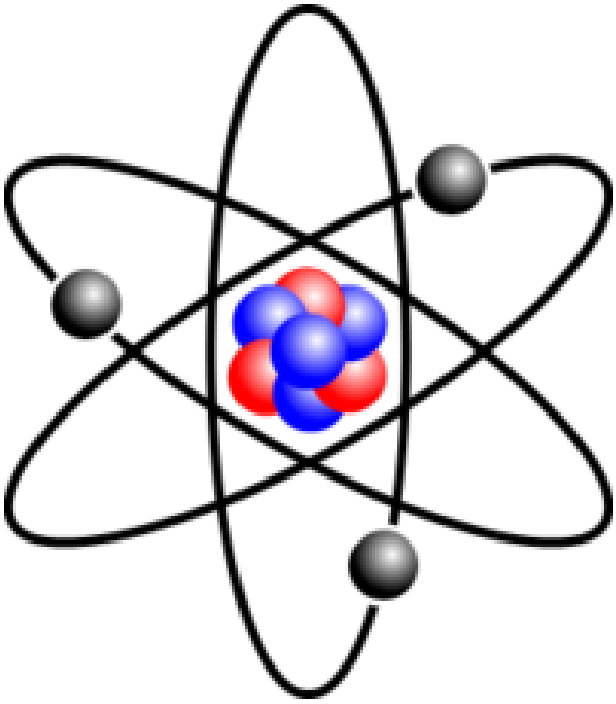
Year 9 AQA GCSE Chemistry Revision Booklet



Use this booklet to help you with your revision in preparation for your year 9 Chemistry examination.

There are lots of tips and hints to make sure that the time you spend revising is effective.

This checklist tells you exactly what needs to be learnt and could be examined in each topic. Use it to help guide your revision plan and revision time. Just reading it and trying to learn some of the facts will help you to gain marks in the examination. If you don't understand any points then look them up in the textbook, ask a friend or teacher.

Revision Schedule: Use the table below to help you plan your revision.

Topic Area	Pages of the white Co-ordinated Chemistry	Pages of the Red Co-ordinated Chemistry	Studied checklist	Read through textbook	Read through exercise book	Made notes or index cards or mind map or spider diagram	Revisits of topic area					
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Atomic Structure	26-39	24-33										
Particles	6-23	6-22										
Formulae and Equations	62-71	60-73 46-47										
Bonding and Structure	42-59	40-51										
Acids, Bases, Salts	138-149	116-127										

Revision Top Tips

Use your textbook

This book is excellent and covers all the work that you have done this year. It also contains questions to test knowledge and also past paper questions – use these resources rather than spending time browsing the web.

Writing Questions

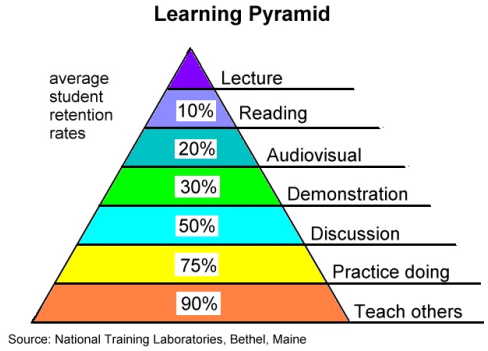
A good way to revise is to use your textbook to write really good questions and answers. Use these questions then to get a friend, parent or test you.

Use your exercise book
Go through the work that you have done in lessons – use your exercise book to remind yourself what you have studied.

Write something....

Spider diagrams, mind maps, index cards, revision notes, revision diagrams - do what works best for you - but usually it is best to write it down.

Remember the learning Pyramid when you do your revision.



Use the text book and revision book.

Read and write notes or draw a mind map

Condense work or notes

Write, write, write – at least then you have to engage with thinking

Test yourself

Year 9 Atomic Structure and the Periodic Table			
Models of the atom – know the: • plum pudding model of the atom and Rutherford and Marsden's alpha experiments • Niels Bohr adaptation of the plum pudding model • Chadwick's experiments and what they showed			
Atoms, elements and compounds - know • about elements (first 20) and what compounds are • names of compounds given formulae or symbol equations • how to write word equations for the reactions in this specification and how to write formulae and balanced chemical equations • the electrical charges and masses of protons, neutrons and electrons. • know how to calculate the number of protons, electrons and neutrons in an atom or ion given the atomic number and mass number • the size of atoms as very small, having a radius of about 0.1 nm (1 x 10-10 m). • the radius of a nucleus is less than 1/10 000 of the atom (about 1 x 10-14 m). • what an isotope is			
Electronic structure - know • how electrons are arranged in atoms • how to draw electron configuration diagrams			

Year 9 Particles			
The three states of matter - know • The states of matter are solid, liquid and gas and how they are shown in equations • The names of the changes of state • The arrangement of particles in each of the states of matter • How to use particle theory to explain changes of state such as steric acid cooling • What affects the amount of energy needed for a substance to change state • How to use melting and boiling point data to decide the state of a substance			

Formulae and Equations - Stoichiometry			
Conservation of mass and balanced chemical equations – know that • no atoms are lost or made during a chemical reaction so the mass of the products equals the mass of the reactants. • mass changes when a reactant or product is a gas • what happens to the mass of reactants and products during reactions such as when a metal reacts with oxygen or during the thermal decompositions of metal carbonates. • how to use the balanced symbol equation and calculations involving the masses of atoms and molecules to make predictions about the changes of mass during a reaction.			
Formulae and valencies – know • the valencies of elements and common ions • how to write the formulae for compounds • how to balance equations.			

