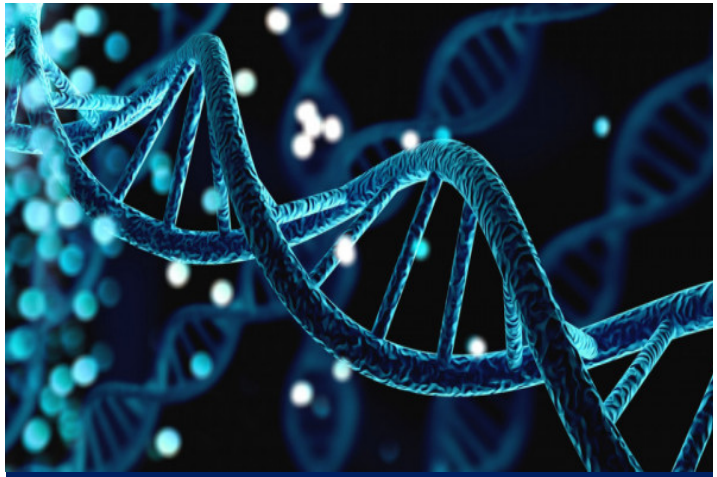
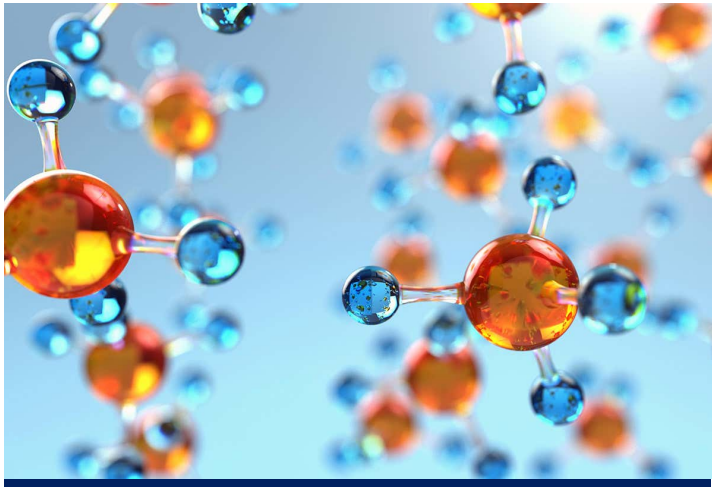
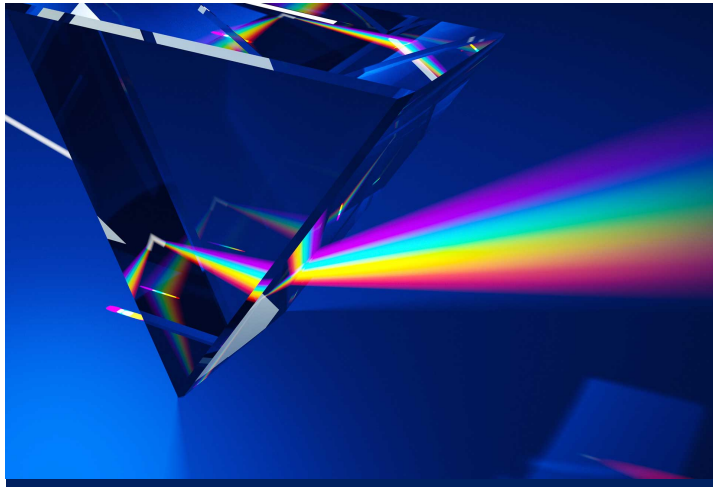
Hessle High School

Science Department







Chemistry Combined Foundation

This document will help you work with students to assess their understanding of the science curriculum for their exam. The students have their personal learning checklist from their mock exams. They need to revise these topics, then they can use these questions to test their understanding.

