

	Year 5	Year 6	Year 7	Year 8
<p>1 Autumn Term</p> <p>1a 6.5 weeks</p> <p>1b 8 weeks</p> <p>(14.5 week total)</p>	<p>1a Safety in science – Introduction to basic science in a laboratory including lab rules, using equipment, simple lab procedures e.g. observations, carrying out simple investigations and organising a fair test.</p> <p>1b Material World - The children will sort and classify objects according to their properties. They will explore the properties of materials to find the most suitable material for different purposes. The children will work scientifically and collaboratively to investigate the best thermal insulator to make a lunch box, making predictions and forming conclusions. Furthermore, they will have chance to find the best electrical conductor, in the context of making floodlights brighter. They will have the opportunity to work in a hands-on way to explore dissolving, identifying the different variables in their own investigations. They will find out about different ways to separate mixtures of materials, using filtering, sieving and evaporating. Finally, they will learn about irreversible changes, and participate in two exciting investigations to create new materials, including casein</p>	<p>1a Investigation skills – Children will have the opportunity to practise their investigation skills. They will be using a variety of equipment to plan, carry out and analyse their investigations and work on their graph drawing skills.</p> <p>1b Light – Children will learn how light travels and how this enables us to see objects. They will demonstrate their knowledge by making and starring in their own television programme. The children will have the opportunity to make a functioning periscope, finding out about mirrors and the angles of reflection and incidence. They will work scientifically and collaboratively to investigate refraction, carrying out some fantastic experiments into the effects of bending light. Furthermore, they will have a chance to predict what will happen in an exciting investigation into the visible spectrum. They will work in a</p>	<p>1a Living systems</p> <p>Students study the cell is the unit of living organisms; there are similarities and differences between plant cells, animal cells and unicellular organisms; the function of the human skeleton and how movement is brought about via joints and muscles.</p> <p>1b The particulate nature of matter</p> <p>The essential points covered are: the particle diagram for the three states of matter, the names of the processes to change state. This then moves on to mixtures and how they differ from pure chemicals and the separation techniques that can be used to change mixtures into pure substances.</p> <p>1C Forces and motion</p> <p>Students study the motion of objects and how this can be represented graphically. They then analyse a range of forces</p>	<p>1a Photosynthesis, respiration and circulation</p> <p>Students study photosynthesis in plants, gas exchange systems in plants and animals (including the structure and function of the lungs and the circulatory system in humans) and the similarities and differences between aerobic and anaerobic respiration.</p> <p>1b Acids and alkalis</p> <p>Students study the pH scale, the strength of acidity and alkalinity and the names of some everyday acids and alkalis. Strong acids and alkalis are very corrosive and students will learn how these substances are dealt with in the laboratory as well as the associated hazards symbols and the risks involved in using these substances. Students will study neutralisation reactions of both strong and weak acids, developing their skills in both word and symbol equations. These reactions will be put into context of neutralisation reactions and their importance to the environment and health.</p> <p>1C The earth and the atmosphere</p> <p>Students study the composition and</p>

	plastic and carbon dioxide.	hands-on way to explore how light creates the colours we see, designing code messages. Finally, they will learn about Isaac Newton and his theory of light and colour, performing a shadow puppet play about his discoveries and ideas.	acting on objects, including the concept of force pairs, contact and non-cintact forces. They then go on to measure frictional forces and the behaviour of materials when forces act on them	structure of the earth, including the inner core, outer core, mantle and crust, the processes and the rock cycle and the characteristics of igneous, sedimentary and metamorphic rocks. The focus then moves to the Earth as a source of resources, and evaluating humanity’s impact on the environment, including how human activities have affected the carbon cycle and the composition of the atmosphere.
<p>2 Spring Term</p> <p>2a 6 weeks</p> <p>2b 6 weeks</p> <p>(12 week total)</p>	<p>2a Growing up and growing old - Children will learn about the life cycle of a human being. They will investigate the development of babies and compare the gestation period of humans and other animals. They will learn about the changes experienced during puberty and why these occur. The final investigation will be about the changes to the body as humans get older, as well as comparing the life expectancy of different animals.</p> <p>2b Earth and space – learning about how ideas about space have changed over time, describing the features of the planets and their place and movement in the solar system using evidence. Exploring the causes of day and night and how the Earth and Moon move</p>	<p>2a Classification – This unit starts by sorting animals into groups based on their similarities and differences. Children will extend their learning to find out about the standard system of classification first developed by Carl Linnaeus, choosing an animal and researching its classification. The children will have the opportunity to design their own ‘curious creature’ and classify it based on its characteristics. They will learn about micro-organisms, and conduct an investigation into the growth of mould on bread. Furthermore, the children will use play dough to create a new single celled</p>	<p>2a Diet and health, nutrition and digestion</p> <p>Students learn about the 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 consequences of imbalances in the diet, including obesity, starvation and deficiency diseases; the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes as biological catalysts); the importance of</p>	<p>2a Waves</p> <p>Students study how different types of waves transfer energy from place to place; the motion of particles within water and sound waves and how waves superimpose each other; the reflection and refraction of light and the applications of mirrors and lenses; how sound is transmitted and heard along with the applications of sound waves.</p> <p>2b Reproduction and growth</p> <p>Students study the differences between sexual and asexual reproduction, pollination, fertilisation and seed dispersal in flowering plants, human reproduction, the menstrual cycle and pregnancy.</p>

