AQA GCSE Physics

Student Checklist

P1 Conservation and dissipation of energy

Name ..... Class ..... Date .....

Conservation and dissipation of energy

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P 1.1 Changes in energy stores	I can state some examples of energy stores.	☐	I can describe a wide range of energy stores in different contexts.	☐	I can describe the nature of energy stores in detail including the relationship between objects.	☐
	I can state the processes that can transfer energy from one store to another.		I can describe changes in energy stores in terms of the process that causes the change.	☐	I can explain factors that affect the size of changes in energy stores.	☐
	I can identify changes in some energy stores using simple systems.		I can use quantitative descriptions of changes in energy stores.	☐	I can represent energy changes graphically, accounting for changes in all stores.	☐
P1.2 Conservation of energy	I can state that energy is conserved in any transfer.	☐	I can apply the law of conservation of energy in straightforward situations.	☐	I can apply the law of conservation of energy to explain why forces cause heating effects.	☐
	I can state that energy is dissipated (is no longer useful) when it heats the environment.		I can describe changes in energy stores explaining why energy ceases to be useful.		I can describe closed systems and the changes to energy stores within them using the principle of conservation of energy.	
	I can investigate the energy transfers in a pendulum and bungee.		I can describe the energy changes in a range of experiments and account for energy dissipation to the surroundings.		I can evaluate in detail experiments to investigate energy changes.	

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P1.3 Energy and work	I can state that energy is measured in joules (J).	☐	I can describe the action of frictional forces on objects and the associated heating effect.	☐	I can use the principle of conservation of energy and forces to explain why objects become heated by frictional forces.	☐
	I can calculate the work done by a force.		I can use the equation for work done to calculate distances or size of forces.	☐	I can apply the equation for work done in a wide range of contexts.	☐
	I can measure the work done by a force experimentally.		I can use repeat values to measure the work done by a force experimentally.	☐	I can evaluate in detail an experiment to measure work done, explaining why there is variation in the measurements.	☐
P1.4 Gravitational potential stores	I can state the factors that affect the change in the gravitational potential energy store of a system.	☐	I can describe the effect of different gravitational field strength on the gravitational potential energy store changes of a system.	☐	I can perform calculations using rearrangements of the gravitational potential energy store equations.	☐ ☐
	I can calculate the gravitational potential energy store of a system using the weight of an object and its height.		I can calculate the gravitational potential energy store of a system using the mass gravitational field strength, and height.		I can apply gravitational potential energy store equations in a wide range of contexts.	
	I can measure the gravitational potential energy store changes in a system with a simple practical activity.		I can describe energy changes that involve a heating effect as opposed to movement of an object.		I can account for all changes of energy during falls or increases in height, including health effects.	
P1.5 Kinetic energy and elastic energy stores	I can state the factors that affect the size of a kinetic energy store of an object.	☐	I can calculate the kinetic energy store of an object.	☐	I can perform calculations involving the rearrangement of the kinetic energy equation.	☐
	I can state the factors that affect the elastic potential energy store of a spring.		I can calculate the elastic potential energy store of a stretched spring.		I can perform calculations involving the rearrangement of the elastic potential energy equation.	
	I can describe energy transfers involving elastic potential energy and kinetic energy stores.		I can investigate the relationship between the energy stored in a spring and the kinetic energy store of an object launched from		I can perform a wide range of calculations involving transfer of energy.	

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P1.6 Energy dissipation	I can identify useful and wasted energy in simple scenarios.	☐	I can analyse energy transfers to identify useful and less useful energy transfers.	☐	I can use a wide range of energy stores and physical processes to decide on wasted and useful energy transfers.	☐
	I can describe energy dissipation in terms of heating the surroundings.	☐	I can describe energy dissipation and how this reduces the capacity of a system.	☐	I can apply the concept of energy dissipation in a wide range of scenarios.	☐
	I can measure the frictional force acting on an object.	☐	I can investigate the factors that affect frictional forces.	☐	I can evaluate in detail an experiment to measure the frictional forces acting on an abject.	☐
P1.7 Energy and efficiency	I can describe an efficient transfer as one that transfers more energy by a useful process.	☐	I can calculate the efficiency of a range of energy transfers.	☐	I can describe design features that can be used to improve the efficiency of an energy transfer.	☐
	I can state that the efficiency of a simple energy transfer is always less that 100%.		I can use the law of conservation of energy to explain why efficiency can never be greater than 100%.	☐	I can rearrange the efficiency equation to find input or total output energy.	☐
	I can describe the energy transfers carries out by electrical devices.	☐	I can describe the processes that waste energy in electrical devices.	☐	I can explain the operation of electrical devices in terms of forces and electric current.	☐
P1.8 Electrical appliances	I can list some electrical appliances.		I can rank electrical devices in terms of their power.		I can compare electrical devices in terms of efficiency.	
	I can survey a range of electrical devices and their operation.		I can compare mains-powered and battery-powered devices.		I can calculate the efficiency of an electrical device.	
	I can calculate the efficiency of a simple energy transfer.	☐	I can investigate the efficiency of a motor.	☐	I can evaluate in detail an efficiency investigation to justify conclusions.	☐
	I can state the unit of power as the watt and kilowatt.	☐	I can calculate the energy transferred by an electrical device.	☐	I can compare the power ratings of devices using standard form.	☐

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P1.9 Energy and power	I can, with support, rank electrical appliances in order of power.		I can calculate the efficiency of a device from power ratings.		I can apply the efficiency equation in a range of situations, including rearrangement of the equation.	
	I can identify 'wasted' and 'useful' energy transfers in electrical devices.		I can find the wasted power of a device.		I can combine the electrical power equation with other equations to solve complex problems.	