IPC Chapter 9 Lab- Compare Series and Parallel Circuits

**Background:**

Imagine what a bedroom might be like if it were wired in series. For an alarm clock to keep time and wake you in the morning, your lights and anything else that uses electricity would have to be on. Fortunately, most outlets in homes are wired in parallel circuits on separate branches of the main circuit.

**Question**

How do the behaviors of series and parallel circuits compare?

**Possible Materials**

D batteries

Small lights with sockets

Short pieces of insulated wire

Scissors

Paper clips

Aluminum foil

**Procedure**

Station One- (10 minutes) **Design** your own series and parallel circuits

1. On a piece of paper you will design your own series and parallel circuit.
2. Utilize the following materials in your circuits
   1. A battery
   2. A lightbulb
   3. 1-3 Resistors (you must use at least one resistor in each circuit)
   4. Connecting wires
3. You should have one designed circuit for both series and parallel before you move into the lab area to put your design into practice.

Station Two- (20 minutes) **Create** your own circuits based on your designs

(Take 10 minutes to work on each circuit)

1. Using your design from station one you will physically create your circuits on the circuit board.
2. Here you will determine if your design is a physically viable circuit. If your circuit does not work, edit your design physically until you have attained a working circuit. Once you have done that write down your changes on your paper design.

Station Three- (10 minutes) Calculate the Electrical Current of Your Design

1. Using the equation we discussed yesterday (I = V / R) calculate the electrical current running through your circuits.
2. Answer the following questions:
   1. Determine which circuit has more electrical current running through it.
   2. Explain why one circuit has less electrical current despite both using the same voltage battery
   3. Which of these circuits is more useful in household electrical systems? Explain why.