NAME:
BLOCK:

# MEASURING RESISTANCE

## PURPOSE:

## MATERIALS:

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

## PROCEDURE:

1. Choose one resistor on the resistor board. Use the colour bands of that resistor to determine the resistance. Write this resistance, and the tolerance, in the space at the top of Table 2.

2. Label your batteries with numbers (1-4). Measure the voltage of each battery. Record these voltages in the appropriate space in Table 1.

3. Connect Battery #1 to one ammeter, one switch, and the resistor that you chose on your board. Record the current reading from the ammeter in Table 2.

4. Add Battery #2 (in series) to the circuit you built in step 3. Record the current reading from the ammeter in Table 2.

5. Add Battery #3 (in series) to the circuit you built in step 4. Record the current reading from the ammeter in Table 2.

6. Add Battery #4 (in series) to the circuit you built in step 5. Record the current reading from the ammeter 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) = _____ Ω ± _____ % | | | |
|---|---|---|---|
| Number of Batteries | Total Voltage of Circuit (Volts) | Current Reading Circuit (Amps) | Resistance (R = V/A) (Ohms) |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| **Average Resistance** (Add all 4 resistances, then divide by 4) ---------> | | | |

## DISCUSSION:

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. 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!)