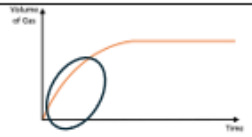
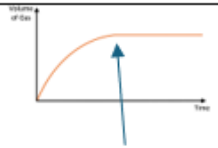
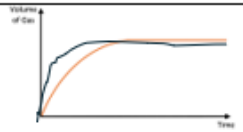
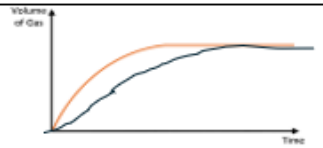
Name: Form:

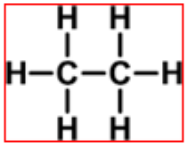
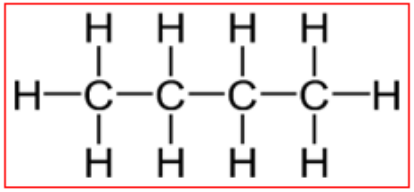
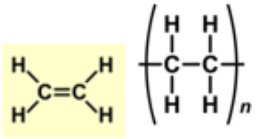
SCIENCE FUNDAMENTAL KNOWLEDGE QUIZ BOOKLET

Key Stage 4
Paper 2
Chemistry

C6 – Rates

What must particles do to react? **Collide**	What is the name given to the minimum amount required to start a reaction **Activation Energy**	Which piece of apparatus can measure volumes of gas? **Gas Syringe**	When measuring RATE of a reaction, what must be measured? **Time**	Which chemical turns cloudy when acid is added to it? **Sodium Thiosulphate**
$Na_2S_2O_3(aq) + 2HCl(aq) \rightarrow 2NaCl(aq) + H_2O(l) + SO_2(g) + S(s)$ What causes the reaction to be cloudy? **Sulfur (S) is an insoluble solid**	 Circle on the graph where the reaction is fastest	 Draw an arrow where the reaction finished	Higher concentration has more **particles**, more particles means more chance of a **Collisions**	 Draw a line for a higher concentration
Higher temperature particles have more **kinetic** Energy, so they move **Faster**, so they **Collide** More often. So the rate of reaction **Increases**	 Draw a line for a lower temperature	What can be added to a reaction to lower the activation energy **Catalyst**	Draw a symbol for a reversible reaction $\rightleftharpoons$	What colour is Anhydrous copper sulphate? **White**
What colour is Hydrated copper Sulphate? **Blue**	**HT Only** When does a reaction reach equilibrium? **Forwards and Backwards reactions happen at the same rate in a closed system**	**HT Only** If a forwards reaction is Endothermic, what is the backwards reaction? **Exothermic**	**HT Only** What is the effect on equilibrium of a catalyst? **No effect**	**HT Only** If an endothermic reaction is Heated, what direction does the equilibrium shift? **Right- To cool the reaction**

C7 – Organic chemistry

Which elements are found in a Hydrocarbon? Carbon and Hydrogen	How is crude oil formed? Dead plants and animals, buried in mud for millions of years	What separation technique is used to separate crude oil? Fractional distillation	During fractional distillation the crude oil is Heated which turns into a gas this rises up the column Where it cools and condenses back to a liquid	 Name the alkane Ethane
Draw Butane 	What is the general formula for an alkane? C_nH_{2n+2}	Write the chemical formula for an alkane with 7 carbons C_7H_{16}	What is the name given to breaking down a long chain into a shorter chain? Cracking	What conditions are required for cracking? High temp + Catalyst
Draw a polymer from this alkene 	State a difference between complete and incomplete combustion Complete uses more Oxygen	State the products of complete combustion Carbon Dioxide and Water	State the products of incomplete combustion Carbon Monoxide, Carbon and Water	State the chemical and the result for an alkene Bromine water Orange → Colourless

