Westbourne Academy Curriculum Planning Document

WESTBOURNE

Timescale		Autum	I n /Spring	
Prior Learning (from KS2/3)		KS3 - Year 8 – writing word and symbol equations	KS3 - Year 7 – use of indicators, classifying acids and alkalis, pH scale, neutralisation and its uses. Reaction of metals with acids. KS3 - Year 8 – reactivity series, reactions of metals, introduction to electrolysis, extraction of metals.	KS2 – Year 4 – Solids, liquids and gases KS3 – Year 7 – classifying solids, liquids, gases, changing state, gas pressure, density, kinetic theory
Unit Title	4.3 Infection and Response	5.3 Quantitative Chemistry	5.4 Chemical Changes	6.3 Particle Model of Matter
Key knowledge (5-10 points)	 Define the term pathogen and describe the differences between the four main types. State some examples of bacterial, fungal and viral diseases in humans. Describe symptoms, mode of transmission, prevention and treatment for some common diseases eg HIV, salmonella, malaria etc Explain how our immune system defends against disease. Describe how vaccines work. Describe the importance of antibiotics and the impact of antibiotic resistance. Interpret data about painkillers, antibiotics and other medicines. Describe the main stages in the development and testing of a new drug. 	 Describe the law of conservation of mass. Write word equations and balanced symbol equations. Calculate the relative formula mass of substances using relative atomic mass data. Understand the 'mole' has a unit of quantity. (HIGHER only) Calculate the number of moles in a substance using the relative formula mass data (HIGHER only) Calculate reacting masses using a balanced symbol equation. (HIGHER only) Explain the meaning of concentration. Calculate using the concentration equation: c=m/v 	 Explain the terms reduction and oxidation. Describe the reactions of metals with water and dilute acid. Know how metals can be extracted from their ores by reduction using carbon. Write ionic equations for displacement reactions (HIGHER only) Know how acids react with alkalis, metals, bases and metal carbonates to form salts. Describe how to make a pure, dry sample of a soluble salt. Use the pH scale to identify acidic or alkaline solutions. Distinguish between the terms: concentrated, dilute, weak and strong when describing acids. (HIGHER only) Write half equations for the reactions occurring at each electrode during electrolysis (HIGHER only) Predict the products formed at each electrode when a substance is electrolysed. 	 Calculate the density of a material using density = mass / volume. Describe how to find the density of both regular and irregular objects. Use particle ideas to explain the differences in densities between solids, liquids and gases. Know that when a substance changes state, mass is conserved and the temperature does not change. Describe what is meant by 'internal energy'. Define specific heat capacity. Carry out calculations using the specific heat capacity equation. Define specific latent heat. Use E=mL to calculate energy, mass or specific latent heat. Explain what is meant by gas pressure and how temperature can affect it.

Subject: Science Year: 10



Key skills (optional)				
Key terminology	Antibodies, antigens, antitoxins, bacteria, blind trial, double-blind, fungus, microorganism, phagocytosis, placebo, protist, toxins, vaccination, vector, virus	Conservation of mass, reactants, products, word equation, symbol equation, balanced, relative atomic mass, relative formula mass, concentration, percentage mass, conservation of mass, moles, limiting reactions	Reactivity series, neutralisation, redox reaction, reduction, oxidation, acids, bases, alkalis, hydrogen ions, hydroxide ions, dissociates, reversible, electrolysis, electrolyte, electrodes, anode, cathode, inert, half equation	Density, mass, volume, particles, force of attraction, solid, liquid, gas, temperature, pressure, internal energy, specific latent heat, kinetic energy, potential energy, change of state, specific latent heat of fusion, specific latent heat of vaporisation
Assessment (methods to assess)	Trust common End of Unit Assessment Test / 45	 Trust common End of Unit Assessment Test / 45 	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45
Links to other units in KS3/4.	 KS4 Cell Biology Unit KS4 Organisation Unit ELC Unit 1 – The Human Body 	 KS3 – Year 8 – Atoms, elements and the Periodic Table KS3 – Year 8 – Chemical reactions and equations KS4 Atomic structure and the Periodic Table 	 KS3 – Year 7 – Acids and Alkalis KS3 – Year 8 – Reactivity of metals ELC Unit 4 – Chemistry in Our World 	 KS3 – Year 7 – Particulate nature of matter KS4 Energy Unit



