SP3: **Conservation of Energy** (Paper 1)

Lesson	Objectives Tracker Sheet	Date covered	I know this well	I need to do more work on this
SP3a Energy stores and transfers	P3.3 Draw and interpret diagrams to represent energy transfers.			
	P3.4 Explain what is meant by conservation of energy.			
	P3.5 Analyse the changes involved in the way energy is stored when a system changes, including: (a) an object projected upwards or up a slope (b) a moving object hitting an obstacle (c) an object being accelerated by a constant force (d) a vehicle slowing down (e) bringing water to a boil in an electric kettle.			
	P3.6 Explain that where there are energy transfers in a closed system there is no change to the total energy in that system			
	P3.6 Explain that where there are energy transfers in a closed system there is no change to the total energy in that system			
SP3b Energy efficiency	P3.7 Explain that mechanical processes become wasteful when they cause a rise in temperature so dissipating energy in heating the surroundings.			
	P3.9 Explain ways of reducing unwanted energy transfer including through lubrication, thermal insulation.			
	P3.11 Recall and use the equation: efficiency = (useful energy transferred by the device) / (total energy supplied to the device).			
	P3.12 H Explain how efficiency can be increased.			
SP3c Keeping warm	P3.9 Explain ways of reducing unwanted energy transfer including through … thermal insulation			

	P3.10 Describe the effects of the thickness and thermal conductivity of the walls of a building on its rate of cooling qualitatively.			
SP3d Stored energies	P3.1 Recall and use the equation to calculate the change in gravitational PE when an object is raised above the ground: change in gravitational potential energy (joule, J) = mass (kilogram, kg) × gravitational field strength (newton per kilogram, N/kg) × change in vertical height (metre, m) $\Delta GPE = m \times g \times \Delta h$			
	P3.2 Recall and use the equation to calculate the amounts of energy associated with a moving object: kinetic energy (joule, J) = ½ × mass (kilogram, kg) × (speed)2 ((metre/second)2 , (m/s)2) $KE = \frac{1}{2} \times m \times v^2$			
SP3e Non-renewable resources	P3.13 Describe the main energy sources available for use on Earth (including fossil fuels, nuclear fuel, bio-fuel, wind, hydro-electricity, the tides and the Sun), and compare the ways in which both renewable and non-renewable sources are used.			
	P3.14 Explain patterns and trends in the use of energy resources.			
SP3f Renewable resources	P3.13 Describe the main energy sources available for use on Earth (including fossil fuels, nuclear fuel, wind, hydro-electricity, the tides and the Sun), and compare the ways in which both renewable and non-renewable sources are used			
	P3.14 Explain patterns and trends in the use of energy resources.			