



This year in Science we will be learning:		This links to:	Key Vocabulary:	
1	<p>Genes (Biology)</p> <ul style="list-style-type: none"> There is variation between individuals of the same species, which can be inherited or environmental. Natural selection is a theory that explains how species evolve and why extinction occurs Inherited characteristics are the result of genetic information (genes) being transferred from parents to offspring 	<p>In this topic you will learn about how characteristics are passed from parents to offspring, which builds on your learning of reproduction from year 7.</p> <p>You will develop your knowledge of adaptation from key stage 2, looking in more detail about Natural Selection and the role of genes and mutations within this process. You will be able to explain how species adapt or become extinct over time.</p>	<ul style="list-style-type: none"> DNA Chromosome Gene Genetic variation Environmental variation 	<ul style="list-style-type: none"> Continuous Discontinuous Species Evolution Natural selection Extinction
2	<p>Light and Sound (Physics)</p> <ul style="list-style-type: none"> The idea of waves is key to explaining how energy transfers from one object to another by radiation even when objects are not touching. Waves carry information that can be detected by humans or manufactured detectors. Understanding waves helps us to communicate, explore the universe and transfer energy to where we want it. 	<p>This unit links to your learning of the basic properties of sound and light at key stage 2, as well as energy transfers from year 7. You will build on the investigations done into reflection at key stage 2 to consider refraction and dispersion of light.</p> <p>You will develop your knowledge of sound to consider how it travels in waves and how we can measure properties of sound from wave diagrams.</p>	<ul style="list-style-type: none"> Wave Vibration Amplitude Wavelength Frequency 	<ul style="list-style-type: none"> Trough Peak Transverse Longitudinal Refraction
3	<p>Reactions 1 (Chemistry)</p> <ul style="list-style-type: none"> How pH of a solution depends on the strength of an acid and that neutralisation reactions occur between acids and alkalis. Metals are good conductors of thermal energy, electrical energy and have high melting and boiling points. The reactivity of a metal can be described in terms of the reactivity series and how it reacts with oxygen, water and acids. 	<p>Building on the idea that atoms rearrange during chemical reactions that you studied in year 7, in this unit you will study examples of chemical reactions such as neutralisation and oxidation. You will develop your scientific enquiry skills using a range of demonstrations and experiments to observe chemical reactions.</p>	<ul style="list-style-type: none"> Acid Alkali Neutralisation pH scale Chemical reaction 	<ul style="list-style-type: none"> Displacement Universal indicator Reactivity series Concentrated Neutral
4	<p>Ecosystems and Biological Processes (Biology)</p> <ul style="list-style-type: none"> Organisms in a habitat are interdependent so that a change in one population leads to a change in the others. Plants and algae use carbon dioxide, water and energy from light to make glucose through photosynthesis which can be used in respiration, converted to other molecules or stored. There are two types of respiration, both of which generate energy for organisms. 	<p>This unit builds on your knowledge of energy transfers in habitats from key stage 2. You will see that food chains rarely exist in isolation and that organisms are part of complex food webs and have interdependent relationships. You will also consider the transfer of energy on a biochemical basis through the reactions of photosynthesis and respiration (introduced in year 7).</p>	<ul style="list-style-type: none"> Bioaccumulation Niche Community Competition Food web 	<ul style="list-style-type: none"> Aerobic respiration Anaerobic respiration Fermentation Lactic acid Glucose
5	<p>Space and magnetism (Physics)</p> <ul style="list-style-type: none"> The solar system can be modelled as planets rotating on axes which orbiting the sun, moons orbiting planets and sunlight spreading out and being reflected. Magnetic materials, electromagnets and the Earth create magnetic fields which can be describe by drawing field lines to show the strength and direction. 	<p>Having studied properties of magnets and magnetic materials in key stage 2 in this topic you will learn about electromagnets and how we can manipulate them to be useful. You will also build on your knowledge of the Earth and space from key stage 2,</p>	<ul style="list-style-type: none"> Orbit Satellite Solar system Phases of the moon 	<ul style="list-style-type: none"> Electromagnet Attract Repel Magnetic field
6	<p>Reactions 2 (Chemistry)</p> <ul style="list-style-type: none"> During chemical reactions bonds are broken and new bonds formed. Reactions can be exothermic or endothermic. Carbon is recycled through natural processes in the atmosphere, ecosystems, oceans and the Earth's crust as well as human activities. Most metals are found combined with other elements as a compound, in ores. The more reactive a metal the more difficult it is to separate from its compound. 	<p>This unit builds on the Reactions 1, Matter 1 and Matter 2 topics. You will learn more examples of chemical reactions and study chemical reactions in context; for example, in extraction of metals and in biological systems.</p>	<ul style="list-style-type: none"> Chemical bond Combustion Conservation of mass Decomposition Exothermic 	<ul style="list-style-type: none"> Endothermic Climate change Carbon cycle Electrolysis Fossil fuel

Target Grade:

AP1:

AP2:

AP3: