Science Curriculum

	Autumn Term	Spring Term	Summer Term
Year 5 2 lessons per week	**Out of this world**	**Material world**	**Circle of life**
	In this topic, pupils learn about space. Starting with the Solar System, they look next at how ideas about space have changed over time before they explore what causes us to experience night and day on Earth.	In this topic, pupils learn about materials and how they change. First, pupils test properties of materials before looking at how materials dissolve, what a solution is and evaporation. Finally, pupils compare reversible and irreversible changes.	In this topic, pupils look at the life cycles of various species including mammals, amphibians, fish and birds. Pupils also look at and describe the life process of reproduction in plants and animals.
	Let's get moving	**Amazing changes**	**Growing old and growing up**
	In this topic, pupils learn about forces and machines. They start with the force of gravity before learning about friction forces, including air and water resistance. Finally, pupils investigate how simple machines work.	In this topic, pupils extend their learning about materials, investigating how they change and which changes are reversible and irreversible. The topic concludes by looking at how these properties are applied in the real world.	In this topic, pupils look at and describe the changes as humans develop to old age. Pupils draw a timeline to indicate stages in the growth and development of humans and learn about the changes experienced in puberty.

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Year 6 2 lessons per week	**Classifying living things**	**Evolution and Inheritance**	**Electricity**
	Pupils build on their learning about group living things from Year 4 by looking at the classification system in more detail. The topic is divided into two units; pupils first revisit their knowledge of classification and creating keys, before developing their knowledge by looking at fungi and bacteria. Pupils also look at the work of Carl Linnaeus, the scientist who first made important the function of naming and classifying to 'identify' organisms	Building on what pupils have learned about fossils in Year 3, pupils find out more about how living things have changed over time. Pupils are introduced to the idea that characteristics are passed from parents to their offspring, but that they are not exactly the same. Pupils should also appreciate that variation over time can make animals more or less likely to survive in particular environments (adaptation). Pupils look at evolution and Charles Darwin's theory of natural selection, as well as palaeontologist Mary Anning's work with fossils.	This topic builds on the Year 4 work on electricity, taking it into the scientific use of symbols for components in a circuit, as well as considering the effect in more detail of changing components in a circuit. Pupils have the opportunity to apply their learning by creating an electric game.
	Healthy bodies	**Light**	**Secondary Ready - Enquiry Processes**
	In this topic pupils build on learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system). It considers life processes that are internal to the body, such as the circulatory system. The impact of lifestyle on bodies, particularly of humans, is considered. Scientists are continually finding out what is good and bad for us, and their ideas do change as more research is carried out.	The topic introduces the concept of light travelling in straight lines. It starts by looking at beams of light and how light travels to enable pupils to understand how we see things. This understanding is then applied to the production of shadows and starts to look at how light is reflected. The topic then takes the learning into the realm of coloured light and rainbows, using scientific skills to raise and answer questions. It builds on work carried out in Year 3 on light, shadows and reflection.	By 'working scientifically', pupils will work in similar ways to scientists. • Asking scientific questions • Planning investigations • Collecting, recording, and presenting data • Analysing patterns in data • Evaluating data and methods

