



**GCSE**

3700U20-1A



S19-3700U20-1A

**ENGLISH LANGUAGE**

**UNIT 2**

**Reading and Writing: Description, Narration and Exposition**

TUESDAY, 4 JUNE 2019 – MORNING

**Resource Material**

For use with Section A

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*Text A is taken from a manufacturing magazine and gives information about robots.*

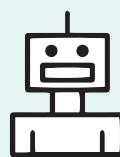
## 6 things you didn't know about robots



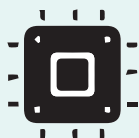
**The word 'robot'** comes from the Czech word, 'robota', which means 'drudgery' and was first used in 1921.



**The origins of robotics** go back as far as the 15th century when Leonardo Da Vinci drew a plan of a robot knight in 1495.



**The first humanoid robot** to walk the ground was Elektro back in 1939. Just above two metres tall, the machine knew 700 words and could simulate a conversation.



Kevin Warwick calls himself **the first cyborg in the world** – he has a chip in his arm that can remotely operate doors and has an artificial hand.



**The first working robot** started its job in 1961 at a Ford factory.



**America has an impressive army of 4,000 robots** that were used to search for bombs in Iraq.



*Text B is taken from an article from a website about technology.*

## What is a Robot?

Robots may be all around us, but do you know how to recognise one?

### **There is some debate about exactly what a robot is, and what it is not.**

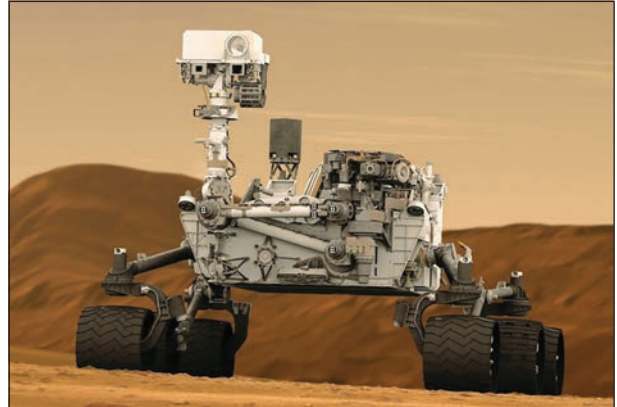
Many people think of robots as human-looking devices that carry out commands. Whilst this may be true, this is not a common type of robot.

Robots are much more common than people think, and we encounter them every day. If you've taken your car through an automatic car wash, withdrawn cash from an ATM, or used a vending machine to grab a drink, then you may have interacted with a robot. It really all depends on how you define a robot.

The Oxford English Dictionary defines a robot as: *'A machine capable of carrying out a complex series of actions automatically, especially one programmable by a computer.'*

A robot should also be able to respond to its environment to alter its program to complete a task and know when a task is complete. So, the following definition of a robot is therefore more appropriate: *A machine capable of responding to its environment to automatically carry out complex or repetitive tasks with little, if any, direction from a human being.*

Modern robot design, known as robotics, is a branch of science and engineering that designs and builds robots. Robotic design involves everything from designing robotic arms used in factories, to androids which are designed to look and act like humans.



Robots, such as the Mars Curiosity Rover, are used to investigate places that are dangerous for humans.

*Text C is taken from an article on business news on the BBC website.*

## **Robots to affect up to 30% of UK jobs**

Robotics and artificial intelligence could affect almost a third of UK jobs by the 2030s, according to a report by John Hawksworth. However, it also predicted that the nature of some jobs would change rather than disappear. It added that the use of robots could create more wealth and additional jobs elsewhere in the economy.

Jobs in manufacturing and retail were among those most at risk from new technology. 30% of existing jobs in the UK were potentially at risk, compared with 38% in the US, 35% in Germany and 21% in Japan.

John Hawksworth told the BBC that “more manual, routine jobs” which “can effectively be programmed” were the most at risk. Jobs that required “more of a human touch, like health and education, would be safer.”

The use of robots in the workplace is increasing with some workers already facing up to the potential challenges. For example, in the future, truck drivers might “job share” with a self-driving lorry. Ultimately, people are going to have to be more adaptable.

However, the report also concluded that better efficiency through the use of robots would boost the economy. “In many ways automation is a good thing. It’s going to boost productivity and increase incomes. This will increase demand for human jobs in other areas.”

