Year 8 Chemistry – Objectives and Assessment

Lesson	Range and Content Objective	Skills Objective	Activities	Formal Assessment	Success Criteria
1.	*(The first few lessons are given to allow children to become familiar with the format and use of the periodic table)* To become familiar with the periodic table.		• Odd one out gold/plastic/wood/wool children discuss possible answers. Gold is desired answer as only element. Brainstorm other elements. • Explain elements building blocks of all materials and display periodic table outline main features. • Periodic table quiz. • Demonstrate using Lego bricks how elements are made up of one type of particle and these are called atoms. • Play the elements song. (Google 'private hand elements song' for an animated version) • Challenge to remember the first 20 elements and their symbols.		• Must, explain what is meant by an element. • Challenge: name some of the first 20 elements and give their symbols.
2.	To understand why the periodic table is arranged they way it is.		• Symbols test. • Use active book to consider ways the elements have been arranged, focus on Dmitri Mendeleev. • Use cards to sort elements into similar piles. (in exploring science		• Must give the features of group 1, 7 and 8 of the PT. • Challenge: extend to other groups.

Year 8 Chemistry – Objectives and Assessment

			but have some laminated in the same place as the pelmanism game, they have a description of the element on them) • Compare piles with layout of PT. They are similar as this is what Mendeleev did. • Note some of the characteristics of groups of the periodic table such as group 1.		
3.	To define the terms metal and non metal.		• Groups colour known metals on blank PT. • Discuss how children know if something is a metal or not. • Children test some metals (iron, magnesium) and non metals (charcoal and sulphur (just use powder as long as goggles are worn and children don't touch sulphur) for colour, shininess, sound when dropped, heat conductivity, electrical conductivity, bendiness, mpt, density (will have to be researched) and come up with a list of metallic/non metallic properties. • Record in spider diagrams. • Colour PT with a metal/non metal		• Must list 3 properties of metals and non metals. • Challenge: use and define vocab, sonorous, malleable and ductile.

Year 8 Chemistry – Objectives and Assessment

			split, look at pattern.		
4.	To know what is formed when elements combine	To use models to explain a scientific concept.	• Consider a mixture of iron and sulphur, how can we get them to combine? Energy is needed (heat them up) • React iron filings and sulphur in ignition tubes (read risk assessment in exploring science, ignition tubes are in the 'spares' cupboard. Mix iron filings and sulphur in a put and scoop into tube, use a small amount. Heat on an angle over a blue flame, SO_2 is evolved DO NOT inhale, it smells of rotten eggs. Discard ignition tubes after use) • Write equation for formation of iron sulphide, in word, symbol and particle form. Define the term 'compound' • Can repeat with magnesium and oxygen.		• Must define the term compound • Challenge: explain what a compound is in terms of particles.
5.	To understand the term 'compound'	To use a model to explain a scientific concept.	• Writing of further equations in word, symbol and particle form. (keep at 1:1 ratios) • Element or compound sorting sheet.		• Must identify a particle diagram as an element or a compound. • Challenge: identify compounds in solid, liquid and gas forms

Year 8 Chemistry – Objectives and Assessment

					from diagrams.
6.	To understand the process of the formation of compounds.	To use a model to explain a scientific concept. Draw conclusions from data collected, giving supporting evidence.	• Consider the reaction of magnesium and oxygen and the formation of magnesium oxide. • Groups discuss whether they thing magnesium oxide is heavier or lighter than magnesium and give reasons. • Write predictions. • React magnesium and oxygen in a crucible, measuring mass before and after heating (see exp sci for method, but use 30cm of magnesium ribbon curled up in a crucible with the lid on. Heat over a blue flame on a pipe clay triangle. Lift lid periodically, using tongs to allow oxygen in but keep lid on as much as possible. Allow to fully cool before touching or weighing.) • Write conclusion of findings, referring to particles in answers.	Record in assessment books.	• AF1 S/C
7.			*Consolidation may be necessary here, particularly regarding vocab, such as molecule, atom, element, compound etc. Also regarding the idea that compounds can be a gas, and how to*		

Year 8 Chemistry – Objectives and Assessment

			represent these in particle diagrams.		
8.	To understand the term 'mixture'		• Look at particle diagram of a mixture, challenge children to explain why it isn't an element or a compound. • Define 'mixture' and 'pure' • Consider properties of pure compounds vs. mixtures, e.g. bpt of pure water vs. salty water, impurity changes properties. • Note examples of this.		• Must: identify a mixture from a particle diagram • Challenge: give examples of when adding an impurity to a compound can be beneficial.
9.	What is dissolving?		• Key vocabulary (solute, solvent, solution. • Particle diagrams • EXT: Saturated solutions		•
10.	To use knowledge of properties of mixtures to solve a problem.	To draw conclusions based on evidence.	• Particle diagram sorting E/C/M • 'Which is pure?' challenge. Groups plan how to determine which water sample is pure and which is a salt and water mixture. (using evaporation and bpt) • *Optional consolidation – 'types of gold'*	Plan and findings in assessment books with supporting explanations	• Task S/C • (2 methods must be used.
11.	To know how mixtures can be separated.	To use a model to explain scientific processes.	• NASA separation task-plan and explain. Children draw diagrams of separation methods on a particle level (methods include filtration,	Work levelled on sheet for assessment book.	• Task S/C on sheet

Year 8 Chemistry – Objectives and Assessment

			evaporation and sieving) (you'll need coarse iron filings, sand, gravel and salt for the mixture)		
12.	As above	As above	• AS ABOVE (2 lessons needed to carry out separation and draw diagrams accurately) NB *groups sometimes need complete revision of separation methods as they did not fully understand why a soluble solid (e.g. salt) can not be separated by filtering in yr6.*	As above	• As above
13.	To know how to collect evaporated water from a solution		• Consider ways to collect evaporated water. • Look at distillation equipment, groups explain how it is working. (we do have distillation equipment in the 'glassware' cupboard and it connects to the sink by the teachers desk) • Label diagram + explanation in books • Desert island distillation – how to get clean water from sea water in a survival situation.		• Must explain how distillation works using the terms 'evaporation' and 'condensation' • Challenge: explain how distillation works using the idea of particles.

Year 8 Chemistry – Objectives and Assessment

14.	To know how a mixture of 2 soluble solids can be separated.		• Discuss why salt and sugar can not be separated by methods we already know of. • Demo chromatography technique using black ink (mixture of soluble inks) • Groups practice technique with different colour pens, discovering which colours are 'pure' • Supporting worksheets 'who scraped the gatepost? etc)		• Must: produce a chromatogram correctly • Challenge: use chromatography to answer questions.
15.	To use chromatography to solve a problem	Describe how aspects of science are applied in particular jobs.	• CSI Whytrig. Murder/Blackmail note etc……groups need to find which pen wrote the note by testing various pens and comparing to the chromatogram of the note.		• Must: describe which of your chromatograms matches the one from the note, pointing out the main features • Challenge: explain why more evidence would need to be collected in order to convict a criminal in this case.

Year 8 Chemistry – Objectives and Assessment

			Revision of concepts in this topic will be needed before the test.		
			• END OF TOPIC TEST		