C8 – Chemical analysis

What is this the definition of? Pure ' Contains one type of element or compound'	What is the Boiling point of pure water 100°C	What is this the definition of Formulation 'Mixture designed for a particular purpose'	State why sugar is added to children's medicine Taste	Chromatography is a way to separate a mixture of substance with different solubilities
In chromatography what is the Mobile Phase: Solvent Stationary Phase: Paper	What is used to draw the baseline in chromatography and why? Pencil- Insoluble	In chromatography how do you know if something is pure? One spot	What is the equation to calculate Rf value? Rf= Distance by substance/ Distance by solvent	Describe the test and result for Oxygen Glowing splint Relights
Describe the test and result for Chlorine Damp blue litmus paper Bleaches Blue to White	Describe the test and result for Carbon Dioxide Limewater Cloudy	Describe the test and result for Hydrogen Lit splint Squeaky pop	Triple Only Which colour flame do we use for the flame tests? Why? Blue – so we can clearly see the colours	Triple Only What colour do we see for: Lithium - Crimson Potassium - Lilac Copper Green
Triple Only We can also use precipitation reactions to identify cations. What reagent do we add? Sodium Hydroxide (NaOH)	Triple Only What colour precipitate is seen for: Copper (II) Blue Iron(II) Green Iron (III) Brown	Triple Only Which 3 metal ions all give white precipitates? Aluminium (dissolves in excess NaOH) Calcium Magnesium	Triple Only What reagents do you use to identify if an unknown compound contains a halide? Acid followed by silver nitrate	Triple Only What are the advantages of flame emission spectroscopy? Faster, more accurate, more sample, less sample needed

C9 - Atmosphere

State the percentage of the following gases in earth's atmosphere Nitrogen: 78% Oxygen: 21% Carbon Dioxide: 0.04%	Which gases was most abundant in earth's early atmosphere Carbon Dioxide	What was the first organism to do photosynthesis? Algae	Nitrogen has increased because of Volcanic eruptions	Oxygen has increased because of Photosynthesis
State 3 reason CO_2 levels have decreased Dissolved in Oceans Limestone rocks Photosynthesis	Water vapour has decreased because the earth cooled below 100°C, so the water vapour condensed And fell as Rain	State the 3 greenhouse gases Carbon Dioxide Methane Water Vapour	What wavelength radiation does the sun emit? Short	What 2 things happen to radiation when it reaches earth? Absorbed and reflects
How does the wave change when it is reemitted? Longer- Less energy	State 2 consequences of climate change Ice caps melting Flooding Drought	State 2 reasons for CO_2 levels rising Deforestation Combustion	State 2 reasons methane levels are rising More cows Rice fields Landfill	Nitrogen Oxides are produced in a car engine because, Nitrogen from the Air reacts with Oxygen from the Air in a Hot engine
Which element is found in fuels to form sulfur Dioxide? Sulfur	How is Carbon monoxide and Particulates are formed? Incomplete combustion	What environmental problem is caused by Nitrogen Oxide and Sulfur Dioxide Acid rain	What environment problem does particulate cause? Global Dimming	State products of complete combustion Carbon Dioxide and Water

C10 – Using resources

What is this the definition of? ' A resources that will eventually ruin out' Finite	What is this the definition of? 'Thinking about future generations' Sustainable	What is the name given to water that is safe to drink? Potable	Name 3 sterilising agents Chlorine Ozone UV	Water with low levels of Salt is classed as an appropriate source
Why is water passed through a filter bed when making it potable? Remove insoluble solids	Why is Chlorine added when making water potable? Kill bacteria	Why is sewage water Screened? To remove large insoluble	What is the name given to the step when the effluent and sludge separate out Sedimentation	How is the effluent treated? Aerobic respiration
How is the sludge treated? Anaerobic respriation	HT Only Which metal is extracted from low grade ore sites? Copper	HT Only What is used to flood an area in bioleaching? Bacteria	HT Only What is the name of the solution formed after the area is flooded with Bacteria? Leachate	HT Only What is added to the leachate solution to extract the copper? Scrap Iron
HT Only What is the name given to the process of growing a plant to extract copper? Phytomining	HT Only Where does copper get absorbed in the plant? Roots	HT Only What do you do to the plant once it has grown? Cut and burn	HT Only What do you dissolve the ash in? Sulphuric Acid	HT Only State 2 techniques to extract the copper from the solution Scrap Iron Electrolysis