

Year 8 Module 1 Chemical Reactions You must be able to complete /understand all the previous pathway information to reach your pathway	
7-9	<p>Determine the relative re-activities of metals by comparing their reactions with acids.</p> <p>Explain how neutralisation occurs using ideas about pH. Be able to draw the structure of ethanoic acid and the salt is ethanoate and apply this knowledge to write equations for neutralisation reactions with ethanoic acid.</p> <p>Apply knowledge of thermal decomposition and apply to other reactions. Draw simple energy level diagrams and explain in terms of bond breaking and bond making why a reaction is endothermic or exothermic.</p> <p>Recognise reversible reactions in hydrated equations and link to changes of states of matter.</p>
6-8	<p>An acid particle is a H^+ ion, an alkali particle is a OH^- ion. Explain how neutralisation occurs in terms of ions.</p> <p>Write balanced symbol equations for the reactions of acids below using sulphuric and nitric acids.</p> <p>Describe what is happening during thermal decomposition of a metal carbonate in terms of word and balanced symbol equation. Draw simple energy level diagrams and highlight the activation energy in a reaction. Write word equation for reversible reaction.</p>
5-7	<p>Recall the name and formula of ethanoic acid and its pH value. Describe some reactions of acids and alkalis. Recall some applications of neutralisation. Write balanced symbol equation for neutralisation reactions listed below with HCl. Be able to identify a metal oxide and non-metal oxide from its pH value.</p> <p>Identify thermal decomposition reactions give two products from 1 reactant. Write word equation for thermal decomposition of $CaCO_3$. Classify changes as exothermic or endothermic reactions based on energy change.</p> <p>Explain how physical and chemical changes associated with reversible / irreversible reaction. Write word equations to show irreversible reactions. Analyse quantitative data to show the effect of a catalyst.</p>
4-6	<p>Recall the name and formula of hydrochloric acid, sulfuric acid, nitric acid, sodium hydroxide, potassium hydroxide and ammonia and their pH values. Use a colour chart for an indicator to determine the relative acidity or alkalinity of different solutions. Recall which salts are produced by which acids.</p> <p>Describe the steps involved in making a salt and draw labelled diagrams.</p> <p>Be able to the general equations for reactions listed below and apply these to form word equations using HCl</p> <ul style="list-style-type: none"> the reactions of acids and alkalis – know this is a neutralisation equation the reactions of acids and metals and the test for hydrogen gas the reaction of acids with carbonates and the test for carbon dioxide gas <p>Describe the tests for hydrogen, oxygen and carbon dioxide.</p> <p>Define the term reversible reaction and irreversible reaction. Recognise the reversible and irreversible signs used in equations. Define activation energy. Define the term thermal decomposition.</p>
3-5	<p>Recall a few applications of neutralisation. Describe how indicators, including universal indicator, are used to separate between acidic, alkaline and neutral solutions. Describe the main features of the pH scale. Recall general word equation for reaction of acid with alkali. Label and identify practical equipment needed to make the salt.</p> <p>Classify changes as exothermic or endothermic reactions based on data/observations. Recall the term activation energy. Describe the effect of a catalyst on a reaction. Identify chemical reactions by the changes observed.</p>
2-4	<p>Recall the name and formula of hydrochloric acid and sodium hydroxide and give their pH values</p> <p>List the properties of acids and alkalis. Define an indicator and make different types of indicators following instructions.</p> <p>Recall Exothermic reaction in terms of temperature change. Describe physical changes in water to melting point and boiling point. Recall the term catalyst.</p>
1-3	<p>Name some everyday acids. Know how to handle acids safely and follow instructions safely.</p> <p>Know colours of acids and alkalis in UI indicator.</p> <p>Recall some examples of physical and chemical changes.</p>

	Year 8 Module 2 – Earth's Resources You must be able to complete /understand all the previous pathway information to reach your pathway
7-9	Use the correct use of terms such as temperature gradient in separating fractions. Write balanced equations for the complete and incomplete combustion of the 1 st four alkanes. Write balanced equations for the redox reaction involving the extraction of any metal from its ore from Zn to Cu in the reactivity series. Write balanced equation for displacement reactions.
6-8	Use key terms to describe the process of separating fractions industrially. Write a balanced symbol equation for the complete combustion of methane. Identify the reactants and products from reduction and oxidation reactions from the extraction of copper and iron. Draw conclusions relating the position of a metal in the reactivity series based on displacement reactions.
5-7	Apply the formula to work out formula of unknown alkanes. Recognise the industrial fractional distillation equipment and name some fractions. Write a word equation for incomplete combustion and list condition for the reaction to occur. Write word equations for the extraction of copper and iron from copper oxide and iron oxide. Define displacement.
4-6	Describe how crude oil is formed. Use the general formula to work out the 1 st 4 alkanes. Recall the names of 1 st 4 alkanes. Draw molecules of 1 st 4 alkanes. Describe the connection between chain length and hydrocarbon properties. Define the term fraction. Write a word equation for complete combustion and list condition for the reaction to occur. Describe how classroom fractional distillation works. Define the terms oxidation and reduction in terms of oxygen. Recognise the reactivity series is a list of metals based on their reactivity.
3-5	Define the term mineral. Define crude oil and hydrocarbon, alkane and the general formula of an alkane. List hydrocarbon properties. Draw and label classroom fractional distillation equipment. Label combustion equipment diagrams. Give a test for CO ₂ and water. Define Ore and explain reasons why the extraction of copper is expensive. Explain that alloys are harder than metals and this is the reason for their usefulness.
2-4	Define renewable and non- renewable. Link a resource to whether it is renewable or non-renewable. Describe why the fossil fuels are non-renewable. Define melting point, boiling point, flammability & viscosity. List the fire triangle and what is needed to burn fuels. Define alloy as a mixture of metals. Define pig iron and list different types of steel.
1-3	Recall the Earth consists of a core, mantle and crust. List some resources from the earth. List the fossil fuels, name some fuels. List some uses of copper, steel, brass or bronze.