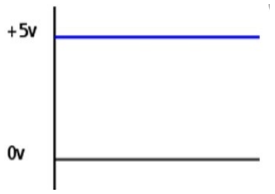
AQA P2b Electricity in the home
Foundation Combined - Physics

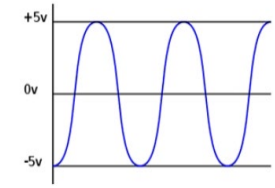
There are no RPs in this topic

National grid
- Is the cables and transformers that connects the power stations to the consumers (houses etc)



Direct current (D.C.)

Current flows in one direction. Batteries and solar cells produce p.d. and so direct current in a circuit with a fixed p.d.



Alternating current (A.C.)

Current repeatedly changes direction. How often these changes happen is called frequency. UK mains electricity has an alternating current of 230V and a frequency of 50Hz

Step up transformers	Increase p.d.(and decrease the current) in cables. Increases efficiency as it reduces energy lost as heat from cables.
Step down transformers	Decrease p.d (and increases current) so it is safer to use in homes etc.

Appliances – Power is energy transferred per second. Devices with high power ratings transfer energy faster than lower power devices. Devices designed to produce heat have high power ratings.

wire	colour	p.d.	function
Live	brown	230V	Carries current from power supply.
Neutral	blue	0V	Completes the circuit
Earth	Green and yellow	0V	Safety wire – stops device from becoming live.

Potential difference and current
Potential difference causes a current to flow. Power supplies provide a p.d. Current will always flow from a high p.d. to a low p.d.

Electric shocks
If you touch something with a high p.d., current will pass through you into the ground (0V p.d.)

Symbol equation	Word equation
P = I V	Power= current x potential difference
$P = I^2 R$	Power = $current^2$ x resistance
E = P t	Energy transferred = power x time
E = Q V	Energy transferred = charge x potential difference

Knowledge required from previous topic

resistance	The amount an object reduces the current. Measured in ohms (Ω)

switch (open)	Breaks circuit; stopping the current
switch (closed)	Completes circuit; allows current to flow
cell	Store of chemical energy
battery	Two or more cells
diode	Only allows current to flow one way
resistor	Fixed resistance reduces current
variable resistor	Changeable resistance reduces current
LED	Emits light
lamp	Emits light
fuse	Breaks circuit when current too high
V voltmeter	Measures potential difference
A ammeter	Measures current
thermistor	Resistance decreases as temperature increases
LDR	Resistance decreases as light intensity increases

charge	The number of electrons. Measured in coulombs (C)
current	Flow of charge (the speed of electrons). Measured in amps (A)
potential difference	Energy per electron . Measured in volts (V)