

Index

TABLE OF CONTENTS

TERM 1.....	7
UNIT 3: NETWORKS AND DIGITAL COMMUNICATION.....	9
Topic 3.1 – Network Hardware.....	9
Task 1: Fill in the blanks.....	11
Task 2: Network Hardware – Q & A.....	12
Task 3: Wired or Wireless Network?.....	14
Task 4: Hands-On Activity – Network Layout.....	15
Self-Assessment Checklist – Topic 3.1.....	16
Topic 3.3 – Network Failure.....	17
Task 9: Complete the Sentences with the Correct Term.....	18
Task 10: Analyze and Answer.....	19
Task 11: Minor or Large?.....	20
Task 12: Hands-On Activity – Research Work.....	21
Self-Assessment Checklist – Topic 3.3.....	22
UNIT 1: COMPUTATIONAL THINKING AND PROGRAMMING.....	23
Topic 1.1 – Assigning Variables.....	23
Task 1: Variable Review.....	25
Task 2: Unplugged Activity 1.....	26
Topic 3.2 – How Data Travels Through Networks.....	27
Task 5: Fill in the Blanks.....	31
Task 6: Who am I?.....	32
Task 7: Q & A (Part 1).....	33
Task 8: Q & A (Part 2).....	35
Self-Assessment Checklist – Topic 3.2.....	37
Task 3: My Favorite Vegetable.....	38
Task 4: Hands-On Programming Activity – Creating Variables.....	39
Self-Assessment Checklist – Topic 1.1.....	40
Topic 1.2 – Using Operators.....	41
Task 5: What is the value of Result?.....	43
Task 6: Comparison Operators – Check your Understanding.....	44
Task 7: Variables in Algorithm and Selection.....	45
Task 8: Linear vs. Selection Algorithm.....	46
Task 9: Hands-On Programming Activity – Building a Calculator.....	47
Self-Assessment Checklist – Topic 1.2.....	50

Task 1: Fill in the blanks

Choose the correct word from the box given below and fill in the blanks with the appropriate answers. Please note that **one word can be used more than once**.

ethernet	another	wireless adapter	radio	network	IP addresses
switch	wireless	cables	router	share	hardware

1. A network is a group of connected computers and devices.
2. Networks help devices share information.
3. Devices connected with wires use an wired connection.
4. A switch helps direct data to the correct device in the same network.
5. A router connects different networks together.
6. Digital devices connect to a network using an ethernet cable.
7. Routers and switches are examples of network hardware.
8. A wired connection is often faster and more stable.
9. Devices connected using Wi-Fi are using wireless networks.
10. Wi-Fi uses radio waves to send and receive data.
11. A wireless adapter connects a computer to a wireless network.
12. Routers can work with both wired and wireless devices.
13. Switches only work within the same network.
14. Network hardware helps data travel from one place to another.
15. Wireless networks do not need physical cables.
16. A router assigns IP addresses to devices on the network.

Task 2: Network Hardware – Q & A

1. From the sentences below, mark a TICK against the two sentences which are true about networks:

- ☒ A network is a group of computers and devices that can share information.
- ☐ Switches connect different networks together across long distances.
- ☒ Networks help devices talk to each other and share data.
- ☐ Wi-Fi connections use wires to send signals between computers.
- ☐ A router is only used to connect printers to computers.

2. What is a network? Briefly describe what a network does.

A network is a group of devices connected together to share to share data and resources. It helps devices communicate and share information such as files and internet.

3. Name the two devices which are used to connect devices across a network.

Switch, router

4. After reading the following six statements, write **wired** after the statements you identify as characteristics of wired networks and the word **wireless** in front of the statements you identify as characteristics of wireless networks.

Statement	Wired/ Wireless
a. Data usually travels faster and is more stable in this type of network.	w
b. Devices connect without cables, using signals in the air.	wl
c. This type of network is often easier to set up in large open spaces.	wl
d. You need physical cables to connect devices in this kind of network.	w
e. It can be harder to move devices around because they are tied to cables.	w
f. Signals can be affected by walls or distance from the router.	wl

5. Briefly explain how the following devices work:

a. Switch

A switch connects devices on the same network and sends data to the correct device.

b. Router

A Router connects different networks and chooses the best path for data to travel.

6. What is the benefit of using a wireless access point (WAP)?

A Wap allows devices to connect to a network wirelessly using wifi without needing cables.

7. Give three examples of devices that can connect to the internet wirelessly:

a. smart phone b. I pad c. Laptop.

8. What kind of signals does a Wi-Fi network use to transmit data?

wifi uses radio waves to transmit data.

9. Can a router work with both wired and wireless devices?

A Router can connect wired devices using Ethernet cables and wireless devices using wifi.

10. Do you think wired connections are better than wireless connections? Explain why or why not.

wired connections can be faster when speed and stability are important because they are usually faster and less affected by interference. wireless connections are more convenient because devices can move around freely.

