Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Lab: What Affects Resistance Ω ?**

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1. Phet Simulation DC Circuit construction kit (DC only): **http://bit.ly/1mOYoH6**
2. Click run now and allow Java to run
3. Construct a simple series circuit containing one of each of the following: battery, light bulb, switch, contact ammeter



1. Close the switch and record what the **current** in the circuit is in Amps \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Click on the voltmeter tool. Place the red wire to the left of the battery and the black wire on the right. Record the **voltage** in the circuit in Volts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Calculate the resistance in ohms of this circuit.

V =

I =

R = ?

1. Now, add another **light bulb to the circuit in series**.
2. Record what the **current** in the circuit is in Amps

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. What happens to the **current** in the wire?

Increase Decrease Stays the Same

1. Record the **voltage** in the circuit in Volts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_What happened to the **voltage** in the circuit?

 Increase Decrease Stays the Same

1. Again **calculate the resistance** in ohms of this circuit using these **new values**

V =

I =

R = ?

1. How did this new resistance compare to the 1st resistance calculated?

 Increase Decrease Stays the Same

1. So because another light bulb was added in series\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ decreased which caused \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to increase. This means that it is harder for electrons to flow through the circuit.
2. What happened to the brightness of the original light bulb when the 2nd one was added?
3. Disconnect a wire and add a resistor in series with the two light bulbs and ammeter and switch.
4. Record what the **current** in the circuit is in Amps \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. What happens to the **current** in the wire?

 Increase Decrease Stays the Same

1. Record the **voltage** in the circuit in Volts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_What happened to the **voltage** in the circuit?

 Increase Decrease Stays the Same

1. Calculate the resistance of this new circuit using the values from above.

V =

I =

R = ?

1. What does this effect of adding a resistor have on the speed/ability of electrons to flow through the circuit?

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