



Science

## Year 7 - Half Term 1 Topic 1 – Transition

<b>Prior Learning</b>	From KS2 students should be able to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary and take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
<b>What will I learn?</b>	This short unit is an introduction to learning in a Science laboratory. Students will find out where things are stored within the lab; the name of new equipment that is regularly used in lessons and how to use it safely; how to use Bunsen burner safely and how a scientist goes about planning an investigation.
<b>Next Steps</b>	All subsequent topics.
<b>Personal Development</b>	Students will explore hazard symbols of chemicals and equipment not just found in the lab but at home as well and learn the precautions needed to use them safely.
<b>Key vocabulary</b>	balance, beaker, boiling tube, bung, Bunsen burner, clamp, conical flask, corrosive, environmentally damaging, filter paper, flammable, funnel, gauze, harmful, heat-proof mat, irritant, measuring cylinder, pipette, safety glasses, spatula, stand, stopwatch, temperature, test-tube, test-tube rack, thermometer, tongs, toxic dependent, diagram, hazard, height, hypothesis, independent, label, length, mass, method, precaution, reliable, risk, time, variable, volume
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, homework tasks, verbally in class Summative – 2 baseline assessments
<b>Resources to use</b>	<a href="#">BBC Bitesize – Apparatus and techniques</a> <a href="#">BBC Bitesize – Hazards and risks</a>
<b>Enrichment opportunities</b>	Science Club (ask teacher for more information) Research a famous scientist Design a safety poster to be displayed in the lab

## Year 7 - Half Term 1 Topic 2 – 7A Cells, Tissues, Organs & Systems

<b>Prior Learning</b>	From KS2 most students will be able to describe the life cycles common to a variety of animals, including humans (birth, growth, development, reproduction and death), and to a variety of plants (growth, reproduction and death) (Year 5); identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood (including the pulse and clotting) (Year 5); describe the life process of reproduction in some plants and animals (Year 6); use results from experiments as evidence (Years 5 and 6).
<b>What will I learn?</b>	This unit starts by reminding students about the features of organisms, and then looks at organs, tissues and cells. These ideas are then built back up in order to look at organs once again, in the context of organ systems. Throughout the unit, students are encouraged to compare what we know now about the structure of organisms with what people believed in the past.
<b>Next Steps</b>	8A - Food & Nutrition 8C - Breathing & Respiration 8D - Unicellular Organisms 8B - Plants & their Reproduction
<b>Personal Development</b>	Students will learn how healthy organ systems function and there are plenty of opportunities to explore careers in the health care services.
<b>Key vocabulary</b>	breathing , cell , cell membrane , cell wall , cellulose, chlorophyll, chloroplast, circulatory, coverslip, cytoplasm, digestive, excretion, eyepiece lens, focus, focusing wheel, growth, life process, magnify, microscope, mitochondria, movement, nucleus, nutrition, objective lens, organ, organism, reproduction, respiration, sensitivity, slide, specimen, stage, stain, system , tissue , transplant, vacuole <b>aim, conclusion, evaluation, function, method, prediction, results</b>
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Living Organisms</a> <a href="#">Cells video clips</a> <a href="#">Microscopes</a>
<b>Enrichment opportunities</b>	<a href="#">Operation Ouch! (CBeebies)</a> <a href="#">Eureka! The National Children's Museum (Halifax)</a> Using a pocket microscope to magnify objects at home Make a model cell (animal or plant)

## Year 7 - Half Term 1 Topic 3 – 7E Mixtures & Separation

<b>Prior Learning</b>	From KS2 most students will understand how some materials dissolve in liquid to form a solution (Year 5); describe how to recover a substance from a solution (Year 5); use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating (Year 5); demonstrate that dissolving, mixing and changes of state are reversible changes (Year 5).
<b>What will I learn?</b>	This unit revises and builds on work in KS2 on materials, specifically on mixtures, solutions and separation techniques using the context of providing clean drinking water. This provides opportunities to introduce the methods of working in a science lab, which will differ from the science learning experience that most students will have had previously.
<b>Next Steps</b>	7G – Particle Model 7H – Atoms, Elements & Compounds 8F – Periodic Table
<b>Personal Development</b>	Students will be made aware of the availability of clean drinking water in developing countries and careers relating to water treatment.
<b>Key vocabulary</b>	boiling point, chromatography, colloid, condense, disperse, dissolve, distillation, evaporate, filter, filtrate, gas, insoluble, liquid, method, mixture, saturated, sieve, solid, solubility, soluble, solute, solution, solvent, steam, suspension aim, apparatus, compare, conclusion, describe, evaluation, explain, function, hazard, identify, method, prediction, recall, relate, results, risk, state, suggest
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">Bitesize - separating mixtures</a> <a href="#">Filtration and distillation video clip</a>
<b>Enrichment opportunities</b>	Research task – different ways of producing clean drinking water in developing countries Fundraising to support water charities <a href="#">Chromatography at home using a coffee filter</a>

## Year 7 - Half Term 2 Topic 1 – 7C Muscles and Bones

<b>Prior Learning</b>	From KS2 most students will be able to identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood (Year 6). From previous Year 7 units, most students may be able to describe the relationship between cells, tissues, organs and organ systems (7A); recall the organs in and functions of the main human organ systems (7A); recall that some cells are adapted to their functions (7A); recall respiration as a life process (7A).
<b>What will I learn?</b>	This unit uses a 'fitness' theme to cover three important organ systems: the gas exchange system, the circulatory system and the locomotor system. The various effects of drugs on these systems are also considered, together with their effects on the nervous system
<b>Next Steps</b>	8C – Breathing and respiration CB/SB8 – Exchange and transport in animals
<b>Personal Development</b>	There are plenty of opportunities to explore careers in the health care services and develop their understanding of the law (illegal drugs) and the different ways substance abuse poses a risk to a person's wellbeing.
<b>Key vocabulary</b>	antagonistic pair, artery, bone, breathing, capillary, carbon dioxide, cartilages, circulatory system, contract, depressant, drug, excreted, exhale, fracture, gas exchange, haemoglobin, inhale, joint, ligament, oxygen, plasma, pulse, reaction time red blood cell, relax, skeleton, solvent, stimulant, tendon, veins, white blood cell <b>adapted, classify, compare, consider, data, describe, effects, explain, function, identify, method, model, outline, recall, relate, state, suggest</b>
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	BBC Bitesize – <a href="#">Skeletal and muscular systems</a> , <a href="#">Respiration</a> , <a href="#">Drugs</a> <a href="#">BBC Teach video clip - How do our muscles and bones work?</a> <a href="#">Education quizzes - Skeleton, Joints and Muscles</a>
<b>Enrichment opportunities</b>	<a href="#">Operation Ouch! (CBeebies)</a> Eureka! The National Children's Museum (Halifax) <a href="#">Chicken leg dissection</a>

## Year 7 - Half Term 2 Topic 2 – 7I Energy

<b>Prior Learning</b>	Energy is not explicitly covered in the KS2 curriculum. From KS2 most students will recall that temperature is a measure of how hot or cold something is and be able to use thermometers to measure temperature; be able to describe some materials as thermal conductors and some as thermal insulators; have seen materials burning and understand that burning is an irreversible change; recall that plants need sunlight to grow and that animals, including humans, need food.
<b>What will I learn?</b>	This unit uses a theme park to introduce the idea that stores of energy are needed to make most things happen. It looks at food, energy stores and transfers, and energy resources in terms of non-renewable fuels and renewable resources.
<b>Next Steps</b>	7J – Current electricity 8K – Energy transfers C/SP3 – Conservation of energy
<b>Personal Development</b>	This is an ideal opportunity for students to develop their understanding of climate change as well as exploring careers in the energy sector (e.g. <a href="#">Blackpool and the Fylde College: Lancashire Energy HQ</a> ).
<b>Key vocabulary</b>	biofuel, carbon dioxide, chemical, coal, diet, elastic potential, electricity, energy, fossil fuel, geothermal, gravitational potential, hydroelectric, hydrogen, joule (J), kinetic, natural gas, non-renewable, nuclear, nutrients, oil, photosynthesis, pollution, power station, renewable, solar power, thermal, wind turbine apparatus, compare, conservation, consider, data, describe, effects, efficiency, explain, generate, identify, mass, method, outline, ratio, recall, relate, state, suggest, transfer, weight
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	BBC Bitesize <a href="#">Energy</a> <a href="http://www.darvill.clara.net/altenerg/index.htm">http://www.darvill.clara.net/altenerg/index.htm</a>
<b>Enrichment opportunities</b>	<a href="#">Wallney offshore wind farm</a> (off the coast of Cleveleys/Rossall) <a href="#">Heysham Power Station visitor centre</a> <a href="#">Manchester Museum of Science and Industry</a> <a href="#">Institute of Physics - Do try this at home!</a>

## Year 7 - Half Term 3 Topic 1 – 7F Acids & Alkalis

<b>Prior Learning</b>	From KS2 most students will be able to recall some examples of reversible and irreversible changes (Year 5); recall what happens when acids are mixed with bicarbonate of soda (Year 5). Also, from having studied topic 7E (Mixtures & Separation), most students will be able to describe how a solution is formed from a solute and a solvent; describe how to obtain soluble solids from a solution.
<b>What will I learn?</b>	This unit looks at acids and alkalis and how they are described using a pH number. It looks at neutralisation reactions and some of their uses, and also introduces standard hazard symbols.
<b>Next Steps</b>	7H – Atoms, Elements & Compounds 8F – Periodic Table
<b>Personal Development</b>	Students will explore hazard symbols of chemicals and equipment not just found in the lab but at home as well and learn the precautions needed to use them safely.
<b>Key vocabulary</b>	acid, alkali, base, chemical reaction, concentrated, corrosive, diluted, explosive, flammable, indicator, irritant, neutral, neutralisation, pH scale, product, reactant, salt, toxic, word equation apparatus, compare, data, dependent, describe, effects, explain, hazard, identify, independent, method, recall, risk, state, suggest, variable
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Acids &amp; Alkalis</a> <a href="#">Science in Action - Acids &amp; alkalis video clip</a> <a href="#">Scientific Eye video clip - Acids &amp; alkalis video clip</a>
<b>Enrichment opportunities</b>	Making red cabbage indicator at home to test pH of household substances. <a href="#">Science Buddies home experiments</a>

## Year 7 - Half Term 3 Topic 2 – 7J Current Electricity

<b>Prior Learning</b>	From KS2 most students will be able to construct simple circuits and use them to find out whether materials are conductors or insulators; know how switches work; draw circuit diagrams and construct circuits from diagrams using conventional symbols; be able to investigate the effect of changing components in a circuit on the brightness of bulbs; describe the effects of changing the voltage of a battery; describe the effects of short circuits and the use of fuses. Students will also have looked at some simple electrostatic phenomena, e.g. hair standing up on end when rubbed with a balloon.
<b>What will I learn?</b>	This unit looks at the measurement of current and how it behaves in series and parallel circuits, and at voltage and resistance. Various models for thinking about what is happening in circuits are explored, and the unit concludes by looking at how we use electricity safely.
<b>Next Steps</b>	CP9,10,11– Electricity & Circuits; Magnetism & the Motor Effect; Electromagnetic Induction SP10,11,12,13 - Electricity & Circuits; Static Electricity; Magnetism & the Motor Effect; Electromagnetic Induction
<b>Personal Development</b>	Students will explore the risks associated with using electrical equipment not just found in the lab but at home as well and learn the precautions needed to use them safely.
<b>Key vocabulary</b>	ammeter, amp (A), battery, cell, charges, current, filament, parallel circuit, power pack, resistance, resistor, series circuit, volt (V), voltage, voltmeter apparatus, compare, component, data, dependent, describe, effects, explain, hazard, identify, independent, method, model, recall, risk, state, suggest, variable
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Electricity</a> <a href="#">Electricity video clips</a>
<b>Enrichment opportunities</b>	<a href="#">Imagine That! Museum (Liverpool)</a> <a href="#">Make a fruit battery</a> <a href="#">James Dyson Foundation challenges</a> - 10 Lenz's Law



## Year 7 - Half Term 4 Topic 1 – 7D Ecosystems

<b>Prior Learning</b>	From KS2 most students will be able to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals (Year 6). From previous units, most students will be able to recall that plants need light to make food by photosynthesis (7A); describe how energy is released from food by respiration, which usually needs oxygen from the air and releases carbon dioxide as a waste gas (7A).
<b>What will I learn?</b>	With a general theme about explorers, this unit looks at ecosystems and the factors that affect them. This includes the impact of human activity and the importance of biodiversity.
<b>Next Steps</b>	8D – Unicellular Organisms 8B – Plants & the Reproduction
<b>Personal Development</b>	IN part of this topic students will explore the variation amongst people and how individual characteristics make people unique. This will provide an opportunity to promote equality and to enable their understanding that difference is a positive, not a negative.
<b>Key vocabulary</b>	adaptation, carnivore, community, competition, consumer, ecosystem, environment, environmental factors, food chain, food web, habitat, herbivore, hybrid, inherited variation, interdependence, line of best fit, omnivore, pest, pesticide, physical, predator, prey, producer, pyramid of numbers, relationship, species, variable compare, continuous, data, dependent, describe, discontinuous, effects, explain, hazard, identify, independent, method, model, normal distribution, population, recall, risk, state, suggest, variable
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Ecosystems &amp; Habitats</a> <a href="#">Ecosystems video clips</a>
<b>Enrichment opportunities</b>	<a href="#">Blackpool Zoo</a> <a href="#">Sea Life Centre</a> (Blackppol) <a href="#">Knowlsey Safari Park</a> (Prescot) <a href="#">Lakes Aquarium</a> (Newby Bridge) Watch wildlife documentary to further explore a whole variety of ecosystems and the adaptations of the organisms that live within them <a href="#">BBC iPlayer</a>

## Year 7 - Half Term 4 Topic 2 – 7G Particle Model

<b>Prior Learning</b>	From KS2 most students will be able to understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution (Year 5); use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating (Year 5).
<b>What will I learn?</b>	This unit develops an understanding of the different properties of solids, liquids and gases within the context of waste management and disposal. Scientific method and ideas on experiments, observation, hypotheses and theories are discussed, leading to an understanding of the particle theory of matter. Further applications of the particle theory are investigated using the context of waste and waste disposal.
<b>Next Steps</b>	8I – Fluids CP12 – Particle Model SP14 – Particle Model
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous chemicals/apparatus and develop their knowledge and confidence at using them safely.
<b>Key vocabulary</b>	Brownian motion, diffusion, flow, gas, liquid, nanometres, nanoscale, particle, pressure, solid, states of matter, volume compare, data, describe, evidence, explain, hazard, hypothesis, identify, method, model, observation, prediction, property, random, recall, risk, state, suggest, theory, variable
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - States of Matter</a> <a href="#">States of Matter video clips</a> <a href="#">States of Matter quiz</a>
<b>Enrichment opportunities</b>	Making models of particles in solids, liquids and gases Using diffusion to produce a <a href="#">Skittles rainbow</a> <a href="#">Catalyst Science Discovery Centre &amp; Museum (Widness)</a> <a href="#">James Dyson Foundation challenges</a> - 6 Expanding gases; 8 Non-Newtonian fluid; 12 100 + 100 = 192?

## Year 7 - Half Term 5 Topic 1 – 7B Sexual Reproduction

<b>Prior Learning</b>	From KS2/previous units most students will describe the life process of reproduction in some plants and animals (Year 5); describe the changes as humans develop to old age (Year 5); understand the concept of the cell (7A); recall that some cells are specialised (7A).
<b>What will I learn?</b>	This unit explores sexual reproduction in animals, in the context of efforts being made by zoos to prevent endangered species becoming extinct. However, the central focus for learning is the human reproductive system and sexual reproduction in humans.
<b>Next Steps</b>	8B – Plants & their Reproduction CB3/SB3 – Genetics CB7/SB7 – Animal Coordination, Control & Homeostasis
<b>Personal Development</b>	This is an ideal opportunity for students to develop age-appropriate understanding of healthy relationships through appropriate relationship and sex education and there are plenty of opportunities to explore careers in the health care services, midwifery.
<b>Key vocabulary</b>	adolescence, amniotic fluid, cervix, contractions, egg cell, embryo, fallopian tube, fertilisation, fetus, fuse, gamete, gestation period, hormones, implantation, labour, offspring, oviduct, ovulation, placenta, pregnant, puberty, reproduction, sex cell, sperm cell, umbilical cord, uterus, vagina adapted, data, describe, effects, evidence, explain, function, hypothesis, identify, method, observation, prediction, recall, state
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Human Reproduction</a> <a href="#">Reproduction video clips</a>
<b>Enrichment opportunities</b>	Fundraising to support the conservation of endangered animals ( <a href="#">WWF</a> , <a href="#">RSPB</a> ) <a href="#">Chester Zoo</a>

## Year 7 - Half Term 5 Topic 2 – 7K Forces

<b>Prior Learning</b>	From KS2 most students will describe different kinds of forces, including magnetism, gravity, upthrust and friction, and be able to classify these as contact or non-contact forces; identify the effect of drag forces that act between moving surfaces; describe why moving objects that are not driven tend to slow down.
<b>What will I learn?</b>	This unit revises the concepts of forces and their effects and extends students' knowledge of friction, gravity and springs. These ideas are presented using a theme of outdoor sports, such as climbing and mountain biking, to link to ideas about forces, friction and pressure.
<b>Next Steps</b>	CP1, 2, 7, 8, 13 – Motion & Forces; Motions, Forces Doing Work; Forces & their Effects; Forces & Matter SP1, 2, 8, 9, 15 – Motion & Forces; Motions, Forces Doing Work; Forces & their Effects; Forces & Matter
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous apparatus and develop their knowledge and confidence at using it safely.
<b>Key vocabulary</b>	air resistance, balanced forces, compress, contact forces, elastic, extension, force, force meter, friction, gram (g), gravity, Hooke's Law, kilogram (kg), magnetism, mass, newton (N), non-contact force, pascal (Pa), pressure, spring, static electricity, stationary, stretch, unbalanced force, upthrust, water resistance analysis, data, describe, effects, evidence, explain, hypothesis, identify, method, observation, prediction, recall, state, theory
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Forces</a> <a href="#">Balanced and unbalanced forces video clip</a> <a href="#">Forces quiz 1</a> <a href="#">Forces quiz 2</a>
<b>Enrichment opportunities</b>	<a href="#">History of Sir Isaac Newton video clip</a> <a href="#">Manchester Museum of Science and Industry</a> <a href="#">Institute of Physics - Do try this at home!</a> <a href="#">James Dyson Foundation challenges</a> - 4 Balloon kebabs; 11 Inertial eggs

## Year 7 - Half Term 6 Topic 1 – 7H Atoms, Elements & Compounds

<b>Prior Learning</b>	From previous units, most students will be able to identify different kinds of mixtures, including solutions, and describe ways of separating mixtures (7E); describe the difference between chemical and physical changes (7F); recognise differences between solids, liquids and gases, in terms of ease of flow and maintenance of shape and volume (7G); describe the properties of the different states of matter in terms of particle kinetics, including gas pressure and diffusion (7G).
<b>What will I learn?</b>	This unit uses the context of resources from the Earth and atmosphere to introduce ideas about the make-up of matter. It expands on particle theory and explains the differences between atoms, and molecules, elements and compounds. It looks at the symbols and formulae for elements and compounds. The involvement of chemical reactions in the formation and decomposition of compounds is also covered. It links these with the more abstract ideas of particle models, naming compounds and word equations.
<b>Next Steps</b>	8E – Combustion 8F – Periodic Table
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous chemicals/apparatus and develop their knowledge and confidence at using them safely.
<b>Key vocabulary</b>	air pressure, Brownian motion, compressed, cubic centimetre (cm <sup>3</sup> ), diffusion, flow, gas, liquid, nanometres, particle, random, solid, states of matter, vacuum, volume data, describe, effects, evidence, explain, function, hazard, hypothesis, identify, method, observation, prediction, property, recall, state, theory
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize – Atoms, Elements &amp; Compounds</a> <a href="#">Atoms and elements video clip</a>
<b>Enrichment opportunities</b>	<a href="#">Catalyst Science Discovery Centre &amp; Museum (Widness)</a> <a href="#">Periodic Table song</a>

## Year 7 - Half Term 6 Topic 2 – 7L Sound

<b>Prior Learning</b>	From KS2 most students will be able to name a variety of sound sources; recall that sounds get fainter with distance; explain that sounds are made by vibrations; link the size of an object with the pitch of the sound it produces; link the volume of a sound with the size of the vibrations producing it. From previous units, most students may be able to recall that animals need to attract mates (7A, 7D); ultrasound scans are used to make images of a developing foetus (7B); some animals are only active at night and have adaptations for this (7D).
<b>What will I learn?</b>	This unit looks at how sounds are made, transmitted and detected, some uses of sound and compares sound waves with waves on the surface of water.
<b>Next Steps</b>	CP3, 4 – Conservation of Energy; Waves SP3, 4 – Conservation of Energy; Waves
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous apparatus and develop their knowledge and confidence at using it safely. In addition to this, there are opportunities to explore careers in sound production, e.g. sound effects, and health care services that use sound, e.g. audiology, sonography, physiotherapy.
<b>Key vocabulary</b>	absorb, amplitude, auditory nerve, cochlea, crest, decibel (dB), density, ear canal, eardrum, echo, echolocation, energy, frequency, hertz (Hz), impulse, infrasound, intensity, longitudinal, medium, microphone, oscilloscope, particles, pitch, reflect, sonar, sound wave, source, trace, transmit, transverse, trough, ultrasound, vacuum, vibrate, vocal folds, volume analysis, data, describe, effects, evidence, explain, hypothesis, identify, line (or curve) of best, method, model, observation, prediction, recall, state, theory
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize – Sounds Waves</a> <a href="#">Transverse and longitudinal waves video clip</a>
<b>Enrichment opportunities</b>	Further research into how <a href="#">animals communicate</a> <a href="#">Top 10 Animal Sounds</a> <a href="#">Manchester Museum of Science and Industry</a> <a href="#">Institute of Physics - Do try this at home!</a>

## Year 8 - Half Term 1 Topic 1 – 8A Food & Nutrition

<b>Prior Learning</b>	From KS2 most students will be able to recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function (Year 6). From previous units, most students will be able to recall the main parts of the digestive system (7A); describe how some cells are adapted to the functions (7A); describe how soluble substances are carried by the blood (7C); explain the importance of a healthy skeleton (7C); recall some of the effects of alcohol on the body (7C); describe how animals depend on other animals and plants for food (7D); describe what happens during diffusion, in terms of particles (7G); compare energy values of different foods using labels, including interpreting nutrition information labels (7I).
<b>What will I learn?</b>	This unit looks at the main components in the human diet and why they are needed. The digestive system is also covered in some detail, and the idea of enzymes is introduced.
<b>Next Steps</b>	8C – Breathing & Respiration CB5/SB5 – Health, Disease & Development of Medicines SB1 – Key Concepts in Biology
<b>Personal Development</b>	Students will learn about the importance of a healthy, balanced diet and there are opportunities to explore careers in the health care services, e.g. dietician. Students will have further opportunities to identify the risks involved in using potentially hazardous chemicals/apparatus and develop their knowledge and confidence at using them safely.
<b>Key vocabulary</b>	absorb, anus, balanced diet, carbohydrate, catalyst, deficiency disease, diet, diffusion, digestive system, egestion, enzyme, faeces, fat, fibre, gullet, ingestion, insoluble, kilojoule (kJ), large intestine, lipid, liver, malnutrition, microvillus, mineral, nutrient, obesity, oesophagus, oil, protein, rectum, respiration, saliva, salivary gland, small intestine, soluble, starch, stomach, sugar, surface area, villus, vitamin <b>adapted, classify, compare, consider, data, describe, effects, explain, function, identify, method, model, outline, recall, relate, state, suggest</b>
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize – Food, Digestion and Excretion</a> <a href="#">Video clips</a>
<b>Enrichment opportunities</b>	‘Supersize Me’ film <a href="#">Junior Doctor experience at The Body Worlds Museum, London</a> <a href="#">Make a model gut</a> <a href="#">How much plastic do you eat?</a> <a href="#">What happens when you don’t brush your teeth?</a> <a href="#">BBC Earth lab – Diet video clips</a>

## Year 8 - Half Term 1 Topic 2 – 8E Combustion

<b>Prior Learning</b>	From previous units, most students will be able to define the term fuel (7I); name the three states of matter and describe their properties (7G); describe features of chemical reactions (7F, 7H); be able to carry out the test for carbon dioxide (7H).
<b>What will I learn?</b>	This unit uses the context of combustion engines to cover combustion and oxidation reactions, including those of hydrocarbons, metals and non-metals. The idea of an exothermic reaction is introduced and there is also a look at the pollution of the air by the products of fossil fuel combustion. There are opportunities to discuss the impact of global warming and methods for controlling carbon dioxide emissions.
<b>Next Steps</b>	8F – Periodic Table 8G – Metals & their uses
<b>Personal Development</b>	This is an opportunity for students to develop their understanding of how combustion impacts the environment (pollution, acid rain, global warming) as well as exploring careers in the energy sector (e.g. <a href="#">Blackpool and the Fylde College: Lancashire Energy HQ</a> ).
<b>Key vocabulary</b>	acid rain, catalytic converter, climate change, combustion, exothermic, filter, fire extinguisher, fire triangle, global warming, greenhouse effect, greenhouse gas, hazard symbol, conservation of mass, metal, metal oxide, nitrogen oxide, non-metal, oxidation, phlogiston, pollutant, soot, sulfur dioxide compare, consider, control, data, dependent, describe, effects, explain, fair test, identify, independent, information, method, model, outline, recall, relate, state, suggest, variable
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Combustion</a> <a href="#">Combustion of natural gas video clip</a> <a href="#">Complete and incomplete combustion video clip</a>
<b>Enrichment opportunities</b>	<a href="#">Manchester Museum of Science and Industry</a> Research into how to combat the effects of acid rain <a href="#">James Dyson Foundation challenge</a> - 16 Fire Extinguisher <a href="#">BBC Earth lab combustion video clips</a>



## Year 8 - Half Term 2 Topic 1 – 8B Plants and Their Reproduction

<b>Prior Learning</b>	From KS2 most students will be able to describe the life process of reproduction in some plants and animals (Year 5). From previous units, most students will have covered plant cells, tissues, organs and organ systems (7A); photosynthesis (7A); sexual reproduction in humans (7B); respiration (7C); inherited variation (7D); interdependence (7D); food as a store of energy (7I).
<b>What will I learn?</b>	This unit covers reproduction in plants, both sexual and asexual, although the former is of chief importance. Classification and biodiversity are also covered. The theme that is threaded through the unit is the various uses that we have for plants.
<b>Next Steps</b>	CB6/SB6 – Plant Structures & Functions
<b>Personal Development</b>	Students will have the opportunity to explore careers in agriculture and botany. Students will have further opportunities to identify the risks involved in using potentially hazardous apparatus and develop their knowledge and confidence at using them safely.
<b>Key vocabulary</b>	anther, asexual reproduction, biodiversity, carpel, cell division, characteristic, chloroplast, classify, competition, cross-pollination, dormant, embryo, extinct, faeces, fertilisation, filament, fruit, gamete, genus, germinate, hybrid, inherited, interdependent, life cycle, photosynthesis, plant kingdom, pollen, pollination, population, quadrat, respiration, runner, seed, seed dispersal, self-pollination, sepal, sexual reproduction, species, stamen, starch, tuber, variation, zygote accurate, anomalous, data, describe, effects, estimate, evidence, explain, function, hypothesis, identify, method, observation, prediction, random, range, recall, reliable, repeatable, reproducible, sample, state
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize – Plant reproduction</a> <a href="#">BBC Bitesize - Photosynthesis</a> <a href="#">Parts of plants video clip</a> <a href="#">Scientific Eye – plants video clip</a> <a href="#">Other plants video clips</a>
<b>Enrichment opportunities</b>	Grow your own plants, fruit and vegetables Visit a 'pick your own' farm <a href="#">Eden Project</a> <a href="#">James Dyson Foundation challenges</a> – 21 Coloured Carnations <a href="#">Photosynthesis virtual experiment</a>

## Year 8 - Half Term 2 Topic 2 – 8I Fluids

<b>Prior Learning</b>	From KS2 most students will be able to classify substances as solids, liquids or gases; observe and name changes of state; identify the effects of air resistance and water Resistance. From previous units, most students may be able to use the particle model to explain the properties of solids, liquids and gases (7G); understand how particles in a gas cause pressure (7G); identify differences between chemical and physical changes (7H); describe the effects of balanced and unbalanced forces on objects (7K).
<b>What will I learn?</b>	This unit looks at changes of state, and then goes on to look at fluids and some of their effects, including pressure, floating and sinking, and drag.
<b>Next Steps</b>	CP12 – Forces & Matter
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous apparatus and develop their knowledge and confidence at using it safely.
<b>Key vocabulary</b>	air resistance, balanced force, boiling point, Brownian motion, change of state, chemical change, compress, condense, contract, density, diffusion, drag, evaporate, expand, fluid, freezing point, friction, gas, liquid, mass, melting point, particle theory, physical change, pressure, solid, state of matter, streamlined, sublime, upthrust, volume, water resistance, weight anomalous, compare, consider, control, data, describe, effects, evidence, explain, identify, mean, method, recall, relate, state, suggest
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Pressure in liquids</a> <a href="#">Changes of state video clip</a> <a href="#">BBC Earth lab video clips - Fluids</a>
<b>Enrichment opportunities</b>	<a href="#">James Dyson Foundation challenges:</a> 1 Changing state 3 Floating ping-pong balls 5 Liquid densities 6 Expanding gases 7 Tornado in a bottle 14 Weather balloon 18 Dancing raisins 19 How to make a lava lamp 20 Ivory soap

## Year 8 - Half Term 3 Topic 1 – 8F Periodic Table

<b>Prior Learning</b>	From previous units, most students will be able to describe the difference between chemical and physical changes (7H); use the particle model to explain other observations about matter (7G); describe elements, mixtures and compounds using words and particle diagrams (7H); use chemical symbols for common elements and explain why they are an international code (7H); describe and identify metals and non-metals by their properties (7H); describe the changes you might see when compounds are formed (7H); name simple compounds and use word equations to describe chemical reactions (7H).
<b>What will I learn?</b>	This unit uses the context of fireworks to develop students' understanding of matter, atoms and chemical and physical change. Students then look at using the trends in the periodic table to make predictions about physical and chemical properties of elements and their compounds.
<b>Next Steps</b>	8G – Metals & their Uses Y9 Chemistry Transition Unit
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous chemicals/apparatus and develop their knowledge and confidence at using them safely.
<b>Key vocabulary</b>	alkali metal, atom, boiling point, chemical change, chemical formula, chemical property, chemical reaction, compound, element, freezing point, group, halogen, matter, melting point, metal, noble gas, non-metal, oxide, period, periodic table, pH, physical change, physical property, reactivity, symbol, transition metal anomalous, data, describe, effects, evidence, explain, function, hazard, hypothesis, identify, method, observation, outlier, prediction, property, range, ratio, recall, state, theory
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize – The Periodic Table</a> <a href="#">Introduction to atoms and elements video clip</a> <a href="#">Period in the Periodic Table video clip</a>
<b>Enrichment opportunities</b>	<a href="#">Interactive Periodic Table</a> (Royal Society of Chemistry) <a href="#">The genius of Mendeleev's Periodic Table video clip</a> <a href="#">Periodic Table bingo</a> <a href="#">Catalyst Science Discovery Centre &amp; Museum (Widness)</a> <a href="#">James Dyson Foundation challenges</a> - 22 Invisible ink

