



Learning Journey – 8F Chemical Reactions

Ad Astra 

What have I done previously in my learning journey?			
Previously....	Some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.		
In this topic...	We will develop our understanding of chemical changes. Knowing about these different chemical changes meant that scientists could begin to predict exactly what new substances would be formed and use this knowledge to develop a wide range of different materials and processes. It also helped biochemists to understand the complex reactions that take place in living organisms. Chemical reactions can occur at vastly different rates. Whilst the reactivity of chemicals is a significant factor in how fast chemical reactions proceed, there are many variables that can be manipulated in order to speed them up or slow them down. Understanding energy changes that accompany chemical reactions is important for this process. In industry, chemists and chemical engineers determine the effect of different variables on reaction rate and yield of product.		
We will develop our learning by studying the following each lesson:		RAG	Skills in Science checklist
8F.01 Introduction to Chemical Reactions - Describe what is meant by a 'chemical reaction'. - Describe some indications that a chemical reaction has taken place. - Write word equations for a range of chemical reactions.			☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
8F.02 Thermal Decomposition - Describe what is meant by thermal decomposition. - Represent these reactions with word equations - Investigate the rate of thermal decomposition of carbonates and analyse results.			☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
8F.03 Displacement Reactions - Describe what is meant by displacement reactions and represent these reactions with word equations. - Deduce the order of reactivity of three metals by carrying out displacement reactions.			☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
8F.04 Metals and acids - Describe the reactions of acids and metals. - Represent these reactions with word equations. - Complete an assessed piece to check progress.			☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
8F.05 Neutralisation and making crystals - Explain what is meant by 'neutralisation'. - Write word equations for the reactions of acids and a base - Safely neutralise dilute sulfuric acid with copper oxide to produce copper sulfate crystals.			☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
8F.06 Factors affecting the rate of a reaction - Describe a range of ways to speed up chemical reactions - Use ideas about particles and collisions to explain how different factors speed up reactions.			☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
8F.07 The effect of concentration on the rate of a reaction - Describe what is meant by the concentration of a solution - Describe how increasing the concentration of a solution will affect the rate of a chemical reaction - Plan an investigation to test a hypothesis.			☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication



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8F.08 The Black Cross practical Carry out a safe investigation to test the hypothesis that increasing the concentration of a solution will increase the rate of reaction.						☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication		
8F.09 The Black Cross practical (Writing a conclusion) - Analyse data from a practical investigation to form conclusions Evaluate the method used to collect the data. - Demonstrate understanding of the topic by completing exam questions.						☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication		
8F.10 The Effect of surface area on the rate of reaction - Plot a graph from secondary data and form conclusions about how the surface area of a substance affects the rate of reaction Calculate the rate of reaction. - Apply scientific knowledge to an exam question.						☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication		
8F.11 The Effect of temperature on the rate of reaction - Plot a graph from secondary data and form conclusions about how the temperature of a substance affects the rate of reaction. - Demonstrate understanding of the topic by completing questions.						☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication		
Key Vocabulary								
collisions	frequency	neutralisation	frequency	concentration	surface area	pH	sulphate	salt
base	acid	rate	displacement	Thermal decomposition	carbonate	reactant	product	equation

Future Learning	In Year 11 you will study how changing different factors can make reactions speed up or slow down. This will be linked to how chemical reactions can be manipulated to make the maximum profit. You will also investigate the different methods used to make various salts and the significance of chemical and word equations.
In careers	Chemical engineers need to have a good understanding of designing equipment for a variety of chemical reactions. Pharmacists need to know how different chemicals react in the body and how much is needed to influence the body. Knowledge of chemical reactions is important for people working in the food industry e.g when baking a cake, it is important to understand which chemicals are needed to make a cake rise.