

CG1108 – Lab 1 : Resistors and Ohm's Law

Name: _____ Matric. No. _____ Group: _____	Activities Completed	Verified By	Marks From 3
	a		
	b		
	c		
	d		
	e		
	f		

1. Objectives of the Experiment

- a) To learn about the use of lab power supply, the multi-meter and breadboard
- b) To measure resistance values using the multi-meter and compare with values read from the color codes.
- c) To verify Ohm's law using these equipment.
- d) To verify the series and parallel rules for resistors.
- e) To verify voltage divider and current divider rules.

2. Equipment to be used

- Lab DC power supply
- Digital multi-meter
- Breadboard

3. Components

- Resistors

In-lab activities

- What are the voltage and current ratings of the lab power supply?
- How many different voltage sources are available on this power supply?
- What is the maximum voltage that can be obtained from this power supply?
- What is maximum load current that can be supplied by this power supply?
- What would happen if the positive and negative terminals of the power supply are shorted together through a wire? (DO NOT attempt to do this.)

a) Reading color code of resistors and resistance measurements.

(1) Pick a resistor from the rack. Note its color code : _____

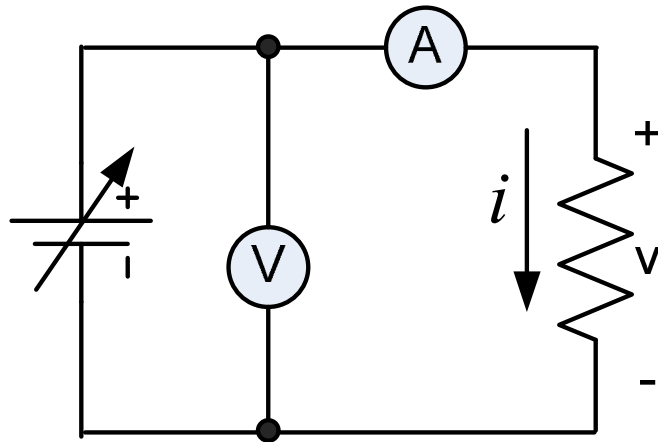
Find its theoretical value from the color code : _____

(2) Measure the resistance using a multimeter. _____

Explain the difference if any. (Refer to the tolerance bar from the color code):

b) Verification of Ohm's Law

Build the circuit shown below on the breadboard using a resistor of a value in the range of a few hundred Ohms. **Vary the input voltage while taking note of the current through the resistor.** Take five different readings and verify Ohm's law.



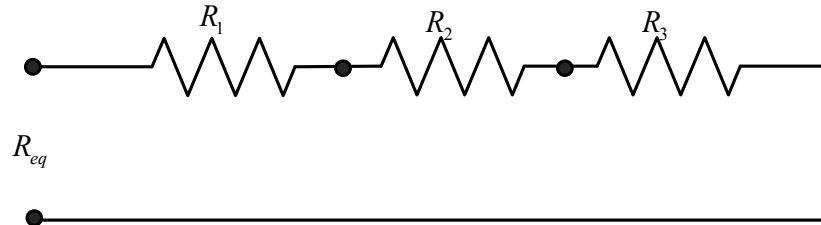
Voltage across the resistor (Volt)	Current through the resistor (Amp)	Resistance = Volt/Amp

(1) Conclusion:

(2) What will happen if a 0.25 Watt, 27 Ohm resistor is connected to the power supply providing a voltage of 10V?

c) Verification of series rule for resistors

Build the series circuit below on breadboard using 3 random resistors.



(1) Note down the following values :

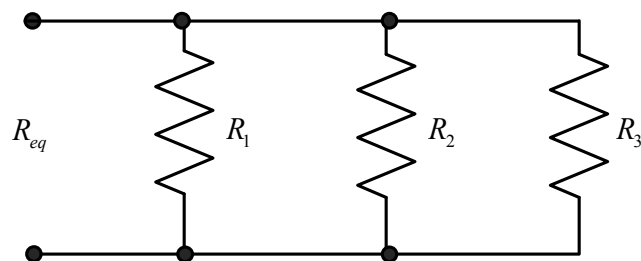
$R_1 =$ _____ $R_2 =$ _____ $R_3 =$ _____

R_{EQ} (Calculated) = _____ R_{EQ} (Measured) = _____

(2) Conclusion:

d) Verification of Parallel rule for resistors

Build the parallel circuit on breadboard using 3 random resistors.



(1) Note down the following values :

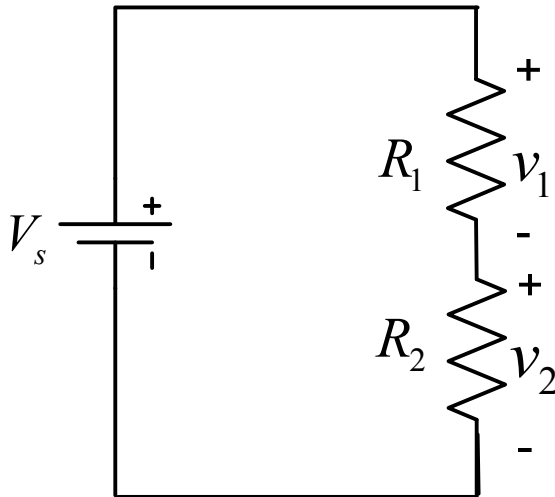
$R_1 =$ _____ $R_2 =$ _____ $R_3 =$ _____

R_{EQ} (Calculated) = _____ R_{EQ} (Measured) = _____

(2) Conclusion:

e) Verification of voltage divider rule

Build the parallel circuit on breadboard using 2 random resistors.



(1) Note down the following values :

$V_s =$ _____ $R_1 =$ _____ $R_2 =$ _____

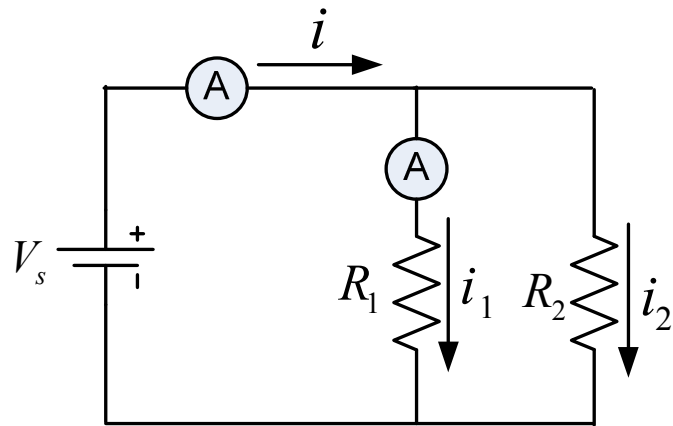
V_1 (Calculated) = _____ V_1 (Measured) = _____

V_2 (Calculated) = _____ V_2 (Measured) = _____

(2) Conclusion:

f) Verification of current divider rule

Build the parallel circuit shown below on the breadboard.



(1) Note down the following values :

$V_s =$ _____ $R_1 =$ _____ $R_2 =$ _____

$I(\text{Measured}) =$ _____

$I_1(\text{Calculated}) =$ _____ $I_1(\text{Measured}) =$ _____

$I_2(\text{Calculated}) =$ _____ $I_2(\text{Measured}) =$ _____

(2) Conclusion: