

**PARKLANDS SCIENCE**

***KEY STAGE 3 PROGRAMME OF STUDY***

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| **Topic** | **Content in Year 7** | **Content in Year 8** |
| **Forces** | **Speed and gravity** | **Contact forces and pressure** |
| **Electromagnets** | **Voltage, resistance, current.** | **Magnetism and electromagnets** |
| **Energy** | **Energy costs & transfer** | **Work and heating and cooling** |
| **Waves** | **Sound and light** | **Wave effects and wave properties** |
| **Matter** | **Particle model & separating mixtures** | **Periodic table and elements** |
| **Reactions** | **Metals and non-metals and acids and alkalis** | **Chemical energy and types of reactions** |
| **Earth** | **Earth structure and universe** | **Climate and earth resources** |
| **Organisms** | **Movement and cells** | **Breathing and digestion** |
| **Ecosystems** | **Interdependence and plant reproduction** | **Respiration and photosynthesis** |
| **Genes** | **Variation and human reproduction** | **Evolution and inheritance** |

**FORCES YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Forces | Speed | 1.1.1 Understanding speed | Change depending on direction of force and its size  Speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time) |
| 1.1.2 Describing journeys with distance–time graphs | The representation of a journey on a distance–time graph |
| 1.1.3 Exploring journeys on distance–time graphs | The representation of a journey on a distance–time graph  Speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time) |
| 1.1.4 Investigating the motion of a car on a ramp | Relating ideas about changing speed and factors affecting it to the identification and management of variables to gather evidence and form conclusions |
| 1.1.5 Understanding relative motion | Relative motion: trains and cars passing one another |
| Gravity | 1.1.6 Understanding forces | Forces as pushes or pulls arising from the interaction between two objects  Using force arrows in diagrams |
| 1.1.7 Understanding gravitational fields | Gravity force, weight = mass × gravitational field strength (*g*), on  Earth *g* =10 N/kg, different on other planets and stars |
| 1.1.8 Understanding mass and weight | Explain the difference between mass and weight |
| 1.1.9 Understanding gravity | Understanding that weight is an effect caused by an object being in a gravitational field and that moving from one such field to another (such as various places in the solar system) causes a change in weight |

**ELECTROMAGNETS YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Electromagnats | Voltage and resistance | 1.2.1 Describing electric circuits | Other processes that involve energy transfer: completing an electrical circuit  Electric current, measured in amperes, in circuits |
| 1.2.2 Understanding energy in circuits | Other processes that involve energy transfer: completing an electrical circuit  Electric current, measured in amperes, in circuits  Potential difference, measured in volts, battery and bulb ratings |
| 1.2.3 Explaining resistance | Potential difference (p.d.), measured in volts, battery and bulb ratings  Resistance, measured in ohms, as the ratio of p.d. to current |
| Current | 1.2.4 Describing series and parallel circuits | Series and parallel circuits, currents add where branches meet and current as flow of charge |
| 1.2.5 Comparing series and parallel circuits | Electric current, measured in amperes, in circuits  Series and parallel circuits, currents add where branches meet and current as flow of charge  Potential difference, measured in volts, battery and bulb ratings |
| 1.2.6 Investigating static charge | Non-contact forces: forces due to static electricity  Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects |
| 1.2.7 Explaining static charge |
| 1.2.8 Understanding electrostatic fields | Non-contact forces: forces due to static electricity  Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects  The idea of electric field, forces acting across the space between objects not in contact |

**ENERGY YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Energy | Energy costs | 1.3.1 Understanding energy transfers by fuels and food | Energy as a quantity that can be quantified and calculated; the total energy has the same value before and after a change  Comparing energy values of different foods (from labels) (kJ)  Other processes that involve energy transfer: metabolism of food, burning fuels |
| 1.3.2 Comparing rates of energy transfers | Comparing power ratings of appliances in watts (W, kW)  Comparing amounts of energy transferred (J, kJ, kW hour) |
| 1.3.3 Looking at the cost of energy use in the home | Comparing power ratings of appliances in watts (W, kW)  Comparing amounts of energy transferred (J, kJ, kW hour)  Domestic fuel bills: fuel use and costs |
| 1.3.4 Getting the electricity we need | Calculation of fuel uses and costs in the domestic context: fuels and energy resources |
| 1.3.5 Using electricity responsibly | Calculation of fuel uses and costs in the domestic context: comparing power ratings of appliances in watts (W, kW), comparing amounts of energy transferred (J, kJ, kW hour), domestic fuel bills, fuel use and costs and fuels and energy resources |
| Energy transfers | 1.3.6 Energy stores and transfers | Processes that involve energy transfer and changes in systems, including: energy as a quantity that can be quantified and calculated; comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy |
| 1.3.7 Exploring energy transfers | Other processes that involve energy transfer: changing motion, dropping an object, completing an electrical circuit, burning fuels  Energy as a quantity that can be quantified and calculated; the total energy has the same value before and after a change. |
| 1.3.8 Understanding potential energy and kinetic energy | Other processes that involve energy transfer: changing motion, dropping an object |
| 1.3.9 Understanding elastic potential energy | Other processes that involve energy transfer: stretching a spring.  Work done and energy changes on deformation.  Comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy in elastic distortions |

