

Measuring Voltages

Apparatus

voltmeter, batteries, low voltage power supplies, simple circuit with bare wires and resistor

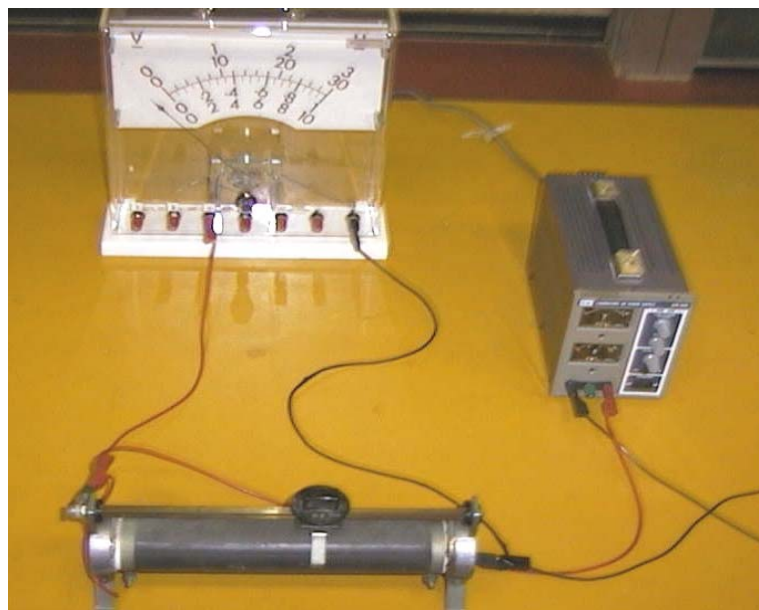
Action

The students can either set up the circuit to measure current and voltage, or the circuit can be set up for them in advance. The students measure the potential difference across the terminals of the batteries and/or power supplies. The students measure the potential difference across the resistor (a poor conductor) and across two points a similar distance apart on the wire. They should also consider why they measure potential difference by putting the probes at different points.

The Physics

All points on a conductor (the wire) will be at the same potential, hence the potential difference between two points on the wire is zero. The resistor is a poor conductor (approximately an insulator) and hence there will be a potential difference across the resistor.

The voltmeter is connected in parallel, because it measures the difference in potential between two points.



Accompanying sheet

Measuring Voltages

Use the voltmeter to measure the potential difference across the terminals of the various batteries and power supplies.

Voltmeters are always connected in parallel with the device you are measuring the voltage across.

Why is this the case?

Why do we often talk about “potential difference” rather than simply potential?