

Science Curriculum Map

Primary Phase – Reception to Year 6

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
R	Showing curiosity of things, they have observed.	Making comments through observations.	Looking at similarities and differences between environments. Caring for the environment.	Comparing plants and their growth.	Research skills and being able to identify animals.	Exploration of materials.
1	Using observations to answer questions.	Gathering and recording data.	Performing simple tests.	Identifying and classifying	Identifying and classifying	Observing closely using equipment.
2	Observing closely, using simple equipment. Identifying and classifying. Gathering and recording data to help in answering questions.	Asking simple questions and recognising that they can be answered in different ways. observing closely, using simple equipment. Identifying and classifying Using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions.	Observing closely, using simple equipment. Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.	Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment Identifying and classifying. Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.	Asking simple questions and recognising that they can be answered in different ways. Performing simple tests Identifying and classifying. Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions..	Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Identifying and classifying. Using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.
3	Asking questions/observations Matching fossils and animals	Gather/record/classify Organising rocks into categories/tables	Identifying/Recording/Reporting Investigate the way water is transported in a variety of plants	Presenting data /Reporting findings	Observations/measuring in standard units/recording data Investigate shadows/reflections	Observations/Recording data/Reporting – introduction to a fair test

				Investigate food chains and nutrients		Parachutes Investigate friction surface types
4	Asking relevant questions Record findings Report using oral and written explanations, displays or presentations of results and conclusions Identifying differences, similarities or changes	Ask relevant questions Set up simple practical enquiries. Comparative and fair tests. Observe and measure using standard units Record findings Reporting on findings Use results to draw simple conclusions, make predictions Use straightforward scientific evidence to answer questions or to support their findings. .	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests gathering, recording, classifying and presenting data in a variety of ways. Recording Reporting on findings Use results to draw simple conclusions, make predictions Identify differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.	Asking simple questions and recognising that they can be answered in different ways Observe closely, using simple equipment identifying and classifying using their observations and ideas to suggest answers to questions. Gathering and recording data to help in answering questions.	Asking relevant questions. Setting up simple practical enquiries, comparative and fair tests. Record findings Reporting on findings Using results to draw simple conclusions, Make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes	Ask relevant questions Make systematic and careful observations. Record Identify differences, similarities or changes related to simple scientific ideas and processes
5	Identify & classify – stages of human life cycle. Compare – similarities & differences. Research- changes during life cycle.	Fair Tests - gravity Comparative Tests – linked to air resistance and friction of surfaces. Present results identify & discuss anomalies	Research Pattern seeking – movement of the planets (link to sizes) Identify & classify – phases of the moon. Identify scientific evidence.	Compare & group materials Fair test, recording data & results.	Compare & group materials Fair test, recording data & results. Make predictions and Use test results to report and present findings.	Identify & classify – stages of life cycles. Compare – similarities & differences. Research- changes during life cycle.
6	Planning a scientific enquiry to answer a question: pulse test. Use test results to make predictions. Report and present	Planning a scientific enquiry to answer a question: microbes test. Measure and record results.	Identify scientific evidence that has been used to support ideas or arguments.			Planning a scientific enquiry to answer a question: comparing distance of light source to size of shadow.

findings and explain trust in results.					Measure and record results. Taking measurements: observing light phenomena.
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Science Knowledge	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
N	Autumn and weather changes.	Winter changes	Which material is best to use to build a house?	How plants change growing sunflowers	Caring for animals in the environment	Where are different countries and places that we go on holiday.
R	Makes comments based on where they live. Autumn walk to explore natural and found objects.	Making comparisons between the things that we observe such as fireworks and pumpkins. Children can explore, colour, texture, patterns etc.	Looking at different environments (forests and China) and making comparisons to where we live. Children will use the planters in our outdoor area to plant their own plants that they can look after throughout the year. This will promote children's vocab to discuss changes over time, decay and allow them to care for our environment.	Growing and changes linked to plants and humans. Making comparisons between different plants and how plants have grown. Being aware of what plants need to grow.	Babies of people and animals– growth and change. Children to find out about an animal and present this to the class- Children can then make comparisons between the animals they have explored.	Exploring and using materials to build their own form of transport. Developing vocab to discuss why things happen and how things work.
1	<u>Sorting Materials</u> and properties of materials. Name and identify a variety of everyday materials. What are things made of?	<u>Seasons</u> Seasonal Change from Autumn to winter Observe and describe weather associated with the seasons. Look at how day length varies.	<u>Materials</u> Name and identify a variety of everyday materials. Investigating materials. Plastic and the environment and sea creatures.	<u>Animals and ourselves</u> Body parts. Senses. Animal categories.	<u>Animals</u> Carnivores and herbivores. Where do different animals live? Link to hot and cold countries. Not needed in science	<u>Plants</u> Parts of plants and trees Names of different plants and trees.

