



# Ohm Comforts

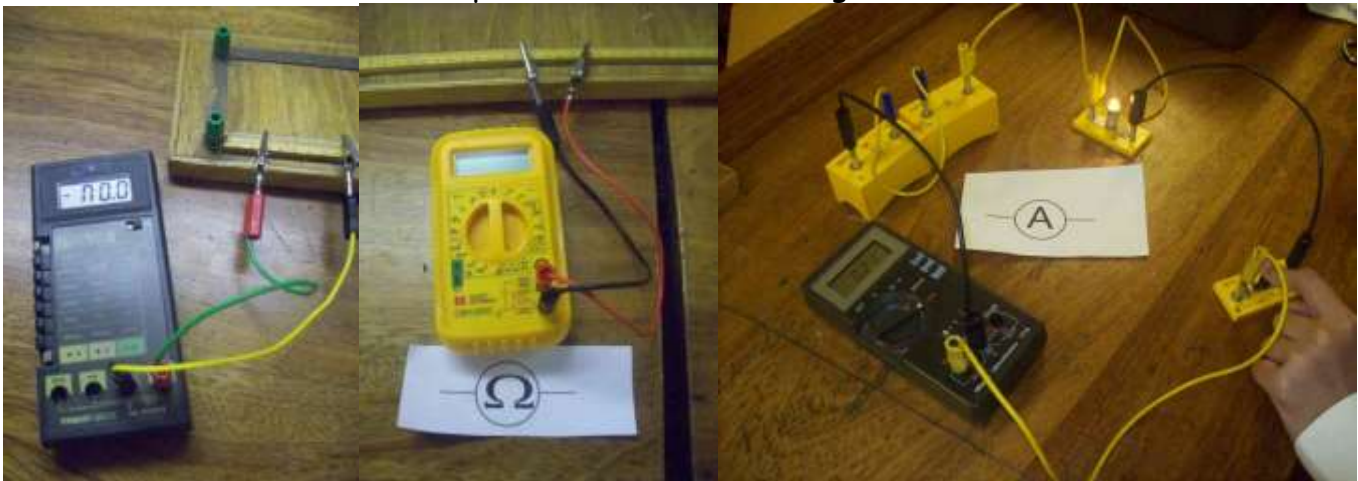


## METERS

When dealing with electricity it is sometimes helpful to be able to use a meter to measure current, resistance and voltage. For example, if you muddled up old and new batteries how do you sort them out? Using a voltmeter will distinguish between the old and the new. An ohmmeter can tell you if there is a break in the circuit. An ammeter will show you if you are overloading a circuit.

Rather than using a separate meter to measure each of the quantities, it is easier to buy a meter that can be adapted to take readings of different quantities. Such a meter is called a MULTIMETER. They are fairly cheap to buy and with careful setting up can be very useful.

Examples of multimeters are given below.



The symbols for each meter are given below.

Meter symbol	Meter	IMPORTANT INFORMATION ON CONNECTING
	Ammeter	Ammeters are used to measure the current in a circuit. The wires connect to the COM (negative) and 10A (positive). Only if the current is small can you connect it on the mA scale, but beware, too much current and the fuse will blow and the meter wont work. AMMETERS are connected IN SERIES
	Ohmmeter	Ohmmeters are used to measure the resistance of a component or a circuit. The wires connect to the COM (negative) and Ω (positive). OHMMETERS must not be used with a power supply
	Voltmeter	Voltmeters are used to measure the voltage in a circuit. The wires connect to the COM (negative) and V (positive). VOLTMETERS are connected in PARALLEL across the component.

