

5.1.1 Smart Devices in the Home

Syllabus 2026 - 2028

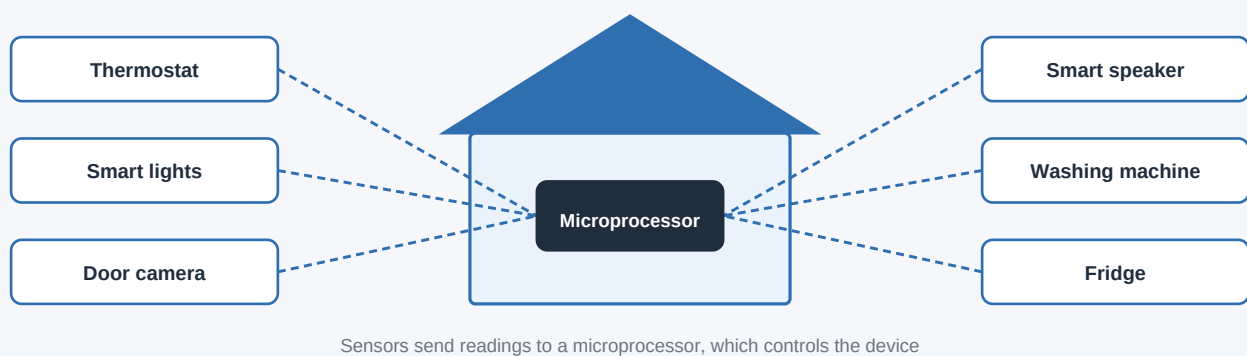
WHAT YOU NEED TO KNOW

- The positive and negative effects of microprocessors and smart devices in monitoring and controlling devices in the home
- The impact on lifestyle, leisure time, physical fitness, security of data and the degree of social interaction

Microprocessors and smart devices

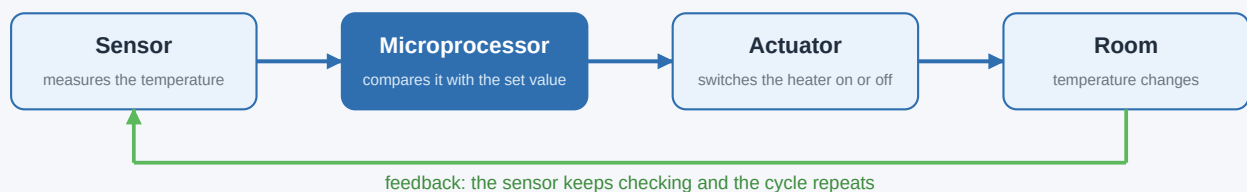
A **microprocessor** is a small chip that processes instructions, and it is built into many devices. A **smart device** has a microprocessor and sensors, and often connects to the internet or a home network so that it can be monitored and controlled automatically or remotely, for example by a phone app. Examples in the home are central heating and air conditioning, security cameras and alarms, lighting, washing machines, ovens, fridges, robot vacuum cleaners, smart speakers and doorbells.

Figure 12: Microprocessor-controlled devices in a smart home



- **Monitoring:** sensors measure things such as temperature, light, movement or the contents of a fridge, and send readings to the microprocessor
- **Controlling:** the microprocessor compares the readings with stored settings and switches devices on or off, or changes their settings, through actuators

Figure 13: How a smart heating system monitors and controls temperature



Positive and negative effects

Area	Positive effects	Negative effects
Lifestyle	Home is more comfortable and convenient. Devices work automatically, such as heating that comes on before you get home. Energy and money are saved. Helps older and disabled people live independently. Safer, with smoke and security alarms.	Devices and repairs cost money. People can become dependent on them and lose skills such as cooking. If the power or internet fails, devices may stop working. Faults or poor settings can cause problems.
Leisure time	Chores are done automatically (washing, vacuuming, cooking), which gives people more free time. Entertainment can be controlled by voice or app.	Time can be wasted on devices, apps and screens. Learning to set up and update devices takes time.
Physical fitness	Fitness trackers and smart gym equipment monitor activity and heart rate and help people set and reach goals.	People move less because devices are controlled from a chair or phone, so they may become less active and gain weight.
Security of data	Security cameras and alarms can protect the home and alert the owner. Data from devices can improve services.	Devices collect personal data such as habits, voice and video, which can be hacked, leaked or sold. Weak passwords can let hackers watch or control the home.
Social interaction	Video calls and messaging keep people in touch. Time saved on chores can be spent with family.	People may spend more time with their devices and less face-to-face. Staying at home can lead to isolation.

Reducing the risks

- Change default passwords and use strong, different ones for each device
- Keep the device software up to date and turn off features that are not needed
- Use a secure home network, and review what data the device is allowed to collect
- Balance device use with exercise and time with other people

EXAM TIP

Link each point to one of the five areas in the syllabus (lifestyle, leisure time, fitness, data security, social interaction) and say **how** the device causes the effect, for example 'the thermostat is controlled by a phone app, so the user does not need to get up, which reduces activity'.

Key terms

Term	Meaning
Microprocessor	A small chip that processes instructions.
Smart device	A device with a microprocessor that can be monitored and controlled, often over the internet.
Sensor	Measures a physical quantity and sends readings to the microprocessor.
Actuator	Converts a signal from the microprocessor into movement or action.
Feedback	Using the sensor's readings to adjust the output.
Internet of things	Everyday devices connected to the internet.
Sedentary	Spending a lot of time sitting and not moving.
Data security	Protecting data from unauthorised access and loss.

Practice questions

Answer each question in full sentences. Command words used: State (give a short answer), Describe (say what it is like), Explain (give reasons), Analyse (break it down and examine it), Suggest (apply your knowledge to a situation), Compare and contrast (similarities and differences), Evaluate (weigh up and reach a judgement).

No.	Question	Marks
1	State two examples of microprocessor-controlled devices found in the home.	[2]
2	Describe how a microprocessor controls a smart heating system.	[3]
3	Explain one way that smart devices in the home can affect the physical fitness of the people living there.	[2]
4	Analyse how smart devices could put the security of a family's data at risk.	[3]
5	Suggest two ways a family could reduce the risk of their smart devices being hacked.	[2]
6	Evaluate the effect of smart devices on the social interaction of a family.	[6]

Total: 18 marks