

## Curriculum Map: Year 9 Transitional Science Curriculum

### Half Term 1

	Biology	Chemistry	Physics
Topic	Cell Structure and Microscopy	Elements and compounds Separating mixtures	Particle model of matter
Intent	Students develop a deeper understanding of cells as the building block of life. Students will learn the structure and function of cell components of both Prokaryotes and Eukaryotes. They will develop their ability to use a microscope to identify cells and record observations.	Mixtures can be separated using a variety of scientific techniques and apparatus	Student will learn how the particle model is used to predict behaviour of solids, liquids and gases and link this to everyday applications. Students learn how diagrams are used to represent the particle model of behaviour. Students learn about density and how to calculate of regular and irregular objects.
Key Knowledge	Structure of eukaryotes and prokaryotes. Structure and function of animal and plant cell and cell structures. How to set up and use a microscope to analyse prepared slides. E.g. Onion cell. How to prepare a slide for analysis. Calculate magnification and size of objects. $I=A/M$	Matter is composed of atoms. There are about 100 naturally occurring atoms called elements. Different elements can combine to form compounds. Mixtures of elements and compounds can be separated.	The density of a material is defined by the equation: <b>density = mass volume</b> Changes of state are physical changes which differ from chemical changes because the material recovers its original properties. Students calculate density of regular and irregular objects.
Retrieval Practice	<ul style="list-style-type: none"> <li>Revisit of year 7 cells and organelles.</li> <li>Cell organelles and their function.</li> <li>Differences between prokaryotes and Eukaryotic cells.</li> <li>How to see a prepared slide using a light microscope.</li> </ul>	<ul style="list-style-type: none"> <li>Recall of reversible and non-reversible reactions to describe the difference between compounds and mixtures.</li> <li>Modelling compounds and mixtures.</li> </ul>	<ul style="list-style-type: none"> <li>Drawing of particle diagram to describe the difference between solids, liquids and gases.</li> <li>Maths calculation of volume of regular objects.</li> </ul>
Key Skills	Use scientific vocabulary, terminology and definitions confidently in both written and spoken work when recalling and comparing cells. Develop ability in method writing. Develop use of the microscope to make accurate observations.	Analysis Recall Practical Problem solving Use of scientific vocabulary Making accurate observations	Recall. Rearranging equations. Practical techniques. Problem solving. Making accurate observations.

	Use prefixes centi, milli, micro and nano. Calculations and manipulation of formula.		Interpreting data from graphs to make appropriate conclusions. <b>Carryout Required Practical activity 17</b>
<b>Key Vocabulary</b>	Cell, nucleus, cytoplasm, cell membrane, chloroplast, mitochondria, ribosome, cell, wall, vacuole, magnify, eukaryote, prokaryote, compare, calculate, identify.	Atom, element, compound, mixture, chemical symbol, substance, particle, chemical bond, dissolve, soluble, insoluble, boiling and melting point, filter, evaporate, condense, residue, crystallisation.	Mass, volume, density, solid, liquid, gas, condensing, freezing, boiling, particles, pressure.
<b>Key Reading</b>	BBC Bite Size Combined Science Biology CGP Revision Guide	BBC Bitesize CGP revision guide	BBC bitesize GCSE Combined Science CGP revision guide
<b>End Point</b>	Students are competent in answering structured and longer response exam style questions. Able to structure comparative sentences. Can recall scientific equation. <b>Required Practical 1= Microscopy</b>	Students are competent in answering structured and longer response exam style questions. Able to structure comparative sentences. Can recall practical methods.	Students can rearrange density equation to calculate density of regular objects. Can recall practical methods. Students are competent in answering maths, data and graph-based questions. Students can plot and analyse line graphs.
<b>Form of Assessment</b>	Exam ready questions and Extended writing.	Exam ready questions and Extended writing.	Exam ready questions and Extended writing.
<b>Enrichment Opportunities</b>	Use of outdoor classroom. As Universities start to offer science-based workshops again Y9 will be given the opportunity to take part in trips to local Universities to gain insights into scientific courses and careers. Linked with Duke of Edinburgh there is an opportunity for some students to gain hands on experience in a science career with a Science technician as part of their skills or volunteering section. British Science Week Link to science careers.		
<b>Leadership Opportunities</b>	Year 9 provides a fantastic opportunity for a student to embrace the role of a subject leader which will meet regularly with a teacher from the subject. They will talk to other pupil about the subject and share your views with teachers. They will think about how you can make the subject even more interesting than it is already, as well as examining ways in which students learn effectively. They will tell students and other groups of people what is great about the subject! Students will also be offered to take place in open evening giving them an opportunity to show what skills and knowledge they have developed over the course. Chances to formally present within lessons and take ownership of that process. Student examples to demonstrate good quality work. Group work.		

