## AQA Combined Science & Physics.

## Unit 1: Energy

Year: 9
---------

Energy Stores & pathways									
1	energy		the capacity to do work						
2	system		an object or a group of objects						
3	energy Pathway		process by which energy is transferred						
4	gravitational pote	ntial	energy stored in an object raised in height						
	energy (GPE)								
5	elastic potential		energy stored in an object which has been						
	energy (EPE)		stretched or compressed						
6	kinetic energy (KE	)	energy stored in an object which is in motion						
7	thermal energy		energy stored which raises the temperature						
8	chemical energy		transferred during chemical reactions eg fuels,						
			foods, or in batteries						
9	conservation of		energy cannot be created or destroyed, only						
	energy		transferred usefully, stored or dissipated						
10	dissipated energy		energy lost to the environment or wasted						
11	energy Efficiency		the proportion of the total energy supplied to a						
			device that is transferred usefully						
12	power		the rate at which energy is transferred or the						
			rate at which work is done						
13	work done		transfer of energy from one store to another						
Spe	cific heat capacity								
14	Specific Heat	the energy required to increase the temperature of							
	Capacity	1kg of	a substance by 1°C						
15	<b>Required Practica</b>	I: speci	fic heat capacity						
Α	Independent Varia	able:	type of metal/substance						
В	Dependent Variable:		specific heat capacity						
С	Control Variables:		same heater, mass of metal						
D	Method: Specific heat capacity -								

	same nearen) mas
Method: Specific heat cap	oacity -

- Insert heater and thermometer into 1kg block of metal ١.
- record temperature every minute for 10 minutes Π.
- Calculate energy transferred = power x time III.
- IV. SHC = energy transferred/mass x change in temperature

Equations to memorize							
16	gravitational potential energy = mass x gravity x height	GPE = m g h					
17	elastic potential energy	EPE = ½ k e <sup>2</sup>					
	= 0.5 x spring constant x (extension) <sup>2</sup>	EFE - /2 K E					
18	kinetic energy = 0.5 x mass x (velocity) <sup>2</sup>	$KE = \frac{1}{2} m v^2$					
19	energy =	E=mxcx∆ϑ					
	mass x specific heat capacity x temperature change						
20	work done = force x distance	W = f x d					
21	power = work done/time	P = E/t					
	<b>OR</b> Power = energy transferred/ time	OR P = Wd/t					
22	efficiency = <u>useful output energy transfer</u>						
	Total input energy transfer						

Units									
energy		E	Joules	J					
mass		m	kilograms	kg					
gravitational field strength		g	Newtons/kilogram	N/kg					
height		h	metres	m					
spring constant		k	Newtons/metre	N/m					
extension		е	metres	m					
velocity		v	metres per second	ms⁻¹					
specific heat capacity		С	Joules/kilogram degree	J/kgºC					
change in temperature		$\Delta \vartheta$	degrees Celsius	°C					
work done		Wd	Joules	J					
force		f	Newton	Ν					
distance		d	metres	М					
power		Р	watts	W					
time		t	seconds	S					
rgy resources									
renewable energy	energy resource that will not run out								
renewable resources	solar, wind, tidal, geothermal, hydroelectric,								
	biofuel								
non-renewable energy	energy from a finite resource								
fossil Fuel	non-renewable energy resources made from								
	the fossilised remains of animals and plants.								
	energy mass gravitational field strength height spring constant extension velocity specific heat capacity change in temperature work done force distance power time rgy resources renewable energy renewable resources non-renewable energy	energy mass gravitational field strength height spring constant extension velocity specific heat capacity change in temperature work done force distance power time renewable energy ernewable energy ernewable resources so bi non-renewable energy er fossil Fuel no	energyEmassmgravitational field strengthgheighthspring constantkextensionevelocityvspecific heat capacitycchange in temperatureΔϑwork doneWdforcefdistancedpowerPtimetrenewable energyenergy resorenewable energysolar, wind, biofuelnon-renewable energyenergy fromfossil Fuelnon-renewable	energyEJoulesmassmkilogramsgravitational field strengthgNewtons/kilogramheighthmetresspring constantkNewtons/metreextensionemetresvelocityvmetres per secondspecific heat capacitycJoules/kilogram degreechange in temperatureΔϑdegrees Celsiuswork doneWdJoulesforcefNewtondistancedmetrespowerPwattstimetsecondsrenewable energyenergy resource that will not run outrenewable resourcessolar, wind, tidal, geothermal, hydroelbiofuelnon-renewable energy resources mad					