	What do they look/feel like?				area.	
2	<p><u>Living things</u> Explore and compare the differences between things that are living, dead, and things that have never been alive. Describe the characteristics of living things. Know that plants are living things.</p>	<p><u>Local habitats</u> Know how to respect living things in their environment. Describe the changes that take place in vegetation and animal life in a habitat and a micro-habitat across seasons.</p>	<p><u>Animals and their needs</u> Know that animals, including humans, have offspring which grow into adults. Describe the basic needs of animals, including humans, for survival. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p><u>Plants</u> Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p><u>Materials</u> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p><u>Habitats</u> Identify and name a variety of plants and animals in their habitats, including micro-habitats Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</p>
3	<p><u>Rocks</u> compare and group rocks on appearance and physical properties Describe how fossils are formed</p>	<p><u>Rocks</u> Recognise that soils are made from rocks and organic matter <u>Plants</u> Identify and describe functions of parts of a flowering plant (roots/stem/trunk/leaves/flowers)</p>	<p><u>Plants</u> Explore requirements for life and growth Investigate ways in which water is transported</p>	<p><u>Animals (incl. humans)</u> Nutrition Animals and humans can't make their own food Humans and some animals have</p>	<p><u>Light</u> Need light to see Dark is the absence of light Reflection Recognising the sun can be dangerous</p>	<p><u>Forces and magnets</u> Compare different surfaces Look at how magnets Attract or repel each other.</p>

			Explore the part a flower has in its life cycle	skeletons and muscles for protection, support and movement	shadows	Identify some magnetic materials.. Describe magnets have having two poles
4	<u>Humans</u> The digestive system, teeth	<u>Sound</u> Find patterns between pitch and its source. Volume, find patterns between volume, strength and vibration. How sound increases and gets fainter How sound travels to the ear.	<u>Electricity</u> Electrical appliances, circuits, conductors and insulators. The function of a switch.	<u>Living things and their habitats</u> Changing environments, classification, grouping and identifying including a variety of living things in their local and wider environment. Recognise that sometimes environments can be dangerous to living things.	<u>States of matter –</u> Compare and group solids, liquids and gases. Observe changes in state when heated and cooled. Identify the part played by evaporation and condensation in the water cycle.	<u>Animals</u> Life cycles (not needed) Construct and interpret a variety of food chains, predators and prey
5	<u>Changes from birth to old age.</u> Describe changes as humans develop to Reproduction in plants and animals Describe life processes in some plants and animals and age.	<u>Force of gravity,</u> the effects of air resistance, water resistance, and friction between surfaces. understand that mechanisms (levers, pulleys and gears)allow a smaller force to have a greater effect. Explain that unsupported objects fall towards the Earth.	<u>Earth and Space</u> Movement of earth and other planets relative to sun. Movement of moon relative to earth. Understand they are spherical. Earth rotation causing day and night and why the sun moves across the sky.	<u>Materials through time</u> Compare and group Properties and changes. Group materials based on properties.	<u>Materials through time</u> Know that some dissolve to form solution and how to recover substances. How solids liquids and gases might be separated. Give reasons and give evidence to give uses of everyday materials.	<u>Life Cycles</u> of mammal, amphibian, insect birds. Including the reproduction of some plants and animals.

					Explore reversible and irreversible changes. Formation of new materials through burning and action of acid on bicarbonate soda	
6	<p><u>Human body:</u> Identify and name the main parts of the circulatory system ie heart and blood. Investigate how nutrients and water are transported. Recognise the impact of diet, exercise, drugs and lifestyle have on our body.</p>	<p><u>Classification and Darwin:</u> classifying creatures looking at similarities and differences including micro-organisms, plants and animals. Give reasons for classification based on characteristics.</p>	<p><u>Evolution, adaptation and inheritance .</u> Look at changes over time. Recognise that living things produce off spring.. Know how plants and animals adapt to their environment.</p>			<p><u>Light:</u> how do we see? How can lights be produced? Linked to history and English-shadow theatres. Not in the year 6 curriculum.</p> <p><u>Electricity</u> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit. Compare and give reasons for variations in how components function. Use recognised symbols when representing a simple circuit in a diagram.</p>

