Further Mechanics 1

Topics	What students need to learn:		
		Content	Guidance
1 **Momentum and impulse**	1.1	Momentum and impulse. The impulse-momentum principle. The principle of conservation of momentum applied to two spheres colliding directly.	Questions involving oblique impact will not be set. The spheres may be modelled as particles.
2 **Work, energy and power**	2.1	Kinetic and potential energy, work and power. The work-energy principle. The principle of conservation of mechanical energy.	Problems involving motion under a variable resistance and/or up and down an inclined plane may be set.
3 **Elastic collisions in one dimension**	3.1	Direct impact of elastic spheres. Newton's law of restitution. Loss of kinetic energy due to impact.	Students will be expected to know and use the inequalities $0 \leqslant e \leqslant 1$ (where e is the coefficient of restitution). The spheres may be modelled as particles.
	3.2	Successive direct impacts of spheres and/or a sphere with a smooth plane surface.	The spheres may be modelled as particles.