WESTON LULLINGFIELDS CE PRIMARY SCHOOL SCIENCE

Progression of Skills in each curriculum area

The document below has been designed to show how we cover all of the relevant Science knowledge and skills across our school curriculum.

	ACORNS		OAK CLASS			
	ANIMALS INCLUDING HUMANS					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge	•Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals •Identify and name a variety of common animals that are carnivores, herbivores and omnivores. •Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets). •Identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense.	•Notice that animals, including humans, have offspring which grow into adults •Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) •Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	•Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat •Identify that humans and some animals have skeletons and muscles for support, protection and movement.	•Describe the simple functions of the basic parts of the digestive system in humans •Identify the different types of teeth in humans and their simple functions •Construct and interpret a variety of food chains, identifying producers, predators and prey	•Describe the changes as humans develop from birth to old age.	•Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood •Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function •Describe the ways in which nutrients and water are transported within animals, including humans.
Working Scientifically	-use observations to compare and contrast animals at first hand or through videos and photographs	-observe, through video or first-hand observation and measurement, how different animals,	-identify and group animals with and without skeletons and observe and compare their movement -explore ideas about what would happen if humans did not have skeletons	-compare the teeth of carnivores and herbivores, and suggest reasons for differences	-research the gestation periods of other animals and compare them with humans	- explore the work of scientists and scientific research about the relationship between diet,

-describe how they identify and group animals group animals according to what they eat -use their senses to compare different textures, sounds and smells.	including humans, grow -ask questions about what things animals need for survival and what humans need to stay healthy suggest ways to find answers to their questions.	-compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat -research different food groups and how they keep us healthy and design meals based on what they find out.	-find out what damages teeth and how to look after them draw and discuss their ideas about the digestive system and compare them with models or images.	-find out and record the length and mass of a baby as it grows.	exercise, drugs, lifestyle and health.	
Reptiles Mammals Amphibians (+ examples of each) Herbivore Omnivore Carnivore	Survival Offspring Calf Exercise Hygiene	Muscles Contract Relax Joints Nutrition Nutrients Carbohydrates Protein	Fats Fibre Vitamins Minerals invertebrates vertebrates	Digestive system Small Intestine Large Intestine Colon Saliva Canine Incisor Molar Producers	Foetus Embryo Womb Gestation Development Puberty Life Cycle Fertilisation	Reproduce Life Expectancy skeletal muscle digest	circulatory system blood vessels lifestyle nutrients substances

LIVING THINGS AND THEIR HABITATS						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge		•Explore and compare the differences between things that are living dead and things that have never been alive •Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other. •Identify and name a variety of plants and animals in their habitats including micro - habitats •Describe how animals obtain their food from plants and other animals using the idea of a simple food chain and identify and name different sources of food.		•recognise that living things can be grouped in a variety of ways •explore and use classification keys to help group identify and name a variety of living things in their local and wider environment •recognise that environments can change and that this can sometimes pose dangers to living things	•Describe the differences in the life cycles of a mammal an amphibian an insect and a bird •Describe the life process of reproduction in some plants and animals.	•Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including micro - organisms plants and animals •Give reasons for classifying plants and animals based on specific characteristics

Working Scientifically		-Sort and classify things according to whether they are living, dead or were never alive, and recording their findings using charts. -Describe how they decided where to place things, exploring questions such as: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. -Construct a simple food chain that includes humans (e.g. grass, cow, human). -Describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.				
		Living habitat Energy Food chain Predator Prey Woodland desert Source Adapt.	Vertebrates Invertebrates	Environment Human impact	Life Cycle Mammal Reproduction Amphibian Offspring	classify classification domain kingdom phylum class family genus species characteristics micro-organisms organism flowering non-flowering

