

Year 4 Design Technology: Introduction to Electronics

Learning objective: To identify, design, and explain the function of simple electrical circuits and components.

Read each question carefully. Use the word bank to help you answer the questions. Make sure your answers are clear and written in full sentences where requested.

Max the monkey is building a secret alarm for his treehouse! He needs to make sure his circuit is connected correctly so that when someone opens the door, a light turns on and a sound plays. He is using a power source, wires, and different components to finish his design.

Word bank: battery · bulb · switch · circuit · conductor · insulator · cell · buzzer · pathway

1. Max needs to power his alarm. Name two types of power sources he could use in his circuit. (2 marks)

2. What is the purpose of a switch in an electrical circuit? (2 marks)

3. Explain the difference between a conductor and an insulator. Give one example of each. (4 marks)

4. If Max connects his circuit but the bulb does not light up, list two possible reasons why it might not be working. (2 marks)

5. Nova the owl wants to design a brightness control for her reading lamp. Why might she choose to include a switch in her design? Describe how it changes the flow of electricity. (4 marks)

6. Imagine you are designing a safety light for a bedroom. In 5 marks, describe the components you would use, how you would connect them, and why your design is useful for a user. (6 marks)

7. Draw a circuit diagram containing a battery, a bulb, and a switch. Use standard scientific symbols. (5 marks)

Draw: In the space provided above, draw a clear circuit diagram showing a battery, a bulb, and a switch connected by wires. Remember to use the correct symbols for each component.



Extension challenge: Total: /25