Paper 1

Question	Answer	Sub-topic
What is the list of all the elements called?	The periodic table	C1.1 Atoms
What is a compound?	2 or more elements chemically bonded together	C1.1 Atoms
What is a mixture?	2 or more elements or compounds that are not chemically bonded	C1.1 Atoms
What is an element?	A group of atoms that are the same.	C1.1 Atoms
Define atom	The smallest part of an element that can still be recognised as that element	C1.1 Atoms
Define element	A substance made of only one type of atom	C1.1 Atoms
Define compound	A substance made of two or more different atoms chemically bonded together	C1.1 Atoms
Define molecule	A substance made of more than one atom chemically bonded together (can be atoms of the same type!)	C1.1 Atoms
What are the rules for writing the symbols of elements?	First letter is a capital any others are lower case.	C1.2 Chemical equations
How many atoms are in H2SO4?	H=2 S=1 O=4 Total= 7	C1.2 Chemical equations
How many atoms are in 3HNO3?	3H + 3N + 9O --> 15	C1.2 Chemical equations
Is gold an element, mixture or compound? Why?	Gold is an element as it is made only of gold atoms.	C1.3 Separating mixtures
Is carbon dioxide an element, mixture or compound? Why?	Carbon dioxide is a compound as it is formed from carbon and oxygen chemically bonded together.	C1.3 Separating mixtures
Is salt water an element, mixture or compound? Why?	Salt water is a mixture as the water compound and salt compound are not bonded together.	C1.3 Separating mixtures
What property does filtration exploit?	Solubility	C1.3 Separating mixtures
What property does crystallisation exploit?	Solubility	C1.3 Separating mixtures
What property does simple distillation exploit?	Boiling point	C1.3 Separating mixtures
What property does fractional distillation exploit?	Boiling point	C1.3 Separating mixtures
What separation technique separates solids from liquids?	Filtration	C1.3 Separating mixtures

Why would you use filtration to separate a mixture of sand and water?	Because the water will filter through, but the sand is not soluble so will form the residue.	C1.3 Separating mixtures
Why would filtration not be a good method to separate salt and water?	Because salt is soluble in water so both the salt and the water would be in the filtrate.	C1.3 Separating mixtures
Define mixture	A substance made of more than one type of particle not chemically bonded together	C1.3 Separating mixtures
What are the key steps of distillation?	Heating, evaporation, cooling, condensing	C1.4 Fractional distillation and paper chromatography
Advantages of simple distillation over fractional distillation?	Simpler setup, faster, consumes less energy	C1.4 Fractional distillation and paper chromatography
Disadvantages of simple distillation over fractional distillation?	Requires the liquids to have a large difference in boiling point and gives poorer separation.	C1.4 Fractional distillation and paper chromatography
Why do inks separate in chromatography?	Because of their mass and solubility.	C1.4 Fractional distillation and paper chromatography
What is the soluble part of a filtered mixture called?	Filtrate	C1.4 Fractional distillation and paper chromatography
What is the insoluble part of a filtered mixture called?	Residue	C1.4 Fractional distillation and paper chromatography
What method would be suitable to separate a mixture of inks?	Chromatography	C1.4 Fractional distillation and paper chromatography
What was the plum pudding model of the atom?	Atoms were spheres with negatively charges electrons embedded in them	C1.5 History of the atom
Which model of the atom was developed first? Plum pudding or Nuclear?	plum pudding model	C1.5 History of the atom
What is the nuclear model of the atom?	Atoms have a central nucleus and are surrounded by negative electrons.	C1.5 History of the atom
Who discovered the nucleus?	Rutherford in 1911 using the alpha scattering experiment.	C1.5 History of the atom
Who discovered that electrons orbit the nucleus at fixed distances?	Bohr in 1913	C1.5 History of the atom
Who discovered there were neutrons in the nucleus?	Chadwick in 1932	C1.5 History of the atom
What did the gold foil experiment prove?	That atoms have dense nucleuses with a positive charge	C1.5 History of the atom
What is in the nucleus of an atom?	Protons and neutrons	C1.6 Structure of the atom
What subatomic particle is not in the nucleus?	Electrons	C1.6 Structure of the atom
Where are electrons in the atom?	Shells/ energy levels	C1.6 Structure of the atom
What size are atoms?	0.1nm in radius	C1.6 Structure of the atom
What size is the radius of the nucleus compared to the atom?	1/10,000 of the atom	C1.6 Structure of the atom

