

Welcome APPRENTICES

Your task today

1. Know what a multimeter, ohmmeter, ammeter and voltmeter measured.
2. Be able to use multimeters, ohmmeters, ammeters and voltmeters
3. Connect the meters correctly
4. Find out how resistances of a wire is affected by length
5. Find out the current and/or resistance of various circuits

measures
voltage

AMMETERS

OHMMETER

measures
current

measures
resistance

VOLTMETER

measures a
number of
electrical
quantities

MULTIMETER

a measure of how
difficult it is for a
current to move
through an object

voltage

current

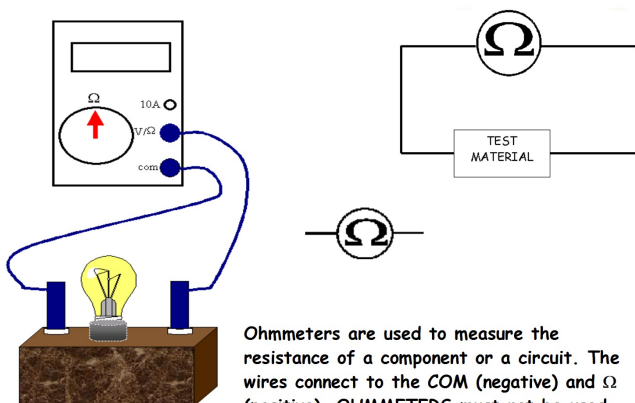
AMMETERS flow of electrons

resistance

VOLTMETER

OHMMETER

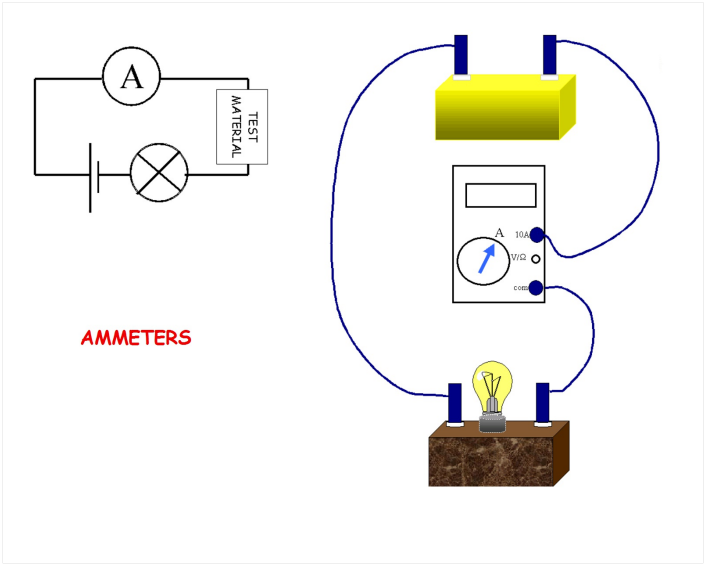
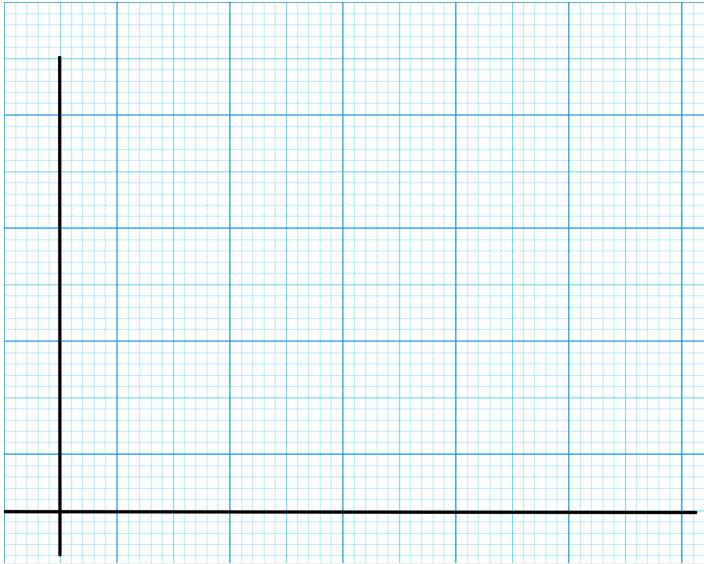
the electrical
push that allows
charge to flow

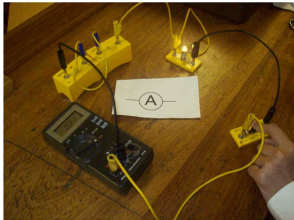



OHMMETER

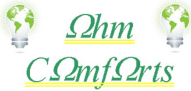


Length (cm)	Resistance (OHMS)
10	
20	
30	
40	
50	
60	
70	
80	
90	
100	



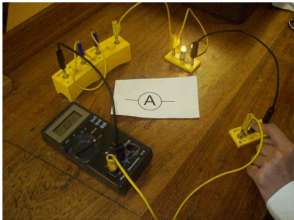





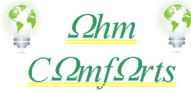


IMPORTANT INFORMATION ON CONNECTING
 Ammeters are used to measure the current in a circuit. The wires connect to the COM (negative) and 10A (positive). Only if the current is small can you connect it on the mA scale, but beware, too much current and the fuse will blow and the meter won't work.

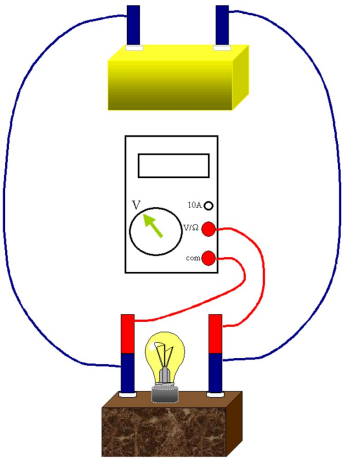
AMMETERS are connected IN SERIES









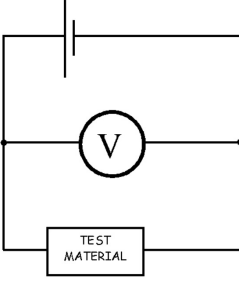
Material	Current (AMPERES)
Tin	
Copper	
Rubber	
Aluminum	
Plastic	
Glass	
Zinc	
Carbon	
Cork	
Steel	
Sellotape	

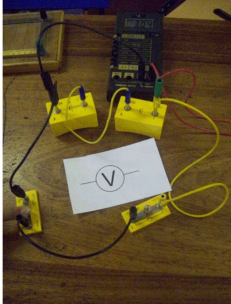





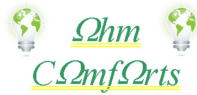


Voltmeters are used to measure the voltage in a circuit. The wires connect to the COM (negative) and V (positive). VOLTMETERS are connected in PARALLEL across the component.









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.