Before Reading

BEFORE READING ACTIVITIES (PAGE 90)

ACTIVITY 1 BEFORE READING
1 Yes 2 No 3 Yes 4 No 5 No 6 Yes 7 Yes 8 Yes 9 No

ACTIVITY 2 BEFORE READING
Encourage students to speculate and to make guesses, but do not tell them the answers. They will find out as they read that the ‘yes’ answers are numbers 1, 4 and 5. (The answer to number 3 is ‘no’ with one exception.)

While Reading

THE THREE LAWS OF ROBOTICS, DR SUSAN CALVIN

1 A robot should first protect human beings; second, obey orders; and third, protect itself.
2 She saw robots as friends to help humankind. She thought they were cleaner, better creatures than human beings, and also stronger, more useful, and more capable.

RUNAROUND WHILE READING
1 The Second Law: a robot must obey the orders given by human beings.
2 The Third Law: a robot must obey the orders given by human beings. (So when Speedy removed himself from the dangerous gas above the selenium pool).
3 The Second Law: a robot must obey the orders given by human beings. (When Speedy realized that Powell was in danger of dying, the First Law then took over from the others.)
4 The First Law: a robot must not allow a human being to come to harm. (When Speedy realized that Powell was in danger of dying, the First Law then took over from the others.)
5 He made sure that the First Law was in effect, by explaining to Speedy that the selenium was urgently needed in order to keep him and Powell alive.

REASON WHILE READING
1 Cutie to Powell, about the reason for his existence as he thought it was improbable that he had been made by Powell and Donovan.
2 Cutie to Powell, about space and the stars.
3 Cutie to Powell, about human beings.
4 Cutie to Powell and Donovan, about the Energy Converter, which Cutie believed had created him.
5 Powell to Donovan, about the electron storm which might cross the energy beam the Converter was sending to Earth.
6 Donovan to Powell, about building another robot in front of Cutie’s eyes, so that Cutie would be forced to believe that Powell and Donovan made him.
7 Powell to Donovan, about Cutie and the fact that Cutie’s beliefs did not prevent him from doing his job perfectly.
8 Miller to Powell, about the new robot, Cutie, which as yet he knew nothing about.

CATCH THAT RABBIT WHILE READING
1 He meant that they had to discover what the problem was before they could look for an answer to it.
2 Because the subsidiary robots were controlled almost wholly by Dave.
3 Personal initiative.
4 Because they wanted to create their own emergency, so that they could watch what happened to Dave.
5 In an emergency orders had to be given to all six subsidiaries at the same time.
6 Dave could not communicate with six subsidiaries at the same time because his circuits got overloaded, but his positronic brain was able to work properly if he had to give orders to only five subsidiaries.

LIAR! WHILE READING
1+8+15 Herbie knew that Dr Calvin loved Milton Ashe, but he couldn’t tell her that Ashe didn’t love her because that information would have hurt her.
2+11+17 Bogert wanted to be the next Managing Director, so Herbie told him that Dr Lanning had resigned although he knew that wasn’t true.
3+7+13 Herbie also knew what the mistake in the factory had been but he knew that Lanning and Bogert wanted to discover the mistake for themselves, so he told them that he didn’t know the answer.
4+12 Dr Calvin realized that Herbie had been telling lies when Ashe told her about the girl he planned to marry.
5+10+16 She realized that Herbie couldn’t tell people the truth if he knew that the truth would hurt them, so he had to give people the answers they wanted to hear.
6+9+14 Telling the truth would be a psychological injury and so Herbie would be breaking the First Law, which a robot can never do.
LITTLE LOST ROBOT  WHILE READING
1 The brains of a few (some) NS-2s contained only part of the First Law.
2 The normal NS-2s didn’t allow humans to go near the radiation / The secret NS-2s allowed . . .
3 In the test the robots didn’t move forwards to save the man because they knew that the electric cable would kill them first.
4 The NS-2s which had just arrived knew nothing about radiation.
5 Bogert advised the robots to sit where they were if they noticed any radiation between them and the human being.
6 The test involved harmless radiation from light and heat.
7 Nestor 10 was caught in the end because he forgot that the other robots knew less than he did about radiation.

