

Nova's Guide to Electrical Circuits

Learning objective: To construct a scientific report explaining how a simple circuit functions and identifying common electrical appliances.

Use the prompts below to build your report. Remember to use technical vocabulary to explain how energy travels through a circuit to power a component, like a bulb or a buzzer.

Nova the owl has been observing the way light travels through her woodland home, and she wants to understand how we can create our own light using a simple circuit.

Word bank: conductors · insulators · complete circuit · source of electricity · components · flow of energy · therefore · consequently · in addition to · however

1. Introduction: Define electricity and identify its primary purpose in our homes. Start with: Electricity is a form of energy that... (2 marks)

2. Circuit Components: Describe the essential parts needed to build a working circuit. Start with: To create a complete circuit, we require a power source, wires, and a component such as... (3 marks)

3. The Flow of Energy: Explain what happens when a circuit is broken or incomplete. Start with: If there is a gap in the circuit, the flow of energy stops because... (3 marks)

4. Conductors vs. Insulators: Compare and contrast these two types of materials. Start with: Materials that allow electricity to pass through them are called conductors, whereas... (3 marks)

5. Justification: Why is it important to use plastic coating on electrical wires? Start with: It is essential to cover metal wires with plastic because... (2 marks)

6. Critical Thinking: What might happen to a bulb if you added a second battery to the circuit? Explain your reasoning. Start with: If a second battery were added to the circuit, I predict that... (3 marks)

Extension challenge: Design a 'Switch Investigation': Imagine you are tasked with creating a switch for a bedroom lamp. Draw a diagram of your switch and write a paragraph justifying why your chosen materials would be safe and effective. Explain why you chose a conductor for the contact point and an insulator for the handle.