## Year 8 - Half Term 3 Topic 2 – 8I Light

<b>Prior Learning</b>	From KS2 most students will understand that light travels in straight lines and use this idea to explain how objects are seen (Year 6); explain why shadows have the same shape as the objects that cast them, and predict the size of shadows when the position of the light source changes (Year 6). From previous units, most students may be able to recall that energy is transferred by waves (7L); describe different kinds of wave (7L); recall that waves travel at different speeds in different materials (7L).
<b>What will I learn?</b>	This unit revises work from KS2 on light, which is then extended to consider how light travels and what happens when it meets an object. The unit is set in the context of stage, film and illusions.
<b>Next Steps</b>	CP3,5 – Conservation of Energy; Light & the EM Spectrum
<b>Personal Development</b>	Within the unit there are plenty of opportunities to explore careers in the health care services, e.g. optometry, and photography.
<b>Key vocabulary</b>	absorb, angle, cone cell, converging lens, cornea, diffuse reflection, dispersion, filter, focal point, frequency, image, incident ray, interface, iris, lens, longitudinal wave, normal, opaque, optic nerve, plane mirror, primary colour, prism, pupil, ray, reflection, refraction, retina, rod cell, secondary colour, shadow, source, spectrum, translucent, transmit, transparent, transverse wave data, describe, effects, evidence, explain, function, hypothesis, identify, method, observation, prediction, property, recall, state
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Light waves</a> <a href="#">Waves – reflection, refraction and diffraction video clip</a> <a href="#">Longitudinal and transverse waves video clip</a>
<b>Enrichment opportunities</b>	<a href="#">Camera Obscura &amp; World of Illusions (Edinburgh)</a> <a href="#">Scientific Eye – Light &amp; Colour</a> <a href="#">Science in Action – Light &amp; Refraction</a> <a href="#">James Dyson Foundation challenges</a> - 13 Measure the speed of light

## Year 8 - Half Term 4 Topic 1 – 8C Breathing & respiration

<b>Prior Learning</b>	From Year 7, most students should be able to recall how cells, tissues, organs and organ systems are related (7A); describe how some cells are adapted for certain functions (7A, 7B, 7C); recall that respiration and breathing are not the same (7C); describe how certain drugs affect the body (7C); describe how the circulatory system carries food and oxygen around the body (7C); describe diffusion (7G); explain the concept of air pressure (7G).
<b>What will I learn?</b>	Under the broad theme of water sports, this unit covers gas exchange in humans and other organisms, together with details of aerobic and anaerobic respiration in humans.
<b>Next Steps</b>	CB8/SB8 – Exchange & Transport in Animals
<b>Personal Development</b>	Students will learn how healthy organ systems function and there are opportunities to explore careers in sports science.
<b>Key vocabulary</b>	aerobic, alveolus, anaerobic, artery, asthma, breathing, bronchus, capillary, carbohydrate, carbon dioxide, carbon monoxide, ciliated epithelial cell, combustion, contract, diaphragm, diffusion, emphysema, gas exchange, gills, glucose, haemoglobin, indicator, limewater, mitochondrion, mucus, oxygen, pH, photosynthesis, plasma, red blood cell, stoma, surface area, tar, trachea, vein, ventilation, word equation anomalous, compare, consider, control, data, describe, effects, estimate, explain, identify, mean, method, model, outlier, range, recall, relate, state, suggest
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Respiration</a> <a href="#">Aerobic respiration video clip</a> <a href="#">Respiratory system video clip</a> <a href="#">Respiration 3D Animation</a> <a href="#">BBC Earth lab video clip - Getting energy from food (Live experiment)</a>
<b>Enrichment opportunities</b>	Scuba diving Research into heart and lung transplants

## Year 8 - Half Term 4 Topic 2 – 8G Metals and Their Uses

<b>Prior Learning</b>	From previous units most students will be able to describe the difference between chemical and physical changes (7H); use the particle model to explain other observations about matter (7G); describe elements, mixtures and compounds using words and particle diagrams (7H); use chemical symbols for common elements (7H); describe and identify metals and non-metals by their properties (7H); describe the changes you might see when compounds are formed (7H); name simple compounds and use word equations to describe chemical reactions (7H).
<b>What will I learn?</b>	This unit uses the context of metals used in building to review common physical properties of metals, and to introduce their main chemical properties. The idea that reactions can occur at different speeds is also illustrated and this leads to the introduction of the general reactivity series of metals.
<b>Next Steps</b>	Year Chemistry Transition Unit CC11/SC11 –Obtaining & Using Metals
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous chemicals/apparatus and develop their knowledge and confidence at using them safely.
<b>Key vocabulary</b>	acid, alloy, boiling point, catalyst, chemical formula, chemical property, composite material, corrosion, effervescence, halogen, malleable, melting point, metal, mixture, non-metal, physical property, pure, reactivity series, rust, salt, symbol equation, word equation accurate, anomalous, data, describe, effects, evidence, explain, function, hypothesis, identify, method, observation, prediction, range, recall, reliable, repeatable, reproducible, state
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Metals</a> <a href="#">BBC Bitesize – The reactivity series</a> <a href="#">BBC Earth lab video clips - Metals</a>
<b>Enrichment opportunities</b>	Research into artwork made from metal, e.g. The Angel of the North, the Kelpies in Falkirk. <a href="#">James Dyson Foundation challenges</a> – 9 Bright as a Penny

## Year 8 - Half Term 5 Topic 1 – 8D Multicellular Organisms

<b>Prior Learning</b>	From KS2 most students will be able to recall that microorganisms are tiny living things (Year 6). From Year 7, most students should be able to recall the seven life processes (7A); recall how cells, tissues, organs and organ systems are related (7A); describe how some cells are adapted for certain functions (7A, 7B, 7C); describe how organisms are interdependent in an ecosystem (7D); describe diffusion (7G);
<b>What will I learn?</b>	Under the broad theme of diseases, this unit takes a detailed look at what unicellular organisms are, the differences between different types, their problems and their uses.
<b>Next Steps</b>	Y9 Biology Transition unit CB5/SB5 - Health Disease & Development of Medicines
<b>Personal Development</b>	Students will learn about disease and there are opportunities to explore careers in the health care services, e.g. pathology and epidemiology. Students will have further opportunities to identify the risks involved in using potentially hazardous chemicals/apparatus and develop their knowledge and confidence at using them safely.
<b>Key vocabulary</b>	aerobic respiration, anaerobic respiration, asexual reproduction, bacterium, binary fission, carbohydrate, carbon cycle, cell, chlorophyll, cilium, decay, decomposer, diffusion, ecosystem, enzyme, fat, fermentation, flagellum, food chain, fungus, kingdom, microorganism, multicellular, photosynthesis, plant, population, producer, prokaryote, protein, protist, pyramid of numbers, unicellular, vacuole, virus data, describe, effects, evidence, explain, function, hypothesis, identify, method, observation, prediction, recall, state
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize – Unicellular organisms</a> <a href="#">BBC Bitesize – What are bacteria?</a> <a href="#">BBC Earth lab video clips - Bacteria</a>
<b>Enrichment opportunities</b>	Research into different bacterial and fungal diseases Build a model of a bacterial cell Baking bread (using yeast) Cheese and yoghurt making <a href="#">Yeast respiration virtual experiment</a> <a href="#">Effect of penicillin on bacterial growth virtual experiment</a>

## Year 8 - Half Term 5 Topic 2 – 8K Energy Transfers

<b>Prior Learning</b>	From previous work, most students will be able to use the particle model of matter to explain the properties of solids, liquids and gases (7G); recall some ways in which energy is transferred and stored (7I); recall the law of conservation of energy, and that the efficiency of a machine tells us how much energy is transferred as wasted energy (7I).
<b>What will I learn?</b>	This unit looks at energy transfers by heating in the context of homes.
<b>Next Steps</b>	CP3/SP3 – Conservation of Energy
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous apparatus and develop their knowledge and confidence at using it safely.
<b>Key vocabulary</b>	absorb, appliance, climate change, conduction, convection, convection current, degrees Celsius (°C), density, efficiency, emit, evaporate, fluid, fossil fuel, infrared radiation, internal energy, joule (J), kilowatt (kW), kilowatt-hour (kWh), medium, payback time, power, power rating, radiation, reflect, Sankey diagram, solar cell, solar panel, temperature, thermal conductor, thermal energy, thermal imager, thermal insulator, watt (W) accurate, data, describe, effects, estimate, evidence, explain, hypothesis, identify, method, observation, precise, prediction, random error, range, recall, state, systematic error, valid
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">Conduction, convection and radiation video clip</a> <a href="#">BBC Bitesize – Conservation of energy</a> <a href="#">Science in Action – Heat and temperature video clip</a> <a href="#">Scientific Eye – Temperature and heat video clip</a>
<b>Enrichment opportunities</b>	Exploring energy efficiency ratings of appliances found at home <a href="#">Make a convection spiral</a> <a href="#">Tested! Conservation of Energy Principle video clip</a> <a href="#">Conservation of energy – Brian Cox Wonders of Life video clip</a> <a href="#">James Dyson Foundation challenges - 2 Underwater volcano</a>



## Year 8 - Half Term 6 Topic 1 – 8H Rocks

<b>Prior Learning</b>	From KS2, most students will be able to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties; describe in simple terms how fossils are formed when things that have lived are trapped within rock. From previous units, most students will be able to describe elements, compounds and mixtures, chemical and physical changes (7H).
<b>What will I learn?</b>	This unit examines the different types of rock and the processes that bring about their formation, leading to the idea of a rock cycle that operates within a huge geological timescale. It also looks at the Earth as a source of resources and the advantages of recycling metals. The unit is set in the context of natural disasters.
<b>Next Steps</b>	CC17/Sc21 – Earth and Atmospheric Science
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous chemicals/apparatus and develop their knowledge and confidence at using them safely. They will also be able to explore careers in areas such as geology, palaeontology and volcanology.
<b>Key vocabulary</b>	basalt, biological weathering, cementation, chemical weathering, compaction, contract, crust, crystal, deposit, earthquake, erosion, eruption, expand, extrusive, fossil, freeze–thaw, geologist, igneous rock, interlocking, intrusive, lava, magma, mantle, metamorphic rock, mineral, mixture, onion-skin weathering, ore, permeable, physical change, physical weathering, porous, rock cycle, sedimentary rock, volcano data, describe, effects, evidence, explain, function, hypothesis, identify, method, observation, prediction, property, range, recall, state
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Rock</a> <a href="#">BBC Bitesize – The rock cycle</a> <a href="#">Science in Action – Rocks video clip</a> <a href="#">Scientific Eye – Rocks video clip</a>
<b>Enrichment opportunities</b>	<a href="#">Fossil hunting</a> <a href="#">The Lapworth Museum of Geology (Birmingham)</a> <a href="#">Natural History Museum (London)</a> <a href="#">Make a model volcano</a>

## Year 8 - Half Term 6 Topic 2 – 8L Earth and Space

<b>Prior Learning</b>	From KS2, most students will be able to describe the movement of the Earth and other planets relative to the Sun (Year 5); describe the movement of the Moon relative to the Earth (Year 5); describe the Sun, Earth and Moon as approximately spherical bodies (Year 5); use the idea of the Earth’s rotation to explain day and night (Year 5). From previous units, most students will be able to describe the difference between weight and mass (7K); recall the direction in which gravity acts (7K).
<b>What will I learn?</b>	This unit builds on work from KS2 on the Solar System and looks at the Earth, including the seasons and the Earth’s magnetic field and gravity. It also looks at the Solar System and what is beyond the Solar System. The theme is exploring the Solar System– in terms of observations and the use of models as well as via astronauts and space probes.
<b>Next Steps</b>	SP7 - Astronomy
<b>Personal Development</b>	This units provides an opportunity for pupil to look into careers in the field of astronomy and space exploration.
<b>Key vocabulary</b>	attract, compass, constellation, Earth, elliptical, equator, field, galaxy, gravitational field, gravity, hemisphere, light year, magnetic field, Milky Way, moon, northern hemisphere, north-seeking pole, orbit, phases of the Moon, planet, repel, satellite, Solar System, south-seeking pole, star, strength, Sun, Universe, weight data, describe, effects, evidence, explain, function, hypothesis, identify, method, model, observation, percentage, recall, state
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Space</a> <a href="#">Space video clips</a> <a href="#">Moon calendar</a> <a href="#">BBC Earth lab video clips - Space</a>
<b>Enrichment opportunities</b>	<a href="#">Jodrell Bank Discovery Centre (Macclesfield)</a> <a href="#">National Space Centre (Leicester)</a> <a href="#">The Royal Observatory (London)</a> <a href="#">Stargazing</a> <a href="#">BBC News – Space topics</a> <a href="#">Live stream from International Space Station</a> Make a model Solar System

## Year 9 - Half Term 1 Topic 1 – 8B Plants and Their Reproduction

<b>Prior Learning</b>	From KS2 most students will be able to describe the life process of reproduction in some plants and animals (Year 5). From previous units, most students will have covered plant cells, tissues, organs and organ systems (7A); photosynthesis (7A); sexual reproduction in humans (7B); respiration (7C); inherited variation (7D); interdependence (7D); food as a store of energy (7I).
<b>What will I learn?</b>	This unit covers reproduction in plants, both sexual and asexual, although the former is of chief importance. Classification and biodiversity are also covered. The theme that is threaded through the unit is the various uses that we have for plants.
<b>Next Steps</b>	CB6/SB6 – Plant Structures & Functions
<b>Personal Development</b>	Students will have the opportunity to explore careers in agriculture and botany. Students will have further opportunities to identify the risks involved in using potentially hazardous apparatus and develop their knowledge and confidence at using them safely.
<b>Key vocabulary</b>	anther, asexual reproduction, biodiversity, carpel, cell division, characteristic, chloroplast, classify, competition, cross-pollination, dormant, embryo, extinct, faeces, fertilisation, filament, fruit, gamete, genus, germinate, hybrid, inherited, interdependent, life cycle, photosynthesis, plant kingdom, pollen, pollination, population, quadrat, respiration, runner, seed, seed dispersal, self-pollination, sepal, sexual reproduction, species, stamen, starch, tuber, variation, zygote accurate, anomalous, data, describe, effects, estimate, evidence, explain, function, hypothesis, identify, method, observation, prediction, random, range, recall, reliable, repeatable, reproducible, sample, state
<b>How and when will I be assessed?</b>	Formative – low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize – Plant reproduction</a> <a href="#">BBC Bitesize - Photosynthesis</a> <a href="#">Parts of plants video clip</a> <a href="#">Scientific Eye – plants video clip</a> <a href="#">Other plants video clips</a>
<b>Enrichment opportunities</b>	Grow your own plants, fruit and vegetables Visit a 'pick your own' farm <a href="#">Eden Project</a> <a href="#">James Dyson Foundation challenges</a> – 21 Coloured Carnations <a href="#">Photosynthesis virtual experiment</a>

## Year 9 - Half Term 1 Topic 2 – 8L Earth and Space

<b>Prior Learning</b>	From KS2, most students will be able to describe the movement of the Earth and other planets relative to the Sun (Year 5); describe the movement of the Moon relative to the Earth (Year 5); describe the Sun, Earth and Moon as approximately spherical bodies (Year 5); use the idea of the Earth's rotation to explain day and night (Year 5). From previous units, most students will be able to describe the difference between weight and mass (7K); recall the direction in which gravity acts (7K).
<b>What will I learn?</b>	This unit builds on work from KS2 on the Solar System and looks at the Earth, including the seasons and the Earth's magnetic field and gravity. It also looks at the Solar System and what is beyond the Solar System. The theme is exploring the Solar System– in terms of observations and the use of models as well as via astronauts and space probes.
<b>Next Steps</b>	SP7 - Astronomy
<b>Personal Development</b>	This units provides an opportunity for pupil to look into careers in the field of astronomy and space exploration.
<b>Key vocabulary</b>	attract, compass, constellation, Earth, elliptical, equator, field, galaxy, gravitational field, gravity, hemisphere, light year, magnetic field, Milky Way, moon, northern hemisphere, north-seeking pole, orbit, phases of the Moon, planet, repel, satellite, Solar System, south-seeking pole, star, strength, Sun, Universe, weight data, describe, effects, evidence, explain, function, hypothesis, identify, method, model, observation, percentage, recall, state
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Space</a> <a href="#">Space video clips</a> <a href="#">Moon calendar</a> <a href="#">BBC Earth lab video clips - Space</a>
<b>Enrichment opportunities</b>	<a href="#">Jodrell Bank Discovery Centre (Macclesfield)</a> <a href="#">National Space Centre (Leicester)</a> <a href="#">The Royal Observatory (London)</a> <a href="#">Stargazing</a> <a href="#">BBC News – Space topics</a> <a href="#">Live stream from International Space Station</a> Make a model Solar System

## Year 9 - Half Term 2 Topic 1 – 8H Rocks

<b>Prior Learning</b>	From KS2, most students will be able to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties; describe in simple terms how fossils are formed when things that have lived are trapped within rock. From previous units, most students will be able to describe elements, compounds and mixtures, chemical and physical changes (7H).
<b>What will I learn?</b>	This unit examines the different types of rock and the processes that bring about their formation, leading to the idea of a rock cycle that operates within a huge geological timescale. It also looks at the Earth as a source of resources and the advantages of recycling metals. The unit is set in the context of natural disasters.
<b>Next Steps</b>	CC17/Sc21 – Earth and Atmospheric Science
<b>Personal Development</b>	Students will have further opportunities to identify the risks involved in using potentially hazardous chemicals/apparatus and develop their knowledge and confidence at using them safely. They will also be able to explore careers in areas such as geology, palaeontology and volcanology.
<b>Key vocabulary</b>	basalt, biological weathering, cementation, chemical weathering, compaction, contract, crust, crystal, deposit, earthquake, erosion, eruption, expand, extrusive, fossil, freeze–thaw, geologist, igneous rock, interlocking, intrusive, lava, magma, mantle, metamorphic rock, mineral, mixture, onion-skin weathering, ore, permeable, physical change, physical weathering, porous, rock cycle, sedimentary rock, volcano data, describe, effects, evidence, explain, function, hypothesis, identify, method, observation, prediction, property, range, recall, state
<b>How and when will I be assessed?</b>	Formative –low stakes quizzing, 2 x practical skills assessments, homework tasks, verbally in class Summative – end of topic test
<b>Resources to use</b>	<a href="#">BBC Bitesize - Rock</a> <a href="#">BBC Bitesize – The rock cycle</a> <a href="#">Science in Action – Rocks video clip</a> <a href="#">Scientific Eye – Rocks video clip</a>
<b>Enrichment opportunities</b>	<a href="#">Fossil hunting</a> <a href="#">The Lapworth Museum of Geology (Birmingham)</a> <a href="#">Natural History Museum (London)</a> <a href="#">Make a model volcano</a>

## Y9 - Half Term 3- Biology Transition Unit part 1

<b>Prior Learning</b>	Previously you will have learnt at KS3: <ul style="list-style-type: none"><li>• That cells divide</li><li>• About the structure of plant and animal cells</li></ul>
<b>What will I learn?</b>	In this unit you will learn: <ul style="list-style-type: none"><li>• About mitosis and its importance in growth, repair and asexual reproduction</li><li>• About meiosis and its importance in sexual reproduction</li><li>• How cells become specialised, and the importance of stem cells</li><li>• To explain how different specialised cells are adapted to their functions</li></ul>
<b>Next Steps</b>	This topics links with SB1 Biological Key Concepts, SB2 Cells and Control, SB3 Genetics, SB6 Plant Structures and Functions and SB8 Exchange and Transport in Animals
<b>Personal Development</b>	In this topic you will develop an understanding of how different organisms grow and divide and the potential scientific benefits of studying cell growth. You will also understand how technology enables scientific advancements to take place e.g. microscopy
<b>Key vocabulary</b>	Resolution, magnification, embryonic, ciliated, gamete, meiosis, mitosis, xylems, phloem, palisade, anaphase, asexual, cytokinesis, diploid, haploid, interphase, metaphase, telophase, differentiation, meristem, neurone, axon, neurotransmission, synapse, myelin, research, respond, estimate, function, method, identify, process, theory, normal, focus, feature, affect, sex, publish, remove,
<b>How and when will I be assessed?</b>	Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson Baseline GCSE assessment
<b>Resources to use</b>	<a href="#">Pearson Edexcel GCSE (9-1) Separate Biology textbook</a> <a href="#">Bitesize Separate Biology</a>
<b>Enrichment opportunities</b>	<a href="#">Mitosis Mover activity</a> <a href="#">How stuff works- Stem Cells</a> <a href="#">Anton Van Leuwenhoek museum visit</a> <a href="#">Purchase your own microscope and investigate everyday things</a>

## Year 9 - Half Term 3 – SP3 Conservation of Energy

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied energy during the topics</p> <ul style="list-style-type: none"> <li>- 7I Energy and 8K – Energy Transfers</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- That temperature differences lead to energy transfers</li> <li>- How energy can be transferred by conduction, convection and radiation</li> <li>- Ways of reducing energy transferred by heating</li> <li>- The energy is conserved</li> <li>- Ways in which energy can be stored and transferred</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How energy is stored and transferred</li> <li>• How to represent energy transfers using diagrams</li> <li>• How to calculate efficiency</li> <li>• How to reduce transfers of wasted energy</li> <li>• How to calculate the amount of gravitational potential or kinetic energy stored in objects</li> <li>• About the different renewable and non-renewable resources we use to make electricity, for heating and cooking, and for transport</li> </ul>
<b>Next Steps</b>	<p>Topic 4 (waves) has clear links to energy as does Topic 10 (electricity and circuits)</p> <p>At AS/ A-Level this links to “Mechanics and Materials” unit</p>
<b>Personal Development</b>	<p>Potential for career pathways, both locally and nationally/internationally as this unit explores the use of both renewable and non-renewable energy resources, Climate change and global warming issues are also addressed.</p>
<b>Key vocabulary</b>	<p>Atomic energy, chemical, elastic potential, gravitational potential, joule, kinetic, conservation, nuclear, Sankey, strain, system, thermal, dissipated, efficiency, lubrication, absorb, conduction, convection, emit, fluid, infrared radiation, insulation, conductivity, climate change, fossil fuel, renewable, non-renewable, uranium, biofuel, hydroelectricity, solar cell, tidal, wind turbine</p> <p style="background-color: yellow;">Benefit, source, data, estimate, structure, evaluate, site, resource, positive, construct</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Separate Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Separate Science Textbook</a> pages 33-46  <a href="https://www.bbc.co.uk/bitesize/topics/zsd9b82">https://www.bbc.co.uk/bitesize/topics/zsd9b82</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.bbc.co.uk/programmes/m00049b1">https://www.bbc.co.uk/programmes/m00049b1</a> “Climate change. The facts” BBC, David Attenborough documentary.</p> <p><a href="https://www.nms.ac.uk/about-us/schools/get-energised/">https://www.nms.ac.uk/about-us/schools/get-energised/</a> “Get Energised was a science, engineering and technology engagement programme which ran until June 2019. A range of sessions and resources are still available”</p>

## Year 9 - Half Term 3 – SC0 Chemistry Transition Part 1

<b>Prior Learning</b>	<p>In KS3 you will have learnt:</p> <ul style="list-style-type: none"> <li>• About metals and non-metals, their properties and their positions in the periodic table.</li> <li>• About solubility, solvents, solutes and solutions,</li> <li>• How to separate some mixtures using filtration and evaporation,</li> <li>• About what happens during simple neutralisation reactions,</li> <li>• About oxidation and displacement reactions,</li> <li>• About the reactivity series,</li> <li>• How to show chemical reactions using equations,</li> <li>• How to represent elements and compounds using symbols,</li> <li>• How mass is conserved during changes of state and chemical reactions,</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• How the elements are arranged in the modern periodic table,</li> <li>• How to use the periodic table to predict and model the arrangement of electrons in atoms,</li> <li>• Properties and uses of metals and their alloys,</li> <li>• More about reactivity, oxidation and reduction,</li> <li>• About the properties of transition metals,</li> <li>• How ionic and metallic bonds are formed,</li> <li>• How soluble salts can be prepared in the laboratory,</li> <li>• How to identify metal ions,</li> </ul>
<b>Next Steps</b>	SC0 Chemistry Transition Part 2, SC1 and SC2 States of Matter and Separating Mixtures, SC18 and SC19 Rates of Reaction and Energy Changes, SC26 Materials and Nanoparticles, SC3 Atomic Structure, SC4 The Periodic Table and SC17 Groups in the Periodic Table.
<b>Personal Development</b>	Students will learn the properties of copper and how it has been used in a variety of different uses for thousands of years.
<b>Key vocabulary</b>	<p>Soluble, insoluble, solution, solvent, filtration, crystallisation, filtrate, residue, saturated, atoms, elements, protons, neutrons, electrons, charge, mass, nucleus, properties, electronic configuration, electron shells,</p> <p>Analyse, period, indicate, similar, create, individual, consist, involve, structure, constitute, theory, obtain, acquire, conduct, affect, positive, element, transfer, layer, react, deduce, physical, remove, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	<p>Extended written answer method of preparing a soluble salt (Copper sulfate or a different named salt).</p> <p>SC0 End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics:            Atomic Structure (Pages 2 and 3 only)  <a href="https://www.bbc.co.uk/bitesize/guides/zscrw6f/revision/2">https://www.bbc.co.uk/bitesize/guides/zscrw6f/revision/2</a>            Periodic Table (Pages 2-4 only)  <a href="https://www.bbc.co.uk/bitesize/guides/zxmmsrd/revision/2">https://www.bbc.co.uk/bitesize/guides/zxmmsrd/revision/2</a>            Salts (P1-3)  <a href="https://www.bbc.co.uk/bitesize/guides/zqxyjty/revision/1">https://www.bbc.co.uk/bitesize/guides/zqxyjty/revision/1</a></p>
<b>Enrichment opportunities</b>	<p>How to turn Copper coins into gold (Alchemists' gold)  <a href="https://www.youtube.com/watch?v=5fmRfsep450">https://www.youtube.com/watch?v=5fmRfsep450</a></p>



## Y9 - Half Term 4- Biology Transition Unit part 2

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• Enzymes as part of the digestive system</li> <li>• About the structure of plant cells</li> <li>• Respiration and photosynthesis</li> <li>• Variation</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About diffusion, osmosis and active transport</li> <li>• About enzymes and how they work</li> <li>• About food tests</li> <li>• How plants are adapted to carry out photosynthesis and the products that they produce</li> <li>• About plant hormones and their commercial uses</li> <li>• How variation in living things is caused (genetic and environmental)</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB1 Biological Key Concepts, SB2 Cells and Control, SB3 Genetics, SB6 Plant Structures and Functions and SB8 Exchange and Transport in Animals</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding how the study of biological molecules and phenomena can help in our everyday lives e.g. biological washing powders, weed killers and food testing. You will consider careers such as food scientist and market gardeners.</p>
<b>Key vocabulary</b>	<p>Osmosis, diffusion, palisade, xylem, phloem, epidermis, transpiration, evaporation, lignin, auxin, gibberellin, herbicide, enzyme, substrate, active site, optimum, variation, Benedict's Biuret, iodide, calorimetry, ethanol, area, theory, role, specific, factor, affect, site, transfer, label, concentration, quantitative, qualitative, rigid, passive</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson Baseline GCSE assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Separate Biology textbook</a> <a href="#">Bitesize Separate Biology</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Grow cress seeds under different conditions to observe the effect of plant hormones</a> <a href="#">Carry out a simple osmosis practical at home</a> Look in the <a href="#">Guinness book for world records</a> to see the wide variation in living organisms (height, mass, colour, speed etc) and try to determine if these variation are a result of genetic or environmental factors.</p>

## Year 9 - Half Term 4 – SP3 Conservation of Energy

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied energy during the topics</p> <ul style="list-style-type: none"> <li>- 7I Energy and 8K – Energy Transfers</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- That temperature differences lead to energy transfers</li> <li>- How energy can be transferred by conduction, convection and radiation</li> <li>- Ways of reducing energy transferred by heating</li> <li>- The energy is conserved</li> <li>- Ways in which energy can be stored and transferred</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How energy is stored and transferred</li> <li>• How to represent energy transfers using diagrams</li> <li>• How to calculate efficiency</li> <li>• How to reduce transfers of wasted energy</li> <li>• How to calculate the amount of gravitational potential or kinetic energy stored in objects</li> <li>• About the different renewable and non-renewable resources we use to make electricity, for heating and cooking, and for transport</li> </ul>
<b>Next Steps</b>	<p>Topic 4 (waves) has clear links to energy as does Topic 10 (electricity and circuits)</p> <p>At AS/ A-Level this links to “Mechanics and Materials” unit</p>
<b>Personal Development</b>	<p>Potential for career pathways, both locally and nationally/internationally as this unit explores the use of both renewable and non-renewable energy resources, Climate change and global warming issues are also addressed.</p>
<b>Key vocabulary</b>	<p>Atomic energy, chemical, elastic potential, gravitational potential, joule, kinetic, conservation, nuclear, Sankey, strain, system, thermal, dissipated, efficiency, lubrication, absorb, conduction, convection, emit, fluid, infrared radiation, insulation, conductivity, climate change, fossil fuel, renewable, non-renewable, uranium, biofuel, hydroelectricity, solar cell, tidal, wind turbine</p> <p style="background-color: yellow;">Benefit, source, data, estimate, structure, evaluate, site, resource, positive, construct</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Separate Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Separate Science Textbook</a> pages 33-46  <a href="https://www.bbc.co.uk/bitesize/topics/zsd9b82">https://www.bbc.co.uk/bitesize/topics/zsd9b82</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.bbc.co.uk/programmes/m00049b1">https://www.bbc.co.uk/programmes/m00049b1</a> “Climate change. The facts” BBC, David Attenborough documentary.</p> <p><a href="https://www.nms.ac.uk/about-us/schools/get-energised/">https://www.nms.ac.uk/about-us/schools/get-energised/</a> “Get Energised was a science, engineering and technology engagement programme which ran until June 2019. A range of sessions and resources are still available”</p>

## Year 9 - Half Term 4 – SC0 Chemistry Transition Part 2

<b>Prior Learning</b>	<p>In KS3 you will have learnt:</p> <ul style="list-style-type: none"> <li>• About metals and non-metals, their properties and their positions in the periodic table.</li> <li>• About solubility, solvents, solutes and solutions,</li> <li>• How to separate some mixtures using filtration and evaporation,</li> <li>• About what happens during simple neutralisation reactions,</li> <li>• About oxidation and displacement reactions,</li> <li>• About the reactivity series,</li> <li>• How to show chemical reactions using equations,</li> <li>• How to represent elements and compounds using symbols,</li> <li>• How mass is conserved during changes of state and chemical reactions,</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• What a relative atomic mass is,</li> <li>• How to work out empirical and molecular formulae of compounds,</li> <li>• How to calculate the mass of reactants or products in a reaction,</li> <li>• How to use relative atomic masses to calculate relative formula masses of elements and compounds,</li> <li>• About how metals can be extracted,</li> <li>• About the advantages of recycling metals,</li> <li>• About the life cycle assessment of products,</li> <li>• To describe what happens during electrolysis and electroplating,</li> </ul>
<b>Next Steps</b>	<p>SC1 and SC2 States of Matter and Separating Mixtures, SC18 and SC19 Rates of Reaction and Energy Changes, SC26 Materials and Nanoparticles, SC3 Atomic Structure, SC4 The Periodic Table and SC17 Groups in the Periodic Table. SC14 Quantitative Chemistry, SC9 Mass Calculations, SC10 Electrolysis and SC11 Extracting Metals.</p>
<b>Personal Development</b>	<p>Students will learn how metals like copper are extracted from their ores and develop an understanding of the need to recycle metals such as copper in order to conserve natural resources in the face of rising demand for electronic goods.</p>
<b>Key vocabulary</b>	<p>Empirical formula, molecular formula, relative formula mass, reactant, product, electrolysis, electrolyte, cathode, anode, electrode, reactivity series, displacement, oxidation, reduction, ore, extraction, bioleaching, phytoextraction, corrosion, Analyse, period, indicate, similar, create, individual, consist, involve, structure, constitute, theory, obtain, acquire, conduct, affect, positive, element, transfer, layer, react, deduce, physical, remove, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	<p>Extended written answer on the extraction of metals SC0 End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Pages Obtaining and Using Metals (P2-7) <a href="https://www.bbc.co.uk/bitesize/guides/zcgt4qt/revision/2">https://www.bbc.co.uk/bitesize/guides/zcgt4qt/revision/2</a> Calculations for All Students (P1-4) <a href="https://www.bbc.co.uk/bitesize/guides/z2ty97h/revision/1">https://www.bbc.co.uk/bitesize/guides/z2ty97h/revision/1</a> Electrolysis (P3-4) <a href="https://www.bbc.co.uk/bitesize/guides/zyg73k7/revision/3">https://www.bbc.co.uk/bitesize/guides/zyg73k7/revision/3</a></p>
<b>Enrichment opportunities</b>	<p>Royal Society of Chemistry – Extracting copper from malachite <a href="https://www.youtube.com/watch?v=8ocYcA_xi98">https://www.youtube.com/watch?v=8ocYcA_xi98</a> BBC Teach – The Alchemist’s Apprentices – Extracting Copper From Rock <a href="https://www.youtube.com/watch?v=58p9JyhFOpl">https://www.youtube.com/watch?v=58p9JyhFOpl</a></p>

