

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 $0 \leq e \leq 1$ (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.