ORIEL HIGH SCHOOL

Year 7 Science Term 1B

Subject:	**SCIENCE: Chemistry**	**Year group:**	**7**
Topic:	**Mixtures and separation**	**Sequence:**	**Term 1b**
Prior learning: **(What previous learning will the new learning in this unit build upon?)**		**Next learning:** **(What learning comes next and builds upon this unit?)**	
KS2 knowledge and understanding of substances that do and don't dissolve Working safely in a lab and basic laboratory apparatus, understanding of the particle model and it's application to the properties of states of matter. Definitions of atoms, elements and compounds.		KS3 knowledge - Students learn that mixtures are made from two or more substances that are not chemically joined and can be separated using physical processes. They develop an understanding of solutions, including the roles of solutes and solvents, and investigate how properties such as solubility, particle size and boiling point can be used to separate substances. Pupils apply and explain separation techniques including filtration, evaporation, crystallisation, distillation and chromatography, linking their observations to the particle model and developing practical scientific skills	
Learning objectives: **(In chronological order)**	**Duration:** **(How long it usually takes to secure each learning objective)**	**Homework:** **(Activities to consolidate learning outside the classroom)**	**Specific vocabulary:** **(Subject specific terms relating to each learning objective)**
Writing a method Be able to write a step-by-step scientific method for a simple practical that can be followed accurately by another student	1 hour	**Seneca KS3:** 4.1.9 'Planning an Experiment'	Imperative verb, apparatus, beaker, filter funnel, filter paper, conical flask, plan, justify
Different types of mixtures State what is meant by a mixture and be able to classify different mixtures as suspensions, solutions and colloids	1 hour	**Century Nuggets:** Keywords Relating to Solutions [CH1.24]	Mixture, solution, suspension, colloid
Solutions State what is meant by a solution and use key terms relating to solubility accurately	1 hour	**Century Nuggets:** Solutions [CK5.03] Solubility [CK5.04]	Soluble, solute, solvent, solution, solubility, saturated

Solutions Plan and carry out a simple investigation into the factors that affect the solubility of different substances	1 hour	**Seneca KS3:** 2.1.20 'Solubility' 2.1.21 'Investigating Solubility'	Soluble, solute, solvent, solution, solubility, saturated, pan, investigate, conclude
Evaporating and heating safely Demonstrate how to heat a solution safely to obtain crystals	2 hours	**Century Nuggets:** Evaporation [CK5.06] Solubility [CK5.04]	Heat, evaporate, boil,
Separating rock salt Plan a workable procedure to obtain a sample of pure salt from rock salt, justify the steps in the procedure using knowledge gained from this unit, carry out the procedure safely	2 hours	**Seneca KS3:** 2.1.17 'Separating Mixtures'	Filter, crystallise, heat, solute, solvent, soluble, insoluble
Chromatography	1 hour	**Century Nuggets:** Chromatography [CK5.08]	Chromatography, chromatogram, solvent, pure, mixture, soluble
Distillation	2 hours	**Century Nuggets:** Distillation [CK5.07]	Distillation, evaporation, condensation, heating, condenser

Subject:	**SCIENCE: Chemistry**	**Year group:**	**7**
Topic:	**Acids and alkalis**	**Sequence:**	**Term 1b**
Prior learning: **(What previous learning will the new learning in this unit build upon?)**		**Next learning:** **(What learning comes next and builds upon this unit?)**	
KS2 knowledge of substances that are acidic. Working safely in a lab and basic laboratory apparatus. Hazard symbols, hazards and risk		KS3 Knowledge - Acids and alkalis are substances that can be identified using the pH scale. Acids have a pH below 7, alkalis have a pH above 7, and neutral substances have a pH of 7. Indicators such as universal indicator change colour to show the pH of a substance. Acids react with metals to produce hydrogen gas and with carbonates to produce carbon dioxide. When an acid reacts with an alkali, a neutralisation reaction occurs, producing a salt and water. Acids and alkalis have many everyday uses, including medicines, cleaning products and agriculture. KS4 knowledge: using separation techniques to make a pure sample of soluble and insoluble salts.	

Learning objectives: (In chronological order)	**Duration:** (How long it usually takes to secure each learning objective)	**Homework:** (Activities to consolidate learning outside the classroom)	**Specific vocabulary:** (Subject specific terms relating to each learning objective)
Chemistry in the home State and identify hazards, pH values and neuralisation reactions	1 hour	**Century Nuggets:** Chemical Reactions [CK6.01]	Hazards
Hazards and controlling risk Identify and classify hazards in the lab	1 hour	**Century Nuggets:** Hazards and Risks [CK6.02]	Hazard, risk, caution, irritant, corrosive
Indicators from everyday materials Make and investigate an indicator form plant material	1 hour	**Educake:** KS3 - Chemical Reactions – Acids and alkalis	Indicator, colour change, pestle, mortar
Different types of indicators Know what is meant by an indicator and what the different colours represent	1 hour	**Century Nuggets:** Indicators [CK8.03]	Universal indicator, phenolphthalein, methyl orange
Acidity and alkalinity Explain the use of universal indicators to assess the pH of a substance.	1 hour	**Century Nuggets:** Concentration and Strength [CK8.02] Acids and Bases [CK8.01]	Litmus paper, universal indicator, pH scale,
Neutralisation Explain how acids and alkalis react together.	1 hour	**Century Nuggets:** Neutralisation [CK8.04]	Neutralisation, neutral, salt
Neutralisation in daily life Describe and explain how neutralisation in used in everyday life.	1 hour	**Educake:** KS3 - Chemical Reactions – the pH scale	Neutralisation, acid, alkali, antacid, dissolve
Preparing a salt using neutralisation Prepare copper sulphate crystals from an acid base reaction.	2 hours	**Seneca KS3:** 2.2.4 'Reactions of Acids'	Solution, solid, neutralisation, acid, base, salt