SP8: **Energy – Forces Doing Work** (Paper 2)
SP9: **Forces and their Effects** (Paper 2)

Lesson	Objectives Tracker Sheet	Date covered	I know this well	I need to do more work on this
SP8a Work and power	P8.1 Describe the changes involved in the way energy is stored when systems change.			
	P8.4 Identify the different ways that the energy of a system can be changed: a through work done by forces b in electrical equipment c in heating.			
	P8.5 Describe how to measure the work done by a force and understand that energy transferred (joule, J) is equal to work done (joule, J).			
	P8.6 Recall and use the equation: work done (joule, J) = force (newton, N) × distance moved in the direction of the force (metre, m), E = F × d.			
	P8.7 Describe and calculate the changes in energy involved when a system is changed by work done by forces.			
	P8.12 Define power as the rate at which energy is transferred and use examples to explain this definition.			
	P8.13 Recall and use the equation: power (watt, W) = work done (joule, J) ÷ time taken (second, s), P = E/t.			
	P8.14 Recall that one watt is equal to one joule per second, J/s.			
SP9a Objects affecting each other	P9.1 Describe, with examples, how objects can interact: a at a distance without contact, linking these to the gravitational, electrostatic and magnetic fields involved b by contact, including normal contact force and friction c producing pairs of forces which can be represented as vectors			

	P9.2 Explain the difference between vector and scalar quantities using examples.			
SP9b Vector diagrams	**H** Use vector diagrams to illustrate resolution of forces, a net force, and equilibrium situations (scale drawings only).			
	H Draw and use free body force diagrams.			
	H Explain examples of the forces acting on an isolated solid object or a system where several forces lead to a resultant force on an object and the special case of balanced forces when the resultant force is zero.			
SP9c Rotational forces	P9.6P Describe situations where forces can cause rotation.			
	P9.7P Recall and use the equation: moment of a force (newton metre, N m) = force (newton, N) × distance normal to the direction of the force (metre, m).			
	P9.8P Recall and use the principle of moments in situations where rotational forces are in equilibrium: the sum of clockwise moments = the sum of anti-clockwise moments for rotational forces in equilibrium.			
	P9.9P Explain how levers and gears transmit the rotational effects of forces.			