Timescale	Spring/Summer				
Prior Learning (from KS2/3)	KS3 – Year 8 – Photosynthesis and limiting factors, aerobic and anaerobic respiration, word equations.	KS3 – Year 8 – Distinguish between exothermic and endothermic reactions.	KS3 – Year 8 – History of the atom, structure of the atom, electron configuration etc	KS3 – Year 7 – contact and non-contact forces, balanced and unbalanced forces, friction, air resistance and pressure. KS3 – Year 8 – resultant forces, mass and weight, work done, F=ma, Hooke's Law, distance-time and speed-time graphs.	
Unit Title	4.4 Bioenergetics	5.5 Energy Changes	6.4 Atomic Structure	6.5 Forces	
Key knowledge (5-10 points)	 Describe the process of photosynthesis Explain how to test a leaf for starch State factors that can limit photosynthesis and interpret data. Describe an experiment used to investigate photosynthesis. List ways that glucose is used by a plant. Describe the process of aerobic respiration Describe the process of anaerobic respiration Describe and explain the changes that occur in the body during exercise Define the term, 'oxygen debt'. Know what metabolism means and give examples of reactions that make up metabolism. 	 Define the terms 'exothermic' and 'endothermic' and be able to give examples of each. Describe an experiment to investigate factors that affect the temperature changes in reacting solutions eg acids + metals Draw reaction profiles to represent exothermic and endothermic reactions and define the term, 'activation energy'. Calculate the energy transferred in chemical reactions using bond energies (HIGHER only) 	 Describe the structure of the atom in terms of size and particles. State the number of protons, neutrons and electrons in a given element. Describe what is meant by an 'isotope' Understand how the current model of the atom was discovered and the key scientists involved. Describe radioactive decay. Know the differences in properties of the three types of nuclear radiation – alpha, beta and gamma. Describe what happens to an atom when it undergoes alpha, beta or gamma emission. Define the term, 'half-life' and be able to calculate the half-life of a substance. Explain the differences between contamination and irradiation. Describe the main safety precautions that should be taken when handling radioactive sources. 	 Describe the difference between scalar and vector quantities. Describe the difference between mass and weight. Calculate using the equation W=mg Draw force diagrams and calculate resultant forces. Calculate using the equation work done = force x distance Describe how to investigate the extension of a spring and use the equation F=ke Calculate speed and acceleration. Draw and interpret distance- time and velocity-time graphs. State and explain Newtons Laws of Motion. Describe the factors that affect the stopping distance of a car. (HIGHER) = Define momentum and use the equation p =m v. Explain the principle of conservation of momentum. 	
Key skills (optional)					

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Key terminology	Photosynthesis, carbon dioxide, water, glucose, oxygen, light, chlorophyll, endothermic, chloroplasts, stomata, roots, xylem, limiting factor, temperature, light intensity, carbon dioxide, inverse square law, respiration, mitochondria, exothermic, aerobic, anaerobic, lactic acid, oxygen debt, metabolism	Exothermic, endothermic, reaction profiles, activation energy, catalysts, energy change, bond making, bond breaking, combustion, respiration, neutralisation, thermal decomposition	Plum Pudding model, alpha scattering experiment, protons, neutrons, electrons, electron shells, isotopes, alpha radiation, beta radiation, gamma rays, penetrating power, ionising ability, half-life, becquerels, Geiger-Muller tube, irradiation, contamination	Scalar, vector, magnitude, direction, speed, velocity, contact, non-contact, resultant force, equilibrium, balanced, work done, proportional, elastic limit, elastic potential energy, centripetal force, displacement, acceleration, deceleration, terminal velocity, braking distance, thinking distance, momentum, law of conservation of mass
Assessment (methods to assess)	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45
Links to other units in KS3/4.	 KS3 – Year 8 – Plant Biology KS3 – Year 8 – Respiration and gas exchange KS4 Unit Cell Biology KS4 Unit Ecology ELC Unit 2 – Environment, evolution and inheritance 	 KS3 – Year 8 – Chemical reactions and equations. KS4 Unit Chemical Changes ELC Unit 4 Chemistry in Our World 	 KS3 – Year 8 – Atoms, elements and the Periodic Table KS4 Unit Atomic Structure and the Periodic Table ELC Unit 3 – Elements, Mixtures and Compounds ELC Unit 5 – Energy, forces and the structure of matter 	 KS3 – Year 7 – Forces KS3 – Year 8 – Forces and equations KS4 Unit Energy ELC Unit 5 – Energy, forces and the structure of matter