Secondary Phase – Year 7 to Year 11

		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
7 (7 lessons over 2 weeks)	Biology	<ol style="list-style-type: none"> 1. <u>Safety in Science</u> – Equipment and hazards. 2. <u>Cell Biology</u> – Animal and plant cells, specialised cells, unicellular organisms. 3. <u>Assessment 1</u> 		<ol style="list-style-type: none"> 1. <u>Infection and response</u> – Microorganisms, diseases, defence against disease. 2. <u>Organisation (pt.1)</u> – The skeleton, joints, muscles, the respiratory system, smoking, drugs and alcohol, plant reproduction. 3. <u>Mid-year assessment</u> 		<ol style="list-style-type: none"> 1. <u>Assessment 2</u> 2. <u>Ecology</u> – Food chains and webs, ecosystems and interdependence, predator/prey cycles, adaptation, evolution, competition and extinction, biodiversity. 3. <u>Investigation skills</u> – graphs, method writing, variables, calculating averages, anomalous results, conclusions, evaluations. 	
	Chemistry	<ol style="list-style-type: none"> 1. <u>Safety in Science</u> – Equipment and hazards. 2. <u>Chemical Changes (pt.1)</u> – Types of reaction, word equations, metal reactions with acids, water and oxygen. 3. <u>Energy Changes</u> – endothermic and exothermic reactions. 4. <u>Chemical Analysis</u> – Mixtures, solutions and solubility, evaporation, distillation, chromatography. 5. <u>Assessment 1</u> 		<ol style="list-style-type: none"> 1. <u>Atomic structure & The Periodic Table</u> – Metals and non-metals, The periodic Table, elements, compounds and formulae, Group 1, 7 and 0 elements. 2. <u>Mid-year assessment</u> 		<ol style="list-style-type: none"> 1. <u>Assessment 2</u> 2. <u>Organic Chemistry</u> – Formation of crude oil, basic alkanes and alkenes. 3. <u>Investigation skills</u> – graphs, method writing, variables, calculating <i>averages, anomalous results, conclusions, evaluations.</i> 	
	Physics	<ol style="list-style-type: none"> 1. <u>Safety in Science</u> – Equipment and hazards. 2. <u>Energy (pt.1)</u> – Conduction, convection and radiation, insulation, renewable and non-renewable resources. 3. <u>Assessment 1</u> 		<ol style="list-style-type: none"> 1. <u>Particle model of matter</u> – The particle model, changes of state, melting and boiling points, diffusion, pressure. 2. <u>Mid-year assessment</u> 		<ol style="list-style-type: none"> 1. <u>Assessment 2</u> 2. <u>Atomic Structure</u> – The structure of an atom, comparing models of the atom, basic types of radiation, research project on Chernobyl. 	

		4. Space – The solar system, night and day, seasons, phases of the moon.	3. Waves (pt.1) – Types of wave, sound, loudness and pitch, The Electromagnetic Spectrum, echoes and ultrasound.	3. Forces (pt.1) – Force diagrams, calculating weight, contact & non-contact forces, drag forces and friction, balanced & unbalanced forces. Investigation skills – graphs, method writing, variables, calculating averages, anomalous results, conclusions, evaluations.
8 (7 lessons over 2 weeks)	Biology	1. Homeostasis & Response – Adolescence, reproductive systems, The Menstrual Cycle, Fertilisation & implantation, development of a foetus, contraception. 2. Assessment 1 3. Organisation (pt.2) – cells, tissues, organs and organ systems, nutrients & a balanced diet, food tests, the digestive system, enzymes & bacteria.	1. Bioenergetics – Review plants cells and leaf structure, plant minerals and fertilisers, photosynthesis, limiting factors for photosynthesis, plant adaptations, aerobic respiration, anaerobic respiration. 2. Mid-year Assessment	1. Assessment 2 2. Inheritance, variation & evolution – The structure of DNA, extracting DNA, inheritance, basic genetic diagrams, cell division, genetic modification & ethics, variation. 3. Investigation skills – graphs, method writing, variables, calculating averages, anomalous results, conclusions, evaluations.
	Chemistry	1. Chemical changes (pt.2) – Acids & alkalis, the pH scale, making indicators, making salts, neutralisation. 2. Chemistry of the atmosphere – The atmosphere, the structure of the Earth, the rock cycle. 3. Assessment 1	1. Structure & properties – Properties of ionic and simple covalent substances, properties of giant covalent substances, applications of graphene. 2. Quantitative Chemistry – Formulae, calculating relative formula mass, calculating percentage composition. 3. Mid-year Assessment 4. Rate of Reaction – Basic collision theory, methods to measure rate of a reaction, investigating how concentration impact rate of reaction, catalysts.	1. Assessment 2 2. Using Resources – Extracting metals, reduction, displacement, basic electrolysis. 3. Investigation skills – graphs, method writing, variables, calculating averages, anomalous results, conclusions, evaluations.
	Physics	1. Energy (pt.2) – Calculating energy & power, cost of electricity and energy bills, energy in foods, energy stores &	1. Electricity – Resistance & calculating resistance, basic calculations.	1. Assessment 2 2. Forces (pt.2) – Calculating speed, motion graphs,

