

Year 4 Science Assessment: Electrical Circuits

Learning objective: To identify common appliances that run on electricity, construct simple series circuits, and identify components and conductors/insulators.

Read each question carefully. Use your scientific knowledge to answer in full sentences where required. Ensure you use the correct terminology when naming electrical components.

Max the monkey is helping his friends set up a laboratory in the jungle. He has been given various items including wires, cells, bulbs, and buzzers. He needs to make sure his circuits are safe and functional so that his experiments run smoothly. Help Max solve his electrical puzzles by answering the questions below.

Word bank: Cell · Battery · Switch · Bulb · Buzzer · Conductor · Insulator · Circuit · Complete · Flow

1. Identify two common household appliances that require mains electricity to function. (2 marks)

2. Look at a simple circuit containing a battery, a wire, and a bulb. Explain why the bulb will not light up if there is a gap in the circuit. (2 marks)

3. List three components that are necessary to create a complete, working circuit that powers a buzzer. (3 marks)

4. Max is testing materials to see if they allow electricity to flow. Define the difference between an electrical conductor and an electrical insulator. (4 marks)

5. Compare and contrast a metal paperclip and a plastic ruler when used in a circuit. Justify which one would allow the bulb to light up. (4 marks)

6. What might happen if you added a second battery to a simple circuit with one bulb? Explain your reasoning using your knowledge of electrical flow. (5 marks)

7. Why is it important to ensure that electrical wires are covered in plastic insulation? Give a detailed explanation. (5 marks)

Draw: Draw a diagram of a simple series circuit. Include a cell, a switch, and a bulb. Use arrows to show the direction in which the electricity flows when the switch is closed.



Extension challenge: Imagine you are designing a new invention that uses a battery-powered motor. Write a short persuasive paragraph explaining why you would choose a specific material for the casing of your invention to ensure it is safe for the user. Total: /25