Timescale		Spring/Su	immer	
Prior Learning (from KS2/3)	KS2 – Year 5 – life cycles KS3 – Year 7 – male and female reproductive systems, secondary characteristics of males and females, how hormones control the menstrual cycle.	KS3 – Year 8 – inherited and environmental variation, continuous and discontinuous variation, inheritance and genes, structure of DNA, introduction to genetic crosses, selective breeding.	KS3 – Year 8 – physical and chemical changes, work equations, law of conservation of mass, combustion, thermal decomposition, oxidation, exothermic and endothermic reactions.	KS2 – Year 4 – sound and the ear KS2 – Year 5 – properties of light waves KS3 – Year 7 – longitudinal and transverse waves, properties of light and sound waves, calculating speed of sound, refraction and reflection.
Unit Title	4.5 Homeostasis and Response	4.6 Inheritance, Variation and	5.6 The rate and extent of	6.6 Waves
		Evolution	chemical chnage	
Key knowledge (5-10 points) Key skills (optional)	 Explain what homeostasis is and why it is important. Describe the functions of the main structures of the nervous system. Describe an investigation to test reaction times. Explain the importance of reflex actions and give examples. Describe the endocrine system and define the term hormone. Describe how blood glucose concentration is monitored and controlled. Explain the cause, treatment and problems associated with Type 1 and Type 2 diabetes. Describe the role of hormones in the changes that take place in boys and girls during puberty. Compare different methods of contraception and explain how they work. Describe the use of fertility drugs and evaluate the use of fertility drugs and evaluate the use of fertility treatments. 	 Compare sexual and asexual reproduction. Describe the process of meiosis. Explain using a Punnett square how sex is determined in humans. Describe the structure of chromosomes, DNA and genes. Draw Punnett square diagrams to show the outcome of genetic crosses. Define the term genetic engineering and describe the process alongside its advantages and disadvantages. Consider examples of continuous and discontinuous variation and describe the process of selective breeding. Describe Darwin's theory of evolution by natural selection. Define the term fossil and describe how fossils may be formed. Define the term extinction and explain how extinction may have been caused. 	 Calculate the mean rate of reaction from given data. Recall how changing the temperature, concentration or particle size affects the rate of a reaction. Explain the effect of changing temperature, concentration or particle size using collision theory. Define a catalyst and describe its effect on the rate of a reaction. Draw a labelled reaction profile to explain the effect of a catalyst on reaction rate. Describe what is meant by a reversible reaction. Recall the definition of exothermic and endothermic. Define the term equilibrium. Explain how equilibrium can be reached in a closed system. 	 Compare longitudinal and transverse waves and give examples. Label a diagram of a wave and define each part. Calculate using the equation: wave speed = frequency x wavelength. Describe how to investigate waves in a ripple tank and how to calculate the wavelength. Know the order of the electromagnetic spectrum and describe the properties of all electromagnetic waves. Describe the effects of gamma rays, X-rays and ultra-violet waves on the body. Give some uses of each electromagnetic wave in the spectrum. Draw ray diagrams to show the refraction of a wave at a boundary between two substances.