## Curriculum Map: Year 9 Transitional Science Curriculum

### Half Term 2

	Biology	Chemistry	Physics
Topic	Principles of Organisation and Enzymes and Digestion	Atomic structure History and Development of the atomic model.	Radiation and types of radiation
Intent	Students learn the principles of organisation of the whole organism of animals and plants. Being able to relate their years' work on the building blocks of life to the whole organism and the 7 life processes (MRS GREN). Students will develop their existing knowledge of organism organisation, focussing on the digestive system. Students will develop a deeper knowledge of the digestive process including the action of enzymes and how nutrients are absorbed.	Students will learn the importance of experimental evidence and how they lead to change or replace an existing model. Students will also learn how the subatomic particle discovery has led to the development of the atomic model. Students will also learn the model of a nuclear atom, size charge, mass, and electron arrangement in energy levels. The position of each subatomic particle and how to calculate the number of each particle. Students will learn how to balance chemical equations.	Students will develop their existing knowledge of atoms and isotopes, linking their knowledge from Chemistry and explore how the model of the atom has changed over time. Students will learn that unstable nuclei give out radiation to become more stable. A process that is random. They will learn the different types of radiation, the effects of their decay and the hazards associated with radioactive decay. Students will also learn the uses and application of each radiation and careers involved.
Key Knowledge	Define and identify tissues, organs and organ systems in plants and animals. Describe the function of plant and animal tissues. Know the functions of different organ systems and how they link to MRS GREN. Cells, tissues, organs, and organ systems. The structure of the digestive system. The "Lock and Key Theory". Products of digestion linked to each type of enzyme.	Development of the atomic model and the role played by key scientist. Matter is composed of atoms. Define isotopes and be able to work out their relative atomic mass. The structure of the atom including the arrangement of electrons in energy levels. Calculating masses	Define the different types of radiation. The properties of each type of radiation. Hazards of each type of radiation. Health and safety procedures when handling radiation.
Retrieval Practice	<ul style="list-style-type: none"> <li>Revisiting cell's structure and organelles.</li> <li>Order of organisation in organisms.</li> </ul>	<ul style="list-style-type: none"> <li>Model of the particle diagram</li> <li>Year 7 Elements, Compounds and Mixtures</li> <li>Year 7 Separating Techniques.</li> </ul>	<ul style="list-style-type: none"> <li>Revisit heat transfer, conduction, convection and radiation.</li> <li>Use of Atomic model.</li> </ul>