**WAVES YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Waves | Sound | 1.4.1 Exploring sound | Sound produced by vibrations of objects; sound waves are longitudinal |
| 1.4.2 Describing sound | Sound produced by vibrations of objects, in loudspeakers; detected by their effect on microphone diaphragm and the ear drum  Frequencies of sound waves, measured in hertz (Hz) |
| 1.4.3 Hearing sounds | Sound produced by vibrations of objects, detected by their effects on microphone diaphragm and the ear drum  Waves transferring information for conversion to electrical signals by microphone |
| 1.4.4 Understanding how sound travels through materials | sound needs a medium to travel, the speed of sound in air, in water, in solids |
| 1.4.5 Learning about the reflection and absorption of sound | Echoes, reflection and absorption of sound |
| Light | 1.4.6 Exploring properties of light | The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface |
| 1.4.7 Exploring reflection | Use of the ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye |
| 1.4.8 Exploring refraction |
| 1.4.9 Seeing clearly | Colour and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection |
| 1.4.10 Exploring coloured light | colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection. |

**MATTER YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Matter | Particle model | 1.5.1 Using particles to explain matter | The properties of different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure |
| 1.5.2 Understanding solids |
| 1.5.3 Understanding liquids and gases |
| 1.5.4 Exploring diffusion | Diffusion in liquids and gases driven by differences in concentration  Diffusion in terms of the particle model |
| 1.5.5 Explaining changes of state | Changes of state in terms of the particle model |
| Separating mixtures | 1.5.6 Separating mixtures | Mixtures, including dissolving  Simple techniques for separating mixtures: filtration |
| 1.5.7 Exploring solutions | Mixtures, including dissolving |
| 1.5.8 Understanding distillation | Simple techniques for separating mixtures: distillation |
| 1.5.9 Exploring chromatography | Simple techniques for separating mixtures: chromatography  The identification of pure substances |

**REACTIONS YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Reactions | Metals & non-metals | 1.6.1 Using metals and non-metals | The varying physical and chemical properties of different elements  The properties of metals and non-metals |
| 1.6.2 Exploring the reactions of metals with acids | Reactions of acids with metals to produce a salt plus hydrogen |
| 1.6.3 Understanding displacement reactions | The order of metals and carbon in the reactivity series; representing chemical reactions using formulas and using equations; displacement reactions; conservation of mass, changes of state and chemical reactions |
| 1.6.4 Understanding oxidation reactions | Combustion, thermal decomposition, oxidation and displacement reactions |
| Acids & alkalis | 1.6.5 Exploring acids | Defining acids and alkalis |
| 1.6.6 Exploring alkalis | Defining acids and alkalis |
| 1.6.7 Using indicators | The pH scale for measuring acidity/alkalinity; and indicators |
| 1.6.8 Exploring neutralisation | Defining acids and alkalis in terms of neutralisation reactions  The pH scale for measuring acidity/alkalinity; and indicators |
| 1.6.9 Investigating neutralisation | Reactions of acids with alkalis to produce a salt plus water |

**EARTH YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Earth | Earth structure | 1.7.1 Understanding the structure of the Earth | The composition of the Earth  The structure of the Earth |
| 1.7.2 Exploring igneous rocks | The rock cycle and the formation of igneous, sedimentary and metamorphic rocks |
| 1.7.3 Exploring sedimentary rocks |
| 1.7.4 Exploring metamorphic rocks |
| 1.7.5 Understanding the rock cycle |
| Universe | 1.7.6 Describing stars and galaxies | Our Sun as a star, other stars in our galaxy, other galaxies |
| 1.7.7 Explaining the effects of the Earth’s motion | The seasons and the Earth’s tilt, day length at different times of year, in different hemispheres |
| 1.7.8 Exploring our neighbours in the Universe | The light year as a unit of astronomical distance |
| 1.7.9 Using models in science | Understanding that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas |

**ORGANISMS YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Organisms | Movement | 1.8.1 Exploring the human skeleton | The structure and functions of the human skeleton, to include support, protection, movement and making of blood cells |
| 1.8.2 Understanding the role of joints and muscles | Biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles |
| 1.8.3 Examining interacting muscles | The function of muscles and examples of antagonistic muscles |
| 1.8.4 Exploring problems with the skeletal system | The structure and functions of the human skeleton, to include support, protection, movement and making blood cells  Biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles |
| Cells | 1.8.5 Understanding organisation of organisms | Hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms |
| 1.8.6 Describing animal and plant cells | Cells as the fundamental unit of living organisms, including how to observe and record cell structure using a light microscope  The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts  The similarities and differences between animal and plant cells |
| 1.8.7 Understanding adaptations of cells | The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts  The similarities and differences between animal and plant cells |
| 1.8.8 Exploring cells | Cells as the fundamental unit of living organisms, including how to observe and record cell structure using a light microscope  The similarities and differences between animal and plant cells |
| 1.8.9 Understanding unicellular organisms | The structural adaptations of some unicellular organisms |

**ECOSYSTEMS YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Ecosystems | Interdependence | 1.9.1 Understanding food webs | The interdependence of organisms in an ecosystem, including food webs |
| 1.9.2 Understanding the effects of toxins in the environment | How organisms affect, and are affected by, their environment, including the accumulation of toxic materials |
| 1.9.3 Exploring the importance of insects | The importance of plant reproduction through insect pollination in human food security |
| 1.9.4 Exploring ecological balance | The interdependence of organisms in an ecosystem, including insect-pollinated crops |
| Plant reproduction | 1.9.5 Exploring flowering plants | Reproduction in plants, including flower structure, wind and insect pollination |
| 1.9.6 Exploring fertilisation | Reproduction in plants, including flower structure, wind and insect pollination, fertilisation |
| 1.9.7 Understanding how seeds are dispersed | Reproduction in plants, including seed formation and dispersal |
| 1.9.8 Understanding how fruits disperse seeds | Reproduction in plants, including fruit formation and dispersal, and quantitative investigation of some dispersal mechanisms |

**GENES YEAR 7**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Genes | Variation | 1.10.1 Looking at variation | Describe what is meant by variation in a species.  Explain the difference between continuous and discontinuous variation.  Plot graphs to show variation. |
| 1.10.2 Exploring causes of variation | Identify whether a feature is inherited or determined by the environment.  Understand that offspring from the same parents may show variation. |
| 1.10.3 Considering the importance of variation | Describe the importance of variation.  Explain how variation may help a species to survive.  Apply ideas about variation and survival to specific examples. |
| Human reproduction | 1.10.4 Understanding the female reproductive system and fertility | Describe the structure and function of different parts of the female reproductive system.  Describe the process of menstruation.  Describe causes of low fertility. |
| 1.10.5 Understanding the male reproductive system and fertilisation | Describe the structure and function of different parts of the male reproductive system.  Describe fertilisation in humans. |
| 1.10.6 Learning how a foetus develops | Describe the role of the mother in supporting and protecting the developing foetus.  Recognise the development of a foetus. |
| 1.10.7 Understanding factors affecting a developing foetus | Describe the effects of different factors on a developing foetus.  Evaluate the strength of data.  Analyse advice given to pregnant women. |
| 1.10.8 Communicating ideas about smoking in pregnancy | Critique claims linked with the effects of smoking in pregnancy.  Identify potential bias in sources of information.  Give a reasoned opinion. |