What does the atomic number tell us about an atom?	Number of protons/electrons	C1.6 Structure of the atom
What does the mass number tell us about an atom?	Number of protons and neutrons	C1.6 Structure of the atom
State the masses of the subatomic particles	Protons: 1, neutrons: 1, electrons: 0	C1.6 Structure of the atom
State the relative charges of the subatomic particles	Protons: +1, neutrons: 0, electrons: -1	C1.6 Structure of the atom
How are the subatomic particles arranged in an atom? (3 marks)	Protons and neutrons in the nucleus, electrons orbiting in shells	C1.6 Structure of the atom
What is the atomic number of an atom?	The number of protons in an atom	C1.6 Structure of the atom
How do you calculate the number of neutrons?	Atomic mass- Atomic number	C1.7 Ions, atoms, and isotopes
What is an isotope?	Atoms of the same element with a different number of neutrons.	C1.7 Ions, atoms, and isotopes
How do you calculate the atomic mass of an element?	(Mass x abundance) + (Mass x abundance) / 100	C1.7 Ions, atoms, and isotopes
What is an ion	An atom that has lost or gained an electron	C1.7 Ions, atoms, and isotopes
What is the mass number of an atom?	The number of protons + the number of neutrons in an atom	C1.7 Ions, atoms, and isotopes
How many electrons can fit on each shell?	2, 8, 8,2	C1.8 Electronic structures
How does the period link to the electron configuration?	The number of shells	C1.8 Electronic structures
How does the group link to the electron configuration?	The number of electrons on the outer shell	C1.8 Electronic structures
What is the electron configuration of sodium?	2,8,1	C1.8 Electronic structures
How are the electrons arranged in atoms?	Orbiting the nucleus in shells	C1.8 Electronic structures
How are the electrons in sulphur arranged?	2.8.6 (18 electrons total)	C1.8 Electronic structures
How are the electrons in magnesium arranged?	2.8.2 (12 electrons total)	C1.8 Electronic structures
How many electrons are in the outer shell of boron?	3 (it is in group 3!)	C1.8 Electronic structures
How many electrons are in the outer shell of phosphorous?	5 (it is in group 5!)	C1.8 Electronic structures
How many electrons are in the outer shell of sodium?	1 (it is in group 1!)	C1.8 Electronic structures
An element has three shells and three electrons in the outer shell. What element is it?	Aluminium (group 3, period 3	C1.8 Electronic structures
How many electrons are in the outer shell of Gallium?	3 (it is in group 3!)	C1.8 Electronic structures

How was Mendeleev's periodic table different from even earlier versions?	Mendeleev left gaps for undiscovered elements and switched elements around, so each group had similar properties.	C2.1 Development of the periodic table
Before the modern periodic table elements were arranged in order of?	Mass number not atomic number.	C2.1 Development of the periodic table
Why did Mendeleev put some elements in groups?	Because they had similar chemical properties (e.g. they reacted violently with water)	C2.1 Development of the periodic table
How do we know today that Mendeleev was correct in leaving gaps?	Elements with properties predicted by Mendeleev were discovered and filled the gaps	C2.1 Development of the periodic table
How are elements arranged in the modern periodic table?	By increasing number of protons.	C2.2 Electronic structures and the periodic table
Why is it called the periodic table?	Because similar properties occur at regular intervals (or periods).	C2.2 Electronic structures and the periodic table
What are the columns in the periodic table called?	Groups	C2.2 Electronic structures and the periodic table
What are the rows in the periodic table called?	Periods	C2.2 Electronic structures and the periodic table
How does the group number link to electron configuration?	Number of electrons on the outer shell (valence electrons)	C2.2 Electronic structures and the periodic table
How does the period number link to electron configuration?	Number of electron shells	C2.2 Electronic structures and the periodic table
What is the middle block of the periodic table called?	Transition metals	C2.2 Electronic structures and the periodic table
What is group 1 called?	Alkali metals	C2.2 Electronic structures and the periodic table
What is group 2 called?	Alkali earth metals	C2.2 Electronic structures and the periodic table
What is group 7 called?	Halogens	C2.2 Electronic structures and the periodic table
What is group 8 called?	Noble gases	C2.2 Electronic structures and the periodic table
What Group is unreactive and do not easily form molecules because their atoms have stable arrangements of electrons.	Noble gases (8/0)	C2.2 Electronic structures and the periodic table
The boiling points of the noble gases increase/decrease with increasing relative atomic mass (going down the group)?	Increase.	C2.2 Electronic structures and the periodic table
Why do alkali metals all have similar properties?	Because they all have 1 electron on their outer shell.	C2.3 Group 1 – the alkali metals

