THORPE HESLEY PRIMARY SCHOOL
Progression Document for Science

Progression Document for EYFS

Disciplinary Knowledge	0-3 Years - N1 (Jan Nursery Starters)	3-4 Years – N1 (Jan Nursery Starters) & N2 (Sep Nursery Starters)	Reception
In the EYFS, the characteristics of effective learning from the Statutory Framework for the Early Years Foundation Stage are the foundations on which the working scientifically skills build in Key Stage 1. While children are playing and exploring, teachers should be modelling, encouraging and supporting them to do the following: • show curiosity and ask questions • make observations using their • senses and simple equipment • make direct comparisons • use equipment to measure • record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group	**Key Vocabulary:** **Animals excluding Humans** Model and encourage children to use vocabulary such as: • egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young, fur, feathers, scales, tail, wings, beak, claws, paws, hooves, swim, walk, run, jump, jump, fly, patterns, spots, stripes Expose children to supplementary vocabulary such as: • life cycle, mane, webbed feet **Electricity** Model and encourage children to use vocabulary such as:battery, plug, socket, electricity, wire, sound, light, move. Expose children to supplementary vocabulary such as: • mains electricity, device, appliance, electrical **Forces** Model and encourage children to use vocabulary such as: object, float, sink, water, up, down, top, bottom, push, pull, magnet, spring, squash, bend, twist, stretch, turn, spin, smooth, rough, fast, slow. Expose children to supplementary vocabulary such as: rising, falling, attract, repel, faster, slower, pulley, gear, elastic **Humans** Model and encourage children to use vocabulary such as: grow, change, baby, toddler, child, adult, old person, smell, taste, touch, feel, hear, see, blind, deaf. Expose children to supplementary vocabulary such as: life cycle, senses, elderly, die (if appropriate) **Light** Model and encourage children to use vocabulary such as: light, torch, bulb, lamp, spotlight, shiny, bright, brighter, brightest, Sun, shine, glow, mirror. Expose children to supplementary vocabulary such as: light source, reflective, non-reflective, dim, dimmer, dimmest **Living Things and Their Habitat** Model and encourage children to use vocabulary such as: natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different, pattern. Expose children to supplementary vocabulary such as: living, dead, similar **Materials Including Changing Materials** Model and encourage children to use vocabulary such as: mix, stir, cook, hot, oven, microwave, change, burn, melt, hard, runny, set, freeze, freezer, cold, blended, hard, soft, bendy, stiff, wobbly, wood, plastic, paper, card, fabric. Expose children to supplementary vocabulary such as: solid, liquid, rigid, stronger, weaker **Plants** Model and encourage children to use vocabulary such as: plant, leaf, stem, trunk, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil. Expose children to supplementary vocabulary such as: seedling, healthy, unhealthy, strong, sturdy, wilting, decay, mould, life cycle **Sound** Model and encourage children to use vocabulary such as: sound, noise, loud, quiet, high, low, music, bang, blow, pluck, soft, hard, fast, slow, names of instruments. Expose children to supplementary vocabulary such as: musician, notes, vibrate, vibration, pitch, rhythm, pulse, volume	**Key Vocabulary:** **Animals excluding Humans** Model and encourage children to use vocabulary such as: • egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young, fur, feathers, scales, tail, wings, beak, claws, paws, hooves, swim, walk, run, jump, jump, fly, patterns, spots, stripes Expose children to supplementary vocabulary such as: • life cycle, mane, webbed feet **Electricity** Model and encourage children to use vocabulary such as:battery, plug, socket, electricity, wire, sound, light, move. 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Expose children to supplementary vocabulary such as: musician, notes, vibrate, vibration, pitch, rhythm, pulse, volume	**Key Vocabulary:** **Animals excluding Humans** Model and encourage children to use vocabulary such as: • names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice Expose children to supplementary vocabulary such as: • environment, polar regions, ocean, camouflage **Earth and Space** Model and encourage children to use vocabulary such as: sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float Expose children to supplementary vocabulary such as: sunrise, sunset, astronaut, astronomer, constellation, orbit, nocturnal, slow-motion, magnify **Forces** Model and encourage children to use vocabulary such as: float, sink, up, down, top, bottom, surface, move, roll, drop, fly, turn, spin, fall, fast, slow, faster, slower, fastest, slowest, further, furthest, wind, air, water, blow, bounce. Expose children to supplementary vocabulary such as: force, rotate, solid, liquid, gravity **Humans** Model and encourage children to use vocabulary such as: hair (black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (blue, brown, green, grey), skin (black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman. Expose children to supplementary vocabulary such as:bald, elderly, wrinkles, male, female, freckles **Light** Model and encourage children to use vocabulary such as:sun, sunny, light, shadow, shady, clouds, torch, see-through, non-seethrough, source, light source. Expose children to supplementary vocabulary such as:casting a shadow, pale, dark, transparent, opaque **Living Things and Their Habitat** Model and encourage children to use vocabulary such as:plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment e.g. beach, forest. Expose children to supplementary vocabulary such as: environment **Materials Including Changing Materials** Model and encourage children to use vocabulary such as:ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smaller, smallest, hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back. Expose children to supplementary vocabulary such as:solid, liquid, gas, most suited **Seasonal Changes** Model and encourage children to use vocabulary such as: spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers Expose children to supplementary vocabulary such as:hibernate, migrate, snowflake **Sound** Model and encourage children to use vocabulary such as:sound, noise, listen, hear, music, voices, bird song, traffic, sirens, thunder, high, low, loud,

