



# AQA GCSE Combined Science: Trilogy

## Topic Checklists

### 6.1 Energy

#### 6.1.1 Energy Changes in a System, and the Ways Energy Is Stored before and after Such Changes

Topic	Success Criteria	Progress		
Energy Stores and Systems	I can state what is meant by a system.			
	I can describe all the changes involved in the way energy is stored when a system changes, for common situations.			
	I can calculate the changes in energy involved when a system changes by: <ul style="list-style-type: none"> <li>• heating;</li> <li>• work done by forces;</li> <li>• work done when a current flows.</li> </ul>			
	I can use calculations to show how the overall energy in a system is redistributed when the system is changed.			
Changes in Energy	I can recall and apply the correct equation to calculate the amount of energy associated with a moving object.			
	I can rearrange the equation linking kinetic energy, mass and speed to calculate the mass or speed of a moving object.			
	I can calculate the amount of energy associated with a stretched spring by applying the correct equation from the physics equation sheet.			
	I can rearrange the equation linking elastic potential energy, extension and spring constant to calculate the extension or spring constant of a stretched spring.			
	I can recall and apply the correct equation to calculate the amount of energy associated with an object raised above ground level.			
Energy Changes in Systems	I can rearrange the equation linking gravitational field strength, gravitational potential energy, height and mass to calculate the mass or height of an object or the strength of the gravitational field the object is in.			
	I can calculate the amount of energy stored in or released from a system as its temperature changes by applying the correct equation from the physics equation sheet.			
	I can rearrange the equation linking change in thermal energy, mass, specific heat capacity and temperature change to calculate the mass, specific heat capacity or temperature change of an object.			
	I can define the specific heat capacity of a substance.			
Energy Changes in Systems	I can describe an investigation to determine the specific heat capacity of one or more materials (required practical activity 14).			



Topic	Success Criteria	Progress		
Power	I can define power.			
	I can recall and apply the correct equation to calculate power from the amount of energy transferred and time.			
	I can rearrange the equation linking energy transferred, power and time to calculate the energy transferred or time.			
	I can recall and apply the correct equation to calculate power from work done and time.			
	I can rearrange the equation linking power, time and work done to calculate the work done or time.			
	I can state the energy transferred in joules per second in watts.			
	I can give examples to illustrate the definition of power.			

**6.1.2 Conservation and Dissipation of Energy**

<b>Topic</b>	<b>Success Criteria</b>	<b>Progress</b>		
Energy Transfers in a System	I can describe the conservation of energy, with reference to transfer, storage, dissipation, creation and destruction.			
	I can describe how energy transfers in a closed system affect the total energy of the system.			
	I can describe, with examples, how energy is dissipated when a system changes.			
	I can explain ways of reducing unwanted energy transfers including the use of lubrication or thermal insulation.			
	I can describe how the thermal conductivity of a material affects the energy transfer by conduction across the material.			
	I can describe how the rate of cooling of a building is affected by the thickness and thermal conductivity of its walls.			
Efficiency	I can recall and apply the correct equation to calculate efficiency as a decimal or a percentage from the useful output energy transfer and the total input energy transfer.			
	I can rearrange the equation linking efficiency, total input energy transfer and useful output energy transfer to calculate the total input energy transfer or useful output energy transfer.			
	I can recall and apply the correct equation to calculate efficiency as a decimal or a percentage from the useful power output and the total power input.			
	I can rearrange the equation linking efficiency, total power input and useful power output to calculate the total power input or useful power output.			
	(HT only) I can describe ways to increase the efficiency of an intended energy transfer.			

**6.1.3 National and Global Energy Resources**

Topic	Success Criteria	Progress		
National and Global Energy Resources	I can name the main energy resources available for use on Earth.			
	I can describe what is meant by a renewable energy resource.			
	I can distinguish between energy resources that are renewable and energy resources that are non-renewable.			
	I can compare the ways that different energy resources are used, including for transport, electricity generation and heating.			
	I can explain why some energy resources are more reliable than others.			
	I can describe the environmental impact arising from the use of different energy resources.			
	I can explain patterns and trends in the use of energy resources.			
	I can give reasons why science does not always have the power to deal with the environmental issues arising from the use of energy resources.			