		<p>transfers, calculating kinetic energy and gravitational potential energy.</p> <p>2. Assessment 1</p> <p>3. Electricity – Static electricity, circuit symbols & drawing circuit diagrams, measuring potential difference and current, introduction to electricity formulae and rearranging formulae.</p>	<p>2. Mid-year Assessment</p> <p>3. Magnetism – Magnets and magnetic fields, electromagnets and building electromagnets, investigating electromagnets.</p> <p>4. Waves (pt.2) – Types of wave, reflection, refraction, calculating speed of waves, coloured & filters, the eye.</p>	<p>acceleration & relative motion, calculating work done.</p> <p>3. Investigation skills – graphs, method writing, variables, calculating averages, anomalous results, conclusions, evaluations.</p>
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Year 9 will follow a new order of study agreed on by all secondary school within the MAT

9 (Trilogy) (9 lessons over 2 weeks)	Biology	<p>1. Cell Biology (pt.1) – Animal and plant cells, Eukaryotes and prokaryotes, comparing cells, required practical for microscopy, specialised cells, chromosomes, gene and DNA, mitosis and binary fission, meristems.</p> <p>2. Organisation (pt.1) – Cell organisation, the digestive system, nutrients, required practical for food tests, enzymes.</p> <p>3. Assessment 1</p> <p>4. Organisation (pt.2) – Required practical for enzymes, the circulatory system, the heart, blood composition, the lungs and gas exchange.</p>	<p>1. Infection and Response (pt.1) – Pathogens, communicable diseases, symptoms, treatments, prevention, fighting disease, white blood cells, vaccination, immunity.</p> <p>2. Bioenergetics (pt.1) – Plant cells and leaf structure, photosynthesis and starch test, limiting factors, required practical for photosynthesis and light intensity.</p> <p>3. Cell Biology (pt.2) – Stems cells, diffusion, osmosis, perfect exchange surfaces.</p>	<p>1. Assessment 2</p> <p>2. Cell Biology (pt.3) – Perfect exchange surfaces, required practical for osmosis, active transport.</p> <p>3. Organisation (pt.3) – Communicable and non-communicable diseases, risk factors, coronary heart disease, artificial blood, artificial hearts, artificial valves, cancer.</p> <p>4. Infection and Response (pt.2) – fighting disease, vaccination, developing drugs, drug trials, antibiotic resistance.</p> <p>5. Investigation skills – Method writing, results tables, collecting results, drawing graphs, maths skills, averages, standard form, conclusions, evaluations etc.</p>
	Chemistry	<p>1. Atomic Structure and The Periodic Table (pt.1) – Elements, compounds and formulae, word and chemical</p>	<p>1. Structure, bonding and the properties of matter (pt.2) – properties of simple covalent</p>	<p>1. Assessment 2</p> <p>2. Chemical Changes (pt.1) – The pH scale, acids, bases</p>