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			quiet, soft, volume, crackle, thunder, hum, buzz, roar. Expose children to supplementary vocabulary such as:source, crescendo, vibration, pitch
	Substantive Knowledge: **<u>Animals including Humans</u>** • Explore natural materials, indoors and outdoors. • Make connections between the features of their family and other families • Notice differences between people **<u>Plants</u>** • Explore natural materials, indoors and outdoors. **<u>Living Things and Their Habitats</u>** • Explore natural materials, indoors and outdoors. **<u>Materials</u>** • Explore natural materials, indoors and outdoors. • Explore materials with different properties **<u>Rocks</u>** • Explore materials with different properties • Explore natural materials, indoors and outdoors **<u>Light</u>** • Repeat actions that have an effect **<u>Forces</u>** • Repeat actions that have an effect **<u>Sound</u>** • Repeat actions that have an effect **<u>Electricity</u>** • Repeat actions that have an effect **<u>Earth and Space</u>** • Explore and respond to different natural phenomena in their setting and on trips	**Substantive Knowledge:** **<u>Animals excluding Humans</u>** • Understand the key features of the life cycle of plant and an animal • Begin to understand the need to respect and care for the natural environment and all living things **<u>Electricity</u>** • Explore how things work. **<u>Forces</u>** • Explore how things work. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice. **<u>Humans</u>** • Use all their senses in hands-on exploration of natural materials. • Begin to make sense of their own life-story and family's history. • Understand the key features of the life cycle of a plant and an animal. **<u>Light</u>** • Explore how things work. • Talk about the differences in materials and changes they notice. **<u>Living Things and Their Habitat</u>** • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Begin to understand the need to respect and care for the natural environment and all living things. **<u>Materials Including Changing Materials</u>** • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about the differences between materials and changes they notice. **<u>Plants</u>** • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things **<u>Sound</u>** • Explore how things work.	**Substantive Knowledge:** **<u>Animals excluding Humans</u>** • Recognise some environments that are different to the one in which they live. **<u>Earth and Space</u>** • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. **<u>Forces</u>** • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. **<u>Humans</u>** • Talk about members of their immediate family and community. • Name and describe people who are familiar to them. **<u>Light</u>** • Describe what they see, hear and feel whilst outside. **<u>Living Things and Their Habitat</u>** • Draw information from a simple map. • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live **<u>Materials Including Changing Materials</u>** • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. **<u>Seasonal Changes</u>** • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them. **<u>Sound</u>** • Describe what they see, hear and feel whilst outside.