## Y9 - Half Term 5- SB5 Health, Disease and the Development of Medicines

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That imbalances in the diet can lead to obesity and deficiency disease</li> <li>• That recreational drugs can affect behaviour, health and life processes</li> <li>• About the structure of bacteria</li> <li>• About the use of microscopes to study cells</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About how we define health</li> <li>• About some pathogens, the diseases they cause and how their spread can be reduced or prevented</li> <li>• About the lifecycle of viruses</li> <li>• How plants defend themselves from pests and pathogens and how plant diseases can be identified</li> <li>• How the body is protected against infection</li> <li>• About the immune system</li> <li>• How antibiotics works and how new medicines are developed</li> <li>• About aseptic technique for culturing microorganisms</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB1 Key Concepts in Biology, SB7 Animal Coordination and homeostasis and SB8 Exchange and Transport. It also leads onto A-level Biology; Cells and Organism exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will learn how your health can be affected by various factors. You will develop and understanding of how to keep healthy and how medicine can be developed and used to treat illness and disease.</p>
<b>Key vocabulary</b>	<p>Communicable, immune, pathogen, cirrhosis, deficiency, malnutrition, obesity, cardiovascular, stent, stroke, cholera, diarrhoea, cholera, host, AIDS, HIV, malaria, virus, tuberculosis, protist, vector, lytic, lysogenic, autoclave, aseptic, chlamydia, lysozyme, mucus, antigen, antibody, lymphocyte vaccine, immunisation, <b>chemical, survive, inhibit, area, contact, environment, research, method, specific, primary, transmit, eliminate, attach</b></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 95-122</a> Bitesize Health, Disease and Developing Medicines</p>
<b>Enrichment opportunities</b>	<p><a href="#">Medical Museum- Leeds</a> <a href="#">Virtual Virus Lab game</a> <a href="#">World Health Organisation website</a> – research diseases you are interested in <a href="#">BBC Operation Ouch!!</a></p>

## Year 9 - Half Term 5 – SP4 Waves

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 7L Sound</li> <li>- 8J Light</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>• About light waves and sound waves, and how they can be described</li> <li>• How sound waves are produced and how they are detected by our ears</li> <li>• Some uses of sound waves</li> <li>• How light can be absorbed, scatter and reflected</li> <li>• Different colours of light</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• That waves transfer energy and information</li> <li>• How to describe the characteristics of waves</li> <li>• How the speed of a wave is related to its frequency and wavelength, and to the time it takes to travel a certain distance</li> <li>• How waves are refracted at boundaries between different materials</li> <li>• What happens when waves are reflected, refracted, transmitted or absorbed by different materials</li> <li>• More about how our ears work</li> <li>• About the uses of ultrasound and infrasound</li> </ul>
<b>Next Steps</b>	<p>SP4 leads into SP5</p> <p>At AS/ A-Level this links to “Waves” Physics unit.</p> <p>This also links to BTEC Applied Science Level 3 “Unit 1: Principles and Applications of Science I”</p>
<b>Personal Development</b>	<p>Application of knowledge about refraction can be helpful for anyone who takes part in leisure activities such as fishing and deep-sea diving.</p>
<b>Key vocabulary</b>	<p>Amplitude, electromagnetic waves, frequency, hertz, longitudinal, medium, period, seismic, sound, transverse, velocity, wave, wavelength, interface, normal, refraction,</p> <p>Analyse, similar, area, data, formula, estimate, identify, conclude, select, distort, vision, perspective, predict, interpret, period, source,</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test at the end of both units</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics (Foundation) or (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 47-64</p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zt4gfcw">https://www.bbc.co.uk/bitesize/topics/zt4gfcw</a> BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.bbc.co.uk/teach/ks3-gcse-physics-colours/zvdgt39">https://www.bbc.co.uk/teach/ks3-gcse-physics-colours/zvdgt39</a> - Why do we see colours differently?</p> <p><a href="http://www.bbc.com/earth/story/20170622-the-incredible-science-of-surfing-and-waves">http://www.bbc.com/earth/story/20170622-the-incredible-science-of-surfing-and-waves</a> “the incredible science of surfing and waves”</p> <p><a href="https://www.youtube.com/watch?v=K31V-bOKLJw">https://www.youtube.com/watch?v=K31V-bOKLJw</a> National geographic - Documentary Disaster Wars Earthquake vs Tsunami</p> <p><a href="https://www.youtube.com/watch?v=UNmv6H-f180&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=7">https://www.youtube.com/watch?v=UNmv6H-f180&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=7</a> – CORE PRACTICAL</p> <p><a href="https://www.youtube.com/watch?v=OY0IXHPo_nM&amp;list=PLAdOMSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=7">https://www.youtube.com/watch?v=OY0IXHPo_nM&amp;list=PLAdOMSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=7</a> – CORE PRACTICAL</p>

## Year 9 - Half Term 5 – SC1-2 States of Matter and Mixtures

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How particles are arranged in solids, liquids and gases and how their energy changes with change of state.</li> <li>• How mixtures differ from pure substances.</li> <li>• How to separate some mixtures using filtration, distillation and chromatography.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to use information to predict the state of a substance.</li> <li>• How the arrangement, movement and energy of particles change during change of state.</li> <li>• How to use melting points to distinguish between mixtures and pure substances.</li> <li>• How different methods of separation work.</li> <li>• How to choose a separation method based on the properties of substances in a mixture.</li> <li>• How drinking water is produced.</li> </ul>
<b>Next Steps</b>	<p>Chemistry y9 Half-term6 – Energy changes, y11 half term 1 – Solubility and qualitative analysis. Btec level 3 Applied Science or AS level Chemistry - Energetics</p>
<b>Personal Development</b>	<p>Through the study of separating mixtures, you will learn about the processes required in the production of clean drinking water. You will consider the importance of a resource which you may take for granted every day.</p>
<b>Key vocabulary</b>	<p>physical change, state, energy, arrangement, particle, pure, filtration, crystallisation, soluble, insoluble, chromatography, distillation, R<sub>f</sub> value, evaporate, condense, chlorination, sedimentation, analysis, potable. <b>source, process, layer, remove, sequence, phase, random,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on separating mixtures. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos <a href="#">States of Matter</a> <a href="#">Separation and Purification</a> <a href="#">Chromatography core practical</a> <a href="#">Practice exam questions</a> <a href="#">water purification video</a></p>
<b>Enrichment opportunities</b>	<p>Water: a <a href="#">precious resource</a> Research why rock salt is added to the roads in winter. <a href="#">Forensic science</a> as a career. Can we use the different properties of plastic and water to solve the problem of plastic pollution?</p>

## Year 9 - Half Term 6 – SP5 Light and the Electromagnetic Spectrum

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 8J Light</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>• That light transfers energy</li> <li>• About colour and how different colours are absorbed and reflected differently</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to use ray diagrams to explain reflection, refraction and total internal reflection</li> <li>• How to make coloured light and why some objects appear coloured</li> <li>• How lenses work and some things they can be used for</li> <li>• That light is part of a family of waves called the electromagnetic spectrum, which all have some properties in common</li> <li>• About some used of the waves in different parts of the electromagnetic spectrum</li> <li>• About some of the harmful effects of the waves in different parts of the electromagnetic spectrum.</li> <li>• About some of the factors that affect the temperature of the Earth</li> </ul>
<b>Next Steps</b>	<p>At Physics AS-Level this links to “Particles and Radiation” and “Waves” units</p> <p>At Physics A-Level this links to “Turning Point in Physics” and “Electronics” units.</p> <p>This also links to BTEC Applied Science Level 3 “Unit 1: Principles and Applications of Science 1” unit “C Waves in communication”</p>
<b>Personal Development</b>	<p>This unit of work covers the uses and dangers of Electromagnetic radiation; where you will study both the risks and benefits in using radiation to treat cancer. The field of nuclear medicine introduces various career opportunities and ideas.</p>
<b>Key vocabulary</b>	<p>Electromagnetic, frequency, infrared (IR), interface, refraction, transverse wave, ultraviolet, vacuum, visible light, incidence, normal, gamma, microwaves, radio waves, x-rays, oscillations, fluorescence, radiotherapy, mutation, cancer,</p> <p>Analyse, similar, data, identify, conclude, select, distort, vision, perspective, interpret, period, source,</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test at the end of both units</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics (Foundation) or (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Physics Science Textbook</a> pages 65-88</p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zxr3ng8">https://www.bbc.co.uk/bitesize/topics/zxr3ng8</a> BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://science.nasa.gov/ems">https://science.nasa.gov/ems</a> - NASA Science</p> <p><a href="https://www.pbs.org/wgbh/nova/physics/electromagnetic-spectrum.html">https://www.pbs.org/wgbh/nova/physics/electromagnetic-spectrum.html</a> - Electromagnetic Spectrum Tour</p> <p><a href="https://www.targetingcancer.com.au/our-stories/our-first-tv-documentary-on-radiation-therapy/">https://www.targetingcancer.com.au/our-stories/our-first-tv-documentary-on-radiation-therapy/</a> - Radiation Oncology, targeting cancer</p> <p><a href="https://www.youtube.com/watch?v=tiqiN3y1ze4&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=2">https://www.youtube.com/watch?v=tiqiN3y1ze4&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=2</a> – CORE PRACTICAL</p> <p><a href="https://www.youtube.com/watch?v=LFwio38EK9s&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=3">https://www.youtube.com/watch?v=LFwio38EK9s&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=3</a> – CORE PRACTICAL</p>

## Y9 - Half Term 6- SB9 Ecosystems

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• How almost all life on Earth depends on photosynthesis in plants and algae</li> <li>• About the interdependence of organisms, including food webs and insect pollination</li> <li>• How organisms affect and are affected by their environment, including the accumulation of toxic materials</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How ecosystems are organised</li> <li>• How communities are affected by abiotic and biotic factors</li> <li>• How the abundance and distribution of organisms are measured</li> <li>• How energy is transferred through trophic levels</li> <li>• Parasitic and mutualistic relationships</li> <li>• How humans affect ecosystems and the benefits of maintaining biodiversity</li> <li>• About the importance of the carbon cycle, water cycle and nitrogen cycle</li> <li>• How indicator species can be used to assess pollution levels</li> <li>• Why the rate of decomposition of food and compost can vary</li> </ul>
<b>Next Steps</b>	A-level biology – Biological Molecules, Cells, Organisms exchange substances with their environment, energy transfers in and between organisms, ecosystems
<b>Personal Development</b>	In this unit you will learn about the importance of careers in conservation such as environmental scientist, zoologist and wildlife biologist. Through the study of the world around you and environmental issues you will develop an understanding of how to be responsible, respectful and active citizens who are able to play their part and become actively involved in public life as adults.
<b>Key vocabulary</b>	Ecosystem, habitat, quadrat, abiotic, biotic, transect, biodiversity, predation, eutrophication, indigenous, captivity, conservation, potable, desalination, distillation, biomass, decay, decomposer, faeces, manure, nitrate, nitrogen-fixing bacteria, , abundance, analyse, community, distribution, environment, data, factor, interpret, method, vary, appropriate, range
<b>How and when will I be assessed?</b>	Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment
<b>Resources to use</b>	<a href="#">Pearson Edexcel GCSE (9-1) Biology Textbook pages 175-204</a> <a href="#">BBC Bitesize Ecosystems and material cycles</a> <a href="#">Quadrats core practical video</a>
<b>Enrichment opportunities</b>	<a href="#">BBC Life series</a> <a href="#">National Geographic</a> <a href="#">WWF website</a> <a href="#">The Carbon Cycle game</a> Visit Blackpool Zoo Research <a href="#">non-indigenous</a> or <a href="#">endangered species</a>



## Year 9 - Half Term 6 – SC3, 4 – Atoms, Periodic Table

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How the particle model and Dalton’s ideas about atoms help to explain the properties of matter.</li> <li>• How elements are arranged in groups and periods the periodic table, including the use of chemical symbols to represent them.</li> <li>• How to represent chemical change with word and symbol equations.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How our ideas about atoms and organising the elements have changed.</li> <li>• How scientists such as Dmitri Mendeleev, Ernest Rutherford, James Chadwick and Niels Bohr worked scientifically to gather evidence.</li> <li>• How to use the modern periodic table to make predictions about atomic structure and properties.</li> </ul>
<b>Next Steps</b>	<p>Chemistry y10 Half-term 4 – Quantitative analysis Btec level 3 App Sci or AS level Chemistry – quantitative chemistry, Atomic structure</p>
<b>Personal Development</b>	<p>Through the study of the halogens, you will learn about fluorine and chlorine. You will consider their use in our water supply to kill microbes and improve teeth enamel. You may also debate whether inflating party balloons is an appropriate use of helium.</p>
<b>Key vocabulary</b>	<p>atom, sub-atomic particles, proton, neutron, electron configuration, nucleus, isotope, relative atomic mass (<math>A_r</math> or RAM) group, property, prediction, halogen, alkali metal, noble gas, inert, <b>period, identify, theory, structure, element, positive, neutral,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on atomic structure. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos <a href="#">Atomic structure</a>; <a href="#">Periodic table</a>; <a href="#">Groups of the periodic table</a></p>
<b>Enrichment opportunities</b>	<p>Circular periodic table – evaluate how well it represents the patterns in the elements. Research Döbereiner and Newland’s attempts to organise the elements. Watch the series <a href="#">Atom</a>, featuring Jim Al-Khalili</p>



Combined Science  
Years 10 & 11

## Y10 - Half Term 1- CB1 Key Concepts in Biology

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• How to use a microscope</li> <li>• About the differences between cells from different organisms</li> <li>• How some cells are specialised and adapted to their functions</li> <li>• How enzymes help to digest food in the digestive system</li> <li>• How substances can move by diffusion</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• how developments in microscopy have allowed us to find out more about the sub-cellular structures in plants, animal and bacterial cells</li> <li>• About the importance of enzymes in nutrition, growth and development</li> <li>• How enzymes are affected by pH and temperature and why each enzyme only works on a certain type of molecules</li> <li>• How substances are carried by diffusion, osmosis and active transport</li> </ul>
<b>Next Steps</b>	<p>This topic is integral or the Biology components of Combined Science and links with unit B2-9 and also leads onto A-level biology – Biological Molecules, Cells and Organisms exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how modern technologies have helped scientific advancements e.g. microscopy. You will learn about everyday phenomena and develop an understanding of how all living things are built and operate. This topic has links with various careers such as Biomedical Science and Microscopy.</p>
<b>Key vocabulary</b>	<p>Magnification, resolution, membrane, eukaryotic, prokaryotic, ribosome, mitochondria, acrosomes, cilia, chromosomal DNA, plasmid, catalyst, monomer, polymer, diffusion, osmosis, denature, optimum, theory, data, factor, interpret, method, vary, range, similar, structure, specific, function, percent</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 1-24</a> <a href="#">BBC Bitesize Key Concepts in Biology</a> <a href="#">Using a microscope core practical</a> <a href="#">Enzyme core practical video</a> <a href="#">Osmosis core practical video</a></p>
<b>Enrichment opportunities</b>	<p>Pupils could use an inexpensive microscope to explore substances at home (you can get traditional light microscopes that can be purchased easily from toy shops, however digital ones that attach to smartphone cameras are also readily available. <a href="#">Virtual Enzyme Lab</a> <a href="#">Carry out an osmosis experiment at home</a></p>

## Year 10 - Half Term 1 – CC3, 4– Atoms, Periodic Table

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How the particle model and Dalton’s ideas about atoms help to explain the properties of matter.</li> <li>• How elements are arranged in groups and periods the periodic table, including the use of chemical symbols to represent them.</li> <li>• How to represent chemical change with word and symbol equations.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How our ideas about atoms and organising the elements have changed.</li> <li>• How scientists such as Dmitri Mendeleev, Ernest Rutherford, James Chadwick and Niels Bohr worked scientifically to gather evidence.</li> <li>• How to use the modern periodic table to make predictions about atomic structure and properties.</li> </ul>
<b>Next Steps</b>	<p>Chemistry y10 Half-term 4 – Quantitative analysis Btec level 3 App Sci or AS level Chemistry – quantitative chemistry, Atomic structure</p>
<b>Personal Development</b>	<p>Through the study of the halogens, you will learn about fluorine and chlorine. You will consider their use in our water supply to kill microbes and improve teeth enamel. You may also debate whether inflating party balloons is an appropriate use of helium.</p>
<b>Key vocabulary</b>	<p>atom, sub-atomic particles, proton, neutron, electron configuration, nucleus, isotope, relative atomic mass (<math>A_r</math> or RAM) group, property, prediction, halogen, alkali metal, noble gas, inert, <b>period, identify, theory, structure, element, positive, neutral,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on atomic structure. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos <a href="#">Atomic structure</a>; <a href="#">Periodic table</a>; <a href="#">Groups of the periodic table</a></p>
<b>Enrichment opportunities</b>	<p>Circular periodic table – evaluate how well it represents the patterns in the elements. Research Döbereiner and Newland’s attempts to organise the elements. Watch the series <a href="#">Atom</a>, featuring Jim Al-Khalili</p>

## Year 10 - Half Term 1 – CP6 Radioactivity

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the structure of the atom in the topics</p> <ul style="list-style-type: none"> <li>- 7G Particle Model</li> <li>- 7H atoms, elements and compounds</li> <li>- 8F Periodic Table</li> <li>- CP3 Conservation of Energy</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- About the particle model of matter</li> <li>- That atoms contain smaller charged particles called electrons</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How the particles inside atoms are arranged</li> <li>• How to represent atoms using symbols</li> <li>• About the different types of radiation and how they affect atoms</li> <li>• About the background radiation that is all around us</li> <li>• About the uses of radioactivity in the home and industry</li> <li>• About the dangers of radiation and how we can protect ourselves</li> </ul>
<b>Next Steps</b>	At A-Level this links to the “Nuclear Physics” unit. There is a link to atomic structure in BTEC Applied Science (Level 3) Unit 1: Principles and Applications of Science I
<b>Personal Development</b>	Potential for career pathways into nuclear medicine or nuclear power. There are some interesting areas of the topic to explore that might have a personal link to your life, in the form of the detection and treatment of cancer.
<b>Key vocabulary</b>	<p>Alpha particle, atom, electron, element, nucleus, subatomic, isotope, neutron, mass, nucleon, proton, absorption spectrum, electromagnetic radiation, configuration, emission, ion, ionising, cosmic rays, dose, count rate, Geiger-Muller tube, beta, decay, gamma, penetrate, positron, random, unstable, activity, Becquerel, half-life, irradiate, sterilise, tracer, contaminate, mutation, electrostatic repulsion</p> <p>Benefit, source, data, estimate, structure, evaluate, resource, positive, significant, demonstrate</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 353-370  <a href="https://www.bbc.co.uk/bitesize/topics/zxnvv9q">https://www.bbc.co.uk/bitesize/topics/zxnvv9q</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.youtube.com/watch?v=Xw3SFOfbR84">https://www.youtube.com/watch?v=Xw3SFOfbR84</a> – The Real Chernobyl, SKY News documentary</p> <p><a href="https://visit.cern/tours/guided-tours-individuals">https://visit.cern/tours/guided-tours-individuals</a> - Visit CERN</p>

## Y10 – Half Term 2 - CB2 Cells and Control

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That cells divide</li> <li>• About the structure of plant and animal cells</li> <li>• That your nervous system helps coordinate your actions</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About mitosis and its importance in growth, repair and asexual reproduction</li> <li>• How cells become specialised, and the importance of stem cells</li> <li>• To identify different specialised cells in the nervous system and explain how the system works</li> </ul>
<b>Next Steps</b>	<p>This topics links with CB3, Genetics, CB7 Animal Coordination and Control and onto A-level biology – Biological Molecules, Cells and Organisms</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how organisms grow and divide and the potential scientific benefits of studying cell growth. You will also develop an understanding of how your nervous system operates,</p>
<b>Key vocabulary</b>	<p>Anaphase, asexual, cytokinesis, diploid, haploid, interphase, metaphase, telophase, differentiation, meristem, neurone, axon, neurotransmission, synapse, myelin, <b>contract, transfer, sex, layer, cycle, energy, medical, reject, identical, voluntary, chemical,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 25-38</a> <a href="#">Bitesize Cells and Control</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Mitosis Mover activity</a> <a href="#">Optical illusions</a> <a href="#">ABPI Nervous System Resources</a> <a href="#">How stuff works- Stem Cells</a></p>

## Year 10 – Half Term 2 - CP1 Motion and CP2 Forces and Motion

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 7k Forces</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>• what forces are and the effects of balanced and unbalanced forces</li> <li>• How average speed, distance and time are related</li> <li>• How to represent a journey on a distance-time graph</li> <li>• What a resultant force is</li> <li>• About gravity as a non-contact force</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• The difference between vector and scalar quantities</li> <li>• How to calculate speed and acceleration</li> <li>• How to represent journeys on distance/time and velocity/time graphs</li> <li>• How to use graphs to calculate speed, acceleration and distance travelled</li> <li>• About Newton’s Laws of Motion</li> <li>• How to calculate the weight of an object from its mass</li> <li>• About the factors that affect the stopping distance of a vehicle</li> <li>• About the dangers or large decelerations</li> <li>• How to calculate momentum, and apply ideas about momentum to collisions (higher only)</li> </ul>
<b>Next Steps</b>	<p>CP1 leads into CP2</p> <p>At AS/ A-Level this links to “Mechanics and materials” Physics unit.</p>
<b>Personal Development</b>	<p>SMSC – driving</p> <p>British values – the rule of law – risks of dangerous driving</p> <p>Risks to wellbeing – substance and alcohol misuse and abuse</p> <p>Careers – driving instructor, navigator</p>
<b>Key vocabulary</b>	<p>Acceleration, displacement, distance, forces, magnitude, mass, momentum, scalar, speed, vector, velocity, weight, gradient, average, deceleration, balanced, resultant force, unbalanced, centripetal (Higher only), gravitational field strength, inertia, action-reaction, equilibrium, momentum, conservation, stimulus, response, crumple zone</p> <p>Analyse, similar, area, data, formula, estimate, identify, conclude, select, differentiate, highlight, distort, vision, vehicle, perspective, contact, predict,</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test at the end of both units (CP1 and CP2)</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics (Foundation) or (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 285-314</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.youtube.com/watch?v=LOOPgyPWE3o">https://www.youtube.com/watch?v=LOOPgyPWE3o</a> “Top Gear, BBC”</p> <p><a href="https://www.pbs.org/video/science-trek-force-and-motion/">https://www.pbs.org/video/science-trek-force-and-motion/</a> “Force and Motion, PBS”</p> <p><a href="https://www.youtube.com/watch?v=Y2s2fyMoCCU">https://www.youtube.com/watch?v=Y2s2fyMoCCU</a> “The secret life of Isaac Newton”</p> <p><a href="https://www.bbc.co.uk/teach/isaac-newton-the-man-who-discovered-gravity/zh8792p">https://www.bbc.co.uk/teach/isaac-newton-the-man-who-discovered-gravity/zh8792p</a></p> <p>BBC timeline</p> <p><a href="https://www.youtube.com/watch?v=wl-VkxEelxw&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=5">https://www.youtube.com/watch?v=wl-VkxEelxw&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=5</a> –CORE PRACTICAL</p> <p><a href="https://www.youtube.com/watch?v=PKsMxaPbaWE">https://www.youtube.com/watch?v=PKsMxaPbaWE</a> – CORE PRACTICAL</p>

## Year 10 – Half Term 2 - CC5-7 Ionic Bonding, Covalent Bonding and Types of Substance

<b>Prior Learning</b>	At KS3 you learned about the particle model of matter (7G, 8I), how Dalton’s ideas about atoms and molecules helped to explain the properties of matter (7H, 8F) and how elements are arranged in the periodic table (8F). In CC 1-4 you learned about separating mixtures and the structure of the atom including the electronic configuration and how this related to the arrangement of elements on the periodic table.
<b>What will I learn?</b>	In this topic you will learn how ionic, covalent and metallic bonds are formed, about the formation of lattice and molecular structures and will be able to link the physical properties of a substance with it’s bonding and structure.
<b>Next Steps</b>	CC9-12 Formation of Ions in Electrolysis, the structure of metals and their properties. AS level Chemistry e.g. AQA AS Chemistry Specification point 3.1.3 Bonding.
<b>Personal Development</b>	SMSC – You will learn about recent innovations surrounding Graphene and Fullerenes and will learn about the potential of these exciting new materials. Careers – You will learn how some chemists discover and develop new types of materials.
<b>Key vocabulary</b>	Atom, proton, neutron, electron, electronic configuration, ion, ionic, covalent, metallic, molecule, particle, charged, metal, lattice, electrostatic, intermolecular, attraction, cation, anion, delocalised, conductivity, melting, boiling, aqueous, solution, molten, anode, cathode, dot and cross diagrams, valency, monomer, polymer, poly(ethene), allotropes, fullerene, graphene, giant molecular, lubricant, metals, non-metals, malleable, Analyse, period, indicate, similar, create, individual, consist, involve, structure, constitute, theory, obtain, acquire, conduct, affect, positive, element, transfer, layer, react, deduce, physical, remove, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,
<b>How and when will I be assessed?</b>	Extended written answer on differences between ionic and covalent (Pearson 6 Mark Question). CC5-7 End of Unit Test
<b>Resources to use</b>	BBC Bitesize Topics: Ionic Compounds: <a href="https://www.bbc.co.uk/bitesize/guides/z9fwrwx/revision/1">https://www.bbc.co.uk/bitesize/guides/z9fwrwx/revision/1</a> Simple Molecules: <a href="https://www.bbc.co.uk/bitesize/guides/zqrxdxs/revision/1">https://www.bbc.co.uk/bitesize/guides/zqrxdxs/revision/1</a> Giant Covalent: <a href="https://www.bbc.co.uk/bitesize/guides/zspdxs/revision/1">https://www.bbc.co.uk/bitesize/guides/zspdxs/revision/1</a> Metallic Bonding: <a href="https://www.bbc.co.uk/bitesize/guides/zcrvtv4/revision/1">https://www.bbc.co.uk/bitesize/guides/zcrvtv4/revision/1</a>
<b>Enrichment opportunities</b>	‘The One Show’ BBC 2013 about the potential uses of Graphene: <a href="https://www.youtube.com/watch?v=WFacA6OwCjA">https://www.youtube.com/watch?v=WFacA6OwCjA</a> Royal Society of Chemistry Video ‘Future Applications of Graphene’ <a href="https://www.youtube.com/watch?v=ZzBLsjkNqVc">https://www.youtube.com/watch?v=ZzBLsjkNqVc</a> ‘Getting to Grips with Graphene’ TEDx Talks <a href="https://www.youtube.com/watch?v=KzeQSZ3bQ2g">https://www.youtube.com/watch?v=KzeQSZ3bQ2g</a>



## Year 10 – Half Term 3 - CB2 Cells and Control

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That cells divide</li> <li>• About the structure of plant and animal cells</li> <li>• That your nervous system helps coordinate your actions</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About mitosis and its importance in growth, repair and asexual reproduction</li> <li>• How cells become specialised, and the importance of stem cells</li> <li>• To identify different specialised cells in the nervous system and explain how the system works</li> </ul>
<b>Next Steps</b>	<p>This topics links with CB3, Genetics, CB7 Animal Coordination and Control and onto A-level biology – Biological Molecules, Cells and Organisms</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how organisms grow and divide and the potential scientific benefits of studying cell growth. You will also develop an understanding of how your nervous system operates,</p>
<b>Key vocabulary</b>	<p>Anaphase, asexual, cytokinesis, diploid, haploid, interphase, metaphase, telophase, differentiation, meristem, neurone, axon, neurotransmission, synapse, myelin, contract, transfer, sex, layer, cycle, energy, medical, reject, identical, voluntary, chemical,</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 25-38</a> <a href="#">Bitesize Cells and Control</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Mitosis Mover activity</a> <a href="#">Optical illusions</a> <a href="#">ABPI Nervous System Resources</a> <a href="#">How stuff works- Stem Cells</a></p>

## Year 10 – Half Term 3 - CP1 Motion and CP2 Forces and Motion

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 7k Forces</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>• what forces are and the effects of balanced and unbalanced forces</li> <li>• How average speed, distance and time are related</li> <li>• How to represent a journey on a distance-time graph</li> <li>• What a resultant force is</li> <li>• About gravity as a non-contact force</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• The difference between vector and scalar quantities</li> <li>• How to calculate speed and acceleration</li> <li>• How to represent journeys on distance/time and velocity/time graphs</li> <li>• How to use graphs to calculate speed, acceleration and distance travelled</li> <li>• About Newton’s Laws of Motion</li> <li>• How to calculate the weight of an object from its mass</li> <li>• About the factors that affect the stopping distance of a vehicle</li> <li>• About the dangers or large decelerations</li> <li>• How to calculate momentum, and apply ideas about momentum to collisions (higher only)</li> </ul>
<b>Next Steps</b>	<p>CP1 leads into CP2</p> <p>At AS/ A-Level this links to “Mechanics and materials” Physics unit.</p>
<b>Personal Development</b>	<p>SMSC – driving</p> <p>British values – the rule of law – risks of dangerous driving</p> <p>Risks to wellbeing – substance and alcohol misuse and abuse</p> <p>Careers – driving instructor, navigator</p>
<b>Key vocabulary</b>	<p>Acceleration, displacement, distance, forces, magnitude, mass, momentum, scalar, speed, vector, velocity, weight, gradient, average, deceleration, balanced, resultant force, unbalanced, centripetal (Higher only), gravitational field strength, inertia, action-reaction, equilibrium, momentum, conservation, stimulus, response, crumple zone</p> <p>Analyse, similar, area, data, formula, estimate, identify, conclude, select, differentiate, highlight, distort, vision, vehicle, perspective, contact, predict,</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test at the end of both units (CP1 and CP2)</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics (Foundation) or (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 285-314</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.youtube.com/watch?v=LOOPgyPWE3o">https://www.youtube.com/watch?v=LOOPgyPWE3o</a> “Top Gear, BBC”</p> <p><a href="https://www.pbs.org/video/science-trek-force-and-motion/">https://www.pbs.org/video/science-trek-force-and-motion/</a> “Force and Motion, PBS”</p> <p><a href="https://www.youtube.com/watch?v=Y2s2fyMoCCU">https://www.youtube.com/watch?v=Y2s2fyMoCCU</a> “The secret life of Isaac Newton”</p> <p><a href="https://www.bbc.co.uk/teach/isaac-newton-the-man-who-discovered-gravity/zh8792p">https://www.bbc.co.uk/teach/isaac-newton-the-man-who-discovered-gravity/zh8792p</a></p> <p>BBC timeline</p> <p><a href="https://www.youtube.com/watch?v=wl-VkxEelxw&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=5">https://www.youtube.com/watch?v=wl-VkxEelxw&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=5</a> –CORE PRACTICAL</p> <p><a href="https://www.youtube.com/watch?v=PKsMxaPbaWE">https://www.youtube.com/watch?v=PKsMxaPbaWE</a> – CORE PRACTICAL</p>