	<ul style="list-style-type: none"> <li>Organ systems and their functions.</li> </ul>		
<b>Key Skills</b>	Use scientific vocabulary, terminology and definitions confidently in both written and spoken work.	Analysis Recall Practical Problem solving Use of scientific vocabulary Making accurate observations	<ul style="list-style-type: none"> <li>Explain how data can be used to justify the change of scientific models.</li> <li>Evaluate risks of hazards associated with radioactivity.</li> <li>Calculating half-life of radioactive nucleus.</li> <li>Unit of measurement for radioactivity.</li> <li>Able to plot and interpret radioactive data.</li> </ul>
<b>Key Vocabulary</b>	Cell, tissue, organ, organ system, organism, MRS GREN, tissues, organisms, saliva, pancreas, protease, carbohydrase, amylase, lipase, bile, emulsifies, gall bladder, absorbed.	Atom, element, subatomic, electron, proton, neutron, atomic number, atomic mass, isotope, abundance, balance.	Nucleus, charge, proton, neutron, electron, isotope, half-life, radiation, alpha, beta, gamma, ionising, plum pudding, Bohr model, nuclear, radioactive, hazard.
<b>Key Reading</b>	BBC Bite Size Combined Science Biology CGP Revision Guide	BBC Bitesize, Combined Science Chemistry CGP revision guide	BBC Bitesize, Combined Science Physics CGP revision guide
<b>End Point</b>	Students are competent in answering structured and longer response exam style questions. Students able to link enzymes to their specific substrates. Students are able to write a method that is coherent and would allow you to complete all food tests safely. <b>Required Practical 3+4</b>	Students can calculate subatomic particles and molecular mass of atoms. Students can balance chemical equations. Students are competent in answering structured and longer response exam style questions. Students	Students can state the different types of radioactivity and how it changes the nucleus. Students can calculate half-life of radioactive nuclei. Students are able to describe how to measure the radioactivity of a substance, listing the safety precautions. Students apply the uses of each type of radioactivity.
<b>Form of Assessment</b>	Exam ready questions	Exam ready questions	Exam ready questions
<b>Enrichment Opportunities</b>	Use of outdoor classroom. As Universities start to offer science-based workshops again Y9 will be given the opportunity to take part in trips to local Universities to gain insights into scientific courses and careers. Linked with Duke of Edinburgh there is an opportunity for some students to gain hands on experience in a science career with a Science technician as part of their skills or volunteering section. British Science Week Link to science careers.		

<b>Leadership Opportunities</b>	<p>Year 9 provides a fantastic opportunity for a student to embrace the role of a subject leader which will meet regularly with a teacher from the subject. They will talk to other pupil about the subject and share your views with teachers. They will think about how you can make the subject even more interesting than it is already, as well as examining ways in which students learn effectively. They will tell students and other groups of people what is great about the subject!</p> <p>Students will also be offered to take place in open evening giving them an opportunity to show what skills and knowledge they have developed over the course.</p> <p>Chances to formally present within lessons and take ownership of that process.</p> <p>Student examples to demonstrate good quality work.</p> <p>Group work.</p>
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## Curriculum Map: Year 9 Transitional Science Curriculum

### Half Term 3

	Biology	Chemistry	Physics
Topic	Communicable Diseases and Non-communicable diseases.	Periodic Table History of the Periodic Table Groups, metals and non-metals	Energy and energy changes
Intent	<p>Students to develop a deeper knowledge of micro-organisms. Learn about communicable diseases and how pathogens can be transmitted, relating this to real life current affairs. Understand the first and second line of human defence systems and begin to explore the workings of the immune system.</p> <p>Students can explain the process of vaccination and evaluate the global use of vaccination in the prevention of disease.</p> <p>To learn how other common drugs work to kill pathogens or relieve symptoms.</p> <p>Explore the development of new drugs from concept to use. Make links between the discovery of new drugs and the importance of the conservation of the planet.</p>	<p>Students will learn:</p> <p>The periodic table provides chemists with an organized way of looking at the known chemical elements. How scientists helped to develop the periodic table. The arrangement of elements in the modern periodic table. How the periodic table separates metals and non-metals. Basic properties of metals and non-metals. The similarities and differences between elements in groups and periods. The chemical and physical trends in groups 1, 7 and 0.</p>	<p>Students learn about the concept of energy and how it cannot be created or destroyed. They learn about the different energy stores and the four energy pathways.</p> <p>Students learn changes in energy stores and can calculate the energy store.</p> <p>Students can link energy efficiency of appliances to cost of energy.</p>