Progression Document for KS1

Disciplinary Knowledge	Year 1	Year 2
Core Science Skills •Explore the world around you and start to ask your own simple questions. •Beginning to recognise different ways to answer your questions. •Practise talking about what you have found out and how you have found it out. •Communicate your findings in a range of ways using simple scientific language. **Observing Changes Over Time**	**Key Vocabulary:** **<u>Animals including Humans</u>** • Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves • Names of animals experienced first-hand from each vertebrate group • Parts of the body including those linked to PSHE teaching • Senses – touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue N.B. The children need to be able to name and identify a range of animals in each group e.g. name specific birds and fish. They do not need to use the terms mammal, reptiles etc. or know the key characteristics of each, although they will probably be able to identify birds and fish, based on their characteristics.	**Key Vocabulary:** **<u>Animals including Humans</u>** Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta **<u>Living Things and Their Habitats</u>** Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, names of local habitats e.g. pond, woodland etc. names of micro-habitats e.g. under logs, in bushes etc. **<u>Plants</u>** As for Year 1 plus light, shade, sun, warm, cool, water, grow, healthy

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•Observe closely using simple equipment. •Observe changes over time, with help. •Use your own observations to suggest answers to questions. **Comparative and Fair Testing** •Experience different types of science enquiries including practical activities. •Carry out simple tests. **Pattern Seeking** •With guidance, begin to notice patterns and relationships. •Use simple measurements and equipment (hand lens, egg timers) to gather data. •Record simple data. **Using Secondary Sources of Information** •Ask people questions. •Use simple secondary sources to find answers **Identifying, Classifying and Grouping** •Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them	The children also do not need to use the words carnivore, herbivore and omnivore. If they do, ensure that they understand that carnivores eat other animals, not just meat. **Everyday Materials** Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through **Plants** Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area **Seasonal Changes** Weather (sunny, rainy, windy, snowy etc.), seasons (winter, summer, spring, autumn), sun, sunrise, sunset, day length	**Use of Everyday Materials** Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching
	Substantive Knowledge: **Animals including Humans** • 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. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Everyday Materials** • 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. **Plants** • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. • Identify and describe the basic structure of a variety of common flowering plants, including trees. **Seasonal Changes** • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	**Substantive Knowledge:** **Animals including Humans** • 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. **Living Things and Their Habitats** • 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 **Plants** • 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. **Use 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.

Progression Document for Lower KS2

Disciplinary Knowledge	Year 3	Year 4
Core Science Skills • Ask your own relevant questions about the world around you. •Start to make your own decisions about the most appropriate type of scientific enquiry you might use to answer questions •Use relevant simple scientific language to discuss your ideas and communicate your findings. •With support you can identify new questions arising from your findings, making predictions and	**Key Vocabulary:** **Animals including Humans** Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine **Forces and Magnets** Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole **Light** Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous	**Key Vocabulary:** **Animals including Humans** Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain **Electricity** Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol **N.B.** Children in Year 4 do not need to use standard symbols for electrical components, as this is taught in Year 6 **Living Things and Their Habitats**

