Edexcel Single Chemistry (1CI0) from 2016 Topic C1a&b				
Topic	**Student Checklist**	**R**	**A**	**G**
Topic 1a – Key concepts in chemistry Edexcel Single Chemistry (1CI0) from 2016 Topic C1a&b	Describe how the Dalton model of an atom has changed over time because of the discovery of subatomic particles			
	Describe the structure of an atom as a nucleus containing protons and neutrons, surrounded by electrons in shells			
	Recall the relative charge and relative mass of: a proton, a neutron and an electron			
	Explain why atoms contain equal numbers of protons and electrons			
	Describe the nucleus of an atom as very small compared to the overall size of the atom			
	Recall that most of the mass of an atom is concentrated in the nucleus			
	Recall the meaning of the term mass number of an atom			
	Describe atoms of a given element as having the same number of protons in the nucleus and that this number is unique			
	Describe what isotopes are			
	Calculate the numbers of protons, neutrons and electrons in atoms given the atomic number and mass number			
	Explain how the existence of isotopes results in relative atomic masses of some elements not being whole numbers			
	HT ONLY: Calculate the relative atomic mass of an element from the relative masses and abundances of its isotopes			
	Describe how Mendeleev arranged the elements known at that time, in a periodic table by using properties of these elements and their compounds			
	Describe how Mendeleev used his table to predict the existence and properties of some elements not discovered by then			
	Explain that Mendeleev thought he had arranged elements in order of increasing relative atomic mass but this was not always true			
	Explain the meaning of atomic number of an element in terms of position in the periodic table and number of protons in the nucleus			
	Describe how elements are arranged in the groups and periods of the periodic table			
	Identify elements as metals or non-metals according to their position in the periodic table, explaining this division in terms of atomic structure			
	Predict the electronic configurations of the first 20 elements in the periodic table as diagrams and in the form 2.8.1 etc			
	Explain how the electronic configuration of an element is related to its position in the periodic table			
	Explain how ionic bonds are formed to produce cations and anions, including the use of dot and cross diagrams			
	Recall that an ion is an atom or group of atoms with a positive or negative charge			
	Calculate the numbers of protons, neutrons and electrons in simple ions given the atomic number and mass number			
	Explain the formation of ions in ionic compounds from their atoms, limited to compounds of elements in groups 1, 2, 6 and 7			
	Explain the use of the endings –ide and –ate in the names of compounds			
	Deduce the formulae of ionic compounds given the formulae of the constituent ions			
	Explain the structure of an ionic compound including a description of the lattice and electrostatic forces			

Topic 1b – Key concepts in chemistry	Explain how a covalent bond is formed when a pair of electrons is shared between two atoms			
	Recall that covalent bonding results in the formation of molecules			
	Recall the typical size (order of magnitude) of atoms and small molecules			
	Explain the formation of simple molecular, covalent substances, using dot and cross diagrams, including: H, HCl, H_20, CH_4, O_2, CO_2			
	Explain why elements and compounds can be classified as: ionic, simple molecular (covalent), giant covalent and metallic			
	Explain how the structure and bonding of substances results in different physical properties			
	Explain the properties of ionic compounds limited to: melting/boiling points, forces between ions and conductivity			
	Explain the properties of typical covalent, simple molecular compounds limited to: melting/boiling points, forces between ions and conductivity			
	Recall that graphite and diamond are different forms of carbon and that they are examples of giant covalent substances			
	Describe the structures of graphite and diamond			
	Explain, in terms of structure and bonding, why graphite and diamond have different uses			
	Explain the properties of fullerenes including C_{60} and graphene in terms of their structures and bonding			
	Describe, using poly(ethene) as the example, that simple polymers consist of large molecules containing chains of carbon atoms			
	Explain the properties of metals, including malleability and the ability to conduct electricity			
	Describe the limitations of particular representations and models, to include dot & cross, ball & stick models & 2/3D			
	Describe the properties of most metals			
	Calculate relative formula mass given relative atomic masses			
	Calculate the formulae of simple compounds from reacting masses and understand that these are empirical formulae			
	Deduce: empirical formula of a compound from the formula of its molecule			
	Deduce: molecular formula of a compound from its empirical formula and its relative molecular mass			
	Describe an experiment to determine the empirical formula of a simple compound such as magnesium oxide			
	Explain the law of conservation of mass applied to: a closed system and a non-enclosed system			
	Calculate masses of reactants and products from balanced equations, given the mass of one substance			
	Calculate the concentration of solutions in g dm^{-3}			
	HT ONLY: Recall what one mole of particles of a substance is defined as			
	HT ONLY: Calculate the number of: moles of particles of a substance in a given mass of that substance and vice versa			
	HT ONLY: Calculate the number of: particles of a substance in a given number of moles of that substance and vice versa			
	HT ONLY: Calculate the number of: particles of a substance in a given mass of that substance and vice versa			
	HT ONLY: Explain why, in a reaction, the mass of product formed is controlled by the mass of the reactant which is not in excess			
	HT ONLY: Deduce the stoichiometry of a reaction from the masses of the reactants and products			