What is an element?	A substance made up of only one type of atom.
What does an atomic number represent?	The number of protons in the nucleus or electrons in an atom.
What does the mass number represent?	The total number of protons and neutrons in the nucleus.
What is a mixture?	A substance made of more than one type of atom NOT chemically joined together.
What is a compound?	A substance that is made up of two or more atoms chemically joined together.
Name the four ways in which mixtures can be separated.	Filtration, evaporation, chromatography and distillation.
Why do atoms sometimes gain or lose electrons?	To get a full outer shell.
What is an ion?	A charged particle, formed when an atom either loses or gains electrons.
What is a reactant in a chemical reaction?	A substance used up in a chemical reaction.
What is a product?	A substance made in a chemical reaction
Name the three ways in which you can tell a reaction has occurred.	Change in colour, change in temperature or fizzing
What is an isotope?	Form of an element with the same number of protons but differer
Where would you find electrons in an atom?	Electron shells (orbits) around the nucleus.
Why do atoms never have an overall charge?	An atom has same number of protons electrons. Protons are positive, electrons negative so they cancel each other out.
What is relative atomic mass?	The mass of an ‘average atom’ of that element compared with the mass of an atom of carbon-12.

What does the group number tell us about the elements in that group?	The number of electrons in the outer shell
What is filtration?	A method of separating an insoluble solid from a liquid
What is evaporation?	A method of separating a soluble solid from a liquid.
What is chromatography?	separates soluble substances such as dyes or inks
What is distillation?	Separates a mixture of liquids due to differences in boiling points.
In chromatography, the most soluble substance travels the…..	Furthest
What do these state symbols, (s), (l), (g) and (aq) represent?	Solid, liquid, gas and aqueous (dissolved in water)
What do elements in the same period have in common?	They have the same number of occupied electron shells.
What are group 1 metals also known as?	Alkali metals
Why does the reactivity of group 1 elements increase down the group.	outer electron is further away from the nucleus, is more shielded
Which group has elements which are unreactive?	Group 0
Alkali metals react with oxygen to form what?	Oxides
Alkali metals react with water to form what?	Hydroxides and hydrogen gas
Alkali metals react with chlorine to form what?	Chlorides
Why are most of the alkali metals stored in oil?	They are very reactive and react with oxygen in the air.

Why do group 7 elements get less reactive as you go down the group?	more difficult to gain an electron as there are more shells and more shielding from the nucleus.
What colour are sodium ions in a flame test?	Orange - yellow flame
What colour are lithium ions in a flame test?	Crimson-red flame
What colour are potassium ions in a flame test?	Lilac flame
What colour is bromine at room temperature?	Reddish-brown liquid
What happens to lithium, sodium and potassium in air / oxygen?	Tarnishing of freshly cut surface.
What test is used to identify hydrogen gas?	Squeaky pop is observed with a lit split.
What will you observe when potassium reacts with water?	floats, fizzes, moves on the surface and catches fire with a lilac flame
What will you observe when sodium reacts with water?	floats, fizzes, moves on the surface and melts into a sphere
What are group 7 elements also known as?	Halogens
What colour is iodine at room temperature?	grey/black solid
What colour is chlorine at room temperature?	Greenish-yellow gas
What is the reaction called when a more reactive halogen displaces a less reactive halogen?	Displacement reaction
What would you see if you added silver nitrate to chloride ions?	White precipitate
What would you see if you added silver nitrate to bromide ions?	cream precipitate

What would you see if you added silver nitrate to iodide ions?	Yellow precipitate
Give uses for chlorine	Kills bacteria; used in treatment of water supplies, treatment of swimming pool water, making household cleaners.
Give uses for iodine	Kills bacteria; used as antiseptic following hospital procedures
What flame colour would you expect for barium ions?	Apple green
What flame colour would you expect for calcium ions?	Brick red
Why are noble gases very unreactive?	They have a full outer shell.
What is the test for carbon dioxide?	Lime water turns milky
What gases are dissolved in rainwater?	Carbon dioxide and oxygen
What ions does groundwater contain?	Mg2+, Ca2+, Na+ and K+
How do ions get into the groundwater?	From minerals dissolved as it travels through rocks.
What is the definition of a solute?	Chemical which dissolves in a solvent to form a solution.
Name 4 man-made pollutants that pollute natural water?	Pesticides, fertilisers, household waste and industrial waste.
What is desalination?	Removing salt from sea water to convert it into water fit for drinking.
Name 3 sources of drinking water	rivers, lakes, reservoirs
State the three ways water is purified.	Sedimentation, filtration and chlorination.