EVIDENCE  WHILE READING
1 Why . . .? Because no one in the city had ever seen him eat, drink, or sleep.
2 What . . .? They were either destroyed, or used for new robots.
3 What . . .? Nothing, because if Byerley were a humanoid robot, whoever made him would have made sure that he could eat and sleep if necessary.
4 What . . .? It would prove that he wasn’t a robot.
5 What . . .? Nothing, because he might be a robot, or he might simply be a very good man.
6 Why . . .? Because Byerley was wearing special clothes that prevented X-ray photographs.
7 Why . . .? By hitting a man, which he couldn’t have done if he had been a robot because of the First Law.
8 Why . . .? Because he would be unable to harm human beings, so would govern better than any human being; and a robot could never be cruel, stupid or unjust because of the Laws of Robotics.
9 Why . . .? Because when he died, he arranged for his body to be destroyed.
10 Why . . .? Because she thought that the real Stephen Byerley, ‘John’, had made another humanoid robot, which was the ‘man’ that Byerley hit to prove to the crowd that he wasn’t a robot.

After Reading

ACTIVITY 1  AFTER READING
Possible answers:
The photocell banks which protected us from the heat of Mercury’s sun were damaged. We needed selenium to repair them, so we sent Speedy to a selenium pool to bring us some selenium. Hours later (passed), Speedy still hadn’t returned, so we decided (had) to go after Speedy on the robots from the First Expedition. They couldn’t move without human control, so we rode them through the tunnels of the mining station to an exit which was five kilometres from the selenium pool. We went outside the station and stood in the shadow (shade) of a tall cliff, where the temperature was eighty centigrade. We saw Speedy running (coming) towards us, but when we called him, he turned and ran away, singing.

There was obviously something confusing his brain patterns (circuits). We thought that he was probably avoiding some danger at the pool. The Second Law sent him towards the pool, and then the Third Law drove him away again.

I decided to go out into the sun to see if Speedy would save me. I rode on the old robot towards the pool, and then continued (went) on foot. Ten minutes passed. I called Speedy on my radio. He stopped, but did not turn. I was now breathing with difficulty. I called him again. Suddenly (Then), I felt metal fingers on my arm. Speedy picked me up and carried me into the shadow of the cliff. This (Next) time, Donovan explained that the selenium was essential and sent him to another pool. He was back within forty-two minutes.

ACTIVITY 2  AFTER READING
Possible responses for Powell might be:
MILLER: How’s this new robot? I hope it’s good!
Powell: It is rather good. You won’t need to spend much time at the controls.
MILLER: Why not?
Powell: Well, the robot won’t let us into the control room because he believes that the Converter made him.
MILLER: Have you told him that you made him?
Powell: Of course we have, but he refuses to believe us.
Perhaps it doesn’t matter. Last week an electron storm hit us and the robot directed the beam exactly at the receiving station on Earth all through the storm.
MILLER: So what am I going to do with the robot while I’m on the station?
Powell: Nothing. He can control the station perfectly, so just let him get on with it.

ACTIVITY 3  AFTER READING
The right order is: 3, 6, 1, 4, 5, 2
A possible summary could be:
(3) The new robot on the asteroid and its six subsidiaries worked well as a team only as long as Donovan watched it. When Donovan didn’t watch, the robots didn’t work. (6) Powell and Donovan did a test on Dave and interviewed one of the subsidiaries, from whom they learnt that the robots were ordered to march or dance when there was an emergency. (1) Powell and Donovan decided to create their own emergency so that they could watch the robots. However, part of the roof of their own tunnel fell in, and they were trapped. The robots began dancing.
(4) Powell had an idea and destroyed one of the subsidiaries. The robot immediately became normal and began to rescue Powell and Donovan. (5) Powell explained that in normal situations, with routine jobs, the robot gave orders separately to the subsidiaries.