<b>Key Knowledge</b>	<p>The modes of transmission for micro-organisms.</p> <p>Process of vaccination.</p> <p>Function and examples of antibiotic, painkillers, and antivirals.</p> <p>How pathogens can cause damage.</p> <p>Specifics of 7 communicable diseases.</p> <p>The non-specific human defences.</p> <p>Functions of white blood cells.</p> <p>Process of drug development.</p> <p>Understand that the results of testing and trials are published only after scrutiny by peer review.</p>	<p>Names and contributions made by scientists in the development of the periodic table.</p> <p>The periodic table reveals trends and connections between groups and periods.</p> <p>Metals and non-metals have distinct similarities and differences.</p> <p>Elements in the same group share similar properties.</p> <p>Elements in the same period share similar properties.</p> <p>Properties change as you go across or down the periodic table.</p> <p>Electrons and protons play an important part when explaining these properties and trends.</p>	<p>Energy can be in different forms.</p> <p>Energy transfer involves changes in form.</p> <p>Calculating energy, power, and efficiency.</p> <p>Calculating work done and linking to current flow.</p> <p>Investigate the Gravitational Potential Energy Store and Kinetic Energy Store.</p>
<b>Retrieval Practice</b>	<ul style="list-style-type: none"> <li>Recall of levels of organisation</li> <li>Different organ systems.</li> <li>Year 8 Health and disease.</li> </ul>	<ul style="list-style-type: none"> <li>Year 7 Periodic Table</li> <li>Development of the Periodic Table</li> </ul>	<ul style="list-style-type: none"> <li>Year 7 Energy Stores and Transfers</li> <li>Efficiency</li> </ul>
<b>Key Skills</b>	<p>Students are able to describe the different types of pathogens, the diseases they cause, their symptoms and treatments. .</p> <p>Interpret data to describe the fluctuation in prevalence of different diseases.</p> <p>Describe and explain specified examples of the technological applications of science in reduce the spread of communicable diseases and understanding of non-communicable diseases.</p>	<p>Pupils able explain the trends in reactivity of Group 1 and Group 7 relative to electron structure and atomic size.</p> <p>Pupils able to plan an experiment to test the reactivity of group 1 alkali metals.</p> <p>Pupils can complete a risk assessment allowing the safe use of group 1 metals.</p>	<p>Using formulas to calculate energy, power and efficiency.</p> <p>Interpret graphs and data tables.</p>
<b>Key Vocabulary</b>	<p>Communicable, immune, pathogen, bacteria, virus, fungi, transmission, infectious, toxin, neutralise, symptom, protest, vector, antibody, antitoxin, phagocytosis Vaccine, vaccination, toxicity, efficacy, dose, clinical, trial, stimulate, immunise, resistant, strains, placebo.</p>	<p>Group, period, protons, neutrons, electrons, charge, mass, nucleus, energy level, atomic number, atomic mass, alkali metal, transition metal, halogen, displacement, boiling point, reactivity, noble gas. Malleable, ductile, sonorous, dense, brittle, atomic radius, nuclear attraction, shielding, repulsion, weak intermolecular forces.</p>	<p>Energy, joule, kilojoule, law of conservation of energy, chemical store, energy store, thermal, kinetic, gravitational potential, elastic, dissipated, energy resource, fossil fuel, non-renewable, thermal power station, renewable, nuclear, power rating, watt, kilowatt, kilowatt hour, work done.</p>
<b>Key Reading</b>	BBC Bite Size Combined Science Biology	BBC Bite Size Combined Science Biology	BBC bitesize GCSE Combined Science

