Max’s Magnificent Electronics Challenge

Learning objective: To identify the components of a simple electrical circuit and understand how switches control the flow of electricity.

Help Max the monkey solve his circuit puzzles! Read each question carefully and select the best answer or provide the missing word. Remember to think about what makes a circuit complete.

Answer Key: 1.C, 2.True, 3.Battery, 4.False, 5.B, 6.Conductor, 7.A, 8.True, 9.Switch, 10.B. A circuit must be a complete loop for electricity to flow. A break in the wire or an open switch prevents the device from working.

Word bank: battery · conductor · insulator · switch · circuit · bulb · buzzer · filament

1. 1. Which of these is a source of electricity in a simple circuit? A) Wire B) Bulb C) Battery* D) Switch (1 mark)

2. 2. True or False: For a bulb to light up, the circuit must be a complete, unbroken loop. (1 mark)

3. 3. What do we call the component that provides the energy to push electricity around the loop? (1 mark)

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

5. 5. Which component is used to break or complete a circuit safely? A) Battery B) Switch* C) Bulb D) Wire (1 mark)

6. 6. What is the name for a material that allows electricity to flow through it easily? (1 mark)

7. 7. If you add a second battery to a circuit with one bulb, what happens? A) The bulb glows brighter* B) The bulb goes out C) The bulb glows dimmer D) Nothing changes (1 mark)

8. 8. True or False: A buzzer is an electrical component that creates sound. (1 mark)

9. 9. What is the missing word? An _____ is a material that stops the flow of electricity, such as rubber or wood. (1 mark)

10. 10. Which of these materials would safely conduct electricity? A) A wooden stick B) A metal paperclip* C) A plastic straw D) A piece of string (1 mark)

Draw: Draw a circuit diagram featuring a battery, a bulb, and a switch connected by wires. Label each component clearly and draw an arrow to show the path of the electricity when the switch is closed.

Extension challenge: Greater Depth Questions: 1. Explain why a circuit will not work if there is a gap in the wires. 2. Compare and contrast a conductor and an insulator; why is it important to use insulators on electrical cables? 3. Justify why we use switches in our homes instead of just disconnecting the wires. 4. What might happen if you used a battery with too high a voltage for a small bulb? 5. Design an experiment: How could you test if an object is a conductor or an insulator? 6. If you have two bulbs in a loop, how does the brightness compare to a circuit with only one bulb? Explain your reasoning.