Reactions of Acids			
Reactions of acids with metals – know the following reactions and be able to apply them to different metals, acid etc • Metal and acid produce salts and hydrogen. • Acid and base (alkali) produce salt and water = neutralisation • Metal carbonates and acids produce salt and water and carbon dioxide **Be able to** Predict the salt formed during a reaction between any particular acid and a base or alkali.			
Soluble salts - know • how to make soluble salts by reacting acids with solid insoluble substances, such as metals, metal oxides, hydroxides or carbonates. • how to describe in detail the steps to make a pure, dry sample of a soluble salt from an insoluble oxide or carbonate (base).			
The pH scale and neutralisation – know • how to use the pH scale, from 0 to 14, to measure of the acidity or alkalinity of a solution. • how to describe what a base and alkali are • how to describe what an acid is • how to use universal indicator or a wide range indicator to measure the approximate pH of a solution and then identify acidic or alkaline solutions.			
Strong and weak acids - know • what a strong acid is along with examples • what a weak acid is along with examples • why a particular acid is either strong or weak in terms of dissociation/ionisation • how the hydrogen ion concentration is related to the pH • how to describe the terms dilute and concentrated and understand that these are different to strong and weak			

Year 9 - Structures and Bonding			
Ionic bonding – know • in ionic bonding the particles are oppositely charged ions when a metal atom reacts with a non-metal atom electrons in the outer shell of the metal atom are transferred. • how metal atoms become ions either +, 2+ etc • how non metal atoms become ions either -, 2- etc • how to draw dot and cross diagrams to show ionic bonding • that metal atoms lose electrons to become positively charged ions. Non-metal atoms gain electrons to become negatively charged ions. This can be shown with dot and cross diagrams.			
Ionic compounds - know • The structure of an ionic compound such as sodium chloride is a giant structure of ions. Ionic compounds are held together by strong electrostatic forces of attraction between oppositely charged ions. • How to deduce that a compound is ionic from a diagram of its structure • The limitations of using dot and cross, ball and stick, two and three dimensional diagrams to represent a giant ionic structure • How to work out the empirical formula of an ionic compound from a given model or diagram that shows the ions in the structure.			

Properties of ionic compounds - know • How the strong electrostatic forces of attraction in all directions in an ionic compound result in compounds with high melting points and high boiling points • Why ionic compound when melted or dissolved in water, conduct electricity			
Covalent bonding - know • that particles are atoms which share pairs of electrons and that bonds are strong • that covalent bonding occurs in non-metallic elements and in compounds of non-metals. • that covalent bonding can be found in different structures – covalent molecular structures such H_2, Cl_2, O_2, N_2, HCl, H_2O, NH_3 and CH_4 and giant covalent structures such as diamond and silicon dioxide			
Properties of small molecules - know • The properties of covalent small molecules and be able to explain why they are gases using ideas relating to energy and the strength of intermolecular forces. • How the strength of intermolecular forces varies as molecules get bigger and how this affects boiling and melting points.			
Giant covalent structures – know • That diamond and graphite (forms of carbon) and silicon dioxide (silica) are examples of giant covalent structures • The properties of each of these giant covalent structures • How to relate the properties of each of these substanes to their structures eg; melting point, electrical conductivity, hard or soft, shiny??			
Graphene and fullerenes – know • the structure of graphene and fullerenes including a Buckminsterfullerene (C60) and carbon nanotubes • how their properties in terms of strength, electrical and thermal conductivity. • how fullerenes can be used for drug delivery into the body, as lubricants, as catalysts and carbon nanotubes can be used for reinforcing materials, eg in tennis rackets.			
Nanosciencec and Nanoparticles – know • That nanoscience refers to structures that are 1–100 nm in size, of the order of a few hundred atoms. Nanoparticles, are smaller than fine particles, which have diameters between 100 and 2500 nm (1 x 10-7 m and 2.5 x 10-6 m). • That coarse particles (PM10) have diameters between 1 x 10-5 m and 2.5 x 10-6 m. Coarse particles are often referred to as dust. • Nanoparticles may have properties different due to their high surface area to volume ratio. • some of the applications in medicine for controlled drug delivery and in synthetic skin; in electronics; in cosmetics and sun creams; in the development of new catalysts for fuel cells materials; in deodorants and in fabrics to prevent the growth of bacteria. • some of the advantages and disadvantages of using nanoparticles are being used in sun creams.			
Metallic bonding and metallic properties - know • How to draw and explain the structure of a metal and an alloy • How to explain the properties of metals and relate these properties (high melting point, shiny, malleability and electrical conductivity) to their structures • Why most metals in everyday use are alloys			