11. Look at the pictures below and fill in the Names of the devices, Connection Type and Purpose

		
Name	Switch	Router
Connection Type	wired	wireless
Purpose	connect multiple devices in a local area network and send data to correct devices.	connect devices to the internet and allow communication between wired and wireless devices.

Task 3: Wired or Wireless Network?

Carefully read each **scenario** and identify whether it describes a **wired** or **wireless** network.

	Scenarios	Wired/ Wireless
1	At the bank, the computers that tellers use to check accounts and transfer money are connected to the internet using cables for extra security.	w
2	In the university library, students use their laptops to do research by connecting to the campus Wi-Fi.	wl
3	Doctors and nurses use tablets to check patient information. These tablets connect to the hospital's secure Wi-Fi network.	wl
4	The police station's security system is connected to the internet using strong cables to ensure it always works properly	w
5	Saad's gaming console at home connects to the internet using an Ethernet cable for faster gaming speed.	w
6	Employees use laptops to attend video meetings. Their laptops are connected to the internet through Wi-Fi so they can move around easily.	wl
7	In a coffee shop, a customer pays using a card machine that connects to the internet through Wi-Fi.	wl
8	At the airport, passengers use their laptops to check emails using free public Wi-Fi.	wl

Task 9: Complete the Sentences with the Correct Term

Choose the correct words from the box given below and fill in the boxes with the appropriate answers. Be Careful! A word may be used more than once!

outage	devices	damaged	failure	networks
major	load	down	hardware	Weather
websites				

1. The internet is a connection of many networks across the world.
2. A network failure can be minor or major.
3. A common reason for a broken connection is a damaged cable.
4. Network failures may be caused by faulty hardware used in the network.
5. Devices may not work properly when the network is down.
6. Restarting the devices can sometimes fix minor issues.
7. Power outages can cause a network to stop working.
8. Storms and damage caused by the weather can affect connections.
9. Network failures interrupt access to websites for example www.youtube.com.
10. When networks fail, websites may not load.
11. A slow connection can also be a sign of a failure.

Task 10: Analyze and Answer

1. Differentiate between minor and large network failure. You can use an online resource to help you do this research work.

	Minor Network Failure	Large Network Failure
What it means?	A small issue that effect single device and issues.	A major issues that effects many users or entire areas.
Who it effects?	one person, small group	many people, companies or cities
Examples	wifi not working on your laptop	the whole internet gone down in city
How long does it last?	a few minutes to hour	hours even days
Common causes	looses cables, device glitch	power outage, server clashes
How to fix it?	restart router and devices	it experts, services providers

2. What happens when a connection breaks? And why do connections break?

How: when a connection, your device cannot send or receive data, you might not be able to load websites or use apps. Reasons connections break because of signal

3. What are the causes of large-scale network failures? problems or weather damage

Power failures.

Storms or weather damage.
Soft ware or hardware issue in data center.

Task 11: Minor or Large?

Carefully read each scenario and decide whether it is **minor** or **large** network failure. Circle your choice.

	Scenarios	Type of Network Failure
1	You are trying to watch a video on your tablet at home, but it keeps pausing. Your brother's phone is still working fine on the same Wi-Fi.	Minor / Large
2	At school, no one in your class can connect to the internet, and even the teacher's computer is not working online.	Minor / Large
3	Only your laptop can't connect to Wi-Fi, but your friends' laptops are working fine in the same room.	Minor / Large
4	The whole school has no internet connection for the entire morning, and the IT teacher says there's a problem with the main network.	Minor / Large
5	You unplugged the Wi-Fi router at home by mistake, and now nobody can use the internet until it's plugged back in.	Minor / Large
6	You are at a library where all the computers suddenly lose internet access. The librarian says the internet is down for the whole area because of a problem with the internet provider.	Minor / Large

For 12/9/20

Task 5: Fill in the Blanks

Choose the correct words from the box given below and fill in the boxes with the appropriate answers.
A word may be used more than once:

router	wireless	weak	networks	packets
cellular	radio waves	transmit	interference	devices
source	megabits per second (MBPs) / gigabits per second (GBPs)		switch	wired

1. Data travels in the form of packets.
2. Devices like switches and routers help to transmit data.
3. Data can travel through cables or wireless signals.
4. Connection speed is measured in MBPs/GBPs.
5. The network mobile phones connect to a network with is called a cellular network.
6. The biggest disadvantage of cellular networks is that they can suffer from interference.
7. Interference can either stop a device from connecting or make the connection weak.
8. A switches connects devices using wires inside a local network.
9. Routers connect multiple networks together.
10. A router decides the best path for the data.
11. Each packet has a source and a destination address.
12. Networks allow data to travel between different device.
13. A wired connection uses cables.
14. Wi-Fi uses radio waves to send data.
15. Data is broken up into packet before transmission to improve efficiency.
16. Wireless networks use radio waves to transmit data.