## Year 10 – Half Term 3 - CC8 Acids

<b>Prior Learning</b>	<p>At KS3 you will have learnt about:</p> <ul style="list-style-type: none"> <li>• solubility, solutes, solvents and solutions (7E),</li> <li>• how common international hazard symbols are used (7F),</li> <li>• about common acids, alkalis and neutral solutions (7F),</li> <li>• about the use of indicators to test the pH of solutions (7F)</li> <li>• and about what happens during simple neutralisation reactions (7F).</li> </ul> <p>In CC14 you will have learnt how:</p> <ul style="list-style-type: none"> <li>• reactions of acids can be affected by their temperature, concentration, and the surface area of solid metal carbonates.</li> <li>• a chemical reaction between an acid and a metal will produce hydrogen gas,</li> <li>• the reaction between an acid and a metal carbonate will produce carbon dioxide gas.</li> </ul>
<b>What will I learn?</b>	In this topic you will learn about the ions in acids and alkalis and how their concentrations are linked to pH, what happens in the reactions between acids and different types of bases, how different indicators can be used in acid-alkali titrations and how different soluble and insoluble salts can be prepared in the laboratory.
<b>Next Steps</b>	CC10 Electrolytic processes including Core Practical Electrolysis of copper sulphate. AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.12 Acids and Bases.
<b>Personal Development</b>	SMSC – Hazard symbols and appreciation of safety when using household and workplace chemicals (e.g. bleaches and other chemical cleaners).
<b>Key vocabulary</b>	<p>Aqueous, solutions, acidic, alkaline, neutral, pH scale, indicators, polyatomic ions, concentration, concentrated, dilute, dissociate, bases, neutralise, salt, state symbols, soluble, filtered, crystallisation, common alkali, balanced equation, titration, burette, pipette, end-point, reactivity series, effervescence, ionic equation, spectator ions, half equation, oxidation, reduction, precipitation, precipitate.</p> <p>Analyse, concept, consist, constitute, data, define, estimate, factor, formula, identify, interpret, method, occur, require, role, obtain, acquire, affect, positive, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	<p>Extended written answer method of preparing a soluble salt (copper sulfate or a different named salt).</p> <p>CC8 End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics Acids and Alkalis <a href="https://www.bbc.co.uk/bitesize/guides/z8jt4qt/revision/1">https://www.bbc.co.uk/bitesize/guides/z8jt4qt/revision/1</a> Salts <a href="https://www.bbc.co.uk/bitesize/guides/zqxyjty/revision/1">https://www.bbc.co.uk/bitesize/guides/zqxyjty/revision/1</a> Youtube Clips Acids and pH scale <a href="https://www.youtube.com/watch?v=vt8fB3MFzLk">https://www.youtube.com/watch?v=vt8fB3MFzLk</a> Strong and Weak Acids <a href="https://www.youtube.com/watch?v=_gYBbzqrmE">https://www.youtube.com/watch?v=_gYBbzqrmE</a> Neutralisation <a href="https://www.youtube.com/watch?v=IBjwMcHUyBY">https://www.youtube.com/watch?v=IBjwMcHUyBY</a> Core Practical: Investigating Neutralisation <a href="https://www.youtube.com/watch?v=51b8-EUcl_Q">https://www.youtube.com/watch?v=51b8-EUcl_Q</a> Core Practical: Making Soluble Salts <a href="https://www.youtube.com/watch?v=qIOMlwBoe_4">https://www.youtube.com/watch?v=qIOMlwBoe_4</a></p>
<b>Enrichment opportunities</b>	<p>Investigating the periodic table with experiments (Royal Institution lecture): <a href="https://www.youtube.com/watch?v=kqe9tEcZkno">https://www.youtube.com/watch?v=kqe9tEcZkno</a> The Magic of Chemistry (Royal Institution lecture): <a href="https://www.youtube.com/watch?v=0g8lANs6zpQ">https://www.youtube.com/watch?v=0g8lANs6zpQ</a></p>

## Year 10 – Half Term 4 - CB3 Genetics

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• About the differences between environmental and inherited (genetic) variation</li> <li>• How gametes fuse to produce a gamete</li> <li>• How the nuclei of eukaryotic cells contain chromosomes, which contain DNA</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About sexual and asexual reproduction and the need for meiosis</li> <li>• About the structure of DNA</li> <li>• About mutations and the causes of genetic variation</li> <li>• How the inheritance of some characteristics occurs in families</li> </ul>
<b>Next Steps</b>	<p>This topics links with CB4 Natural Selection and Genetic Modification and onto A-level biology – Biological Molecules, Cells and Genetic information, variation and relationships between organisms.</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of genetics and how you inherited your features from your parents. You will understand the role of genetic analysis and how medical professionals can advise prospective parents. You will also develop and understanding of the ethical and social issues surrounding scientific developments in relation to the Human Genome Project.</p>
<b>Key vocabulary</b>	<p>Asexual, meiosis, gamete, chromosome, zygote, helix, gene, allele, homozygous, heterozygous, polypeptide, genotype, phenotype, Punnett square, carrier, mutation, benefit, structure, alternative, sex, substitute, bond, gender, identical</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 39-54</a> <a href="#">Bitesize Genetics</a> <a href="#">Mitosis V Meiosis</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Human Genome Project Documentary</a> <a href="#">Build and DNA model</a> <a href="#">Extracting DNA at home</a> <a href="#">Make a DNA bracelet</a></p>

## Year 10 – Half Term 4 - CP7 Energy – Force doing work CP8 Forces and Their Effects

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the structure of the atom in the topics</p> <ul style="list-style-type: none"> <li>- 7K Forces</li> <li>- 8K Energy Transfers</li> </ul> <p>At Key Stage 4 you will have already studied</p> <ul style="list-style-type: none"> <li>- CP1 – Motion</li> <li>- CP3 Conservation of Energy</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- The different ways in which energy can be stored and transferred</li> <li>- About using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces</li> <li>- The effects of balanced and unbalanced forces</li> <li>- The difference between vector and scalar quantities</li> <li>- How to calculate changes in GPE and KE</li> <li>- About energy transfer diagrams and how to work out the efficiency of a transfer</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How the energy in a system can be changed</li> <li>• How to calculate power and work done</li> <li>• How objects interact with each other, through force fields and contact forces</li> <li>• How to use vector diagrams to work out the effects of forces on an object (Higher tier only)</li> </ul>
<b>Next Steps</b>	<p>At AS/A-Level this links to the “Mechanics and materials” unit. At A-Level there is a link to the unit “Fields and their consequences” There is a link to atomic structure in BTEC Applied Science (Level 3) Unit 1: Principles and Applications of Science I</p>
<b>Personal Development</b>	<p>This unit of work will provide an appreciation for the fundamental laws that underpin our understanding of the physical world. It will also help explain some phenomena that we experience on a daily basis but take for granted for example gravity, static.</p>
<b>Key vocabulary</b>	<p>Energy, power, watts, action, reaction, contact, electrostatic field, force field, friction, gravitational, magnetic, magnetism, magnitude, non-contact, scalar quantity, upthrust, vector, component forces, net, resolving, resultant, scale</p> <p>Analyse, concept, normal, transfer, illustrate, component, contact, data, estimate, structure, demonstrate</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 371-378  <a href="https://www.bbc.co.uk/bitesize/topics/zq6nng8">https://www.bbc.co.uk/bitesize/topics/zq6nng8</a> and  <a href="https://www.bbc.co.uk/bitesize/guides/z3w3h39/revision/1">https://www.bbc.co.uk/bitesize/guides/z3w3h39/revision/1</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.dailymotion.com/video/x3oeb9e">https://www.dailymotion.com/video/x3oeb9e</a> - “At the edge of space” Documentary  <a href="https://www.theverge.com/2013/10/15/4840200/felix-baumgartner-skydive-documentary-now-streaming-rdio">https://www.theverge.com/2013/10/15/4840200/felix-baumgartner-skydive-documentary-now-streaming-rdio</a> - Felix Baumgartner documentary 'Mission to the Edge of Space'</p>

## Year 10 – Half Term 5 - CB4 Natural Selection and Genetic Modification

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That organisms change over time (evolution)</li> <li>• That Charles Darwin came up with a theory to explain this</li> <li>• About how DNA contains instructions for the characteristics of organisms</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About the development of the theory of evolution by natural selection</li> <li>• How different methods, including genetic analysis, are being used to investigate evolution</li> <li>• How organisms are classified</li> <li>• How selective breeding and genetic engineering are carried out, and their benefits and drawbacks</li> </ul>
<b>Next Steps</b>	<p>This topics links with CB3 Genetics and onto A-level biology – Biological Molecules, Cells and Genetic information, variation and relationships between organisms.</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how organisms have changed overtime and how evidence is used to support the theories developed by scientists. You will also learn how science contributes to our everyday lives through selective breeding and genetic modification of animals, plants and bacteria.</p>
<b>Key vocabulary</b>	<p>Evolution, ancestor, species, ancestor, resistant, antibiotic, domain, genome, artificial, genetic engineering, GMO, yield, recombinant DNA, ligase, insulin, vector, fertiliser  <span style="background-color: yellow;">evolve, modify, theory, generation, domestic, trend, select, technique,</span></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class            Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 55-66</a>  <a href="#">Bitesize Natural Selection and Genetic Modification</a></p>
<b>Enrichment opportunities</b>	<p>Visit the Natural History Museum (<a href="#">or take a look at their website</a>)  <a href="#">Genetics Alive- virtual lab</a>            Watch David Attenborough; <a href="#">First life and Rise of the Mammals</a>  <a href="#">Become a fossil hunter</a></p>

## Year 10 – Half Term 5 - CC9-12 Calculations Involving Masses, Electrolytic Processes and Extracting Metals

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How to represent elements and compounds using symbols and that reactions can be represented using equations.</li> <li>• That mass is conserved in a reaction.</li> <li>• About the reactivity series of metals in the copper chemistry unit.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to calculate the following: relative formula masses; empirical and molecular formulae of compounds; concentration of solutions; mass of reactants or products in a reaction.</li> <li>• How metals are extracted from ores by reduction and electrolysis and link this to reactivity.</li> <li>• <i>Higher Tier students: about the Avogadro constant and molar quantities and how to write half equations.</i></li> </ul>
<b>Next Steps</b>	<p>Chemistry y11 half term 3 - Fuels and Earth Science topic. Btec level 3 Applied Science or AS level Chemistry - Amount of substance, Equilibria, Redox.</p>
<b>Personal Development</b>	<p>Through the study of Earth's resources, you will learn about the economic and environmental benefits of recycling so that the you can understand how to be a responsible, respectful citizen. You will discuss and debate issues and ideas around metal extraction, such as the use of biological methods, in a considered way.</p>
<b>Key vocabulary</b>	<p>empirical formula, molecular formula, relative formula mass, concentration, Avogadro constant, mole, anion, anode, cation, cathode, electrode, electrolyte, oxidation, reduction, half equation, ore, redox, extraction, bioleaching, phytoextraction, recycling <b>dynamic, conduct, obtain, positive, transfer, finite, transport, environment, economy,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on calculating empirical formula. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos:  <a href="#">Bitesize calculations</a> <a href="#">Relative formula mass</a> <a href="#">Calculating concentration</a>  <a href="#">Bitesize HT only calculations</a> <a href="#">Moles, Mass, Mr</a>  <a href="#">Bitesize obtaining and using metals</a> <a href="#">Reduction of metal ore</a>  <a href="#">Bitesize electrolysis</a> <a href="#">Electrolysis basics</a> <a href="#">Extracting metals by electrolysis</a></p>
<b>Enrichment opportunities</b>	<p>From rock to copper <a href="#">video</a>            Where does gold come from? <a href="#">video</a>            Research different metals and find out the name, appearance and location of their ores. Eg. Bauxite contains aluminium, it is mined in Australia, South America, Africa, and the Caribbean</p>

## Year 10 – Half Term 5 - CP12 Particle Model

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have studied the particle model during</p> <ul style="list-style-type: none"> <li>- Transition unit</li> <li>- topic 7G-Particle Model</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>- mass is conserved during changes of state</li> <li>- about the properties of solids, liquids and gases</li> <li>- how particles are arranged in solids, liquids and gases and how this is affected by temperature</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to explain different densities of substances and how to calculate density</li> <li>• About specific heat capacity and specific latent heat and how to calculate them</li> <li>• How changing the temperature of a gas affects its pressure</li> <li>• About the Kelvin and Celsius temperature scales</li> </ul>
<b>Next Steps</b>	<p>Topic 13 follows directly on from topic 12; this topic looks at the energy stored and transferred in the changing shape of a material.</p> <p>At A-Level this links to “Thermal Physics” unit.</p>
<b>Personal Development</b>	<p>For anyone with an interest in amateur dramatics or theatrical settings, you will be able to apply your knowledge and understanding of changes of state to appreciate how dry ice can be used to set the scene or increase the dramatics of a situation e.g. an illusion on stage</p>
<b>Key vocabulary</b>	<p>Particle, arranged, solid, liquid, gas, uniform, vibrate, temperature, thermal, energy, state, matter, density, mass, , displacement, measure, calculate, change, reversible, , latent, pressure, Kelvin, <b>Structure, specific, theory, volume, bond, displace, analyse</b></p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test – however to be done at the end of the next topic, as topic 12 leads into topic 13.</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a> (Foundation) or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 414-425  <a href="https://www.bbc.co.uk/bitesize/guides/z32cfcw/revision/1">https://www.bbc.co.uk/bitesize/guides/z32cfcw/revision/1</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.pbs.org/wgbh/nova/zero/">https://www.pbs.org/wgbh/nova/zero/</a>  <a href="https://www.youtube.com/watch?v=lvqu6JAbaKc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=5">https://www.youtube.com/watch?v=lvqu6JAbaKc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=5</a> – CORE PRACTICAL (Density)  <a href="https://www.youtube.com/watch?v=loeRLKNeUsc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=6">https://www.youtube.com/watch?v=loeRLKNeUsc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=6</a> – CORE PRACTICAL (Specific heat capacity)</p>



## Year 10 – Half Term 6 - CB4 Natural Selection and Genetic Modification

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That organisms change over time (evolution)</li> <li>• That Charles Darwin came up with a theory to explain this</li> <li>• About how DNA contains instructions for the characteristics of organisms</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About the development of the theory of evolution by natural selection</li> <li>• How different methods, including genetic analysis, are being used to investigate evolution</li> <li>• How organisms are classified</li> <li>• How selective breeding and genetic engineering are carried out, and their benefits and drawbacks</li> </ul>
<b>Next Steps</b>	<p>This topics links with CB3 Genetics and onto A-level biology – Biological Molecules, Cells and Genetic information, variation and relationships between organisms.</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how organisms have changed overtime and how evidence is used to support the theories developed by scientists. You will also learn how science contributes to our everyday lives through selective breeding and genetic modification of animals, plants and bacteria.</p>
<b>Key vocabulary</b>	<p>Evolution, ancestor, species, ancestor, resistant, antibiotic, domain, genome, artificial, genetic engineering, GMO, yield, recombinant DNA, ligase, insulin, vector, fertiliser  <span style="background-color: yellow;">evolve, modify, theory, generation, domestic, trend, select, technique,</span></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class            Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 55-66</a>  <a href="#">Bitesize Natural Selection and Genetic Modification</a></p>
<b>Enrichment opportunities</b>	<p>Visit the Natural History Museum (<a href="#">or take a look at their website</a>)  <a href="#">Genetics Alive- virtual lab</a>            Watch David Attenborough; <a href="#">First life and Rise of the Mammals</a>  <a href="#">Become a fossil hunter</a></p>

## Year 10 – Half Term 6 - CC9-12 Calculations Involving Masses, Electrolytic Processes and Extracting Metals

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How to represent elements and compounds using symbols and that reactions can be represented using equations.</li> <li>• That mass is conserved in a reaction.</li> <li>• About the reactivity series of metals in the copper chemistry unit.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to calculate the following: relative formula masses; empirical and molecular formulae of compounds; concentration of solutions; mass of reactants or products in a reaction.</li> <li>• How metals are extracted from ores by reduction and electrolysis and link this to reactivity.</li> <li>• <i>Higher Tier students: about the Avogadro constant and molar quantities and how to write half equations.</i></li> </ul>
<b>Next Steps</b>	<p>Chemistry y11 half term 3 - Fuels and Earth Science topic. Btec level 3 Applied Science or AS level Chemistry - Amount of substance, Equilibria, Redox.</p>
<b>Personal Development</b>	<p>Through the study of Earth's resources, you will learn about the economic and environmental benefits of recycling so that the you can understand how to be a responsible, respectful citizen. You will discuss and debate issues and ideas around metal extraction, such as the use of biological methods, in a considered way.</p>
<b>Key vocabulary</b>	<p>empirical formula, molecular formula, relative formula mass, concentration, Avogadro constant, mole, anion, anode, cation, cathode, electrode, electrolyte, oxidation, reduction, half equation, ore, redox, extraction, bioleaching, phytoextraction, recycling <b>dynamic, conduct, obtain, positive, transfer, finite, transport, environment, economy,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on calculating empirical formula. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos:  <a href="#">Bitesize calculations</a> <a href="#">Relative formula mass</a> <a href="#">Calculating concentration</a>  <a href="#">Bitesize HT only calculations</a> <a href="#">Moles, Mass, Mr</a>  <a href="#">Bitesize obtaining and using metals</a> <a href="#">Reduction of metal ore</a>  <a href="#">Bitesize electrolysis</a> <a href="#">Electrolysis basics</a> <a href="#">Extracting metals by electrolysis</a></p>
<b>Enrichment opportunities</b>	<p>From rock to copper <a href="#">video</a>            Where does gold come from? <a href="#">video</a>            Research different metals and find out the name, appearance and location of their ores. Eg. Bauxite contains aluminium, it is mined in Australia, South America, Africa, and the Caribbean</p>

## Year 10 – Half Term 6 - CP12 Particle Model

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have studied the particle model during</p> <ul style="list-style-type: none"> <li>- Transition unit</li> <li>- topic 7G-Particle Model</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>- mass is conserved during changes of state</li> <li>- about the properties of solids, liquids and gases</li> <li>- how particles are arranged in solids, liquids and gases and how this is affected by temperature</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to explain different densities of substances and how to calculate density</li> <li>• About specific heat capacity and specific latent heat and how to calculate them</li> <li>• How changing the temperature of a gas affects its pressure</li> <li>• About the Kelvin and Celsius temperature scales</li> </ul>
<b>Next Steps</b>	<p>Topic 13 follows directly on from topic 12; this topic looks at the energy stored and transferred in the changing shape of a material.</p> <p>At A-Level this links to “Thermal Physics” unit.</p>
<b>Personal Development</b>	<p>For anyone with an interest in amateur dramatics or theatrical settings, you will be able to apply your knowledge and understanding of changes of state to appreciate how dry ice can be used to set the scene or increase the dramatics of a situation e.g. an illusion on stage</p>
<b>Key vocabulary</b>	<p>Particle, arranged, solid, liquid, gas, uniform, vibrate, temperature, thermal, energy, state, matter, density, mass, , displacement, measure, calculate, change, reversible, , latent, pressure, Kelvin, <b>Structure, specific, theory, volume, bond, displace, analyse</b></p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test – however to be done at the end of the next topic, as topic 12 leads into topic 13.</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a> (Foundation) or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 414-425  <a href="https://www.bbc.co.uk/bitesize/guides/z32cfcw/revision/1">https://www.bbc.co.uk/bitesize/guides/z32cfcw/revision/1</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.pbs.org/wgbh/nova/zero/">https://www.pbs.org/wgbh/nova/zero/</a>  <a href="https://www.youtube.com/watch?v=lvqu6JAbaKc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=5">https://www.youtube.com/watch?v=lvqu6JAbaKc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=5</a> – CORE PRACTICAL (Density)  <a href="https://www.youtube.com/watch?v=loeRLKNeUsc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=6">https://www.youtube.com/watch?v=loeRLKNeUsc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=6</a> – CORE PRACTICAL (Specific heat capacity)</p>

## Year 11 – Half Term 1 - Natural Selection and Genetic Modification

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That organisms change over time (evolution)</li> <li>• That Charles Darwin came up with a theory to explain this</li> <li>• About how DNA contains instructions for the characteristics of organisms</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About the development of the theory of evolution by natural selection</li> <li>• How different methods, including genetic analysis, are being used to investigate evolution</li> <li>• How organisms are classified</li> <li>• How selective breeding and genetic engineering are carried out, and their benefits and drawbacks</li> </ul>
<b>Next Steps</b>	<p>This topics links with CB3 Genetics and onto A-level biology – Biological Molecules, Cells and Genetic information, variation and relationships between organisms.</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how organisms have changed overtime and how evidence is used to support the theories developed by scientists. You will also learn how science contributes to our everyday lives through selective breeding and genetic modification of animals, plants and bacteria.</p>
<b>Key vocabulary</b>	<p>Evolution, ancestor, species, ancestor, resistant, antibiotic, domain, genome, artificial, genetic engineering, GMO, yield, recombinant DNA, ligase, insulin, vector, fertiliser  <span style="background-color: yellow;">evolve, modify, theory, generation, domestic, trend, select, technique,</span></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class            Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 55-66</a>  <a href="#">Bitesize Natural Selection and Genetic Modification</a></p>
<b>Enrichment opportunities</b>	<p>Visit the Natural History Museum (<a href="#">or take a look at their website</a>)  <a href="#">Genetics Alive- virtual lab</a>            Watch David Attenborough; <a href="#">First life and Rise of the Mammals</a>  <a href="#">Become a fossil hunter</a></p>

## Year 11 – Half Term 1 - CB6 Plant structures and functions

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That plants make their own food (glucose) using photosynthesis</li> <li>• How light and chlorophyll are necessary for photosynthesis</li> </ul> <p>You will have also learnt in SB1 Key Concepts:</p> <ul style="list-style-type: none"> <li>• About certain plant cells being specialised and adapted to their function</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• More about photosynthesis and how different factors affect its rate</li> <li>• How the rate of water uptake by a plant is affected by different factors</li> <li>• How the reactants for and products of photosynthesis are transported</li> <li>• More about specialised cells (including palisade, root hair, xylem and phloem cells)</li> </ul>
<b>Next Steps</b>	<p>CB9- Ecosystems</p> <p>A-level biology – Biological Molecules, Cells, Organisms exchange substances with their environment, energy transfers in and between organisms</p>
<b>Personal Development</b>	<p>In this unit you will learn about plant-based careers in areas such as farming and agriculture. You will also gain an understanding about the importance of plants within your everyday lives.</p>
<b>Key vocabulary</b>	<p>chloroplast, exchange, palisade, photosynthesis, starch, stoma, sucrose, concentration, proportional, rate, diffusion, osmosis, phloem, xylem, transpiration, translocation, analyse, environment, data, factor, interpret, method, vary, appropriate, range</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class</p> <p>Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 85-96</a></p> <p><a href="#">BBC Bitesize Plants and Photosynthesis</a></p> <p><a href="#">Photosynthesis Core Practical video</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">BBC Life of Plants</a></p> <p><a href="#">Photosynthesis in education</a></p>

## Year 11 – Half Term 1 - CC9-12 Calculations Involving Masses, Electrolytic Processes and Extracting Metals

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How to represent elements and compounds using symbols and that reactions can be represented using equations.</li> <li>• That mass is conserved in a reaction.</li> <li>• About the reactivity series of metals in the copper chemistry unit.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to calculate the following: relative formula masses; empirical and molecular formulae of compounds; concentration of solutions; mass of reactants or products in a reaction.</li> <li>• How metals are extracted from ores by reduction and electrolysis and link this to reactivity.</li> <li>• <i>Higher Tier students: about the Avogadro constant and molar quantities and how to write half equations.</i></li> </ul>
<b>Next Steps</b>	<p>Chemistry y11 half term 3 - Fuels and Earth Science topic. Btec level 3 Applied Science or AS level Chemistry - Amount of substance, Equilibria, Redox.</p>
<b>Personal Development</b>	<p>Through the study of Earth's resources, you will learn about the economic and environmental benefits of recycling so that the you can understand how to be a responsible, respectful citizen. You will discuss and debate issues and ideas around metal extraction, such as the use of biological methods, in a considered way.</p>
<b>Key vocabulary</b>	<p>empirical formula, molecular formula, relative formula mass, concentration, Avogadro constant, mole, anion, anode, cation, cathode, electrode, electrolyte, oxidation, reduction, half equation, ore, redox, extraction, bioleaching, phytoextraction, recycling <b>dynamic, conduct, obtain, positive, transfer, finite, transport, environment, economy,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on calculating empirical formula. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos:  <a href="#">Bitesize calculations</a> <a href="#">Relative formula mass</a> <a href="#">Calculating concentration</a>  <a href="#">Bitesize HT only calculations</a> <a href="#">Moles, Mass, Mr</a>  <a href="#">Bitesize obtaining and using metals</a> <a href="#">Reduction of metal ore</a>  <a href="#">Bitesize electrolysis</a> <a href="#">Electrolysis basics</a> <a href="#">Extracting metals by electrolysis</a></p>
<b>Enrichment opportunities</b>	<p>From rock to copper <a href="#">video</a>  Where does gold come from? <a href="#">video</a>  Research different metals and find out the name, appearance and location of their ores. Eg. Bauxite contains aluminium, it is mined in Australia, South America, Africa, and the Caribbean</p>

## Year 11 – Half Term 1 - CP12 Particle Model

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have studied the particle model during</p> <ul style="list-style-type: none"> <li>- Transition unit</li> <li>- topic 7G-Particle Model</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>- mass is conserved during changes of state</li> <li>- about the properties of solids, liquids and gases</li> <li>- how particles are arranged in solids, liquids and gases and how this is affected by temperature</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to explain different densities of substances and how to calculate density</li> <li>• About specific heat capacity and specific latent heat and how to calculate them</li> <li>• How changing the temperature of a gas affects its pressure</li> <li>• About the Kelvin and Celsius temperature scales</li> </ul>
<b>Next Steps</b>	<p>Topic 13 follows directly on from topic 12; this topic looks at the energy stored and transferred in the changing shape of a material.</p> <p>At A-Level this links to “Thermal Physics” unit.</p>
<b>Personal Development</b>	<p>For anyone with an interest in amateur dramatics or theatrical settings, you will be able to apply your knowledge and understanding of changes of state to appreciate how dry ice can be used to set the scene or increase the dramatics of a situation e.g. an illusion on stage</p>
<b>Key vocabulary</b>	<p>Particle, arranged, solid, liquid, gas, uniform, vibrate, temperature, thermal, energy, state, matter, density, mass, , displacement, measure, calculate, change, reversible, , latent, pressure, Kelvin, <b>Structure, specific, theory, volume, bond, displace, analyse</b></p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test – however to be done at the end of the next topic, as topic 12 leads into topic 13.</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a> (Foundation) or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 414-425  <a href="https://www.bbc.co.uk/bitesize/guides/z32cfcw/revision/1">https://www.bbc.co.uk/bitesize/guides/z32cfcw/revision/1</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.pbs.org/wgbh/nova/zero/">https://www.pbs.org/wgbh/nova/zero/</a>  <a href="https://www.youtube.com/watch?v=lvqu6JAbaKc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=5">https://www.youtube.com/watch?v=lvqu6JAbaKc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=5</a> – CORE PRACTICAL (Density)  <a href="https://www.youtube.com/watch?v=loeRLKNeUsc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=6">https://www.youtube.com/watch?v=loeRLKNeUsc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=6</a> – CORE PRACTICAL (Specific heat capacity)</p>

## Year 11 – Half Term 1 - CP13 Forces and Matter

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 7k Forces</li> <li>- CP2 Forces and Motion</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>- Some of the effects that forces have on objects</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About elastic and inelastic distortion</li> <li>• About the relationship between force and extension and how to calculate the extension and spring constant</li> <li>• How to calculate the work done when stretching a spring</li> </ul>
<b>Next Steps</b>	At AS/ A-Level this links to “Mechanics and materials” Physics unit.
<b>Personal Development</b>	You will be able to apply your knowledge and understanding to real-life situations that you might have a particular interest, for example specialist sports and leisure activities such as pole vaulting or bungee jumping.
<b>Key vocabulary</b>	Elastic, inelastic, distortion, deform, force, springs, extension, linear, relationship, directly proportional, investigate, energy, transferred, constant, work done, distance, calculate, force meter, <span style="background-color: yellow;">Transfer, proportion, constant, flexible, Data,</span>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test for both topic 12 and 13</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a> (Foundation) or  <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages  <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 426-432  <a href="https://www.bbc.co.uk/bitesize/guides/zt9smmsg/revision/1">https://www.bbc.co.uk/bitesize/guides/zt9smmsg/revision/1</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.bbc.co.uk/programmes/p033wsm9g">https://www.bbc.co.uk/programmes/p033wsm9g</a> “BBC Laws of Nature: Hooke’s Law”  <a href="https://www.youtube.com/watch?v=sZrXv0dHARK">https://www.youtube.com/watch?v=sZrXv0dHARK</a> “BBC: Robert Hooke Victim of Genius”  <a href="https://www.youtube.com/watch?v=jQAt3e6Bz7U&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=6">https://www.youtube.com/watch?v=jQAt3e6Bz7U&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=6</a> – CORE PRACTICAL</p>



## Year 11 – Half Term 2 - CB7 Animal Coordination and Homeostasis

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• About the structure and function of the human reproductive systems</li> <li>• About the Menstrual cycle</li> <li>• How enzymes help digest food molecules</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About endocrine glands and how hormones are transported to target organs</li> <li>• How the hormones thyroxine and adrenaline affect the body</li> <li>• How the menstrual cycle is controlled by hormones and how hormones are used in contraception</li> <li>• About diabetes and how blood sugar concentration is controlled</li> </ul>
<b>Next Steps</b>	<p>This topic links with CB1 Key Concepts in Biology, CB3 Selective Breeding and Genetic Modification, CB5 Health, Disease and Developing New Medicines and CB8 Exchange and Transport. It also leads onto A-level Biology; Cells and Organism exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will learn how your body maintains its internal conditions and how medical professionals can control and treat different endocrine conditions e.g. diabetes and infertility</p>
<b>Key vocabulary</b>	<p>Adrenal, adrenaline, hormone, ovary, menstrual, progesterone, oestrogen, thyroxine, pancreas, testis, thyroid, glycogen, glucose, glucagon, metabolic, contraception, fertility, ovulation, clomiphene, follicle, diabetes, pituitary, area, function, role, structure, affect, normal, maintain, range, regulate, sex, internal, label, medical, ratio, trend, inhibit</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 97-110</a> <a href="#">Bitesize Animal coordination and homeostasis</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Medical Museum- Leeds</a> <a href="#">BBC Operation Ouch- hormones</a> <a href="#">BBC Alex ones- My fertility and Me documentary</a></p>

## Year 11 – Half Term 2 - CC9-12 Calculations Involving Masses, Electrolytic Processes and Extracting Metals

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How to represent elements and compounds using symbols and that reactions can be represented using equations.</li> <li>• That mass is conserved in a reaction.</li> <li>• About the reactivity series of metals in the copper chemistry unit.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to calculate the following: relative formula masses; empirical and molecular formulae of compounds; concentration of solutions; mass of reactants or products in a reaction.</li> <li>• How metals are extracted from ores by reduction and electrolysis and link this to reactivity.</li> <li>• <i>Higher Tier students: about the Avogadro constant and molar quantities and how to write half equations.</i></li> </ul>
<b>Next Steps</b>	<p>Chemistry y11 half term 3 - Fuels and Earth Science topic. Btec level 3 Applied Science or AS level Chemistry - Amount of substance, Equilibria, Redox.</p>
<b>Personal Development</b>	<p>Through the study of Earth's resources, you will learn about the economic and environmental benefits of recycling so that the you can understand how to be a responsible, respectful citizen. You will discuss and debate issues and ideas around metal extraction, such as the use of biological methods, in a considered way.</p>
<b>Key vocabulary</b>	<p>empirical formula, molecular formula, relative formula mass, concentration, Avogadro constant, mole, anion, anode, cation, cathode, electrode, electrolyte, oxidation, reduction, half equation, ore, redox, extraction, bioleaching, phytoextraction, recycling <b>dynamic, conduct, obtain, positive, transfer, finite, transport, environment, economy,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on calculating empirical formula. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos:  <a href="#">Bitesize calculations</a> <a href="#">Relative formula mass</a> <a href="#">Calculating concentration</a>  <a href="#">Bitesize HT only calculations</a> <a href="#">Moles, Mass, Mr</a>  <a href="#">Bitesize obtaining and using metals</a> <a href="#">Reduction of metal ore</a>  <a href="#">Bitesize electrolysis</a> <a href="#">Electrolysis basics</a> <a href="#">Extracting metals by electrolysis</a></p>
<b>Enrichment opportunities</b>	<p>From rock to copper <a href="#">video</a>  Where does gold come from? <a href="#">video</a>  Research different metals and find out the name, appearance and location of their ores. Eg. Bauxite contains aluminium, it is mined in Australia, South America, Africa, and the Caribbean</p>

## Year 11 – Half Term 2 - CP9 Electricity and Circuits

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have studied the particle model during</p> <ul style="list-style-type: none"> <li>- 7J Current and Electricity</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>- That electric current is measured in amps and voltage is measured in volts</li> <li>- The circuits can be connected with components in series or in parallel</li> <li>- That conductors have low resistance and insulators have high resistance</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About current, charge and potential difference</li> <li>• How to calculate resistance, power and energy transferred</li> <li>• About components with changing resistance</li> <li>• About the UK domestic electricity supply and electrical safety features in homes</li> </ul>
<b>Next Steps</b>	<p>Topics 10 and 11 follow on from topic 9; where pupils look at the production of electricity. Optional unit, 15 Electrical Circuits and their Application, for the BTEC Level 3 Applied Science</p> <p>At AS/ A-Level this links to “Electricity” unit.</p>
<b>Personal Development</b>	<p>You will be given the opportunity to consider careers in the electricity industry, such as an electrician, electrical engineer. You will also develop an appreciation for how the appliances you use everyday are powered and possible causes should they fail.</p>
<b>Key vocabulary</b>	<p>Charge, coulombs, current, amperes, voltage, potential difference, volts, resistance, ohms, conductor, insulator, series, parallel, circuit, electrons, energy, voltmeter, ammeter, diode, thermistor, fuse, component, switch, filament lamp, cell, battery, power, watts, alternating, direct, live, neutral, Earth, neutron, proton</p> <p>Data, role, function, identify, conclude, potential, transfer, alternative, series, parallel, energy, symbol, neutral, route,</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages  <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 380-400  <a href="https://www.bbc.co.uk/bitesize/guides/zwpwrwx/revision/1">https://www.bbc.co.uk/bitesize/guides/zwpwrwx/revision/1</a> BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.youtube.com/watch?v=2g2M1dndmEg">https://www.youtube.com/watch?v=2g2M1dndmEg</a> “How it works”  <a href="https://www.youtube.com/watch?v=NUUeGianTKM">https://www.youtube.com/watch?v=NUUeGianTKM</a> “The story of electricity”</p>

## Year 11 – Half Term 3 - CC16-17 – Fuels and Earth Science

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• That mixtures can be separated by fractional distillation.</li> <li>• That combustion of fuels releases CO<sub>2</sub> into the atmosphere.</li> <li>• That energy resources can be renewable or non-renewable.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About the names and structures of hydrocarbons found in crude oil (the alkanes)</li> <li>• How crude oil is separated into fractions, giving some typical uses for each.</li> <li>• About the process of cracking.</li> <li>• How the Earth's atmosphere has evolved; how the balance of gases is changing now and leading to climate change.</li> </ul>
<b>Next Steps</b>	Btec level 3 Applied Science or AS level Chemistry – Organic chemistry, Earth Science.
<b>Personal Development</b>	Through the study of Earth science, you will learn about the processes involved in production of greenhouse gases. You will consider the importance of reducing your carbon footprint.
<b>Key vocabulary</b>	hydrocarbon, finite, non-renewable, feedstock, homologous series, fraction, viscosity, ignite, molecular formulae, general formulae, combustion, cracking, supply & demand, monoxide, haemoglobin, toxic, limewater, alkane, composition, process, environment, resources, dispose,
<b>How and when will I be assessed?</b>	Formative: low stakes quizzing, homework tasks, extended written answer on the fractions of crude oil. Summative: Pearson End of Unit Test
<b>Resources to use</b>	BBC Bitesize Topics & useful videos <a href="#">Fuels</a> ; <a href="#">Earth science</a> ;
<b>Enrichment opportunities</b>	<a href="#">Organic chemistry</a> as a career. <a href="#">Environmental science</a> as a career.