(2) In emergencies, all six subsidiaries had to be given orders at the same time, and the robot’s circuits became overloaded and he began to give crazy orders.

**ACTIVITY 4 AFTER READING**

Possible responses:

1. **DR CALVIN:** What does Milton Ashe really think about me? Are you sure he isn’t in love with someone else?
   **HERBIE:** He thinks you’ve been peculiar recently, and he isn’t interested in you as a woman at all. He’s in love with, and plans to marry, that young, pretty girl who visited the factory last summer.

2. **Milton Ashe:** What’s Dr Calvin’s secret, Herbie? Why is she using perfume and smiling at me all the time?
   **HERBIE:** It’s because she’s in love with you, and the perfume and smiles are her way of trying to tell you this.

3. **Dr Lanning:** I’m a bit worried about Bogert. Does he think I’m a good Managing Director? Is he happy working for me?
   **HERBIE:** He thinks you’re too old for the job. He’s impatient for you to resign so that he can become Managing Director.

4. **Peter Bogert:** I’m the best mathematician around here, and I’ll soon be giving the orders too. Isn’t that right, Herbie?
   **HERBIE:** No, you’re not the best mathematician. I’m a better mathematician than you are, and you won’t be moving into the Managing Director’s office soon because Dr Lanning has no intention of resigning.

**ACTIVITY 5 AFTER READING**

Dear Jim

Last week Susan Calvin, a robot psychologist, came up from Earth to solve a problem we had here. I was partly responsible for it because I’d got annoyed with a Nestor robot and told him to get lost! He took this as an order that he had to obey. He then bid himself among a group of similar robots and either imitated what they did or taught them to do what he did, so Dr Calvin’s tests couldn’t catch him. She finally caught him by a trick. Nestor 10 could recognize different types of radiation, but the other robots couldn’t. In the last test Nestor 10 forgot that, and then he attacked Dr Calvin and had to be destroyed. In future I shall be more careful what I say to robots!

Best wishes, Gerald

**ACTIVITY 6 AFTER READING**

11+2, 12+3, 10+1+9, 8+5, 4+6, 13+7

Francis Quinn thought that Byerley was a robot because no one had ever seen him eat or drink. Dr Calvin met Byerley and she gave him an apple, which he ate. Later, an official took some X-ray photographs of Byerley, but Byerley was wearing special clothes so the photographs did not show anything. While Byerley was speaking to the crowd during the election, a man came up to the platform and called him an ugly machine. Byerley then hit the man hard on the chin, which proved to the crowd that he was human. If he had been a robot, he would not have been able to injure a human being.

**ACTIVITY 7 AFTER READING**

1. Herbie, from *Liar!* He has just told Dr Calvin that Ashe loves her.
2. Speedy, from *Runaround*. He has just heard Powell calling for his help.
3. Dave, from *Catch that Rabbit*. Powell has just shot one of his subsidiaries.
4. Byerley, from *Evidence*. He has just won the election, and Dr Calvin has just visited him.
5. Cutie, from *Reason*. He is watching Powell and Donovan putting a new robot together.
6. Nestor 10, from *Little Lost Robot*. This takes place the night before the second test arranged by Dr Calvin.

**ACTIVITY 8 AFTER READING**

**Runaround**
- Death by Slow Boiling
- The Selenium Pool
- Mercury Sunside
- Serving the Master
- Electron Storm
- Who Created the Parts?

**Little Lost Robot**
- Get Lost!
- Gerald Black’s Mistake
- Dangerous Radiation

**Evidence**
- Mind-Reader
- Truth Hurts
- Dr Calvin’s Secret

**Liar!**
- Robot or Human?
- The City Governor
- Does He Eat?

**ACTIVITY 9 AFTER READING**

Open answers. Encourage discussion.

**ACTIVITY 10 AFTER READING**

Free discussion.