**FORCES YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Forces | Contact forces | 2.1.1 Analysing equilibrium | Opposing forces and equilibrium: weight held by a stretched spring or supported on a compressed surface  Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces |
| 2.1.2 What a drag! | Forces associated with rubbing and friction between surfaces, with pushing things out of the way; resistance to the motion of air and water |
| 2.1.3 Understanding stretch and compression | Forces associated with deforming objects  Measurements of stretch or compression as force is changed |
| 2.1.4 Investigating Hooke’s Law | Forces associated with deforming objects; stretching and squashing – springs  Measurements of stretch or compression as force is changed  Force–extension linear relation, Hooke’s Law as a special case |
| Pressure | 2.1.5 Exploring pressure on a solid surface | Pressure measured by the ratio of force over area – acting normal to any surface |
| 2.1.6 Exploring pressure in a fluid | Pressure in liquids, increasing with depth  Atmospheric pressure; decreases with increase of height as the weight of air above decreases with height |
| 2.1.7 Calculating pressure | Pressure measured by the ratio of force over area – acting normal to any surface |

**ELECTROMAGNETS YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Electromagnets | Magnetism | 2.2.1 Forces and fields | Magnetism: Earth’s magnetism, compass and navigation |
| 2.2.2 Using ideas about fields |
| Electromagnets | 2.2.3 Investigating electromagnetism | Magnetism: the magnetic effect of a current, electromagnets, D.C. motors (principles only). |
| 2.2.4 Using electromagnets | Magnetism: the magnetic effect of a current, electromagnets. |
| 2.2.5 Investigating strength of electromagnets | Magnetism: the magnetic effect of a current, electromagnets. |

**ENERGY YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Energy | Work | 2.3.1 Doing work | Work done; simple machines give bigger force but at the expense of smaller movement (and vice versa): product of force and displacement unchanged |
| 2.3.2 Making work easier |
| Heating & cooling | 2.3.3 Explaining thermal energy | Heating and thermal equilibrium: temperature difference between two objects leading to energy transfer from the hotter to the cooler one  Comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with temperatures |
| 2.3.4 Heating |
| 2.3.5 How to stop energy from travelling |
| 2.3.6 Energy and temperature | Heating and thermal equilibrium: temperature difference between two objects leading to energy transfer from the hotter to the cooler one, through contact (conduction) or radiation; such transfers tending to reduce the temperature difference: use of insulators |

**WAVES YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Waves | Wave effects | 2.4.1 Exploring sound | Frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound  Sound needs a medium to travel; the speed of sound in air, in water, in solids; auditory range of humans and animals  Use of ultra-sound for cleaning and in physiotherapy; waves transferring information for conversion to electrical signals by a microphone  Sound produced by vibrations of objects, such as in loudspeakers; sound waves detected by their effects on a microphone diaphragm and the ear drum; sound waves are longitudinal |
| 2.4.2 Sound systems |
| Wave properties | 2.4.3 Exploring light | Similarities and differences between light waves and waves in matter  Light waves travelling through a vacuum; speed of light  Transmission of light through materials; absorption, diffuse scattering and specular reflection of light at a surface  Use of a ray model to explain imaging in mirrors; the pinhole camera; refraction of light and the action of convex lens in focusing (qualitative); the human eye  Light transferring energy from a source to an absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras  Colours and the different frequencies of light; white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection  Waves on water as undulations that travel through water with transverse motion; waves can be reflected, and add or cancel – superposition |
| 2.4.4 Comparing transverse and longitudinal waves |
| 2.4.5 Exploring waves |

**MATTER YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Matter | Periodic table | 2.5.1 Looking at the periodic table of elements | The principles underpinning the Mendeleev periodic table  The periodic table: periods and groups; metals and non-metals |
| 2.5.2 Exploring metals in the periodic table | The varying physical and chemical properties of different elements  How patterns in reactions can be predicted with reference to the periodic table  The properties of metals and non-metals |
| 2.5.3 Exploring non-metals in the periodic table |
| 2.5.4 Analysing wider patterns within the periodic table | The varying physical and chemical properties of different elements  How patterns in reactions can be predicted with reference to the periodic table |
| Elements | 2.5.5 Combining elements | Differences between atoms, elements and compounds  Chemical symbols and formulas for elements and compounds |
| 2.5.6 Comparing elements and compounds | Differences between atoms, elements and compounds  The chemical properties of metal and non-metal oxides |
| 2.5.7 Exploring polymers | Properties of ceramics, polymers and composites (qualitative) |
| 2.5.8 Exploring ceramics and composites |