PLANTS						
Knowledge	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

	•Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen •Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers.	•Observe and describe how seeds and bulbs grow into mature plants •Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	•Identify and describe the functions of different parts of plants; roots, stem, leaves and flowers. •Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant. •Investigate the ways in which water is transported within plants. •Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			
Working Scientifically	-observe closely, perhaps using magnifying glasses, and compare and contrast familiar plants; -describe how they were able to identify and group them, and draw diagrams showing the parts of different plants including trees. keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.	-observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth set up a comparative test to show that plants need light and water to stay healthy.	-compare the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser -discover how seeds are formed by observing the different stages of plant life cycles over a period of time -look for patterns in the structure of fruits that relate to how the seeds are dispersed. observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.			
	Deciduous Evergreen Blossom Petals Roots	Bulb Stem Temperature Growth	nutrients reproduction transportation transpiration	dispersal pollination		

SEASONAL CHANGE

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge	•Observe changes across the four seasons •Observe and describe weather associated with the seasons and how day length varies.					
Working Scientifically	-make tables and charts about the weather; and make displays of what happens in the world around them, including day length, as the seasons change **Seasons weather Summer Spring Autumn Winter**					

	MATERIALS		ROCKS	STATES OF MATTER	PROPERTIES & CHANGES OF MATERIALS	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge	•Distinguish between an object and the material from which it is made. •Identify and name a variety of everyday materials including wood plastic glass water and rock. •Describe the simple physical properties of a variety of everyday materials. •Compare and group together a variety of everyday materials	•Identify and compare the suitability of a variety of everyday materials including wood metal plastic glass brick rock paper and cardboard for particular uses •Find out how the shapes of solid objects made from some materials can be changed by squashing bending twisting and stretching.	•Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties •Describe in simple terms how fossils are formed when things that have lived are trapped within rock •Recognise that soils are made from rocks and organic matter.	•Compare and group materials together according to whether they are solids liquids or gases •Observe that some materials change state when they are heated or cooled and measure or research the temperature at which this happens in degrees Celsius (°C) •Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	•Compare and group together everyday materials on the basis of their properties including their hardness solubility transparency conductivity (electrical and thermal) and response to magnets •Understand that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution •Use knowledge of solids liquids and gases to decide how mixtures might be separated including through filtering sieving and evaporating	

	on the basis of their physical properties.				•Give reasons based on evidence from comparative and fair tests for the particular uses of everyday materials including metals wood and plastic •Demonstrate that dissolving mixing and changes of state are reversible changes •Explain that some changes result in the formation of new materials and that this kind of change is not usually reversible including changes associated with burning and the action of acid on bicarbonate of soda	

Working Scientifically	-performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'	-comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs) -observe closely, identifying and classifying the uses of different materials, and recording their observations.	-observe rocks, including those used in buildings and gravestones, and explore how and why they might have changed over time; -use a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. -research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. -explore different soils, identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. -raise and answer questions about the way soils are formed.	-grouping and classifying a variety of different materials; -exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). -research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. -observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and -investigate the effect of temperature on washing drying or snowmen melting.	-carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' -compare materials in order to make a switch in a circuit -observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. -research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.		
	Rough Smooth Stretchy Stiff	Bending Twisting Stretching Elastic Foil	Dull Waterproof Absorbent Fabrics	Fossils Sandstone Granite Marble Rock	Pumice Crystals Absorbent Sedimentary Organic matter Grains	Solid Liquid Gas Evaporation Condensation Particles	Freezing solidify changing state degrees Celsius water cycle water vapour	properties solubility transparency electrical - conductor thermal conductor magnets	dissolve solution separate separating reversible changes dissolving evaporation filtering	melting irreversible new material quantitative measurements conductivity insulation

		sieving	chemical

FORCES AND MAGNETS						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge			•Compare how things move on different surfaces •Notice that some forces need contact between two objects but magnetic forces can act at a distance •Observe how magnets attract or repel each other and attract some materials and not others •Compare and group together a variety of everyday materials on the basis of whether they		•Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object •Identify the effects of air resistance water resistance and friction that act between moving surfaces •Recognise that some mechanisms including levers pulleys and gears allow a smaller force to have a greater effect.	

			are attracted to a magnet and identify some magnetic materials •Describe magnets as having two poles •Predict whether two magnets will attract or repel each other depending on which poles are facing.			
Working Scientifically			-compare how different things move and group them -raise questions and carry out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions; -explore the strengths of different magnets and find a fair way to compare them -sort materials into those that are magnetic and those that are not; -look for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another -identify how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.		-explore falling paper cones or cup-cake cases, and design and make a variety of parachutes and carry out fair tests to determine which designs are the most effective -explore resistance in water by making and testing boats of different shapes design and make products that use levers, pulleys, gears and/or springs and explore their effects.	

