

LESSON 1

What is a Robot?

20 minutes

Robotics Fundamentals

WHAT THIS LESSON DOES

In this lesson, we will learn about robots - what they are, what they look like, what they can do, and how they work. We'll explore different ways robots are used in different industries and environments. By the end of the lesson, we'll have a better understanding of what robotics is and how robots are changing the world around us.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the definition and basic components of robots.
- Recognise the variety of robot designs and their purposes.
- Identify the range of tasks robots can perform.
- Appreciate the diverse applications of robots across different environments.
- Evaluate the importance and benefits of robots in society.

BEFORE THE BELL

- No kit, accounts or printouts needed. Skim the six content blocks so you can run them as talk, and have two or three named examples ready if discussion stalls (factory arm, robot vacuum, surgical system).

What is a Robot?

HOW THE LESSON RUNS

Introduction

Exploring the Appearance of Robots

What can robots do?

How do robots work?

Where are robots used?

Understanding the Importance of Robots

TEACHING MOVES

- 1. Introduction. Put the definition in your own words, then ask: what separates a robot from a remote-control toy? Take three answers before moving on.
- 2. Exploring the Appearance of Robots. Ask pairs to name one humanoid and one non-humanoid robot. Push for purpose: why that shape for that job.
- 3. What can robots do? Collect everyday, industrial and exploration examples on the board. Challenge any claim that robots only do factory work.
- 4. How do robots work? Walk sensors, motors and controllers as senses, muscles and brain. After each, ask for one real example before the next.
- 5. Where are robots used? In pairs, students name five environments where robots work. Share back and group them: home, industry, health, hazard, exploration.
- 6. Understanding the Importance of Robots. Run a short spoken discussion: five dangerous or difficult tasks robots take on, plus three benefits in healthcare or industry. Nothing to hand up.

WHAT TO WATCH FOR

- A machine only counts as a robot if it looks human. Point to vacuum robots, factory arms and planetary rovers. Shape follows the job, not a human body plan.
- Robots understand their surroundings the way people do. Remind them sensors only pass data to the controller. Without the right sensor and program, the robot has no picture of what is in front of it.
- Any machine that moves on its own is making its own decisions. Separate autonomy from remote control. Ask whether a human is driving it live, or software is acting on sensor data.

DIFFERENTIATION

- Emerging: Give two concrete examples (a vacuum robot and a factory arm) and ask which parts are sensors, motors or controller. Pair them with a classmate who can talk the three components through first.
- Developing: Ask them to explain one robot they named using sensors, motors and controller. Have them add one new environment to the class list and say why a robot fits there.
- Proficient: Ask them to argue why a traffic light is or is not a robot, using the lesson definition. Have them lead a short share-back for their pair on benefits in one sector.