## Year 11 – Half Term 3 - CB8 Exchange and Transport in Animals

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• How the digestive system gets glucose and other food molecules into the blood</li> <li>• How the respiratory system gets oxygen into the blood</li> <li>• About aerobic and anaerobic respiration</li> <li>• About diffusion</li> <li>• About different animal cells and their adaptations</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• More about diffusion, gas exchange and surface area:volume ratio</li> <li>• About the rate of diffusion and Fick's law</li> <li>• More about the different types of respiration</li> <li>• How the heart, lungs, blood vessels and blood are adapted to their functions</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB1 Key Concepts in Biology, SB5 Health and Disease and Developing New Medicines. It also leads onto A-level Biology; Cells and Organism exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will learn how your body takes in and releases key chemicals and how they are transport around the body. This topics overs some basics of human anatomy and is always of great interest to pupils wanting to follow any kind of medical career.</p>
<b>Key vocabulary</b>	<p>Aerobic, anaerobic, capillary, vein, artery, diffusion, excretion, metabolism, area, gas exchange, surface area, volume, proportional, inversely, erythrocyte, lymphocyte, platelet, plasma, pulse, cardiac, atrium, ventricle, pulmonary, oxygenated, deoxygenated, valve, septum, vena cava, lactic acid, mitochondrion, <b>area, consist, data, identify, factor, role, label, method, similar, function, range</b></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 161-174</a> <a href="#">Bitesize Animal Coordination and Homeostasis</a> <a href="#">Respiration Core Practical</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Medical Museum- Leeds</a> <a href="#">BBC Operation Ouch- heart</a> and lungs <a href="#">Virtual Heart dissection</a> <a href="#">One blood website</a></p>

## Year 11 – Half Term 3 - CP10 Magnetism and the Motor Effect CP11 Electromagnetic Induction

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the structure of the atom in the topics</p> <ul style="list-style-type: none"> <li>- 7J Current and Electricity</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- How to plot the shape of a magnetic field and that the Earth has a magnetic field</li> <li>- That electric currents cause magnetic fields, including in electromagnets and motors</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About the permanent and induced magnets, and how to represent a magnetic field</li> <li>• About the magnetic field around a current in a wire and how the factors that affect it</li> <li>• How the fields from the individual coils in a solenoid interact</li> <li>• How to use the power equation for transformers</li> <li>• How transformers are used in the national grid</li> <li>• How a current can be induced in a wire and the factors that affect it (HIGHER tier only)</li> <li>• How to calculate the size of the force on a wire carrying a current in a magnetic field (HIGHER tier only)</li> <li>• How to work out the direction of the force on a wire carrying a current in a magnetic field (HIGHER tier only)</li> </ul>
<b>Next Steps</b>	At A-Level there is a link to the unit “Fields and their consequences”
<b>Personal Development</b>	This unit of work provides an insight into how everyday electrical appliances work and will also develop your understanding of how electricity is generated and distributed around the country. This unit will also provide an introduction to potential career opportunities for example electrical engineer.
<b>Key vocabulary</b>	<p>Core, induced magnet, magnetic field, permanent magnet, plotting compass, electromagnet, solenoid, temporary magnet, Fleming’s left-hand rule</p> <p>Magnetic flux density, motor effect, tesla, induction, induce, potential difference, transformer, alternating current, national grid, transmission</p> <p>Analyse, concept, normal, transfer, illustrate, component, contact, data, estimate, structure, demonstrate</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages  <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 401-412  <a href="https://www.bbc.co.uk/bitesize/topics/z34ddxs">https://www.bbc.co.uk/bitesize/topics/z34ddxs</a> and  <a href="https://www.bbc.co.uk/bitesize/guides/zcyh6yc/revision/1">https://www.bbc.co.uk/bitesize/guides/zcyh6yc/revision/1</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.bbc.co.uk/news/uk-scotland-scotland-politics-29509021">https://www.bbc.co.uk/news/uk-scotland-scotland-politics-29509021</a> - What is the National Grid</p> <p><a href="https://www.youtube.com/watch?v=vXOG9F42puY">https://www.youtube.com/watch?v=vXOG9F42puY</a> – Fully Charged – National Grid</p>



Separate Sciences  
Years 10 & 11

## Year 10 - Half Term 1 – SP4 Waves

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 7L Sound</li> <li>- 8J Light</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>• About light waves and sound waves, and how they can be described</li> <li>• How sound waves are produced and how they are detected by our ears</li> <li>• Some uses of sound waves</li> <li>• How light can be absorbed, scatter and reflected</li> <li>• Different colours of light</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• That waves transfer energy and information</li> <li>• How to describe the characteristics of waves</li> <li>• How the speed of a wave is related to its frequency and wavelength, and to the time it takes to travel a certain distance</li> <li>• How waves are refracted at boundaries between different materials</li> <li>• What happens when waves are reflected, refracted, transmitted or absorbed by different materials</li> <li>• More about how our ears work</li> <li>• About the uses of ultrasound and infrasound</li> </ul>
<b>Next Steps</b>	<p>SP4 leads into SP5</p> <p>At AS/ A-Level this links to “Waves” Physics unit.</p> <p>This also links to BTEC Applied Science Level 3 “Unit 1: Principles and Applications of Science I”</p>
<b>Personal Development</b>	<p>Application of knowledge about refraction can be helpful for anyone who takes part in leisure activities such as fishing and deep-sea diving.</p>
<b>Key vocabulary</b>	<p>Amplitude, electromagnetic waves, frequency, hertz, longitudinal, medium, period, seismic, sound, transverse, velocity, wave, wavelength, interface, normal, refraction,</p> <p>Analyse, similar, area, data, formula, estimate, identify, conclude, select, distort, vision, perspective, predict, interpret, period, source,</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test at the end of both units</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics (Foundation) or (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 47-64</p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zt4gfcw">https://www.bbc.co.uk/bitesize/topics/zt4gfcw</a> BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.bbc.co.uk/teach/ks3-gcse-physics-colours/zvdgt39">https://www.bbc.co.uk/teach/ks3-gcse-physics-colours/zvdgt39</a> - Why do we see colours differently?</p> <p><a href="http://www.bbc.com/earth/story/20170622-the-incredible-science-of-surfing-and-waves">http://www.bbc.com/earth/story/20170622-the-incredible-science-of-surfing-and-waves</a> “the incredible science of surfing and waves”</p> <p><a href="https://www.youtube.com/watch?v=K31V-bOKLJw">https://www.youtube.com/watch?v=K31V-bOKLJw</a> National geographic - Documentary Disaster Wars Earthquake vs Tsunami</p> <p><a href="https://www.youtube.com/watch?v=UNmv6H-f180&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=7">https://www.youtube.com/watch?v=UNmv6H-f180&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=7</a> – CORE PRACTICAL</p> <p><a href="https://www.youtube.com/watch?v=OY0IXHPo_nM&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=7">https://www.youtube.com/watch?v=OY0IXHPo_nM&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=7</a> – CORE PRACTICAL</p>



## Year 10 - Half Term 1 – SC18 and SC19 Rates of Reaction and Energy Changes, SC12 and SC15 Dynamic Equilibria and The Haber Process

<b>Prior Learning</b>	<p>You will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• about elements compounds and the periodic table (8F),</li> <li>• what happens during chemical reactions (7F, 7H, 8E, 8G).</li> </ul> <p>In SC0, SC1 and SC2 you will have learnt:</p> <ul style="list-style-type: none"> <li>• reacting copper metal with hydrochloric acids will produce hydrogen gas,</li> <li>• reacting copper carbonate with hydrochloric acid will produce carbon dioxide gas,</li> <li>• that the change in mass of a reactant before and after a chemical reaction can be measured,</li> <li>• that all substances are made of particles (either atoms or molecules).</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• How changes in conditions (such as temperature, concentration and surface area of reactants) can affect the rates of reactions.</li> <li>• About the energy transfers that can occur during chemical reactions.</li> <li>• That some chemical reactions are reversible, and that dynamic equilibrium is the point when forward and backwards reactions occur at the same rate.</li> <li>• How to make a fertiliser in a laboratory and compare this with industrial production.</li> <li>• <i>Higher Tier: That chemists must consider rate of reaction, yield, cost and safety in choosing conditions for a particular reaction.</i></li> </ul>
<b>Next Steps</b>	SC8 Acids, SC9 Calculations Involving Masses, SC14 Quantitative Analysis. AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.4 Energetics and 3.1.9 Rate Equations.
<b>Personal Development</b>	SMSC This topic develops an understanding that increasing temperature, concentration, surface area of reactants will increase chemical reactions. This will develop understanding of using ingredients in powder form when cooking or increasing the temperature will cook food faster. It also develops understanding of industrial chemistry and the factors to be considered to make chemistry profitable.
<b>Key vocabulary</b>	<p>Rate, reactants, products, variables, activation energy, exothermic, endothermic, concentration, surface area, pressure, dependent, independent, control, temperature, catalysts, volume, dissolves, reaction profiles, enzymes, protein, active site, substrates, denature, precipitation, neutralisation, distillation, bonds,</p> <p>Analyse, area, assess, available, constitute, data, define, estimate, factor, formula, identify, interpret, method, occur, require, role, obtain, acquire, affect, positive, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	Extended written answer evaluation of method or a conclusion based on data for the core practical experiments (measuring the volume of gases and observing a colour change). SC18 and 19 End of Unit Test
<b>Resources to use</b>	<p>BBC Bitesize Topics: Rates of Reaction and Energy Changes <a href="https://www.bbc.co.uk/bitesize/topics/ztyggdm">https://www.bbc.co.uk/bitesize/topics/ztyggdm</a></p> <p>Youtube Clips: Rates and Energy Revision Video <a href="https://www.youtube.com/watch?v=OyXq2HYCKL0">https://www.youtube.com/watch?v=OyXq2HYCKL0</a></p> <p>Core Practicals: Measuring the volume of a gas <a href="https://www.youtube.com/watch?v=ssa3wh3RNt0">https://www.youtube.com/watch?v=ssa3wh3RNt0</a> Observing precipitation <a href="https://www.youtube.com/watch?v=GI6LVI7oAIU">https://www.youtube.com/watch?v=GI6LVI7oAIU</a></p>
<b>Enrichment opportunities</b>	<p>How do cold packs work? <a href="https://www.youtube.com/watch?v=hVh-bpAv4_E">https://www.youtube.com/watch?v=hVh-bpAv4_E</a> <a href="https://www.youtube.com/watch?v=A5q0NUDbGp8">https://www.youtube.com/watch?v=A5q0NUDbGp8</a></p> <p>Why do chemicals react? <a href="https://www.youtube.com/watch?v=8m6RtOpqvtU">https://www.youtube.com/watch?v=8m6RtOpqvtU</a></p>

## Y10 - Half Term 1- SB9 Ecosystems

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• How almost all life on Earth depends on photosynthesis in plants and algae</li> <li>• About the interdependence of organisms, including food webs and insect pollination</li> <li>• How organisms affect and are affected by their environment, including the accumulation of toxic materials</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How ecosystems are organised</li> <li>• How communities are affected by abiotic and biotic factors</li> <li>• How the abundance and distribution of organisms are measured</li> <li>• How energy is transferred through trophic levels</li> <li>• Parasitic and mutualistic relationships</li> <li>• How humans affect ecosystems and the benefits of maintaining biodiversity</li> <li>• About the importance of the carbon cycle, water cycle and nitrogen cycle</li> <li>• How indicator species can be used to assess pollution levels</li> <li>• Why the rate of decomposition of food and compost can vary</li> </ul>
<b>Next Steps</b>	A-level biology – Biological Molecules, Cells, Organisms exchange substances with their environment, energy transfers in and between organisms, ecosystems
<b>Personal Development</b>	In this unit you will learn about the importance of careers in conservation such as environmental scientist, zoologist and wildlife biologist. Through the study of the world around you and environmental issues you will develop an understanding of how to be responsible, respectful and active citizens who are able to play their part and become actively involved in public life as adults.
<b>Key vocabulary</b>	Ecosystem, habitat, quadrat, abiotic, biotic, transect, biodiversity, predation, eutrophication, indigenous, captivity, conservation, potable, desalination, distillation, biomass, decay, decomposer, faeces, manure, nitrate, nitrogen-fixing bacteria, abundance, analyse, community, distribution, environment, data, factor, interpret, method, vary, appropriate, range
<b>How and when will I be assessed?</b>	Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment
<b>Resources to use</b>	<a href="#">Pearson Edexcel GCSE (9-1) Biology Textbook pages 175-204</a> <a href="#">BBC Bitesize Ecosystems and material cycles</a> <a href="#">Quadrats core practical video</a>
<b>Enrichment opportunities</b>	<a href="#">BBC Life series</a> <a href="#">National Geographic</a> <a href="#">WWF website</a> <a href="#">The Carbon Cycle game</a> Visit Blackpool Zoo Research <a href="#">non-indigenous</a> or <a href="#">endangered species</a>

## Year 10 - Half Term 1 – SC1-2 States of Matter and Mixtures

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How particles are arranged in solids, liquids and gases and how their energy changes with change of state.</li> <li>• How mixtures differ from pure substances.</li> <li>• How to separate some mixtures using filtration, distillation and chromatography.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to use information to predict the state of a substance.</li> <li>• How the arrangement, movement and energy of particles change during change of state.</li> <li>• How to use melting points to distinguish between mixtures and pure substances.</li> <li>• How different methods of separation work.</li> <li>• How to choose a separation method based on the properties of substances in a mixture.</li> <li>• How drinking water is produced.</li> </ul>
<b>Next Steps</b>	<p>Chemistry y10 Half-term 2 – Energy changes, y11 half term 1 – Solubility and qualitative analysis. Btec level 3 Applied Science or AS level Chemistry - Energetics</p>
<b>Personal Development</b>	<p>Through the study of separating mixtures, you will learn about the processes required in the production of clean drinking water. You will consider the importance of a resource which you may take for granted every day.</p>
<b>Key vocabulary</b>	<p>physical change, state, energy, arrangement, particle, pure, filtration, crystallisation, soluble, insoluble, chromatography, distillation, R<sub>f</sub> value, evaporate, condense, chlorination, sedimentation, analysis, potable. <b>source, process, layer, remove, sequence, phase, random,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on separating mixtures. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos <a href="#">States of Matter</a> <a href="#">Separation and Purification</a> <a href="#">Chromatography core practical</a> <a href="#">Practice exam questions</a> <a href="#">water purification video</a></p>
<b>Enrichment opportunities</b>	<p>Water: a <a href="#">precious resource</a> Research why rock salt is added to the roads in winter. <a href="#">Forensic science</a> as a career. Can we use the different properties of plastic and water to solve the problem of plastic pollution?</p>

## Y10 - Half Term 2- SB5 Health, Disease and the Development of Medicines

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That imbalances in the diet can lead to obesity and deficiency disease</li> <li>• That recreational drugs can affect behaviour, health and life processes</li> <li>• About the structure of bacteria</li> <li>• About the use of microscopes to study cells</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About how we define health</li> <li>• About some pathogens, the diseases they cause and how their spread can be reduced or prevented</li> <li>• About the lifecycle of viruses</li> <li>• How plants defend themselves from pests and pathogens and how plant diseases can be identified</li> <li>• How the body is protected against infection</li> <li>• About the immune system</li> <li>• How antibiotics works and how new medicines are developed</li> <li>• About aseptic technique for culturing microorganisms</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB1 Key Concepts in Biology, SB7 Animal Coordination and homeostasis and SB8 Exchange and Transport. It also leads onto A-level Biology; Cells and Organism exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will learn how your health can be affected by various factors. You will develop and understanding of how to keep healthy and how medicine can be developed and used to treat illness and disease.</p>
<b>Key vocabulary</b>	<p>Communicable, immune, pathogen, cirrhosis, deficiency, malnutrition, obesity, cardiovascular, stent, stroke, cholera, diarrhoea, cholera, host, AIDS, HIV, malaria, virus, tuberculosis, protist, vector, lytic, lysogenic, autoclave, aseptic, chlamydia, lysozyme, mucus, antigen, antibody, lymphocyte vaccine, immunisation, <b>chemical, survive, inhibit, area, contact, environment, research, method, specific, primary, transmit, eliminate, attach</b></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 95-122</a> Bitesize Health, Disease and Developing Medicines</p>
<b>Enrichment opportunities</b>	<p><a href="#">Medical Museum- Leeds</a> <a href="#">Virtual Virus Lab game</a> <a href="#">World Health Organisation website</a> – research diseases you are interested in <a href="#">BBC Operation Ouch!!</a></p>

## Year 10 - Half Term 2 – SP5 Light and the Electromagnetic Spectrum

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 8J Light</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>• That light transfers energy</li> <li>• About colour and how different colours are absorbed and reflected differently</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to use ray diagrams to explain reflection, refraction and total internal reflection</li> <li>• How to make coloured light and why some objects appear coloured</li> <li>• How lenses work and some things they can be used for</li> <li>• That light is part of a family of waves called the electromagnetic spectrum, which all have some properties in common</li> <li>• About some used of the waves in different parts of the electromagnetic spectrum</li> <li>• About some of the harmful effects of the waves in different parts of the electromagnetic spectrum.</li> <li>• About some of the factors that affect the temperature of the Earth</li> </ul>
<b>Next Steps</b>	<p>At Physics AS-Level this links to “Particles and Radiation” and “Waves” units</p> <p>At Physics A-Level this links to “Turning Point in Physics” and “Electronics” units.</p> <p>This also links to BTEC Applied Science Level 3 “Unit 1: Principles and Applications of Science 1” unit “C Waves in communication”</p>
<b>Personal Development</b>	<p>This unit of work covers the uses and dangers of Electromagnetic radiation; where you will study both the risks and benefits in using radiation to treat cancer. The field of nuclear medicine introduces various career opportunities and ideas.</p>
<b>Key vocabulary</b>	<p>Electromagnetic, frequency, infrared (IR), interface, refraction, transverse wave, ultraviolet, vacuum, visible light, incidence, normal, gamma, microwaves, radio waves, x-rays, oscillations, fluorescence, radiotherapy, mutation, cancer,</p> <p>Analyse, similar, data, identify, conclude, select, distort, vision, perspective, interpret, period, source,</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test at the end of both units</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics (Foundation) or (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Physics Science Textbook</a> pages 65-88</p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zxr3ng8">https://www.bbc.co.uk/bitesize/topics/zxr3ng8</a> BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://science.nasa.gov/ems">https://science.nasa.gov/ems</a> - NASA Science</p> <p><a href="https://www.pbs.org/wgbh/nova/physics/electromagnetic-spectrum.html">https://www.pbs.org/wgbh/nova/physics/electromagnetic-spectrum.html</a> - Electromagnetic Spectrum Tour</p> <p><a href="https://www.targetingcancer.com.au/our-stories/our-first-tv-documentary-on-radiation-therapy/">https://www.targetingcancer.com.au/our-stories/our-first-tv-documentary-on-radiation-therapy/</a> - Radiation Oncology, targeting cancer</p> <p><a href="https://www.youtube.com/watch?v=tiqiN3y1ze4&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=2">https://www.youtube.com/watch?v=tiqiN3y1ze4&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=2</a> – CORE PRACTICAL</p> <p><a href="https://www.youtube.com/watch?v=LFwio38EK9s&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=3">https://www.youtube.com/watch?v=LFwio38EK9s&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=3</a> – CORE PRACTICAL</p>

## Year 10 - Half Term 2 – SC18 and SC19 Rates of Reaction and Energy Changes, SC12 and SC15 Dynamic Equilibria and The Haber Process

<b>Prior Learning</b>	<p>You will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• about elements compounds and the periodic table (8F),</li> <li>• what happens during chemical reactions (7F, 7H, 8E, 8G).</li> </ul> <p>In SC0, SC1 and SC2 you will have learnt:</p> <ul style="list-style-type: none"> <li>• reacting copper metal with hydrochloric acids will produce hydrogen gas,</li> <li>• reacting copper carbonate with hydrochloric acid will produce carbon dioxide gas,</li> <li>• that the change in mass of a reactant before and after a chemical reaction can be measured,</li> <li>• that all substances are made of particles (either atoms or molecules).</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• How changes in conditions (such as temperature, concentration and surface area of reactants) can affect the rates of reactions.</li> <li>• About the energy transfers that can occur during chemical reactions.</li> <li>• That some chemical reactions are reversible, and that dynamic equilibrium is the point when forward and backwards reactions occur at the same rate.</li> <li>• How to make a fertiliser in a laboratory and compare this with industrial production.</li> <li>• <i>Higher Tier: That chemists must consider rate of reaction, yield, cost and safety in choosing conditions for a particular reaction.</i></li> </ul>
<b>Next Steps</b>	SC8 Acids, SC9 Calculations Involving Masses, SC14 Quantitative Analysis. AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.4 Energetics and 3.1.9 Rate Equations.
<b>Personal Development</b>	SMSC This topic develops an understanding that increasing temperature, concentration, surface area of reactants will increase chemical reactions. This will develop understanding of using ingredients in powder form when cooking or increasing the temperature will cook food faster. It also develops understanding of industrial chemistry and the factors to be considered to make chemistry profitable.
<b>Key vocabulary</b>	<p>Rate, reactants, products, variables, activation energy, exothermic, endothermic, concentration, surface area, pressure, dependent, independent, control, temperature, catalysts, volume, dissolves, reaction profiles, enzymes, protein, active site, substrates, denature, precipitation, neutralisation, distillation, bonds,</p> <p>Analyse, area, assess, available, constitute, data, define, estimate, factor, formula, identify, interpret, method, occur, require, role, obtain, acquire, affect, positive, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	Extended written answer evaluation of method or a conclusion based on data for the core practical experiments (measuring the volume of gases and observing a colour change). SC18 and 19 End of Unit Test
<b>Resources to use</b>	<p>BBC Bitesize Topics: Rates of Reaction and Energy Changes <a href="https://www.bbc.co.uk/bitesize/topics/ztyggdm">https://www.bbc.co.uk/bitesize/topics/ztyggdm</a></p> <p>Youtube Clips: Rates and Energy Revision Video <a href="https://www.youtube.com/watch?v=OyXq2HYCKL0">https://www.youtube.com/watch?v=OyXq2HYCKL0</a></p> <p>Core Practicals: Measuring the volume of a gas <a href="https://www.youtube.com/watch?v=ssa3wh3RNt0">https://www.youtube.com/watch?v=ssa3wh3RNt0</a> Observing precipitation <a href="https://www.youtube.com/watch?v=GI6LVI7oAIU">https://www.youtube.com/watch?v=GI6LVI7oAIU</a></p>
<b>Enrichment opportunities</b>	<p>How do cold packs work? <a href="https://www.youtube.com/watch?v=hVh-bpAv4_E">https://www.youtube.com/watch?v=hVh-bpAv4_E</a> <a href="https://www.youtube.com/watch?v=A5q0NUDbGp8">https://www.youtube.com/watch?v=A5q0NUDbGp8</a></p> <p>Why do chemicals react? <a href="https://www.youtube.com/watch?v=8m6RtOpqvtU">https://www.youtube.com/watch?v=8m6RtOpqvtU</a></p>

## Year 10 - Half Term 2 – SC26 Materials and Nanoparticles

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• Some typical properties of materials, such as hardness, flexibility, conductivity, transparency etc.</li> <li>• That the choice of material for any given use, depends upon its physical and chemical properties.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• What is meant by 'composite' material</li> <li>• How to compare the physical properties of different materials</li> <li>• How and why materials are chosen for a particular use.</li> <li>• About nanoparticles and their possible uses and possible risks.</li> </ul>
<b>Next Steps</b>	<p>Chemistry y10 Half-term 6 – Metals Btec level 3 Applied Science or AS level Chemistry – Material science</p>
<b>Personal Development</b>	<p>Through the study of nanoparticles, you will evaluate the risks and benefits of using nanoparticles. You could consider how the choice of <a href="#">cladding material for the Grenfell tower</a> led to such a huge tragedy.</p>
<b>Key vocabulary</b>	<p>physical property, state, ceramic, transparent, opaque, monomer, polymer, malleable, alloy, electrical conductivity, tensile strength, compressive strength, composite, laminate, pykrete, concrete, nanoparticle. <b>process, layer, environment, function, structure, aggregate, physical</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on separating mixtures. Summative: Exam questions</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos <a href="#">Materials</a>; <a href="#">Nanoparticles</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Material science as a career.</a> <a href="#">Victrex</a> : local job opportunities</p>

## Y10 - Half Term 3- SB1 Key Concepts in Biology

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• How to use a microscope</li> <li>• About the differences between cells from different organisms</li> <li>• How some cells are specialised and adapted to their functions</li> <li>• How enzymes help to digest food in the digestive system</li> <li>• How substances can move by diffusion</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• how developments in microscopy have allowed us to find out more about the sub-cellular structures in plants, animal and bacterial cells</li> <li>• About the importance of enzymes in nutrition, growth and development</li> <li>• How enzymes are affected by pH and temperature and why each enzyme only works on a certain type of molecules</li> <li>• How to carry out food tests and calorimetry</li> <li>• How substances are carried by diffusion, osmosis and active transport</li> </ul>
<b>Next Steps</b>	<p>This topic is integral or the Biology components of Combined Science and links with unit B2-9 and also leads onto A-level biology – Biological Molecules, Cells and Organisms exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how modern technologies have helped scientific advancements e.g. microscopy. You will learn about everyday phenomena and develop an understanding of how all living things are built and operate. This topic has links with various careers such as Biomedical Science, Microscopy and Biological Analysis.</p>
<b>Key vocabulary</b>	<p>Magnification, resolution, membrane, eukaryotic, prokaryotic, ribosome, mitochondria, acrosomes, cilia, chromosomal DNA, plasmid, catalyst, monomer, polymer, diffusion, osmosis, denature, calorimetry optimum, theory, data, factor, interpret, method, vary, range, similar, structure, specific, function, percent</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 1-28</a> <a href="#">BBC Bitesize Key Concepts in Biology</a> <a href="#">Using a microscope core practical</a> <a href="#">Enzyme core practical video</a> <a href="#">Osmosis core practical video</a></p>
<b>Enrichment opportunities</b>	<p>Pupils could use an inexpensive microscope to explore substances at home (you can get traditional light microscopes that can be purchased easily from toy shops, however digital ones that attach to smartphone cameras are also readily available. <a href="#">Virtual Enzyme Lab</a> <a href="#">Carry out an osmosis experiment at home</a></p>



