

Switches & Circuit Paths

Switch Tower with Sparkling

Learning target

Predict how a switch changes a circuit.



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

Opening and closing; switches; paths; simple circuit symbols

Open Switch Tower - 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.



Switches & Circuit Paths - key ideas

1. The first clues

A switch opens or closes a circuit path. A closed switch connects the path; an open switch breaks it.

2. How the clues connect

In a simple single-path circuit, a break anywhere in that path can stop the lamp operating. Circuit symbols represent connections, not miniature photographs.

3. Our evidence record

Our source and lamp are connected except for Switch A. The lamp is off when A is open and on when A closes in the supplied working model.

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 an open switch do?

Expected answer: Breaks the path

Reasoning: A switch opens or closes a circuit path. A closed switch connects the path; an open switch breaks it.

2. When does the lamp work in our model?

Expected answer: When A is closed

Reasoning: Our source and lamp are connected except for Switch A. The lamp is off when A is open and on when A closes in the supplied working model.

3. Can a break elsewhere also stop this single-path circuit?

Expected answer: Yes

Reasoning: In a simple single-path circuit, a break anywhere in that path can stop the lamp operating. Circuit symbols represent connections, not miniature photographs.

4. What do the symbols represent?

Expected answer: Components and connections

Reasoning: In a simple single-path circuit, a break anywhere in that path can stop the lamp operating. Circuit symbols represent connections, not miniature photographs.

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.