Year 7 Autumn Term 1			
What are we learning?	**What knowledge, understanding and skills will we gain?**	**What does mastery look like?**	**What additional resources are available?**
7A Cells, tissues and organs This unit covers the following statements from the UK National Curriculum for Science: • cells as the fundamental unit of living organisms, including how to observe, interpret 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 plant and animal cells • the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms. In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety (using a light microscope and preparing light microscope slides).	**Knowledge** **Understanding** **Skills** See left.	Lessons are a mixture of theory and practical activities designed to prepare the Students for the GSCE course, triple science for the more able students. Students are encouraged to have resilience and confidence in the science that they have been taught in order to be able to apply it to unfamiliar situations. Students are challenged on the depth of their scientific understanding and vocabulary through regular oral and written questioning/testing.	Pearson active learn Bitesize KS3 Science Seneca Learning Various KS revision guides

7H Atoms, elements and compounds This unit covers the following statements from the UK National Curriculum for Science: • the concept of a pure substance • mixtures, including dissolving • differences between atoms, elements and compounds • chemical symbols and formulae for elements and compounds • combustion, thermal decomposition, oxidation and displacement reactions • the varying physical and chemical properties of different elements • the composition of the Earth • the difference between chemical and physical changes (physics) • atoms and molecules as particles (physics). In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • present observations and data using appropriate methods, including tables and graphs • understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature. **7B Sexual reproduction in animals** This unit covers the following statement from the UK National Curriculum for Science: • reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle			

(without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review • ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience • make predictions using scientific knowledge and understanding • select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate. **7E Mixtures and separation** This unit covers the following statements from the UK National Curriculum for Science: • mixtures, including dissolving • simple techniques for separating mixtures: filtration, evaporation, evaporation, distillation and chromatography. In addition to covering a variety of Working Scientifically statements, this unit has a focus on:			

• use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety. This unit also focuses on the aim to 'equip students with the scientific knowledge required to understand the uses and implications of science, today and for the future'. **7J Current electricity** This unit covers the following statements from the UK National Curriculum for Science: • electric current, measured in amperes, in circuits, series and parallel circuits and the domestic ring main • current as flow of charge • potential difference, measured in volts, battery … ratings; resistance as the ratio of potential difference (p.d.) to current measured in ohms • differences in resistance between conducting and insulating components. In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • using physical models to help to explain phenomena • explaining why models are used • planning a fair test.			

Year 8 Autumn Term 1			
What are we learning?	**What knowledge, understanding and skills will we gain?**	**What does mastery look like?**	**What additional resources are available?**
7H Atoms, elements and compounds This unit covers the following statements from the UK National Curriculum for Science: • the concept of a pure substance • mixtures, including dissolving • differences between atoms, elements and compounds • chemical symbols and formulae for elements and compounds • combustion, thermal decomposition, oxidation and displacement reactions • the varying physical and chemical properties of different elements • the composition of the Earth • the difference between chemical and physical changes (physics) • atoms and molecules as particles (physics). In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • present observations and data using appropriate methods, including tables and graphs • understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature.	**Knowledge** **Understanding** **Skills** See left.	Lessons are a mixture of theory and practical activities designed to prepare the Students for the GSCE course, triple science for the more able students. Students are encouraged to have resilience and confidence in the science that they have been taught in order to be able to apply it to unfamiliar situations. Students are challenged on the depth of their scientific understanding and vocabulary through regular oral and written questioning/testing.	Pearson active learn Bitesize KS3 Science Seneca Learning Various KS revision guides

7L Sound This unit covers the following statements from the UK National Curriculum for Science: • waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition • 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 • sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal • auditory range of humans and animals • pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound; waves transferring information for conversion to electrical signals by microphone. In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • present observations and data using appropriate methods, including tables and graphs • interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions.			

8A Food and nutrition This unit covers the following statements from the UK National Curriculum for Science: • content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed • calculations of energy requirements in a healthy daily diet • the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts) • the role of diffusion in the movement of materials in and between cells. In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • apply mathematical concepts and calculate results. **8E Combustion** This unit covers the following statements from the UK National Curriculum for Science: • the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure • 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 • representing chemical reactions using formulae and using equations • combustion, thermal decomposition, oxidation and displacement reactions • what catalysts do • exothermic and endothermic chemical reactions (qualitative) • the carbon cycle • the composition of the atmosphere • the production of carbon dioxide by human activity and the impact on climate. In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate. **8I Fluids** This unit covers the following statements from the UK National Curriculum for Science: • forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water • atmospheric pressure, decreases with increase of height as weight of air above decreases with height			

• pressure in liquids, increasing with depth; upthrust effects, floating and sinking • pressure measured by ratio of force over area – acting normal to any surface • conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving • similarities and differences, including density differences, between solids, liquids and gases • the difference between chemical and physical changes • the differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density, the anomaly of ice–water transition • atoms and molecules as particles • changes with temperature in motion and spacing of particles. In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • apply mathematical concepts and calculate results. **8B Plants and their reproduction** This unit covers the following statements from the UK National Curriculum for Science: • plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots			

• reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms • the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops • the importance of plant reproduction through insect pollination in human food security • heredity as the process by which genetic information is transmitted from one generation to the next • differences between species • the variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation • the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material. In addition to covering a variety of Working Scientifically statements, this unit has a focus on: • make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements • apply sampling techniques.			