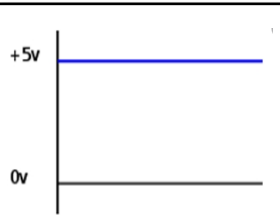


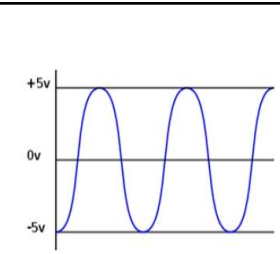
AQA P2b Electricity in the home
Foundation Combined - Physics

There are no RPs in this topic



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

National grid

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

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 (0 V p.d.). A live wire is still a shock risk even if switch is open.

Symbol equation	Word equation
$P = IV$	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

resistance	The amount an object reduces the current. Measured in ohms (Ω)
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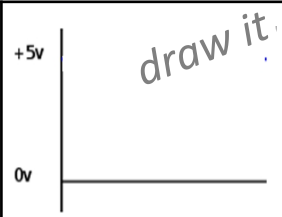
Knowledge required from previous topic

	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
	voltmeter	measures potential difference
	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)

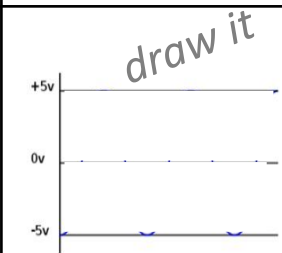
Describe it

RETRIEVAL ACTIVITIES



Direct current (D.C.)

Describe it and give examples



Alternating current (A.C.)

Describe it and give the frequency and p.d. of mains

Step up transformers

What do they do and why?

Step down transformers

What do they do and why?

Appliances –

What is power and which devices use higher power?

Draw it switch (open)

Draw it switch (closed)

Draw it cell

Draw it battery

Draw it diode

Draw it resistor

Draw it variable resistor

Draw it LED

Draw it lamp

Draw it fuse

Draw it voltmeter

Draw it ammeter

Draw it thermistor

Draw it LDR

Describe

what

they

do

wire	colour	p.d.	function
Live	<i>What colour?</i>	<i>p.d?</i>	<i>and what does it do?</i>
Neutral			
Earth			

Potential difference and current

Describe the link between them

Electric shocks

Describe how they happen

Symbol equation	Word equation
?	Power = ?
	Power = ?
	Energy transferred = ?
	Energy transferred = ?

Knowledge required from previous topic

resistance *Describe it and give the unit*

charge	<i>Describe it and give the unit</i>
current	<i>Describe it and give the unit</i>
potential difference	<i>Describe it and give the unit</i>