What is the product when alkali metals react with oxygen?	Metal oxides	C2.3 Group 1 – the alkali metals
What is the product when alkali metals react with chlorine?	Metal chloride	C2.3 Group 1 – the alkali metals
What are the products when alkali metals react with water?	Metal hydroxide + Hydrogen	C2.3 Group 1 – the alkali metals
Explain the trend in reactivity down group 1?	They get more reactive down the group.	C2.3 Group 1 – the alkali metals
What is more reactive, lithium or sodium?	Sodium	C2.3 Group 1 – the alkali metals
State the trend in the melting points of the alkali metals	decreases down the group	C2.3 Group 1 – the alkali metals
Name LiOH	Lithium hydroxide	C2.3 Group 1 – the alkali metals
Name KOH	Potassium hydroxide	C2.3 Group 1 – the alkali metals
Explain why the group 1 elements are called alkali metals	They are metals that form alkalis when they react with water	C2.3 Group 1 – the alkali metals
Why do elements in group 7 have similar properties?	Because they all have 7 electrons on their outer shell.	C2.4 Group 7 – the halogens
Does melting point increase or decrease going down group 7?	Increase.	C2.4 Group 7 – the halogens
Does boiling point increase or decrease going down group 7?	Increase.	C2.4 Group 7 – the halogens
Does reactivity increase or decrease going down group 7?	Decrease.	C2.4 Group 7 – the halogens
What is more reactive, chlorine or bromine?	Chlorine	C2.4 Group 7 – the halogens
What state is fluorine at room temperature?	Gas	C2.4 Group 7 – the halogens
What state is chlorine at room temperature?	Gas	C2.4 Group 7 – the halogens
What state is bromine at room temperature?	liquid	C2.4 Group 7 – the halogens
What state is iodine at room temperature?	solid	C2.4 Group 7 – the halogens
Explain why fluorine is more reactive than chlorine	Fewer shells/electrons, less shielding (or stronger attraction from nucleus), easier to gain electrons	C2.5 Explaining trends
What happens to the boiling point as you go down the noble gases group?	It increases.	C2.5 Explaining trends
Compare the properties of alkali metals to transition metals.	Group 1 elements have lower melting points, are less dense, are not as strong but are more reactive.	C2.5 Explaining trends
Define inert	Unreactive	C2.5 Explaining trends
Explain why the noble gases are inert	They have full outer shells, so do not need to gain or lose electrons	C2.5 Explaining trends

What is a trend?	A pattern in properties	C2.5 Explaining trends
Explain why potassium is more reactive than lithium (3 marks)	More shells/electrons, less shielding (or weaker attraction from nucleus), easier to lose electrons	C2.5 Explaining trends
Explain why bromine is less reactive than chlorine (3 marks)	More shells/electrons, more shielding (or weaker attraction from nucleus), harder to gain electrons	C2.5 Explaining trends
Explain why sodium is less reactive than caesium (3 marks)	Fewer shells/electrons, less shielding (or stronger attraction from nucleus), harder to lose electrons	C2.5 Explaining trends
What is the state symbol for solid, liquid, aqueous and gas?	(s) (l) (g) (aq)	C3.1 States of matter
What does aqueous mean?	A solid dissolved in water.	C3.1 States of matter
What does the amount of energy needed to change state depends on?	The strength of the forces between the particles of the substance.	C3.1 States of matter
The stronger the forces between the particles the higher the?	melting point and boiling point of the substance	C3.1 States of matter
What is broken when a substance melts or boils?	The intermolecular forces between molecules not the covalent/ionic bonds within the molecule.	C3.1 States of matter
What are the three types of chemical bonds?	Ionic, covalent and metallic.	C3.2 Atoms into ions
What is an ion?	An atom that has lost or gained electrons	C3.2 Atoms into ions
Why would an ion have a positive charge?	It has lost electrons	C3.2 Atoms into ions
Why would an ion have a negative charge?	It has gained electrons	C3.2 Atoms into ions
An oxygen atom gains 2 electrons, what is its charge?	-2	C3.2 Atoms into ions
A lithium atom loses 1 electron, what is its charge?	1+	C3.2 Atoms into ions
What charge do ions from group 1 have?	1+	C3.2 Atoms into ions
What charge do ions from group 2 have?	2+	C3.2 Atoms into ions
What charge do ions from group 3 have?	3+	C3.2 Atoms into ions
What charge do ions from group 6 have?	2-	C3.2 Atoms into ions
What charge do ions from group 7 have?	1-	C3.2 Atoms into ions
What charge do electrons have?	-1	C3.2 Atoms into ions
Draw the ionic bond for NaCl	#REF!	C3.3 Ionic bonding
Draw the ionic bond for MgCl2	#REF!	C3.3 Ionic bonding
What holds ions together in an ionic bond?	Electrostatic attraction	C3.3 Ionic bonding
Ionic bonding occurs between…	metals and non-metals	C3.3 Ionic bonding

