

<i>Autumn 01</i>	<i>Autumn 02</i>	<i>Spring 01</i>
<p>Content: 8PL: light The unit builds on work done at KS2, which should be borne in mind in terms of starting points. Students should know that light travels in straight lines, is reflected and enters the eye in order to see. The unit begins by looking at light as a wave, that transfers energy and what happens when it meets different surfaces. Electrical and chemical effects should be studied – perhaps by way of a solar cell investigation. The unit then moves to reflection, refraction in more detail and this offers the opportunity to look at reproducibility in data and accuracy of measurements, before moving on to vision and problems with vision. The colours of the spectrum and how colour is seen and then how different coloured light can be produced and affects the colour of objects. The final section deals with the Earth in space, the cause of seasons and the Earth’s place in the universe. Connections between this and light can be explored – light years, speed of light etc.</p> <p><i>Working scientifically skills and oracy opportunity:</i> <i>Required practical reflection</i></p>	<p>Content: 8CP: periodic table This unit of work begins what an element is and how elements can combine/mix to form compounds and mixtures. Some work is then done linking elements to the periodic table and their significance. Following this, compounds are studied in more detail including naming them and how to write a formula. This links to the next area of conservation of mass showing the same numbers of atoms on each side of a balanced symbol equation and use the reaction of magnesium and oxygen to help develop an understanding of this. The periodic table is then looked at in more detail starting first with the Dalton atomic model and moving on to the nuclear model and electron configuration. Group 1 and 7 and their main properties are then looked at in further detail including their reactivity and general uses.</p> <p>8BD: diet and nutrition This unit builds on the work done in year 7 on organ systems and diffusion. It begins by establishing the components of food and the use of each within the body. Student will look at what is meant by a balanced diet and the consequences when nutritional and calorie intake is not inadequate or excessive. Students will carry out practical to test foods for the main components and then move on to look at the organs of the digestive system and the role each plays in digestion. The role of enzymes is introduced as part of this, as well as the role of gut bacteria.</p> <p><i>Working scientifically skills and oracy opportunity:</i> <i>Required practical conservation of mass</i> <i>Required practical effect on temperature of enzymes</i></p>	<p>Content: 8PE: electricity This unit begins with electricity – what it is and how current behaves in series and parallel circuits. Ohm’s Law is introduced in a simple way. The unit then switches to magnetism and then the link between the two before investigating how to make electromagnets and some uses of them.</p> <p><i>Working scientifically skills and oracy opportunity:</i> <i>Required practical Ohms law</i> <i>Required practical series and parallel circuits</i></p>
<p>Assessment objectives: 8PL1 - Describe how light interacts with different materials 8PL2 - Describe the effects of absorption of light in terms of energy</p>	<p>Assessment objectives: 8CP1 - Identify, with reasons, differences between atoms, elements and compounds 8CP2 - Represent chemical reactions as word equations and apply this idea to conservation of mass</p>	<p>Assessment objectives: 8PE1 - Define current and describe current in series and parallel circuits 8PE2 - Correctly use apparatus to measure current and potential difference</p>

<p>8PL3 - Use ray diagrams to show how images are formed - such as mirrors, pinhole cameras and the human eye</p> <p>8PL4 - Describe the properties that affect the sizes of gravitational forces between different objects in the solar system</p> <p>8PL5 - Calculate the weight of an object on different planets</p> <p>8PL6 - Compare the relative sizes of different astronomical structure within the university using astronomical distances</p> <p>End of topic tests in topics studied</p>	<p>8CP3 - Explain how an elements position in the periodic table links to its properties and reactivity</p> <p>8BD1 - Describe and explain the components that make up a balanced diet, describing the consequences of an imbalanced diet</p> <p>8BD2 - Evaluate how different lifestyles have different energy needs</p> <p>8BD3 - Describe the symbiotic relationship between bacteria and the human digestive system</p> <p>8BD4 - Describe how and explain why foods are broken down in the digestive system, in terms of enzymes</p> <p>End of topic tests in topics studied</p>	<p>8PE3 - Identify conductors and insulators and calculate resistance values using appropriate units</p> <p>8PE4 - Explain how insulators are charged by friction and describe the forces between charged objects</p> <p>8PE5 - Draw and interpret simple magnetic field diagrams</p> <p>8PE6 - Describe how electromagnets and direct current motors work</p> <p>End of topic tests in topics studied</p> <p>Big test 1: Mid year exam</p>