The UK is currently experiencing low levels of unemployment; giving more repetitive tasks to robots could free up people to do more valuable work, the report found.

*Text D is taken from a national newspaper.*

## **UK scientists create world's smallest surgical robot**

A team of 100 scientists and engineers from Cambridge have used low-cost technology, originally developed for mobile phones to create the world's smallest surgical robot, a robotic arm specifically designed to carry out keyhole surgery.

The robot, called Versius, imitates the human arm and can be used to carry out medical procedures in which small incisions are made to avoid the need for traditional open surgery. This reduces complications and pain after surgery and speeds up recovery times for patients.

Although surgical robots already exist, the new creation is easier to use, takes up about a third of the space of current machines and will be no more expensive than non-robotic keyhole surgery.

"Having robots in the operating theatre is not a new idea," said the company's chief executive. "The problem at the moment is that they are hugely expensive – not only do they cost £2m each to buy but every operation costs an extra £3,000 when using the robot – and they are very large. Many hospitals have to set up the operating theatre around the robot. They are also poorly utilised; they are only really used for pelvic surgery, and can't be easily adapted to other types of surgery."

For robots to revolutionise surgery, they need to be versatile, easy to use and small so that surgical staff can move them around the operating room or between operating theatres. "Our robot does all of this and is the first robotic arm to be designed specifically for keyhole surgery," he said. One of the key benefits of the robot is that it works with the same care and precision as a human arm. The other great benefit is that the robot doesn't tire like a surgeon can.

*Text E is adapted from a collection of short stories by Isaac Asimov. In this extract Professor Goodfellow is introduced to the robot, Easy, by Dr. Alfred Lanning, the scientist who has developed it.*

Professor Goodfellow looked at the robot with a certain uneasiness.

He knew it was coming; it wasn't that he was unprepared. From the moment of Dr. Lanning's first phone call on March 3, he had felt himself giving way to the other's persuasiveness, and now, as a result, he found himself face to face with a robot.

It looked uncommonly large as it stood within arm's reach.

Lanning cast a hard glance at the robot, as though making certain it had not been damaged in transit. Then he turned to the professor.

"This is Robot Easy-27." He turned to the robot. "This is Professor Goodfellow, Easy."

Easy spoke unemotionally, but with such suddenness that the professor flinched. "Good afternoon, Professor."

Easy stood seven feet tall and had the general proportions of a man.

"It's harmless, I'm sure." Goodfellow didn't sound sure.

"More harmless than I am," said Lanning. "I could be goaded into striking you. Easy could not be. You know the Three Laws of Robotics, I presume."

"Yes, of course," said Goodfellow.

"They are built into the patterns of the robot's brain and must be observed. The First Law, the prime rule of robotic existence, safeguards the life and well-being of all humans."

"It's just that he seems formidable."

"Yes. But whatever he seems, you'll find that he is useful. Have you brought a book?"

"I have." Goodfellow reached down without taking his eyes off the robot. From the briefcase at his feet, he withdrew a book.

"You selected this yourself, at random. Am I right?"

"Yes."

Lanning passed the book to the robot.

The professor jumped a little. "No! That's a valuable book!"

Lanning raised his eyebrows and said, "Easy can handle a book as carefully as you or I. Go ahead, Easy."

"Thank you, sir," said Easy. Then, turning its metal bulk slightly, it added, "With your permission, Professor Goodfellow."

The professor stared, then said, "Yes—yes, of course."

With slow and steady use of metal fingers, Easy turned the pages of the book, glancing at the left page, then the right; turning the page, glancing left, then right; turning the page and so on for minute after minute.

The last page was turned eventually. Lanning asked, "Well, Easy?"

The robot said, "It is a most accurate book and there is little to which I can point. On line 22 of page 27, the word 'positive' is spelled p-o-i-s-t-i-v-e. The comma in line 6 of page 32 is unnecessary, whereas one should have been used on line 13 of page 54."

"Wait!" cried the professor. "What is he doing?"

"Doing? Why, he has already done it! He has proofread that book. In the short time it took him to turn those pages, he caught and noted every mistake in spelling, grammar and punctuation. And he will retain that information, indefinitely."

The professor's mouth was open. He folded his arms across his chest and stared at them. Finally he said, "You mean this is a proofreading robot?"

Lanning nodded. "Among other things."