Science Sequence Overview Year 3 – Year 6

We are Biologists

Year	Term	Animals including humans (evolution and inheritance)	Living things and their habitats	Plants and human growth (life cycles)
3	AUT	**Skeletons and muscles and nutrition (14hours)** Link to KS1 Animals inc humans and living things **Nutrition (6hours)** Link with DT and the Eatwell plate. Children will learn to the 4 major food groups for nutrition and how they affect the body. They also need to understand what it means to have a healthy balanced diet. **Focus Scientist:** Elise Widdowson. **Skeletons and muscles (8hours)** Children will learn the purpose of a skeleton and how it keeps the body supported, protected and allows animals to move. They will be able to name some of the bones in the skeletal system including the rib cage, spine and skull. They will understand that muscles also aid the body in movement. **Focus Scientist:** Greg Whyte OBE **Key working scientifically objectives**: WS5, WS9		
	SPR 1			
	SPR 2/SUM 1			**Parts of the plant, purpose and seed dispersal** After recapping KS1 plant knowledge the children will begin to describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Key focus on 7 life processes of a living thing (MRS GREN). They will be able to name the key stages in a flowering plants life cycle including pollination, seed formation and seed dispersal. Children will then explore the requirements for plant life and growth through investigations - links to previous learning from rocks topic with the composition of soil. They will then investigate how water is transported within a plant. **Focus scientist**: Katherine Esau **Key working scientifically objectives**: WS2, WS3, WS6
	SUM 2			
4	AUT	**Teeth and digestion** **Teeth, digestion and food chains** Key link with Y3 and life processes (excretion). Children are required to remember the simple functions of the digestive system. Linking this with the different types of teeth and their functions. Children then move onto interpreting a variety of food chains beginning to identify producers, predators and prey. **Focus scientists**: Ivan Pavlov and a local, ideally parent, dentist**.** **Key working scientifically objectives:** WS1 and WS4		
	SPR 1			
	SPR 2/SUM 1		**Observable Classification (trees)** Key links to KS1 and Y3. Cross curricular links to Geography. Children are expected to be able to group living things on their observable features. They will carry out exploration of classification keys to aid grouping and identification of a variety of living things while linking them to their local and wider environment. Children should recognise that changes in the environment can posing danger to living things. **Focus scientists:** Carl Linnaeus and Rachel Carson **Key working scientifically objectives:** WS1, WS4, WS5	
	SUM 2			
5	AUT			
	SPR 1			**Human growth** This unit builds on Year 3 Plants and links very closely with Y5 Life Cycles. It also leads into Y6 SRE (PSHCE). Children learn about the seven stages of the human life-cycle, the changes that happen to the human body during puberty and about gestations periods and how they vary

				between different species. All of this is linked to previous learning (Y3 Plants and Y4 Living Things) on the 7 life processes - Mrs Gren. **Focus scientist:** Robert Winston **Key working scientifically objectives:** WS12, WS14 and WS15
	SPR 2/SUM 1		**Living Things, Life cycles and Reproduction** This unit links closely to and builds on learning from Y3 Plants and Y5 Human Growth and again leads into Y6 SRE (PSHCE). In it children will learn about sexual and asexual plant reproduction and the life cycles of birds, frogs and butterflies. They will compare this knowledge with what they have learnt about the Human Life Cycle and in the context of deepening their understanding of the importance of the seven life processes – Mrs Gren. The unit also links to the children's work on classification (Y4 and Y6) by identifying similarities and differences between the life cycles of different species of plants and animals. **Focus scientists:** Jane Goodall and Sir David Attenborough **Key working scientifically objectives:** WS10, WS11 and WS14	**Living Things, Life cycles and Reproduction** This unit links closely to and builds on learning from Y3 Plants and Y5 Human Growth and again leads into Y6 SRE (PSHCE). In it children will learn about sexual and asexual plant reproduction and the life cycles of birds, frogs and butterflies. They will compare this knowledge with what they have learnt about the Human Life Cycle and in the context of deepening their understanding of the importance of the seven life processes – Mrs Gren. The unit also links to the children's work on classification (Y4 and Y6) by identifying similarities and differences between the life cycles of different species of plants and animals. **Focus scientists:** Jane Goodall and Sir David Attenborough **Key working scientifically objectives:** WS10, WS11 and WS14
	SUM 2			
6	**AUT**			**Evolution and Inheritance (including Fossils)** This unit links work from different strands, i.e. Biology and Chemistry e.g. genetics and environmental adaption, and is included in both. Children start by revising their knowledge of how fossils are formed from Y3 Rocks. They then explore how scientists use fossil discoveries to learn about living things from the past by identifying similarities and differences between them. The key learning is the concepts of: evolution by natural selection, inheritance and adaption. Evolution and inheritance link closely to all previous work on Plants and Living Things and adaption to previous work on Habitats. Developing the children's appreciation of how these changes take place over extended periods of time (see year 3 Rocks) is vital to securing deeper conceptual understanding of these ideas. Reproduction i.e. offspring, variation, characteristics and mutation are other important ideas covered. **Focus scientists:** Charles Darwin and Mary Anning **Key working scientifically objectives:** WS12, WS14 and WS15
	SPR 1		**Classification (Linnaeus)** This unit of work builds directly on from Y4 Classification and also links to all previous KS2 work on Plants and Animals i.e. how we can use similarities, differences and observable properties to classify all living things systematically In this unit children will revise Mrs Gren and how to use classification keys from Y4 before exploring/investigating how to use these in greater depth. They will then learn about Carl Linnaeus' seven level system of classification and how scientists are able to use it to name and differentiate between all of the millions of different species on Earth. **Focus scientist:** Carl Linnaeus **Key working scientifically objectives:** WS10, WS12 and WS14	
	SPR 2/SUM 1			
	SUM 2	**Circulation** This unit links to and builds on our previous work on nutrition and how the body works (Y3 Skeletons and muscles/nutrition, Y4 Teeth and digestion). It also makes several important cross-curricular links e.g., the importance of staying fit and healthy (P.E.) and substance abuse/addiction and mental health (PSHCE). In this unit children will learn to identify and name the main parts of the human circulatory system, and to describe the functions of the heart, blood vessels and blood. They will also learn how nutrients and water are transported around the body. They will investigate and recognise the impact of diet, exercise, drugs and lifestyle on how bodies function. **Focus scientist:** Barbara Casadei **Key working scientifically objectives:** WS10, WS11 and WS13		

