

Science - Chemistry

Year 10

Unit Checklist



Topic	Student Checklist	R	A	G
Topic 1.1 The nature of substances and chemical reactions	Define the term element			
	Describe the structure of an element			
	Define the term compound			
	Represent elements using chemical symbols and simple molecules using chemical formulae			
	Represent simple molecules using a diagram and key			
	Write the formulae of ionic compounds given the formulae of the ions they contain			
	Calculate relative atomic mass and relative molecular (formula) mass			
	Calculate the percentage composition of compounds			
	Define the term mixture			
	Describe how to separate mixtures using different processes			
	Use chromatographic data to calculate R _f values			
	Describe what a chemical reaction is and how the total number of reactant atoms stay the same as the product atoms			
	State the evidence you could use to show that a chemical reaction has taken place			
	Represent chemical reactions using word equations			
	Represent chemical reactions using balanced chemical equations			
	Calculate the percentage yield of a chemical reaction			
	HT only: Calculate the formula of a compound from reacting mass data			
	HT only: calculate the masses of reactants or products from a balanced chemical equation			
	HT only: Define the Avogadro constant and the mole			
HT only: Convert amount of substance in grams to moles and vice versa				
Topic 1.2 Atomic structure and the periodic table	Describe the structure of an atom			
	Recall the relative masses and relative charges of protons, neutrons and electrons			
	Describe why atoms have no overall electrical charge			
	Define the terms atomic number, mass number and isotope			
	Calculate the number of protons, neutrons and electrons in an atom using mass and atomic numbers			
	HT & Chem only: Calculate the relative atomic mass of elements with more than one isotope			
	Explain how elements are arranged in the periodic table			
	State the location of metals, non-metals and intermediate elements on the periodic table			

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	Deduce and draw the electronic structures of the first 20 elements			
	Describe how the electronic structure of an element is related to its position in the Periodic Table			
	Describe the similarities and trends in physical and chemical properties of elements in the same group			
	Explain how reactions can involve the loss or gain of electrons and the formation of charged ions			
	HT only: Recall the trends in reactivity of Group 1 and Group 7 elements in terms of their readiness to lose or gain an electron			
	Recall the reactions of the alkali metals with oxygen, the halogens and water			
	Describe the test used to identify hydrogen gas			
	Recall the reactions of halogens with alkali metals and with iron			
	HT only: State the relative reactivity of chlorine, bromine and iodine as demonstrated by displacement reactions			
	Recall the properties and uses of chlorine and iodine			
	<i>Spec prac: identify unknown metals using a flame test</i>			
	<i>Spec prac: identify unknown ionic compounds using chemical tests for ions</i>			
	Explain how Group 0 gases are unreactive			

Topic 1.3 Water	Describe the composition of water in 'natural' water supplies, including dissolved gases, ions, microorganisms and pollutants			
	Explain why there is a need for a sustainable water supply			
	Describe the main steps in producing a clean water supply			
	Discuss the arguments for and against the fluoridation of the water supply in order to prevent tooth decay			
	Describe desalination of sea water to supply drinking water including the sustainability of the process on a large scale			
	Explain how water can be separated from other miscible liquids using distillation			
	<i>Spec prac: Determine the amount of hardness of water using soap solution</i>			
	Produce a solubility curve			
	Interpret solubility curves			
	Explain how hard water is caused and recall how to distinguish between hard and soft waters by their action with soap			
	Describe the difference between temporary and permanent hardness			
	Describe the process used to soften water			

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	HT only: Explain how the process used to soften water works			
	Describe the health benefits of hard water and its negative effects on household appliances			
Topic 1.4 The ever-changing earth	Produce a labelled diagram of the structure of the Earth including; inner and outer core, mantle and crust and recall their composition			
	Describe the theory of plate tectonics and how it developed from Alfred Wegener's earlier theory of continental drift			
	Describe the processes occurring at conservative, destructive and constructive plate boundaries			
	Explain how the original atmosphere was formed by gases released from volcanoes			
	Recall the composition of the atmosphere and how the composition has changed over time			
	Describe how respiration, combustion and photosynthesis maintain levels of oxygen and carbon dioxide in the atmosphere			
	Describe the environmental effects and consequences of carbon dioxide and sulfur dioxide in the atmosphere			
	Describe how levels of global warming and acid rain are being addressed			
	Explain how the air can be used as a source of nitrogen, oxygen, neon and argon			
	Describe the tests used to identify oxygen gas and carbon dioxide gas			
Topic 1.5 Rate of chemical change	<i>Spec prac: Investigate the factors that affect the rate of reaction using a gas collection method</i>			
	<i>Spec prac: Investigate the factors that affect the rate of reaction between dilute acid and sodium thiosulphate</i>			
	Describe how changes in temperature, concentration (pressure) and surface area affect the rate of reaction			
	Use particle theory to explain how changing the temperature, concentration and surface area changes the rate of a reaction			
	Define a catalyst			
	HT only: Explain how a catalyst increases the rate of a reaction			
	<i>Chem only: Describe what an enzyme is and how they are specific to their role</i>			
<i>Chem only: Name some uses of enzymes</i>				
Topic 1.6 Limestone	<i>Chem only: Describe the trend in stabilities of metal carbonates and their thermal decomposition</i>			
	<i>Chem only spec prac: Investigate the thermal stabilities of calcium, copper and sodium carbonate</i>			
	<i>Chem only: Recall the chemical names for limestone, quicklime and slaked lime</i>			
	<i>Chem only: Describe the cycle of reactions involving limestone and products made from it</i>			
	<i>Chem only: Describe the uses of limestone</i>			
	<i>Chem only: Describe the social, economic and environmental benefits and drawbacks of limestone quarrying</i>			

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