	<p>relative to the Sun.</p>	<p>micro-organism and explain how it is classified and why. Finally, the children will put their learning into practice by creating a field guide to the living things in their local area, showing how and why each one is classified.</p> <p>2b Body systems - Children will build on their knowledge and understanding of different systems within the body. They will research the parts and functions of the circulatory system. They will focus on how nutrients are transported around the human body. Children will explore how a healthy lifestyle supports the body to function and how different types of drugs affect the body.</p>	<p>bacteria in the human digestive system.</p> <p>2b Atoms, elements and compounds</p> <p>Students study and use the particle model to describe elements and compounds. They understand that the smallest particles of elements are atoms and learn the basic Dalton model for an atom. Students understand how elements exhibit patterns and trends in their properties, how the Periodic table represents these patterns and trends visually. Students learn how to observe chemical reactions and describe them in word equations.</p>	<p>2c Space</p> <p>Students study; the place of Earth in the solar system and the universe as a whole; the properties of stars and the behaviours of the planets held in orbit around them by gravity forces; the structure of the Universe and the technology used to gather evidence about it.</p>
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<p>3 Summer Term</p> <p>3a 5 weeks 3b 7 weeks (12 week total)</p>	<p>3a Circle of life – learning about the life cycles and basic reproduction of various animal species. Investigating conditions required for germination and learning about life processes and reproduction in plants.</p> <p>3b Let’s get moving (forces) - The children will identify forces and complete force diagrams. They will find out about Isaac Newton and his discoveries about gravity. They will look for patterns and links between the mass and weight of objects, using newton metres to measure the force of gravity. Furthermore, they will work collaboratively to investigate air and water resistance, participating in challenges to design the best parachute and boat. They will have the opportunity to work in a hands-on way to explore friction, developing their own brake pad for a tricycle. Finally, they will find out about different mechanisms, including levers, gears and pulleys, and will design their own marvellous machine.</p>	<p>3a Dinosaurs and evolution - Children should already have from year 4 the appropriate understanding of fossils, habitats and human development in order to grasp the concepts and ideas presented to them in these lessons. Children will learn about variation and adaptation. They will be able to explore how both Charles Darwin and Alfred Wallace separately developed their theories of evolution. They will examine the scientific evidence from plants and animals that has been gathered to support the theory of evolution.</p> <p>3b Electricity - Children will learn to represent circuits using symbols in a diagram. They will learn about two of the most important scientific inventors in the field of electricity – Thomas Edison and Nikola Tesla. Children will get the opportunity to develop their understanding of what electricity is and how to measure it. As well as conducting their own investigation, they will get the opportunity to create their own torch!</p>	<p>3a Electricity and magnetism</p> <p>Students study the nature and effects of static electricity followed by current, voltage and resistance in circuits and, finally magnetism and electro-magnetism. The essential points to cover are; charges and charging by friction, electrostatic effects, current in circuits and at junctions, voltage and energy, resistance, simple magnetism and magnetic fields and finally electromagnets and their applications.</p> <p>3b Reactions</p> <p>Students study and recap on the structure of the Periodic Table and investigate the reactivity of metals and the acidity of different oxides. They then discover the difference between chemical and physical change and look at the characteristics of exothermic, endothermic, combustion, oxidation and reduction reactions.</p>	<p>3a Materials and everyday chemistry</p> <p>There is a major focus on scientific enquiry, such as the types of reactions – from precipitation to fermentation – that all happen around us and their everyday uses. Students study metabolic systems, explore chemical synthesis and issues including sustainability of resources and solving problems with waste management. They study polymers and their uses, ceramics and composite materials, as well as the use of secondary sources to investigate trends in changing fuel usage and the development of medicines. Finally they investigate chemical reactions that take place when cooking food and their importance.</p> <p>3b Energy</p> <p>Students study a wide range of energy transfers and energy resources with particular focus on heating and cooling. They explore the advantages and disadvantages of different energy resources, evaluating their suitability for production of electricity. Students then investigate the various methods of heating and cooling, finding ways to control energy transfer. Finally students look at calculations involved with energy transfer including work done, power, and the costs of domestic electricity.</p>
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Project Overview -

Dept 2019/2020

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