Physics

Electricity at home

- Electricity at home comes from the mains
- It is supplied from the power stations through national grid
- AC means alternating current
- DC means direct current
- In AC, current changes direction 50 times per second
- UK main supply is 230 volts
- Unlike DC AC have live and neutral wires instead of positive and negative

Cable have three wires

Appliances are connected with three core cables

Livewire(Brown)

- It carries 230 volt from main supply
- it is the most dangerous wire

Neutral wire (Blue)

- It complete the circuit with livewire
- it has nearly zero volts

Earth wire

- It has a colour of green or yellow
- it is a safety wire
- its stops the case becoming live

Dangers of electricity

- Livewire exposed we will get a shock like if the wire is damaged so we will get shock
- If there is a damp conditions and you know wire conduct electricity so then you will get a shock
- Overloaded sockets, Means overheating and there will be the risk of fire
- Overheating cable means melt insulation and it will be exposed wires
- Open circuit means still it has voltage even if it is switched

Safety measures

- fuses and circuit breakers ,They cut of current if it gets too high
- Insulation plastic coating prevent contact with livewires
- Some appliances have no Earth wire because casing is fully insulated
- metal casing connected to earth wire so current flows to ground not through a person

Power of appliances

- Energy transfer in appliance
- everyday appliances transfer electrical energy into other useful forms
- Kettle toaster heater convert electrical energy into thermal

- Fan electrical motor electrical energy is converted into kinetic energy
- some energy is always wastage like thermal and sound

Power

- Power is the rate of energy transfer
- The unit of power is Watt
- The formula of power is
- P = I x V
- 1 kilowatt hair dryer is connected to 230V. What is the current?
- I = 4.34 A

Energy transferred percharge

- Formula is
- E= Q x V
- Where is the energy? Q is the charge and V is the voltage
- example is
- There is a fan motor powered by 3 volts charge is 320C
- E= 3 x 320
- E = 960 J
- Unit of energy is joules