

Combined Science GCSE Revision Checklists

Chemistry PAPER 2

Name: _____

Science Teacher: _____

Chemistry 2

CC3 - Atomic Structure	<input type="checkbox"/>
Describe how Dalton's ideas about atoms have changed.	<input type="checkbox"/>
Describe how the subatomic particles are arranged in an atom.	<input type="checkbox"/>
Explain how atoms of different elements are different.	<input type="checkbox"/>

Recall the charges and relative masses of the three subatomic particles.	<input type="checkbox"/>
Explain why all atoms have no overall charge.	<input type="checkbox"/>
Describe how the size of an atom compares to the size of its nucleus.	<input type="checkbox"/>
State where most of the mass of an atom is found.	<input type="checkbox"/>
State the meaning of atomic number.	<input type="checkbox"/>
State the meaning of mass number.	<input type="checkbox"/>
Describe how the atoms of different elements vary.	<input type="checkbox"/>
State the number of electrons in an atom from its atomic number.	<input type="checkbox"/>
Calculate the numbers of protons, neutrons and electrons using atomic and mass numbers.	<input type="checkbox"/>
State what is meant by an isotope.	<input type="checkbox"/>
Identify isotopes from information about the structure of atoms.	<input type="checkbox"/>
Calculate the numbers of protons, neutrons and electrons using atomic numbers and mass numbers.	<input type="checkbox"/>
Explain why the relative atomic mass of many elements is not a whole number.	<input type="checkbox"/>
H Calculate the relative atomic mass of an element from the relative masses and abundances of its isotopes.	<input type="checkbox"/>
CC4 - The Periodic Table	<input type="checkbox"/>
Recall the chemical symbols of some common elements.	<input type="checkbox"/>
Describe how Mendeleev arranged elements into a periodic table.	<input type="checkbox"/>
Describe how Mendeleev predicted the existence and properties of some elements yet to be discovered.	<input type="checkbox"/>
Explain how Mendeleev's early ideas were supported by later evidence.	<input type="checkbox"/>
Explain some problems Mendeleev had when ordering the elements.	<input type="checkbox"/>
Explain the meaning of the term 'atomic number'.	<input type="checkbox"/>
Describe how the elements are arranged in the modern periodic table.	<input type="checkbox"/>
Recall the positions of metals and non-metals in the periodic table.	<input type="checkbox"/>
State what the term 'electronic configuration' means.	<input type="checkbox"/>
Show electronic configurations in the form 2.8.1 and as diagrams.	<input type="checkbox"/>
Predict the electronic configurations of the elements hydrogen to calcium.	<input type="checkbox"/>
Explain the links between an element's position in the periodic table and its electronic configuration.	<input type="checkbox"/>
CC5 - Ionic Bonding	<input type="checkbox"/>
Recall the formulae of simple ions.	<input type="checkbox"/>
Explain how cations and anions are formed.	<input type="checkbox"/>
Use dot and cross diagrams to explain how ionic bonds are formed.	<input type="checkbox"/>
Explain the difference between an atom and an ion.	<input type="checkbox"/>
Calculate the numbers of protons, neutrons and electrons in simple ions.	<input type="checkbox"/>
Explain the formation of ions in groups 1, 2, 6 and 7 of the periodic table.	<input type="checkbox"/>

Recall the formulae of common polyatomic ions, and the charges on them.	<input type="checkbox"/>
Interpret the use of –ide and –ate endings in the names of compounds.	<input type="checkbox"/>
Name ionic compounds using –ide and –ate endings.	<input type="checkbox"/>
Work out the formula of an ionic compound from the formulae of its ions.	<input type="checkbox"/>
Describe the structure of ionic compounds.	<input type="checkbox"/>
Explain how ionic compounds are held together.	<input type="checkbox"/>
Describe the properties of ionic compounds.	<input type="checkbox"/>
Explain why ionic compounds have high melting points and high boiling points.	<input type="checkbox"/>
Explain why ionic compounds conduct electricity when they are molten and in aqueous solution.	<input type="checkbox"/>
Explain why ionic compounds do not conduct electricity as solids.	<input type="checkbox"/>
Identify ionic compounds from data about their properties.	<input type="checkbox"/>
CC6 - Covalent Bonding	<input type="checkbox"/>
Explain how covalent bonds are formed.	<input type="checkbox"/>
Recall the names of some common molecular elements.	<input type="checkbox"/>
Recall the names of some common molecular compounds.	<input type="checkbox"/>
State the bonding that is found in molecules.	<input type="checkbox"/>
State the approximate size (order or magnitude) of atoms and small molecules.	<input type="checkbox"/>
Explain the formation of covalent bonds using dot and cross diagrams.	<input type="checkbox"/>
CC7 - Types of Substance	<input type="checkbox"/>
Recall examples of common covalent, simple molecular compounds.	<input type="checkbox"/>
Describe the general properties of covalent, simple molecular compounds.	<input type="checkbox"/>
Explain why covalent, simple molecular compounds have low melting and boiling points.	<input type="checkbox"/>
Explain why covalent, simple molecular compounds are poor conductors of electricity.	<input type="checkbox"/>
Describe the structure of a polymer.	<input type="checkbox"/>
Recall some allotropes of carbon.	<input type="checkbox"/>
Describe the basic differences between covalent, simple molecules and giant covalent structures.	<input type="checkbox"/>
Describe the structures of diamond, graphite, fullerenes and graphene.	<input type="checkbox"/>

