Unit 2 - Electricity

What is current measured in?	Amps (A)
What is the symbol for current in equations?	An italic capital I (with line on top and bottom!).
What measures current?	An ammeter
Does current flow across or through a component?	Through!
How is an ammeter fitted into a circuit?	It is placed in series with whatever component you wish to measure the current in.
What does the size of the current in a circuit depend on?	How hard the supply tries to push charge through the circuit and how hard the circuit resists having charge pushed through it
What 'pushes' the current through the circuit?	The potential difference (voltage) provided by the power supply (battery or lab pack).
What resists the charge movement?	The resistance of the component.
What is resistance measured in?	Ohms
What measures p.d. ?	A voltmeter
How is a voltmeter fitted in the circuit?	It is connected in parallel with the component across which it is measuring the voltage drop (potential drop or potential difference).
What is resistance?	The ratio of potential difference across a component to the current flowing through it.
How can you find the resistance of a component?	By measuring the current through it with an ammeter; and the potential difference of the component with a voltmeter and then dividing the p.d. by the current.
What are current-potential difference graphs called?	Characteristic curves.
What are characteristic curves used for?	They are a visual way of seeing how a component will behave if you put different potential differences across it.
What is Ohm's Law?	The current through a resistor (at a constant temperature) is directly proportional to the potential difference across the resistor.
Why is the characteristic curve of the filament lamp curved?	The resistance of a filament lamp increases as the temperature of the filament increases.
Why is the graph for a resistor a straight line through the origin?	Because the resistor has a constant resistance.
Why does the characteristic of the diode have virtually no current in reverse bias?	The diode has a very high resistance when connected in reverse bias.
What kind of resistance does a diode have when connected in forward bias?	Very low resistance if a voltage of more than 0.6V is connected across it.
Describe how the resistance of a light-dependent resistor (LDR) changes as light intensity increases.	It decreases (Lighter conditions - Lower resistance)
Describe how the resistance of a thermistor changes as the temperature increases.	It decreases.
How do you work out the potential difference provided by cells connected in series?	It is the sum of the potential difference of each cell (depending on the direction in which they are connected - see Cyberphysics graphic).
For components connected in series how do you calculate the total resistance?	The total resistance is the sum of the resistance of each component.
For components connected in series what do you know about the current through each component?	It is the same.

For components connected in series what do you know about the total potential difference?	The potential difference of the supply is shared between the components according to their resistance - bigger resistance - bigger share.
For components connected in parallel what do you know about the potential difference across each component?	It is the same.
For components connected in parallel what do you know about the current through them?	The total current through the whole circuit is the sum of the currents through the separate components - and the lower the resistance of the component the more current flows.
What is d.c.?	Direct current - current that always flows in the same direction.
What is a.c.?	Alternating current - current that is constantly changing direction.
What type of current do cells and batteries supply?	d.c.
What is mains electricity?	It is an a.c.supply that is supplied via the sockets in our houses.
What is mains frequency in the UK?	50 cycles per second (50 hertz or 50Hz).
What is UK mains supply voltage?	230 volts.
How are most electrical appliances are connected to the mains?	Using a cable and a three-pin plug.
What is the structure of electrical cable?	Three insulated strands (brown, blue and green/yellow stripe) within an insulating sheath
What is the right hand pin of a three-pin plug and what colour wire is connected to it?	Live - brown wire.
What is the left hand pin of a three-pin plug and what colour wire is connected to it?	Neutral - blue wire.
What is the top pin of a three-pin plug and what colour wire is connected to it?	Live - yellow/green wire.
Which pin is connected to the fuse?	The live pin.
What is the purpose of a fuse?	If an electrical fault causes too great a current the circuit should be switched off by a fuse blowing or a circuit breaker.
When the current in a fuse wire exceeds the rating of the fuse, what happens?	It will melt (because high current makes wires hot), breaking the circuit.
What should be done to appliances with metal cases?	They are usually earthed.
What protects the appliance?	The earth wire and fuse together protect the appliance.
What is the voltage of the live terminal?	The live terminal of the mains supply alternates between positive and negative potential with respect to the neutral terminal.
What is the voltage of the neutral terminal?	It stays at a potential close to zero with respect to earth.
What do electrical appliances do?	They transform energy from electrical energy into the type we need.
What does the power of an electrical appliance tell you?	It tells you how fast it transforms energy.
What information is stamped onto electrical appliances?	Most appliances have their power and the potential difference of the supply they need printed on them.
How do we know what value of fuse to put in an appliance's plug?	From the power and voltage we can calculate the current and the fuse it needs.

What is electric current?	It is the rate of flow of charge.
What happens when an electrical charge flows through a resistor?	Electrical energy is transformed into heat energy (it gets hot).
What is the rate at which energy is transformed in a device?	It is called the power - measured in watts (W).