GCSE Chemistry Year 9

Chemistry	**Spec points covered**	
States of matter	C2.1	Describe the arrangement, movement and the relative energy of particles in each of the three states of matter: solid, liquid and gas
	C2.2 C2.3	Recall the names used for the interconversions between the three states of matter, recognising that these are physical changes Explain the changes in arrangement, movement and energy of particles during these interconversions
	C2.4	Predict the physical state of a substance under specified conditions, given suitable data (links to a Maths statement).
Mixtures	C3.1 C3.2	Explain the differences between a pure substance and a mixture Interpret melting point data to distinguish between pure substances which have a sharp melting point and mixtures which melt over a range of temperatures
Filtration and crystalisation	C3.3	Explain the experimental techniques for separation of mixtures by c filtration d crystallisation
	C0.6	Evaluate the risks in a practical procedure and suggest suitable precautions for a range of practicals including those mentioned in the specification
Paper chromatography	C3.3	Explain the experimental techniques for separation of mixtures by e paper chromatography
	C3.5	Describe paper chromatography as the separation of mixtures of soluble substances by running a solvent (mobile phase) through the mixture on the paper (the paper contains the stationary phase), which causes the substances
	C2.6	to move at different rates over the paper Interpret a paper chromatogram a to distinguish between pure and impure substances b to identify substances by comparison with known substances c to identify substances by calculation and the use of rf values (links to
	C3.7	a Maths statement). *Investigate the composition of inks using simple … paper chromatography*
Distillation	C3.3	Explain the experimental techniques for separation of mixtures by a simple distillation
	C0.6	b fractional distillation (links to a Maths statement). Evaluate the risks in a practical procedure and suggest suitable precautions for
	C3.7	a range of practicals including those mentioned in the specification *Investigate the composition of inks using simple distillation*
Drinking water	C3.4	Describe an appropriate experimental technique to separate a mixture, knowing the properties of the components of the mixture
	C0.6	Evaluate the risks in a practical procedure and suggest suitable precautions for a range of practicals including those mentioned in the specification
	C3.8	Describe how a waste and ground water can be made potable, including the need for sedimentation, filtration and chlorination b sea water can be made potable by using distillation c water used in analysis must not contain any dissolved salts

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Atomic structure	C1.1 C1.2 C1.3 C1.4 C1.5	Describe how the Dalton model of an atom has changed 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 (links to a Maths statement). a a proton b a neutron c an electron Explain why atoms contain equal numbers of protons and electrons (links to a Maths statement). Describe the nucleus of an atom as very small compared to the overall size of the atom
Atomic mass and numbers	C1.6 C1.7 C1.8 C1.10	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 (links to a Maths statement). Describe atoms of a given element as having the same number of protons in the nucleus and that this number is unique to that element Calculate the numbers of protons, neutrons and electrons in atoms given the atomic number and mass number (links to a Maths statement).
Isotopes	C1.9 C1.10 C1.11 C1.12	Describe isotopes as different atoms of the same element containing the same number of protons but different numbers of neutrons in their nuclei Calculate the numbers of protons, neutrons and electrons in atoms given the atomic number and mass number (links to a Maths statement). Explain how the existence of isotopes results in some relative atomic masses of some elements not being whole numbers Calculate the relative atomic mass of an element from the relative masses and abundances of its isotopes (links to a Maths statement).
Elements and the Periodic Table(Mendleev)	C1.13 C1.14 C0.1	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 then discovered Recall the formulae of elements, simple compounds and ions
Atomic number and the Period Table	C1.15 C1.16 C1.17 C1.18	Explain that Mendeleev thought he had arranged elements in order of increasing relative atomic mass but this was not always true because of the relative abundance of isotopes of some pairs of elements in the periodic table 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 that in the periodic table a elements are arranged in order of increasing atomic number, in rows called periods b elements with similar properties are placed in the same vertical columns called groups Identify elements as metals or non-metals according to their position in the periodic table
Electronic configurations and the Period Table	C1.19 C1.20	Predict the electronic configurations of the first 20 elements in the periodic table as diagrams and in the form, for example, 2.8.1 Explain how the electronic configuration of an element is related to its position in the periodic table