Describe the properties of diamond, graphite, fullerenes and graphene.	<input type="checkbox"/>
Explain the properties and uses of diamond and graphite in terms of their structure and bonding.	<input type="checkbox"/>
Explain the properties of fullerenes and graphene in terms of their structure and bonding.	<input type="checkbox"/>
Describe the particles and how they are arranged in metals.	<input type="checkbox"/>
Explain why metals are malleable.	<input type="checkbox"/>
Explain why metals conduct electricity.	<input type="checkbox"/>
Describe the typical properties of metals.	<input type="checkbox"/>

Describe the typical properties of non-metals.	<input type="checkbox"/>
Give examples of ionic; covalent, simple molecular; covalent, giant molecular; and metallic substances.	<input type="checkbox"/>
Describe how the different types of bonds and structures are formed.	<input type="checkbox"/>
Explain how the structure and bonding of a substance is linked to its physical properties. (Relative melting point and boiling point, relative solubility in water and ability to conduct electricity, as solids and in solution.)	<input type="checkbox"/>
Explain why we use models to represent structure and bonding.	<input type="checkbox"/>
Represent structures and bonding using a variety of different models (dot and cross, ball and stick, 2D, 3D).	<input type="checkbox"/>
Describe the limitations of the different models used to represent structure and bonding (dot and cross, ball and stick, 2D, 3D).	<input type="checkbox"/>
CC13 - Groups in the Periodic Table	I Know it!
Explain the classification of alkali metals, halogens and noble gases, into groups in the periodic table.	<input type="checkbox"/>
Describe the main physical properties of alkali metals.	<input type="checkbox"/>
Describe the reactions of lithium, sodium and potassium with water.	<input type="checkbox"/>
Write word, balanced and H ionic equations (including state symbols) for the reactions of alkali metals.	<input type="checkbox"/>
Describe the pattern of reactivity of the alkali metals.	<input type="checkbox"/>
Explain how the electronic configurations of the atoms of alkali metals affect their reactivity.	<input type="checkbox"/>
Recall the appearance of chlorine, bromine and iodine at room temperature.	<input type="checkbox"/>
Describe the trends in colour, melting point and boiling point of chlorine, bromine and iodine down the group, and use these to predict physical properties of other halogens.	<input type="checkbox"/>
Describe the chemical test for chlorine gas.	<input type="checkbox"/>
Describe the trends in the reactions of halogens with metals, and use this to predict reactions of other halogens	<input type="checkbox"/>
Write word and balanced chemical equations, including state symbols, for the reactions of halogens with metals.	<input type="checkbox"/>
Describe hydrogen halides and their chemical properties.	<input type="checkbox"/>
Describe the relative reactivity of halogens.	<input type="checkbox"/>
Explain how the reactivity of halogens can be worked out from displacement reactions.	<input type="checkbox"/>
Write balanced chemical equations, including state symbols, for the displacement reactions of halogens.	<input type="checkbox"/>
H Explain how displacement reactions are examples of redox reactions.	<input type="checkbox"/>
H Write ionic equations, including state symbols, for displacement reactions of halogens.	<input type="checkbox"/>
Explain the order of reactivity of halogens (using electronic configurations).	<input type="checkbox"/>
Explain why noble gases are chemically inert by referring to their electronic configuration.	<input type="checkbox"/>
Describe uses of noble gases linked with their properties.	<input type="checkbox"/>
Describe the trends in the physical properties of the noble gases.	<input type="checkbox"/>
Use trends in physical properties to predict the physical properties of other noble gases.	<input type="checkbox"/>

