

Topic:	The Earth's Early Atmosphere (C.20)	Topic:	Finite resources, water and waste (C.22)
When did the Early Atmosphere form?	4.6 billion years ago	State 4 factors that humans use the Earth's resources for	Warmth, Shelter, Food, Transport
State the four gases present in the Early Atmosphere?	Carbon dioxide (70%), methane (10%), ammonia (10%) and water vapour (10%)	State 4 products gained from the Earth	Food, Timber, Clothing, Fuel
Where did the gases in the early atmosphere come from?	Volcanic activity	Define "finite"	Will run out
What are the 2 most prevalent gases in the atmosphere today?	Nitrogen (78%) and Oxygen (21%)	Define "sustainable development"	Development that meets the needs of the current generation without compromising the ability to meet the needs of future generations
How much carbon dioxide is there in the Earth's atmosphere today?	0.0004	State two examples of synthetic materials that are replacing natural materials	Artificial leather, Synthetic rubber
State the substances that have trapped carbon dioxide under the ground	Fossil Fuels and Sedimentary rocks	What is the name given to water that is safe to drink?	Potable
Name the process by which the oceans are thought to have formed	Condensation of water vapour	State the two stages of making potable water from a lake or river	1) Filter bed 2) Sterilise (with chlorine) 3) Add fluoride
Where do our current levels of nitrogen come from?	Volcanoes	Why is fluoride added to drinking water?	Reduce tooth decay
Name the process that converts carbon dioxide into oxygen.	Photosynthesis	State three things that can be used to sterilise water	UV, ozone, chlorine
Which organism is responsible for releasing nitrogen from plants?	Bacteria	State two ways that desalination can be carried out	Reverse osmosis or distillation
State the naturally occurring phenomenon that is believed to have converted gases into nitrogen?	Lightening	State one disadvantage of desalination.	Requires large amounts of energy
State the process that releases nitrogen from organisms on death	Decomposition	Is potable water pure?	No, it contains lots of minerals
State the 4 processes that lead to a reduction in CO2 between the Early Atmosphere and today.	1) Dissolved in seas 2) Trapped in rocks 3) Photosynthesis 4) Trapped in fossil fuels	Describe the two steps in desalination	1) Heat water (evaporation) 2) Cool (condensation)
Name the process that caused an increase in oxygen levels	Photosynthesis	State the 4 stages of waste water treatment	1) Screening, 2) Sedimentation, 3) Anaerobic digestion (sewage), 4) Aerobic biological treatment (effluent)
Which two organisms caused an increase in oxygen levels?	Algae and green plants	What are the 4 stages of an LCA?	1) Extracting & processing raw materials 2) Manufacturing and packing 3) Use during it's life

Topic:	Global warming and air pollution (C.21)	Topic:	Alternative methods of extracting metals (HT only) (C.24)
Name the 3 greenhouse gases	Water, Methane, carbon dioxide	Define high-grade and low-grade ore.	High-grade ore is a rock containing lots of a metal, low-grade ore is a rock containing a small amount of a metal
Name the greenhouse gas produced by rice fields	Methane (CH4)	State three reasons why copper is a useful metal (HT only)	1) Good conductor, 2) Easily bent, 3) Unreactive with water
Name the three types of radiation emitted by the sun	Infrared (long wave), visible light (short wave) and UV (short wave)	How can copper be extracted from copper-rich ores? (HT only)	Smelting = heating the copper ore with carbon in a furnace
Name the one type of radiation emitted by the Earth	Infrared radiation (long wave)	How can copper be purified after smelting? (HT only)	Electrolysis
What happens to the majority of radiation emitted by the sun when it gets to the Earth's atmosphere?	It passes through (is transmitted)	Name the method for extracting copper from a salt. (HT only)	Electrolysis
What happens to the majority of radiation emitted by the Earth when it reaches the atmosphere?	It is absorbed	Where do copper ions move to during electrolysis? (HT only)	The cathode
State 2 human activities that increase the amount of carbon dioxide in the atmosphere	Burning fossil fuels, deforestation	Name the method used to extract copper using scrap iron. (HT only)	Displacement
State 3 human activities that increase the amount of methane in the atmosphere	Decaying organic matter, growing rice, cattle farming	Which metal is used in reduction of low grade copper extraction? (HT only)	Iron
Why is global climate change difficult to model?	Involves many factors	Why are we running out of copper-rich ores? (HT only)	Because of extensive mining of copper in the past.
What is the main cause of global climate change?	Increase in average global temperature	State two alternative methods of extracting copper rather than using copper-rich ores. (HT only)	Phytomining (using contaminated land), Bioleaching (using low-grade ores)
State 6 potential effects of global climate change	1) Ice caps melting 2) Sea level rising 3) Loss of habitats 4) Desertification 5) Changes in migratory patterns 6) Drought	Why are phytomining and bioleaching more environmentally friendly? (HT only)	They don't involve digging up and moving large quantities of rock, or produce lots of waste.
Define 'carbon footprint'	The total amount of CO2 and other greenhouse gases emitted over the full life cycle of a produce, service or event	State the 3 steps in phytomining (HT only)	1) Grow plants on low grade ore, 2) Plants absorb and store copper, 3) Burn plants to produce ash
State three ways we can reduce our carbon footprint?	1) recycle 2) take public transport 3) use renewable energies	State the organism used in bioleaching and the solution produced (HT only)	Bacteria, Leachate
State two effect of carbon particulates (soot) being released into the atmosphere	Global dimming & asthma	State the two steps in removing copper from the copper filled ash produced in phytomining (HT only)	1) Dissolve in water, 2) displacement/electrolysis
State the effect of sulphur dioxides and nitrogen oxides being released into the atmosphere	Acid rain & respiratory problems	State how copper is removed from the leachate produced in bioleaching (HT only)	Displacement or electrolysis