		<p>equations, filtration, evaporation and distillation, structure of an atom and electronic configuration, comparing models of the atom, the development of the periodic table, the modern periodic table, group 1, group 7, group 0.</p> <p>2. <u>Structure, bonding and the properties of matter (pt.1)</u> – ionic bonding, covalent bonding, properties of ionic compounds.</p> <p>3. <u>Assessment 1</u></p>	<p>substances, polymers, giant covalent structures, fullerenes, metals and metallic bonding, alloys, states of matter and changes of state.</p> <p>2. <u>Atomic structure (pt.1)</u> – Comparing models of the atom, Rutherford’s scattering experiment, radioactive decay, isotopes, nuclear equations.</p> <p>3. <u>Quantitative Chemistry</u> – Conservation of mass, relative formula mass, percentage composition, mole calculations, reacting masses, titrations, calculating concentrations.</p>	<p>and alkalis, Neutralisation, acids and carbonates, required practical for acids and metal oxides, reactions between acids and metals, reactions between metals and water, displacement, reduction, electrolysis.</p> <p>3. <u>Energy Changes</u> – Endothermic and exothermic reactions, reaction profiles, required practical for energy changes, bond energy calculations.</p> <p>4. <u>Investigation skills</u> – Method writing, results tables, collecting results, drawing graphs, maths skills, averages, standard form, conclusions, evaluations etc.</p>
	Physics	<p>1. <u>Energy (pt.1)</u> – Energy stores and systems, energy transfers, kinetic energy, gravitational potential energy, elastic energy, Hooke’s Law, specific heat capacity.</p> <p>2. <u>Assessment 1</u></p> <p>3. <u>Electricity(pt.1)</u> – Circuit symbols and building basic circuits, measuring current and potential difference in series and parallel circuits, calculating charge and current, resistance and Ohm’s Law, required practical for resistance of a wire.</p>	<p>1. <u>Particle model of matter (pt.1)</u> – Calculating density, required practical for density of regular and irregular objects.</p> <p>2. <u>Energy(pt.2)</u> - transfers, systems, efficiency, calculating power, energy resources and their uses, trends in energy resources.</p>	<p>1. <u>Assessment 2</u></p> <p>2. <u>Electricity (pt.2)</u> – Resistance in series, thermistors, LDR’s, I/V characteristics, AC/DC mains electricity, calculating power, energy transfers in everyday appliances, $I=Qt$, $E=QV$, The National Grid.</p> <p>3. <u>Investigation skills</u> – Method writing, results tables, collecting results, drawing graphs, maths skills, averages, standard form, conclusions, evaluations etc.</p>
9 (Biology) (3 lessons across 2 weeks)		<p>1. <u>Cell biology (pt.1)</u> – Plant and animal cells, using microscopes and microscopy, calculating magnification, specialised cells, prokaryotic and eukaryotic cells, comparing light and electron microscopes, Chromosomes and DNA, mitosis and</p>	<p>1. <u>Infection and response (pt.1)</u> – communicable disease, viral, fungal and bacterial diseases, investigating bacteria and growing bacteria, fighting</p>	<p>1. <u>Assessment 2</u></p> <p>2. <u>Cell biology (pt.2)</u> – Required practical for osmosis, investigation skills such as graphs and data analysis, perfect exchange surfaces,</p>

		<p>binary fission, stem cells and meristems, diffusion, osmosis, active transport.</p> <ol style="list-style-type: none"> Assessment 1 Organisation (pt.1) – The digestive system, enzymes, nutrients in food and food tests, required practical for food tests. 	<p>disease and white blood cells, immunity, vaccination, drug trials.</p> <ol style="list-style-type: none"> Bioenergetics (pt.1) – Plant cells and leaf structure, photosynthesis and testing a leaf for starch, limiting factors, required practical and impact of light intensity on rate of photosynthesis. 	<ol style="list-style-type: none"> Organisation (pt.2) – Structure of the lungs and gas exchange, heart structure and function, the circulatory system, blood vessels, stents and statins, artificial hearts and artificial blood, non-communicable disease and risk factors, cancer.
<p>9 (Chemistry) (3 lessons across 2 weeks)</p>		<ol style="list-style-type: none"> Atomic structure and The Periodic Table (pt.1) – Elements, compounds and mixtures, chemical equations and formulae, separating substances, atomic structure, electronic structure, comparing models of the atom. Bonding structure and the properties of matter (pt.1) – Formation of ions, ionic bonding, properties of ionic substances, covalent bonding, properties of simple covalent and giant covalent substances, metals and alloys, states of matter. Assessment 1 Quantitative Chemistry (pt.1) – Conservation of mass, calculating relative formula mass, calculating percentage composition, mole calculations. 	<ol style="list-style-type: none"> Chemical changes (pt.1) – Acids and alkalis, the pH scale, neutralisation, making salts, acids and carbonates, required practical for making copper sulphate, reactions of acids and metals, displacement. Energy changes – Endothermic and exothermic reactions, reaction profiles, calculating overall energy change from bond energy calculations, cell and batteries, fuel cells. 	<ol style="list-style-type: none"> Assessment 2 Atomic structure and the periodic table (pt.2) – Isotopes and calculating relative abundance, The structure and patterns in the modern Periodic table, The early Periodic table, group 1, 7 and 0 elements and patterns in their reactivity. Structure, bonding and the properties of matter (pt.2) – Structure and properties of simple molecules, structure and properties of giant covalent substances, Properties and applications of graphene and fullerenes, polymers, nanoparticles, and their uses.
<p>9 (Physics) (3 lessons across 2 weeks)</p>		<ol style="list-style-type: none"> Energy (pt.1) – Energy stores and systems, calculating kinetic energy and gravitational potential energy, calculating specific heat capacity, required practical for specific heat capacity, Conduction, convection, insulation. Assessment 1 Electricity (pt.1) – Static electricity, electric fields, building circuits, series and parallel circuits, measuring current 	<ol style="list-style-type: none"> Particle model – calculating density for regular and non-regular shapes, required practical for density, internal energy, calculating specific latent heat, particle motion and pressure in gasses, Brownian motion. Atomic Structure – Developing the model of the atom, atomic structure, 	<ol style="list-style-type: none"> Assessment 2 Energy (pt.3) – Wind, solar and geothermal power, hydroelectric, tides and wave power, Biofuels and non-renewable resources, trends in energy resource use. Electricity (pt.2) – Resistance, required practical for resistance in series and parallel circuits, V-I graphs, thermistors, LDR's, wiring a plug, calculating power of

