



# ELECTRICITY

## SECTION 3: PARALLEL CIRCUIT

Westminster College

### STANDARDS:

*Students know* basic energy types, sources, and conversions.

*Students describe* the flow of energy through an object or system.

*Students recognize or illustrate* simple direct current series and parallel circuits composed of batteries, light bulbs, wire and on/off switches.

### BACKGROUND:

A circuit means ‘to go around’. It is a circle or path that carries an electric current. An electric circuit must have an energy source, wire to carry the energy and an object requiring the energy. A series circuit contains bulbs connected in one circle. The problem with a series circuit is that when one bulb burns, out, it brakes the circuit and the other bulbs no longer work. Each group of students will be given these three things and asked to figure out how to make two light bulbs light up and stay lit when one of the bulbs is removed. Allow students to figure this out on their own through trial and error- a true inquiry lesson.

### SAFETY:

Discuss safety with students prior to experiment. The bulbs break easily. The battery can produce enough heat to cause a slight burn. The wire is sharp.

### MATERIALS: (same as series circuit lesson 2 only add one more wire)

D cell battery and battery holder

Wire (2-4 pieces per group, 5-6 inches long)

Light bulb and bulb holder (2 per group if possible-check that the kind of bulb is the same for each group. If the group has one oblong-shaped bulb and one circle-shaped bulb it will affect the circuit.

### PROCEDURE:

1. Review the safety information.
2. Have students to get into groups.
3. Pass out the materials.
4. Ask students to connect 2 bulbs and 2 batteries in a circuit. Then have them unscrew a bulb. What happens? The circuit was broken. Explain that this is a series circuit. In a series circuit, when one bulb breaks or is missing, it stops the flow of electricity.
5. Pass out worksheet.
6. Instruct groups to brainstorm together to figure out how to make the circuit work to light the bulbs and stay lit if one bulb is removed. They can remove a bulb by unscrewing it for the bulb holder. Have them list the objects they need.
7. Remind students to fill in their findings on their worksheet.

8. Guide groups into finding the answer.
9. Have groups draw diagrams of circuits that did NOT work on the chalkboard. Once each group is successful in making a parallel circuit, draw a diagram of it on the board.

**CONCLUSION:**

Discuss the flow of energy through the circuit.

Discuss how a parallel circuit is made of two or more circuits on the same battery to ensure that all the bulbs will stay lit when one breaks/burns out/is removed.

This is the type of circuit found in our classroom and at home. Each room usually has one circuit (a kitchen may have a few). The rooms are separated on different circuits.

# Electricity

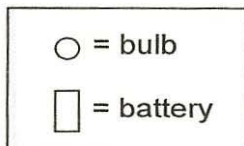
## Parallel Circuits

List materials needed to make a circuit.

Draw attempts to make a parallel circuit that DID NOT work.

Draw a working parallel circuit that worked. Draw arrows showing the flow of electricity.

Key



# Electricity

## Parallel Circuits

List materials needed to make a circuit.

WIRE, 2 BULBS, 2 BATTERIES

Draw attempts to make a parallel circuit that DID NOT work.

ANSWERS VARY

Draw a working parallel circuit that worked.

