1.6 Momentum

Core	Supplement
	1 Define momentum as mass × velocity; recall and use the equation $p = mv$
	2 Define impulse as force × time for which force acts; recall and use the equation impulse = $F\Delta t = \Delta(mv)$
	3 Apply the principle of the conservation of momentum to solve simple problems in one dimension
	4 Define resultant force as the change in momentum per unit time; recall and use the equation $F = \frac{\Delta p}{\Delta t}$

1.7 Energy, work and power

1.7.1 Energy

Core	Supplement
1 State that energy may be stored as kinetic, gravitational potential, chemical, elastic (strain), nuclear, electrostatic and internal (thermal)	
2 Describe how energy is transferred between stores during events and processes, including examples of transfer by forces (mechanical work done), electrical currents (electrical work done), heating, and by electromagnetic, sound and other waves	
	4 Recall and use the equation for kinetic energy $E_k = \frac{1}{2}mv^2$
	5 Recall and use the equation for the change in gravitational potential energy $\Delta E_p = mg\Delta h$
3 Know the principle of the conservation of energy and apply this principle to simple examples including the interpretation of simple flow diagrams	6 Know the principle of the conservation of energy and apply this principle to complex examples involving multiple stages, including the interpretation of Sankey diagrams

1.7 Energy, work and power continued

1.7.2 Work

Core	Supplement
1 Understand that mechanical or electrical work done is equal to the energy transferred	
2 Recall and use the equation for mechanical working $W = Fd = \Delta E$	

1.7.3 Energy resources

Core	Supplement
1 Describe how useful energy may be obtained, or electrical power generated, from: (a) chemical energy stored in fossil fuels (b) chemical energy stored in biofuels (c) water, including the energy stored in waves, in tides and in water behind hydroelectric dams (d) geothermal resources (e) nuclear fuel (f) light from the Sun to generate electrical power (solar cells) (g) infrared and other electromagnetic waves from the Sun to heat water (solar panels) and be the source of wind energy including references to a boiler, turbine and generator where they are used	4 Know that radiation from the Sun is the main source of energy for all our energy resources except geothermal, nuclear and tidal
2 Describe advantages and disadvantages of each method in terms of renewability, availability, reliability, scale and environmental impact	5 Know that energy is released by nuclear fusion in the Sun
	6 Know that research is being carried out to investigate how energy released by nuclear fusion can be used to produce electrical energy on a large scale
3 Understand, qualitatively, the concept of efficiency of energy transfer	7 Define efficiency as: (a) $\%\text{ efficiency} = \frac{\text{(useful energy output)}}{\text{(total energy input)}} \times 100\%$ (b) $\%\text{ efficiency} = \frac{\text{(useful power output)}}{\text{(total power input)}} \times 100\%$ recall and use these equations

1.7 Energy, work and power continued

1.7.4 Power

Core	Supplement
1 Define power as work done per unit time and also as energy transferred per unit time; recall and use the equations (a) $P = \frac{W}{t}$ (b) $P = \frac{\Delta E}{t}$	

1.8 Pressure

Core	Supplement
1 Define pressure as force per unit area; recall and use the equation $p = \frac{F}{A}$	
2 Describe how pressure varies with force and area in the context of everyday examples	
3 Describe, qualitatively, how the pressure beneath the surface of a liquid changes with depth and density of the liquid	4 Recall and use the equation for the change in pressure beneath the surface of a liquid $\Delta p = \rho g \Delta h$

2 Thermal physics

2.1 Kinetic particle model of matter

2.1.1 States of matter

Core	Supplement
1 Know the distinguishing properties of solids, liquids and gases	
2 Know the terms for the changes in state between solids, liquids and gases (gas to solid and solid to gas transfers are **not** required)	