YEAR 10 OVERVIEW 2020/21 - CHEMISTRY

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	**Atoms & Elements**	**Bonding & Molecules**	**Reactions & Energy 1**	**Reactions & Energy 1**	**Reactions & Energy 2**	**Quantitative Chemistry**
	All substances are made of atoms. The model of the atom was developed over time and included ideas such as the 'plum pudding' model and evidence from alpha scattering. Elements contain only one type of atom. Elements are organised in the Periodic Table. Groups in the Periodic Table have patterns in terms of their reactivity. Compounds contain two or more elements chemically combined in fixed proportions. ***SEPARATE SCIENCE:*** Transition metals can be compared to Group 1 in terms of their properties.	Ionic, covalent and metallic are all types of chemical bond. Ionic compounds are held together by strong electrostatic forces of attraction between oppositely charged ions. When atoms share pairs of electrons, they form covalent bonds. The sharing of delocalised electrons gives rise to strong metallic bonds. Substances containing the different types of bonds display different properties. ***SEPARATE SCIENCE:*** Nanoscience refers to structures that are 1-100nm in size. Nanoparticles have different properties to those for the same materials in bulk, meaning that they can have specific uses in medicine, electronics, and research.	Acids produce hydrogen ions in aqueous solutions whereas aqueous solutions of alkalis contain hydroxide ions. In neutralisation reactions between an acid and an alkali, hydrogen ions react with hydroxide ions to produce water. Acids can take part in a variety of useful chemical reactions, some of which involve oxidation and reduction. Oxidation is the loss of electrons and reduction is the gain of electrons. ***SEPARATE SCIENCE:*** The volume of acid and alkali solutions that react with each other can be measured by titration using a suitable indicator.	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. **Reactions & Energy 2** An endothermic reaction is one that takes in energy from the surroundings whereas an exothermic reaction is one that transfers energy to the surroundings.	For a chemical reaction to occur, reacting particles have to have sufficient energy when they collide. 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. 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. Catalysts change the rate of chemical reactions but are not used up during the reaction. Some chemical reactions are reversible; when the forward and reverse reactions occur at exactly the same rate, equilibrium is reached. ***SEPARATE SCIENCE:*** Batteries and cells contain chemicals which react to produce electricity. The fuel in a fuel cell can be oxidised electrochemically to produce a potential difference.	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. Many chemical reactions take place in solutions; the concentration of a solution can be measured in mass per given volume of solution. Chemical reactions can therefore be represented by symbol equations which can be balanced.