CC14 - Rates of Reaction	
Describe different changes that can occur as a reaction proceeds.	<input type="checkbox"/>
Suggest different experimental methods to investigate rates of reaction (e.g. measurements of mass of reactants against time, volume of gas released against time, concentration of reactant or product against time).	<input type="checkbox"/>
Use graphs of changes (in mass, volume or concentration of reactant or product) against time, to interpret what is happening during reactions.	<input type="checkbox"/>
Explain what has to happen for reactions to take place.	<input type="checkbox"/>
Explain why changes in the energy of particles affect rates of reaction.	<input type="checkbox"/>
Explain why changes in the frequency of collisions between particles affect the rate of reaction.	<input type="checkbox"/>
Explain why changes in temperature, concentration, surface area and pressure affect the rate of reaction (surface area for solids, pressure for gases only).	<input type="checkbox"/>
Describe ways of speeding up or slowing down chemical reactions.	<input type="checkbox"/>
Describe what a catalyst does.	<input type="checkbox"/>
Explain how catalysts are useful.	<input type="checkbox"/>
Explain what the activation energy of a reaction is.	<input type="checkbox"/>
Explain how catalysts speed up chemical reactions.	<input type="checkbox"/>
Describe what enzymes are.	<input type="checkbox"/>
Name one or more examples of enzymes.	<input type="checkbox"/>
CC15 - Heat Energy Changes in Chemical Reactions	
Recall some examples of exothermic and endothermic changes.	<input type="checkbox"/>
Describe how heat changes in solution may be determined.	<input type="checkbox"/>
Describe the differences between exothermic and endothermic changes.	<input type="checkbox"/>
Describe exothermic and endothermic reactions in terms of energy changes when bonds are broken and formed.	<input type="checkbox"/>
H Use bond energies to calculate energy changes in reactions.	<input type="checkbox"/>
Explain the meaning of activation energy.	<input type="checkbox"/>
Draw and label reaction profiles.	<input type="checkbox"/>
CC16 - Fuels	
Recall the meaning of the term hydrocarbon.	<input type="checkbox"/>
Describe the compounds found in crude oil.	<input type="checkbox"/>
Describe the importance of crude oil for the petrochemical industry.	<input type="checkbox"/>
Explain why crude oil is a finite resource.	<input type="checkbox"/>
Recall the names of some common fossil fuels.	<input type="checkbox"/>
Describe how crude oil is separated by fractional distillation.	<input type="checkbox"/>
Explain how fractional distillation of crude oil works.	<input type="checkbox"/>
Recall the names and uses of fractions from crude oil.	<input type="checkbox"/>

Describe how fractions differ from each other.	<input type="checkbox"/>
Explain why the properties of different fractions differ.	<input type="checkbox"/>
Describe that oil fractions mostly contain alkanes.	<input type="checkbox"/>
Describe the main features of an homologous series.	<input type="checkbox"/>
Explain why alkanes form an homologous series.	<input type="checkbox"/>
Describe the complete combustion of hydrocarbon fuels.	<input type="checkbox"/>
Explain the production of harmful products during the incomplete combustion of hydrocarbon fuels.	<input type="checkbox"/>
Explain why carbon monoxide is toxic.	<input type="checkbox"/>
Describe the problems caused by incomplete combustion.	<input type="checkbox"/>
Explain how some hydrocarbon fuels produce sulfur dioxide in use.	<input type="checkbox"/>
Recall the names of the pollutants responsible for acid rain.	<input type="checkbox"/>
Describe some effects of acid rain.	<input type="checkbox"/>
Explain why oxides of nitrogen are produced when fuels are burned in engines.	<input type="checkbox"/>
Evaluate hydrogen as an alternative fuel to petrol for cars.	<input type="checkbox"/>
Describe what happens during cracking.	<input type="checkbox"/>
Explain why alkanes are saturated and alkenes are unsaturated.	<input type="checkbox"/>
Explain why cracking is necessary.	<input type="checkbox"/>
CC17 - Earth and Atmosphere Science	
Describe how the Earth's early atmosphere was formed.	<input type="checkbox"/>
State the names and relative amounts of the gases found in the Earth's early atmosphere.	<input type="checkbox"/>
Draw conclusions from evidence about the Earth's early atmosphere.	<input type="checkbox"/>
Explain how the oceans are thought to have formed.	<input type="checkbox"/>
Describe how the formation of the oceans influenced the composition of the atmosphere.	<input type="checkbox"/>
Explain how photosynthetic organisms (including plants) changed the composition of the atmosphere.	<input type="checkbox"/>
State the chemical test for oxygen.	<input type="checkbox"/>
Recall the names of significant greenhouse gases.	<input type="checkbox"/>
Describe the processes involved in the greenhouse effect.	<input type="checkbox"/>
Describe how human activity increases the concentration of greenhouse gases.	<input type="checkbox"/>
Evaluate the correlation between atmospheric carbon dioxide concentrations and fossil fuel use.	<input type="checkbox"/>
Evaluate the evidence for increased atmospheric greenhouse gas concentrations being part of the cause of global warming and climate change.	<input type="checkbox"/>
Suggest possible effects on the climate of increased levels of carbon dioxide and methane.	<input type="checkbox"/>
Describe how human activity leads to increased carbon dioxide levels.	<input type="checkbox"/>
Describe how human activity leads to increased methane levels.	<input type="checkbox"/>
Describe the projected effects of climate change.	<input type="checkbox"/>
Describe how the potential harmful effects of climate change can be addressed and limited.	<input type="checkbox"/>

