

Combined Science Learning Journey – C4 Chemical Changes



	What have I done previously in my learning journey?							
Previously	You have learnt previously about chemical reactions. This has involved learning about:							
_	 chemical reactions as the rearrangement of atoms 							
	 representing chemical reactions using formulae and using equate 	tions						
	 combustion, thermal decomposition, oxidation and displacement 	nt reacti	ions					
	 defining acids and alkalis in terms of neutralisation reactions 							
	 the pH scale for measuring acidity/alkalinity; and indicators 	cidity/alkalinity; and indicators						
	 reactions of acids with metals to produce a salt plus hydrogen 							
	 reactions of acids with alkalis to produce a salt plus water 							
	what catalysts do							
In this topic	e began	experimenting with						
-	chemical reactions in a systematic way and organizing their results logically. Kn	owing ab	out these different					
	chemical changes meant that scientists could begin to predict exactly what new s		es would be formed					
	and use this knowledge to develop a wide range of different materials and proc							
We will develop our lea	RAG	Skills in Science						
CA OA MALLI OULLE			checklist					
C4.01 Metal Oxides	metals react with engage		☐ Scientific Methods					
	metals react with oxygen counds that metals form when they react with oxygen		☐ Practical☐ Number Skills					
•	on and reduction		☐ Application					
• Define Oxidatio	on and reduction		☐ Communication					
C4.02 The Reactivity Se	wise							
•	rrangement of metals in the reactivity series, including carbon and hydrogen		☐ Scientific Methods☐ Practical					
	vity series to predict the outcome of displacement reactions		□ Number Skills					
	cribe the reactions, if any, of potassium, sodium, lithium, calcium, magnesium,		Application					
	copper with water or dilute acids		□ Communication					
	ctivity of metals to its tendency to form positive ions and be able to deduce an							
	vity of metals based on experimental results							
C4.03 Extraction of Me			☐ Scientific Methods					
 Recall what na 	tive metals are.		☐ Practical					
	etals can be extracted from the compounds in which they are found in nature		Number Skills					
by reduction w			☐ Application					
•	fic metal extraction processes when given appropriate information and identify		☐ Communication					
•	are oxidised or reduced							
C4.04 Reactions of Acid			☐ Scientific Methods					
	tion and reduction in terms of loss and gain of electrons.		□ Practical □ Number Skills					
· · · · · · · · · · · · · · · · · · ·	uations for displacement reactions, and identify which species are oxidised and a symbol or half equation.		☐ Application					
	as symbol of half equation. Is of gain or loss of electrons that the reactions between acids and some		☐ Communication					
· · · · · · · · · · · · · · · · · · ·	ox reactions, and identify which species are oxidised and which are reduced							
	Acids and Salt Production		☐ Scientific Methods					
 Explain that a 	cids can be neutralised by alkalis, bases and metal carbonates and list the		☐ Practical					
products of ea	products of each of these reactions.							
 Predict the sal 		Application						
ions in the bas		☐ Communication						
	lae of common ions to deduce the formulae of the salt.							
 Describe how sobtained. 	soluble salts can be made from acids and how pure, dry samples of salts can be							
 Required pract 	tical 1: preparation of a pure, dry sample of a soluble salt from an insoluble oxide							
or carbonate u evaporate the	ising a Bunsen burner to heat dilute acid and a water bath or electric heater to solution							
C4.06 The pH Scale and		☐ Scientific Methods						
Recall what the		☐ Practical						
alkaline solutio		□ Number Skills						
			☐ Application					



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Define the terms acid and alkali in terms of production of hydrogen ions or hydroxide ions (in



	•		term base									
		se of universal indicator to measure the approximate pH of a solution ale to identify acidic or alkaline solutions										
	•		•	or alkaline soluti	ions				☐ Scion			
 C4.07 Strong and Weak Acids Use and explain the terms dilute and concentrated (in terms of amount of substance) and 									☐ Scientific Methods☐ Practical			
weak and strong (in terms of the degree of ionisation) in relation to acids									□ Number Skills			
 Explain how the concentration of an aqueous solution and the strength of an acid affects the 										☐ Application		
pH of the solution and how pH is related to the hydrogen ion concentration of a solution										munication		
			-	-			30141011					
C4.08 Electrolysis of Molten Ionic Solutions • Describe how ionic compounds can conduct electricity when dissolved in water and describe												
 Describe how ionic compounds can conduct electricity when dissolved in water and describe these solutions as electrolytes 									☐ Practical☐ Number Skills			
these solutions as electrolytesDescribe the process of electrolysis									☐ Application			
	-		-	ionic compound	ds and predict t	he products at	each	□ Communication				
elect	Cacii											
C4.09 Using E			•	,					□ Scien	tific Methods		
_	-			rom molten con	npounds using o	electrolysis and	use the		□ Pract			
				ne metals are ex					□ Num	ber Skills		
								☐ Application				
									□ Comr	munication		
C4.10 Electrol	ysis of A	queou	s Solutions					☐ Scientific Methods		tific Methods		
 Description 	ribe the e	lectro	lysis of aqueou	s solutions and	predict the pro	ducts of the ele	ectrolysis of		□ Pract	ical		
aque	ous solut	ions c	ontaining single	e ionic compour	nds				□ Num	ber Skills		
• Requ	ired prac	tical 3	8: investigate w	hat happens wh	nen aqueous sol	lutions are elec	trolysed			cation		
_	inert ele								□ Comr	munication		
	riha tha r	pactio	nc at the electi	radas durina ala	ctrolysis as oxid	dation and redu	ıction					
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				equations for the	ese reactions							
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		write	balanced half e	equations for the K Displacement	ese reactions ey Vocabulary Native	Ionic	Redox	Neutra	lisation	pH scale		
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