	CGP Revision Guide	CGP Revision Guide	CGP revision guide
<b>End Point</b>	Students can recall different pathogens and their modes of transmission. Students are competent in answering structured and longer response exam style questions.	Students are competent stating the work of Dimitri Mendeleev. They can describe the how reactivity changes as you go down Group 1 and Group 7 of the Periodic Table. Students can highlight position of metals and non metals on the Periodic table and describe the difference in their properties.	Students are competent in answering structured and longer response exam style questions and recall the scientific equations. Students can: describe energy changes; calculate energy changes, power and efficiency; describe ways to reduce energy loss; explain why fossil fuels are a non-renewable energy source and why alternative energy sources need exploring.
<b>Form of Assessment</b>	Exam ready questions	Exam ready questions	Exam ready questions
<b>Enrichment Opportunities</b>	Use of outdoor classroom. As Universities start to offer science-based workshops again Y10 will be given the opportunity to take part in trips to local Universities to gain insights into scientific courses and careers. Linked with Duke of Edinburgh there is an opportunity for some students to gain hands on experience in a science career with a Science technician as part of their skills or volunteering section. British Science Week Link to science careers.		
<b>Leadership Opportunities</b>	Year 9 provides a fantastic opportunity for a student to embrace the role of a subject leader which will meet regularly with a teacher from the subject. They will talk to other pupil about the subject and share your views with teachers. They will think about how you can make the subject even more interesting than it is already, as well as examining ways in which students learn effectively. They will tell students and other groups of people what is great about the subject! Students will also be offered to take place in open evening giving them an opportunity to show what skills and knowledge they have developed over the course. Chances to formally present within lessons and take ownership of that process. Student examples to demonstrate good quality work. Group work.		

## Curriculum Map: Year 9 Transitional Science Curriculum

### Half Term 4

	Biology	Chemistry	Physics
Topic	Respiratory and Circulatory System	Acids and bases	Renewable and Non-renewable resources National Grid
Intent	Students will learn the respiratory system linking the structure of each part to its function. Students also learn the circulatory system learning about the structure and function of the heart and blood vessels.	Students learn how acids reacts with metals, metals oxides, metal carbonates. The difference between bases and alkali and the products of the different neutralisation reactions. Students learn to write word and balanced chemical equations to represent the changes that occur neutralisation reactions. Students will prepare a pure sample of salt. Students will develop on their learning of acids and alkali and link the presence of $H^+$ and $OH^-$ in aqueous solution to the strength of acids and alkalis respectively and their position on the pH scale.	Students develop an understanding of the main energy sources available to us on Earth, both renewable and non-renewable. Be able to calculate the efficiency of energy transfers.
Key Knowledge	Students can explain how each structure of the respiratory system is adapted. Students link the structure of the blood vessels and their role. Students link the role of blood to its component.	Acids react with metals to form salts and hydrogen. Redox reactions involve the gain and loss of electrons. Acids can be neutralised by a base; this produces salts. <b>Required practical 8</b> – preparing salts. The pH scale is used to measure the acidity or alkalinity of a solution.	Calculating Efficiency. Fossil fuels are finite. Renewable energy sources can be replenished. Environmental impact of different energy sources.
Retrieval Practice	<ul style="list-style-type: none"> <li>Levels of organisation</li> <li>Exercise and its effects on the body (Year 8).</li> <li>Structure of respiratory system</li> </ul>	<ul style="list-style-type: none"> <li>Acids and Alkalis (Year 7)</li> <li>Common household acids and alkalis.</li> <li>Neutralisation</li> </ul>	<ul style="list-style-type: none"> <li>Energy Stores</li> <li>Energy Pathways</li> <li>Energy Efficiency</li> </ul>
Key Skills	Use scientific vocabulary in descriptive writing. Students link the large surface area of the alveoli surrounded by the capillary	Recall products from different neutralisation reactions. Balancing equations. Practical	Structure arguments about the rights and wrongs of new technology and how to tackle