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Key terminology	Homeostasis, nervous system, endocrine system, stimulus, receptor, central nervous system, effector, synapse, sensory neurone, motor neurone, dendrites, axon, cell sheath, myelin sheath, reflex, glands, hormones, pituitary gland, diabetes, oestrogen, testosterone, glucagon, glycogen, follicle stimulating hormone (FSH), luteinising hormone (LH), contraception, infertility, IVF, adrenaline, thyroxine, metabolism	Allele, asexual reproduction, chromosomes, cystic fibrosis, DNA, dominant, fertilisation, gamete, gene, genome, genotype, heterozygous, homozygous, meiosis, mutation, phenotype, polydactyly, recessive, sexual reproduction, embryo screening, evolution, evolutionary tree, extinction, fossils, genetic engineering, natural selection, selective breeding, speciation, variation.	reactions, reactants, products, temperature, concentration, particle size, surface area, pressure, catalyst, activation energy, enzymes, frequency, collisions, successful collisions, kinetic energy, equilibrium, closed system, dynamic equilibrium, reversible, precipitate	Transverse, longitudinal, peaks, troughs, amplitude, frequency, wavelength, rarefaction, compression, parallel, perpendicular, wave speed, ripple tank, electromagnetic waves, electromagnetic spectrum, radio, microwave, infra-red, visible, ultraviolet, X-ray, gamma, radiographers, ionising, mutation, cancer, reflection, angle of incidence, angle of reflection
Assessment (methods to assess)	 Trust common End of Unit Assessment Test / 45 	 Trust common End of Unit Assessment Test / 45 	 Trust common End of Unit Assessment Test / 45 	 Trust common End of Units Assessment Test / 45
Links to other units in KS3/4.	 KS3 – Year 7 – Reproduction KS4 Unit Cell Biology ELC Unit 1 – The human body 	 KS3 – Year 8 – Genetics KS3 – Year 8 – Interactions and Evolution KS4 Unit Cell Biology KS4 Unit Organisation KS4 Unit Infection and Response ELC Unit 2 – Environment, Evolution and Inheritance 	 KS3 – Year 8 – Chemical reactions and equations ELC Unit 4 – Chemistry in our world 	 KS3 – Year 7 – Light and Sound Waves ELC Unit 6 – Electricity, magnetism and waves



Westbourne Academy Curriculum Planning Document

Subject: Science Year: 11

Timescale	Autumn Term (1 st Half)			
Prior Learning (from KS2/3)	KS2 – Year 5 – life cycles KS3 – Year 7 – male and female reproductive systems, secondary characteristics of males and females, how hormones control the menstrual cycle.	KS3 - Year 8 – writing word and symbol equations, describing the process of combustion.	KS3 – Year 7 – contact and non-contact forces, balanced and unbalanced forces, friction, air resistance and pressure. KS3 – Year 8 – resultant forces, mass and weight, work done, F=ma, Hooke's Law, distance-time and speed-time graphs.	
Unit Title	4.5 Homeostasis and Response	5.7 Organic Chemistry	6.5 Forces	
Key knowledge (5-10 points) Key skills (optional)	 Explain what homeostasis is and why it is important. Describe the functions of the main structures of the nervous system. Describe an investigation to test reaction times. Explain the importance of reflex actions and give examples. Describe the endocrine system and define the term hormone. Describe how blood glucose concentration is monitored and controlled. Explain the cause, treatment and problems associated with Type 1 and Type 2 diabetes. Describe the role of hormones in the changes that take place in boys and girls during puberty. Compare different methods of contraception and explain how they work. Describe the use of fertility drugs and evaluate the use of fertility treatments. 	 Recognise substances as alkanes given their molecular or structural formulae. Describe the formation and composition of crude oil. Describe the process of fractional distillation. Know the trends in properties of the alkanes and explain these in relation to intermolecular forces. Describe and explain the process of cracking. Write balanced equations for the complete combustion of hydrocarbons. Write balanced equations for the cracking of alkenes. Describe the test unsaturation using bromine water. 	 Describe the difference between scalar and vector quantities. Describe the difference between mass and weight. Calculate using the equation W=mg Draw force diagrams and calculate resultant forces. Calculate using the equation work done = force x distance Describe how to investigate the extension of a spring and use the equation F=ke Calculate speed and acceleration. Draw and interpret distance-time and velocity-time graphs. State and explain Newtons Laws of Motion. Describe the factors that affect the stopping distance of a car. (HIGHER) = Define momentum and use the equation p =m v. Explain the principle of conservation of momentum. 	
Key terminology	Homeostasis, nervous system, endocrine system, stimulus, receptor, central nervous system, effector, synapse, sensory neurone, motor neurone, dendrites, axon, cell sheath, myelin sheath, reflex, glands, hormones, pituitary gland, diabetes, oestrogen, testosterone, glucagon, glycogen, follicle stimulating hormone (FSH), luteinising hormone (LH), contraception, infertility, IVF, adrenaline, thyroxine, metabolism	Crude oil, hydrocarbons, non-renewable, fossil fuels, alkanes, homologous series, formula, saturated, unsaturated, fractional distillation, fractionating column, chain length, intermolecular forces, complete combustion, incomplete combustion, structural formula, molecular formula, catalytic cracking, steam cracking, thermal decomposition, alkene, polymers, boiling point, viscosity, flammability	Scalar, vector, magnitude, direction, speed, velocity, contact, non-contact, resultant force, equilibrium, balanced, work done, proportional, elastic limit, elastic potential energy, centripetal force, displacement, acceleration, deceleration, terminal velocity, braking distance, thinking distance, momentum, law of conservation of mass	



