

NAME:

# MEASURING RESISTANCE

**MATERIALS:** 4 1.5 V batteries  
8 wires  
1 board of resistors  
1 ammeter  
1 voltmeter

## PROCEDURE:

1. Label your batteries with numbers (1-4). Measure the voltage of each battery. Record these voltages in the appropriate space in Table 1 **and** in Table 2.
2. Record the resistance colour code to the top of Table 2 by looking at the coloured bands of your resistor.
3. Connect Battery #1 to one ammeter, one switch, and a resistor. Record the current reading from the ammeter in Table 2 (Amps column).
4. Add Battery #2 (in series) to the circuit you built in step 3. Record the amps in Table 2.
5. Add Battery #3 (in series) to the circuit. Record the amps in Table 2.
6. Add Battery #4 (in series) to the circuit. Record the amps in Table 2.
7. Add up all four resistances of the Ohms column in Table 2 and divide by 4. Record in table 2.

## OBSERVATIONS:

**TABLE 1 : MEASURED VOLTAGES OF BATTERIES**

BATTERY #	VOLTAGE (V)
1	
2	
3	
4	

**TABLE 2 : VOLTAGE, CURRENT, AND RESISTANCE READINGS OF A SIMPLE CIRCUIT**

Resistance (Colour Code) = _____ $\Omega$ $\pm$ _____ %			
Number of Batteries	Total Voltage of Circuit (Volts)	Current Reading Circuit (Amps)	Resistance (R = V/A) (Ohms)
1			
2			
3			
4			
<b>Average Resistance</b> (Add all 4 resistances, then divide by 4) ----->			

**DISCUSSION:**

Analyze both Tables in order to answer the following questions.

1. What happens to the current in the circuit as voltage increases?
2. Compare the “Average Resistance” and the “Colour code resistance”.
  - a) Are they exactly the same? (Circle one)                    **YES**                    **NO**
  - b) If you circled NO, describe 2 reasons why these values are different.
3. Use Ohms Law to predict what would happen to the current in the circuit if you increased the voltage to...

Voltage (V)	Predicted Current Reading of Circuit (A)
9 V	
12 V	
3.2 V	

**CONCLUSION:** (Describe 2 things that you learned by completing this lab...be specific!)