

Year 8 Science Overview

Unit	Learning Objectives/Outcomes
Digestion	<ul style="list-style-type: none">• Explain the content of a healthy balanced diet• Calculate energy requirements for different people• Describe the digestive system• Explain the function of the parts of the digestive system• Explain how the digestive system allows food to be digested
Chemical reactions	<ul style="list-style-type: none">• Explain why a reaction is an example of combustion or thermal decomposition• Explain observations about mass during combustion and thermal decomposition reactions• Use particle diagrams to show what happens during oxidation, combustion and thermal decomposition reactions• Construct equations
Fuel bills / appliances	<ul style="list-style-type: none">• Compare the power rating of appliances• Compare the amounts of energy transferred by appliances• Calculate the cost of fuels, fuel use and household fuel bills
Biomechanics	<ul style="list-style-type: none">• Explain how a physical property of parts of a skeleton relate to their functions• Explain antagonistic pairs• Explain why some organs contain muscle tissue (stomach / heart)
Periodic table	<ul style="list-style-type: none">• Explain why symbols are used to represent elements• Link the physical properties to the position in the periodic table• Use observation and patterns to explain the arrangement of the periodic table
Speed	<ul style="list-style-type: none">• Explain how forces affect the speed of an object• Use given equations to calculate speed• Analyse speed distance time graphs
Respiration	<ul style="list-style-type: none">• Explain how the alveoli are adapted for efficient gas exchange• Apply knowledge gained to locate structures within an actual lung• Apply knowledge of inhalation and exhalation to explain the balloon in a jar lung model• Explain what happens during ventilation to why it hurts so much to breathe after very intense exercise• Explain why our bodies sometimes carry out anaerobic respiration

Acids	<ul style="list-style-type: none"> • Use a range of indicators and interpret the results • Explain how neutralisation occurs • Explain how to make specific salts through neutralisation
Astronomy calcs	<ul style="list-style-type: none"> • Explain the choices for particular units of measurement • Calculate weight on different planets using gravitational field strength • Explain how gravity varies for different masses and distances • Explain how space exploration and observations are affected by the size of the universe
Microbes	<ul style="list-style-type: none"> • The importance of bacteria in the human digestive system • Micro-organisms • Fermentation • The process of anaerobic respiration in humans and micro-organisms, including fermentation, and a word summary for anaerobic respiration
Reactivity	<ul style="list-style-type: none"> • Explain the patterns formed when metals react with oxygen, water and acids • Use observations to construct a reactivity series of metals • Explain displacement reactions and how they occur • Write equations to show displacement reactions
Pressure and moments	<ul style="list-style-type: none"> • Simple machines give bigger force but at the expense of smaller movement (and vice versa): product force and displacement unchanged • Moment as the turning effect of a force • Force-extension linear relation; Hooke's Law as a special case • 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
Photosynthesis	<ul style="list-style-type: none"> • Explain why a plant needs light, Carbon dioxide, water, chlorophyll • Write the word equation for photosynthesis • Explain how other organisms are dependent on photosynthesis • Explain how specialised plant cells are adapted for their function • Explain how gases move in and out of cells • Sketch and explain how the rate of photosynthesis is affected by changing conditions • Explain why glucose is not suitable for storage

Materials	<ul style="list-style-type: none"> • Explain why the properties of composites change • Analyse results on polymer strength • Explain the difference between natural and synthetic polymers • Explain the properties of materials (ceramics, composites, polymers)
Heat transfer	<ul style="list-style-type: none"> • Apply knowledge to calculate domestic fuel bills, fuel use and costs • Sketch diagrams to show convection currents in unfamiliar situations • Compare and contrast the three ways that energy can be moved from one place to another by heating
Health	<ul style="list-style-type: none"> • Explain the functions of the key nutrients in a balanced diet • Explain the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases • Explain the effect of recreational drugs on the body • Explain the impact of exercise and asthma on the human gas exchange system
Rocks	<ul style="list-style-type: none"> • Explain the composition of each layer of the Earth • Explain, in detail, the stages involved in the formation of igneous, sedimentary and metamorphic rocks • Link the properties of igneous, sedimentary and metamorphic rocks to their formation and structure • Use a labelled diagram to explain the rock cycle • Explain the different ways that weathering may occur
Magnetism	<ul style="list-style-type: none"> • Explain why distance between magnets changes the force • Investigate the field lines around attracting and repelling magnets • Explain how the earth's magnetic field aids navigation • Explain how an electromagnet works. (link to earth's magnetic field) • Investigate factors that affect the strength of an electromagnet • Explain the choice of electromagnet or permanent magnet for a device