

# **Trilogy Chemistry Paper 1 Revision checklist**

Key Point	1	2
<b>Atomic Structure &amp; the Periodic Table</b>		
Describe the structure of an atom and calculate numbers of protons, neutrons and electrons given a periodic table		
Describe the development of the nuclear model of the atom from earlier models – e.g the plum pudding		
Describe how mixtures can be separated using filtration, evaporation, distillation and chromatography		
Compare the size of atoms to other items		
Explain what is meant by an isotope and calculate the Atomic mass of an element given the percentage abundance of its isotopes		
Draw the electron configuration for any of the first 20 elements in the periodic table.		
Describe some of the steps in the development of the Periodic Table		
Describe how atoms become ions and represent this using diagrams		
Explain why group 0 do not form ions and describe the properties of group 0 elements		
Describe the properties of the Group 1 metals and their reactions with oxygen and water		
Explain why Group 1 reactivity increases going down the group		
Describe the properties of group 7 elements.		
Describe and explain the trend in reactivity of group 7 down the group		
Interpret practical observations to prove reactivity in group 7 – ie displacement of less reactive halogens		
<b>Bonding &amp; Properties</b>		
Describe the particle arrangement in solids, liquids and gases and explain how changes of state occur		
Describe the formation of ionic bonds between metal and non-metal atoms and represent this in diagrams and models		
Use dot and cross diagrams to show the transfer of electrons in ionic bonding		
Describe the properties of ionic compounds		
Represent covalent bonds using dot and cross diagrams		
Describe the properties of simple and giant covalent substances		
Describe the structure and bonding of carbon in the forms of diamond, graphite and fullerenes and relate their properties to the bonding		
Represent the bonding in polymers using diagrams and explain why most polymers are solids at room temperature		
Describe the bonding in metals and relate the properties of metals to the bonding		
<b>Quantitative Chemistry</b>		

Explain what is meant by 'conservation of mass' and apply it to chemical equations		
Calculate relative formula mass		
Know that a mole represents $6.02 \times 10^{23}$ atoms or molecules and is equal to the atomic or formula mass in grams		
Use the equation $\text{Mass} = M_r \times \text{moles}$ to work out number of moles, mass or formula mass, given the other two		
Calculate the mass of reactants and products in a symbol equation and use these to predict the masses of reactants needed or products expected		
Use moles to balance symbol equations		
Calculate the mass of a given solid in a specified volume of a solution of a given concentration		

### Chemical Change

Define the terms oxidation and reduction in terms of reactions with oxygen		
Identify which substances have been oxidised or reduced in a given equation in terms of gain or loss of oxygen		
Evaluate metal extraction methods given appropriate information		
Describe the reactions of K, Na, Li, Ca, Mg, Zn, Fe and Cu with dilute acids and water		
Derive the reactivity series for metals given information about displacement reactions		
Explain reactivity in terms of a metal's tendency to form ions		
Identify which species has been oxidised and which has been reduced in terms of gain or loss of electrons in given equations		
Write half equations for oxidation and reduction		
Describe the test for hydrogen gas		
Describe the formation of a soluble salt by neutralising acids with metal oxides or metal carbonates		
Describe the reactions of acids and alkalis and the use of indicators		
Explain the meaning of the terms 'strong' and 'weak' acids		
Explain the process of electrolysis in terms of movement of ions to the electrodes and the loss or gain of electrons		
Describe the extraction of Aluminium from its oxide using electrolysis		
Predict the products from the electrolysis of solutions and explain why hydrogen is often given off at the cathode		

### Energy Changes

Describe and recognise exothermic and endothermic reactions		
Describe some of the variables that can affect temperature change in endothermic and exothermic reactions		
Use bond energies to determine whether a reaction will be endothermic or exothermic		