## Year 10 - Half Term 3 – SP7 Astronomy

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the structure of the atom in the topics</p> <ul style="list-style-type: none"> <li>- 8L Earth and Space</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- About the Solar System and how we find out about it</li> <li>- About the Earth's gravitational field and what causes weight</li> <li>- That there are stars and galaxies beyond the Solar System</li> </ul> <p>You will have also learnt in SP2 Motion and Forces unit</p> <ul style="list-style-type: none"> <li>- More about mass and weight</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About the bodies in our Solar System and our ideas about the Solar System have changed over time</li> <li>• How methods of observing the Universe have changed over time</li> <li>• Why gravity is different on different bodies and how this affects orbits</li> <li>• What redshift is and what it shows</li> <li>• About different theories on the origin of the Universe</li> <li>• About the life cycles of stars</li> </ul>
<b>Next Steps</b>	<p>At A-Level this links to the "Astrophysics" Physics unit.</p> <p>There is a link to BTEC Applied Science (Level 3) <b>Optional</b> unit 16: Astronomy and Space Science</p>
<b>Personal Development</b>	<p>Astronomy and space exploration are incredibly interesting subjects to study. This unit will also provide the opportunity to explore theories of the origins of the universe and gain an appreciation for the differing opinions and ideas surrounding such a topic</p>
<b>Key vocabulary</b>	<p>Asteroid, comet, dwarf planet, elliptical, geocentric, heliocentric, moon, satellite, orbit, planet, star, telescope, artificial, vector, gravitational field strength, velocity, weight, black hole, electromagnetic radiation, fusion, nebula, neutron star, protostar, red giant, supergiant, supernova, white dwarf, Doppler effect, pitch, red shift, universe, big bang, steady state, theory, cosmic microwave background radiation</p> <p>Analyse, theory, hypothesis, assume, evident, establish, journal, shift, technology, focus, data, estimate</p>
<b>How and when will I be assessed?</b>	<p>Formative – "quick-quizzes" used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a> (Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages  <a href="#">Pearson Edexcel GCSE (9-1) Physics Textbook</a> pages 117-128  <a href="https://www.bbc.co.uk/bitesize/topics/zwfpmg">https://www.bbc.co.uk/bitesize/topics/zwfpmg</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.pbs.org/wgbh/nova/origins/universe.html">https://www.pbs.org/wgbh/nova/origins/universe.html</a>  <a href="https://www.youtube.com/watch?v=-i9qE3jl5go">https://www.youtube.com/watch?v=-i9qE3jl5go</a> – the life cycle of stars and the ultimate fate of our sun  <a href="https://www.jodrellbank.net/visit/plan-a-visit/opening-times/">https://www.jodrellbank.net/visit/plan-a-visit/opening-times/</a> - Jodrell Bank Discovery Centre, Cheshire.</p>

## Year 10 - Half Term 3 – SC3, 4 & 17 – Atoms, Periodic Table and Groups

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How the particle model and Dalton’s ideas about atoms help to explain the properties of matter.</li> <li>• How elements are arranged in groups and periods the periodic table, including the use of chemical symbols to represent them.</li> <li>• How to represent chemical change with word and symbol equations.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How our ideas about atoms and organising the elements have changed.</li> <li>• How scientists such as Dmitri Mendeleev, Ernest Rutherford, James Chadwick and Niels Bohr worked scientifically to gather evidence.</li> <li>• How to use the modern periodic table to make predictions about atomic structure and properties.</li> <li>• About the properties and reactions of the elements in group 1 (alkali metals), group 7 (halogens) and group 0 (noble gases).</li> </ul>
<b>Next Steps</b>	<p>Chemistry y10 Half-term 4 – Quantitative analysis                      Btec level 3 App Sci or AS level Chemistry – quantitative chemistry, Atomic structure</p>
<b>Personal Development</b>	<p>Through the study of the halogens, you will learn about fluorine and chlorine. You will consider their use in our water supply to kill microbes and improve teeth enamel. You may also debate whether inflating party balloons is an appropriate use of helium.</p>
<b>Key vocabulary</b>	<p>atom, sub-atomic particles, proton, neutron, electron configuration, nucleus, isotope, relative atomic mass (<math>A_r</math> or RAM) group, property, prediction, halogen, alkali metal, noble gas, inert, <b>period, identify, theory, structure, element, positive, neutral,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on atomic structure.                      Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos  <a href="#">Atomic structure</a>; <a href="#">Periodic table</a>; <a href="#">Groups of the periodic table</a></p>
<b>Enrichment opportunities</b>	<p>Circular periodic table – evaluate how well it represents the patterns in the elements.                      Research Döbereiner and Newland’s attempts to organise the elements.                      Watch the series <a href="#">Atom</a>, featuring Jim Al-Khalili</p>

## Y10 - Half Term 4- SB2 Key Concepts in Biology

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That cells divide</li> <li>• About the structure of plant and animal cells</li> <li>• That your nervous system helps coordinate your actions</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About mitosis and its importance in growth, repair and asexual reproduction</li> <li>• How cells become specialised, and the importance of stem cells</li> <li>• To identify different specialised cells in the nervous system and explain how the system works</li> <li>• How the eye works, and how some eye problems are corrected</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB3, Genetics, SB7 Animal Coordination and Control and onto A-level biology – Biological Molecules, Cells and Organisms</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how organisms grow and divide and the potential scientific benefits of studying cell growth. You will develop an understanding of how the human nervous system operates and how medical professionals can investigate and potentially eye, brain and spinal problems.</p>
<b>Key vocabulary</b>	<p>Anaphase, asexual, cytokinesis, diploid, haploid, interphase, metaphase, telophase, differentiation, meristem, cerebellum, cerebral cortex, medulla, neurone, axon, neurotransmission, synapse, myelin, contract, focus, transfer, sex, layer, cycle, energy, medical, reject, identical, voluntary, chemical,</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 29-48</a> <a href="#">Bitesize Cells and Control</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Mitosis Mover activity</a> <a href="#">Optical illusions</a> <a href="#">ABPI Nervous System Resources</a> <a href="#">How stuff works- Stem Cells</a></p>

## Year 10 - Half Term 4 – SP6 Radioactivity

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the structure of the atom in the topics</p> <ul style="list-style-type: none"> <li>- 7G Particle Model</li> <li>- 7H atoms, elements and compounds</li> <li>- 8F Periodic Table</li> <li>- CP3 Conservation of Energy</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- About the particle model of matter</li> <li>- That atoms contain smaller charged particles called electrons</li> <li>- About nuclear fuel as a non-renewable energy resource</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How the particles inside atoms are arranged</li> <li>• How to represent atoms using symbols</li> <li>• About the different types of radiation and how they affect atoms</li> <li>• About the background radiation that is all around us</li> <li>• About the uses of radioactivity in the home and industry</li> <li>• About the dangers of radiation and how we can protect ourselves</li> <li>• How radioactive materials are used to diagnose and treat cancer</li> <li>• About the advantages and disadvantages of nuclear power</li> <li>• What fusion and fission nuclear reactions are</li> </ul>
<b>Next Steps</b>	At A-Level this links to the “Nuclear Physics” unit. There is a link to atomic structure in BTEC Applied Science (Level 3) Unit 1: Principles and Applications of Science I
<b>Personal Development</b>	Potential for career pathways into nuclear medicine or nuclear power. There are some interesting areas of the topic to explore that might have a personal link to your life, in the form of the detection and treatment of cancer.
<b>Key vocabulary</b>	<p>Alpha particle, atom, electron, element, nucleus, subatomic, isotope, neutron, mass, nucleon, proton, absorption spectrum, electromagnetic radiation, configuration, emission, ion, ionising, cosmic rays, dose, count rate, Geiger-Muller tube, beta, decay, gamma, penetrate, positron, random, unstable, activity, Becquerel, half-life, irradiate, sterilise, tracer, contaminate, mutation, radiotherapy, tumour, PET, decommission, fission, fusion, moderator, electrostatic repulsion</p> <p>Benefit, source, data, estimate, structure, evaluate, resource, positive, significant, demonstrate</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Physics Science Textbook</a> pages 89-116  <a href="https://www.bbc.co.uk/bitesize/topics/zqvs6yc">https://www.bbc.co.uk/bitesize/topics/zqvs6yc</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.youtube.com/watch?v=Xw3SFOfbR84">https://www.youtube.com/watch?v=Xw3SFOfbR84</a> – The Real Chernobyl, SKY News documentary</p> <p><a href="https://visit.cern/tours/guided-tours-individuals">https://visit.cern/tours/guided-tours-individuals</a> - Visit CERN</p>

## Year 10 - Half Term 4 – SC8 Acids

<b>Prior Learning</b>	<p>At KS3 you will have learnt about:</p> <ul style="list-style-type: none"> <li>• solubility, solutes, solvents and solutions (7E),</li> <li>• how common international hazard symbols are used (7F),</li> <li>• about common acids, alkalis and neutral solutions (7F),</li> <li>• about the use of indicators to test the pH of solutions (7F)</li> <li>• and about what happens during simple neutralisation reactions (7F).</li> </ul> <p>In SC18 you will have learnt how:</p> <ul style="list-style-type: none"> <li>• reactions of acids can be affected by their temperature, concentration, and the surface area of solid metal carbonates.</li> <li>• a chemical reaction between an acid and a metal will produce hydrogen gas, the reaction between an acid and a metal carbonate will produce carbon dioxide gas.</li> </ul>
<b>What will I learn?</b>	In this topic you will learn about the ions in acids and alkalis and how their concentrations are linked to pH, what happens in the reactions between acids and different types of bases, how different indicators can be used in acid-alkali titrations and how different soluble and insoluble salts can be prepared in the laboratory.
<b>Next Steps</b>	<p>SC10 Electrolytic processes including Core Practical Electrolysis of copper sulphate.</p> <p>SC14 Titrations and Calculations and Core Practical Titration.</p> <p>AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.12 Acids and Bases.</p>
<b>Personal Development</b>	SMSC – Hazard symbols and appreciation of safety when using household and workplace chemicals (e.g. bleaches and other chemical cleaners).
<b>Key vocabulary</b>	<p>Aqueous, solutions, acidic, alkaline, neutral, pH scale, indicators, polyatomic ions, concentration, concentrated, dilute, dissociate, bases, neutralise, salt, state symbols, soluble, filtered, crystallisation, common alkali, balanced equation, titration, burette, pipette, end-point, reactivity series, effervescence, ionic equation, spectator ions, half equation, oxidation, reduction, precipitation, precipitate.</p> <p>Analyse, concept, consist, constitute, data, define, estimate, factor, formula, identify, interpret, method, occur, require, role, obtain, acquire, affect, positive, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	<p>Extended written answer method of preparing a soluble salt (Copper sulfate or a different named salt).</p> <p>SC8 End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics</p> <p>Acids and Alkalis <a href="https://www.bbc.co.uk/bitesize/guides/z8jt4qt/revision/1">https://www.bbc.co.uk/bitesize/guides/z8jt4qt/revision/1</a></p> <p>Salts <a href="https://www.bbc.co.uk/bitesize/guides/zqxyjty/revision/1">https://www.bbc.co.uk/bitesize/guides/zqxyjty/revision/1</a></p> <p>Youtube Clips</p> <p>Acids and pH scale <a href="https://www.youtube.com/watch?v=vt8fB3MFzLk">https://www.youtube.com/watch?v=vt8fB3MFzLk</a></p> <p>Strong and Weak Acids <a href="https://www.youtube.com/watch?v=_gYBbzqrmE">https://www.youtube.com/watch?v=_gYBbzqrmE</a></p> <p>Neutralisation <a href="https://www.youtube.com/watch?v=IBjwMcHUyBY">https://www.youtube.com/watch?v=IBjwMcHUyBY</a></p> <p>Core Practical: Investigating Neutralisation <a href="https://www.youtube.com/watch?v=51b8-EUcl_Q">https://www.youtube.com/watch?v=51b8-EUcl_Q</a></p> <p>Core Practical: Making Soluble Salts <a href="https://www.youtube.com/watch?v=qlOMlwBoe_4">https://www.youtube.com/watch?v=qlOMlwBoe_4</a></p>
<b>Enrichment opportunities</b>	<p>Investigating the periodic table with experiments (Royal Institution lecture): <a href="https://www.youtube.com/watch?v=kqe9tEcZkno">https://www.youtube.com/watch?v=kqe9tEcZkno</a></p> <p>The Magic of Chemistry (Royal Institution lecture): <a href="https://www.youtube.com/watch?v=0g8lANs6zpQ">https://www.youtube.com/watch?v=0g8lANs6zpQ</a></p>

## Year 10 - Half Term 4 – SC14 Quantitative Analysis

<b>Prior Learning</b>	<p>In KS3 you will have learnt:</p> <ul style="list-style-type: none"> <li>that mass of reactants and products is conserved in chemical reactions (8E)</li> <li>that some product can be lost in a chemical reaction, causing anomalous results (8F)</li> </ul> <p>In SC0 and SC8 you will have learnt:</p> <ul style="list-style-type: none"> <li>that the useful amount of product formed is called the yield,</li> <li>how to carry out an acid-alkali titration.</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>to calculate the percentage yield of a reaction,</li> <li>why the actual yield of a reaction is less than the theoretical yield,</li> <li>what is meant by the atom economy of a reaction and how to calculate it,</li> <li>how to calculate an unknown concentration or volume of a solution using titration,</li> <li>how to convert between <math>\text{g dm}^{-3}</math> and <math>\text{mol dm}^{-3}</math>.</li> </ul>
<b>Next Steps</b>	<p>SC9 Mass Calculations, SC15 Dynamic Equilibria, SC25 Qualitative analysis AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.12 Acids and Bases.</p>
<b>Personal Development</b>	<p>SMSC – You will learn to apply percentage calculations to real world examples and will develop logical problem solving skills to calculate an unknown concentration or volume using an experimental method.</p>
<b>Key vocabulary</b>	<p>Theoretical yield, actual yield, percentage yield, side reactions, atom economy, by-product, reaction pathway, volumetric flask, calibrated, concentration, titration, meniscus, indicator, methyl orange, phenolphthalein, Avogadro's Law, molar gas volume,</p> <p>Analyse, concept, consist, constitute, data, define, derive, economy, estimate, factor, formula, identify, interpret, method, occur, percent, process, require, role, obtain, acquire, affect, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	<p>An evaluation of method extended written answer based upon the core practical 'Acid-Alkali Titration'. SC14 and 15 End of Unit Test.</p>
<b>Resources to use</b>	<p>BBC Bitesize Topic: Chemical Calculations <a href="https://www.bbc.co.uk/bitesize/guides/zg9rxfr/revision/1">https://www.bbc.co.uk/bitesize/guides/zg9rxfr/revision/1</a> More Chemical Calculations – Higher <a href="https://www.bbc.co.uk/bitesize/guides/zwbyjty/revision/1">https://www.bbc.co.uk/bitesize/guides/zwbyjty/revision/1</a></p> <p>YouTube Clips: Core Practical Acid-Alkali Titration <a href="https://www.youtube.com/watch?v=0rvFGKc7wqo">https://www.youtube.com/watch?v=0rvFGKc7wqo</a> Calculating Concentration and Molar Volume videos <a href="https://www.youtube.com/watch?v=kJBbu7_vYC8">https://www.youtube.com/watch?v=kJBbu7_vYC8</a> <a href="https://www.youtube.com/watch?v=MEQ1YGxfAQ4">https://www.youtube.com/watch?v=MEQ1YGxfAQ4</a></p>
<b>Enrichment opportunities</b>	<p>Using Quantitative Chemistry in Forensic Investigations <a href="https://www.youtube.com/watch?v=Q21-AX5abE">https://www.youtube.com/watch?v=Q21-AX5abE</a></p>

## Y10 - Half Term 5- SB3 Genetics

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• About the differences between environmental and inherited (genetic) variation</li> <li>• How gametes fuse to produce a gamete</li> <li>• How the nuclei of eukaryotic cells contain chromosomes, which contain DNA</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About sexual and asexual reproduction and the need for meiosis</li> <li>• About the structure of DNA and its role in protein synthesis</li> <li>• About mutations and the causes of genetic variation</li> <li>• How the inheritance of some characteristics occurs in families</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB4 Natural Selection and Genetic Modification and onto A-level biology – Biological Molecules, Cells and Genetic information, variation and relationships between organisms.</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of genetics and how you inherited your features from your parents. You will understand the role of genetic analysis and how medical professionals can advise prospective parents. You will also develop and understanding of the ethical and social issues surrounding scientific developments in relation to the Human Genome Project.</p>
<b>Key vocabulary</b>	<p>Asexual, meiosis, gamete, chromosome, zygote, helix, gene, allele, homozygous, heterozygous, polypeptide, transcription, translation, genotype, phenotype, Punnett square, carrier, mutation, benefit, structure, transfer, alternative, sex, substitute, attach, bond, gender, transport, identical, assemble</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 49-74</a> <a href="#">Bitesize Genetics</a> <a href="#">Mitosis V Meiosis</a> <a href="#">Protein Synthesis Animation</a> <a href="#">Protein Synthesis Video</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Human Genome Project Documentary</a> <a href="#">Build and DNA model</a> <a href="#">Extracting DNA at home</a> <a href="#">Make a DNA bracelet</a></p>

**Year 10 - Half Term 5 – SP1 Motion and SP2 Forces and Motion**

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 7k Forces</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>• what forces are and the effects of balanced and unbalanced forces</li> <li>• How average speed, distance and time are related</li> <li>• How to represent a journey on a distance-time graph</li> <li>• What a resultant force is</li> <li>• About gravity as a non-contact force</li> <li>• Ways in which energy is stored and transferred</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• The difference between vector and scalar quantities</li> <li>• How to calculate speed and acceleration</li> <li>• How to represent journeys on distance/time and velocity/time graphs</li> <li>• How to use graphs to calculate speed, acceleration and distance travelled</li> <li>• About Newton’s Laws of Motion</li> <li>• How to calculate the weight of an object from its mass</li> <li>• About the factors that affect the stopping distance of a vehicle</li> <li>• How to use ideas about energy transfers to calculate braking distances</li> <li>• About the dangers or large decelerations</li> <li>• How to calculate momentum, and apply ideas about momentum to collisions (higher only)</li> </ul>
<b>Next Steps</b>	<p>SP1 leads into SP2</p> <p>At AS/ A-Level this links to “Mechanics and materials” Physics unit.</p>
<b>Personal Development</b>	<p>This unit of work will provide an insight and understanding into the risks of dangerous driving and the importance of the laws surrounding the misuse of alcohol and other illegal substance</p>
<b>Key vocabulary</b>	<p>Acceleration, displacement, distance, forces, magnitude, mass, momentum, scalar, speed, vector, velocity, weight, gradient, average, deceleration, balanced, resultant force, unbalanced, centripetal (Higher only), gravitational field strength, inertia, action-reaction, equilibrium, momentum, conservation, stimulus, response, crumple zone</p> <p>Analyse, similar, area, data, formula, estimate, identify, conclude, select, differentiate, highlight, distort, vision, vehicle, perspective, contact, predict,</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test at the end of both units (SP1 and SP2)</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics (Foundation) or (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages</p> <p>Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 1-32</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.youtube.com/watch?v=LOOPgyPWE3o">https://www.youtube.com/watch?v=LOOPgyPWE3o</a> “Top Gear, BBC”</p> <p><a href="https://www.pbs.org/video/science-trek-force-and-motion/">https://www.pbs.org/video/science-trek-force-and-motion/</a> “Force and Motion, PBS”</p> <p><a href="https://www.youtube.com/watch?v=Y2s2fyMoCCU">https://www.youtube.com/watch?v=Y2s2fyMoCCU</a> “The secret life of Isaac Newton”</p> <p><a href="https://www.bbc.co.uk/teach/isaac-newton-the-man-who-discovered-gravity/zh8792p">https://www.bbc.co.uk/teach/isaac-newton-the-man-who-discovered-gravity/zh8792p</a></p> <p>BBC timeline</p> <p><a href="https://www.youtube.com/watch?v=wI-VkxEelxw&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=5">https://www.youtube.com/watch?v=wI-VkxEelxw&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=5</a> – CORE PRACTICAL</p> <p><a href="https://www.youtube.com/watch?v=PKsMxaPbaWE">https://www.youtube.com/watch?v=PKsMxaPbaWE</a> – CORE PRACTICAL</p>



## Year 10 - Half Term 5 – SC5-7 Ionic Bonding, Covalent Bonding and Types of Substance

<b>Prior Learning</b>	At KS3 you learned about the particle model of matter (7G, 8I), how Dalton's ideas about atoms and molecules helped to explain the properties of matter (7H, 8F) and how elements are arranged in the periodic table (8F). In SC 1-4 you learned about separating mixtures and the structure of the atom including the electronic configuration and how this related to the arrangement of elements on the periodic table.
<b>What will I learn?</b>	In this topic you will learn how ionic, covalent and metallic bonds are formed, about the formation of lattice and molecular structures and will be able to link the physical properties of a substance with its bonding and structure.
<b>Next Steps</b>	SC9-12 Formation of Ions in Electrolysis, the structure of metals and their properties. AS level Chemistry e.g. AQA AS Chemistry Specification point 3.1.3 Bonding.
<b>Personal Development</b>	SMSC – You will learn about recent innovations surrounding Graphene and Fullerenes and will learn about the potential of these exciting new materials. Careers – You will learn how some chemists discover and develop new types of materials.
<b>Key vocabulary</b>	Atom, proton, neutron, electron, electronic configuration, ion, ionic, covalent, metallic, molecule, particle, charged, metal, lattice, electrostatic, intermolecular, attraction, cation, anion, delocalised, conductivity, melting, boiling, aqueous, solution, molten, anode, cathode, dot and cross diagrams, valency, monomer, polymer, poly(ethene), allotropes, fullerene, graphene, giant molecular, lubricant, metals, non-metals, malleable, Analyse, period, indicate, similar, create, individual, consist, involve, structure, constitute, theory, obtain, acquire, conduct, affect, positive, element, transfer, layer, react, deduce, physical, remove, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,
<b>How and when will I be assessed?</b>	Extended written answer on differences between ionic and covalent (Pearson 6 Mark Question). SC5-7 End of Unit Test
<b>Resources to use</b>	BBC Bitesize Topics: Ionic Compounds: <a href="https://www.bbc.co.uk/bitesize/guides/z9fwrwx/revision/1">https://www.bbc.co.uk/bitesize/guides/z9fwrwx/revision/1</a> Simple Molecules: <a href="https://www.bbc.co.uk/bitesize/guides/zqrxdxs/revision/1">https://www.bbc.co.uk/bitesize/guides/zqrxdxs/revision/1</a> Giant Covalent: <a href="https://www.bbc.co.uk/bitesize/guides/zspdxs/revision/1">https://www.bbc.co.uk/bitesize/guides/zspdxs/revision/1</a> Metallic Bonding: <a href="https://www.bbc.co.uk/bitesize/guides/zcrvtv4/revision/1">https://www.bbc.co.uk/bitesize/guides/zcrvtv4/revision/1</a>
<b>Enrichment opportunities</b>	'The One Show' BBC 2013 about the potential uses of Graphene: <a href="https://www.youtube.com/watch?v=WFacA6OwCjA">https://www.youtube.com/watch?v=WFacA6OwCjA</a> Royal Society of Chemistry Video 'Future Applications of Graphene' <a href="https://www.youtube.com/watch?v=ZzBLsjkNqVc">https://www.youtube.com/watch?v=ZzBLsjkNqVc</a> 'Getting to Grips with Graphene' TEDx Talks <a href="https://www.youtube.com/watch?v=KzeQSZ3bQ2g">https://www.youtube.com/watch?v=KzeQSZ3bQ2g</a>

## Year 10 - Half Term 5 – SC25 Qualitative Analysis: Tests for Ions

<b>Prior Learning</b>	<p>In KS3 you will have learnt:</p> <ul style="list-style-type: none"> <li>• Methods to test for the presence of gases such as carbon dioxide (8E) and hydrogen (8F).</li> </ul> <p>In SC0 you will have learnt:</p> <ul style="list-style-type: none"> <li>• That metals form positive ions (cations) and most non-metals form negative ions (anions).</li> <li>• That copper (II) ions (<math>\text{Cu}^{2+}</math>) produce a blue-green colour in a Bunsen flame.</li> <li>• That copper (II) ions (<math>\text{Cu}^{2+}</math>) form a blue precipitate when tested with dilute sodium hydroxide solution.</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• How to identify metal ions,</li> <li>• The chemical tests for various non-metal ions and for ammonia gas,</li> <li>• About instrumental methods of analysis and their advantages.</li> </ul>
<b>Next Steps</b>	<p>SC10 Electrolysis, SC11 Extracting Metals, SC13 Transition Metals.            AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.2.5 Transition Metals and 3.2.6 Reactions of Ions in Aqueous Solution.</p>
<b>Personal Development</b>	<p>SMSC – You will learn to apply your knowledge of chemical testing to develop logical problem-solving skills to analyse the chemical ions present in an unknown substance.</p>
<b>Key vocabulary</b>	<p>Cations, anions, nichrome, flame photometry, calibration curve, spectrum, emission spectra, precipitates, precipitation reactions, ammonium, confirmatory test, carbonate, sulfate, halide.</p> <p>Analyse, consist, constitute, data, define, estimate, formula, identify, indicate, interpret, complex, correspond, method, occur, require, obtain, affect, positive, element, transfer, react, deduce, remove, residue, reveal, volume, hypothesis, compound, energy, stable, trend, symbol, bond, neutral, chemical,</p>
<b>How and when will I be assessed?</b>	<p>Conclusion based on evidence or Evaluation of Method Assessment based upon the Core Practical (Identifying ions).            SC25 and SC26 End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics:            Tests for Ions: <a href="https://www.bbc.co.uk/bitesize/guides/z9nr6yc/revision/1">https://www.bbc.co.uk/bitesize/guides/z9nr6yc/revision/1</a>            YouTube Clips:  <a href="https://www.youtube.com/watch?v=n1SiWOIJayI">https://www.youtube.com/watch?v=n1SiWOIJayI</a>            Core Practical: Testing for Ions  <a href="https://www.youtube.com/watch?v=fCZztwJmAl0">https://www.youtube.com/watch?v=fCZztwJmAl0</a></p>
<b>Enrichment opportunities</b>	<p>Royal Institution Lecture: The Science of Fireworks  <a href="https://www.youtube.com/watch?v=rmtK2BgmGCw">https://www.youtube.com/watch?v=rmtK2BgmGCw</a>            The Chemistry of Fireworks  <a href="https://www.youtube.com/watch?v=nPHegSull_M">https://www.youtube.com/watch?v=nPHegSull_M</a></p>

## Y10 - Half Term 6- SB4 Natural Selection and Genetic Modification

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That organisms change over time (evolution)</li> <li>• That Charles Darwin came up with a theory to explain this</li> <li>• About how DNA contains instructions for the characteristics of organisms</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About the development of the theory of evolution by natural selection</li> <li>• How different methods, including genetic analysis, are being used to investigate evolution</li> <li>• How organisms are classified</li> <li>• How selective breeding and genetic engineering are carried out, and their benefits and drawbacks</li> <li>• Why tissue culture, GMs, fertilisers and biological control are used in agriculture</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB3 Genetics and onto A-level biology – Biological Molecules, Cells and Genetic information, variation and relationships between organisms.</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how organisms have changed overtime and how evidence is used to support the theories developed by scientists. You will also learn how science contributes to our everyday lives through selective breeding and genetic modification of animals, plants and bacteria.</p>
<b>Key vocabulary</b>	<p>Evolution, ancestor, species, ancestor, resistant, antibiotic, pentadactyl, domain, genome, artificial, genetic engineering, GMO, yield, recombinant DNA, ligase, insulin, vector, insecticide, fertiliser</p> <p><b>evolve, modify, theory, generation, domestic, trend, select, technique,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 75-94</a> <a href="#">Bitesize Natural Selection and Genetic Modification</a></p>
<b>Enrichment opportunities</b>	<p>Visit the Natural History Museum (<a href="#">or take a look at their website</a>) <a href="#">Genetics Alive- virtual lab</a> Watch David Attenborough; <a href="#">First life and Rise of the Mammals</a> <a href="#">Become a fossil hunter</a></p>

Year 10 - Half Term 6 – SP8 Energy – Force doing work SP9 Forces and Their Effects	
<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the structure of the atom in the topics</p> <ul style="list-style-type: none"> <li>- 7K Forces</li> <li>- 8K Energy Transfers</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- The different ways in which energy can be stored and transferred</li> <li>- About resultant forces and the effects of balanced and unbalanced forces</li> <li>- About moments as the turning effects of forces</li> </ul> <p>At Key Stage 4 you will have already studied</p> <ul style="list-style-type: none"> <li>- CP1 – Motion</li> <li>- CP3 Conservation of Energy</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- The difference between vector and scalar quantities</li> <li>- How to calculate changes in GPE and KE</li> <li>- About energy transfer diagrams and how to work out the efficiency of a transfer</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How the energy in a system can be changed</li> <li>• How to calculate power and work done</li> <li>• How objects interact with each other, through force fields and contact forces</li> <li>• About rotational forces, calculating moments and how levers and gears work</li> <li>• How to use vector diagrams to work out the effects of forces on an object (Higher tier only)</li> </ul>
<b>Next Steps</b>	<p>At AS/A-Level this links to the “Mechanics and materials” unit. At A-Level there is a link to the unit “Fields and their consequences” There is a link to atomic structure in BTEC Applied Science (Level 3) Unit 1: Principles and Applications of Science I</p>
<b>Personal Development</b>	<p>This unit of work will provide an appreciation for the fundamental laws that underpin our understanding of the physical world. It will also help explain some phenomena that we experience on a daily basis but take for granted for example gravity, static.</p>
<b>Key vocabulary</b>	<p>Energy, power, watts, action, reaction, contact, electrostatic field, force field, friction, gravitational, magnetic, magnetism, magnitude, non-contact, scalar quantity, upthrust, vector, component forces, net, resolving, resultant, scale</p> <p>Analyse, concept, normal, transfer, illustrate, component, contact, data, estimate, structure, demonstrate</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Physics Textbook</a> pages 129-138  <a href="https://www.bbc.co.uk/bitesize/topics/z9hxjty">https://www.bbc.co.uk/bitesize/topics/z9hxjty</a> and  <a href="https://www.bbc.co.uk/bitesize/topics/zgmqk2p">https://www.bbc.co.uk/bitesize/topics/zgmqk2p</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.dailymotion.com/video/x3oeb9e">https://www.dailymotion.com/video/x3oeb9e</a> - “At the edge of space” Documentary  <a href="https://www.theverge.com/2013/10/15/4840200/felix-baumgartner-skydive-documentary-now-streaming-rdio">https://www.theverge.com/2013/10/15/4840200/felix-baumgartner-skydive-documentary-now-streaming-rdio</a> - Felix Baumgartner documentary 'Mission to the Edge of Space'</p>

## Year 10 - Half Term 6 – SP15 Forces and Matter

<b>Prior Learning</b>	At Key Stage 3 pupils will have previously studied <ul style="list-style-type: none"> <li>- 7k Forces</li> <li>- SP2 Forces and Motion</li> </ul> they will have learnt <ul style="list-style-type: none"> <li>- Some of the effects that forces have on objects</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About elastic and inelastic distortion</li> <li>• About the relationship between force and extension and how to calculate the extension and spring constant</li> <li>• How to calculate the work done when stretching a spring</li> <li>• How pressure in fluids depends on density and depth</li> </ul>
<b>Next Steps</b>	At AS/ A-Level this links to “Mechanics and materials” Physics unit.
<b>Personal Development</b>	You will be able to apply your knowledge and understanding to real-life situations that you might have a particular interest, for example specialist sports and leisure activities such as pole vaulting or bungee jumping.
<b>Key vocabulary</b>	Elastic, inelastic, distortion, deform, force, springs, extension, linear, relationship, directly proportional, investigate, energy, transferred, constant, work done, distance, calculate, force meter, fluid, Pascal, pressure, normal, displace, upthrust <span style="background-color: yellow;">Transfer, proportion, constant, flexible, data, vary, conclude, evaluate, physical, remove, valid</span>
<b>How and when will I be assessed?</b>	Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions Summative – Pearson end of topic test f
<b>Resources to use</b>	Seneca Edexcel Combined Science Physics <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a> (Foundation) or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher) Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 196-206 <a href="https://www.bbc.co.uk/bitesize/topics/zcx78mn">https://www.bbc.co.uk/bitesize/topics/zcx78mn</a> - BBC Bitesize
<b>Enrichment opportunities</b>	<a href="https://www.bbc.co.uk/programmes/p033wsm9g">https://www.bbc.co.uk/programmes/p033wsm9g</a> “BBC Laws of Nature: Hooke’s Law” <a href="https://www.youtube.com/watch?v=sZrXv0dHARK">https://www.youtube.com/watch?v=sZrXv0dHARK</a> “BBC: Robert Hooke Victim of Genius” <a href="https://www.youtube.com/watch?v=jQAt3e6Bz7U&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=6">https://www.youtube.com/watch?v=jQAt3e6Bz7U&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=6</a> – CORE PRACTICAL