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Task 6: Who am I?

The following 5 terms are related to networks. Match each term with the correct description:

Term	Description
1. Web server	a. I am the address you type in the search bar to visit a page on the Internet.
2. Website	b. I am a place on the Internet where information, pictures, and videos are stored and shown together on a page or set of pages.
3. Web browser	c. I am a computer that stores websites and sends them to your device when you ask for them.
4. URL	d. I am the program you use to open and look at websites, like Chrome or Safari.

Task 7: Q & A (Part 1)

1. Read the following statements about Cellular Networks. Only **two** statements are **true**. Mark a tick (✓)

- ☒ Cellular networks use towers to send and receive data. ✓
- ☐ Cellular networks always need Wi-Fi to work.
- ☒ Cellular networks let phones and tablets connect to the internet using mobile signals. ✓
- ☐ Cellular networks only work when you are at home.
- ☐ Cellular networks can only be used for making phone calls, not for the internet.

2. Put the steps below in the **correct order** to show how cellular networks send signals over large distances. Number them from 1 to 5.

- 2 ☐ The signals go to the nearest cell tower. ✓
- 5 ☐ That device sends signals back to your phone the same way. ✓
- 1 ☐ Your phone sends out signals when you make a call or use the internet. ✓
- 3 ☐ The cell tower passes the signals along to other towers or stations. ✓
- 4 ☐ The signals keep moving until they reach the phone or device you are contacting. ✓

3. Research Task: Compare different connections given below.



Feature	Wi-Fi Connection	Cellular Connection	Ethernet Connection
Type of connection	wireless	wireless	wired
Range	short	very long	limited by length of cable
Speed	fast	medium to fast	fast
Number of Devices	many devices	usually one mobile	one device per cable
Chance of Interference	high	medium	very low

4. Read the passage and fill in the blanks with the correct words from those given below to complete the meaning.

address	find	talk	device	internet
---------	------	------	--------	----------

An IP address is a special number given to every device on a network. It helps to find where data should be sent. When you go online, your device uses its IP address to talk with other devices. This makes sure that data reaches the right device across the internet.

5. What helps data find the best path in a network?

☐ Web server ☐ Switch ☒ Router

6. Complete the following passage that describes how data travels across a network. Choose words from the list given below:

packets	switches	router	message	webpage
---------	----------	--------	---------	---------

Data travels across a network in small pieces called packets. These packets move from one device to another, passing through switches and routers. The router helps choose the best path for the packets so they reach the right device. The packets are put back together at the end to show the full message, picture, or webpage.

7. Describe in your own words what are packets and what they contain:

Packets are small piece of data
that are sent along the network.
Packets contain data, source, destination
address as well as packet number.

THIS IS A MESSAGE FOR SOFIA
THIS IS A MESSAGE FOR SOFIA

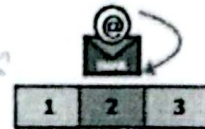
Packet number	1 of 3	Packet number	2 of 3	Packet number	3 of 3
Sent from:	Arun	Sent from:	Arun	Sent from:	Arun
Sent to:	Sofia	Sent to:	Sofia	Sent to:	Sofia
Packet data:	THIS IS A	Packet data:	MESSAGE	Packet data:	FOR SOFIA

Task 8: Q & A (Part 2)

8. Why do networks split data into packets?

Network split data into packets so it can travel faster and more efficiently. If one packet is lost or damaged, only that packet needs to be sent again, not the whole file.

Destination



Step 4

Packets are put back in order to complete the message.

9. The steps below show how data is sent across a network, from your device to another device. The steps are in the wrong order! Number them 1 to 10 to show the correct order of how data travels across a network.

6	The packets pass through a switch to reach the right local device or router.
4	Each packet is given a source address and a destination address .
2	Your device turns your request into data .
1	You ask for something online, like opening a website or sending a message.
7	The packets go to a router , which picks the best path across the network.
10	The packets are put back together in the correct order so you see the full message, picture, or website.
3	The data is broken into small pieces called packets .
8	The packets travel through wires, fiber cables, or wireless signals, moving across different networks.
5	The packets are sent out from your device onto the network.
9	The packets reach the right device (like a web server or a friend's phone).

10. Write two benefits of sending data in packets?

Data travels faster and more efficiently. If a packet is lost, only that packet is sent again instead of the whole file.

11. Write any two drawbacks of sending packets?

Some packets may be lost or delayed. Packets may arrive in the wrong order and need to be rearranged.

12. In packet switching, why do some packets arrive sooner than others?

Packets may travel through different routes across the network. Some routes are faster or less busy, so those packets reach the destination first.

13. What happens if some of the packets are lost?

If some packets are lost, the network requests them to be sent again. Once all the packets arrive, they are put back together to form the complete data.

4/9/26

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