Year	Term	We are Physicists		
		Light, Dark and Sound	**Forces and space**	**Electricity**
3	**AUT**		**Forces and Magnets** In this unit children will revise KS1 forces (pushes and pulls). They will learn about contact forces i.e. friction and investigate the properties of materials in this context. Pupils then investigate magnetic materials and magnetism; learning about poles, polarity, attract and repel and start thinking about forces acting at a distance. **Focus scientists:** William Gilbert and Mary Somerville. **Key working scientifically objectives:** WS1, WS2 and WS3.	
	SPR 1			
	SPR 2/SUM 1	**Light and dark** Light is covered in KS1 in the context of what plants need to grow and the properties of everyday materials. Sun safety is also briefly covered. In this unit children will learn what a light source is and how we use the reflection of light to see. They also learn that dark is the absence of light and how shadows are formed. They then investigate how and why the size and shape of shadows change. **Focus scientist:** Ibn al-Haytham **Key working scientifically objectives:** WS4, WS5 and WS6		
	SUM 2			
4	**AUT**			**Electricity - Torches** Mild links to previous work on properties of materials from KS1. In this unit children will learn to identify common appliances that run on electricity. They will learn all the separate components that are required for a simple series circuit that lights up a bulb. They will understand how a switch can be used to turn a circuit on and off. They will apply this knowledge to design and build their own torches. They will start to learn how to draw simple circuit diagrams and how to use a key of symbols for this. They will also learn about common insulators and conductors and how to use electricity safely. **Focus scientists:** Alessandro Volta and Claire J Tomlin **Key working scientifically objectives:** WS2, WS6 and WS8
	SPR 1	**Sound** Much of this unit is stand-alone but key comparisons need to be made between how sound and light travel and especially their relative speeds. The unit also links closely to core concepts within the Music curriculum. Children will learn how sound is made, how we hear, how sound travels, how sound is measured and how and why it changes (i.e. pitch and volume). **Focus scientists:** Alexander Graham Bell and Beth O'Leary **Key working scientifically objectives:** WS7, WS8 and WS9		
	SPR 2/SUM 1			
	SUM 2			
5	**AUT**		**Space and the Solar System** Much of this unit is stand-alone but it offers excellent curriculum links with Y3/Y6 Light and Dark (i.e. shadows and day/night) and Y3/Y5 forces (i.e. gravity as an example of a non-contact force). Children learn about the solar system and how the objects within it move relative to each other. They also learn that the Sun, Earth and Moon are approximately spherical and how the Earth's rotation explains day and night and the apparent movement of the sun across the sky. **Focus scientists:** Sir Isaac Newton, Galileo and Tim Peake. **Key working scientifically objectives:** WS14 and WS15	
	SPR 1		**Forces (contact and non-contact)/ pulleys, levers and gears** This is an important unit that pulls together and develops previous work on contact forces (Y3), non-contact forces (Y3/Y5) and friction (Y3). The children develop their understanding of concept forces by learning how to use levers, pulleys and gears to scale up the impact of force. The children's understandings of non-contact forces are developed through investigating gravity. Their understanding of friction is developed to incorporate the concepts of resistance and balanced/ unbalanced forces.	

