Lighthouse Light Path

Trace current through a complete circuit

P.4.6A.4 "Develop models that demonstrate the path of an electric current in a complete, simple circuit (e.g., lighting a light bulb or making a sound)."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Number the four places current passes through in the second paragraph, starting at the battery's positive end, to trace the complete path. Circle the words in the third paragraph that tell where the path breaks.

Mara's Lighthouse Lamp

1. Mara builds a tiny lamp for a paper lighthouse. She uses a battery, a bulb, a switch, and wires. One wire runs from the battery's positive end to the switch. Another runs from the switch to the bulb's metal side. A third wire joins the bulb's bottom tip to the battery's negative end. These parts make one loop with no branches.

2. When Mara closes the switch, its metal pieces touch. The loop is complete. In a model, arrows can show current moving from the battery's positive end, through the switch and bulb, to the negative end. The bulb glows because current flows through it. The current's path must include the bulb, not just the wires beside it.

3. Next, Mara opens the switch. Its metal pieces no longer touch, leaving a gap in the loop. The bulb goes dark because current cannot travel all the way around. She could move the switch to the wire between the bulb and the battery's negative end. If she closed it there, the loop would still be complete and the bulb would light.

2 ANSWER WITH EVIDENCE

Use the passage

1. Write the order of parts current passes through in Mara's lit lamp. Start at the battery's positive end and end at its negative end.

2. Where should a model of Mara's lamp show a break when the switch is open? Why does the bulb go dark?

3. Mara moves the closed switch as described in the last paragraph. Write the new order of parts from the battery's positive end to its negative end.

4. A model shows arrows going from the battery's positive end to its negative end without passing through the bulb. Does it show the path that lights Mara's lamp? Explain.

3 YOUR TURN

Your own words

Design a warning light for a toy boat using one battery, two bulbs, one closed switch, and wires. Draw and label one complete loop with no branches, then add arrows showing the current's path through both bulbs.

ANSWER KEY

Lighthouse Light Path

GRADE 4 · P.4.6A.4

PART 1 · READ AND MARK

Number the four places current passes through in the second paragraph, starting at the battery's positive end, to trace the complete path. Circle the words in the third paragraph that tell where the path breaks. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Write the order of parts current passes through in Mara's lit lamp. Start at the battery's positive end and end at its negative end.	**Battery's positive end → closed switch → bulb → battery's negative end.**
2	Where should a model of Mara's lamp show a break when the switch is open? Why does the bulb go dark?	**Show the break at the open switch. The gap stops current from flowing around the complete loop.**
3	Mara moves the closed switch as described in the last paragraph. Write the new order of parts from the battery's positive end to its negative end.	**Battery's positive end → bulb → closed switch → battery's negative end.**
4	A model shows arrows going from the battery's positive end to its negative end without passing through the bulb. Does it show the path that lights Mara's lamp? Explain.	**No. The current's path must pass through the bulb for it to light.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A drawing shows wires joining the battery's positive end, bulb 1, a closed switch, bulb 2, and the battery's negative end in one unbroken loop. Arrows point from the positive end through both bulbs and the switch to the negative end.

Accept either bulb before the other in the drawing, as long as both bulbs and the closed switch are in one complete loop. Arrows should show the path from the battery's positive end through every device to its negative end.