

Loop Power

Trace how a complete circuit lets electricity flow.

SC.5.P.11.1 "Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop)."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline two sentences that explain what makes a circuit a complete loop. Circle the two places where a gap stops the bulb from lighting.

Maya Tests a Bulb

- ① During a school garden project, Maya used a battery, two wires, a small bulb, and a switch to build a circuit. A battery pushed electric charges through the wires and bulb. Charges could move only when there was one complete path from one battery terminal, through each part, and back to the other terminal. This complete path is called a closed circuit.
- ② First, Maya left the switch open. The metal contacts inside the switch did not touch, so the path had a gap. No charges traveled all the way around the circuit, and the bulb stayed dark. Next, she closed the switch. The contacts touched, the gap disappeared, and charges had a complete loop. The bulb lit because electricity could flow through the closed circuit.
- ③ Maya then loosened one wire at the bulb. Although the switch was closed, the loose wire made another gap, so the bulb went out. She tightened the wire, and the bulb lit again. Her tests showed that every part must connect in an unbroken loop. A battery can provide energy, but electricity does not flow through a circuit with even one gap.

2 ANSWER WITH EVIDENCE Use the passage

1 What path must electric charges follow for electricity to flow?

2 Why did the bulb stay dark when Maya left the switch open?

3 Why did the bulb go out when Maya loosened a wire, even though the switch was closed?

4 What two changes did Maya make that allowed the bulb to light again?

3 YOUR TURN Your own words

Use the two panels to draw a battery, wires, a bulb, and a switch. In Panel 1, show a closed circuit with a lit bulb. In Panel 2, show one gap in the circuit with a dark bulb, and label the gap.

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PART 1 • READ AND MARK

Underline two sentences that explain what makes a circuit a complete loop. Circle the two places where a gap stops the bulb from lighting. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What path must electric charges follow for electricity to flow?	Charges must travel in one complete path from one battery terminal, through every part of the circuit, and back to the other battery terminal.
2	Why did the bulb stay dark when Maya left the switch open?	The switch contacts did not touch, so there was a gap in the circuit.
3	Why did the bulb go out when Maya loosened a wire, even though the switch was closed?	The loose wire made a gap in the circuit, so the path was not a complete loop.
4	What two changes did Maya make that allowed the bulb to light again?	She closed the switch so its contacts touched, and she tightened the loose wire.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: The wires connect both battery terminals through the closed switch and bulb in one complete loop. The bulb is lit. Panel 2: One wire has a gap between it and the bulb. The gap is labeled, and the bulb is dark.

Accept answers that show an unbroken loop from one battery terminal through the bulb and back to the other terminal for the lit circuit. For the dark circuit, accept any clearly labeled break or open switch that interrupts the loop.