Year 8 | Topic 2 | **Computer Science** | Networking

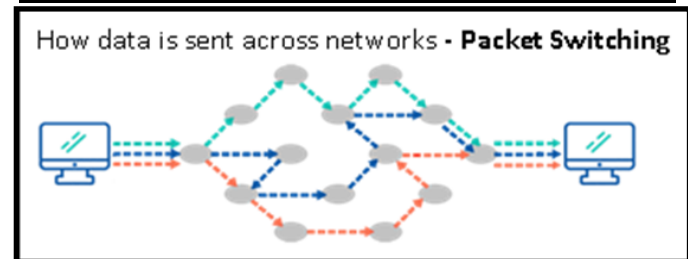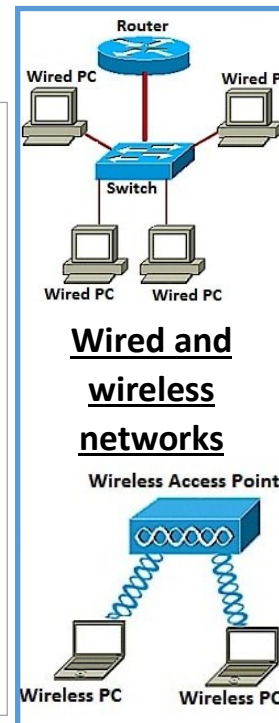| Topology	Advantages	Disadvantages
Bus	Cheap to install—only 1 extra cable needed. Easy to add more devices	Whole network will fail if the cable is damaged. The more devices on the network the slower the performance.
Ring	Adding extra devices doesn't affect the performance of the network and easy to add more devices.	Whole network will fail if a cable is damaged. Adding more devices means temporarily shutting down the network. More expensive as more cables needed.
Star	Damaged cable won't stop the network from working. Easy to locate faults. New devices added easily without shutting network down.	If switch or hub fails then whole network will fail. Expensive to install as more equipment required.
Mesh	Many routes that data can take to get to correct device. Very high performance	Difficult and expensive to install, especially a wired mesh. Hard to manage as well.

Network Topologies

ring bus mesh star
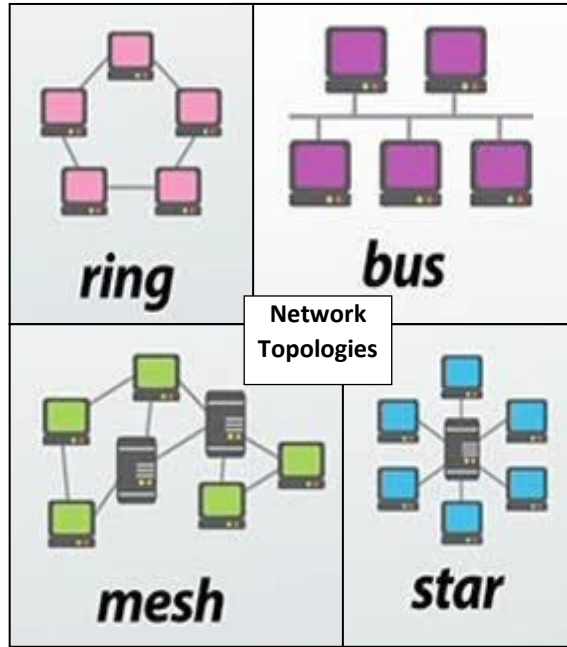
Network	2 or more computers connected together.
Ethernet	A cable that can be used to connect each computer to a network.
LAN	Local area network. Computers connect over a Small geographical area. E.g home, school, office.
WAN	Wide Area network. 2 or more LAN's connected together.
Hardware	Physical components of the computer e.g Keyboard and Mouse
Topology	The arrangement of all the devices in a network.
Internet	Worldwide collection of networks.
URL	Addresses to access web servers. E.g. https://www.google.co.uk
WWW	World Wide Web – collection of websites that are hosted on web servers.
IP address	Unique number given to a device on a network. E.g. 192.168.12.345. Used when sending data across a network.
Cyber crime	Crime that are committed through digital means.

Networking computers

✓ Hardware such as printers can be shared.
X Expensive to set up and lots of hardware needed.
✓ Installing and updating software on all computers at once.
X Viruses can easily spread between networked computers.
✓ User accounts can be stored centrally, so users can use any device.
X Large networks are difficult to manage and require specialists to maintain them.

Wireless Networks

✓ Move around when connected.
X Less secure.
✓ Cheaper and better for the environment.
X Distance from the WAP/ walls/ interference.
✓ Easy to add more users.
X Less reliable.

Router
Wired PC   Wired PC
Switch
Wired PC   Wired PC

Wired and wireless networks

Wireless Access Point

Wireless PC   Wireless PC

How data is sent across networks - **Packet Switching**

Computer systems