What is electrostatic attraction?	Positive and negative charges being attracted to each other	C3.3 Ionic bonding
If something has gained electrons, what charge will it have?	Negative	C3.3 Ionic bonding
If something has lost electrons, what charge will it have?	Positive (because they have lost a negative!)	C3.3 Ionic bonding
Explain in terms of electrons what occurs when lithium bonds with chlorine	One electron transferred from lithium to chlorine	C3.3 Ionic bonding
Why do atoms transfer electrons in ionic bonding?	So that they can have full outer shells	C3.3 Ionic bonding
Explain in terms of electrons what occurs when lithium bonds with fluorine	One electron transferred from lithium to fluorine	C3.3 Ionic bonding
Explain in terms of electrons what occurs when magnesium bonds with oxygen	Two electrons transferred from magnesium to oxygen	C3.3 Ionic bonding
Explain in terms of electrons what occurs when beryllium bonds with oxygen (3 marks)	Two electrons transferred from beryllium to oxygen	C3.3 Ionic bonding
Explain in terms of electrons what occurs when magnesium bonds with chlorine	One electron transferred from magnesium to two different chlorine atoms	C3.3 Ionic bonding
Explain in terms of electrons what occurs when sodium bonds with oxygen	Two electrons transferred to an oxygen atom from two different sodium atoms	C3.3 Ionic bonding
Why do sodium ions and chlorine ions form an ionic bond?	There is an electrostatic force of attraction between oppositely charged ions	C3.3 Ionic bonding
Why don't sulphur ions and oxygen ions form ionic bonds with each other?	Both have negative charges so would repel	C3.3 Ionic bonding
What is an example of a giant ionic structure?	NaCl	C3.4 Giant ionic structures
Giant ionic compounds form a regular structure called a…	lattice	C3.4 Giant ionic structures
Why do giant ionic compounds have a high melting point and boiling point?	Because a large amount of energy is needed to break the many strong bonds	C3.4 Giant ionic structures
When and why can giant ionic compounds conduct electricity?	When they are melted or dissolved in water because the ions are free to move, and so charge can flow	C3.4 Giant ionic structures
Will NaCl(s) conduct electricity? Explain why?	No, ions not free to move	C3.4 Giant ionic structures
Will NaCl (aq) conduct electricity? Explain why?	Yes (aq stands for aqueous which means it is dissolved in water)	C3.4 Giant ionic structures
Will NaCl (l) conduct electricity?	Yes, ions are free to move	C3.4 Giant ionic structures
What does molten mean?	Melted	C3.4 Giant ionic structures