Assessment (methods to assess)	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45
Links to other units in KS3/4.	 KS3 – Year 7 – Reproduction KS4 Unit Cell Biology ELC Unit 1 – The human body 	 KS3 – Year 8 - Chemical reactions and equations ELC Unit 3 – Elements, Mixtures and Compounds ELC Unit 4 – Chemistry in Our World 	 KS3 - Year 7 - Forces KS3 - Year 8 - Forces and equations KS4 Unit Energy ELC Unit 5 - Energy, forces and the structure of matter



Timescale	Autumn Term (2 nd half)			
Prior Learning (from KS2/3)	KS3 – Year 8 – inherited and environmental variation, continuous and discontinuous variation, inheritance and genes, structure of DNA, introduction to genetic crosses, selective breeding.	KS3 – Year 8 – Gases in the atmosphere, evolution of the atmosphere, impact of humans on air pollution, acid rain, greenhouse gases and global warming, carbon cycle. Word and symbol equations, complete and incomplete combustion.	KS2 – Year 4 – sound and the ear KS2 – Year 5 – properties of light waves KS3 – Year 7 – longitudinal and transverse waves, properties of light and sound waves, calculating speed of sound, refraction and reflection.	
Unit Title	4.6. Inheritance, Variation and Evolution	5.9 Chemistry of the Atmosphere	6.6. Waves	
Key knowledge (5-10 points) Key skills	 Compare sexual and asexual reproduction. Describe the process of meiosis. Explain using a Punnett square how sex is determined in humans. Describe the structure of chromosomes, DNA and genes. Draw Punnett square diagrams to show the outcome of genetic crosses. Define the term genetic engineering and describe the process alongside its advantages and disadvantages. Consider examples of continuous and discontinuous variation and describe the process of selective breeding. Describe Darwin's theory of evolution by natural selection. Define the term fossil and describe how fossils may be formed. Define the term extinction and explain how extinction may have been caused. 	 9. Describe the composition of the atmosphere. 10. Describe the theory of the evolution of the Earth's early atmosphere. 11. Describe the main changes in the atmosphere over time and the likely causes of these changes. 12. Describe how greenhouse gases are produced. 13. Describe four potential effects of global climate change. 14. Describe what a carbon footprint is. 15. Describe how emissions can be reduced and what the possible consequences of a reduction will be on the Earth and human life. 16. Write word equations for complete and incomplete combustion. 17. Describe and explain the problems caused by increased amount of pollutants in the air. 	 Compare longitudinal and transverse waves and give examples. Label a diagram of a wave and define each part. Calculate using the equation: wave speed = frequency x wavelength. Describe how to investigate waves in a ripple tank and how to calculate the wavelength. Know the order of the electromagnetic spectrum and describe the properties of all electromagnetic waves. Describe the effects of gamma rays, X-rays and ultra-violet waves on the body. Give some uses of each electromagnetic wave in the spectrum. Draw ray diagrams to show the refraction of a wave at a boundary between two substances. 	
(optional)				
Key terminology	Allele, asexual reproduction, chromosomes, cystic fibrosis, DNA, dominant, fertilisation, gamete, gene, genome, genotype, heterozygous, homozygous, meiosis, mutation, phenotype, polydactyly, recessive, sexual reproduction, embryo screening, evolution, evolutionary tree, extinction, fossils, genetic engineering, natural selection, selective breeding, speciation, variation	Atmosphere, volcanic activity, photosynthesis, dissolves, precipitated, non-renewable, heat, pressure, fossil fuels, deforestation, climate science, greenhouse effect, global warming, climate change, carbon dioxide, water vapour, methane, carbon footprint, photochemical smog, nitrogen oxides, asthma, complete combustion, incomplete combustion, carbon monoxide, haemoglobin, particulate carbon, global dimming, sulphur dioxide, atmospheric pollutants, acid rain	Transverse, longitudinal, peaks, troughs, amplitude, frequency, wavelength, rarefaction, compression, parallel, perpendicular, wave speed, ripple tank, electromagnetic waves, electromagnetic spectrum, radio, microwave, infra- red, visible, ultraviolet, X-ray, gamma, radiographers, ionising, mutation, cancer, reflection, angle of incidence, angle of reflection	