	to provide and maintain a concentration gradient.	techniques in completing <b>Required practical 8</b> , stating health and safety precautions. Using standard form to relate pH and strength of acids and alkalis. Making accurate observations	problems caused by human impact on the environment. Describe, explain and evaluate the use of different energy sources. Using formulas to calculate efficiency.
<b>Key Vocabulary</b>	Trachea, Bronchus, Bronchiole, Lungs, Alveoli, Surface Area, Concentration, Diffusion, Gradient, Ventricle, Aorta, Vena Cava, Pulmonary Artery, Capillary, Coronary, Pacemaker.	Aqueous solution, hydrogen ions $H^+$ , hydroxide ions $OH^-$ , universal indicator, displace, neutralisation, pH, strong and weak/dilute acid, partially ionise, fully ionise, concentration.	Efficiency, fossil fuel, nuclear fuel, hydro-electricity, solar, renewable, impact, conservation, renewable, non-renewable.
<b>Key Reading</b>	BBC Bite Size Combined Science Biology CGP Revision Guide	BBC Bitesize, Combined Science Chemistry CGP revision guide	BBC Bitesize, Combined Science Physics CGP revision guide
<b>End Point</b>	Students can identify and label the parts of the respiratory and circulatory system. Students can link how the respiratory and circulatory system work together during exercise to meet the demand of oxygen by muscles.	Students can recall chemical equations. Able to structure comparative sentences. Can recall practical methods. Students are competent in answering maths standard form questions.	Students can compare renewable and non-renewable energy resources. They are able to identify parts of the national grid and the role of transformers. S Students can describe how to work with electricity safely.
<b>Form of Assessment</b>	Exam ready questions	Exam ready questions	Exam ready questions
<b>Enrichment Opportunities</b>	Use of outdoor classroom. As Universities start to offer science-based workshops again Y10 will be given the opportunity to take part in trips to local Universities to gain insights into scientific courses and careers. Linked with Duke of Edinburgh there is an opportunity for some students to gain hands on experience in a science career with a Science technician as part of their skills or volunteering section. British Science Week Link to science careers.		
<b>Leadership Opportunities</b>	Year 9 provides a fantastic opportunity for a student to embrace the role of a subject leader which will meet regularly with a teacher from the subject. They will talk to other pupil about the subject and share your views with teachers. They will think about how you can make the subject even more interesting than it is already, as well as examining ways in which students learn effectively. They will tell students and other groups of people what is great about the subject! Students will also be offered to take place in open evening giving them an opportunity to show what skills and knowledge they have developed over the course.		

Chances to formally present within lessons and take ownership of that process.  
Student examples to demonstrate good quality work.  
Group work.

## Curriculum Map: Year 9 Transitional Science Curriculum

### Half Term 5

	Biology	Chemistry	Physics
Topic	Structure of a Plant and Photosynthesis.	Metals and their reactions	Forces and Magnetism
Intent	Students will learn the different parts of a plant and link their structure to their function. Student will learn how substances are transported around the plant. They will develop their knowledge of the process of photosynthesis, the factors that affect it and apply this knowledge to real life situations.	Students will learn about the reactivity series. How metals are extracted and reactions of metals. Students will learn about displacement and redox reactions.	Students will learn how forces interact with objects. Students will learn in depth the concept of vectors and scalars and their purpose in understanding interactions between objects through contact or non-contact means. Student recap of basic magnetism and magnetic forces which leads on to learning about the function of the compass and how they demonstrate magnetic fields.
Key Knowledge	Students can describe the process of transpiration and translocation and the difference between the two, including the organs involved. Students can recall photosynthesis equation and factors that affect photosynthesis.	Elements can be arranged according to their reactivity with water and dilute acids; this is known as the reactivity series. Reactive metals can be extracted using a variety of methods including displacement using carbon. The reactivity series helps decide how a metal can be extracted.	The difference between scalars and vectors followed resultant forces and their connection to acceleration. The resultant force is due to a number of forces acting parallel to each other. The difference between permanent and induced magnets. Students identify the magnetic field around a bar magnet and also describe the magnetic field of the Earth.
Retrieval Practice	<ul style="list-style-type: none"> <li>Plant Structure, Structure of the Leaf and Photosynthesis ( Year 8).</li> </ul>	<ul style="list-style-type: none"> <li>Chemical Changes Year 8</li> <li>Metals and their properties.</li> <li>Metal and oxygen.</li> </ul>	<ul style="list-style-type: none"> <li>Year 7 forces</li> <li>Labelling force diagrams</li> <li>Resultant forces.</li> </ul>