## Year 10 - Half Term 6 – SC9-11, SC13 Calculations Involving Masses, Electrolytic Processes, Extracting Metals and Transition Metals

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How to represent elements and compounds using symbols and that reactions can be represented using equations.</li> <li>• That mass is conserved in a reaction.</li> <li>• About the reactivity series of metals in the copper chemistry unit.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to calculate the following: relative formula masses; empirical and molecular formulae of compounds; concentration of solutions; mass of reactants or products in a reaction.</li> <li>• How metals are extracted from ores by reduction and electrolysis and link this to reactivity.</li> <li>• About the properties of typical transition metals.</li> <li>• About corrosion of metal, sacrificial protection and electroplating.</li> <li>• <i>Higher Tier students: about the Avogadro constant and molar quantities and how to write half equations.</i></li> </ul>
<b>Next Steps</b>	<p>Chemistry11 half term 3 - Fuels and Earth Science topic. Btec level 3 Applied Science or AS level Chemistry - Amount of substance, Redox.</p>
<b>Personal Development</b>	<p>Through the study of Earth's resources, you will learn about the economic and environmental benefits of recycling so that you can understand how to be a responsible, respectful citizen. You will discuss and debate issues and ideas around metal extraction, such as the use of biological methods, in a considered way.</p>
<b>Key vocabulary</b>	<p>empirical formula, molecular formula, relative formula mass, concentration, Avogadro constant, mole, anion, anode, cation, cathode, electrode, electrolyte, oxidation, reduction, half equation, ore, redox, extraction, bioleaching, phytoextraction, recycling, <b>conduct, obtain, positive, transfer, finite, transport, environment, economy,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on calculating empirical formula. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos:  <a href="#">Bitesize calculations</a> <a href="#">Relative formula mass</a> <a href="#">Calculating concentration</a>  <a href="#">Bitesize HT only calculations</a> <a href="#">Moles, Mass, Mr</a>  <a href="#">Bitesize obtaining and using metals</a> <a href="#">Reduction of metal ore</a>  <a href="#">Bitesize electrolysis</a> <a href="#">Electrolysis basics</a> <a href="#">Extracting metals by electrolysis</a>  <a href="#">Transition metals</a></p>
<b>Enrichment opportunities</b>	<p>From rock to copper <a href="#">video</a>            Where does gold come from? <a href="#">video</a>            Research different metals and find out the name, appearance and location of their ores. Eg. Bauxite contains aluminium, it is mined in Australia, South America, Africa, and the Caribbean</p>

## Year 10 - Half Term 6 – SC9-11, SC13 Calculations Involving Masses, Electrolytic Processes, Extracting Metals and Transition Metals

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How to represent elements and compounds using symbols and that reactions can be represented using equations.</li> <li>• That mass is conserved in a reaction.</li> <li>• About the reactivity series of metals in the copper chemistry unit.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to calculate the following: relative formula masses; empirical and molecular formulae of compounds; concentration of solutions; mass of reactants or products in a reaction.</li> <li>• How metals are extracted from ores by reduction and electrolysis and link this to reactivity.</li> <li>• About the properties of typical transition metals.</li> <li>• About corrosion of metal, sacrificial protection and electroplating.</li> <li>• <i>Higher Tier students: about the Avogadro constant and molar quantities and how to write half equations.</i></li> </ul>
<b>Next Steps</b>	<p>Chemistry y11 half term 3 - Fuels and Earth Science topic. Btec level 3 Applied Science or AS level Chemistry - Amount of substance, Redox.</p>
<b>Personal Development</b>	<p>Through the study of Earth's resources, you will learn about the economic and environmental benefits of recycling so that you can understand how to be a responsible, respectful citizen. You will discuss and debate issues and ideas around metal extraction, such as the use of biological methods, in a considered way.</p>
<b>Key vocabulary</b>	<p>empirical formula, molecular formula, relative formula mass, concentration, Avogadro constant, mole, anion, anode, cation, cathode, electrode, electrolyte, oxidation, reduction, half equation, ore, redox, extraction, bioleaching, phytoextraction, recycling, <b>conduct, obtain, positive, transfer, finite, transport, environment, economy,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on calculating empirical formula. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos:  <a href="#">Bitesize calculations</a> <a href="#">Relative formula mass</a> <a href="#">Calculating concentration</a>  <a href="#">Bitesize HT only calculations</a> <a href="#">Moles, Mass, Mr</a>  <a href="#">Bitesize obtaining and using metals</a> <a href="#">Reduction of metal ore</a>  <a href="#">Bitesize electrolysis</a> <a href="#">Electrolysis basics</a> <a href="#">Extracting metals by electrolysis</a>  <a href="#">Transition metals</a></p>
<b>Enrichment opportunities</b>	<p>From rock to copper <a href="#">video</a>            Where does gold come from? <a href="#">video</a>            Research different metals and find out the name, appearance and location of their ores. Eg. Bauxite contains aluminium, it is mined in Australia, South America, Africa, and the Caribbean</p>

## Y11 - Half Term 1- SB5 Health, Disease and the Development of Medicines

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That imbalances in the diet can lead to obesity and deficiency disease</li> <li>• That recreational drugs can affect behaviour, health and life processes</li> <li>• About the structure of bacteria</li> <li>• About the use of microscopes to study cells</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About how we define health</li> <li>• About some pathogens, the diseases they cause and how their spread can be reduced or prevented</li> <li>• About the lifecycle of viruses</li> <li>• How plants defend themselves from pests and pathogens and how plant diseases can be identified</li> <li>• How the body is protected against infection</li> <li>• About the immune system</li> <li>• How antibiotics works and how new medicines are developed</li> <li>• About aseptic technique for culturing microorganisms</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB1 Key Concepts in Biology, SB7 Animal Coordination and homeostasis and SB8 Exchange and Transport. It also leads onto A-level Biology; Cells and Organism exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will learn how your health can be affected by various factors. You will develop and understanding of how to keep healthy and how medicine can be developed and used to treat illness and disease.</p>
<b>Key vocabulary</b>	<p>Communicable, immune, pathogen, cirrhosis, deficiency, malnutrition, obesity, cardiovascular, stent, stroke, cholera, diarrhoea, cholera, host, AIDS, HIV, malaria, virus, tuberculosis, protist, vector, lytic, lysogenic, autoclave, aseptic, chlamydia, lysozyme, mucus, antigen, antibody, lymphocyte vaccine, immunisation, chemical, survive, inhibit, area, contact, environment, research, method, specific, primary, transmit, eliminate, attach</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 95-122</a> Bitesize Health, Disease and Developing Medicines</p>
<b>Enrichment opportunities</b>	<p><a href="#">Medical Museum- Leeds</a> <a href="#">Virtual Virus Lab game</a> <a href="#">World Health Organisation website</a> – research diseases you are interested in <a href="#">BBC Operation Ouch!!</a></p>



## Y11 - Half Term 1- SB4 Natural Selection and Genetic Modification

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That organisms change over time (evolution)</li> <li>• That Charles Darwin came up with a theory to explain this</li> <li>• About how DNA contains instructions for the characteristics of organisms</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About the development of the theory of evolution by natural selection</li> <li>• How different methods, including genetic analysis, are being used to investigate evolution</li> <li>• How organisms are classified</li> <li>• How selective breeding and genetic engineering are carried out, and their benefits and drawbacks</li> <li>• Why tissue culture, GMs, fertilisers and biological control are used in agriculture</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB3 Genetics and onto A-level biology – Biological Molecules, Cells and Genetic information, variation and relationships between organisms.</p>
<b>Personal Development</b>	<p>In this topic you will develop an understanding of how organisms have changed overtime and how evidence is used to support the theories developed by scientists. You will also learn how science contributes to our everyday lives through selective breeding and genetic modification of animals, plants and bacteria.</p>
<b>Key vocabulary</b>	<p>Evolution, ancestor, species, ancestor, resistant, antibiotic, pentadactyl, domain, genome, artificial, genetic engineering, GMO, yield, recombinant DNA, ligase, insulin, vector, insecticide, fertiliser</p> <p><b>evolve, modify, theory, generation, domestic, trend, select, technique,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 75-94</a> <a href="#">Bitesize Natural Selection and Genetic Modification</a></p>
<b>Enrichment opportunities</b>	<p>Visit the Natural History Museum (<a href="#">or take a look at their website</a>) <a href="#">Genetics Alive- virtual lab</a> Watch David Attenborough; <a href="#">First life and Rise of the Mammals</a> <a href="#">Become a fossil hunter</a></p>

## Year 11 - Half Term 1 – SP1 Motion and SP2 Forces and Motion

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have previously studied</p> <ul style="list-style-type: none"> <li>- 7k Forces</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>• what forces are and the effects of balanced and unbalanced forces</li> <li>• How average speed, distance and time are related</li> <li>• How to represent a journey on a distance-time graph</li> <li>• What a resultant force is</li> <li>• About gravity as a non-contact force</li> <li>• Ways in which energy is stored and transferred</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• The difference between vector and scalar quantities</li> <li>• How to calculate speed and acceleration</li> <li>• How to represent journeys on distance/time and velocity/time graphs</li> <li>• How to use graphs to calculate speed, acceleration and distance travelled</li> <li>• About Newton's Laws of Motion</li> <li>• How to calculate the weight of an object from its mass</li> <li>• About the factors that affect the stopping distance of a vehicle</li> <li>• How to use ideas about energy transfers to calculate braking distances</li> <li>• About the dangers or large decelerations</li> <li>• How to calculate momentum, and apply ideas about momentum to collisions (higher only)</li> </ul>
<b>Next Steps</b>	<p>SP1 leads into SP2</p> <p>At AS/ A-Level this links to "Mechanics and materials" Physics unit.</p>
<b>Personal Development</b>	<p>This unit of work will provide an insight and understanding into the risks of dangerous driving and the importance of the laws surrounding the misuse of alcohol and other illegal substance</p>
<b>Key vocabulary</b>	<p>Acceleration, displacement, distance, forces, magnitude, mass, momentum, scalar, speed, vector, velocity, weight, gradient, average, deceleration, balanced, resultant force, unbalanced, centripetal (Higher only), gravitational field strength, inertia, action-reaction, equilibrium, momentum, conservation, stimulus, response, crumple zone</p> <p>Analyse, similar, area, data, formula, estimate, identify, conclude, select, differentiate, highlight, distort, vision, vehicle, perspective, contact, predict,</p>
<b>How and when will I be assessed?</b>	<p>Formative – "quick-quizzes" used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test at the end of both units (SP1 and SP2)</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics (Foundation) or (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages</p> <p>Pearson Edexcel GCSE (9-1) Combined Science Textbook pages 1-32</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.youtube.com/watch?v=LOOPgyPWE3o">https://www.youtube.com/watch?v=LOOPgyPWE3o</a> "Top Gear, BBC"</p> <p><a href="https://www.pbs.org/video/science-trek-force-and-motion/">https://www.pbs.org/video/science-trek-force-and-motion/</a> "Force and Motion, PBS"</p> <p><a href="https://www.youtube.com/watch?v=Y2s2fyMoCCU">https://www.youtube.com/watch?v=Y2s2fyMoCCU</a> "The secret life of Isaac Newton"</p> <p><a href="https://www.bbc.co.uk/teach/isaac-newton-the-man-who-discovered-gravity/zh8792p">https://www.bbc.co.uk/teach/isaac-newton-the-man-who-discovered-gravity/zh8792p</a></p> <p>BBC timeline</p> <p><a href="https://www.youtube.com/watch?v=wI-VkxEelxw&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=5">https://www.youtube.com/watch?v=wI-VkxEelxw&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=5</a> – CORE PRACTICAL</p> <p><a href="https://www.youtube.com/watch?v=PKsMxaPbaWE">https://www.youtube.com/watch?v=PKsMxaPbaWE</a> – CORE PRACTICAL</p>

Year 11 - Half Term 1 – SP8 Energy – Force doing work SP9 Forces and Their Effects	
<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the structure of the atom in the topics</p> <ul style="list-style-type: none"> <li>- 7K Forces</li> <li>- 8K Energy Transfers</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- The different ways in which energy can be stored and transferred</li> <li>- About resultant forces and the effects of balanced and unbalanced forces</li> <li>- About moments as the turning effects of forces</li> </ul> <p>At Key Stage 4 you will have already studied</p> <ul style="list-style-type: none"> <li>- CP1 – Motion</li> <li>- CP3 Conservation of Energy</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- The difference between vector and scalar quantities</li> <li>- How to calculate changes in GPE and KE</li> <li>- About energy transfer diagrams and how to work out the efficiency of a transfer</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How the energy in a system can be changed</li> <li>• How to calculate power and work done</li> <li>• How objects interact with each other, through force fields and contact forces</li> <li>• About rotational forces, calculating moments and how levers and gears work</li> <li>• How to use vector diagrams to work out the effects of forces on an object (Higher tier only)</li> </ul>
<b>Next Steps</b>	<p>At AS/A-Level this links to the “Mechanics and materials” unit. At A-Level there is a link to the unit “Fields and their consequences” There is a link to atomic structure in BTEC Applied Science (Level 3) Unit 1: Principles and Applications of Science I</p>
<b>Personal Development</b>	<p>This unit of work will provide an appreciation for the fundamental laws that underpin our understanding of the physical world. It will also help explain some phenomena that we experience on a daily basis but take for granted for example gravity, static.</p>
<b>Key vocabulary</b>	<p>Energy, power, watts, action, reaction, contact, electrostatic field, force field, friction, gravitational, magnetic, magnetism, magnitude, non-contact, scalar quantity, upthrust, vector, component forces, net, resolving, resultant, scale</p> <p>Analyse, concept, normal, transfer, illustrate, component, contact, data, estimate, structure, demonstrate</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)  Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Physics Textbook</a> pages 129-138  <a href="https://www.bbc.co.uk/bitesize/topics/z9hxjty">https://www.bbc.co.uk/bitesize/topics/z9hxjty</a> and  <a href="https://www.bbc.co.uk/bitesize/topics/zgmqk2p">https://www.bbc.co.uk/bitesize/topics/zgmqk2p</a> - BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.dailymotion.com/video/x3oeb9e">https://www.dailymotion.com/video/x3oeb9e</a> - “At the edge of space” Documentary  <a href="https://www.theverge.com/2013/10/15/4840200/felix-baumgartner-skydive-documentary-now-streaming-rdio">https://www.theverge.com/2013/10/15/4840200/felix-baumgartner-skydive-documentary-now-streaming-rdio</a> - Felix Baumgartner documentary 'Mission to the Edge of Space'</p>

## Year 11 - Half Term 1 – SP14 Particle Model

<b>Prior Learning</b>	<p>At Key Stage 3 pupils will have studied the particle model during</p> <ul style="list-style-type: none"> <li>- Transition unit</li> <li>- topic 7G-Particle Model</li> </ul> <p>they will have learnt</p> <ul style="list-style-type: none"> <li>- mass is conserved during changes of state</li> <li>- about the properties of solids, liquids and gases</li> <li>- how particles are arranged in solids, liquids and gases and how this is affected by temperature</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to explain different densities of substances and how to calculate density</li> <li>• About specific heat capacity and specific latent heat</li> <li>• How changing the temperature and volume of a gas affects its pressure and how to calculate temperatures and pressures</li> </ul>
<b>Next Steps</b>	<p>Topic 15 follows directly on from topic 14; this topic looks at the energy stored and transferred in the changing shape of a material.</p> <p>At A-Level this unit's links to "Thermal Physics" unit.</p>
<b>Personal Development</b>	<p>For anyone with an interest in amateur dramatics or theatrical settings, you will be able to apply your knowledge and understanding of changes of state to appreciate how dry ice can be used to set the scene or increase the dramatics of a situation e.g. an illusion on stage</p>
<b>Key vocabulary</b>	<p>Particle, arranged, solid, liquid, gas, uniform, vibrate, temperature, thermal, energy, state, matter, density, mass, displacement, measure, calculate, change, reversible, latent, pressure, Kelvin, compress, conserved, kinetic, sublimation, specific heat capacity, latent heat, absolute zero, gas pressure, work done</p> <p><b>Structure, specific, theory, volume, bond, displace, analyse</b></p>
<b>How and when will I be assessed?</b>	<p>Formative – "quick-quizzes" used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – End of topic test – however to be done at the end of the next topic, as topic 14 leads into topic 15.</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>            (Foundation) or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages  <a href="#">Pearson Edexcel GCSE (9-1) Physics Science Textbook</a> pages 181-195  <a href="https://www.bbc.co.uk/bitesize/topics/z8p6qhv">https://www.bbc.co.uk/bitesize/topics/z8p6qhv</a>- BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.pbs.org/wgbh/nova/zero/">https://www.pbs.org/wgbh/nova/zero/</a>  <a href="https://www.youtube.com/watch?v=lvqu6JAbaKc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=5">https://www.youtube.com/watch?v=lvqu6JAbaKc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=5</a> – CORE PRACTICAL (Density)  <a href="https://www.youtube.com/watch?v=loeRLKNeUsc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=6">https://www.youtube.com/watch?v=loeRLKNeUsc&amp;list=PLAd0MSIZBSsGNWKdHJdQYIndKI3HZUrSB&amp;index=6</a> – CORE PRACTICAL (Specific heat capacity)</p>

## Year 11 - Half Term 1 – SC8 Acids

<b>Prior Learning</b>	<p>At KS3 you will have learnt about:</p> <ul style="list-style-type: none"> <li>• solubility, solutes, solvents and solutions (7E),</li> <li>• how common international hazard symbols are used (7F),</li> <li>• about common acids, alkalis and neutral solutions (7F),</li> <li>• about the use of indicators to test the pH of solutions (7F)</li> <li>• and about what happens during simple neutralisation reactions (7F).</li> </ul> <p>In SC18 you will have learnt how:</p> <ul style="list-style-type: none"> <li>• reactions of acids can be affected by their temperature, concentration, and the surface area of solid metal carbonates.</li> <li>• a chemical reaction between an acid and a metal will produce hydrogen gas, the reaction between an acid and a metal carbonate will produce carbon dioxide gas.</li> </ul>
<b>What will I learn?</b>	In this topic you will learn about the ions in acids and alkalis and how their concentrations are linked to pH, what happens in the reactions between acids and different types of bases, how different indicators can be used in acid-alkali titrations and how different soluble and insoluble salts can be prepared in the laboratory.
<b>Next Steps</b>	<p>SC10 Electrolytic processes including Core Practical Electrolysis of copper sulphate.</p> <p>SC14 Titrations and Calculations and Core Practical Titration.</p> <p>AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.12 Acids and Bases.</p>
<b>Personal Development</b>	SMSC – Hazard symbols and appreciation of safety when using household and workplace chemicals (e.g. bleaches and other chemical cleaners).
<b>Key vocabulary</b>	<p>Aqueous, solutions, acidic, alkaline, neutral, pH scale, indicators, polyatomic ions, concentration, concentrated, dilute, dissociate, bases, neutralise, salt, state symbols, soluble, filtered, crystallisation, common alkali, balanced equation, titration, burette, pipette, end-point, reactivity series, effervescence, ionic equation, spectator ions, half equation, oxidation, reduction, precipitation, precipitate.</p> <p>Analyse, concept, consist, constitute, data, define, estimate, factor, formula, identify, interpret, method, occur, require, role, obtain, acquire, affect, positive, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	<p>Extended written answer method of preparing a soluble salt (Copper sulfate or a different named salt).</p> <p>SC8 End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics</p> <p>Acids and Alkalis <a href="https://www.bbc.co.uk/bitesize/guides/z8jt4qt/revision/1">https://www.bbc.co.uk/bitesize/guides/z8jt4qt/revision/1</a></p> <p>Salts <a href="https://www.bbc.co.uk/bitesize/guides/zqxyjty/revision/1">https://www.bbc.co.uk/bitesize/guides/zqxyjty/revision/1</a></p> <p>Youtube Clips</p> <p>Acids and pH scale <a href="https://www.youtube.com/watch?v=vt8fB3MFzLk">https://www.youtube.com/watch?v=vt8fB3MFzLk</a></p> <p>Strong and Weak Acids <a href="https://www.youtube.com/watch?v=gYBbzqrmE">https://www.youtube.com/watch?v=gYBbzqrmE</a></p> <p>Neutralisation <a href="https://www.youtube.com/watch?v=IBjwMcHUyBY">https://www.youtube.com/watch?v=IBjwMcHUyBY</a></p> <p>Core Practical: Investigating Neutralisation <a href="https://www.youtube.com/watch?v=51b8-EUcl_Q">https://www.youtube.com/watch?v=51b8-EUcl_Q</a></p> <p>Core Practical: Making Soluble Salts <a href="https://www.youtube.com/watch?v=qIOMlwBoe_4">https://www.youtube.com/watch?v=qIOMlwBoe_4</a></p>
<b>Enrichment opportunities</b>	<p>Investigating the periodic table with experiments (Royal Institution lecture): <a href="https://www.youtube.com/watch?v=kqe9tEcZkno">https://www.youtube.com/watch?v=kqe9tEcZkno</a></p> <p>The Magic of Chemistry (Royal Institution lecture): <a href="https://www.youtube.com/watch?v=0g8lANs6zpQ">https://www.youtube.com/watch?v=0g8lANs6zpQ</a></p>

## Year 11 - Half Term 1 – SC14 Quantitative Analysis

<b>Prior Learning</b>	<p>In KS3 you will have learnt:</p> <ul style="list-style-type: none"> <li>that mass of reactants and products is conserved in chemical reactions (8E)</li> <li>that some product can be lost in a chemical reaction, causing anomalous results (8F)</li> </ul> <p>In SC0 and SC8 you will have learnt:</p> <ul style="list-style-type: none"> <li>that the useful amount of product formed is called the yield,</li> <li>how to carry out an acid-alkali titration.</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>to calculate the percentage yield of a reaction,</li> <li>why the actual yield of a reaction is less than the theoretical yield,</li> <li>what is meant by the atom economy of a reaction and how to calculate it,</li> <li>how to calculate an unknown concentration or volume of a solution using titration,</li> <li>how to convert between <math>\text{g dm}^{-3}</math> and <math>\text{mol dm}^{-3}</math>.</li> </ul>
<b>Next Steps</b>	<p>SC9 Mass Calculations, SC15 Dynamic Equilibria, SC25 Qualitative analysis AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.12 Acids and Bases.</p>
<b>Personal Development</b>	<p>SMSC – You will learn to apply percentage calculations to real world examples and will develop logical problem solving skills to calculate an unknown concentration or volume using an experimental method.</p>
<b>Key vocabulary</b>	<p>Theoretical yield, actual yield, percentage yield, side reactions, atom economy, by-product, reaction pathway, volumetric flask, calibrated, concentration, titration, meniscus, indicator, methyl orange, phenolphthalein, Avogadro's Law, molar gas volume,</p> <p>Analyse, concept, consist, constitute, data, define, derive, economy, estimate, factor, formula, identify, interpret, method, occur, percent, process, require, role, obtain, acquire, affect, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	<p>An evaluation of method extended written answer based upon the core practical 'Acid-Alkali Titration'. SC14 and 15 End of Unit Test.</p>
<b>Resources to use</b>	<p>BBC Bitesize Topic: Chemical Calculations <a href="https://www.bbc.co.uk/bitesize/guides/zg9rxfr/revision/1">https://www.bbc.co.uk/bitesize/guides/zg9rxfr/revision/1</a> More Chemical Calculations – Higher <a href="https://www.bbc.co.uk/bitesize/guides/zwbyjty/revision/1">https://www.bbc.co.uk/bitesize/guides/zwbyjty/revision/1</a></p> <p>YouTube Clips: Core Practical Acid-Alkali Titration <a href="https://www.youtube.com/watch?v=0rvFGKc7wqo">https://www.youtube.com/watch?v=0rvFGKc7wqo</a> Calculating Concentration and Molar Volume videos <a href="https://www.youtube.com/watch?v=kJBbu7_vYC8">https://www.youtube.com/watch?v=kJBbu7_vYC8</a> <a href="https://www.youtube.com/watch?v=MEQ1YGxfAQ4">https://www.youtube.com/watch?v=MEQ1YGxfAQ4</a></p>
<b>Enrichment opportunities</b>	<p>Using Quantitative Chemistry in Forensic Investigations <a href="https://www.youtube.com/watch?v=Q21-AX5abE">https://www.youtube.com/watch?v=Q21-AX5abE</a></p>

## Year 11 - Half Term 1 – SC25 Qualitative Analysis: Tests for Ions

<b>Prior Learning</b>	<p>In KS3 you will have learnt:</p> <ul style="list-style-type: none"> <li>• Methods to test for the presence of gases such as carbon dioxide (8E) and hydrogen (8F).</li> </ul> <p>In SC0 you will have learnt:</p> <ul style="list-style-type: none"> <li>• That metals form positive ions (cations) and most non-metals form negative ions (anions).</li> <li>• That copper (II) ions (<math>\text{Cu}^{2+}</math>) produce a blue-green colour in a Bunsen flame.</li> <li>• That copper (II) ions (<math>\text{Cu}^{2+}</math>) form a blue precipitate when tested with dilute sodium hydroxide solution.</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• How to identify metal ions,</li> <li>• The chemical tests for various non-metal ions and for ammonia gas,</li> <li>• About instrumental methods of analysis and their advantages.</li> </ul>
<b>Next Steps</b>	<p>SC10 Electrolysis, SC11 Extracting Metals, SC13 Transition Metals.            AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.2.5 Transition Metals and 3.2.6 Reactions of Ions in Aqueous Solution.</p>
<b>Personal Development</b>	<p>SMSC – You will learn to apply your knowledge of chemical testing to develop logical problem-solving skills to analyse the chemical ions present in an unknown substance.</p>
<b>Key vocabulary</b>	<p>Cations, anions, nichrome, flame photometry, calibration curve, spectrum, emission spectra, precipitates, precipitation reactions, ammonium, confirmatory test, carbonate, sulfate, halide.</p> <p>Analyse, consist, constitute, data, define, estimate, formula, identify, indicate, interpret, complex, correspond, method, occur, require, obtain, affect, positive, element, transfer, react, deduce, remove, residue, reveal, volume, hypothesis, compound, energy, stable, trend, symbol, bond, neutral, chemical,</p>
<b>How and when will I be assessed?</b>	<p>Conclusion based on evidence or Evaluation of Method Assessment based upon the Core Practical (Identifying ions).            SC25 and SC26 End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics:            Tests for Ions: <a href="https://www.bbc.co.uk/bitesize/guides/z9nr6yc/revision/1">https://www.bbc.co.uk/bitesize/guides/z9nr6yc/revision/1</a>            YouTube Clips:  <a href="https://www.youtube.com/watch?v=n1SiWOIJayI">https://www.youtube.com/watch?v=n1SiWOIJayI</a>            Core Practical: Testing for Ions  <a href="https://www.youtube.com/watch?v=fCZztwJmAl0">https://www.youtube.com/watch?v=fCZztwJmAl0</a></p>
<b>Enrichment opportunities</b>	<p>Royal Institution Lecture: The Science of Fireworks  <a href="https://www.youtube.com/watch?v=rmtK2BgmGCw">https://www.youtube.com/watch?v=rmtK2BgmGCw</a>            The Chemistry of Fireworks  <a href="https://www.youtube.com/watch?v=nPHegSull_M">https://www.youtube.com/watch?v=nPHegSull_M</a></p>

## Year 11 - Half Term 1 – SC3, 4 & 17 – Atoms, Periodic Table and Groups

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How the particle model and Dalton’s ideas about atoms help to explain the properties of matter.</li> <li>• How elements are arranged in groups and periods the periodic table, including the use of chemical symbols to represent them.</li> <li>• How to represent chemical change with word and symbol equations.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How our ideas about atoms and organising the elements have changed.</li> <li>• How scientists such as Dmitri Mendeleev, Ernest Rutherford, James Chadwick and Niels Bohr worked scientifically to gather evidence.</li> <li>• How to use the modern periodic table to make predictions about atomic structure and properties.</li> <li>• About the properties and reactions of the elements in group 1 (alkali metals), group 7 (halogens) and group 0 (noble gases).</li> </ul>
<b>Next Steps</b>	<p>Chemistry y11 Half-term 1 – Quantitative analysis                      Btec level 3 App Sci or AS level Chemistry – quantitative chemistry, Atomic structure</p>
<b>Personal Development</b>	<p>Through the study of the halogens, you will learn about fluorine and chlorine. You will consider their use in our water supply to kill microbes and improve teeth enamel. You may also debate whether inflating party balloons is an appropriate use of helium.</p>
<b>Key vocabulary</b>	<p>atom, sub-atomic particles, proton, neutron, electron configuration, nucleus, isotope, relative atomic mass (<math>A_r</math> or RAM) group, property, prediction, halogen, alkali metal, noble gas, inert, <b>period, identify, theory, structure, element, positive, neutral,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on atomic structure.                      Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos  <a href="#">Atomic structure</a>; <a href="#">Periodic table</a>; <a href="#">Groups of the periodic table</a></p>
<b>Enrichment opportunities</b>	<p>Circular periodic table – evaluate how well it represents the patterns in the elements.                      Research Döbereiner and Newland’s attempts to organise the elements.                      Watch the series <a href="#">Atom</a>, featuring Jim Al-Khalili</p>



## Year 11 - Half Term 2 – SP15 Forces and Matter

<b>Prior Learning</b>	At Key Stage 3 pupils will have previously studied <ul style="list-style-type: none"> <li>- 7k Forces</li> <li>- SP2 Forces and Motion</li> </ul> they will have learnt <ul style="list-style-type: none"> <li>- Some of the effects that forces have on objects</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About elastic and inelastic distortion</li> <li>• About the relationship between force and extension and how to calculate the extension and spring constant</li> <li>• How to calculate the work done when stretching a spring</li> <li>• How pressure in fluids depends on density and depth</li> </ul>
<b>Next Steps</b>	At AS/ A-Level this links to “Mechanics and materials” Physics unit.
<b>Personal Development</b>	You will be able to apply your knowledge and understanding to real-life situations that you might have a particular interest, for example specialist sports and leisure activities such as pole vaulting or bungee jumping.
<b>Key vocabulary</b>	Elastic, inelastic, distortion, deform, force, springs, extension, linear, relationship, directly proportional, investigate, energy, transferred, constant, work done, distance, calculate, force meter, fluid, Pascal, pressure, normal, displace, upthrust <b>Transfer, proportion, constant, flexible, data, vary, conclude, evaluate, physical, remove, valid</b>
<b>How and when will I be assessed?</b>	Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions Summative – Pearson end of topic test f
<b>Resources to use</b>	Seneca Edexcel Combined Science Physics <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a> (Foundation) or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher) Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 196-206 <a href="https://www.bbc.co.uk/bitesize/topics/zcx78mn">https://www.bbc.co.uk/bitesize/topics/zcx78mn</a> - BBC Bitesize
<b>Enrichment opportunities</b>	<a href="https://www.bbc.co.uk/programmes/p033wsm9g">https://www.bbc.co.uk/programmes/p033wsm9g</a> “BBC Laws of Nature: Hooke’s Law” <a href="https://www.youtube.com/watch?v=sZrXv0dHARK">https://www.youtube.com/watch?v=sZrXv0dHARK</a> “BBC: Robert Hooke Victim of Genius” <a href="https://www.youtube.com/watch?v=jQAt3e6Bz7U&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=6">https://www.youtube.com/watch?v=jQAt3e6Bz7U&amp;list=PL-0dZdEk-XsJqjLFQ8CxD-YoRh6qYABg1&amp;index=6</a> – CORE PRACTICAL