		and potential difference, resistance and Ohm's law, required practical investigating how length of wire impact resistance.	isotopes and radiation, nuclear equations. 3. Energy (pt.2) – Energy transfers and investigating insulation, efficiency, calculating, power, energy resources and their uses.	electrical devices, The national Grid.
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Year 10 & 11 will continue to follow the previous order of study to make sure they have covered all topics and are fully prepared for their GCSE exams

10 (Trilogy) (9 lessons over 2 weeks)	Biology	<ol style="list-style-type: none"> 1. Bioenergetics – Plant cells and leaf structure, photosynthesis and starch test, limiting factors, required practical for photosynthesis and light intensity, respiration and metabolism, anaerobic respiration, effect of exercise. 2. Assessment 1 3. Homeostasis – The nervous system, Synapses and reflexes, required practical for reaction times, the endocrine system, controlling blood glucose levels, diabetes, adrenaline and thyroxin, puberty, menstrual cycle, fertility hormones, using fertility hormones, contraception. 	<ol style="list-style-type: none"> 1. Inheritance, Variation and Evolution – Sexual/Asexual reproduction, chromosomes, DNA, proteins and genomes, Meiosis, genetic diagrams, inherited disorders, mutation, variation, antibiotic resistance, evolution, fossils, selective breeding, genetic engineering, classification. 	<ol style="list-style-type: none"> 1. Assessment 2 2. WORK EXPERIENCE 3. Investigation skills – Method writing, results tables, collecting results, drawing graphs, maths skills, averages, standard form, conclusions, evaluations etc.
	Chemistry	<ol style="list-style-type: none"> 1. Structure, bonding and the properties of matter – Forming ions, ionic bonding, properties of ionic substances, covalent bonding, properties of simple covalent substances, properties of giant covalent structures, metallic bonding, alloys, polymerisation, states of matter and changes of state. 2. Quantitative Chemistry – Relative formula mass, percentage composition, mole calculations, reacting masses, titrations, concentration calculations. 3. Assessment 1 4. Energy Changes – Endothermic and exothermic reactions, reaction profiles, 	<ol style="list-style-type: none"> 1. Chemistry of the Atmosphere – Formation of sedimentary rocks, fossil fuels, composition of the atmosphere, evolution of the atmosphere, global warming, greenhouse effect, climate change, analysing data and graphs, impact of human activities on the atmosphere, sulphur dioxide and air pollution, carbon footprint. 	<ol style="list-style-type: none"> 1. Assessment 2 2. WORK EXPERIENCE 3. Organic Chemistry – Crude oil, alkanes, fractional distillation, cracking, alkenes. 4. Investigation skills – Method writing, results tables, collecting results, drawing graphs, maths skills, averages, standard form, conclusions, evaluations etc.

