Using Power Supplies and Measuring Voltage Drop

Using the Power Supply

<u>Step 1</u>: **Set Voltage to Zero**

<u>Step 2</u>: **Set current to ½ of maximum.**

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

Measuring Source Voltage and Current: See Power Supply Readout

Voltage Reading

Current Reading

Voltage Control (set = 0 before turning on)

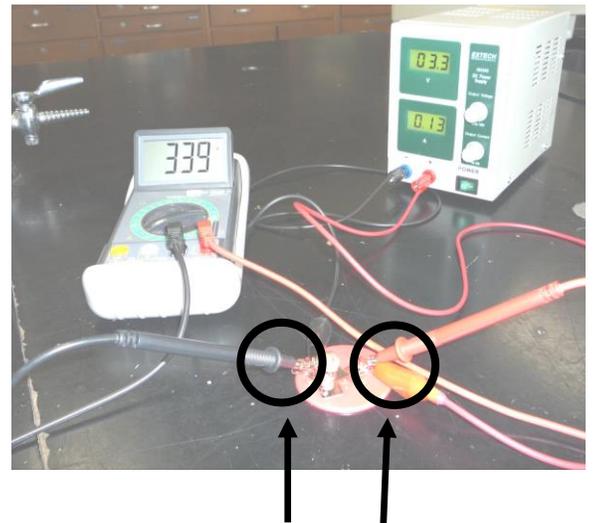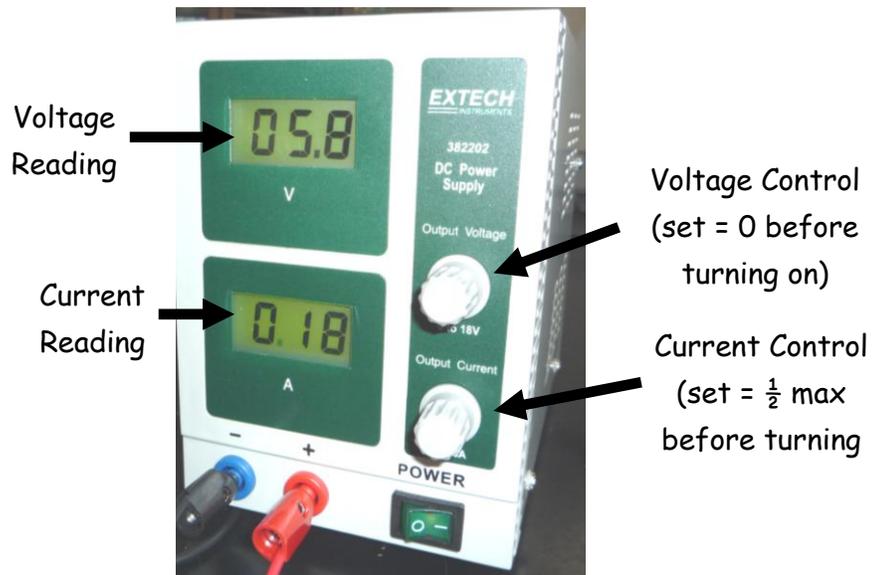Current Control (set = ½ max before turning

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 arrive at these values using other methods.

