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| **St. Anne’s Academy**  |
| **Home Learning Work Booklet: Computer Science** |
| **Main Topics: Networks and Binary****Year 8** |
| Mrs Graziano2020-2021 |



**Instructions: This is a home learning booklet to work from. It is set out to explain a topic and then answer questions written in the work booklet after each topic lesson.**

**Lesson: What is a network?**

**Read the information below and then answer the questions to show your understanding. Use your knowledge organiser to help you complete some of the task.**

A **network** is **two** or **more** computers (or other electronic devices) that are connected together, usually by cables or Wi-Fi. Some computer networks will have a server.

A **server** is a powerful computer that often **acts as a central hub** for **services** in a network, e.g. emails, internet access and file storage. Each computer connected to a server is called a client. When a computer is not connected to a network it is called a standalone device.

The two main types of network are **LAN** and **WAN**.

**LAN** stands for **Local Area Network**

A local area network is when computers or devices are connected together over a small geographical area, such as within a home, a building or one site.

**WAN** stands for **Wide Area Network**

A wide area network is when computers or devices are connected together over a large geographical area. The biggest WAN we know is the internet.

***Task:***

**What is a network?**

**What is a computer called when it is not connected to a network?**

**List 3 types of network hardware.**

1.

2.

3.

**State the purpose of one of the types of network hardware you listed above.**

The purpose of a is

**What does LAN and WAN stand for?**

LAN

WAN

**What is one example of a LAN and one example of a WAN?**

One example of a local area network is…

One example of a wide area network is…

**Lesson: The Internet**

There are many things we can do on the internet. It has grown so much over the past five years. The internet helps us to connect to many different people/things etc.

Can you list 3 websites you have visited in the last 5 years?

1.

2.

3.

Can you list 5 thing you have done while using the internet?

1.

2.

3.

4.

5.

Now were going to discuss the advantages and disadvantages of using the internet. State three thing you can do on the internet and state whether each one is an advantage or disadvantage.

**For example: Communication - advantage**

1.

2.

3.

Now its time to discuss this in an answer form, use my paragraph to help guide you then add two more paragraphs to complete it. This is a 6-mark question.

*“Discuss how the advantages and disadvantages of using the internet.” (6marks)*

 One way the internet has changed the way people live their lives is through communication. This means sending or receiving information, such as telephone lines or computers. This is an advantage because people are able to communicate easily especially for families that may not live in the same country.

 Another way the internet has changed the way people live their lives is

**Lesson: Network Topologies**

A **network's topology** is the arrangement, or pattern, in which all nodes on a network are connected together. There are several common topologies that are in use, but today the most common topologies are:

In a **star** topology all nodes indirectly connect to each other through one or more switches. The switch acts as a central point through which all communications are passed.

In a **bus** topology, all nodes in the network are connected directly to a central cable that runs up and down the network - this cable is known as the backbone. Data is sent up and down the backbone until it reaches the correct node.

In a **ring** network each device (workstation, server, printer) is connected to two other devices - this forms a ring for the signals to travel around. Each packet of data on the network travels in one direction and each device receives each packet in turn until the destination device receives it.

In a **mesh** topology there is no central connection point. Instead, each node is connected to at least one other node and usually to more than one. Each node is capable of sending messages to and receiving messages from other nodes. The nodes act as relays, passing on a message towards its final destination.

There are two types of mesh topology:

* full mesh topology
* partial mesh topology

***Task:* Draw a line to match the names of the topologies with the correct description.**

Bus

All nodes indirectly connect to each other through one or more switches.

Star

There is no central connection point, each node is connected to at least one other node

Ring

All nodes in the network are connected directly to a central cable that runs up and down the network.

Mesh

Each device is connected to two other devices.

**There are two types of mesh networks, what are they?**

1.

2.

**State and draw two types of network topologies.**

Name of topology:

Name of topology:

**Lesson: Binary – The lesson on the next few pages is binary complete the tasks by inputting the numbers into the worksheets:**





