

Electric Circuits Concept Storyline

Unifying Concept

Electricity in circuits can produce light, heat, and other forms of energy.

Unit Concept

Electrical circuits require a complete loop through which an electrical current passes.

Grade-Level Concept

An electric circuit may be constructed with different devices and in different combinations.

Subconcept 1

A complete circuit is required to light a lightbulb.

Lesson 1: Pre-Unit Assessment: Thinking about Electricity and Its Properties
Students discuss what they know and would like to know about electric circuits.

Lesson 2: What Electricity Can Do
Students investigate how to light a bulb.

Lesson 3: A Closer Look at Circuits
Students look at ways to connect the parts of an electric circuit.

Lesson 4: What Is Inside a Lightbulb?
Students study the parts of a bulb and the path of electricity through it.

Subconcept 2

Different devices and materials play special roles in a circuit.

Lesson 5: Building a Circuit
Students use new devices to build a circuit.

Lesson 7: Conductors and Insulators
Students investigate conductors and insulators. They use a circuit tester.

Lesson 14: Working with a Diode
Students experiment with semiconductor diodes and explore the direction of current flow.

Subconcept 3

Electricity in circuits produces a magnetic field and can be used to produce light and heat.

Lesson 8: Making a Filament
Students investigate how to make a lightbulb filament.

Subconcept 4

Different strategies can be used to troubleshoot circuits.

Lesson 6: What's Wrong with the Circuit?
Students learn techniques to solve problems with circuits.

Lesson 9: Hidden Circuits
Students use circuit testers to investigate unknown circuits.

Lesson 10: Deciphering a Secret Language
Students use electrical symbols to create circuit diagrams.

Lesson 11: Exploring Series and Parallel Circuits
Students build parallel and series circuits and identify the properties of each type.

Subconcept 5

Electric circuits are used to design and build useful devices.

Lesson 12: Learning about Switches
Students add switches to their circuits.

Lesson 13: Constructing a Flashlight
Students discuss the differences between parallel and series circuits and apply what they have learned to make a flashlight.

Lesson 15: Planning to Wire a House
Students design plans for wiring a model house.

Lesson 16: Wiring and Lighting the House
Students carry out the plans they developed in Lesson 15.

Lesson 17: Post-Unit Assessment: Sharing What We Know about Electric Circuits
Students revisit their comments from Lesson 1 and discuss what they have learned.