**REACTIONS YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Reactions | Chemical energy | 2.6.1 Understanding exothermic reactions | Internal energy stored in materials; exothermic chemical reactions (qualitative); comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with chemical compositions |
| 2.6.2 Comparing endothermic and exothermic changes | Exothermic and endothermic chemical reactions (qualitative); comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with chemical compositions |
| 2.6.3 Investigating endothermic reactions | Exothermic and endothermic chemical reactions (qualitative) |
| 2.6.4 Explaining the use of catalysts | What catalysts do |
| Types of reactions | 2.6.5 Exploring combustion | Chemical reactions as the rearrangement of atoms  Representing chemical reactions using formulas and using equations  Combustion |
| 2.6.6 Exploring the use of fuels | Fuels and energy resources  Exothermic and endothermic chemical reactions (qualitative) |
| 2.6.7 Understanding thermal decomposition | Chemical reactions; thermal decomposition |
| 2.6.8 Explaining changes | Differences between atoms, elements and compounds  Chemical symbols and formulae for elements and compounds  Conservation of mass changes of state and chemical reactions  Chemical reactions as the rearrangement of atoms  Thermal decomposition; oxidation |

**EARTH YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Earth | Climate | 2.7.1 Understanding our atmosphere | The composition of the atmosphere |
| 2.7.2 Understanding how carbon is recycled | The carbon cycle |
| 2.7.3 Exploring how humans affect the carbon cycle | The carbon cycle; the composition of the atmosphere; the production of carbon dioxide by human activity and its impact on climate |
| 2.7.4 Understanding global warming | The production of carbon dioxide by human activity and its impact on climate |
| Earth resources | 2.7.5 Exploring damage to the Earth’s resources | The Earth as a source of limited resources and the efficacy of recycling |
| 2.7.6 Considering the importance of recycling |
| 2.7.7 How to extract metals | The order of metals and carbon in the reactivity series; the use of carbon in obtaining metals from metal oxides |

**ORGANISMS YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Organisms | Breathing | 2.8.1 Understanding how we breathe | The mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases |
| 2.8.2 Measuring breathing | The mechanism of breathing to move air in and out of the lungs, including simple measurements of lung volume |
| 2.8.3 Explaining gas exchange in humans | The structure and functions of the gas exchange system in humans, including adaptations to function |
| 2.8.4 Exploring the effects of disease and lifestyle | The impact of exercise, asthma and smoking on the human gas exchange system |
| Digestion | 2.8.5 Exploring a healthy diet | Content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed |
| 2.8.6 Understanding the effects of an unbalanced diet | The consequences of imbalances in the diet including obesity, starvation and deficiency diseases |
| 2.8.7 Understanding the human digestive system | The tissues and organs of the digestive system, including adaptations to function |
| 2.8.8 Understanding the roles of the digestive organs |

**ECOSYSTEMS YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Ecosystem | Respiration | 2.9.1 Understanding aerobic respiration | Aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life  The word equation for aerobic respiration |
| 2.9.2 Exploring respiration in sport | Aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life |
| 2.9 3 Understanding anaerobic respiration | The process of anaerobic respiration in humans and micro-organisms, including fermentation  The word equation for anaerobic respiration |
| 2.9.4 Investigating fermentation |
| 2.9.5 Comparing aerobic and anaerobic respiration | The differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism |
| Photosynthesis | 2.9.6 Exploring how plants make food | The reactants in, and products of, photosynthesis, and a word summary for photosynthesis  Plants making carbohydrates in their leaves by photosynthesis |
| 2.9.7 Looking at leaves | The adaptations of leaves for photosynthesis |
| 2.9.8 Exploring the movement of water and minerals in plants | Plants gain mineral nutrients and water from the soil via their roots |
| 2.9.9 Investigating the importance of minerals to plants |
| 2.9.10 Investigating photosynthesis | The reactants in, and products of, photosynthesis, and a word summary for photosynthesis |

**GENES YEAR 8**

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| **Big idea** | **Topic** | **Lesson** | **Programme of study reference** |
| Genes | Evolution | 2.10.1 Explaining natural selection | The variation between species and between individuals of the same species means that some organisms compete more successfully than others, which can drive natural selection |
| 2.10.2 Understanding the importance of biodiversity | Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce than others, which in turn may lead to extinction  The importance of maintaining biodiversity and the use of gene banks to preserve hereditary material |
| 2.10.3 Explaining extinction |
| Inheritance | 2.10.4 Understanding the nature of genetic material | A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model |
| 2.10.5 Exploring the role of chromosomes | A simple model of chromosomes, genes and DNA in heredity |
| 2.10.6 Understanding variation | Heredity as the process by which genetic information is transmitted from one generation to the next |
| 2.10.7 Modelling inheritance |