AQA GCSE Combined Science: Trilogy
Topic Checklists

5.6 The Rate and Extent of Chemical Change

5.6.1 Rate of Reaction				
Topic	**Success Criteria**	**Progress**		
Calculating Rates of Reactions	I can recall the equations used to calculate the mean rate of a reaction.			
	I can recall the units of rate of reaction.			
	I can calculate the mean rate of a reaction from given information about the quantity of a reactant used or the quantity of a product formed and the time taken.			
	I can draw, and interpret, graphs showing the quantity of product formed or quantity of reactant used up against time.			
	I can draw tangents to the curves on these graphs and use the slope of the tangent as a measure of the rate of reaction.			
	(HT only) I can calculate the gradient of a tangent to the curve on these graphs as a measure of rate of reaction at a specific time.			
Factors Which Affect the Rates of Chemical Reactions	I can describe how changing the concentrations of reactants in solution affects the rate of a chemical reaction.			
	I can describe how changing the pressure of reacting gases affects the rate of a chemical reaction.			
	I can describe how changing the surface area of solid reactants affects the rate of a chemical reaction.			
	I can describe how changing the temperature affects the rate of a chemical reaction.			
	I can describe how the presence of catalysts affects the rate of a chemical reaction.			
	I can describe a method involving measuring the volume of a gas to investigate how changes in concentration affect the rate of a reaction (required practical activity 11).			
	I can describe a method involving monitoring a change in colour or turbidity to investigate how changes in concentration affect the rate of a reaction (required practical activity 11).			

Topic	Success Criteria	Progress		
Collision Theory and Activation Energy	I can describe collision theory.			
	I can give a definition for the term 'activation energy'.			
	I can explain how increasing the concentration of reactants in solution affects the rate of a reaction with reference to collision theory.			
	I can explain how increasing the pressure of reacting gases affects the rate of a reaction with reference to collision theory.			
	I can explain how increasing the surface area of solid reactants affects the rate of a reaction with reference to collision theory.			
	I can explain how increasing the temperature affects the rate of a reaction with reference to collision theory.			
	I can predict and explain using collision theory the effects of changing conditions of concentration, pressure and temperature on the rate of a reaction.			
	I can predict and explain the effects of changes in the size of pieces of a reacting solid in terms of surface area to volume ratio.			
	I can use simple ideas about proportionality when using collision theory to explain the effect of a factor on the rate of a reaction.			
Catalysts	I can explain how catalysts affect the rate of a reaction in terms of activation energy.			
	I can draw and interpret reaction profiles to show the effect of catalysts on chemical reactions.			
	I can identify catalysts in reactions from their effect on the rate of reaction and because they are not included in the chemical equation for the reaction.			
	I can name the catalysts used in catalytic cracking.			

5.6.2 Reversible Reactions and Dynamic Equilibrium				
Topic	**Success Criteria**	**Progress**		
Reversible Reactions	I can give a definition for the term 'reversible reaction'.			
	I can recall the symbol used in a chemical equation to indicate that a reaction is reversible.			
	I can explain how the direction of reversible reactions can be changed.			
Energy Changes and Reversible Reactions	I can recall that if a reversible reaction is exothermic in one direction, it is endothermic in the opposite direction.			
	I can describe how the amount of energy transferred by the forward reaction compares to the amount of energy transferred by the reverse reaction.			
Equilibrium	I can give a definition for the term 'equilibrium' in terms of reversible reactions.			
	I can describe the conditions needed for equilibrium to be reached in a reversible reaction.			
The Effect of Changing Conditions on Equilibrium (HT Only)	I can describe what happens if a system is at equilibrium and a change is made to any of the conditions.			
	I can describe how Le Chatelier's Principle can be used to predict the effects of changing conditions on a system at equilibrium.			
	I can make qualitative predictions about the effect of changes on systems at equilibrium when given appropriate information.			
The Effect of Changing Concentration (HT Only)	I can describe what will happen to a system at equilibrium if the concentration of one of the reactants is increased.			
	I can describe what will happen to a system at equilibrium if the concentration of one of the products is decreased.			
	I can interpret appropriate given data to predict the effect of a change in concentration of a reactant or product on given reactions at equilibrium.			

Topic	Success Criteria	Progress		
The Effect of Temperature Changes on Equilibrium (HT Only)	I can describe what will happen to a system at equilibrium if the temperature is increased for an endothermic reaction.			
	I can describe what will happen to a system at equilibrium if the temperature is increased for an exothermic reaction.			
	I can describe what will happen to a system at equilibrium if the temperature is decreased for an endothermic reaction.			
	I can describe what will happen to a system at equilibrium if the temperature is decreased for an exothermic reaction.			
	I can interpret appropriate given data to predict the effect of a change in temperature on given reactions at equilibrium.			
The Effect of Pressure Changes on Equilibrium (HT Only)	I can describe what will happen to a gaseous reaction at equilibrium if the pressure is increased.			
	I can describe what will happen to a gaseous reaction at equilibrium if the pressure is decreased.			
	I can interpret appropriate given data to predict the effect of pressure changes on given reactions at equilibrium.			