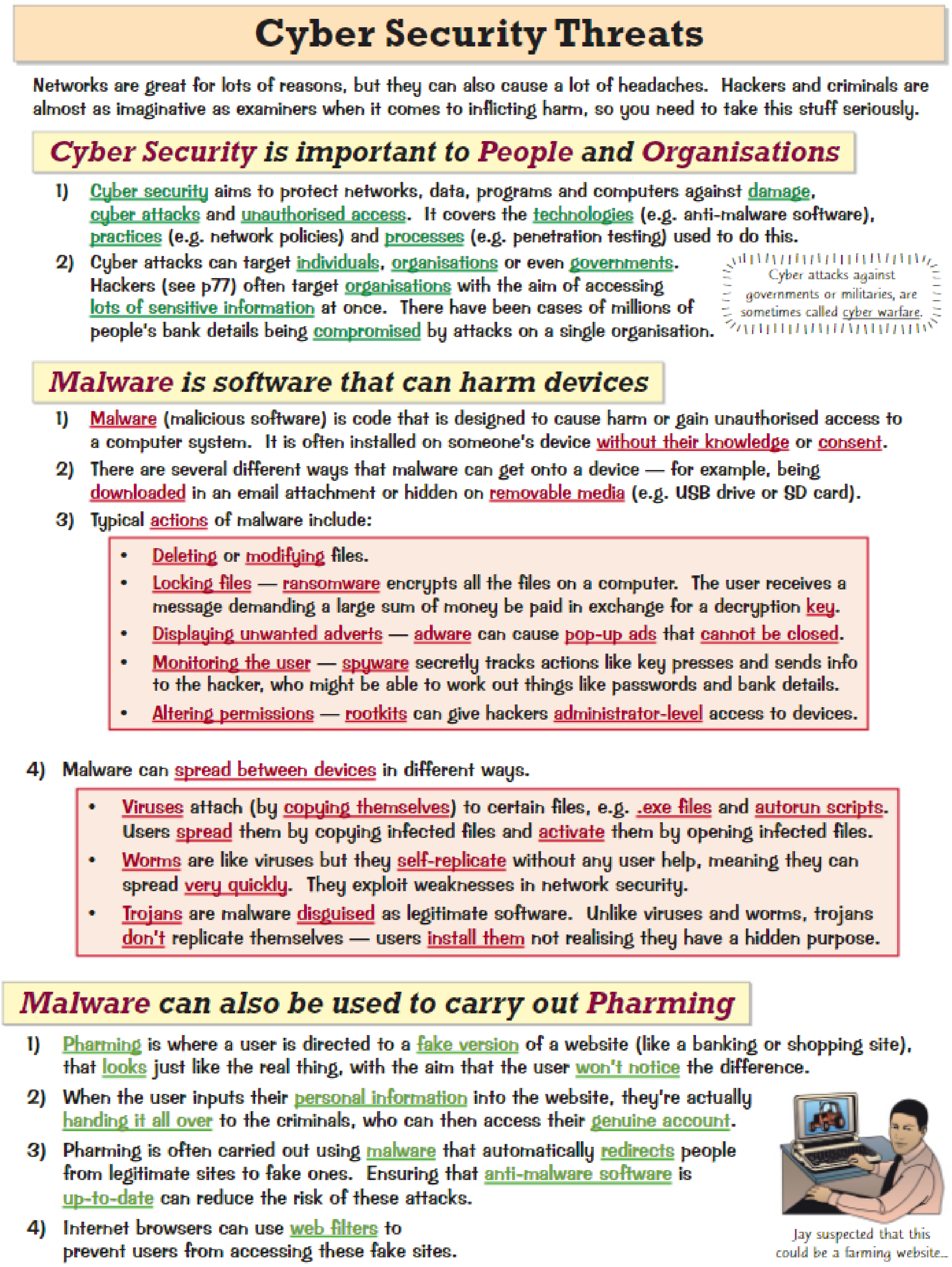
This link will take you to the Oak Academy website where you will be able to complete lessons related to networks.

https://classroom.thenational.academy/units/networks-fe4b

Assessment Lesson

You will have an exam to assess your knowledge and understanding of this topic.

Light Reading



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Malware is software that can harm devices

1) Malware (malicious software) is code that is designed to cause harm or gain unauthorised access to a computer system. It is often installed on someone's device without their knowledge or consent.

