

Science H

Extra Activity Sheets

By The Sonlight Team

SAMPLE



HSG1 Science H "Conservation, Robotics, and Technology"
(04.2019)



Robotics

1. To many roboticists, what cycle must a robot be able to complete? Name each step in the cycle in the boxes, and then use the lines below to describe what happens at each step. On the last line, list the part needed in order to perform each step. (p. 6)

<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div>		<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div>		<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div>
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Part:

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2. Do all roboticists agree that a robot must be able to follow the above steps in order to truly be a robot? Why or why not? (p. 7)

3. How do more simple models help further the field of robotics? (p. 7)



Science H: Week 1 Activity Sheet

4. Complete the activity on pages 8–10 in the space below to determine whether or not each device is a robot, based on the Sense-Think-Act definition. Please add two devices of your own at the end of the list to analyze. (pp. 8–10)

Device	Sensor	Controller	Effector	Robot?
television				<input type="checkbox"/> Yes <input type="checkbox"/> No
automatic garage door opener				<input type="checkbox"/> Yes <input type="checkbox"/> No
calculator				<input type="checkbox"/> Yes <input type="checkbox"/> No
clothes dryer				<input type="checkbox"/> Yes <input type="checkbox"/> No
automatic supermarket door				<input type="checkbox"/> Yes <input type="checkbox"/> No
electric toothbrush				<input type="checkbox"/> Yes <input type="checkbox"/> No
smoke detector				<input type="checkbox"/> Yes <input type="checkbox"/> No
automatic soap dispenser				<input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No

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5. Why have true robots (ones that can sense, think and act) only been possible for the last 50 years or so? (p. 11)

6. Why are automata and punch cards the predecessors to today's robots? (p. 13)

7. Compare and contrast Wiener's theory that both people and machines use feedback, communication and control to make decisions with the Turing test. (p. 13)

They are similar because...	They are different because...

8. Based on the descriptions of the famous fictional robots on page 14, would any pass the Turing test? (p. 14)

9. Do you think developing robots for use in toys and art is as important as other applications? Why? (pp. 16–17)



Science H: Week 1 Activity Sheet

10. How does the da Vinci Surgical System improve a patient's surgical experience? (p. 18)

11. Why are robots excellent workers in the manufacturing industry? (pp. 19–20)

12. Thinking about the examples of robots on pages 16 through 21, if you could construct a robot to improve human life, what would you make it do? Why? (pp. 16–21)



13. How have robots helped scientists further our understanding of hard-to-visit places like volcanoes and the deep sea or outer space? (pp. 22–23)

14. With your parents' permission, visit nasa.gov and search for "Mars Rovers" to look up the latest news on *Opportunity* or *Curiosity*, the Mars Rovers. Summarize three interesting points you find in the space below. (p. 23)

Date you visited the page: _____

Summary: _____