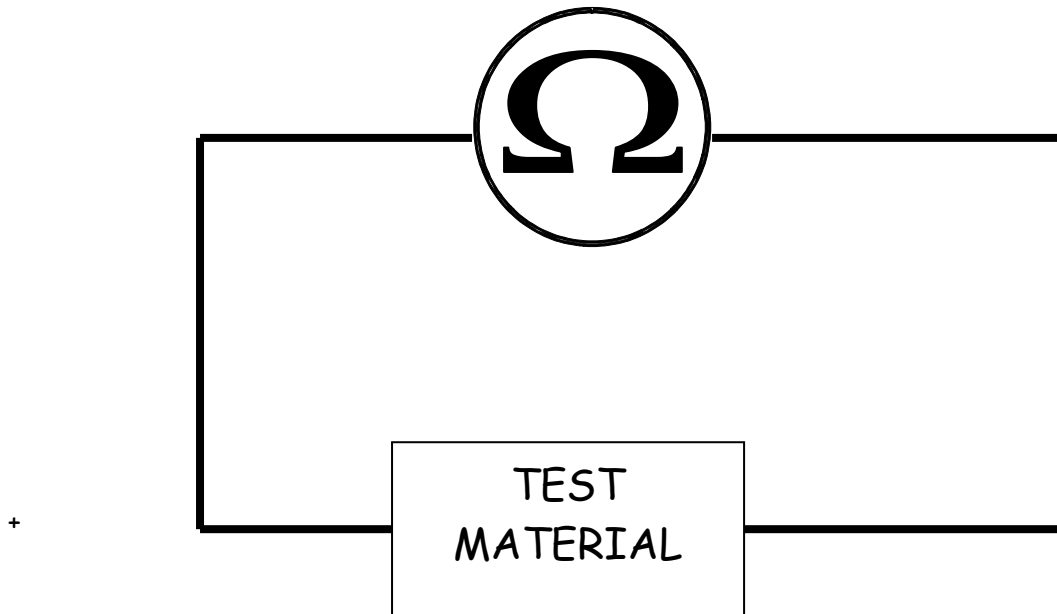


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## Connecting An OHMMETER

Notice there is no power supply and no other component, just what you want to test. Just add two wires to your meter and place it across your test component. Connect one wire into the COM terminal of your meter and the other to the  $\Omega/V$ . Turn the dial to the  $\Omega$  symbol.

