

| Year 7 | Autumn Term |
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| Biology | <p><u>Structure and function of living organisms. Cells and organisation. The skeletal and muscular systems</u></p> <p>Students will directly observe plant and animal cells by creating their own cheek cell and onion cell slides and examining them under a microscope. Students learn to label each part of an animal cell and a plant cell, and compare their structures. They will learn the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts. They will learn about the structure of DNA, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model</p> <p>They will identify specialised cells and their adaptations for their function, and the structural adaptations of some unicellular organisms.</p> <p>Students will learn the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms, and this will lead onto them studying the skeletal and muscular systems.</p> <p>They will learn the structure and functions of the human skeleton, including support, protection, movement and making blood cells. The interaction between skeleton and muscles, the function of muscles and examples of antagonistic muscles. Students will examine bones from various animals, and will dissect a chicken wing to examine the muscles and see how they move the bones</p> |
| Chemistry | <p><u>Particulate nature of matter.</u></p> <p>Students learn to describe the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure. They also describe changes of state in terms of the particle model.</p> <p>Students apply the particle model to explain how motion, temperature and density change as a substance changes state. They apply the particle model of a gas to explain observations of diffusion and gas pressure demonstrations.</p> <p>Students investigate density in liquids by creating density columns. They learn the difference between a pure substance and a mixture. They make a solution and use key terms to describe what is happening. Students use separation techniques such as evaporation, filtration, chromatography and distillation to separate various mixtures</p> |
| Physics | <p><u>Forces and motion</u></p> <p>Students investigate the actions of forces and describe how forces can be represented. They measure simple forces and use the appropriate units.</p> <p>Students carry out experiments to measure speed. They plot and analyse distance time graphs.</p> <p>They investigate the difference between weight and mass, and how weight varies on different planets.</p> <p>Students investigate friction, air and water resistance, balanced and unbalanced forces, and Hooke's Law.</p> |

| Year 7 | Spring Term |
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| Physics | <p><u>Electricity and magnetism</u></p> <p>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.</p> <p>Current electricity: 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, resistance, measured in ohms, differences in resistance between conducting and insulating components (quantitative).</p> <p>Magnetism: magnetic fields by plotting with compass, representation by field lines, Earth's magnetism, compass and navigation, the magnetic effect of a current, electromagnets.</p> |
| Biology | <p><u>Diet, health and the digestive system.</u></p> <p>Students re cap the 7 food groups and what is meant by a balanced diet, they learn about the functions of the different parts of the digestive system.</p> <p>They carry out an investigation looking at the enzyme-catalysed breakdown of starch to sugars.</p> <p>Students perform food tests to identify the nutrient content of the food, and learn the functions of the different food groups. They learn about malnutrition and obesity, and the energy requirements of different people. They look at the effects of drugs and alcohol on health.</p> |
| Chemistry | <p><u>Atoms, elements and compounds</u></p> <p>Students learn to identify the components of a simple (Dalton) atomic model; differences between atoms, elements and compounds; chemical symbols and formulae for elements and compounds; conservation of mass, changes of state and chemical reactions.</p> <p>They learn to describe chemical reactions as the rearrangement of atoms; representing chemical reactions using formulae and using equations.</p> <p>They learn about the periodic table, the varying physical and chemical properties of different elements; the principles underpinning the Mendeleev Periodic Table; periods and groups; metals and non-metals.</p> |

| Year 7 | Summer Term |
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| Chemistry | <p><u>Space, Earth, Atmosphere and Rocks</u></p> <p><u>Earth and atmosphere.</u></p> <p>Students will learn the composition and structure of the earth. They will learn about the rock cycle and the formation of igneous, sedimentary and metamorphic rocks</p> <p>They will learn about the carbon cycle, the composition of the atmosphere and how the production of carbon dioxide by human activity impacts on climate</p> <p><u>Space.</u></p> <p>The students will learn about our Sun as a star, other stars in our galaxy, and other galaxies The relationship between the seasons and the Earth's tilt, day length at different times of year, in different hemispheres The light year as a unit of astronomical distance.</p> |
| Physics | <p><u>Levers, moments and pressure</u></p> <p>Students examine the simple properties and application of levers, they identify a range of force and distance multipliers and describe their function, they identify the pivot and positions of the effort and load. Students measure and calculate the turning effect of a force (the moment). They explore the relationship between work done, the size of the force and the distance the force acts through by examining lever and pulley systems. Students investigate the concept of pressure, looking at a wide range of scenarios and explaining them in terms of force and area. They calculate pressure and measure the pressure exerted by objects on surfaces. Students learn about pressure in gases (including atmospheric pressure) and liquids</p> |