Project #152 (pg. 11) Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Construct this circuit and draw the schematic for it here. Label the following next to the component: **battery voltage, and voltage drop across EACH BULB. Draw an arrow showing electron flow.**

Set your meter to OHMS (Ω) Is there any “resistance” in the wires or switch?

How about the bulbs?

If so, what are they in OHMS?

If one of the bulbs is removed(disconnected) the other will go out. This is an example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_circuit.

If you add the voltage of all batteries wired in series, then the total voltage of the circuit is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Test this by using your meter across both batteries at one time.

This voltage is significantly higher than the voltage rating on L1. Why doesn’t it BURN OUT?

When the circuit has been off for a while, turn the switch and watch the lamps closely. See how L2 takes longer to get bright while L1 gets very bright initially, but becomes less bright as L2 turns on. (This effect may be easier to see if you replace one of the battery holders with a 3-snap wire). Explain why this happens.

Project #153 (pg. 12)

Build this circuit and draw a complete schematic here. Include in your schematic:

**Voltage drops across EACH bulb, battery voltage, and electron flow.**

If the switch is on, both lamps will light. If one is disconnected the other will remain lit. This is an example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_circuit.

Note that in project 153, the lamps have the same brightness as in project 152 even though only one battery set is used. Why is this? (also look at your voltage drop measurements across each bulb to explain this.)

Give an example of when you would use a series circuit being.

Give an example of when you might use a parallel circuit.

Project #103 (pg. 12)

Build and draw the schematic here. Again, list the voltages of the batteries, voltage drops, and electron flow.

How are the batteries wired in this circuit? SERIES or PARALLEL

If the switch is off, the bulb will still be bright. Why?

If the switch is on, the bulb will be even BRIGHTER. Why? (Use the terms CURRENT and VOLTAGE in your explanation.)