



Kings Langley School

Unlocking Potential for Life

I can do statements

KS4 - Year 10

Chemistry



C1 Energy stores and transfers	Check 1	Check 2	Check 3	Check 4
I can describe the basic structure of an atom.				
I can explain in detail, including diagrams, the difference between a pure element, mixture and compound.				
I can name and give the chemical symbol of the first 20 elements in the periodic table.				
I can explain why mass is conserved in a chemical reaction.				
I can describe familiar chemical reactions with balanced symbol equations including state symbols.				
I can balance given symbol equations.				
I can explain the difference between a compound and a mixture.				
I can explain how the chemical properties of a mixture relate to the chemical it is made from.				
I can describe different separation techniques.				
I can describe the process of fractional distillation.				
I can explain the main processes occurring in paper chromatography.				
I can describe the differences between the plum-pudding and the nuclear model of the atom.				
I can explain how evidence from scattering experiments changed the model of the atom.				
I can describe atoms using the atomic model.				
I can explain why atoms have no overall charge.				
I can use atomic number and mass numbers of familiar atoms to determine the number of each subatomic particle.				
I can describe isotopes using the atomic model.				
I can explain why ions have a charge.				
I can write the standard electronic configuration notation from a diagram for the first 20 elements.				
I can explain why elements in the same group react in a similar way.				

C2 The periodic table	Check 1	Check 2	Check 3	Check 4
I can describe how the elements are arranged in groups and periods in the periodic table.				
I can explain why the periodic table was a breakthrough in how to order elements.				
I can describe how the electronic structure of metals and non-metals are different.				
I can explain in terms of electronic structure how the elements are arranged in the periodic table.				
I can explain why the noble gases are unreactive and the trend in their boiling points.				
I can recognise trends in supplied data.				
I can explain why the elements in Group 1 react similarly and why the first three elements float on water.				
I can describe how you can show that hydrogen and metal hydroxides are made when Group 1 metals react with water.				
I can explain why the elements in Group 7 react similarly.				
I can explain how to complete a halogen displacement reaction and explain what happens in the reaction.				
I can explain how electronic structure affects the trend in reactivity of Group 1 and Group 7 elements.				
I can use the nuclear model to explain how the outer electrons experience different levels of attraction to the nucleus.				

C3 Structure and bonding	Check 1	Check 2	Check 3	Check 4
I can use data to determine the state of a substance at a given temperature.				
I can explain, in terms of particles, energy and temperature of a substance when it is at the melting point or boiling point.				
I can describe the factors that affect rate of evaporation.				
I can draw dot and cross diagrams of compounds formed between Group 1 and Group 7 elements.				
I can explain how electron transfer allows ionic bonding to occur in the compound formed when a Group 1 metal reacts with a Group 7 non-metal.				
I can explain how the position of an element on the periodic table relates to the charge on its most stable monatomic ion.				
I can explain, in terms of electronic structure, how unfamiliar elements become ions.				
I can interpret formula of familiar ionic compounds to determine the number and type of each ion present.				
I can explain why ionic compounds have a high melting point.				
I can describe, in terms of ions, how an ionic compound can conduct electricity.				
I can explain the movement of ions in solutions or when molten.				
I can explain how a covalent bond forms in terms of electronic structure.				
I can draw dot and cross diagrams and ball and stick diagrams for H ₂ , Cl ₂ , O ₂ , N ₂ , HCl, H ₂ O, NH ₃ , and CH ₄ .				
I can describe a double bond in a diatomic molecule.				
I can explain how the size of molecules affects melting and boiling points				
I can explain why small molecules and polymers do not conduct electricity.				
I can identify substances that would have weak intermolecular forces.				
I can recognise the structure of diamond and graphite from information provided in written or diagrammatic form.				
I can explain the properties of diamond in terms of its bonding.				
I can explain the properties of graphite in terms of its bonding.				

I can recognise the structure of a fullerene or nanotube in diagrams and prose.				
I can explain the structure of fullerenes.				
I can list the properties and consequent uses of fullerenes and carbon nanotubes.				
I can describe metallic bonding.				
I can recognise and represent metallic bonding diagrammatically.				
I can explain key physical properties of metals using the model of metallic bonding.				
I can describe why metals are alloyed.				

