

EASTERN MEDITERRANEAN UNIVERSITY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC  
ENGINEERING

EENG223

CIRCUIT THEORY I

EXPERIMENT 1

RESISTANCE

Student Name & Student Number

1.....

2.....

3.....

**Object:** To explore the idea of the resistance of a component.

- Construct the circuit in Fig. 1.1 where A is the ammeter and V is the voltmeter.

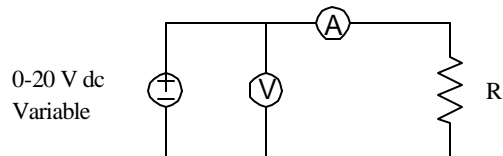


Fig. 1.1

- Set  $R=100\ \Omega$  .  
Increase the applied voltage in 1V steps from 0 up to 10 V and at each step measure the current flowing in the resistor as shown on the ammeter and fill Table 1.1. Then repeat everything with  $R=1\ \text{k}\Omega$  .

**Table 1.1**

Applied volts (v) volt	$R=100\ \Omega$ Resultant Current (I) mA	$R=1\ \text{k}\Omega$ Resultant Current (I) mA
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

- Plot a graph of V against I as shown in Fig. 1.2 (a) and (b) for  $R=100\ \Omega$  and  $R=1\ \text{k}\Omega$  respectively at page 3.

**Questions:**

1. What is the shape of the graph you obtained in Fig. 1.2 (a) and (b) ?
2. With this shape of graph, can you come to any conclusions as to the relationship between current and voltage ?

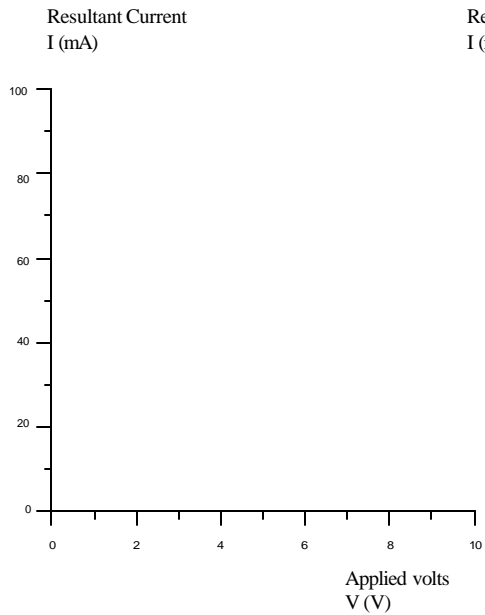


Fig 1.2 (a)

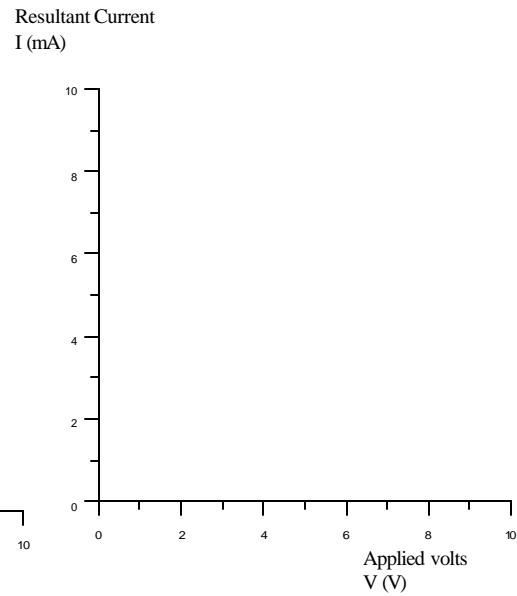


Fig 1.2 (b)

- Calculate the slope of the graphs and fill Table 1.2. (Note: Always work out the slope with V in volts and I in amp, not milliamp.)

**Table 1.2**

R ( $\Omega$ )	Slope of V/I graph
100	
1000	

- Do you then think that the ratio of voltage to current in a component, at d.c., could be used as a measure of that component's resistance?
- Are the values measured for  $R=100 \Omega$  and  $R=1 \text{ k}\Omega$  within the tolerance stated on the resistance?
- What percentage are the actual values of the stated values?