Physics 100 (Stapleton)          Name: _____

Circuit Lab

## Using Power Supplies and Measuring Voltage Drop

**Using the Power Supply**

**Step 1:  Set Voltage to Zero**

**Step 2:  Set current to ½ of maximum.**

**Step 3:  Turn on power supply. Keep voltage at or below 6V.**

**Measuring Source Voltage and Current**: See Power Supply Readout

**Measuring Individual Voltage Drops across resistors (bulbs):**

Set the Digital Multimeter (DMM) to measure the lower of either 20V or 200V DC (solid line over dotted line) This is done by turning the dial.  The DMM should read 0 when you turn it on.  Let your teacher know if it does not.

Simply touch the two probes to each terminal on the bulb holder.  This measures the potential difference between the two sides of the bulb.
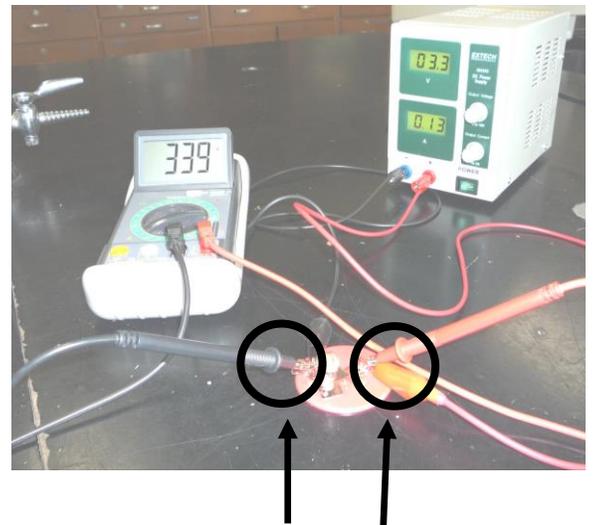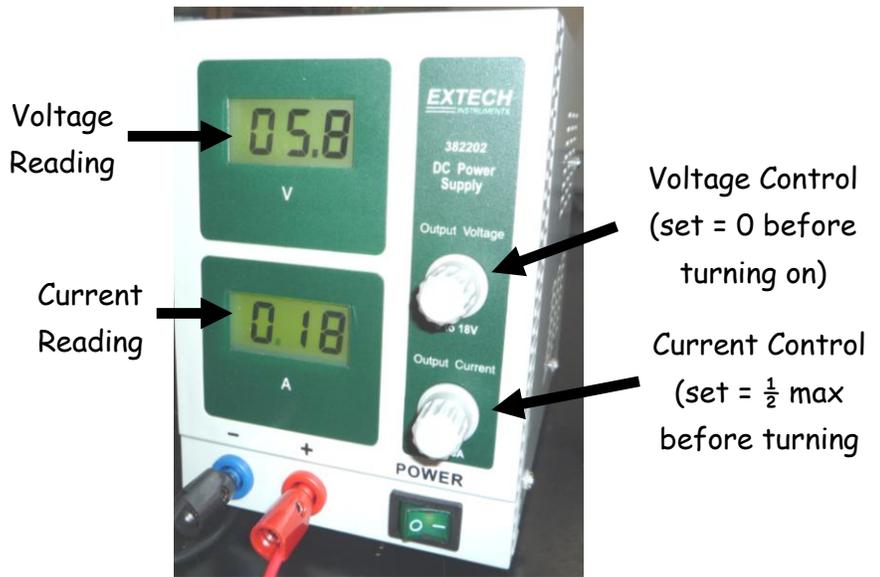
**Measuring Current Through Individual Resistors (bulbs):**  Don't try it.  You will have to infer these values using other methods.

