

Electronics Equipment Familiarization II

Name _____ ID _____

Partners _____

Date _____ Section _____

Do not set the multimeter to “Current Mode” unless you are sure that you will not exceed the maximum current for the fuse.

1. Measuring Voltages and Currents in a Circuit

Pick up two of resistors, and read the resistances with the color codes. (See the last page.)

Resistor 1:

Color 1 _____ Color 2 _____ Color 3 _____ Color 4 _____

Calculation:

Resistance _____(1)

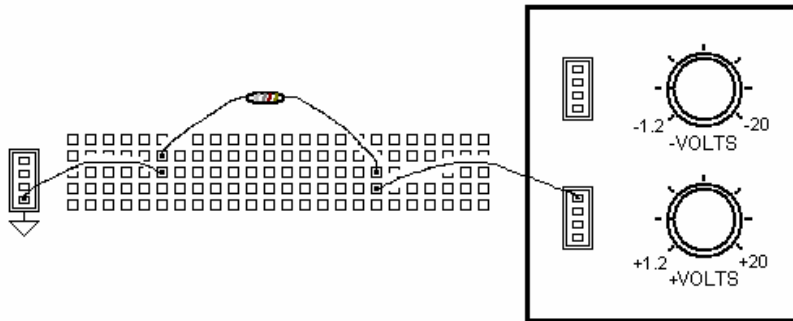
Resistor 2:

Color 1 _____ Color 2 _____ Color 3 _____ Color 4 _____

Calculation:

Resistance _____(2)

Connect each resistor as follows and measure the voltage and current in the resistor. Choose 5 volts from power supply.



	Voltage (V)	Current (A)	Resistance (Ω) (voltage \div current)
1			
2			

◇ **Question 5:**

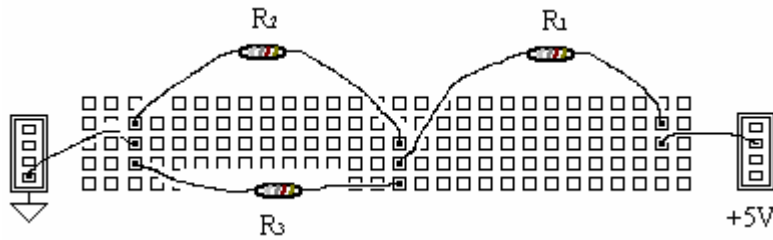
Are the results in the third column similar to the ones you found with the color codes?

2. Simple Circuit Analysis

Find resistances for three resistors (use color codes or multimeter).

$R_1 =$ _____, $R_2 =$ _____, $R_3 =$ _____

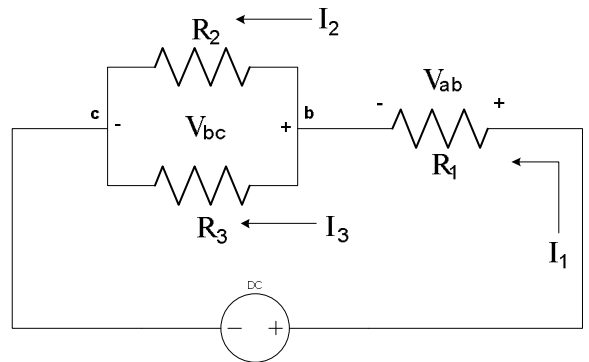
Make a circuit as follows:



Record the source voltage found in the power supply.

V (source voltage) = _____

Measure following:



V (source) = _____, $V_{ab} =$ _____, $V_{bc} =$ _____

I_1 (total) = _____, $I_2 =$ _____, $I_3 =$ _____

Calculate these two.

$$V(\text{source}) = V_{ab} + V_{bc}$$

$$I_1(\text{total}) = I_2 + I_3$$

◇ **Question 6:**

Does your measurement hold the above equations?

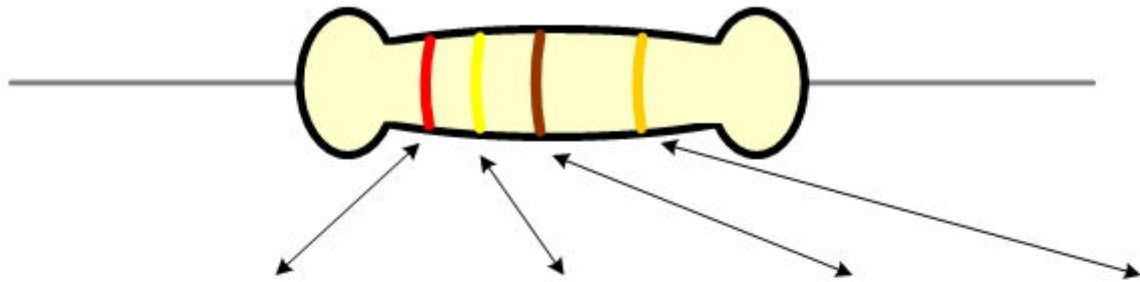
Calculate these ratios.

$$R_3/R_2 = \underline{\hspace{15em}}, \text{ and } I_2/I_3 = \underline{\hspace{15em}}$$

◇ **Question 7:**

Are those values close enough? (They should be the same.)

4-band Resistor



Color	1 st band value	2 nd band value	Multiplier	Tolerances
Black	0	0	× 1	
Brown	1	1	× 10	± 1%
Red	2	2	× 100	± 2%
Orange	3	3	× 1000	± 3%
Yellow	4	4	× 10,000	± 4%
Green	5	5	× 100,000	± 0.5%
Blue	6	6	× 1,000,000	± 0.25%
Violet	7	7	× 10,000,000	± 0.10%
Grey	8	8	× 100,000,000	± 0.05%
White	9	9	× 1,000,000,000	
Gold			× 0.1	± 5%
Silver			× 0.01	± 10%
No band				± 20%