What happens to outer shell electrons in a covalent bond?	They are shared with other atoms	C3.5 Covalent bonding
Covalent bonding occurs between…	non-metals	C3.5 Covalent bonding
Complete the sentence: In covalent bonds, electrons are _____	Shared	C3.5 Covalent bonding
What are intermolecular forces?	The forces between molecules.	C3.6 Structure of simple molecules
What state are substances that consist of small molecules normally	Gas	C3.6 Structure of simple molecules
The intermolecular forces _____ with the size of the molecules, so larger molecules have _____ melting and boiling points.	Increase, Higher	C3.6 Structure of simple molecules
Why do giant covalent compounds have a high melting point and boiling point?	Because the atoms are connected by strong covalent bonds which require a large amount of energy to break	C3.7 Giant covalent structures
In diamond each carbon atom is bonded to how many others?	4	C3.7 Giant covalent structures
Why is diamond hard?	Because each C is bonded to 4 other Cs	C3.7 Giant covalent structures
Why does diamond not conduct electricity?	Because it has no free electrons to move and carry a charge	C3.7 Giant covalent structures
In graphite each carbon atom is bonded to how many others?	3	C3.7 Giant covalent structures
Why is graphite soft?	Because it forms layers that can slide over each other easily	C3.7 Giant covalent structures
Why does graphite conduct electricity?	Because each carbon has 1 delocalised electron than can move and carry a charge	C3.7 Giant covalent structures
What is graphene?	A single layer of graphite	C3.8 Fullerenes and graphene
What is graphene used for?	Electronics and composites	C3.8 Fullerenes and graphene
What is a fullerene?	A hollow structure made of carbon atoms	C3.8 Fullerenes and graphene
What is a carbon nanotube?	Cylindrical fullerenes	C3.8 Fullerenes and graphene
What are carbon nanotubes used for?	Nanotechnology, electronics and materials.	C3.8 Fullerenes and graphene
Describe the bonding in metals	Atoms are arranged in rows; each atom loses its outer shell electrons forming positive ions.	C3.9 Bonding in metals
Why are metallic bonds strong?	Because the positive ions and delocalised electrons have an electrostatic attraction	C3.9 Bonding in metals
Why do metals have a high melting point and boiling point?	Because they have strong metallic bonds	C3.9 Bonding in metals
Why are metals good conductors?	Because they have delocalised electrons which can move and carry a charge	C3.9 Bonding in metals
Why are metals malleable and ductile?	Because the atoms are arranged in rows which can slide over each other	C3.10 Giant metallic structures

What is an alloy?	A mixture of at least 2 metals	C3.10 Giant metallic structures
Why are alloys stronger than metals on their own?	Because the layers are distorted in alloys so cannot slide over each other	C3.10 Giant metallic structures
Explain why metals can be bent and shaped	The layers can slide over each other	C3.10 Giant metallic structures
What is the relative atomic mass	It is an average mass of the isotopes of the element.	C4.1 Relative masses and moles
What is relative formula mass?	The sum of the relative atomic masses for the atoms in the compound.	C4.1 Relative masses and moles
What is the relative formula mass for H_2O? H=1 O=16	1 + 1 + 16 = 18	C4.1 Relative masses and moles
What is the relative formula mass for CH_4? C=12 H=1	12 + 1 + 1 + 1 + 1 = 16	C4.1 Relative masses and moles
What is the relative formula mass for C_2H_5OH? C=12, H=1, O=16	12 + 12 + 1 + 1 + 1 + 1 + 1 + 16 + 1 = 46	C4.1 Relative masses and moles
What is the relative formula mass for $2CO_2$? C=12, O=16	2 x (12 + 16 + 16) = 2 x 44 = 88	C4.1 Relative masses and moles
What are the units of concentration for a solution?	g/dm3	C4.6 Expressing concentrations
What is a solution?	A mixture made of a soluble solute and a liquid solvent.	C4.6 Expressing concentrations
1 litre is equivalent to…	1dm3	C4.6 Expressing concentrations
30g of copper sulphate are dissolved in 1dm3 of water. What is the concentration of the solution?	30 g/dm3	C4.6 Expressing concentrations
60g of copper sulphate are dissolved in 1dm3 of water. What is the concentration of the solution?	60 g/dm3	C4.6 Expressing concentrations
30g of copper sulphate are dissolved in 0.5 dm3 of water. What is the concentration of the solution?	60 g/dm3	C4.6 Expressing concentrations
60g of copper sulphate are dissolved in 0.5 dm3 of water. What is the concentration of the solution?	120 g/dm3	C4.6 Expressing concentrations
40g of copper sulphate are dissolved in 0.25 dm3 of water. What is the concentration of the solution?	160 g/dm3	C4.6 Expressing concentrations
When metal carbonates thermally decompose the mass of the products is often less than the mass of the products. Why?	The two products are a solid metal oxide and carbon dioxide gas. The carbon dioxide escapes into the atmosphere unless captured.	C4.9 Volumes of gases
What is the reactivity series?	A list of metals in order of their reactivity- the list often also includes hydrogen and carbon.	C5.1 The reactivity series