What happens in the filtration stage of treating water?	Through layers of sand and gravel, smaller insoluble particles are removed.
What happens in the sedimentation stage of treating water?	Larger solid particles settle under gravity.
What happens in the chlorination stage of treating water?	Kills bacteria, prevents disease/makes it safe to drink.
Why is fluoride added to the water?	Prevent tooth decay.
State 3 reasons not to add fluorine to water.	fluorosis, bone cancer, mass medication
What are the two ways of removing water from sea water?	Distillation and reverse osmosis
How does distillation separate water and ethanol?	ethanol has a lower boiling point so will evaporate first
What is the boiling point of water?	100˚C
What is a fractionating column used for?	Separating several different liquids
What two processes are involved in distillation?	Boiling and condensing
What does saturated mean?	When no more solute can dissolve
What ions do hard water contain?	Calcium (Ca2+) and magnesium (Mg2+)
What does temporary hard water contain?	Calcium hydrogencarbonate and / or magnesium hydrogencarbonate
What happens when temporary hard water is boiled?	Hardness removed and scale (solid calcium carbonate) is formed.
What is the problem with limescale?	reduces efficiency of heating elements, can clog up pipes.

What does permanent hard water contain?	Chlorides and / or sulfates of calcium and magnesium
How does adding sodium carbonate soften hard water?	Prevents calcium and magnesium ions bonding to the washing detergent meaning less detergent has to be used.
What is the inner core of the earth made from?	Mostly iron with some nickel.
What is the outer core made of?	Liquid layer made of iron and nickel
What is the crust made up of?	Thin layer of solid rock.
The mantle is the thickest layer of the earth, what does it consist of?	Semi molten rock.
What is the lithosphere?	The crust and the upper rigid part of the mantle.
What is Pangaea?	Where land mass on Earth was grouped together in one supercontinent.
What is the continental drift?	Where plates move a few centimetres per year.
What three observations prove continental drift?	Jigsaw edges of continents fit together, similar rocks of same age and similar plant and animal fossils found on different continents.
What are convergent boundaries?	Edges of the plates ‘crumples’ forming mountain ranges. Magma can be released if one plate slides under the other.
What are divergent boundaries?	Plates move apart and molten rock (magma) is released as in a volcano.
What are conservative boundaries?	Plates slide passed one another, neither moving towards nor away from each other.
Which three gases made up the very early atmosphere?	Carbon dioxide, water vapour and ammonia.
How were the oceans formed?	The surface of the Earth cooled over time, the water vapour present in the early atmosphere condensed forming oceans and ice from comets.

What has caused the percentage of carbon dioxide in the atmosphere to decrease?	Photosynthesis in plants locked in limestone and chalk formed from marine animal's shells and locked in fossil fuels.
How is nitrogen formed in the atmosphere?	Ammonia from volcanoes decomposed on reaction with oxygen.
What does acid rain cause?	Lowers the pH of lakes and soil, damages buildings made of limestone and increases the rate of corrosion of metal structures such as bridges and statues.
What is carbon capture?	Removes CO2 produced by the burning of fossils fuels before they enter the atmosphere.
What does rate measure?	A change in concentration over a given time.
What is the activation energy?	The minimum amount of energy needed to start a reaction.
What factors affect the rate of reaction?	Temperature, concentration and surface area.
What does a catalyst do?	Speeds up a reaction without being used in the reaction by lowering the activation energy.
What test is used to identify oxygen gas?	Glowing splint re-lights when placed into a jar containing oxygen gas.
What test is used to identify carbon dioxide gas?	Limewater turns milky
What gas is given off the thermal decomposition of carbonates?	Carbon dioxide
What colour does green copper(II) carbonate turns on gentle heating	Black
What happens to calcium carbonate when heated strongly for several minutes.	Glows
What is the chemical name for limestone?	Calcium carbonate

What is another name for calcium oxide?	Quicklime
What is the chemical name for calcium hydroxide?	Slaked lime
What are the uses of limestone?	The production of iron and steel, in road building, to neutralise soil acidity and to make cement.
Thermal decomposition of metal carbonates forms what?	Metal oxide and carbon dioxide
What happens to the group 2 metal carbonates as you go down the group?	They become more stable and less easily decomposed by heat.
What is the formula for calcium oxide?	CaO
What are the products of the thermal decomposition of CaCO3?	Calcium oxide and carbon dioxide
What is the key ingredient for making cement?	Calcium oxide
How is limestone used in the manufacture of iron and steel?	In the blast furnace to extract iron from iron core.
How is cement made?	Strongly heating limestone and clay in a kiln.
What is thermal decomposition?	Break in chemical bonds using heat.