C4 Chemical calculations	Check 1	Check 2	Check 3	Check 4
I can use the periodic table to find the relative atomic mass of all elements.				
I can calculate the relative formula mass for unfamiliar compounds when the formula is given.				
I can state the units for the amount of substance.				
I can explain why chemical equations must be balanced.				
I can identify the limiting reactant in a chemical reaction.				
I can explain how concentration of a solution can be changed.				
I can calculate the mass of solute (in g) in a solution when given the concentration in g/dm ³ and volume in dm ³ or cm ³ .				
I can calculate the relative formula mass for one substance when the relative formula masses are given for all the other substances in a balanced symbol equation.				

C5 Chemical changes	Check 1	Check 2	Check 3	Check 4
I can describe oxidation and reduction in terms of gain or loss of oxygen.				
I can write word equations for the metals listed in the reactivity series reacting with oxygen, water, and acid and balance given symbol equations.				
I can explain why a displacement reaction occurs.				
I can write word equations and straightforward balanced symbol equations for displacement reactions.				
I can predict observations for the metals listed in the reactivity series reacting with a different metal salt.				
I can identify species that are being oxidised and reduced in a chemical reaction.				
I can explain why some metals are found uncombined in the Earth's crust.				
I can describe how to make a salt by reacting a metal with an acid.				
I can write a balanced symbol equation to describe a reaction between a metal and sulfuric acid or hydrochloric acid.				
I can identify the formula of the salt produced from the reaction between an acid and a metal.				
I can describe a method to prepare a pure, dry sample of a soluble salt from an insoluble substance and a dilute acid.				
I can write a balanced symbol equation to describe a reaction between a metal hydroxide or oxide and sulfuric acid or hydrochloric acid.				
I can explain why the reaction between a base and a dilute acid is a neutralisation reaction.				
I can describe how to make a dry sample of a salt from reacting a metal carbonate or an alkali with a dilute acid.				
I can write balanced symbol equations for neutralisation reactions.				
I can describe how universal indicator can be used to classify a chemical as acidic or alkaline.				
I can describe how solutions can be acidic or alkali.				
I can describe the relationship between alkalis and bases.				
I can recall examples of strong and weak acids.				
I can describe how an acid or alkali can be concentrated or dilute.				
I can describe how an acid or alkali can be weak or strong.				

C6 Electrolysis	Check 1	Check 2	Check 3	Check 4
I can describe electrolysis in terms of movement of ions.				
I can write a balanced symbol equation including state symbols for the overall electrolysis of a molten ionic compound.				
I can predict the products at each electrode for the electrolysis of a molten ionic compound.				
I can describe electrolysis of solutions in terms of movement of ions.				
I can write a balanced symbol equation including state symbols for the overall electrolysis of a solution.				
I can predict the products at each electrode for the electrolysis of a molten ionic compound or its solution. I can describe the electrolysis of aluminium oxide.				
I can explain why electrolysis is an expensive metal extraction method and illustrate this with the extraction of aluminium.				
I can explain why cryolite is added to aluminium oxide in the industrial extraction of aluminium.				
I can describe how to electrolyse brine in terms of ions moving.				
I can predict the products of electrolysis of a solution.				
I can plan and carry out an electrolysis investigation.				

C7 Energy changes	Check 1	Check 2	Check 3	Check 4
I can describe examples of exothermic and endothermic reactions.				
I can explain, using observations from calorimetry, how to classify a reaction as exothermic or endothermic.				
I can explain in detail how to carry out a calorimetry experiment.				
I can explain how an energy change from a chemical reaction can be used.				
I can write balanced symbol equations for familiar reactions.				
I can label activation energy on a reaction profile diagram.				
I can generate a specific reaction profile diagram for a given chemical reaction when its energy change is also supplied.				
I can identify bonds broken in reactants and new bonds made in products of a reaction.				
I can explain, using the particle model, how reactants become products in a chemical reaction.				
I can explain why bond breaking is endothermic and bond making is exothermic.				
I can define bond energy and identify all the bonds that break and are made in a chemical reaction.				