Assessment (methods to assess)	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45
Links to other units in KS3/4.	 KS3 – Year 8 – Plant Biology KS3 – Year 8 – Respiration and gas exchange KS4 Unit Cell Biology KS4 Unit Ecology ELC Unit 2 – Environment, evolution and inheritance 	 KS3 – Year 8 – Earth and the Atmosphere KS3 – Year 8 – Chemical Reactions and Equations ELC Unit 4 – Chemistry in Our World 	 KS3 – Year 7 – Light and Sound Waves ELC Unit 6 – Electricity, magnetism and waves



Timescale		Spring Term (1 st Half)			
Prior Learning (from KS2/3)	KS3 – Year 8 – species and biodiversity, classification of organisms, food chains and webs, pyramids of number and biomass, predator-prey relationships, bioaccumulation, adaptations, natural selection and extinction	KS3 – Year 8 – physical and chemical changes, work equations, law of conservation of mass, combustion, thermal decomposition, oxidation, exothermic and endothermic reactions.	KS3 – Year 8 – Magnet properties, magnetic fields, Earth's magnetic field, how to make an electromagnet and investigating the factors that affect its strength, uses of electromagnets, advantages of electromagnets v permanent magnets, simple electric motors		
Unit Title	4.7 Ecology	5.6 Rate and Extent of Chemical Change	6.7 Magnetism and Electromagnetism		
Key knowledge (5-10 points)	 Know how organisms are classified and be able to classify organisms based on their similarities. Understand and use the terms: ecosystem, community, competition, habitat and interdependence. Distinguish between abiotic and biotic factors and explain how any changes in a factor may affect a community. Describe how to carry out random sampling of organisms. Describe and explain how adaptations help organisms to survive in their habitat. Explain what a food chain shows and interpret and explain population curves. Interpret and explain the processes in diagrams of the carbon, water and decay cycles. Define biodiversity. Describe how human activity is reducing biodiversity and how this can be reversed. Explain the terms global warming and the greenhouse effect. Describe the causes and effects of global warming. 	 Calculate the mean rate of reaction from given data. Recall how changing the temperature, concentration or particle size affects the rate of a reaction. Explain the effect of changing temperature, concentration or particle size using collision theory. Define a catalyst and describe its effect on the rate of a reaction. Draw a labelled reaction profile to explain the effect of a catalyst on reaction rate. Describe what is meant by a reversible reaction. Recall the definition of exothermic and endothermic. Define the term equilibrium. Explain how equilibrium can be reached in a closed system. 	 Identify magnetism as a non-contact force and describe what happens when two magnets are brought close together (NN, SS, NS, SN) Describe the differences between an induced magnet and a permanent magnet. Name three magnetic metals. Investigate the magnetic field around a permanent magnet. Explain how to make an electromagnet and describe the factors that affect its strength. Explain what is meant by the motor effect (HT only) Recall and use Flemings Left Hand Rule (HT only) Describe how the size and direction of the force on a conductor in a magnetic field can be changed (HT only) Use and apply the equation F=BIL (HT only) Explain how rotation is caused by a electric motor (HT only) 		
(optional)					
Key terminology	Abiotic, biotic, adaptations, mutualism, parasitism, biodiversity, carrion, community, competition, consumers, decomposers, deforestation, ecosystem, global warming, habitat, interdependence, population, predator, prey, producers, scavengers, species, convection, evaporation, condensation, precipitation, transpiration, greenhouse effect	reactions, reactants, products, temperature, concentration, particle size, surface area, pressure, catalyst, activation energy, enzymes, frequency, collisions, successful collisions, kinetic energy, equilibrium, closed system, dynamic equilibrium, reversible, precipitate	Poles, north, south, attract, repel, permanent, induced, magnetic field, solenoid, electromagnet, motor effect, magnetic flux density, tesla, current, split ring commutator, brushes, axle, iron, nickel, cobalt		