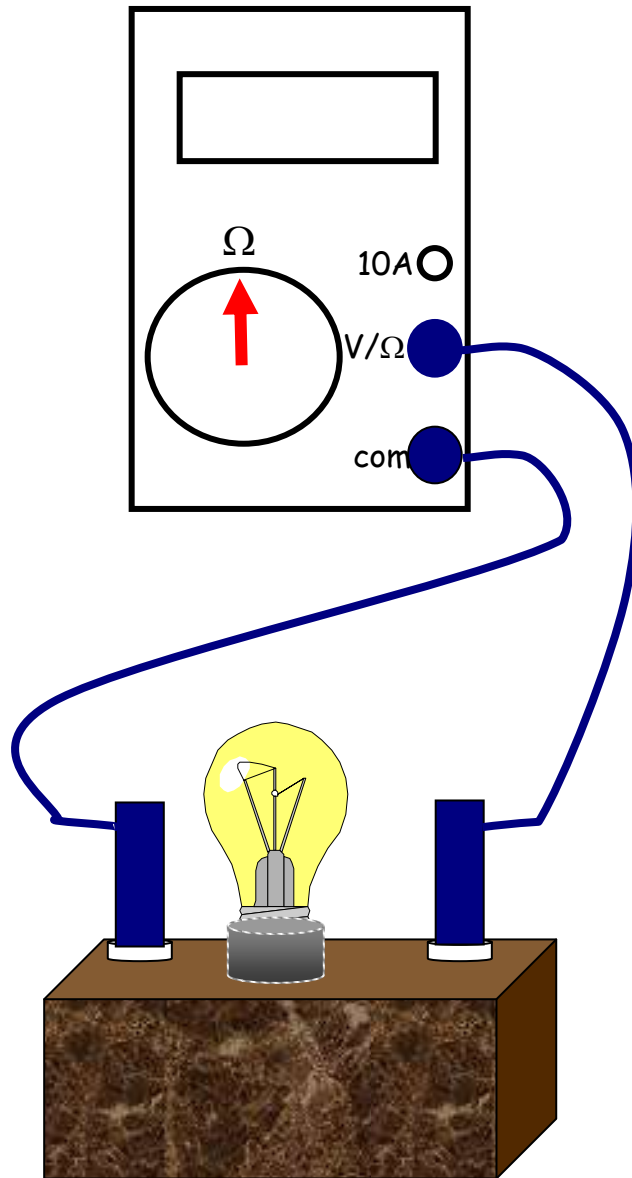




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## Measuring Resistance





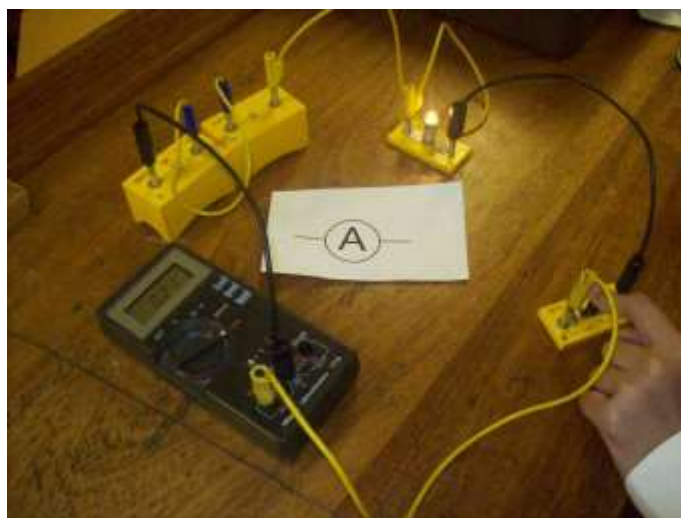
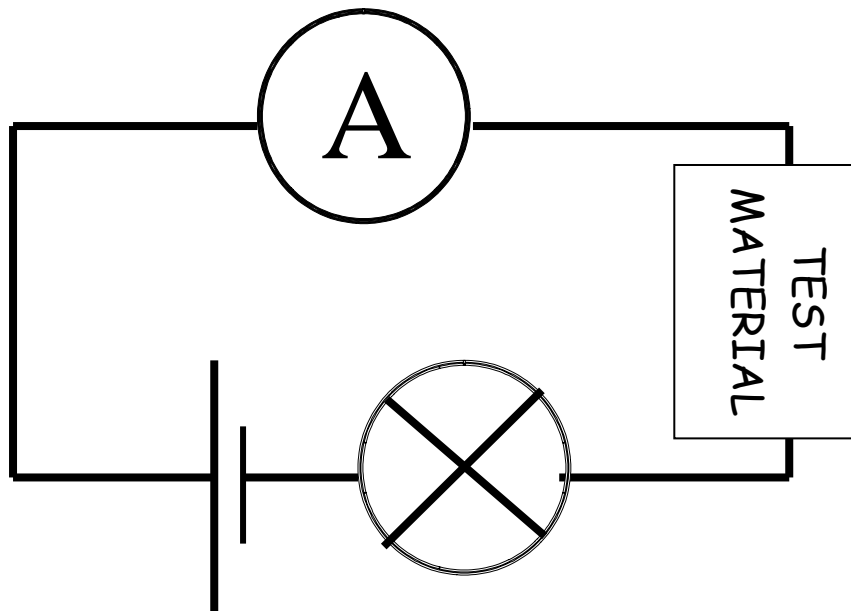
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## Connecting An AMMETER

An Ammeter must have a load (component) and power supply to make it work. Connect one wire to the COM terminal and one to the A symbol. If the current is very small then the second wire can be connected to the mA terminal but if the current is too large and you connect to this terminal you will blow the fuse inside and it will not work. Turn the dial to the A symbol (this should have straight lines above it not wavy which is used for a.c)

The bulb is not necessary but it shows you quickly if you are getting current in your circuit.

