

Personalised Learning Checklists AQA Physics Paper 1 Separate Science and Combined Science

AQA Physics (8463) from 2016 Topics P4.1. Energy				
Topic	Student Checklist	R	A	G
4.1.1 Energy changes in a system, and the ways energy is stored before and after such changes	Energy stores and systems			
	Changes in energy			
	Energy changes in systems			
	Required practical 1: investigation to determine the specific heat capacity of one or more materials.			
4.1.2 Conservation and dissipation of energy	Calculate power by recalling and applying the equations: [$P = E/t$ & $P = W/t$]			
	Energy transfers in a system			
	Required practical 2: investigate the effectiveness of different materials as thermal insulators and the factors that may affect the thermal insulation properties of a material.			
4.1.3 National and global energy resources	Calculate efficiency by recalling and applying the equation: [efficiency = useful power output / total power input]			
	National and global energy resources			

AQA Physics (8463) from 2016 Topics P4.2. Electricity				
Topic	Student Checklist	R	A	G
4.2.1 Current, potential difference and resistance	Standard circuit diagram symbols			
	Electrical charge and current			
	Calculate charge and current by recalling and applying the formula: [$Q = It$]			
	Calculate current, potential difference or resistance by recalling and applying the equation: [$V = IR$]			
	Required practical 3: Use circuit diagrams to set up and check circuits to investigate the factors affecting the resistance of electrical circuits			
	Resistors			
4.2.2 Series and parallel circuits	Required practical 4: use circuit diagrams to construct appropriate circuits to investigate the I–V characteristics of a variety of circuit elements			
	Show by calculation and explanation that components in series have the same current passing through them			
	Show by calculation and explanation that components connected in parallel have the same the potential difference across each of them			
	Calculate the total resistance of two components in series as the sum of the resistance of each component using the equation: [$R_{total} = R_1 + R_2$]			
	Explain qualitatively why adding resistors in series increases the total resistance whilst adding resistors in parallel decreases the total resistance			
4.2.3 Domestic uses and safety	Solve problems for circuits which include resistors in series using the concept of equivalent resistance			
	Explain the difference between direct and alternating voltage and current, stating what UK mains is			
	Identify and describe the function of each wire in a three-core cable connected to the mains			
	State that the potential difference between the live wire and earth (0 V) is about 230 V and that both neutral wires and our bodies are at, or close to, earth potential (0 V)			
4.2.3 Domestic uses and safety	Explain that a live wire may be dangerous even when a switch in the mains circuit is open by explaining the danger of providing any connection between the live wire and earth			

Personalised Learning Checklists AQA Physics Paper 1 Separate Science and Combined Science

4.2.4 Energy transfers	Explain how the power transfer in any circuit device is related to the potential difference across it and the current through it			
	Calculate power by recalling and applying the equations: $[P = VI]$ and $[P = I^2 R]$			
	Calculate and explain the amount of energy transferred by electrical work by recalling and applying the equations: $[E = Pt]$ and $[E = QV]$			
	Energy transfers in everyday appliances			
	National grid			
4.2.5 Static electricity	<i>Static charge</i>			
	<i>Electric fields</i>			

AQA Physics (8463) from 2016 Topics P4.3. Particle model of matter				
TOPIC	Student Checklist	R	A	G
4.3.1 Changes of state and the particle model	Calculate the density of a material by recalling and applying the equation: $[\rho = m/V]$			
	Recognise/draw simple diagrams to model the difference between solids, liquids and gases			
	<i>Required practical 5: use appropriate apparatus to make and record the measurements needed to determine the densities of regular and irregular solid objects and liquids</i>			
	Recall and describe the names of the processes by which substances change state			
	Changes of state			
4.3.2 Internal energy and energy transfers	State that the internal energy of a system is stored in the atoms and molecules that make up the system			
	Explain that internal energy is the total kinetic energy and potential energy of all the particles in a system			
	Calculate the change in thermal energy by applying but not recalling the equation $[\Delta E = m c \Delta \theta]$			
	Calculate the specific latent heat of fusion/vaporisation by applying, but not recalling, the equation: $[E = mL]$			
	Interpret and draw heating and cooling graphs that include changes of state			
	Distinguish between specific heat capacity and specific latent heat			
4.3.3 Particle model and pressure	Particle motion in gases			
	<i>Pressure in gases</i>			
	<i>Increasing the pressure of a gas (HT only)</i>			

AQA Physics (8463) from 2016 Topics P4.4. Atomic structure				
TOPIC	Student Checklist	R	A	G
4.4.1 Atoms and isotopes	The structure of an atom			
	Mass number, atomic number and isotopes			
	The development of the model of the atom (common with chemistry)			
4.4.2 Atoms and nuclear radiation	Radioactive decay and nuclear radiation			
	Nuclear equations			
	Half-lives and the random nature of radioactive decay			
	Radioactive contamination			
4.4.3 Hazards and uses of radioactive emissions and of background	<i>Background radiation</i>			
	<i>Different half-lives of radioactive isotopes</i>			
	<i>Uses of nuclear radiation</i>			
	<i>Nuclear fission</i>			
	<i>Nuclear fusion</i>			

Personalised Learning Checklists AQA Physics Paper 1

Separate Science and Combined Science