

Complete Circuits

Circuit Alley with Sparkling

Learning target

Explain why a simple circuit works or fails.



Before you begin

Use the reference page and discussion prompts on their own, or open the optional browser adventure. No earlier lesson or physical kit is required.

For online play: use an internet-connected current browser with local storage enabled. Read the three-part Gemling briefing, answer the quick check, and apply the evidence at three checkpoints. Retry feedback supports review; results are not a secure test or gradebook.

Use for teacher-led review, science centers or partner practice. Independent readers may need support with the vocabulary below. The design target is grades 3-5; choose support based on the learner.

Vocabulary and concepts to discuss

Closed paths; wires; components; breaks in a circuit

Open Circuit Alley - direct lesson link

Scan the QR code or use the clickable link. This guide is usable offline; the adventure runs on an external educational website.



Complete Circuits - key ideas

1. The first clues

A simple battery circuit needs a complete conducting path through the load and back to the source. A break can stop current in that path.

2. How the clues connect

A diagram helps trace continuity. A line that almost touches is still a gap in the model.

3. Our evidence record

Our lamp diagram has a gap in one connecting line. Closing that modeled gap completes the route through the lamp; drawing an unrelated line elsewhere does not.

Keep the science accurate

Use digital or teacher-managed low-voltage models only. No mains electricity, wiring instructions or Ohm's-law calculations.

Apply the evidence

Use a specific observation from this lesson to explain one choice. Point to a clue, then connect that clue to a scientific idea.

Curriculum reference: <https://www.nextgenscience.org/dci-arrangement/4-ps3-energy>

Talk through the evidence

1. What does the simple circuit need?

Expected answer: A complete path

Reasoning: A simple battery circuit needs a complete conducting path through the load and back to the source. A break can stop current in that path.

2. What is the fault in our diagram?

Expected answer: A gap

Reasoning: Our lamp diagram has a gap in one connecting line. Closing that modeled gap completes the route through the lamp; drawing an unrelated line elsewhere does not.

3. Which model repair addresses it?

Expected answer: Close the indicated gap

Reasoning: A diagram helps trace continuity. A line that almost touches is still a gap in the model.

4. Is a nearly touching line a complete connection?

Expected answer: No

Reasoning: Our lamp diagram has a gap in one connecting line. Closing that modeled gap completes the route through the lamp; drawing an unrelated line elsewhere does not.

Guide the discussion

Ask learners to name the evidence that supports their answer. If an answer differs, revisit the matching key idea on page 2 and invite a revised explanation.

Online rewards: this lesson grants one fixed digital Expedition Discovery. Five saved digital Gemling friends become available only after all six distinct subject lessons are complete, in any order. Digital rewards do not establish physical ownership.