## Enduring Understanding

Charge exists everywhere in a circuit. A power supply gives these charges energy, which may then be converted to other forms of energy.

## Correlations

### Unifying Understanding

| VA SOL | PH.13.a, PH.13.b, PH.13.c, PH.5.g, PH.6.c, PH.8.a; |
| NSES (grade level) | Grades 9-12, Standard B essay, pages 177-178; Motions and Forces, pages 179-180; Interactions of Energy and Matter, Pages 180-181 |

### Essential Questions

- What moves through the wires in a simple electrical circuit? What do these particles carry?
- What makes electricity sometimes dangerous?
- How can we design an electric circuit to make it do what we want it to do? (e.g. light bulbs)
- How is energy utilized in an electric circuit?
- How does the way in which a circuit is connected influence the behavior of the electricity in the circuit?

### Knowledge and Skills

#### Students should know:

- The similarities and differences between parallel and series circuits;
- The relationship between current, voltage, and resistance in a circuit;
- The functions of resistors, batteries, generators, fuses, switches, and capacitors in a circuit;
- How electric power is related to electric energy;

#### Students should be able to:

- Construct series and parallel circuits in the laboratory;
- Draw a circuit diagram of series, parallel, and combination circuits;
- Measure current, voltage, and resistance within a circuit;
- Calculate current, voltage and resistance within a circuit;
### Stage 2: Assessment Evidence

#### Prior Knowledge and Skills
- Electricity travels through conductors and powers many of the conveniences of everyday life.

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### Stage 3: Learning Plan

#### References to Adopted Materials
- See textbook correlation below

#### Suggested Investigations
- Build a simple flashlight.
- Conduct a home electricity / energy audit.
- Determine the resistance of a hot dog as it cooks.

#### Outdoor Education Applications
- None currently noted

#### Resources

##### Web Sites
- [http://www.physicsclassroom.com/Class/circuits/index.cfm](http://www.physicsclassroom.com/Class/circuits/index.cfm)

##### Videos
- None currently noted

##### Online clips
- None currently noted

##### Field Trips
- None currently noted

##### Other
- None currently noted
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