Chemistry Learning Journey Year 10

Temperance Term

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	
Topic	**C3 – Quantitative Chemistry**						**C4 – Chemical Changes**		
Challenge Objective and Content (for all learners)	C3 – Use chemical equations as a way to communicate chemical ideas. -Define 'conservation of mass' -Calculate relative formula mass and percentage mass. -Investigate mass changes -Make estimations of uncertainty -Understand the term 'moles' and calculate moles in a given mass of a substance. -MS1b express data in standard form -MS 3b Change the subject of an equation -MS1c Use ratios, fractions and percentages -Calculate percentage yield						**C4 – Investigate and predict chemical changes in substances** -Explain oxidation and reduction in terms of loss or gain of oxygen -Experiment and describe reactions of metals with water and dilute acids -Interpret and evaluate metal extraction processes -Explain oxidation and reduction in terms of loss and gain of electrons. -Write ionic equations for displacement reactions. -Explain reactions of acids with metals -Predict products from given reactants -Use the pH scale to identify acidic or alkaline solutions -Describe and explain the process of electrolysis -RP Investigate the electrolysis of aqueous solutions -Write half equations		**HALF TERM**
Inspire Opportunities	Explain the effect of a limiting quantity of a reactant on the amount of products it is possible to obtain in terms of amounts in moles or masses in grams								
Assessment Opportunities	End of Topic Test						End of Topic Test		

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	
Topic	**C4 – Chemical Changes**						**CHRI**

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Challenge Objective and Content (for all learners)	**C4 – Investigate and predict chemical changes in substances** -Explain oxidation and reduction in terms of loss or gain of oxygen -Experiment and describe reactions of metals with water and dilute acids -Interpret and evaluate metal extraction processes -Explain oxidation and reduction in terms of loss and gain of electrons. -Write ionic equations for displacement reactions. -Explain reactions of acids with metals -Predict products from given reactants -Use the pH scale to identify acidic or alkaline solutions -Describe and explain the process of electrolysis -RP Investigate the electrolysis of aqueous solutions -Write half equations	
Inspire Opportunities	Explain any observed changes in mass in non-enclosed systems during a chemical reaction given the balanced symbol equation for the reaction and explain these changes in terms of the particle model.	
Assessment Opportunities	End of Topic Test	

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Justice Term

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	
Topic	**C5 – Energy Changes**				**C6 – The Rate and Extent of Chemical Change**		**HALF TERM**
Challenge Objective and Content (for all learners)	-**Explain how the interaction of particles often involves transfers of energy.** -Describe the differences between exothermic and endothermic reactions -RP Investigate the variables that affect temperature changes -Draw and analyse simple reaction profiles -Calculate the energy transferred in chemical reactions -Describe the effects of changing conditions on a system at equilibrium can be predicted using Le Chatelier's Principle				**Understand energy changes that accompany chemical reactions.** -MS 1a Recognise and use expressions in decimal form. -MS4a Translate information between graphical and numerical form -Calculate mean rate of reaction.		
Inspire Opportunities	Interpret appropriate given data to predict the effect of a change in temperature on given reactions at equilibrium				Explain why catalysts increase the rate of reaction by providing a different pathway for the reaction that has a lower activation energy.		
Assessment Opportunities	End of Topic Test				End of Topic Test		

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	
Topic	**C6 – The Rate and Extent of Chemical Change**			**C7- Organic Chemistry**			**EASTER**
Challenge Objective and Content (for all learners)	**Understand energy changes that accompany chemical reactions.** -Describe and explain factors which effect the rate of reaction, including concentration and surface area. -RP5 Investigate how changes in concentration affect the rates of reaction. -Predict and explain changes in rate of reaction by using the collision theory.			**Explain the importance of carbon compounds as organic compounds, in terms of structure and properties.** -Recognise substances as alkanes given their formulae in these forms. -Recognise substances as alkenes given their formulae in these forms -Describe the process of fractional distillation -Describe the properties of hydrocarbons and identify trends			

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	-Explain the effects of a catalyst -Define endothermic and exothermic reactions and describe the term 'equilibrium'	-WS 1.2, 4.1 Investigate the properties of different hydrocarbons -Explain the process of cracking and why it is useful	
Inspire Opportunities	Explain why catalysts increase the rate of reaction by providing a different pathway for the reaction that has a lower activation energy.	Determine name and therefore properties from chemical formula.	
Assessment Opportunities	End of Topic Test	End of Topic Test	

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Courage Term

	Week 1	Week 2	Week 3	Week 4	Week 5	
Topic	**C7- Organic Chemistry**			**Revision**		HALF TERM
Challenge Objective and Content (for all learners)	**Explain the importance of carbon compounds as organic compounds, in terms of structure and properties.** -Recognise substances as alkanes given their formulae in these forms. -Recognise substances as alkenes given their formulae in these forms -Describe the process of fractional distillation -Describe the properties of hydrocarbons and identify trends -WS 1.2, 4.1 Investigate the properties of different hydrocarbons -Explain the process of cracking and why it is useful					
Inspire Opportunities	Determine name and therefore properties from chemical formula.					
Assessment Opportunities	End of Topic Test					

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	
Topic	**Mock Exams**	**C8 – Chemical Analysis**					SUMMER
Challenge Objective and Content (for all learners)		**Explain a variety of instrumental methods can be used to analyse substances** -Use melting point and boiling point data to distinguish pure from impure substances. -Explain how paper chromatography separates mixtures and calculate retention factor -RP 6 Investigate how paper chromatography can be used to separate and tell the difference between coloured substances -Explain the tests for a variety of gases, including oxygen and chlorine					
Inspire Opportunities		Identification of ions by chemical and spectroscopic means					

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Assessment Opportunities		End of Topic Test	