**Definition of Power:**



**Units for Power:**

**Formula for calculating electrical power:**



**Example:  If 3A of current flows through a bulb with a voltage drop of 9V, the bulb uses _____W of power.**

Voltage Reading

Current Reading

Voltage Control (set = 0 before turning on)

Current Control (set = ½ max before turning

**Measure Voltage Drop** by touching the two probes of the voltmeter to each terminal of the bulb holder.

## Circuit directions:
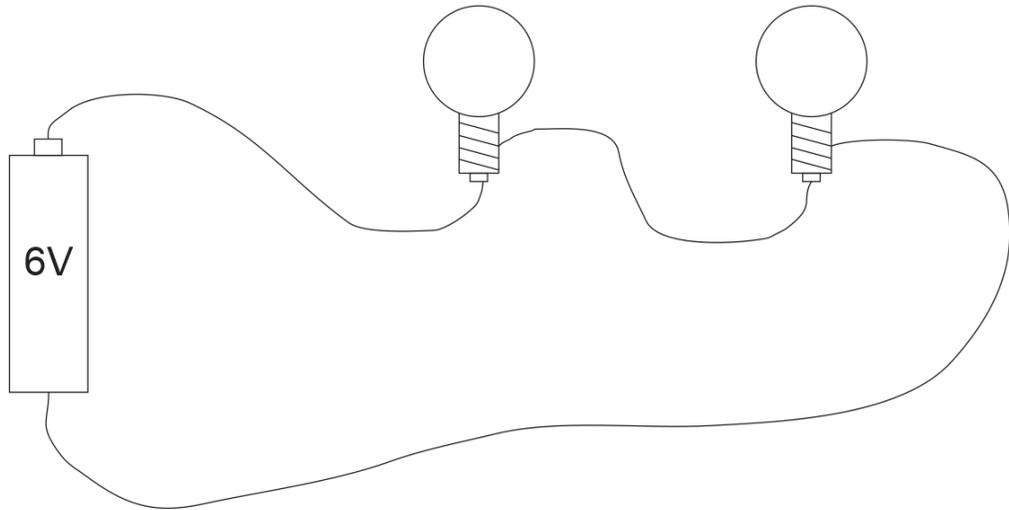
- Build each of the follwing circuits with real bulbs and a power source. **Remember to limit the voltage to 6V.**
- Use all identical bulbs, and assume that they have the same resistance.
- Once you have built each circuit, measure the "voltage drops" across the battery (overall circuit) and the bulbs.
- Then find each of the currents, resistances, and powers in the diagram.
- Use the PhET simulation to check your answers or to find answers that you are missing.

V =   R =                    V =   R =
I =   P =                    I =   P =

Overall
Circuit
 V =
 R =          6V
 I =
 P =

Overall
Circuit
 V =
 R =       6V       V =   R =        V =   R =
 I =               I =   P =        I =   P =
 P =

Overall
Circuit
V =
R =
I =
P =

V =   R =       V =   R =       V =   R =
I =   P =       I =   P =       I =   P =
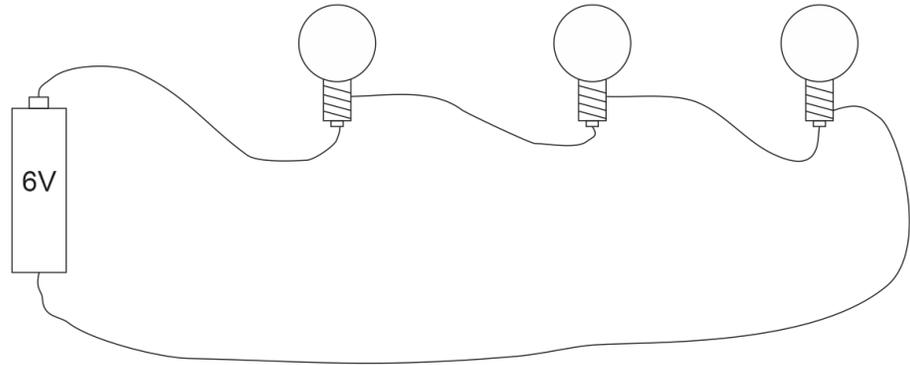
6V

Overall
Circuit
V =
R =
I =
P =

V =   R =       V =   R =       V =   R =
I =   P =       I =   P =       I =   P =

6V