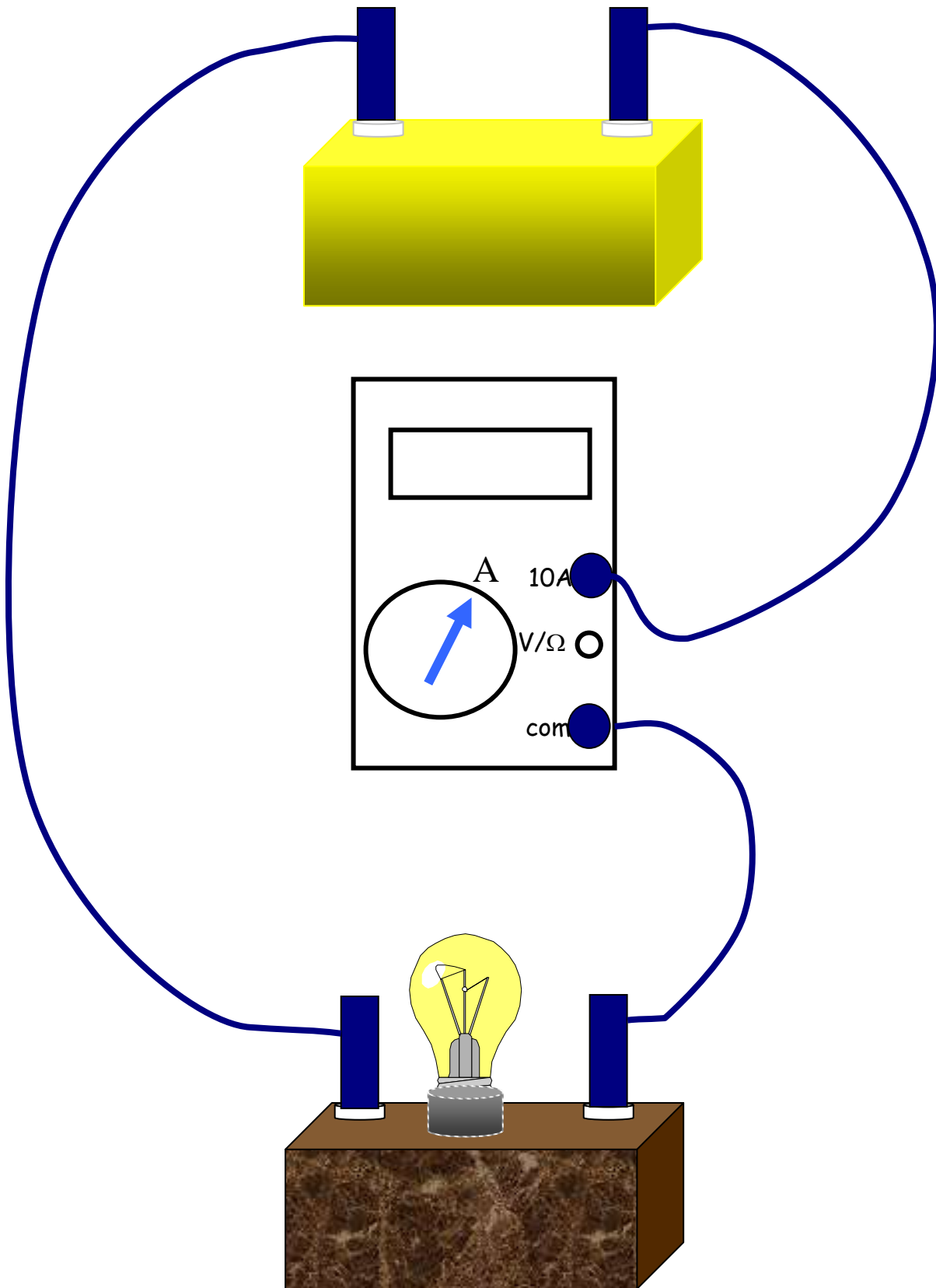




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## Measuring Current



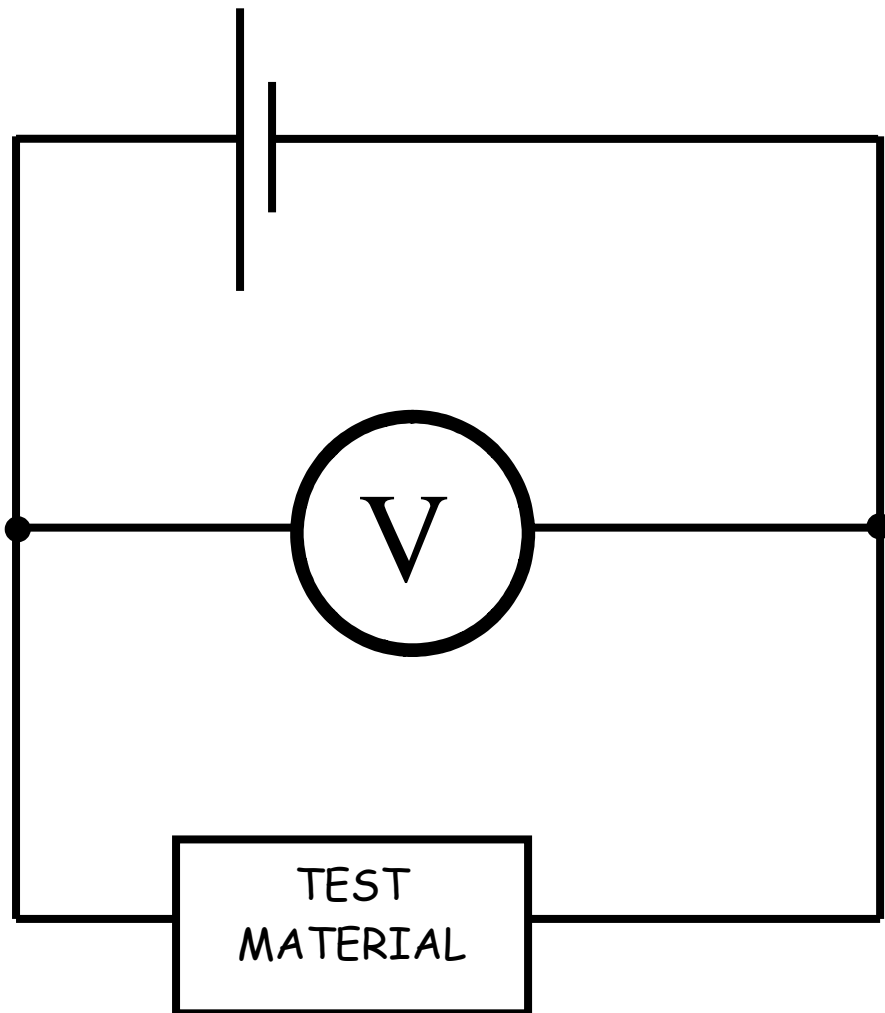


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## Connecting A VOLTMETER

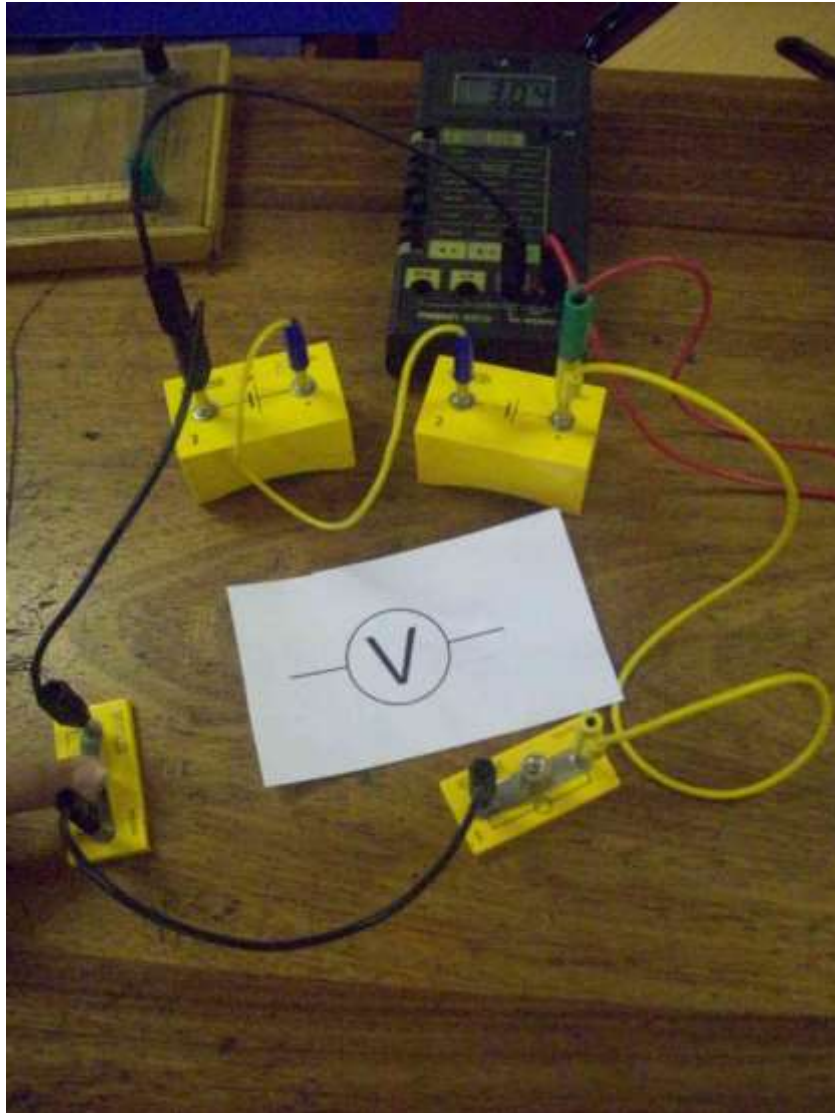
A Voltmeter must be placed **ACROSS** a component in a circuit. Voltmeters always go in parallel. Connect one wire to the **COM** terminal and one to the  $\Omega/V$  symbol. The easiest way is to build your test circuit and then connect the Voltmeter across the terminals where you think the circuit is not functioning or where you wish to measure the voltage. It is probably the easiest meter to use. If you want to see if one of your cells is near the end of its working life then connect a voltmeter straight across the terminals (top and bottom) and it will give you the voltage. Usually most cells are rated at 1.5V. A new cell could give you a reading of 1.65V but some devices will no longer function if the cell voltage drops below 1.3V.







