

End Game		Students should be able to:			
		<ul style="list-style-type: none"> Develop scientific knowledge and conceptual understanding through the specific disciplines of Biology, Chemistry and Physics. Develop understanding of the nature, processes and methods of science, through different types of scientific enquiries that help them to answer scientific questions about the world around them. Develop and learn to apply observational, practical, modelling, enquiry and problem solving skills in the laboratory, in the field and in other learning environments. Develop their ability to evaluate claims based on science through critical analysis of the methodology, evidence and conclusions, both qualitatively and quantitatively. 			
		1 st 10 Week Block	2 nd 10 Week Block	3 rd 10 Week Block	4 th 10 Week Block
Year 8	Fertile Question	Reactions: Why do chemical reactions happen? Electromagnets: What is the link between magnets and electricity?	Ecosystem: Do all living things die? Earth: Do rocks tell stories?	Genes: Why do giraffes have long necks? Reproduction: How are boys and girls different?	Waves: How are light and water similar?
	Content	Reactions: <ul style="list-style-type: none"> Acids and Alkalis Chemical Energy Types of Energy GEM task EOTT Electromagnets: <ul style="list-style-type: none"> Electricity Magnets Electromagnets Motors GEM task EOTT 	Ecosystem: <ul style="list-style-type: none"> Interdependence Respiration Photosynthesis GEM task EOTT Earth: <ul style="list-style-type: none"> Earth Structure Universe Climate Earth's resources GEM task EOTT 	Genes: <ul style="list-style-type: none"> Variation Evolution Inheritance GEM task EOTT Reproduction: <ul style="list-style-type: none"> Human reproduction Plant reproduction 	<ul style="list-style-type: none"> Sound waves Light waves Wave effects Wave properties GEM task EOTT
	Concepts	Reactions: Atoms elements and compounds, chemical and physical reactions, conservation of mass, word and symbol equations, combustion, rates of reaction, catalysts, metals and acids, displacement, oxidation and reduction, exothermic and endothermic, thermal decomposition Electromagnets: Static electricity, conductors and insulators, circuit diagrams, current, voltage, series and parallel, resistance, magnets and magnetic fields, making magnets, electromagnets, motors	Ecosystem: Food chains, ecological pyramids, adaptations, bioaccumulation, classification, biodiversity, photosynthesis, respiration Earth: Structure of earth, types of rocks, igneous rocks, weathering, erosion and transportation, rock cycle, earth's atmosphere, carbon cycle and global warming, recycling and reusing.	Genes: Discovery of DNA, DNA extraction, inheritance, variation, natural selection, selective breeding, extinction and conservation, cloning, stem cells, inherited disease Reproduction: Reproductive organs, fertilisation, cell division, pregnancy, twins, birth, growth, puberty, menstrual cycle, plant fertilisation	Waves, sound waves, the ear, echoes and ultrasounds, water waves, em spectrum, light waves, the eye, reflection, total internal reflection, refraction, colour
	Knowledge	Reactions: <ul style="list-style-type: none"> The difference between atoms elements and compounds Analysing chemical and physical changes and describing them Understanding different types of reactions, and how to identify and describe them using equations Understanding factors that affect reactions Electromagnets: <ul style="list-style-type: none"> Understanding static electricity and movement of charges The different entities that are measurable in an electrical circuit How magnets work and how electromagnets can be formed 	Ecosystems: <ul style="list-style-type: none"> Looking at ecological relationships in food chains and ecological pyramids Understanding adaptations of organisms in different environments Knowing how to use keys to classify organisms How plants make food and oxygen and take in carbon dioxide and water How organisms take in oxygen and glucose and respire to produce carbon dioxide and water vapour Earth: <ul style="list-style-type: none"> Looking at the structure of the earth and the different components within it Types of rocks and the rock cycle The effects of weathering and erosion The components of the atmosphere The carbon cycle and global warming and their effects Recycling and reusing and the benefits and drawbacks 	Genes: <ul style="list-style-type: none"> Understanding how DNA was discovered and how it can be extracted Looking at inheritable characteristics and what can affect them How variation can occur within a species and how this links with natural selection What can cause species to become extinct How can genetics be used in the future in terms of cloning and stem cells Reproduction: <ul style="list-style-type: none"> How to organs of reproduction vary across genders and organisms What is involved in the process of fertilisation Why might cells need to divide What is involved when a female becomes pregnant and how is the offspring born What is the significance of the menstrual cycle The differences and similarities between human and plant reproduction 	<ul style="list-style-type: none"> What are waves What do sound waves look like and how is the ear structured How are echoes created and how is this useful What are water waves The electromagnetic spectrum and where its components can be seen The differences and similarities between types of waves, eg sound and light Structure of light waves and how the eye is structured How is reflection responded to in the eye When does refraction occur