What are metals often reacted with so that their reactivity can be compared?	Water or dilute acids.	C5.1 The reactivity series
Put these metals in order of Copper lithium, potassium, sodium, iron, calcium, zinc, magnesium	potassium, sodium, lithium, calcium, magnesium, zinc, iron and copper	C5.1 The reactivity series
Predict and explain observations of potassium and zinc which water	Potassium- Fizzing vigorously as potassium is very reactive. Zinc- Slight fizzing as less reactive than potassium	C5.1 The reactivity series
What gas produced when metals react water or dilute acid	hydrogen	C5.1 The reactivity series
What is oxidation in terms of oxygen?	Metals gaining oxygen.	C5.1 The reactivity series
What is reduction in terms of oxygen?	A compound losing oxygen	C5.1 The reactivity series
What is a displacement reaction?	A chemical reaction where a more reactive element takes the place of a less reactive metal.	C5.2 Displacement reactions
Why is gold found as a pure substance in the Earth's core?	Because it is unreactive so does not form a compound.	C5.3 Extracting metals
Metal + Oxygen -->	Metal oxide	C5.3 Extracting metals
How can metals less reactive than carbon be extracted from metal oxides?	Reduction with carbon	C5.3 Extracting metals
Acid + Metal -->	Salt + Hydrogen	C5.4 Salts from metals
Magnesium (s) + Hydrochloric Acid (aq) -->	Magnesium chloride (aq) + Hydrogen (g)	C5.4 Salts from metals
Zinc (s) + Sulfuric Acid (aq) -->	Zinc sulphate (aq) + Hydrogen (g)	C5.4 Salts from metals
Iron (s) + Hydrochloric Acid (aq) -->	Iron chloride (aq) + Hydrogen (g)	C5.4 Salts from metals
In chemistry- what is a salt?	An ionic compound produced in a neutralisation reaction.	C5.4 Salts from metals
What is the formula of the salt magnesium chloride?	Ions = Mg^{2+} and Cl^-, need two Cl^- to balance the Mg^{2+} charge- formula = $MgCl_2$	C5.5 Salts from insoluble bases
What is the formula of the salt copper nitrate?	Ions = Cu^{2+} and NO_3^-, need two NO_3^- to balance the Cu^{2+} charge- formula $Cu(NO_3)_2$	C5.5 Salts from insoluble bases
What is the formula of the salt calcium sulfate?	Ions = Ca^{2+} and SO_4^{2-} therefore the charges balance, formula = $CaSO_4$	C5.5 Salts from insoluble bases
A neutralisation reaction involves hydrochloric acid- what will the second half of the salts name be?	Chloride	C5.5 Salts from insoluble bases
A neutralisation reaction involves sulfuric acid- what will the second half of the salts name be?	Sulfate	C5.5 Salts from insoluble bases
A neutralisation reaction involves nitric acid- what will the second half of the salts name be?	Nitrate	C5.5 Salts from insoluble bases