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<i>Spring 02</i>	<i>Summer 01</i>	<i>Summer 02</i>
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<p>Content:</p> <p>8CM: earth and materials</p> <p>The unit begins by looking at the structure of the Earth and some basic plate tectonics to highlight the changing nature of the surface and how this can lead to earthquakes and volcanoes. The formation of the three different types of rock and their physical properties is then covered, as well as fossil formation. The unit then moves on to the atmosphere, how it has changed over the Earth’s history and more recently, and the human impact on that. Finally, the properties of some of the materials made from earth’s resources and recycling.</p> <p><i>Working scientifically skills and oracy opportunity: Required practical identifying rock types</i></p>	<p>Content:</p> <p>9BP: plants and photosynthesis</p> <p>This unit provides the foundation for work in key stage 4 on limiting factors in photosynthesis, energy transfer through an ecosystem and the mineral requirements of plants. The unit starts with exploring the structure and function of roots, with emphasis on its adaptations. Pupils then progress on to the process of photosynthesis and its importance. This will include understanding that the carbon dioxide for photosynthesis comes from the air, that chlorophyll enables a plant to utilise light in photosynthesis, the role of the leaf in photosynthesis, the importance and roles of the xylem and phloem and the importance of photosynthesis to humans and other animals.</p> <p><i>Working scientifically skills and oracy opportunity: Required practical testing leaves for starch Required practical stomata</i></p>	<p>Content:</p> <p>9PM: matter</p> <p>The matter topic build extensively on the particles (7CP) and forces and motion(7PF) topics. In this topic students will reinforce their understanding of the particle model, kinetic theory and resultant forces. They will learn to apply these to situations revolving around pressure and diffusion.</p> <p>9PF: forces in action</p> <p>This unit builds on forces from year 7 to look at how forces can cause turning effects, how this can be amplified, how forces can cause deformation and what elastic deformation is, how forces are linked to energy (work done) and how machines can reduce the force needed to do a particular job. Lots of opportunity to make links with real life objects (bikes, cars, screwdrivers) engineering, tools etc. There is a lot of maths, although the relationships are fairly simple, so challenge can be built by rearrangement and unit changes.</p> <p><i>Working scientifically skills and oracy opportunity: Required practical density Required practical hookes law</i></p>
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Assessment objectives:	Assessment objectives:	Assessment objectives:
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<p>8CM1 - Describe the structure and composition of the earth and link this to the rock cycle</p> <p>8CM2 - Explain how carbon is recycled in the Earth's atmosphere and link the impact of human activity to climate change</p> <p>End of topic tests in topics studied</p>	<p>9BP1 - Describe how roots take up minerals, nutrients and water from the soil</p> <p>9BP2 - Describe photosynthesis in a word equations representing products and reactants</p> <p>9BP3 - Describe how leaves are adapted to carry out photosynthesis</p> <p>9BP4 - Describe the role of plants in maintaining the levels of gases in the atmosphere</p> <p>9BP5 - Describe the importance of pollination on food security</p> <p>End of topic tests in topics studied</p>	<p>9PM1 - Describe the factors that affect pressure in fluids</p> <p>9PM2 - Describe the motion of particles in different states of matter and link this to different behaviours</p> <p>9PM3 - Compare and explain differences in density between solids, liquids and gases</p> <p>9PF1 - Define and calculate a moment, and relate this to force multipliers</p> <p>9PF2 - Measure extension or compression and relate this to the force applied to a spring and to Hooke's law</p> <p>9PF3 - Describe energy transfers and conservation of energy for the deformation of objects</p> <p>9PF4 - Describe balanced forces in relation to mechanical systems</p> <p>End of topic tests in topics studied</p> <p>Big test 2: UL end of year papers</p>
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