## Y11 - Half Term 2- SB6 Plant structures and functions

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• That plants make their own food (glucose) using photosynthesis</li> <li>• How light and chlorophyll are necessary for photosynthesis</li> </ul> <p>You will have also learnt in SB1 Key Concepts:</p> <ul style="list-style-type: none"> <li>• About certain plant cells being specialised and adapted to their function</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• More about photosynthesis and how different factors affect its rate</li> <li>• How the rate of water uptake by a plant is affected by different factors</li> <li>• How the reactants for and products of photosynthesis are transported</li> <li>• More about leaf structure and specialised cells (including palisade, root hair, xylem and phloem cells)</li> <li>• About the effects and uses of plant hormones</li> </ul>
<b>Next Steps</b>	<p>SB9- Ecosystems</p> <p>A-level biology – Biological Molecules, Cells, Organisms exchange substances with their environment, energy transfers in and between organisms</p>
<b>Personal Development</b>	<p>In this unit you will learn about plant-based careers in areas such as farming and agriculture. You will also gain an understanding about the importance of plants within your everyday lives and how hormones can be used to control plant growth e.g weed killers or fruit-ripening.</p>
<b>Key vocabulary</b>	<p>chloroplast, exchange, palisade, photosynthesis, starch, stoma, sucrose, concentration, proportional, rate, diffusion, osmosis, phloem, xylem, transpiration, translocation, analyse, environment, data, factor, interpret, method, vary, appropriate, range</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class</p> <p>Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology textbook pages 123-140</a></p> <p><a href="#">BBC Bitesize Plants and Photosynthesis</a></p> <p><a href="#">Photosynthesis Core Practical</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">BBC Life of Plants</a></p> <p><a href="#">Photosynthesis in education</a></p>

## Y11 - Half Term 2- SB9 Ecosystems

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• How almost all life on Earth depends on photosynthesis in plants and algae</li> <li>• About the interdependence of organisms, including food webs and insect pollination</li> <li>• How organisms affect and are affected by their environment, including the accumulation of toxic materials</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How ecosystems are organised</li> <li>• How communities are affected by abiotic and biotic factors</li> <li>• How the abundance and distribution of organisms are measured</li> <li>• How energy is transferred through trophic levels</li> <li>• Parasitic and mutualistic relationships</li> <li>• How humans affect ecosystems and the benefits of maintaining biodiversity</li> <li>• About the importance of the carbon cycle, water cycle and nitrogen cycle</li> <li>• How indicator species can be used to assess pollution levels</li> <li>• Why the rate of decomposition of food and compost can vary</li> </ul>
<b>Next Steps</b>	A-level biology – Biological Molecules, Cells, Organisms exchange substances with their environment, energy transfers in and between organisms, ecosystems
<b>Personal Development</b>	In this unit you will learn about the importance of careers in conservation such as environmental scientist, zoologist and wildlife biologist. Through the study of the world around you and environmental issues you will develop an understanding of how to be responsible, respectful and active citizens who are able to play their part and become actively involved in public life as adults.
<b>Key vocabulary</b>	Ecosystem, habitat, quadrat, abiotic, biotic, transect, biodiversity, predation, eutrophication, indigenous, captivity, conservation, potable, desalination, distillation, biomass, decay, decomposer, faeces, manure, nitrate, nitrogen-fixing bacteria, , abundance, analyse, community, distribution, environment, data, factor, interpret, method, vary, appropriate, range
<b>How and when will I be assessed?</b>	Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment
<b>Resources to use</b>	<a href="#">Pearson Edexcel GCSE (9-1) Biology Textbook pages 175-204</a> <a href="#">BBC Bitesize Ecosystems and material cycles</a> <a href="#">Quadrats core practical video</a>
<b>Enrichment opportunities</b>	<a href="#">BBC Life series</a> <a href="#">National Geographic</a> <a href="#">WWF website</a> <a href="#">The Carbon Cycle game</a> Visit Blackpool Zoo Research <a href="#">non-indigenous</a> or <a href="#">endangered species</a>

## Year 11 - Half Term 2 – SC5-7 Ionic Bonding, Covalent Bonding and Types of Substance

<b>Prior Learning</b>	At KS3 you learned about the particle model of matter (7G, 8I), how Dalton's ideas about atoms and molecules helped to explain the properties of matter (7H, 8F) and how elements are arranged in the periodic table (8F). In SC 1-4 you learned about separating mixtures and the structure of the atom including the electronic configuration and how this related to the arrangement of elements on the periodic table.
<b>What will I learn?</b>	In this topic you will learn how ionic, covalent and metallic bonds are formed, about the formation of lattice and molecular structures and will be able to link the physical properties of a substance with its bonding and structure.
<b>Next Steps</b>	SC9-12 Formation of Ions in Electrolysis, the structure of metals and their properties. AS level Chemistry e.g. AQA AS Chemistry Specification point 3.1.3 Bonding.
<b>Personal Development</b>	SMSC – You will learn about recent innovations surrounding Graphene and Fullerenes and will learn about the potential of these exciting new materials. Careers – You will learn how some chemists discover and develop new types of materials.
<b>Key vocabulary</b>	Atom, proton, neutron, electron, electronic configuration, ion, ionic, covalent, metallic, molecule, particle, charged, metal, lattice, electrostatic, intermolecular, attraction, cation, anion, delocalised, conductivity, melting, boiling, aqueous, solution, molten, anode, cathode, dot and cross diagrams, valency, monomer, polymer, poly(ethene), allotropes, fullerene, graphene, giant molecular, lubricant, metals, non-metals, malleable, Analyse, period, indicate, similar, create, individual, consist, involve, structure, constitute, theory, obtain, acquire, conduct, affect, positive, element, transfer, layer, react, deduce, physical, remove, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,
<b>How and when will I be assessed?</b>	Extended written answer on differences between ionic and covalent (Pearson 6 Mark Question). SC5-7 End of Unit Test
<b>Resources to use</b>	BBC Bitesize Topics: Ionic Compounds: <a href="https://www.bbc.co.uk/bitesize/guides/z9fwrwx/revision/1">https://www.bbc.co.uk/bitesize/guides/z9fwrwx/revision/1</a> Simple Molecules: <a href="https://www.bbc.co.uk/bitesize/guides/zqrxdxs/revision/1">https://www.bbc.co.uk/bitesize/guides/zqrxdxs/revision/1</a> Giant Covalent: <a href="https://www.bbc.co.uk/bitesize/guides/zspdxs/revision/1">https://www.bbc.co.uk/bitesize/guides/zspdxs/revision/1</a> Metallic Bonding: <a href="https://www.bbc.co.uk/bitesize/guides/zcrvtv4/revision/1">https://www.bbc.co.uk/bitesize/guides/zcrvtv4/revision/1</a>
<b>Enrichment opportunities</b>	'The One Show' BBC 2013 about the potential uses of Graphene: <a href="https://www.youtube.com/watch?v=WFacA6OwCjA">https://www.youtube.com/watch?v=WFacA6OwCjA</a> Royal Society of Chemistry Video 'Future Applications of Graphene' <a href="https://www.youtube.com/watch?v=ZzBLsjkNqVc">https://www.youtube.com/watch?v=ZzBLsjkNqVc</a> 'Getting to Grips with Graphene' TEDx Talks <a href="https://www.youtube.com/watch?v=KzeQSZ3bQ2g">https://www.youtube.com/watch?v=KzeQSZ3bQ2g</a>

## Year 11 - Half Term 2 – SC9-11, SC13 Calculations Involving Masses, Electrolytic Processes, Extracting Metals and Transition Metals

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• How to represent elements and compounds using symbols and that reactions can be represented using equations.</li> <li>• That mass is conserved in a reaction.</li> <li>• About the reactivity series of metals in the copper chemistry unit.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• How to calculate the following: relative formula masses; empirical and molecular formulae of compounds; concentration of solutions; mass of reactants or products in a reaction.</li> <li>• How metals are extracted from ores by reduction and electrolysis and link this to reactivity.</li> <li>• About the properties of typical transition metals.</li> <li>• About corrosion of metal, sacrificial protection and electroplating.</li> <li>• <i>Higher Tier students: about the Avogadro constant and molar quantities and how to write half equations.</i></li> </ul>
<b>Next Steps</b>	<p>Chemistry half term 3 - Fuels and Earth Science topic. Btec level 3 Applied Science or AS level Chemistry - Amount of substance, Redox.</p>
<b>Personal Development</b>	<p>Through the study of Earth's resources, you will learn about the economic and environmental benefits of recycling so that you can understand how to be a responsible, respectful citizen. You will discuss and debate issues and ideas around metal extraction, such as the use of biological methods, in a considered way.</p>
<b>Key vocabulary</b>	<p>empirical formula, molecular formula, relative formula mass, concentration, Avogadro constant, mole, anion, anode, cation, cathode, electrode, electrolyte, oxidation, reduction, half equation, ore, redox, extraction, bioleaching, phytoextraction, recycling, <b>conduct, obtain, positive, transfer, finite, transport, environment, economy,</b></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on calculating empirical formula. Summative: Pearson End of Unit Test</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos:  <a href="#">Bitesize calculations</a> <a href="#">Relative formula mass</a> <a href="#">Calculating concentration</a>  <a href="#">Bitesize HT only calculations</a> <a href="#">Moles, Mass, Mr</a>  <a href="#">Bitesize obtaining and using metals</a> <a href="#">Reduction of metal ore</a>  <a href="#">Bitesize electrolysis</a> <a href="#">Electrolysis basics</a> <a href="#">Extracting metals by electrolysis</a>  <a href="#">Transition metals</a></p>
<b>Enrichment opportunities</b>	<p>From rock to copper <a href="#">video</a>  Where does gold come from? <a href="#">video</a>  Research different metals and find out the name, appearance and location of their ores. Eg. Bauxite contains aluminium, it is mined in Australia, South America, Africa, and the Caribbean</p>

## Year 11 - Half Term 2 – SP10/11 Electricity & Circuits and Static Electricity

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the electricity during</p> <ul style="list-style-type: none"> <li>- 7J Current and Electricity</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- About electric current and voltage</li> <li>- About series and parallel circuits</li> <li>- That conductors have low resistance and insulators have high resistance</li> <li>- About electric fields, how objects become charged and how charged objects behave</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About current, charge and potential difference</li> <li>• How to calculate resistance, power and energy transferred</li> <li>• About components with changing resistance</li> <li>• About the UK domestic electricity supply and electrical safety features in homes</li> <li>• How earthing works and why it is important</li> <li>• About the shape and size of electric fields and how they explain some phenomena caused by static electricity</li> </ul>
<b>Next Steps</b>	<p>Topics 1 and 13 follow on from topics 10 and 11; where pupils look at the production of electricity.</p> <p>For the BTEC Level 3 Applied Science, there is a brief link to electrostatic attraction within an atom.</p> <p>At AS/ A-Level this links to Unit 3.5 “Electricity” and at A-Level only there is a link to unit 3.7 “Fields and their consequences”</p>
<b>Personal Development</b>	<p>You will be given the opportunity to consider careers in the electricity industry, such as an electrician, electrical engineer. You will also develop an appreciation for how the appliances you use every day are powered and possible causes should they fail. There is also an emphasis on the importance of electrical safety, including the safe use of static electricity and its benefits</p>
<b>Key vocabulary</b>	<p>Charge, coulombs, current, amperes, voltage, potential difference, volts, resistance, ohms, conductor, insulator, series, parallel, circuit, electrons, energy, voltmeter, ammeter, diode, thermistor, fuse, component, switch, filament lamp, cell, battery, power, watts, alternating, direct, live, neutral, Earth, neutron, proton, power, watt, hertz, circuit breaker, charge, insulator, induction, static, discharge, field, point charge</p> <p style="background-color: yellow;">Data, role, function, identify, conclude, potential, transfer, alternative, series, parallel, energy, symbol, neutral, route, uniform</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a> (Foundation)            Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages  <a href="#">Pearson Edexcel GCSE (9-1) Combined Science Textbook</a> pages 139-166  <a href="https://www.bbc.co.uk/bitesize/topics/zywkgdm">https://www.bbc.co.uk/bitesize/topics/zywkgdm</a> BBC Bitesize  <a href="https://www.bbc.co.uk/bitesize/topics/zp9ry4j">https://www.bbc.co.uk/bitesize/topics/zp9ry4j</a> BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.youtube.com/watch?v=2g2M1dndmEg">https://www.youtube.com/watch?v=2g2M1dndmEg</a> “How it works”  <a href="https://www.youtube.com/watch?v=NUUeGianTKM">https://www.youtube.com/watch?v=NUUeGianTKM</a> “The story of electricity”  <a href="https://www.youtube.com/watch?v=pyMmRRIB5yw">https://www.youtube.com/watch?v=pyMmRRIB5yw</a> “Static Electricity – The Mechanical Universe”</p>

## Y11- Half Term 3- SB7 Animal Coordination and Homeostasis

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• About the structure and function of the human reproductive systems</li> <li>• About the Menstrual cycle</li> <li>• How enzymes help digest food molecules</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• About endocrine glands and how hormones are transported to target organs</li> <li>• How the hormones thyroxine and adrenaline affect the body</li> <li>• How the menstrual cycle is controlled by hormones and how hormones are used in contraception</li> <li>• About the importance of homeostasis</li> <li>• About how thermoregulation occurs</li> <li>• About diabetes and how blood sugar concentration is controlled</li> <li>• About the kidneys and osmoregulation</li> </ul>
<b>Next Steps</b>	<p>This topic links with SB1 Key Concepts in Biology, SB3 Selective Breeding and Genetic Modification, SB5 Health, Disease and Developing New Medicines and SB8 Exchange and Transport. It also leads onto A-level Biology; Cells and Organism exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will learn how your body maintains its internal conditions and how medical professionals can control and treat different endocrine conditions e.g. diabetes, infertility and kidney failure.</p>
<b>Key vocabulary</b>	<p>Adrenal, adrenaline, hormone, ovary, menstrual, progesterone, oestrogen, thyroxine, pancreas, testis, thyroid, glycogen, glucose, glucagon, metabolic, contraception, fertility, ovulation, clomiphene, follicle, diabetes, hypothalamus, thermoregulation, osmoregulation, vasodilation, vasoconstriction, dialysis, glomerulus, nephron, pituitary, area, function, role, structure, affect, normal, maintain, range, regulate, sex, internal, label, medical, ratio, trend, inhibit</p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 141-160</a> <a href="#">Bitesize Animal Coordination and Homeostasis</a> <a href="#">Menstrual Cycle Animation</a> <a href="#">ABPI Homeostasis</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Medical Museum- Leeds</a> <a href="#">Kidney Filtering Project</a> <a href="#">BBC Operation Ouch- hormones</a> and kidneys <a href="#">BBC Alex ones- My fertility and Me</a> documentary</p>

## Y11- Half Term 3- SB8 Exchange and Transport in Animals

<b>Prior Learning</b>	<p>Previously you will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• How the digestive system gets glucose and other food molecules into the blood</li> <li>• How the respiratory system gets oxygen into the blood</li> <li>• About aerobic and anaerobic respiration</li> <li>• About diffusion</li> <li>• About different animal cells and their adaptations</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• More about diffusion, gas exchange and surface area:volume ratio</li> <li>• About the rate of diffusion and Fick's law</li> <li>• More about the different types of respiration</li> <li>• How the heart, lungs, blood vessels and blood are adapted to their functions</li> </ul>
<b>Next Steps</b>	<p>This topics links with SB1 Key Concepts in Biology, SB5 Health and Disease and Developing New Medicines. It also leads onto A-level Biology; Cells and Organism exchange substances with their environment</p>
<b>Personal Development</b>	<p>In this topic you will learn how your body takes in and releases key chemicals and how they are transport around the body. This topics overs some basics of human anatomy and is always of great interest to pupils wanting to follow any kind of medical career.</p>
<b>Key vocabulary</b>	<p>Aerobic, anaerobic, capillary, vein, artery, diffusion, excretion, metabolism, area, gas exchange, surface area, volume, proportional, inversely, erythrocyte, lymphocyte, platelet, plasma, pulse, cardiac, atrium, ventricle, pulmonary, oxygenated, deoxygenated, valve, septum, vena cava, lactic acid, mitochondrion, <b>area, consist, data, identify, factor, role, label, method, similar, function, range</b></p>
<b>How and when will I be assessed?</b>	<p>Formative- extended exam style questions, homework tasks, verbally in class Summative- Pearson end of topic assessment</p>
<b>Resources to use</b>	<p><a href="#">Pearson Edexcel GCSE (9-1) Biology Student Book Page 161-174</a> <a href="#">Bitesize Animal Coordination and Homeostasis</a> <a href="#">Respiration Core Practical</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Medical Museum- Leeds</a> <a href="#">BBC Operation Ouch- heart</a> and lungs <a href="#">Virtual Heart dissection</a> <a href="#">One blood website</a></p>



## Year 11 - Half Term 3 – SP12 Magnetism and the Motor Effect CP13

### Electromagnetic Induction

<b>Prior Learning</b>	<p>At Key Stage 3 you will have studied the structure of the atom in the topics</p> <ul style="list-style-type: none"> <li>- 7J Current and Electricity</li> </ul> <p>You will have learnt</p> <ul style="list-style-type: none"> <li>- How to plot the shape of a magnetic field and that the Earth has a magnetic field</li> <li>- That electric currents cause magnetic fields, including in electromagnets and motors</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• About the permanent and induced magnets, and how to represent a magnetic field</li> <li>• About the magnetic field around a current in a wire and how the factors that affect it</li> <li>• How the fields from the individual coils in a solenoid interact</li> <li>• How to use the power equation for transformers</li> <li>• How transformers are used in the national grid</li> <li>• How to use the turns ratio equation for transformers (HIGHER tier only)</li> <li>• How a current can be induced in a wire and the factors that affect it (HIGHER tier only)</li> <li>• How to work out the size direction of the force on a wire carrying a current in a magnetic field (HIGHER tier only)</li> </ul>
<b>Next Steps</b>	At A-Level there is a link to the unit “Fields and their consequences”
<b>Personal Development</b>	This unit of work provides an insight into how everyday electrical appliances work and will also develop your understanding of how electricity is generated and distributed around the country. This unit will also provide an introduction to potential career opportunities for example electrical engineer.
<b>Key vocabulary</b>	<p>Core, induced magnet, magnetic field, permanent magnet, plotting compass, electromagnet, solenoid, temporary magnet, carbon brush, Fleming’s left-hand rule</p> <p>Magnetic flux density, motor effect, split-ring commutator, tesla, alternating current, diaphragm, induction, induce, potential difference, transformer, direct current, national grid, transmission, dynamo, generator, voltage, coulomb, power</p> <p>Analyse, concept, normal, transfer, illustrate, component, contact, data, estimate, structure, demonstrate</p>
<b>How and when will I be assessed?</b>	<p>Formative – “quick-quizzes” used at start of lessons, exam questions used during lessons, WAGOLL for extended answer questions</p> <p>Summative – Pearson end of topic test</p>
<b>Resources to use</b>	<p>Seneca Edexcel Combined Science Physics:  <a href="https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba">https://app.senecalearning.com/classroom/course/a45169f6-0419-4904-816d-963748c2bfba</a>(Foundation)</p> <p>Or <a href="https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5">https://app.senecalearning.com/classroom/course/501a009a-2f22-465d-a4ea-1ba453222f58/section/d0ffd564-eb83-463c-9b11-54356a7a64e5</a> (higher)</p> <p>Pearson Edexcel Combined Science Revision guides (available to purchase via school) pages <a href="#">Pearson Edexcel GCSE (9-1) Physics Science Textbook</a> pages 167-180</p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zxgvpbk">https://www.bbc.co.uk/bitesize/topics/zxgvpbk</a> and  <a href="https://www.bbc.co.uk/bitesize/topics/zqynxfr">https://www.bbc.co.uk/bitesize/topics/zqynxfr</a>- BBC Bitesize</p>
<b>Enrichment opportunities</b>	<p><a href="https://www.bbc.co.uk/news/uk-scotland-scotland-politics-29509021">https://www.bbc.co.uk/news/uk-scotland-scotland-politics-29509021</a> - What is the National Grid</p> <p><a href="https://www.youtube.com/watch?v=vX0G9F42puY">https://www.youtube.com/watch?v=vX0G9F42puY</a> – Fully Charged – National Grid</p>

## Year 11 - Half Term 3 – SC18 and SC19 Rates of Reaction and Energy Changes, SC12 and SC15 Dynamic Equilibria and The Haber Process

<b>Prior Learning</b>	<p>You will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>• about elements compounds and the periodic table (8F),</li> <li>• what happens during chemical reactions (7F, 7H, 8E, 8G).</li> </ul> <p>In SC0, SC1 and SC2 you will have learnt:</p> <ul style="list-style-type: none"> <li>• reacting copper metal with hydrochloric acids will produce hydrogen gas,</li> <li>• reacting copper carbonate with hydrochloric acid will produce carbon dioxide gas,</li> <li>• that the change in mass of a reactant before and after a chemical reaction can be measured,</li> <li>• that all substances are made of particles (either atoms or molecules).</li> </ul>
<b>What will I learn?</b>	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>• How changes in conditions (such as temperature, concentration and surface area of reactants) can affect the rates of reactions.</li> <li>• About the energy transfers that can occur during chemical reactions.</li> <li>• That some chemical reactions are reversible, and that dynamic equilibrium is the point when forward and backwards reactions occur at the same rate.</li> <li>• How to make a fertiliser in a laboratory and compare this with industrial production.</li> <li>• <i>Higher Tier: That chemists must consider rate of reaction, yield, cost and safety in choosing conditions for a particular reaction.</i></li> </ul>
<b>Next Steps</b>	SC8 Acids, SC9 Calculations Involving Masses, SC14 Quantitative Analysis. AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.4 Energetics and 3.1.9 Rate Equations.
<b>Personal Development</b>	SMSC This topic develops an understanding that increasing temperature, concentration, surface area of reactants will increase chemical reactions. This will develop understanding of using ingredients in powder form when cooking or increasing the temperature will cook food faster. It also develops understanding of industrial chemistry and the factors to be considered to make chemistry profitable.
<b>Key vocabulary</b>	<p>Rate, reactants, products, variables, activation energy, exothermic, endothermic, concentration, surface area, pressure, dependent, independent, control, temperature, catalysts, volume, dissolves, reaction profiles, enzymes, protein, active site, substrates, denature, precipitation, neutralisation, distillation, bonds,</p> <p>Analyse, area, assess, available, constitute, data, define, estimate, factor, formula, identify, interpret, method, occur, require, role, obtain, acquire, affect, positive, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
<b>How and when will I be assessed?</b>	Extended written answer evaluation of method or a conclusion based on data for the core practical experiments (measuring the volume of gases and observing a colour change). SC18 and 19 End of Unit Test
<b>Resources to use</b>	<p>BBC Bitesize Topics: Rates of Reaction and Energy Changes <a href="https://www.bbc.co.uk/bitesize/topics/ztyggdm">https://www.bbc.co.uk/bitesize/topics/ztyggdm</a></p> <p>Youtube Clips: Rates and Energy Revision Video <a href="https://www.youtube.com/watch?v=OyXq2HYCKL0">https://www.youtube.com/watch?v=OyXq2HYCKL0</a></p> <p>Core Practicals: Measuring the volume of a gas <a href="https://www.youtube.com/watch?v=ssa3wh3RNt0">https://www.youtube.com/watch?v=ssa3wh3RNt0</a> Observing precipitation <a href="https://www.youtube.com/watch?v=GI6LVI7oAIU">https://www.youtube.com/watch?v=GI6LVI7oAIU</a></p>
<b>Enrichment opportunities</b>	<p>How do cold packs work? <a href="https://www.youtube.com/watch?v=hVh-bpAv4_E">https://www.youtube.com/watch?v=hVh-bpAv4_E</a> <a href="https://www.youtube.com/watch?v=A5q0NUDbGp8">https://www.youtube.com/watch?v=A5q0NUDbGp8</a></p> <p>Why do chemicals react? <a href="https://www.youtube.com/watch?v=8m6RtOpgvtU">https://www.youtube.com/watch?v=8m6RtOpgvtU</a></p>

Year 11 - Half Term 3 – SC18 and SC19 Rates of Reaction and Energy Changes, SC12 and SC15 Dynamic Equilibria and The Haber Process	
Prior Learning	<p>You will have learnt at KS3:</p> <ul style="list-style-type: none"> <li>about elements compounds and the periodic table (8F),</li> <li>what happens during chemical reactions (7F, 7H, 8E, 8G).</li> </ul> <p>In SC0, SC1 and SC2 you will have learnt:</p> <ul style="list-style-type: none"> <li>reacting copper metal with hydrochloric acids will produce hydrogen gas,</li> <li>reacting copper carbonate with hydrochloric acid will produce carbon dioxide gas,</li> <li>that the change in mass of a reactant before and after a chemical reaction can be measured,</li> <li>that all substances are made of particles (either atoms or molecules).</li> </ul>
What will I learn?	<p>In this unit you will learn:</p> <ul style="list-style-type: none"> <li>How changes in conditions (such as temperature, concentration and surface area of reactants) can affect the rates of reactions.</li> <li>About the energy transfers that can occur during chemical reactions.</li> <li>That some chemical reactions are reversible, and that dynamic equilibrium is the point when forward and backwards reactions occur at the same rate.</li> <li>How to make a fertiliser in a laboratory and compare this with industrial production.</li> <li><i>Higher Tier: That chemists must consider rate of reaction, yield, cost and safety in choosing conditions for a particular reaction.</i></li> </ul>
Next Steps	SC8 Acids, SC9 Calculations Involving Masses, SC14 Quantitative Analysis. AS level Chemistry e.g. AQA A-Level Chemistry Specification point 3.1.4 Energetics and 3.1.9 Rate Equations.
Personal Development	SMSC This topic develops an understanding that increasing temperature, concentration, surface area of reactants will increase chemical reactions. This will develop understanding of using ingredients in powder form when cooking or increasing the temperature will cook food faster. It also develops understanding of industrial chemistry and the factors to be considered to make chemistry profitable.
Key vocabulary	<p>Rate, reactants, products, variables, activation energy, exothermic, endothermic, concentration, surface area, pressure, dependent, independent, control, temperature, catalysts, volume, dissolves, reaction profiles, enzymes, protein, active site, substrates, denature, precipitation, neutralisation, distillation, bonds,</p> <p>Analyse, area, assess, available, constitute, data, define, estimate, factor, formula, identify, interpret, method, occur, require, role, obtain, acquire, affect, positive, element, transfer, react, deduce, physical, remove, residue, volume, hypothesis, overall, compound, energy, stable, trend, ratio, symbol, bond, neutral, chemical, adjacent,</p>
How and when will I be assessed?	<p>Extended written answer evaluation of method or a conclusion based on data for the core practical experiments (measuring the volume of gases and observing a colour change).</p> <p>SC18 and 19 End of Unit Test</p>
Resources to use	<p>BBC Bitesize Topics: Rates of Reaction and Energy Changes <a href="https://www.bbc.co.uk/bitesize/topics/ztyggdm">https://www.bbc.co.uk/bitesize/topics/ztyggdm</a></p> <p>Youtube Clips: Rates and Energy Revision Video <a href="https://www.youtube.com/watch?v=OyXq2HYCKL0">https://www.youtube.com/watch?v=OyXq2HYCKL0</a></p> <p>Core Practicals: Measuring the volume of a gas <a href="https://www.youtube.com/watch?v=ssa3wh3Rnt0">https://www.youtube.com/watch?v=ssa3wh3Rnt0</a> Observing precipitation <a href="https://www.youtube.com/watch?v=Gl6LVl7oAIU">https://www.youtube.com/watch?v=Gl6LVl7oAIU</a></p>
Enrichment opportunities	<p>How do cold packs work? <a href="https://www.youtube.com/watch?v=hVh-bpAv4_E">https://www.youtube.com/watch?v=hVh-bpAv4_E</a> <a href="https://www.youtube.com/watch?v=A5q0NUDbGp8">https://www.youtube.com/watch?v=A5q0NUDbGp8</a></p> <p>Why do chemicals react? <a href="https://www.youtube.com/watch?v=8m6RtOpqvtU">https://www.youtube.com/watch?v=8m6RtOpqvtU</a></p>

## Year 11 - Half Term 3 – SC26 Materials and Nanoparticles

<b>Prior Learning</b>	<p>Previously you will have learned:</p> <ul style="list-style-type: none"> <li>• Some typical properties of materials, such as hardness, flexibility, conductivity, transparency etc.</li> <li>• That the choice of material for any given use, depends upon its physical and chemical properties.</li> </ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"> <li>• What is meant by 'composite' material</li> <li>• How to compare the physical properties of different materials</li> <li>• How and why materials are chosen for a particular use.</li> <li>• About nanoparticles and their possible uses and possible risks.</li> </ul>
<b>Next Steps</b>	<p>Chemistry y10 – extracting metals, bonding, transition metals.                      Btec level 3 Applied Science or AS level Chemistry – Material science</p>
<b>Personal Development</b>	<p>Through the study of nanoparticles, you will evaluate the risks and benefits of using nanoparticles. You could consider how the choice of <a href="#">cladding material for the Grenfell tower</a> led to such a huge tragedy.</p>
<b>Key vocabulary</b>	<p>physical property, state, ceramic, transparent, opaque, monomer, polymer, malleable, alloy, electrical conductivity, tensile strength, compressive strength, composite, laminate, pykrete, concrete, nanoparticle.  <a href="#">process, layer, environment, function, structure, aggregate, physical</a></p>
<b>How and when will I be assessed?</b>	<p>Formative: low stakes quizzing, homework tasks, extended written answer on separating mixtures.                      Summative: Exam questions</p>
<b>Resources to use</b>	<p>BBC Bitesize Topics &amp; useful videos  <a href="#">Materials</a>; <a href="#">Nanoparticles</a></p>
<b>Enrichment opportunities</b>	<p><a href="#">Material science as a career.</a>  <a href="#">Victrex</a> : local job opportunities</p>

## Year 11 - Half Term 3 –SC20-24 – Fuels, Earth Science and Organic Chemistry

<b>Prior Learning</b>	Previously you will have learned: <ul style="list-style-type: none"><li>• That mixtures can be separated by fractional distillation.</li><li>• That combustion of fuels releases CO<sub>2</sub> into the atmosphere.</li><li>• That energy resources can be renewable or non-renewable.</li></ul>
<b>What will I learn?</b>	<ul style="list-style-type: none"><li>• About the names and structures of hydrocarbons found in crude oil (alkanes and alkenes).</li><li>• How crude oil is separated into fractions, giving some typical uses for each.</li><li>• About the processes of cracking and polymerisation.</li><li>• How the Earth's atmosphere has evolved; how the balance of gases is changing now and leading to climate change.</li><li>• About the structure and uses of the alcohol and carboxylic acid homologous series.</li></ul>
<b>Next Steps</b>	Btec level 3 Applied Science or AS level Chemistry – Organic chemistry, Earth Science.
<b>Personal Development</b>	Through the study of Earth science, you will learn about the processes involved in production of greenhouse gases. You will consider the importance of reducing your carbon footprint. Furthermore, you will consider the problems with polymer disposal (plastic pollution).
<b>Key vocabulary</b>	hydrocarbon, finite, non-renewable, feedstock, homologous series, fraction, viscosity, ignite, molecular formulae, general formulae, combustion, cracking, supply & demand, monoxide, haemoglobin, toxic, limewater, alkane, alkene, alcohol, carboxylic acid, polymer, addition, hydrolysis, condensation, <b>composition, process, environment, resources, dispose,</b>
<b>How and when will I be assessed?</b>	Formative: low stakes quizzing, homework tasks, extended written answer on the fractions of crude oil. Summative: Pearson End of Unit Test
<b>Resources to use</b>	BBC Bitesize Topics & useful videos <a href="#">Fuels</a> ; <a href="#">Earth science</a> ; <a href="#">Hydrocarbons</a> ; <a href="#">alcohols &amp; carboxylic acids</a> ; <a href="#">polymers</a>
<b>Enrichment opportunities</b>	<a href="#">Organic chemistry</a> as a career. <a href="#">Environmental science</a> as a career.