<b>Key Skills</b>	Practical skills. Graph plotting and interpretation. Can measure, calculate rate of photosynthesis from a graph. Plot and draw graphs selecting appropriate scales. Use scientific vocabulary, terminology, and definitions confidently in both written and spoken work.	Students can describe how different metals are extracted. They can identify and write equations for displacement reactions. Students can design experiments to test the reactivity of metals. Students can identify redox reactions.	Accurate use of scientific vocabulary and terminology. Calculate the resultant force acting on an object. Use the equation linking mass, gravity and weight.
<b>Key Vocabulary</b>	Photosynthesis, carbon dioxide, oxygen, glucose, starch, factor, energy, transfer, chloroplast, rate, inverse square law, intensity, cellulose, epidermal, xylem, phloem, mesophyll, palisade, meristem, transpiration, humidity, stomata, translocation.	Reactivity series, extraction, redox, oxidation, reduction, metal oxides,	Force. friction, air resistance, weight, , scalar , vector, Newton, velocity, , resultant force, magnetism, magnetic field, permanent and induced.
<b>Key Reading</b>	BBC Bite Size Combined Science Biology CGP Revision Guide	BBC Bitesize, Combined Science Chemistry CGP revision guide	BBC Bitesize, Combined Science Physics CGP revision guide
<b>End Point</b>	Students are competent in answering structured and longer response exam style questions. Explain how rate limiting factors affect photosynthesis. Link the structure of xylem and phloem to their functions.	Students can list metals in the reactivity series in the correct order and identify metals that can be extracted by displacement. Students explain redox reactions.	Students can draw and label force diagrams. Students can calculate resultant forces acting on an object and use the $w=mg$ equation. Students can draw a magnetic field around a magnet and show its direction. Students are competent in answering structured and longer response exam style questions.
<b>Form of Assessment</b>	Exam ready questions	Exam ready questions	Exam ready questions
<b>Enrichment Opportunities</b>	Use of outdoor classroom. As Universities start to offer science-based workshops again Y10 will be given the opportunity to take part in trips to local Universities to gain insights into scientific courses and careers. Linked with Duke of Edinburgh there is an opportunity for some students to gain hands on experience in a science career with a Science technician as part of their skills or volunteering section. British Science Week Link to science careers.		

<b>Leadership Opportunities</b>	<p>Year 9 provides a fantastic opportunity for a student to embrace the role of a subject leader which will meet regularly with a teacher from the subject. They will talk to other pupil about the subject and share your views with teachers. They will think about how you can make the subject even more interesting than it is already, as well as examining ways in which students learn effectively. They will tell students and other groups of people what is great about the subject!</p> <p>Students will also be offered to take place in open evening giving them an opportunity to show what skills and knowledge they have developed over the course.</p> <p>Chances to formally present within lessons and take ownership of that process.</p> <p>Student examples to demonstrate good quality work.</p> <p>Group work.</p>
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## Curriculum Map: Year 9 Translational Science Curriculum

### Half Term 6

	Biology	Chemistry	Physics
Topic	Ecosystems and Biodiversity	Energy Changes	Forces and Elasticity
Intent	Students will learn to explain how organisms are adapted to their environment, both to abiotic and biotic factors. Students will build on their understanding of food webs and effects of changing populations. Students will explore how humans are threatening	Students will learn: Chemical reactions involve energy changes. Energy can be absorbed or released How to draw reaction profiles.	Students will revisit forces, study Newton's 2nd law, and Hooke's law. Students will learn about the relationship between extension of a spring, mass applied and the spring constant.

