

## SUPER BRIGHT Circuits Best Lesson

**Title:** SUPER BRIGHT Circuits

**Theme:** Physical Science

**Unit Title:** Electricity and Magnetism

**Target Grade Level:** 5<sup>th</sup> Grade

### **Georgia Performance Standards**

S5P3. Students will investigate the electricity, magnetism, and their relationship.

- a. Investigate static electricity.
- b. Determine the necessary components for completing an electric circuit.
- c. Investigate common materials to determine if they are insulators or conductors of electricity.
- d. Compare a bar magnet to an electromagnet.

### **Material**

- a. 50 Alligator clip wires
- b. 10-12 D-size batteries
- c. 10-12 D-size battery holders
- d. 20-25 Light bulb sockets
- e. 20-25 Light bulbs

### **Safety Concerns**

The students should be warned that the glass on the light bulb is fragile and can break if dropped. Also, the alligator clips can hurt if skin is pinched in between the clips.

### **Teaching the Lesson**

The purpose of this lesson is for students to combine all of their knowledge of series and parallel circuits and build the BRIGHTEST light bulb possible. This lesson should be done after students have had their preliminary lessons on parallel and series circuits.

First, the students will pair up in groups of three or four depending on how many supplies you have. Next, the students will receive about 9-10 wires, 2 D batteries, 2 D battery holders, 3 light bulbs, and 3 light bulb sockets. Next, the children will listen to you lecture about their objectives in the experiment: The students are to compete with other groups in their class and try and figure out how to build the BRIGHTEST circuit possible.

To build the brightest circuit possible, a parallel circuit will be utilized. First, the 2 batteries will be connected in a series connection. After that, the wires leading from the batteries will join light bulbs in a parallel fashion. Thus, the more light bulbs that are connected in a parallel circuit the less overall equivalent resistance, making the light bulbs brighter.

### **Modified Lesson**

For future students doing the lesson, make sure to have enough supplies and powerful and charged batteries. Moreover, let students work with 4-5 light bulbs as this will make it more challenging for them as well.

