5.2 Energy
5.2.1 Lattice enthalpy

(a) explanation of the term *lattice enthalpy* (formation of 1 mol of ionic lattice from gaseous ions, $\Delta_{LE}H$) and use as a measure of the strength of ionic bonding in a giant ionic lattice		Red	Yellow	Green	
Born–Haber and related enthalpy cycles				

(b) use of the lattice enthalpy of a simple ionic solid (e.g. NaCl, MgCl$_2$) and relevant energy terms for:
     (i) the construction of Born–Haber cycles
     (ii) related calculations
		Red	Yellow	Green	

(c) explanation and use of the terms:
     (i) *enthalpy change of solution* (dissolving of 1 mol of solute, $\Delta_{sol}H$)
     (ii) *enthalpy change of hydration* (dissolving of 1 mol of gaseous ions in water, $\Delta_{hyd}H$)
		Red	Yellow	Green	

(d) use of the enthalpy change of solution of a simple ionic solid (e.g. NaCl, MgCl$_2$) and relevant energy terms (*enthalpy change of hydration* and *lattice enthalpy*) for:
     (i) the construction of enthalpy cycles
     (ii) related calculations
		Red	Yellow	Green	

(e) qualitative explanation of the effect of ionic charge and ionic radius on the exothermic value of a lattice enthalpy and enthalpy change of hydration.		Red	Yellow	Green	

5.2.2 Enthalpy and entropy

Entropy (a) explanation that entropy is a measure of the dispersal of energy in a system which is greater, the more disordered a system		Red	Yellow	Green	

(b) explanation of the difference in magnitude of the entropy of a system:
     (i) of solids, liquids and gases
     (ii) for a reaction in which there is a change in the number of gaseous molecules
		Red	Yellow	Green	

(c) calculation of the entropy change of a system, ΔS, and related quantities for a reaction given the entropies of the reactants and products		Red	Yellow	Green	
Free energy (d) explanation that the feasibility of a process depends upon the entropy change and temperature in the system, $T\Delta S$, and the enthalpy change of the system, ΔH		Red	Yellow	Green	
(e) explanation, and related calculations, of the free energy change, ΔG, as: $\Delta G = \Delta H - T\Delta S$ (the Gibbs' equation) and that a process is feasible when ΔG has a negative value		Red	Yellow	Green	
(f) the limitations of predictions made by ΔG about feasibility, in terms of kinetics.		Red	Yellow	Green	