Curriculum Rationale and Overview

Subject: Physics **Year group: 8**

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum context	Comparing energy values of different foods (from labels) (kJ) Heating and thermal equilibrium: temperature difference between 2 objects leading to energy transfer from the hotter to the cooler one, through contact (conduction) or radiation Use of insulators Comparing amounts of energy transferred (J, kJ, kW hour)	Chemistry taught in this term	Speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time) The representation of a journey on a distance-time graph Relative motion: trains and cars passing one another Atmospheric pressure, decreases with increase of height as weight of air above decreases with height Pressure in liquids, increasing with depth; upthrust effects, floating and sinking	Biology taught in this term	Chemistry taught in this term	Electric current, measured in amperes, in series and parallel circuits, currents add where branches meet and current as flow of charge Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects Magnetic fields by plotting with compass, representation by field lines Earth's magnetism, compass and navigation The magnetic effect of a current, electromagnets
Scheme of Learning Title:	Energy		Forces/Particle Model: Motion and Pressure			Electricity/Magnetism and electromagnetism: Electricity and Magnetism

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Content *What will students know?*	The energy in found in fuel. Why energy changes are important. The effect on different states of matter when energy is added or removed? The process of conduction, convection and radiation.		Use of graphs to calculate distance and speed. Explain the causes of changes to pressure. How levers can be used to assist with movement.			The difference between charged and non-charged particles. How electricity flows through a circuit. The difference between a conductor and an insulator. The types of circuits needed for different appliances/situations.
What will students understand?	Energy is transferred in different ways depending on the medium/particles. Energy is released when food is broken down in our body.		Distance time graphs can be used to illustrate a journey and speed can be calculated from this graph. Force causes pressure – more/less force causes change in pressure.			Current in a circuit is the flow of charge (electrons). Current in parallel circuits are split across branches. There is electrostatic attraction between oppositely charged particles. Resistance affects the flow of charge in a circuit. The Earth has a magnetic North and South pole.
What will students be able to do?	Test the conduction of different materials. Test the energy released when different food is burnt. Compare conduction, convection and radiation.		Plot a distance time graph for a journey. Recognise that the gradient of a line indicates the speed. Calculate speed using the equation. Explain how pressure is caused.			Construct a series and parallel circuit and measure the current and voltage in different positions. Create an electromagnet and alter this to change the strength Plot the magnetic field around a bar magnet.
How will they be formally assessed?	End of topic tests State the different ways energy can be stored and transferred.		End of topic test: Describe the motion of an object using a distance time graph. Describe the relationship between pressure and density in fluids.			End of topic test: Describe the differences between series and parallel circuits. Describe the interaction between the poles of a magnet.

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