Acid + Alkali/base -->?	a salt and water	C5.5 Salts from insoluble bases
Hydrochloric acid(aq) + Iron(III) Oxide(s) --> ??	Iron(III) chloride + water	C5.5 Salts from insoluble bases
Soluble salts can be made from acids by reacting them with solid insoluble substances, such as...?	solid metals, metal oxides, metal hydroxides and metal carbonate.	C5.6 Making more salts
What is an acid?	A chemical that has a pH between 1-6, they contain hydrogen ions.	C5.6 Making more salts
What does the name of a salt depend on?	The acid used and the positive (metal) ions in the base/alkali/carbonate.	C5.6 Making more salts
Hydrochloric Acid (aq) + Magnesium Hydroxide (aq) -->	Magnesium Chloride (aq) + Water (l)	C5.6 Making more salts
Nitric acid (aq) + Copper oxide (s) -->	Copper nitrate (aq) + Water (l)	C5.6 Making more salts
Sulfuric acid (aq) + Calcium carbonate (s) -->	Calcium sulfate (aq) + Water (l) + Carbon dioxide (g)	C5.6 Making more salts
How are soluble salts produced in the lab	The solid is added to acid in excess and the solution is filtered to remove any unreacted solid. The filtrate solution can then crystallised to produce solid salts.	C5.6 Making more salts
Carbonates + acid -->??	Salt + water + carbon dioxide	C5.6 Making more salts
How can the pH of a chemical be determined?	Using universal indictor or a pH probe.	C5.7 Neutralisation and the pH scale
What is a neutralisation reaction?	A reaction between an acid and an alkali that produces hydrogen and hydroxide ions that react to produce water.	C5.7 Neutralisation and the pH scale
Acid + Metal Carbonate -->	Salt + Water + Carbon dioxide	C5.7 Neutralisation and the pH scale
Acids produce in aqueous solutions.	Hydrogen ions H+	C5.7 Neutralisation and the pH scale
Aqueous solutions of alkalis contain what?	hydroxide ions OH–	C5.7 Neutralisation and the pH scale
What is the pH for: Acidic, neutral and alkali?	Acidic: Below 7, Neutral: 7 Alkali: above 7	C5.7 Neutralisation and the pH scale
What is the formula of hydrochloric acid?	HCl	C5.8 Strong and weak acids
What is the formula of nitric acid?	HNO3	C5.8 Strong and weak acids
What is the formula of sulfuric acid?	H2SO4	C5.8 Strong and weak acids
What is electrolysis?	Separating an ionic compound using electricity due to the charge of the ions.	C6.1 Introduction to electrolysis
What state does an ionic compound need to be to undergo electrolysis? Why?	Melted to a liquid (l) or dissolved in water (aq), so that the ions are free to move.	C6.1 Introduction to electrolysis
What is the liquid/solution being separated in electrolysis called?	Electrolytes	C6.1 Introduction to electrolysis
What are the two electrodes in electrolysis called?	The positive electrode is called the anode (which attracts negative ions), and the negative electrode is called the cathode (which attracts positive ions).	C6.2 Changes at the electrodes
The electrodes in electrolysis are often inert- what does inert mean?	Unreactive	C6.2 Changes at the electrodes

Explain what happens when molten lead bromide is electrolysed.	The lead is converted from a positive ion to neutral atom at the cathode- this oxidation as the metal ions have gained electrons. The bromine is converted from a negative ion to a neutral atom at the anode- this is reduction as the halide ions loss electrons.	C6.2 Changes at the electrodes
Explain what happens when molten aluminium oxide is electrolysed.	The aluminium is converted from a positive ion to neutral atom at the cathode- this oxidation as the metal ions have gained electrons. The oxygen is converted from a negative ion to a neutral atom at the anode- this is reduction as the oxygen ions loss electrons.	C6.3 The extraction of aluminium
When extracting aluminium from aluminium oxide why is cryolite is added?	To reduce the melting point of aluminium oxide so that the amount of energy needed is reduced- to save costs.	C6.3 The extraction of aluminium
When extracting aluminium from aluminium oxide, carbon electrodes are used. Why will the anode need to be regularly replaced?	The anode is positive, in this reaction the oxygen atoms will be oxidised at the anode. The oxygen produced will react with the carbon to produce carbon dioxide- therefore the carbon anode will be reacted away and need to be released.	C6.3 The extraction of aluminium
Why would metals be extracted using electrolysis instead of by reduction with carbon?	Because the metal is more reactive than carbon OR would react with the carbon.	C6.4 Electrolysis of aqueous solutions
Why is working out the products of electrolysis of aqueous solutions more difficult than molten solutions?	In molten solutions there are only 2 ions from the compound. For aqueous solutions there are two additional ions form the water- H+ and OH-.	C6.4 Electrolysis of aqueous solutions
When electrolysing an aqueous solution- when will hydrogen gas be produced at the cathode?	When the metal ion present is more reactive than hydrogen.	C6.4 Electrolysis of aqueous solutions
When electrolysing an aqueous solution- when will oxygen gas be produced at the anode?	Oxygen gas will be produced unless there are halide ions present- then the halogen is produced as a gas.	C6.4 Electrolysis of aqueous solutions
Aqueous sodium bromide is electrolysed- what are the products at each electrode?	There are two positive ions- H+ and Na+, sodium is more reactive than hydrogen so hydrogen gas will form at the cathode. There are two negative ions- OH- and Br-, Br is a halogen so bromine gas will form at the anode.	C6.4 Electrolysis of aqueous solutions
Aqueous silver nitrate is electrolysed- what are the products at each electrode?	There are two positive ions- H+ and Ag+, hydrogen is more reactive than silver so silver will form at the cathode. There are two negative ions- OH- and NO3-, neither of these ions are halogens and so oxygen gas will form.	C6.4 Electrolysis of aqueous solutions