Kit’s Clever Circuit Challenge

Learning objective: To understand the components of electrical circuits and how they function to power devices.

Help Kit the fox solve these electrical puzzles! Read each question carefully and select or write the best answer. Remember, a complete circuit is essential for power to flow.

Answer Key: 1. A (Cell/Battery), 2. False, 3. Switch, 4. B (Conductor), 5. True, 6. C (To protect the bulb/control the current), 7. False, 8. Component, 9. D (Copper), 10. True.

Word bank: Circuit · Component · Conductor · Insulator · Switch · Battery · Voltage · Filament

1. 1. Which of these provides the energy to push electricity around a circuit? A) Battery* B) Bulb C) Wire D) Plastic (1 mark)

2. 2. True or False: Electricity can travel through a broken or incomplete circuit. (1 mark)

3. 3. What device is used to open and close a circuit, stopping or starting the flow of electricity? (1 mark)

4. 4. Which material is best for allowing electricity to flow? A) Rubber B) Copper* C) Wood D) Plastic (1 mark)

5. 5. True or False: A lightbulb is a type of electrical component. (1 mark)

6. 6. Why might a scientist add a resistor to a circuit? A) To make the battery run out faster B) To change the colour of the light C) To control the flow of electricity* D) To break the wire (1 mark)

7. 7. True or False: Plastic is an excellent conductor of electricity. (1 mark)

8. 8. What is the general name for any part of a circuit, such as a buzzer, motor, or lamp? (1 mark)

9. 9. Which of the following is an insulator? A) Iron B) Steel C) Gold D) Rubber* (1 mark)

10. 10. True or False: A buzzer creates sound energy when a circuit is complete. (1 mark)

Draw: Draw a scientific diagram of a simple circuit containing a battery, a bulb, and a switch. Label your components clearly using the correct technical vocabulary.

Extension challenge: Greater Depth Challenges: 1. Explain why copper is used for wires instead of wood. 2. Compare and contrast a series circuit with a parallel circuit. 3. Justify your answer: Why is it dangerous to touch electrical appliances with wet hands? 4. What might happen if you replaced a battery with a much higher voltage power source in a simple bulb circuit? 5. Design a system for a model house using a switch to control two separate lights. 6. If a bulb fails in a series circuit, explain why the other bulbs stop working.