About The Circuit Diagrams: The small circle at the top left end of the circuit represents the red (positive) terminal of the power source. Each X represents a bulb (resistor). The ground symbols (three dashes of diminishing length) represent connections to the black (negative) terminal on the power source. The "A" represents the presence of the internal ammeter that is built in to the power source.
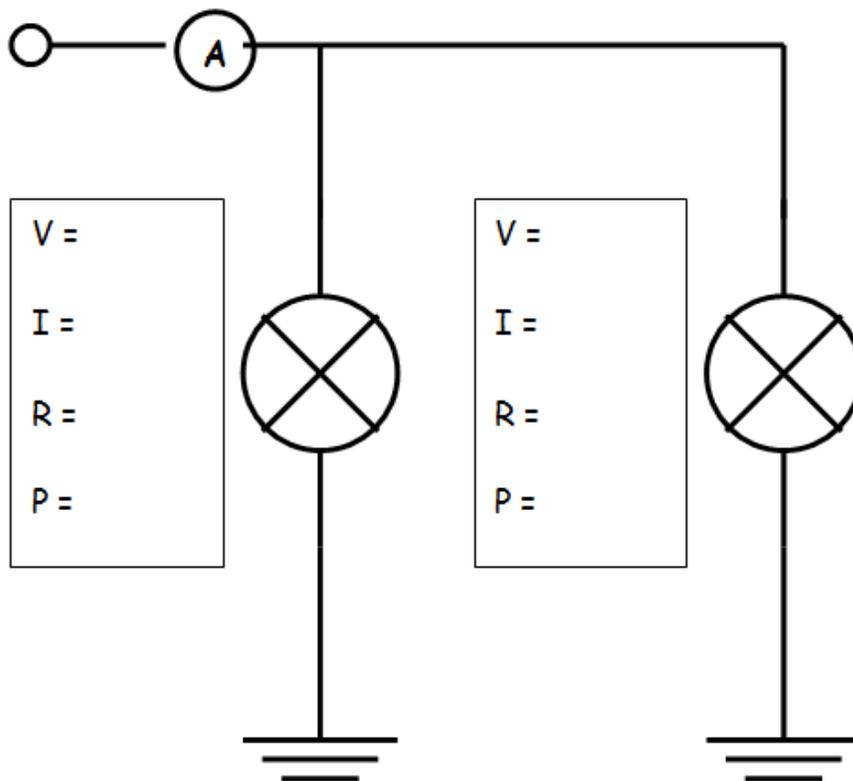
Measure Voltage Drop by touching the two probes of the voltmeter to each terminal of the bulb holder.
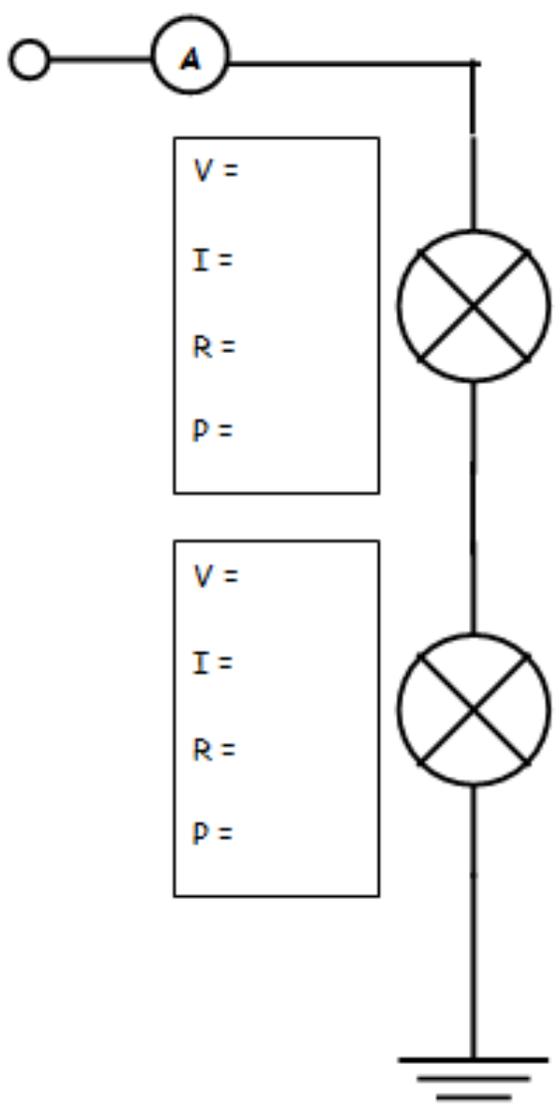
Directions: Look at each circuit diagram, and create a simple sketch of how the actual circuit will look (with bulbs and a power source). Then build the circuit. Use the power source readout to determine the source current and voltage drop [**keep it at 6V or less]. Use this information to determine the total power dissipated by the circuit and the total circuit resistance. Next use a multimeter to determine the voltage drop at each bulb (X symbol). Use those voltage drops (and other clever tricks) to deduce the other values at each bulb. Identify the circuit as parallel or series.

Warning: bulbs are non-ohmic. Their resistances may be different at different voltages. Do not expect the same bulb to always have the same resistance. Furthermore, we may have different types of bulbs, and they may have different resistances.
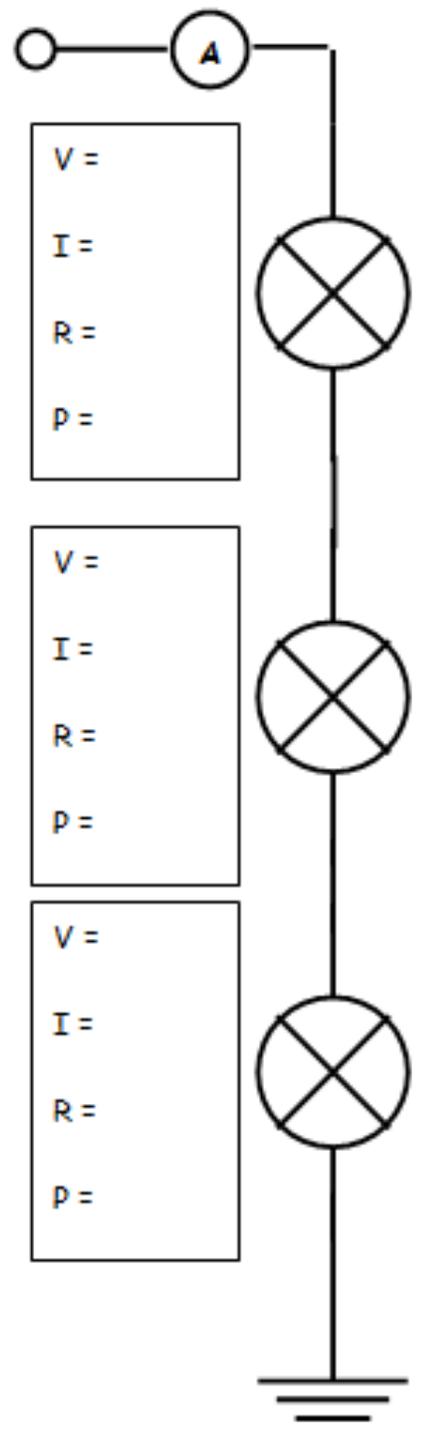
Source

V =   I =

R =   P =

V =

I =

R =

P =

V =

I =

R =

P =

Source
V =   I =

R =   P =

A

V =

I =

R =

P =

V =

I =

R =

P =

Source
V =   I =

R =   P =

A

V =

I =

R =

P =

V =

I =

R =

P =

V =

I =

R =

P =

Source
V =   I =

R =   P =

A

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