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.			
	Recall the symbol used to represent a reversible reaction.			

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**		
Chemical Analysis	Describe what is meant by the term 'pure' in chemistry and in everyday language.			
	Use melting and boiling point data to distinguish between pure and impure substances.			
	Describe what a formulation is.			
	Describe how to test for the following gases (and the results of the tests): hydrogen, oxygen, carbon dioxide and chlorine.			
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		
Chemistry of the Atmosphere	Recall the proportions of the gases that currently make up the Earth's atmosphere.			
	Describe the main changes to the Earth's atmosphere over the past 4.6 billion years and some of the likely causes of these changes.			
	Explain how the percentage of oxygen increased and how the percentage of carbon dioxide decreased.			
	Name three greenhouse gases.			
	Recall two human activities that increase greenhouse gases in the atmosphere.			
	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			
	Identifying variable from a scientific method including the independent, dependent and control variables.			
	How data can be plotted into a bar chart			
	Describe how metals can be extracted from natural resources			
	Describe what a life cycle assessment (LCA) is and state the four stages that are considered.			
	Explain why an LCA is not purely objective.			
	Discuss how an LCA can be used to evaluate a product.			