Year 7	Fertile Question	<p>Skills Passport: Why might different scientists answer the same question in different ways?</p> <p>Organisms: Why are plants and animals different?</p>	<p>Matter part 1: What makes up everything?</p> <p>Matter part 2: Why are some chemicals so reactive?</p>	<p>Forces: Why does a boat float?</p>	<p>Energy: What are we paying for when we use electricity?</p>
	Content	<p>Skills Passport:</p> <ul style="list-style-type: none"> • Health and safety • Bunsen burner usage • How to plan and structure an investigation • GEM task • EOTT <p>Organisms:</p> <ul style="list-style-type: none"> • Cellular biology • Cell transport • Breathing and Digestion • GEM Task • EOTT 	<p>Matter part 1:</p> <ul style="list-style-type: none"> • Particle Model • Separating mixtures • GEM task • EOTT <p>Matter part 2:</p> <ul style="list-style-type: none"> • Periodic table • Elements • GEM task • EOTT 	<ul style="list-style-type: none"> • Speed • Gravity • Contact forces • Pressure • GEM task • EOTT 	<ul style="list-style-type: none"> • Energy costs • Energy transfer • Heating and cooling • GEM Task • EOTT
	Concepts	<p>Skills Passport: introduction and rules, safety in the lab and writing risk assessments, equipment names and usage, measuring, accuracy and precision, method writing.</p> <p>Organisms: Animal and plant cells, microscopes, levels of organisation, specialised cells, unicellular organisms, diffusion, osmosis, fitness, the respiratory system, food, digestive system</p>	<p>Matter part 1: states of matter and Brownian motion, changes of state, heating and cooling curves, dissolving, separating techniques</p> <p>Matter part 2: atoms elements and molecules, compounds, periodic table of elements, atomic structure, group 1 properties, group 7 properties, group 8 elements, properties of metals and non metals, reactions of metals with acids, reactivity series, polymers, composites and ceramics</p>	<p>Forces and interaction pairs, balanced and unbalanced forces, speed and motion, acceleration, gravity, friction, floating and sinking, air resistance, pressure, gas pressure, liquid pressure, moments and levers, spring extension</p>	<p>Energy, energy transfer, energy efficiency, electrical energy, cost of electricity, chemical energy, non-renewable energy, power station and national grid, renewable energy, power stations, sustainable living</p>
	Knowledge	<p>Skills Passport:</p> <ul style="list-style-type: none"> • Constructing and understanding laboratory rules • How to work safely in a school laboratory and use equipment correctly • How to analyse an experiment and identify the main risks involved, and thus write a risk assessment • Understand how to use different pieces of measuring equipment and when it is appropriate to use them • How to use a bunsen burner correctly and safely • How to test a hypothesis, construct a method and collect data • How to draw conclusions from collected data in an investigation <p>Organisms:</p> <ul style="list-style-type: none"> • Label diagrams of plant and animal cells • Describe the functions of the main organelles • The main components of light microscopes and how to observe premade slides • The levels of organisation within organisms • Explain how specialised cells are adapted for their function. • How substances are transported through cells • Fitness and the respiratory system • Food groups and the digestive system 	<p>Matter part 1:</p> <ul style="list-style-type: none"> • The particle model and the arrangement of particles in solids liquids and gases • What happens to particles when energy is applied or taken away • How various mixtures can be separated <p>Matter part 2</p> <ul style="list-style-type: none"> • The difference between atoms elements and molecules and be able to distinguish between them • How compounds are formed and how to identify them • The layout of the periodic table and the different trends and properties within it • How metals react • How polymers, composites and ceramics are formed 	<ul style="list-style-type: none"> • Forces that exist between interactive pairs, and how to identify if they are balanced or unbalanced forces • The difference between speed and acceleration and how to calculate both • How to analyse speed distance time graphs • The forces involved with friction and air resistance and factors that can affect them • How to calculate pressure and factors that can affect pressure in different situations • What happens to a spring when more weight is applied 	<ul style="list-style-type: none"> • To know the different types of energy stores and which energies are transferrable • Not all energy is useful energy, how much energy is wasted before an appliance is no longer efficient • Understanding cost of electricity • Understanding the different types of chemical energy and where it can be found • Understanding how power stations create electricity