		required practical for energy changes, bond energy calculations.		
	Physics	<ol style="list-style-type: none"> Atomic structure – Plum pudding model of the atom and Rutherford scattering, development of the nuclear model of the atom, isotopes, types of radiation, properties and uses of each type of radiation, half-life, nuclear equations, background radiation. Assessment 1 	<ol style="list-style-type: none"> Waves – Transverse and longitudinal waves, waves experiments and the wave equation, reflection, refraction, electromagnetic waves, properties and uses of electromagnetic waves, infra-red and temperature, required practical for black silver and white cans. Particle Model – Density and calculating density of regular and irregular objects, motion in gasses, gas pressure, internal energy, changes of state, specific latent heat. 	<ol style="list-style-type: none"> Assessment 2 WORK EXPERIENCE Forces – Contact and non-contact forces, scale diagrams, resolving forces, weight, mass and gravity, work done and power, required practical for Hooke's Law, calculating speed, calculating acceleration, distance-time graphs, required practical for acceleration, velocity-time graphs, Newton's 1st Law, Newton's 2nd Law, Newton's 3rd Law, stopping distances, breaking and thinking distances, momentum, changes in momentum. Investigation skills – Method writing, results tables, collecting results, drawing graphs, maths skills, averages, standard form, conclusions, evaluations etc.
10 (Biology)		<ol style="list-style-type: none"> Homeostasis and response (pt.1) – The nervous system, synapses and reflexes, requires practical for reaction times, the brain, the eye, the endocrine system, controlling body temperature, controlling blood glucose concentration, diabetes, controlling blood water concentration. Assessment 1 Homeostasis and response (pt.2) – Kidney failure and dialysis, plant hormones and auxins, puberty, the menstrual cycle, fertility hormones, using fertility hormones. 	<ol style="list-style-type: none"> Homeostasis and response (pt.3) – Contraception, plant hormones, commercial uses for plant hormones. Inheritance, variation and evolution – DNA, protein synthesis, mutations, mitosis and meiosis, sexual and asexual reproduction, genetic diagrams, inheriting disorders, variation, evolution and natural selection, Darwin and Lamarck, extinction, selective breeding, genetic engineering, cloning. 	<ol style="list-style-type: none"> Assessment 2 WORK EXPERIENCE Ecology – Competition, food chains and webs, abiotic and biotic factors, adaptations, extremophiles, collecting ecological data, quadrats, transects the water cycle, the carbon cycle, decay, biodiversity and waste management, global warming, deforestation, land use and peat bogs, trophic levels, pyramids of biomass, food security and farming, fish stocks, biotechnology.
10 (Chemistry)		<ol style="list-style-type: none"> Rate of reaction – Collision theory, required practical concentration, surface 	<ol style="list-style-type: none"> Chemical analysis (pt.2) – testing for cations flame tests, 	<ol style="list-style-type: none"> Assessment 2 WORK EXPERIENCE

		<p>area, temperature, catalysts, calculating rate of reaction from graphs, tangents, reversible reactions, Le Chateliers Principle.</p> <ol style="list-style-type: none"> Assessment 1 Chemical analysis (pt.1) – Purity and formulations, chromatography and Rf values, testing for gases. 	<p>testing for cations precipitation, testing for anions carbonates, testing for anions sulphates, testing for anions halides, required practical testing for unknown compounds s=using chemical tests, flame emission spectroscopy.</p> <ol style="list-style-type: none"> Organic chemistry – Crude oil and alkanes, fractional distillation, cracking, alkenes, testing for saturation, addition polymerisation, hydrogenation, making ethanol ethane and fermentation, alcohols, carboxylic acids, esters. 	<ol style="list-style-type: none"> Chemistry of the atmosphere – Composition of the atmosphere, evolution of the atmosphere, global warming, data analysis from tables and graphs, impact of human activities on the atmosphere, peat bogs, carbon footprint, the greenhouse effect, plastics and recycling.
<p>10 (Physics)</p>		<ol style="list-style-type: none"> Space physics – The universe and the solar system, lifecycle of stars, orbits and satellites, The Big Bang Theory, Evidence for The Big Bang Theory. Forces (pt.1) – Contact and non-contact forces, weight, mass and gravity, centre of mass, force diagrams, resolving forces, scaled balanced forces, work done, Hooke's Law. Assessment 1 Forces (pt.2) – Required practical for Hooke's Law, moments, fluid pressure, distance, displacement, speed and velocity. 	<ol style="list-style-type: none"> Forces (pt.3) – distance-time graphs, acceleration, velocity-time graphs, required practical for acceleration, terminal velocity, Newton's 1st Law, Newton's 2nd Law, stopping distances, thinking and breaking distances, momentum, change in momentum, car safety and momentum. 	<ol style="list-style-type: none"> Assessment 2 WORK EXPERIENCE Magnetism and electromagnets – Permanent and induced magnets, electromagnetism theory, investigating electromagnets, the motor effect theory, building an electric motor, loudspeakers, the generator effect, microphones, transformers.
<p>11 (Trilogy) (8 lessons over 2 weeks)</p>	<p>Biology</p>	<ol style="list-style-type: none"> Assessment 1 	<ol style="list-style-type: none"> Inheritance, Variation and Evolution – Sexual/Asexual reproduction, chromosomes, DNA, proteins and genomes, Meiosis, genetic diagrams, inherited disorders, mutation, variation, antibiotic resistance, evolution, fossils, selective breeding, genetic engineering, classification. Assessment 2 	<p>TBD</p> <p>Lessons will be revision based until the GCSE exams.</p> <p>These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>

