Communication technologies

**Activity A: Types of networks**

In the table below, identify whether each characteristic describes a Wi-Fi network or Cellular network.

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| **Characteristic** | **Wi-Fi network** | **Cellular network** |
| A mobile network provided by carriers (like EE, Vodafone, O2). |  | ✓ |
| A wireless local network that uses radio waves to connect devices (phones, laptops, smart TVs) to the internet through a router. | ✓ |  |
| Works best in homes, schools, cafés, or offices. | ✓ |  |
| Uses cell towers to connect your phone to the internet and make calls anywhere there’s signal. |  | ✓ |
| Limited to the area around the router (e.g., your house). | ✓ |  |
| Much larger, covering cities, regions, and countries. |  | ✓ |
| When you connect your phone to your home Wi-Fi. | ✓ |  |
| Using 4G/5G data when you’re out and about. |  | ✓ |

**Activity B: Network security**

In the table below, identify the risk and how to mitigate (prevent) it.

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| **Scenario** | **📚 Scenario 1:**  **Coffee Shop Wi-Fi** | **🎮 Scenario 2:**  **Gaming on Open Wi-Fi** | **🛒 Scenario 3:**  **Online Shopping in a Hotel** |
| You connect your phone to free Wi-Fi in a coffee shop and log in to your email. | A student plays an online game using open Wi-Fi at a train station. During the game, the network asks them to install a “security update” file. | While staying at a hotel, a student uses the open Wi-Fi to buy clothes online and enters their bank card details. |
| Risk | A hacker on the same network could intercept your login details (username and password). | The “update” could be malware, giving hackers access to the student’s device. | Attackers could steal payment information through an unencrypted connection. |
| Mitigation | Use a VPN to encrypt your data or wait until you’re on a secure network. | Never download files from pop-ups on public Wi-Fi. Only update apps from official app stores. | Check for HTTPS in the website address, use two-factor authentication, and ideally use mobile data or VPN instead of open Wi-Fi for purchases. |

**Activity C: Performance issues**

A student takes their laptop to the garden to do homework but the Wi-Fi signal from the house keeps dropping.

1. What is the performance issue?

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| Wi-Fi doesn’t reach far outside the router’s coverage area. |

1. What impact will this have on the student when completing their homework?

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| Pages load slowly, videos buffer, or the connection cuts out. |

1. What could the student do to solve this problem?

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| Move closer to the router, use a Wi-Fi extender, or connect with an Ethernet cable if possible. |