Ohm's Law

AIM:

1. To find the resistance of the given wire using Ohm's Law by drawing Current-Voltage graph, Also find the Conductance
2. To compare the resistances of the two wires drawing Current – Voltage graph by Ohm's Law

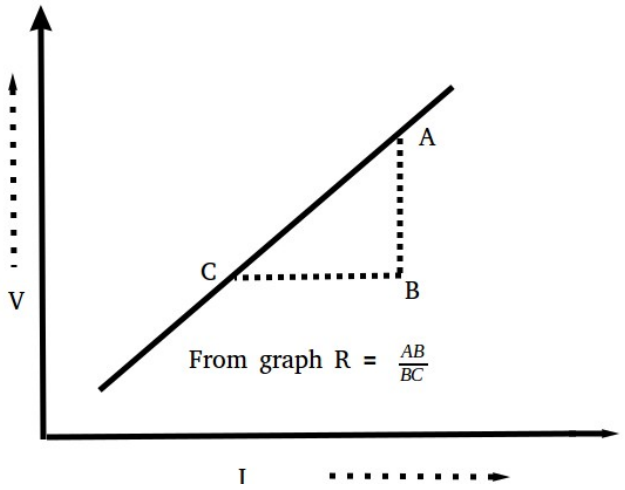
APPARATUS: Cells, Ammeter, Voltmeter, Rheostat, Key, Screw Gauge, Graph Paper, Connecting wires etc

THEORY: At constant temperature, the current passing through the conductor is directly proportional to the potential difference across the conductor.

That is **V α I** or $\frac{V}{I}=R$ the resistance of the conductor.

The Conductance G = $\frac{1}{R}$

Slope of the Current-Voltage graph gives the Resistance



(For Aim 1)

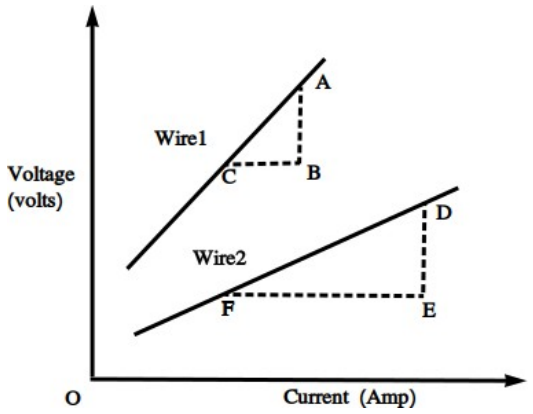
In the graph resistance $R=\frac{AB}{BC}$

(For Aim 2)

Resistance of Wire 1 $R_1=\frac{AB}{BC}$

Resistance of Wire 2 $R_2=\frac{DE}{EF}$

Ratio of $Resistances=\frac{R_1}{R_2}$

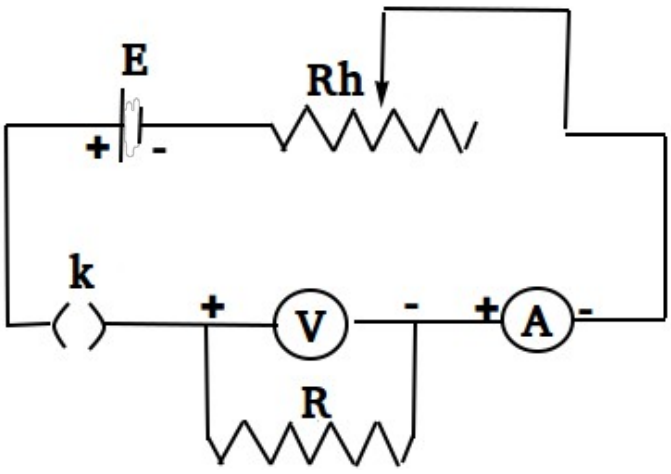


OBSERVATIONS:

1. **To find the resistance of the wire (R)**

Least Count of the ammeter = A

Least Count of the voltmeter = V



Sl No	Wire 1		Wire 2	
	Ammeter Reading (I) Ampere	Voltmeter Reading (V) Volts	Ammeter Reading (I) Ampere	Voltmeter Reading (V) Volts
1				
2				
3				
4				
5				
6				

CALCULATIONS:

Resistance of the wire from the graph = $\frac{AB}{BC}$ = = Ω

The Conductance of the wire G = $\frac{1}{R}$ = = mho

(For Aim 2)

$R_1 = \frac{AB}{BC}$ = = Ω

$R_2 = \frac{DE}{EF}$ = = Ω

Ratio of $Resistances = \frac{R_1}{R_2}$ = =

RESULT:

1. Voltage is found proportional to the current. Hence Ohm's Law is verified
2. Resistance of the given wire 1 = Ω
3. Resistance of the given wire 2 = Ω
4. Ratio of Resistances =