GCSE Combined science – Paper 2

AQA Specification 8464

Personal Learning Checklist (PLC)

6. The Rate and Extent of Chemical Change

	Learning Objectives:	Confidence		
Rates of reaction	Describe how the rate of reaction can be determined experimentally.			
	Explain what happens to particles in a reaction using the collision theory.			
	Predict what happens to the rate of reaction if the temperature, concentration, pressure or surface area are changed and explain why this happens using ideas about particles and collision theory.			
	Describe what catalysts and enzymes are.			
	Calculate the mean rate of reaction.			
	Give units for the rate of a reaction – including moles			
	Draw and interpret graphs showing the amount of product formed (or reactant used up) against time – describe how the rate of reaction changes with time and compare the rate of different reactions.			
	Draw tangents to curves on these graphs and use the slope to describe the rate of reaction. (HT – calculate the gradient of the tangent to give the rate of reaction at a specific time).			
	Recall the symbol used to represent a reversible reaction.			
	Describe how the direction of a reversible reaction can be changed by changing the conditions, e.g. the thermal decomposition of ammonium chloride.			
	Explain how equilibrium is reached with a reversible reaction in a closed system.			
	Use Le Chatelier's Principle to predict the effect of changing conditions (concentration, temperature or pressure) on a system at equilibrium			

	Predict the effect of using a catalyst on the position of equilibrium			

7. Organic Chemistry

	Learning Objectives:	**Confidence**		
	Describe what crude oil is and how it is formed			
Crude oil and alkanes	Define the terms mixture and hydrocarbon.			
	State the properties of hydrocarbons and describe the trends in these properties.			
	Describe how crude oil is separated.			
	Explain why crude oil is separated and how the technique works.			
	Describe what an alkane is.			
	Identify an alkane from its name, molecular formula or displayed formula.			
Cracking and Alkenes	Explain what cracking is and why it is carried out.			
	Balance symbol equations for cracking.			
	Describe what an alkene is.			
	Describe how to test for an alkene using bromine water.			

8. Chemical Analysis

	Learning Objectives:	Confidence		
Chromatography	Describe and explain how paper chromatography can be used to separate mixtures.			
	Explain how to identify pure and impure substances by chromatography.			
	Interpret chromatograms and calculate R_f values from chromatograms.			
	Required Practical – Investigate how paper chromatography can be used to separate and tell the difference between coloured substances. Calculate R_f values.			

9. Chemistry of the Atmosphere

	Learning Objectives:	Confidence		
	Name pollutants produced through combustion of fossil fuels			
	Explain when complete and incomplete combustion occurs			
	Describe the environmental and health impacts of pollutants			

10. Using Resources

	Learning Objectives:	Confidence		
Using Resources	State what is meant by the term 'potable water'			
	Distinguish between potable water and pure water			
	Describe how potable water is produced			
	Required practical – Analysis and purification of water samples from different sources, including pH, dissolved solids and distillation			
	Describe some of the processes involved in sewage and waste water treatment			
	Describe how metals can be extracted from natural resources			