Aldwyn Primary School – Year 5 Science Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	Living things and their habitats	Properties and changes of materials	Animals, including humans	Earth and Space		Forces
Coverage	Flowers, pollination and animal lifecycles	Identify properties of materials, chemical reactions, reversible and irreversible changes	Changes as humans develop, life cycles	Movement of the earth, moon and planets. Night, day, time and seasons		Gravity, air resistance, upthrust, buoyancy, water resistance, friction and levers
Content	•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	•Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity and response to magnets •Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	• Describe the changes as humans develop to old age •Growth and change, gestation, feotal development, baby, child, adolescence, puberty, adult, old age. Human timeline	•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		•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 small force to have a greater effect

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Content		•Use knowledge of solids, liquids and gases to decide how mixtures might be separated including through filtering, sieving and evaporating •Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including 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 bicarbonate of soda		•Use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky		

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Activities	•Pupils should study and raise questions about their local environment throughout the year. They should observe life- cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment •They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall •Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals	•Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4. They should explore reversible changes, including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes •Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. They should find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who	•Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty •Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function. the changes experienced in puberty •Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function	•Pupils should be introduced to a model of the sun and Earth that enables them to explain day and night. Pupils should learn that the sun is a star at the centre of our solar system and that it has 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet (Earth has 1 moon; Jupiter has 4 large moons and numerous smaller ones) Note: pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses •Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric		•Pupils should explore falling objects and raise questions about the effects of air resistance. They should explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall • They should experience forces that make things begin to move, get faster or slow down. Pupils should explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a on a bicycle wheel. Pupils should explore the effects of levers, pulleys and simple machines on movement •Pupils might find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation

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		invented wrinkle-free cotton •Note: pupils are not required to make quantitative measurements about conductivity and insulation at this stage. It is sufficient for them to observe that some materials will feel hotter than others when a heat source is placed against them. Safety guidelines should be followed when burning material		model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus		
Vocabulary	Asexual reproduction, fertilise, gestation, life cycle, reproduction, metamorphosis, pollination, sexual reproduction	Solubility, conductivity, transparency, thermal evaporation, dissolve, bicarbonate of soda, thermal, filtering, melting, separate	Blood vessels, cardiovascular, capillaries, pulse, ventricles, atriums, baby, childhood, adolescence, adulthood, elderly, life cycle	Orbit, solar system, astronomical, planet, rotation, spherical, crescent moon, gibbous moon, eclipse, lunar		Friction, gravity, air resistance, water resistance, levers, pulleys, gears, parachute, Galileo, Newton

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Working Scientifically	•Working scientifically to develop skills in research •Research using secondary sources. Find out about the different habitats and why certain plants and animals are suited to survive in these locations •Report and present findings from enquiries, in oral and written forms using appropriate scientific language •Can children present their research clearly? •Can children present using scientific language?	•Performing simple tests •Using their observations and ideas to suggest answers to questions •Complete comparative and fair tests to predict which materials would dissolve in liquid to form a solution and describing how to recover a substance from a solution	•Working scientifically to develop skills in research •Research using secondary sources. Describe the changes in the human body as we age	•Working scientifically to develop skills in research •Research using secondary sources. What are the distances between the Sun and planets in the solar system? •What facts can I find out about the planets in our solar system? •Impact testing – Fair test to establish the best material to make a space craft from to survive the impact of an asteroid		•Performing simple tests •Using their observations and ideas to suggest answers to questions •How does the surface area of a parachute affect the time it takes to fall to the ground? •How can we use our understanding of forces to protect an object falling to earth? •Can children complete a fair test to create a marble run where the marble is on the move for the longest amount of time •Can children refine their design in response to test data and evaluate their outcomes in terms of forces?

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Assessment	TAPS Assessment – Life cycle research	TAPS Assessment – Dissolving activity	TAPS Assessment – Growth survey	TAPS Assessment – Solar system research		TAPS Assessment - Marble run
Enrichment	Field trips in local area to study native habitats	Baking gingerbread cookies - investigate reversible and irreversible changes	Biology day – 4D Anatomy app to investigate the heart. Human organ torso model	Trip to Jodrell Bank Planetarium		Make a boat to test buoyancy and experiment with air/wind resistance
Prior Learning	EYFS •Comments and questions about the place they live or the natural world •Shows care and concern for living things and the environment •Can talk about things they have observed such as plants and animals •Notices features of objects in their environment •Comments and asks questions about their familiar world	EYFS •Know about similarities and differences in relation to places, objects, materials and living things	EYFS •Be able to identify different parts of their body •Have some understanding of healthy food and the need for variety in their diets •Be able to show care and concern for living things	New unit. However, there are links from other units EYFS •Comments and questions about the place they live or the natural world Year 1 •Observe changes across the four seasons •Observe and describe weather associated with the seasons and how day length varies		EYFS •Know about similarities and differences in relation to objects •Talk about the features of their own immediate environment and how environments might vary from one another Year 2 •May have an awareness of how to make things stop and start, using simple pushes and pulls •They may know about floating and sinking

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Prior Learning	Year 2 •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 microhabitats •Describe how animals obtain their food from Year 2 •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	Year 1 •Distinguish between an object and the material from which it is made •Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock •Describe the simple physical properties of a variety of everyday materials •Compare and group together a variety of everyday materials on the basis of their simple physical properties. Year 2 •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	•Know the effects exercise has on their bodies. Have some understanding of growth and change. Can talk about things they have observed including animals Year 1 •Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. •Identify and name a variety of common animals that are carnivores, herbivores and omnivores Year 2 •Know that animals, including humans, have offspring which grow into adults •Know the basic stages in a life cycle for animals, including humans •Find out and describe the basic needs of animals, including	Year 3 Know that light enables us 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		Year 3 •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 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 .

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	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 microhabitats. •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. Year 4 •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.	changed by squashing, bending, twisting and stretching Year 4 •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.	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. Year 3 •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 other animals have skeletons and muscles for support, protection, and movement.			

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Future Learning	Year 6 •Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals •Give reasons for classifying plants and animals based on specific characteristics.	KS3 •The particulate nature of matter. Atoms, elements and compounds. Pure and impure substances. Chemical reactions. Periodic table. Materials such as carbon, ceramics, polymers and composites.	Year 6 •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.	KS3 •Gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and sun (qualitative only) •Our sun as a star, other stars in our galaxy, other galaxies. The seasons and the Earth's tilt, day length at different times of year, in different hemispheres. The light year as a unit of astronomical distance		KS3 •Know that force is measured in units called newtons (N) using a Newtonmeter. • Know that more than one force can act on an object. • Be able to calculate the size and direction of a resultant force. • Know that if the resultant force is zero then there is no change in speed or direction of the object. •Know that force of gravity decreases with distance but increases with mass. •Be able to calculate weight using the equation weight = mass x gravitational field strength.