2) There are several different ways that malware can get onto a device — for example, being downloaded in an email attachment or hidden on removable media (e.g. USB drive or SD card).

3) Typical actions of malware include:

- Deleting or modifying files.
- Locking files — ransomware encrypts all the files on a computer. The user receives a message demanding a large sum of money be paid in exchange for a decryption key.
- Displaying unwanted adverts — adware can cause pop-up ads that cannot be closed.
- Monitoring the user — spyware secretly tracks actions like key presses and sends info to the hacker, who might be able to work out things like passwords and bank details.
- Altering permissions — rootkits can give hackers administrator-level access to devices.

4) Malware can spread between devices in different ways.

- Viruses attach (by copying themselves) to certain files, e.g. .exe files and autorun scripts. Users spread them by copying infected files and activate them by opening infected files.
- Worms are like viruses but they self-replicate without any user help, meaning they can spread very quickly. They exploit weaknesses in network security.
- Trojans are malware disguised as legitimate software. Unlike viruses and worms, trojans don't replicate themselves — users install them not realising they have a hidden purpose.

Malware can also be used to carry out Pharming

1) Pharming is where a user is directed to a fake version of a website (like a banking or shopping site), that looks just like the real thing, with the aim that the user won't notice the difference.

2) When the user inputs their personal information into the website, they're actually handing it all over to the criminals, who can then access their genuine account.

3) Pharming is often carried out using malware that automatically redirects people from legitimate sites to fake ones. Ensuring that anti-malware software is up-to-date can reduce the risk of these attacks.

4) Internet browsers can use web filters to prevent users from accessing these fake sites.

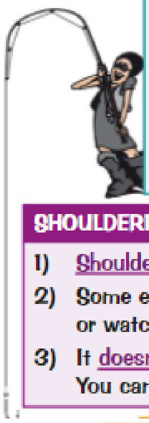
Jay suspected that this could be a farming website...

Cyber Security Threats

Sci-fi movies might have lead you to believe that breaking into a network is all about tapping on a keyboard really quickly, but you'd be surprised how often it's done the old-fashioned way — manipulating people.

People are often the Weak Point in secure systems

Social engineering is a way of gaining sensitive information or illegal access to networks by influencing people, usually the employees of large companies. Social engineering comes in many different forms:

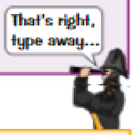


PHISHING

1) Phishing is when criminals send emails or texts to people claiming to be from a well-known business, e.g. a bank. The emails often lead the victim to a fake website, just like pharming.
2) Phishing emails are often sent to thousands of people, in the hope that someone will read the email and believe its content is legitimate.
3) Many email programs, browsers and firewalls have anti-phishing features that will reduce the number of phishing emails received. There are often signs that you can spot, like typos. Emails asking users to follow links or update personal details should be treated with caution.

SHOULDERING

1) Shouldering or shoulder surfing is watching and observing a person's activity (typically over their shoulder).
2) Some examples of this are spying someone's PIN number at a cash machine, or watching someone putting their password into a secured computer.
3) It doesn't require any technical expertise or any planning. It's simple, but it can work. You can reduce risk by being discreet, e.g. covering the keypad when you enter your PIN.



BLAGGING

1) Blagging or pretexting is when someone makes up a story or pretends to be someone they're not, to persuade the victim to share information or do things they wouldn't normally do.
2) For example, a potential attacker could email someone, pretending to be one of their friends, saying they are stuck in a foreign country and need them to send money.
3) Another common method is to phone the victim, trying to gain their trust by persuading them that they are someone important — e.g. their boss's boss.
4) Criminals that use these tactics often try to pressure people, or rush them into giving away details without giving it proper thought. One way to reduce risk is to use security measures that can't be given away, e.g. biometrics (see p72).

Penetration Testing can Test a system's Cyber Security

1) Penetration testing (or pentesting) is when organisations employ specialists to simulate potential attacks to their system. It's used to identify possible weaknesses in their cyber security. The results of the test are then reported back so that vulnerabilities can be fixed.
2) There are two different forms of penetration test — white box and black box.

- White box penetration testing simulates a malicious insider who has knowledge of the current system, e.g. an employee at the organisation. The person carrying out the test will be given user credentials to see what they can do with them.
- Black box penetration testing simulates an external cyber attack. The person carrying out the test will not be given any credentials, but will try to hack the organisation in any way they can.