

Unit 2 - Electricity

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| 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. |

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| 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. |

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| 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). |