	biodiversity as well as natural systems that support it and evaluate situations.		
<b>Key Knowledge</b>	Structural, behavioural and functional adaptations. Extremophiles. Structure of food chains. Carbon cycle Water cycle Role of micro-organisms in decay Importance of biodiversity. Examples of how to maintain biodiversity.	An exothermic reaction is one that transfers energy to the surroundings. An endothermic reaction is one that absorbs energy from the surroundings. Exothermic and endothermic reactions both have uses in everyday life such as hand warmers and sports' injury packs.	Students can explain plastic deformation of materials. Sketch and describe the force and extension curve of an elastic material when stretched beyond its limit of proportionality.
<b>Retrieval Practice</b>	<ul style="list-style-type: none"> <li>Habitat and Ecosystems Year 8</li> <li>Adaptations, predator, and prey</li> <li>Pond dipping analysis</li> </ul>	<ul style="list-style-type: none"> <li>Chemical reactions (Year 8)</li> <li>Exothermic and Endothermic reactions</li> <li>Word and Chemical equations.</li> </ul>	<ul style="list-style-type: none"> <li>Forces and force diagrams</li> <li>Stretching and squashing (Year 7).</li> </ul>
<b>Key Skills</b>	Graph interpretation of predator prey cycles. Interpret diagrams. Evaluation of given information. Use scientific vocabulary, terminology and definitions confidently in both written and spoken work.	Analysis of results. Drawing graphs and energy profile diagrams. Practical techniques, measuring recording and interpreting of energy change practicals.	The application of collected data into graphs for analysis. Practical skills measuring, recording, and plotting data to represent Hooke's law.
<b>Key Vocabulary</b>	Biodiversity, adaptation, consumer, producer, secondary, tertiary, atmosphere, decay, decomposer, peat, cattle, breeding, regeneration, hedgerows, agriculture, emissions, deforestation	Endothermic, exothermic, energy profile, absorb, release, surroundings, energy transfer.	Force, elasticity, elastic, inelastic deformation. Spring constant, directly proportional and indirectly proportional.
<b>Key Reading</b>	BBC bitesize GCSE Combined Science CGP revision guide Knowledge organisers	BBC bitesize GCSE Combined Science CGP revision guide Knowledge organisers	BBC bitesize GCSE Combined Science CGP revision guide Knowledge organisers
<b>End Point</b>	Students can describe how to carryout quadrat analysis of different ecosystems. Students can interpret data from ecology survey and link it to the distribution of organism,	Students are competent in answering structured and longer response exam style questions when describing energy profiles. Students use maths to calculate difference in bond energies between reactants and products. Students can plot and analyse energy profiles.	Student should be able to explain a force that stretches (or compresses) a spring does work and elastic potential energy is stored in the spring. Provided the spring is not inelastically deformed, the work done on the spring and the elastic potential energy stored are equal.
<b>Form of Assessment</b>	Exam ready questions	Exam ready questions	Exam ready questions

<b>Enrichment Opportunities</b>	<p>Use of outdoor classroom.</p> <p>As Universities start to offer science-based workshops again Y10 will be given the opportunity to take part in trips to local Universities to gain insights into scientific courses and careers.</p> <p>Linked with Duke of Edinburgh there is an opportunity for some students to gain hands on experience in a science career with a Science technician as part of their skills or volunteering section.</p> <p>British Science Week</p> <p>Link to science careers.</p>
<b>Leadership Opportunities</b>	<p>Year 9 provides a fantastic opportunity for a student to embrace the role of a subject leader which will meet regularly with a teacher from the subject. They will talk to other pupil about the subject and share your views with teachers. They will think about how you can make the subject even more interesting than it is already, as well as examining ways in which students learn effectively. They will tell students and other groups of people what is great about the subject!</p> <p>Students will also be offered to take place in open evening giving them an opportunity to show what skills and knowledge they have developed over the course.</p> <p>Chances to formally present within lessons and take ownership of that process.</p> <p>Student examples to demonstrate good quality work.</p> <p>Group work.</p>



**AMBITION**



**RESILIENCE**



**COURTESY**



**KINDNESS**