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finding ways to improve what you have already done. **Observing Changes Over Time** • Make predictions about changes you will see over time. •With help, decide how best to observe and measure change over time. • Discuss how your observations differ from your prediction. **Comparative and Fair Testing** • Set up simple practical enquiries, comparative and fair tests. • Recognise when a simple fair test is necessary and help decide how to set it up. **Pattern Seeking** •Begin to look at naturally occurring patterns and relationships and decide what data to collect to identify them. •Take accurate measures using standard units. •Learn how to use a range of equipment. •Collect and record data from your own observations and measurements in various ways (notes, bar chats, tables, standard units, drawings, labelled diagrams, keys). •With help, look for changes, patterns, similarities and differences in your data in order to draw simple conclusions and answer questions. •Help to make decisions about how to use and analyse the data **Using Secondary Sources of Information** • Recognise when and how secondary sources might help you to answer questions that cannot be answered through practical investigations. **Identifying, Classifying and Grouping** • Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. •Talk about criteria for grouping, sorting and classifying. •Use simple keys.	**Plants** Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal) **Rocks** Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil **Substantive Knowledge:** **Animals including Humans** • 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. **Forces and Magnets** • 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. **Light** • 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 an opaque object. • Find patterns in the way that the size of shadows change. **Plants** • Identify and describe the functions of different parts of flowering plants: roots; stem/trunk; 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 way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Rocks** • 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	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate **Sound** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation **States of Matter** Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle **Substantive Knowledge:** **Animals including Humans** • 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. **Electricity** • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its 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 **Living Things and Their Habitats** • 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 **Sound** • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds 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. **States of 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

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Progression Document for Science

Progression Document for Upper KS2

Disciplinary Knowledge	Year 5	Year 6
Core Science Skills • Use your scientific experience to explore ideas and raise different types of questions. •Talk about how scientific ideas have developed over time. •Select and plan the most appropriate types of scientific enquiry to help answer your scientific questions. •Use relevant scientific language and illustrations to discuss, communicate and justify your scientific ideas. Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degrees of trust in the results. **Observing Changes Over Time** • Make your own decisions about which observations to make, what measurements to take and how long to make them for. • Use your results to make predictions and identify when further observations, comparative or fair tests may be necessary. **Comparative and Fair Testing** • Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. **Pattern Seeking** • Look at the different causal relationships in your data and identify evidence which refutes or supports your ideas. •Choose the most appropriate equipment to take measurements with increasing precision and explain how to use it accurately. Take repeat measurements where necessary. •Decide how to record data of increasing complexity from a choice of familiar appropriates (scientific diagrams and labels, identification keys, tables, scatter, bar and line graphs. **Using Secondary Sources of Information** • Recognise which secondary sources will be most useful to research your ideas and begin to separate opinion from fact. **Identifying, Classifying and Grouping** • Use and develop keys and other information records to identify, classify and describe living things and materials, and to identify patterns which may be found in the natural environment.	**Key Vocabulary:** **<u>Animals including Humans</u>** Puberty – the vocabulary to describe sexual characteristics **<u>Earth and Space</u>** Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets **<u>Forces</u>** Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears **<u>Living Things and Their Habitats</u>** Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cutting **<u>Properties and Changes of Materials</u>** Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material **Substantive Knowledge:** **<u>Animals including Humans</u>** • Describe the changes as humans develop to old age. **<u>Earth and Space</u>** • 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. **<u>Forces</u>** • 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 **<u>Living Things and Their Habitats</u>** • 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. **<u>Properties and Changes of Materials</u>** • 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. • Know 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. • 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.	**Key Vocabulary:** **<u>Animals including Humans</u>** Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle **<u>Electricity</u>** Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage N.B. Children do not need to understand what voltage is, but will use volts and voltage to describe different batteries. The words "cells" and "batteries" are now used interchangeably. **<u>Evolution and Inheritance</u>** Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils **<u>Light</u>** As for Year 3 - Light, plus straight lines, light rays **<u>Living Things and Their Habitats</u>** Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering , non-flowering **Substantive Knowledge:** **<u>Animals including Humans</u>** • Identify and name the main parts of the human circulatory system, and describe 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. **<u>Electricity</u>** • 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, 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. **<u>Evolution and Inheritance</u>** • 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. **<u>Light</u>** • 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. **<u>Living Things and Their Habitats</u>** • 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.

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