Vocabulary			Magnetic Force Attract Repel Friction	Poles Magnetic Poles		gravity air resistance water resistance friction, surface force, effect accelerate decelerate	mechanism pulley gear spring theory of gravitation Galileo Galilei Isaac Newton	

EARTH AND SPACE						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Knowledge					•Describe the movement of the Earth and other planets relative to the Sun in the solar system •Describe the movement of the Moon relative to the Earth •Describe the Sun Earth and Moon as approximately spherical bodies •Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	

Working Scientifically					-compare the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; -construct simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day -find out why some people think that structures such as Stonehenge might have been used as astronomical clocks.	
Vocabulary				Earth Sun Moon Orbit Axis Rotation Spherical Day	Night Hemisphere Season Tilt Phases of the Moon star constellation Solar system	Mercury Venus Mars Jupiter Saturn Uranus Neptune Pluto

LIGHT						
Knowledge	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

			•Recognise that they need light in order to see things and that dark is the absence of light •Notice that light is reflected from surfaces •Recognise that light from the sun can be dangerous and that there are ways to protect their eyes •Recognise that shadows are formed when the light from a light source is blocked by a solid object •Find patterns in the way that the sizes of shadows change.			•Recognise that light appears to travel in straight lines •Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye •Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes •Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Working Scientifically			-looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.			-decide where to place rear-view mirrors on cars; -design and making a periscope and use the idea that light appears to travel in straight lines to explain how it works. -investigate the relationship between light sources, objects and shadows by using shadow puppets -extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).
Vocabulary			Reflective Natural Reflection Artificial			Refraction Reflection Spectrum light source Rainbow object travels shadows straight mirrors reflect periscope filters

SOUND						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
				•Identify how sounds are made associating some of them with something vibrating •Recognise that vibrations from a sound travel through a medium to the ear. •Find patterns between the pitch of a sound and features of the object that produced it •Find patterns between the volume of a sound and the strength of the vibrations that produced it. •Recognise that sounds get fainter as the distance from the sound source increases.		

				-finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses -make earmuffs from a variety of different materials to investigate which provides the best insulation against sound make and play their own instruments by using what they have found out about pitch and volume.		
				Vibration Percussion Wave Wood wind Pitch Brass Tone Insulate		

ELECTRICITY						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
				•Identify common appliances that run on electricity •Construct a simple series electrical circuit identifying and naming its		•Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit •Compare and give reasons for variations in how components function

				basic parts including cells wires bulbs switches and buzzers •Identify whether or not a lamp will light in a simple series circuit based on whether or not the lamp is part of a complete loop with a battery •Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit •Recognise some common conductors and insulators and associate metals with being good conductors.		including the brightness of bulbs the loudness of buzzers and the on/off position of switches •Use recognised symbols when representing a simple circuit in a diagram.
Working Scientifically				-observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.		-systematically identify the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.

Vocabulary				Cells Switches Buzzers Motor Circuit Series Conductors Insulators complete circuit		Amps Volts Voltage Cell Circuit Diagram Symbols

EVOLUTION AND INHERITANCE						
Knowledge	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
						•Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. •Recognise that living things produce offspring of the same kind but normally offspring vary and are not identical to their parents •Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

Working Scientifically						-observe and raising questions about local animals and ow they are adapted to their environment -compare how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels -analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.
Vocabulary				evolution adaption inherited traits adaptive traits	natural selection inheritance Charles Darwin Alfred Wallace	DNA variation offspring fossil