

Chemical Reactions (Chemistry)

Year 8, Autumn Term

<i>You will be taught</i>	<i>You should know</i>
how mass is conserved when chemical reactions take place because the same atoms are present, although combined in different ways	how to use the Bunsen burner for gentle warming, vigorous heating etc.;
	that the hottest flame is with the air hole fully open
	the relative temperatures of different parts of the roaring flame ;
	about the experiment to demonstrate the conservation of mass in which a suitable solid, is produced by mixing two solutions in a stoppered conical flask (e.g. potassium iodide + lead nitrate -> potassium nitrate + lead iodide)
	how to construct word equations for simple chemical reactions
	that when a gas is made in a chemical reaction the remaining solid will be lower in mass as the gas has escaped to the air (e.g. heating calcium carbonate)
	that if on heating a solid combines with oxygen in the air to make an oxide then the mass of the solid in the container will increase (e.g. heating magnesium in air: magnesium + oxygen -> magnesium oxide)
that virtually all materials, including those in living systems, are made through chemical reactions, and to recognise the importance of chemical change in everyday situations, [e.g. <i>ripening fruit, setting superglue, cooking food</i>]	many examples of chemical reactions.
	that copper oxide, zinc oxide and magnesium oxide do not change chemically when heated (they are already oxidised!)
	that chemical reactions are needed for the extraction of copper, iron and aluminium from their ores
	that the extraction of aluminium is difficult because aluminium is relatively high in the reactivity series and requires electrolysis
	iron is extracted from its ore by smelting , which involves heating to a high temperature and the use of carbon monoxide to reduce the iron oxide to iron: iron oxide + carbon monoxide -> iron + carbon dioxide
about possible effects of burning fossil fuels on the environment [e.g. <i>production of acid rain, carbon dioxide and solid particles</i>] and how these effects can be minimised.	that when things burn in air they react with oxygen
	that oxygen will relight a glowing splint
	that limewater is a test for carbon dioxide and it goes cloudy;
	how to identify the products of combustion [e.g. of a candle];
	the importance of oxygen as a reactant in respiration;
to identify patterns in chemical reactions.	the effect of burning fossil fuels , that air is often polluted by sulphur dioxide and carbon dioxide and the sources of these pollutants
	that oxidation is the addition of oxygen to an element or compound – e.g. (1) carbon + oxygen -> carbon dioxide; (2) copper + oxygen -> copper oxide

	that reduction is when oxygen is removed from a compound, e.g. iron oxide + carbon monoxide → carbon dioxide + iron
	that neutralisation is any reaction that involves an acid changing
	that decomposition involves a compound breaking up into simpler parts – e.g. (1) thermal decomposition of calcium carbonate → calcium oxide + carbon dioxide; (2) copper carbonate → copper oxide + carbon dioxide; (3) potassium manganate (VII) decomposes to produce oxygen; (4) hydrated copper sulphate (blue) becomes anhydrous copper sulphate on heating (white) – this reaction is reversible – adding water to anhydrous copper sulphate is exothermic ; electrolysis is a form of decomposition using electricity – this is used in the extraction of aluminium from its ore.
	that burning methane and similar fuels (including coal, oil, gas and petrol) produce carbon dioxide and water

http://www.bbc.co.uk/schools/ks3bitesize/science/chemistry/chem_react_intro.shtml