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Year 7 4 lessons per week	**Movement & Cells**	**Acids & Alkalis, Metals & non-metals**	**Plant reproduction, variation & human reproduction**
	In this 'Big Idea', pupils learn: • why they have a skeleton and how it works together with your muscles to enable movement • what is found inside organisms • what plants and animals are made from • what the tiniest organism is • how to use a microscope	Chemical reactions are very useful. They make new substances such as medicines, fabrics, and building materials. In this 'Big Idea', pupils learn: • the chemical reactions of metals and of acids • how to use patterns in properties to predict products • how to make salts	In this 'Big Idea', pupils learn: • the life cycle of a flowering plant and the differences between wind-pollinated and insect-pollinated flowers • the steps of reproduction from pollination to fertilisation, and finally to germination • how to identify their differences and explain how they are caused • how variation can help organisms survive in difficult environments • what changes take place during adolescence • how new life is created and develops, resulting in the birth of a baby
	Particle Model & Separation	**Energy Costs & Energy Transfers**	**Earth Structure & The Universe**
	The batteries in your phone rely on lithium metal. Lithium exists on Earth in rocks and as a lithium chloride solution. How can lithium chloride, and other substances, be separated from their solutions? In this 'Big Idea', pupils learn: • why substances have different properties in solid, liquid, and gas states • what happens when a substance changes from one state to another	In this 'Big Idea', pupils learn: • how to calculate energy in foods and fuels • how electricity is generated • why it is helpful to reduce the time we use appliances • how scientists think about energy, including the idea of dissipation • how energy is transferred between different stored • how we can use energy calculations to tell us which processes are possible	Everything we need to live comes from the Earth, the oceans, the air, and the Sun. In this 'Big Idea', pupils learn: • what the Earth is made from and its structure • how materials are recycled in the 'rock cycle' • the size and scale of our Solar System and galaxy • how the movement of the Earth and Moon explains the observations that we make of the Sun and the night sky
	Speed and Gravity	**Interdependence & Plant Reproduction**	**Potential Difference & Current**
	What is the link between the Moon orbiting the Earth and a falling object on Earth? In this 'Big Idea', pupils learn: • what are forces • how forces arise • how they change the motion of an object • how to measure speed and how to tell the story of a journey with a graph	Our environment is very important. It gives us the things we need to live, like food, water and shelter. In this 'Big Idea', pupils learn: • how organisms are connected and how they interact within ecosystems • feeding relationships and competition between species	In this 'Big Idea', pupils learn: • what happens in a circuit what batteries do and how to use circuit components to make circuits do different jobs • what electric charge is and how objects can become 'charged' • how to the concept of charge is used to explain electric shocks and lightning

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Year 8 4 lessons per week	**Sound & Light**	**Respiration & Photosynthesis**	**Types of Reaction & Chemical energy**
	In a thunderstorm, you see a flash of lightning and hear thunder. Your eyes and hears detect light and sound. In this 'Big Idea', pupils learn: • how you hear sounds • what changes when you make sounds of different pitch and loudness • how we see objects • how light behaves when it hits different materials	How do we get energy from food? In this 'Big Idea', pupils learn: • how the body transfers energy from food so it can be used for movement, growth, and repair by the process of respiration • how anaerobic respiration in micro-organisms can be used to make bread • how plants produce food by the process of photosynthesis • the structure of a leaf • why minerals are required for healthy growth	Chemical reactions are vital to life. We depend on chemical reactions – including the products they make and the energy they transfer – for everything we do. In this 'Big Idea', pupils learn: • what happens to atoms in chemical reactions • how chemical reactions transfer energy • why chemical reactions are important
	Breathing & Digestion	**Climate & Earth Resources**	**Evolution & Inheritance**
	What do we need to stay healthy? In this 'Big Idea', pupils learn: • how we breathe • how smoking, drinking alcohol and taking drugs can damage the respiratory system • what makes a balanced diet • how your body breaks down the food you eat to release energy • what other nutrients you need to live and grow	Where do we get all the materials we need? All the materials come from the earth, the oceans, or the atmosphere. In this 'Big Idea', pupils learn: • how we extract metals from the earth • what we can do to prevent vital resources running out • what are the cause and effects of global warming	The world is full of lots of different types of living things. In this 'Big Idea', pupils learn: • how the organisms that exist today have evolved • how scientists are trying to prevent further species from becoming extinct and preserve biodiversity • how you inherit characteristics from your parents through genetic material • how genetic material in some organisms is being modified
	Elements & Periodic Table	**Heating & Cooling**	**Magnets & Electromagnets**
	What is stuff made from? In this 'Big Idea', pupils learn: • what elements make up everything in the Universe • how elements can be classified • the patterns in the physical and chemical properties of different elements	Athletes can used energy in chemical stores to run, jump or throw. Where does this energy end up? There are many different ways of transferring energy between stores. In this 'Big Idea', pupils learn: • how energy is transferred with radiation and particles • how energy transfer can be reduced	You have probably played with magnets and felt what happens when you push two magnets together. There are many magnets in your house and many of them you cannot see. In this 'Big Idea', pupils learn: • how to make a magnet using electricity • how to make a magnet stronger • how electromagnetic devices like bells and speakers work • what makes Earth's magnetic field