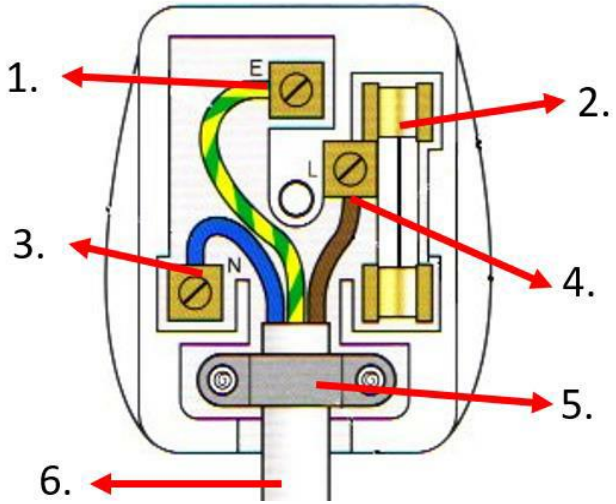
Science: Electricity and Energy part 2

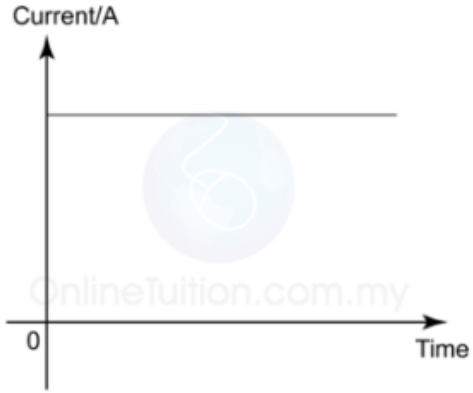
1. Domestic electricity

1	Earth wire (**0V**)	Protects the circuit from causing electrocution in metal appliances.
2	Fuse	Melts if the current is too high so that the circuit is broken.
3	Neutral wire (**0V**)	Carries the current away from the appliance.
4	Live wire (**230V**)	Carries the current to the appliance.
5	Cable grip	Holds the cables in place to prevent them being pulled out.
6	Double insulated cable	Prevents an electric shock.

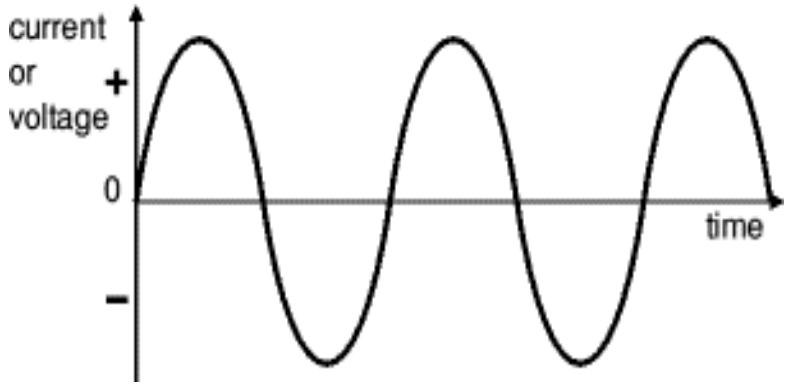


2. Direct and Alternating Current

Direct current	Current that is constant in the negative or positive direction, usually found in batteries. Potential difference can range from 1V to 15V.



Alternating current (**50Hz**)	Current that changes direction 50 times a second, from the mains electricity supply.



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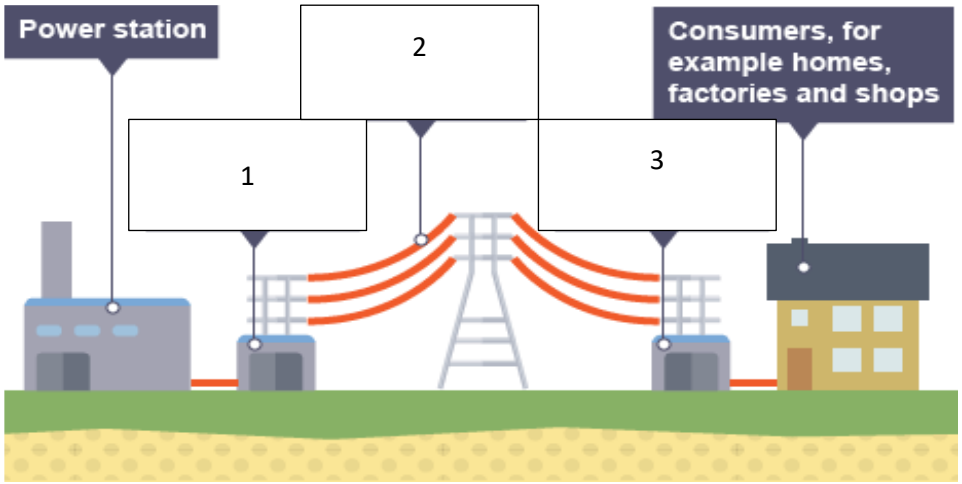
3. The National Grid

The National Grid is the network of cables, pylons and transformers that deliver electricity from the power stations to homes and businesses.

1	Step up transformer	Increases the voltage and decreases the current.
2	Transmission cables	High voltage in cables reduces energy losses.
3	Step down transformer	Decreases the voltage and increases the current.



4. Generating electricity

Energy source	Advantages	Disadvantages
Fossil fuels	• Low cost • Easily transportable • Reliable	• Non-renewable • Produced CO_2 • Produced SO_2 and NO_x
Wind	• Renewable • No fuel cost • Produces no pollutants	• Cannot be used in high or no winds • Visual pollution
Hydroelectric	• Renewable • Reliable • Output easily controlled	• Destroys habitats to build reservoir when flooding land
Solar	• Renewable • No fuel cost • Produces no pollutants	• Does not work at night • Expensive to set up
Nuclear	• High energy output for small mass of fuel • Reliable	• Non-renewable • Produces radioactive waste