Assessment (methods to assess)	• Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45
Links to other units in KS3/4.	 KS3 Year 8 – Interactions and Evolution KS3 Year 8 – Genetics ELC Unit 2 – Environment, evolution and inheritance KS4 – Inheritance, variation and evolution 	 KS3 – Year 8 – Chemical reactions and equations ELC Unit 4 – Chemistry in our world 	 KS3 – Year 8 – Static electricity and Magnetism ELC Unit 6 – Electricity, Magnetism and Waves



Timescale	Spring Term (2 nd Half)	
Prior Learning (from KS2/3)	KS2 – Year 5 – making solutions KS3 – Year 7 – elements, mixtures and compounds, define key terms associated with solutions, investigating chromatography and how it works.	KS3 – Year 8 – reactivity series, ores, method of extraction based on reactivity
Unit Title	5.8 Chemical Analysis	5.10 Using Resources
Key knowledge (5-10 points) Key skills	 Use melting point data to distinguish between pure and impure substances. Identify formulations given appropriate information. Explain how paper chromatography separates mixtures. Describe a method for paper chromatography. Interpret chromatograms and determine Rf values from chromatograms. Describe the test for hydrogen. Describe the test for carbon dioxide. Describe the test for chlorine. 	 Explain the difference between finite and renewable resources using examples. Distinguish between potable and pure water. Describe the differences in treatment of ground water and salty water. Describe how water is treated. Describe the processes of bioleaching and phytomining (HT only). Describe what a LCA is using a suitable example. Evaluate ways of reducing the use of limited resources to generate energy.
(optional) Key terminology	Pure substance, elements, mixtures, compounds, formulations, chromatography,	Population, exponential growth, finite resources, crude oil, fractional distillation, cracking,
	chromatogram, impure, hydrogen, oxygen, carbon dioxide chlorine, squeaky 'POP', relight, limewater, cloudy, litmus paper, bleached.	farming, potable water, pure, filter beds, microbes, sterilising, desalination, reverse osmosis, semi-permeable membrane, wastewater, pollutants, pesticides, screened, sedimentation, aerobic digestion, anaerobic digestion, Life-Cycle assessment, landfill, incineration, recycling, phytomining, bioleaching, bacteria, leachates.
Assessment (methods to assess)	Trust common End of Unit Assessment Test / 45	Trust common End of Unit Assessment Test / 45
Links to other units in KS3/4.	 KS3 – Year 7 – Pure and Impure Substances ELC Unit 3 – Elements, mixtures and compounds ELC Unit 4 – Chemistry in our World 	 KS3 – Year 8 – Reactivity of metals ELC Unit 3 – Elements, mixtures and compounds ELC Unit 4 – Chemistry in our World