			<p>3. <u>Revision</u> - Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>	
Chemistry	<p>1. <u>Rate of Reaction</u> – collision theory, required practical investigating concentration, temperature, surface area, catalysts, calculating rate of reaction from a graph, tangents and gradients, endothermic and exothermic reactions, Le Chatelier's Principle.</p> <p>2. <u>Using Resources</u> – Finite and renewable resources, reuse and recycle, life cycle assessments, potable water and waste water treatments, required practical purification, required practical finding mass of a solute.</p> <p>3. <u>Assessment 1</u></p>	<p>1. <u>Assessment 2</u></p> <p>2. <u>Revision</u> - Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>	<p><u>TBD</u></p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>	
Physics	<p>1. <u>Magnetism and Electromagnets</u> – Permanent and induced magnets, electromagnets, investigating electromagnets, right hand rule, the motor effect, left hand rule, electric motors, applications of the motor effect.</p> <p>2. <u>Assessment 1</u></p> <p>3. <u>Forces</u> – Contact and non-contact forces, scale diagrams, resolving forces, weight, mass and gravity, work done and power, required practical for Hooke's Law, calculating speed, calculating acceleration, distance-time</p>	<p>4. <u>Assessment 2</u></p> <p>5. <u>Revision</u> - Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>	<p><u>TBD</u></p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>	

		graphs, required practical for acceleration, velocity-time graphs, Newton's 1 st Law, Newton's 2 nd Law, Newton's 3 rd Law, stopping distances, breaking and thinking distances, momentum, changes in momentum.		
11 (Biology)		<ol style="list-style-type: none"> 1. Cell biology – Movement in and out of cells, mitosis and binary fission, stem cells. 2. Organisation – Required practical for enzymes, cardiovascular system, Required practical for food tests, transpiration and translocation. 3. Assessment 1 4. Infection and Response – Diseases, fighting diseases, developing drugs, monoclonal antibodies, plant defences. 	<ol style="list-style-type: none"> 1. Homeostasis and Response – The nervous system, the brain, the eye, the endocrine system, controlling temperature, blood glucose, blood water concentration, fertility. 2. Inheritance, Variation & Evolution – DNA structure, mutations, reproduction, meiosis, genetic diagrams, evolution, selective breeding, genetic modification, cloning. 3. Assessment 2 4. Ecology – Required practical for quadrats, line transects, explaining ecosystems, required practical for decay, the water cycle and the carbon cycle, maintaining biodiversity, trophic levels and pyramids of biomass, food security and biotechnology. 	<p style="text-align: center;">TBD</p> <p>Lessons will be revision based until the GCSE exams.</p> <p>These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>
11 (Chemistry)		<ol style="list-style-type: none"> 1. Quantitative chemistry – Relative formula mass, percentage composition, moles and reacting masses, yield and atom economy, gases and solutions, titration, concentration calculations. 2. Assessment 1 3. Chemical changes – Required practical for making salts, electrolysis. 4. Using Resources – Potable water, waste water, lifecycles. 	<ol style="list-style-type: none"> 1. Structure, bonding and properties of matter – Ionic bonding, covalent bonding, comparing structures of diamond, graphite, graphene, properties of ionic substances and simple covalent substances. 2. Chemical changes – Electrolysis, redox reactions. 3. Assessment 2 4. Rate of Reaction – Equilibrium, The Haber Process. 	<p style="text-align: center;">TBD</p> <p>Lessons will be revision based until the GCSE exams.</p> <p>These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>

			5. Organic Chemistry – Alkanes, fractional distillation, alkenes, polymers.	
11 (Physics)		<ol style="list-style-type: none"> 1. Atomic structure – Modern theory of the atom, development of the model of the atom, types of radiation, uses of radiation, nuclear equations, half-life, background radiation and contamination, Chernobyl and nuclear power, nuclear fission, nuclear fusion. 2. Energy – Energy stores and transfers, conduction, convection, insulation, required practical for specific heat capacity, energy sources. 3. Assessment 1 4. Electricity – Series and parallel circuits, required practical for investigating resistance, electricity equations, static electricity and electric fields. 5. Particle model of matter – Required practical for density, internal energy, specific latent heat calculations, gas motion and pressure. 	<ol style="list-style-type: none"> 1. Atomic structure – types of radiation, structure of the atom, nuclear equations, half-life, contamination, nuclear fission, nuclear fusion. 2. Forces – Contact and non-contact forces, weight, mass and gravity, force diagrams, Hooke's Law, fluid pressure, moments, motion graphs, Newton's Laws, stopping distances, momentum. 3. Space Physics – Lifecycle of stars, orbits and satellites, evidence for The Big Bang Theory. 4. Assessment 2 5. Waves – Types of wave and properties, EM waves, lenses. 6. Magnetism and Electromagnetism – Magnets and electromagnets, the motor effect, Electromagnetic induction, transformers. 	<p style="text-align: center;">TBD</p> <p style="text-align: center;">Lessons will be revision based until the GCSE exams.</p> <p style="text-align: center;">These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>