Science Curriculum Overview

			Focus scientists: Sir Isaac Newton, Galileo and Archimedes. **Key working scientifically objectives:** WS10 and WS12	
	SPR 2/SUM 1			
	SUM 2			
6	**AUT**			**Electricity – Advanced Circuits/Burglar Alarms** This unit embeds and develops the children's learning from Y4 Electricity. Key learning involves a deeper understanding of what electricity is, why it can be dangerous and how to use circuit diagrams to design and record their work. Children will be given lots of opportunity to investigate how different circuits work, both in series and in parallel, and to explore how switches work and how different voltages can affect the brightness of bulbs of the volume of buzzers. They will also be asked to compare what happens in their investigations and to give reasons for the similarities and differences in the results that they observe. **Focus scientist:** Nicola Tesla **Key working scientifically objectives:** WS10, WS13 and WS14
	SPR 1			
	SPR 2/SUM 1			
	SUM 2	**Light and dark** This unit embeds and develops the children's learning from Y3 Light and dark. Key learning is a deeper conceptual understanding of what light is (energy i.e. photons), how/the speed it travels (N.B. making links to Y4 Sound) and what happens to it when it passes through a range of different materials i.e. refraction (N.B. again linking to Y4 sound). Children will also be introduced to the concept of light as a spectrum and learn about and have opportunities to research and investigate how the eye works. **Focus scientists:** Sir Isaac Newton and Neil deGrasse Tyson **Key working scientifically objectives:** WS13, WS14 and WS15.		

Year	Term	We are Chemists	
		Matter – properties materials and states	**Rocks**
3	**AUT**		**Rocks (properties of materials/ fossils)** Links to previous work on comparing and grouping based on properties of materials from KS1. In this unit children will compare, test and group different rocks according to their: hardness/softness; permeability/impermeability; durability; and, density (links to Y5 Properties of materials) and investigate how these properties affect what different rocks are useful for in the local environment (Geography links). They will then develop this knowledge by learning how the three main types of rock (sedimentary, igneous and metamorphic) are formed (links to Geography Volcanos, Mountains and Earthquakes). Sedimentary rock is then looked at in more detail in the context of how fossils are formed (Links to Y6 Evolution and Inheritance). Soil is investigated and the children learn what it is made of: air, water, organic matter and minerals (linking to Y3 Plants - nutrition). Throughout this unit the children will be introduced to the concept of changes taking place over varying, but often long, periods of time (Y6 E&I). **Focus scientists:** Mary Anning and Graham Carter **Key working scientifically objectives:** WS1, WS4, WS7 and WS9
	SPR 1		
	SPR 2/SUM 1		
	SUM 2		
4	**AUT**		
	SPR 1	**Matter, properties, materials and states** In this unit children will revise their KS1 learning: names, properties and potential uses of different materials; grouping and compare objects on this basis; and, how the shape of some materials can be changed by force (link to Y3 Forces). They will then learn about and investigate solids, liquids and gases and be introduced to the particle theory of matter. They will learn about changes of state due to heating and cooling and study the concepts of condensation, evaporation, freezing and melting by learning about the water-cycle. They will be introduced to the concepts of reversible and irreversible change in preparation for Y5. **Focus scientists:** Robert Boyle and Dorothy Hodgkin **Key working scientifically objectives:** WS2, WS6 and WS7.	
	SPR 2/SUM 1		
	SUM 2		
5	**AUT**		
	SPR 1		
	SPR 2/SUM 1		
	SUM 2	**Properties of materials** This is an important unit which brings together, develops and applies previous work/concepts from Y4 States of Matter, Y4 Electricity, Y3 Rocks and Y3 Light and Dark. It also links with our classification units in Biology (Y4 and Y6) i.e. classifying items by their properties. In this unit children will learn about, test, compare and group materials by their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. They will learn how to create solutions (solubility/insolubility) and how you can separate out some materials but not others using filtering, sieving and evaporation. They will also learn and investigate how some changes result in new materials that cannot be reversed, e.g. burning and using acids. All of this work will deepen their understanding of the particle theory of matter and the concepts of reversible and irreversible changes (Y4 Matter). **Focus scientists:** Hypatia and Ahmed H.Zewail **Key working scientifically objectives:** WS10, WS11 and WS13	
6	**AUT**		**Evolution and Inheritance (including Fossils)** This unit links work from different strands, i.e. Biology and Chemistry e.g. genetics and environmental adaption, and is included in both. Children start by revising their knowledge of how fossils are formed from Y3 Rocks. They then explore how scientists use fossil discoveries to learn about living things from the past by identifying similarities and differences between them. The key learning is the concepts of: evolution by natural selection, inheritance and adaption. Evolution and inheritance link closely to all previous work on Plants and Living Things and adaption to previous work on Habitats. Developing the children's appreciation of how these changes take place over extended periods of time (see year 3 Rocks) is vital to securing deeper conceptual understanding of these ideas. Reproduction i.e. offspring, variation, characteristics and mutation are other important ideas covered. **Focus scientists:** Charles Darwin and Mary Anning **Key working scientifically objectives:** WS12, WS14 and WS15
	SPR 1		
	SPR 2/SUM 1		
	SUM 2		