Topic:	RP: Water purification (C8) (C.42)
What is the aim of experiment 1?	To determine if a sample of water is pure
What is the independent variable?	The sample of water
What is the dependent variable?	pH and mass of dissolved solids
Name the control variable	Volume of water
How is the pH of the samples tested?	Using universal indicator
What should the pH be?	7 (green)
How do we test for dissolved solids?	1) Weigh an empty evaporating basin 2) Fill evaporating basin with water sample 3) Heat gently using Bunsen burner 4) Re-weight basin once water has evaporated
If water contains dissolved solids (is impure) what would we see?	The mass of the basin would increase
What is the aim of experiment 2?	To purify a sample of water to make it potable
What process can be used to purify water?	Distillation
Name the changes in state that occur during distillation	Evaporation --> condensation
How is the water evaporated?	Heating the conical flask gently
How is evaporated water collected?	Using a delivery tube and bung
How is the water condensed back into a liquid?	Placing the test tube in a beaker of iced water
How can we test if the water is pure?	Use cobalt chloride paper to test whether the substance is water (it will turn blue -> pink).

Topic:	Making materials (ceramics, polymers and glass) (C.26) (Triple only)
What is the name of household glass? (triple only)	Soda-lime glass
How is soda-lime glass made? (triple only)	Heating sand, sodium carbonate and limestone
What is the advantage of borosilicate glass? (triple only)	Melts at a higher temperature
What is borosilicate glass made from? (triple only)	Sand and boron trioxide
How are pottery, bricks and clay ceramics made? (triple only)	Shape wet clay and heat in furnace
Which monomer are low density and high density polyethene made from? (triple only)	Ethene
State one use of LD polyethene (triple only)	Plastic bags
State one use of HD polyethene (triple only)	Plastic bottles
State the name of the type of polymer that can be melted and reshaped (triple only)	Thermosoftening polymers
State the name of the type of polymer that can NOT be melted and reshaped (triple only)	Thermosetting polymers
What is the difference between the structure of thermosetting polymers and the structure of thermosoftening polymers? (triple only)	Thermosetting polymers have crosslinks
What is it called if a material has a binder holding together fibres of other materials (triple only)	Reinforcement
Give two examples of composites (triple only)	Fibreglass and concrete
Give three properties of high density polyethene (triple only)	High melting point, strong, inflexible
Give three properties of low density polyethene (triple only)	Low melting point, not strong, flexible

Topic:	The Haber Process (C.27) (triple only)
Which elements do NPK fertilisers contain? (triple only)	Nitrogen, phosphorous, potassium
How is the nitrogen part of the fertiliser made? (triple only)	Reacting ammonia with acid
What is the word equation for the Haber process? (triple only)	nitrogen + hydrogen --> ammonia
Complete the word equation Ammonia + sulphuric acid -> (triple only)	Ammonium sulphate + hydrogen
What is the symbol equation for the Haber process? (triple only)	$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$
What is used to create the phosphate part of NPK fertilisers? (triple only)	Phosphate rock + acid
What is used to create the potassium part of the NPK fertiliser? (triple only)	Potassium chloride and potassium sulphate are mined from the ground
What is ammonia used for? (triple only)	To make fertiliser, nitric acid, ammonium salts
Is the forward reaction in the Haber process endothermic or exothermic? (triple only)	Exothermic
Which three conditions are required for the Haber process? (triple only)	450°C 200atm Iron catalyst
Complete the word equation phosphate rock + phosphoric acid -> (triple only)	Calcium phosphate
What must the elements in NPK fertilisers form for them to be used effectively? (triple only)	Compounds
What is the Haber process used to manufacture? (triple only)	Ammonia
What are the raw materials for the Haber process? (triple only)	Nitrogen & hydrogen
How do we obtain hydrogen for the Haber process? (triple only)	Reacting methane with steam