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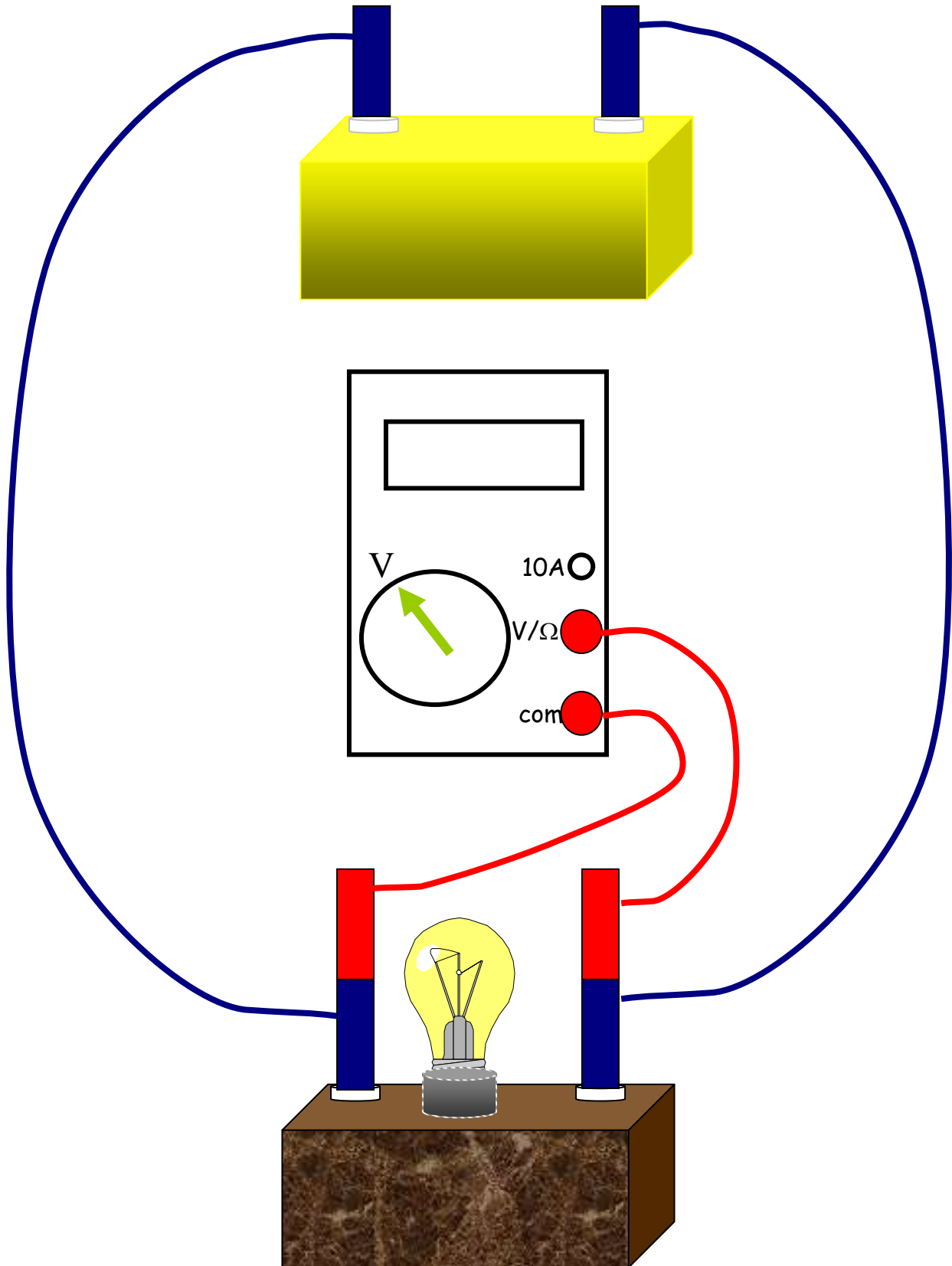




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## Measuring Voltage







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Measure + Record.

1. Voltage of Cell (Battery)
2. Current in the circuit of 1 cell, 1 lamp
3. Resistance of each object in the pots
4. Resistance of a wire of length 10cm, 20cm, 30cm, 40cm, 50cm, 60cm etc
5. Current in the circuit when each item in pot is placed in the circuit.