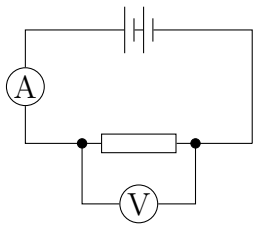
Investigating resistors

A.C. Norman
anorman@bishopheber.cheshire.sch.uk



- Set up the above circuit using the 1K resistor (you may have only one meter, so would have to move its position in that case)
- Set the voltage to a low value (e.g. 4 V) and take the voltage and current measurements. Remember, the current is measured in milliamps (mA), but you need to turn it into amps (A) before filling it in the table. (1 A = 1000 mA).
- Change the voltage to a higher value (e.g. 10 V) and take the readings again.
- Replace the resistor with one of a different value. Repeat the measurements until you have filled in the table below.

Resistor value	Measurements 1			Measurements 2			Average
	voltage/V	current/A	$\frac{\text{voltage}}{\text{current}}/\frac{\text{V}}{\text{A}}$	voltage/V	current/A	$\frac{\text{voltage}}{\text{current}}/\frac{\text{V}}{\text{A}}$	$\frac{\text{voltage}}{\text{current}}/\frac{\text{V}}{\text{A}}$
1K							

1. What do you notice about the $\frac{\text{current}}{\text{voltage}}$ for each resistor at the two different voltages, and the average of these?
2. Can you describe the connexion (the relationship) between the voltage, the current, and the resistance? (*Hint:* Look at the value of the average column for each resistor...)