

Chemistry – Year 10 Overview

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	Careers
	Atoms & Elements	Bonding & Molecules	Reactions & Energy 1		Reactions & Energy 2	Quantitative Chemistry	
Year 10	<p>All substances are made of atoms.</p> <p>The model of the atom was developed over time and included ideas such as the 'plum pudding' model and evidence from alpha scattering.</p> <p>Elements contain only one type of atom.</p> <p>Elements are organised in the Periodic Table.</p> <p>Groups in the Periodic Table have patterns in terms of their reactivity.</p> <p>Compounds contain two or more elements chemically combined in fixed proportions.</p> <p>SEPARATE SCIENCE:</p> <p>Transition metals can be compared to Group 1 in terms of their properties.</p>	<p>Ionic, covalent and metallic are all types of chemical bond.</p> <p>Ionic compounds are held together by strong electrostatic forces of attraction between oppositely charged ions.</p> <p>When atoms share pairs of electrons, they form covalent bonds.</p> <p>The sharing of delocalised electrons gives rise to strong metallic bonds.</p> <p>Substances containing the different types of bonds display different properties.</p> <p>SEPARATE SCIENCE:</p> <p>Nanoscience refers to structures that are 1-100nm in size.</p> <p>Nanoparticles have different properties to those for the same materials in bulk, meaning that they can have specific uses in</p>	<p>Acids produce hydrogen ions in aqueous solutions whereas aqueous solutions of alkalis contain hydroxide ions.</p> <p>In neutralisation reactions between an acid and an alkali, hydrogen ions react with hydroxide ions to produce water.</p> <p>Acids can take part in a variety of useful chemical reactions, some of which involve oxidation and reduction.</p> <p>Oxidation is the loss of electrons and reduction is the gain of electrons.</p> <p>SEPARATE SCIENCE:</p> <p>The volume of acid and alkali solutions that react with each other can be measured by titration using a suitable indicator.</p>	<p>Electrolysis can be used to extract metals from molten compounds. It can also be used to produce elements when ions are discharged at the electrodes in electrolyte solutions.</p>	<p>For a chemical reaction to occur, reacting particles have to have sufficient energy when they collide.</p> <p>Reaction profiles can be used to show the relative energies of reactants and products, the activation energy and the overall energy change of a reaction.</p> <p>The rate of a chemical reaction can be found by measuring the quantity of a reactant used or the quantity of product formed over time.</p> <p>Catalysts change the rate of chemical reactions but are not used up during the reaction.</p> <p>Some chemical reactions are reversible; when the forward and reverse reactions occur at exactly the same rate, equilibrium is reached.</p> <p>SEPARATE SCIENCE:</p> <p>Batteries and cells contain chemicals which</p>	<p>In the conservation of mass, no atoms are lost or made during a chemical reaction, so the mass of the products equals the mass of the reactants.</p> <p>Many chemical reactions take place in solutions; the concentration of a solution can be measured in mass per given volume of solution.</p> <p>Chemical reactions can therefore be represented by symbol equations which can be balanced.</p>	<p>Term 5: A career as an industrial chemist.</p> <p>When studying reactions and energy and how the conditions for chemical reactions can be altered to change the yield of a product, students will look at an industrial chemist improves the processes of chemical and material production on an industrial scale.</p>
					Reactions & Energy 2		

		medicine, electronics, and research.			react to produce electricity. The fuel in a fuel cell can be oxidised electrochemically to produce a potential difference.		
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