

## Revision summary

Use the following summary of syllabus dot points and key knowledge within Module 5 to ensure that you have thoroughly reviewed the content. Provide a brief definition or comment for each item to demonstrate your understanding or code them using the traffic light system – green (all good), amber (needs some review), red (priority area to review). Alternatively, write a follow-up strategy.

Static and dynamic equilibrium	
How can cobalt(II) chloride be used to demonstrate the reversibility of a chemical reaction?	
How can iron(III) nitrate and potassium thiocyanate be used to demonstrate the reversibility of a chemical reaction?	
How can the burning of magnesium be used to demonstrate the reversibility of a chemical reaction?	
How can the burning of steel wool be used to demonstrate the reversibility of a chemical reaction?	
How can we model an equilibrium system?	
What is the difference between a closed system and an open system?	
Explain the changes in enthalpy and entropy associated with a combustion reaction.	
Explain the changes in enthalpy and entropy associated with photosynthesis.	
Discuss the relevance of collision theory in analysing equilibrium systems.	
Discuss the relevance of relative reaction rates in analysing equilibrium systems.	

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»» <b>Factors that affect equilibrium</b>	
In what ways can changing temperature affect an equilibrium system?	
In what ways can changing the concentration of one or more species affect an equilibrium system?	
In what ways can changing pressure affect an equilibrium system?	
In what ways can changing the volume of the reaction vessel affect an equilibrium system?	
What happens when we heat cobalt(II) chloride hydrate?	
What happens when we decrease the volume of a syringe containing a mixture of nitrogen dioxide and dinitrogen tetroxide?	
What happens when we increase the ferric ion concentration in a mixture containing iron(III) thiocyanate ions?	
Use collision theory to explain what happens at the particle level when a system reaches equilibrium.	
How can activation energy affect the position of equilibrium?	
How can the heat of the reaction affect the position of equilibrium?	
<b>Calculating the equilibrium constant (<math>K_{eq}</math>)</b>	
Write the general expression for the equilibrium constant.	
Discuss how you could use the values of $K$ and $Q$ to determine whether a system had reached equilibrium.	
Describe the importance of temperature on an equilibrium system.	

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»	Discuss how you could experimentally determine the $K_{eq}$ for an equilibrium system.	
	How can we apply our knowledge of the equilibrium constant to an ionic salt that is dissolved in water?	
	How can we apply our knowledge of the equilibrium constant to an acid that is ionised in water?	
	How can we apply our knowledge of the equilibrium constant to a basic salt that is dissolved in water?	
<b>Solution equilibria</b>		
	What happens when an ionic salt is dissolved in water?	
	What is a traditional method used by Aboriginal Australians to remove toxins from food?	
	Discuss your method for remembering the solubility rules and/or an experiment to help you determine these rules.	
	Predict what would happen if you mixed solutions of potassium chloride and silver nitrate.	
	Predict what would happen if you mixed solutions of potassium iodide and lead nitrate.	
	Predict what would happen if you mixed solutions of sodium sulfate and barium nitrate.	
	How can we use the equilibrium constant expression for a saturated solution?	
	Explain how you could use the $K_{sp}$ value of a salt to determine its solubility in water.	
	Discuss how you could use the values of $K_{sp}$ and $Q_{sp}$ to determine whether a system would produce a precipitate.	