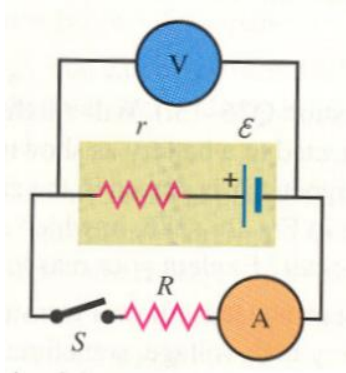


Workshop module 6 - Physics 114, Spring 2015

1. When the switch in the diagram below is open, the voltmeter V reads 1.56 V. When the switch is closed, the voltmeter reading drops to 1.45 V, and the ammeter A reads 1.3 A. Find the emf and internal resistance of the battery. Assume that the two meters are ideal, so they don't affect the circuit.



2. In which 120-V light bulb does the filament have the greater resistance ... a 60-Watt bulb or a 120-Watt bulb? If the two bulbs are connected to a 120-V line in series, across which bulb will there be the greater voltage drop? What if they are connected in parallel?
3. When a capacitor, battery and resistor are connected in series, does the resistor affect the maximum charge stored on the capacitor? Why or why not? What purpose does the resistor serve?
4. A resistor with $R=86.0 \text{ k}\Omega$ is connected to the plates of a charged capacitor with capacitance $C=4.5 \text{ }\mu\text{F}$. Just before the connection is made, the charge on the capacitor is 0.0636 C. What is the energy initially stored in the capacitor? What is the electrical power dissipated in the resistor just after the connection is made? What is the electrical power dissipated in the resistor at the instant when the energy stored in the capacitor has decreased to half the initial value?

5. Find the value of the current through each of the three resistances in the circuit below.

