

LONG TERM PLAN YEAR 5		
Autumn 1	Autumn 2	Spring 1/2
Domain: Earth and space (physics)	Domain: Properties and changes of materials (chemistry)	Domain: Forces (physics)
Key concepts: the Earth in relation to the universe	Key concepts: materials (properties and changes), particles	Key concepts: Forces
<p>End points:</p> <p>Students have an understanding of the key domains of knowledge and can use key concepts (knowing that: declarative/substantive knowledge) to make links between the domains</p> <p>Students can use declarative/substantive knowledge (knowing that) to work scientifically (knowing how: procedural/disciplinary knowledge)</p> <p>Students have an understanding of some of the major issues our planet is facing and what they can do to help, this is because our science curriculum has a focus on sustainability</p> <p>Students appreciate the importance of science in our ever-changing, complex world</p>		
<p><u>Broken down knowledge covered</u></p> <p>Know how planets in the solar system (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune) move around the sun</p> <p>Know that a moon is a celestial body that orbits a planet (Earth has one moon, but Jupiter has four large ones a many smaller ones)</p> <p>Know how the moon moves in relation to Earth</p> <p>Know that the sun, Earth and moon are approximately spherical bodies</p> <p>Know why Earth's rotation is the cause of day and night</p>	<p><u>Broken down knowledge covered</u></p> <p>Know properties of a range of materials (hardness, solubility, transparency, conductivity, magnetism) - Autumn 1</p> <p>Know how tests can be used to select materials for everyday use - Autumn 1</p> <p>Know how mixtures and solutions can be separated by filtering, sieving and evaporating - Summer 1</p> <p>Know how to explain reversible and irreversible changes - Summer 1</p>	<p><u>Broken down knowledge covered</u></p> <p>Know the effect of gravity on unsupported objects</p> <p>Know how friction including air resistance and water resistance acts between moving surfaces</p> <p>Know that pulleys, levers and gears enable a smaller force to have a greater effect</p>
Key vocabulary: Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit	Key vocabulary: thermal insulator/ conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	Key vocabulary: Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears

<p><u>Common misconceptions</u></p> <ul style="list-style-type: none"> <li>• the Earth is flat</li> <li>• the Sun is a planet</li> <li>• the Sun rotates around the Earth</li> <li>• the Sun moves across the sky during the day</li> <li>• the Sun rises in the morning and sets in the evening</li> <li>• the Moon appears only at night</li> <li>• night is caused by the Moon getting in the way of the Sun or the Sun moving further away from the Earth</li> </ul>	<p><u>Common misconceptions</u></p> <ul style="list-style-type: none"> <li>• thermal insulators keep cold in or out</li> <li>• thermal insulators warm things up</li> <li>• solids dissolved in liquids have vanished and so you cannot get them back</li> <li>• lit candles only melt, which is a reversible change.</li> </ul>	<p><u>Common misconceptions</u></p> <ul style="list-style-type: none"> <li>• the heavier the object the faster it falls, because it has more gravity acting on it</li> <li>• forces always act in pairs which are equal and opposite</li> <li>• smooth surfaces have no friction</li> <li>• objects always travel better on smooth surfaces</li> <li>• a moving object has a force which is pushing it forwards and it stops when the pushing force wears out</li> <li>• a non-moving object has no forces acting on it</li> <li>• heavy objects sink and light objects float.</li> </ul>
<p><u>Previous knowledge</u>  This domain just appears in Year 5. However, children should be able to make some links thanks to their knowledge on seasonal changes (EYFS and Y1). Also, in Year 4 children are introduced briefly (and in a basic way) to the domain 'Earth and space'.</p>	<p><u>Previous knowledge</u>  EYFS: Things are made of different materials / Different materials have different properties / Sometimes a material can be changed (e.g. when burnt/ cooked)   Year 1: Know the different types of everyday materials (wood, plastic, glass, metal, water, rock) / Know properties of everyday materials: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. / Know the difference between an object and the material it is made from   Year 2: Know how everyday materials (wood, metal, plastic, glass, brick, rock, paper and cardboard) are suited to different uses (e.g. metal for coins, cars, table legs or wood for matches, floors). Also that different materials are used for the same thing (metal, wood or plastic spoons) / Know how the shape of some solid objects can be changed by squashing, bending, twisting and stretching   Year 4: Know why substances are classified as solids, liquids or gases / Know how</p>	<p><u>Previous knowledge</u>  Year 3: Know that things move differently on different surfaces   Know examples of contact and non-contact forces (e.g. magnets can act at a distance)   Know why magnets attract or repel materials and give examples   Know why magnets attract and repel each other, linking it to their poles (opposite poles attract each other/same poles repel each other)</p>

	<p>temperature can affect a material's state (heating/cooling). Example to be used: water (ice-water-water vapour) / Know how evaporation and condensation form a part of the water cycle</p>	
<p>Previous key vocabulary EYFS: light, dark, moon, seasons</p> <p>Year 1: Sun, day length</p>	<p>Previous key vocabulary EYFS: Sensory exploration of materials: soft, hard, rough, bumpy, smooth, shiny, squeeze, roll, throw, cut, ice, freeze, melt Floating, sinking, pour, liquid, change, mud, mix. Liquid, solid, gas. Dissolving, mixing, diluting Steam, smoke, boil, fire (forest school) Cooking, rising (cooking activities)</p> <p>Year 1: 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</p> <p>Year 2: opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p> <p>Year 4 (states of matter): solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle</p>	<p>Previous key vocabulary Year 3: 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</p>

Summer 1	Summer 2
<b>Domain: Living things and their habitats (biology)</b>	<b>Domain: Animals including humans (biology)</b>
Key concepts: reproduction	Key concepts: organisms, human body, reproduction
<p><u>End points:</u>            Students have an understanding of the key domains of knowledge and can use key concepts (knowing that: declarative/substantive knowledge) to make links between the domains</p> <p>Students can use declarative/substantive knowledge (knowing that) to work scientifically (knowing how: procedural/disciplinary knowledge)</p> <p>Students have an understanding of some of the major issues our planet is facing and what they can do to help; this is because our science curriculum has a focus on sustainability</p> <p>Students appreciate the importance of science in our ever-changing, complex world</p>	
<p><u>Broken down knowledge covered</u>            Know differences in the life cycle of an amphibian, bird, insect and mammal</p> <p>Know differences between sexual (animals and plants) and asexual (plants) reproduction</p>	<p><u>Broken down knowledge covered</u>            Know the stages within development and growth of humans: foetus, baby, childhood, adolescence, adulthood, old age</p> <p>Know the changes that happen to humans during puberty</p> <p>Know that gestation periods differ between animals including humans (e.g, humans- 9 months, dogs - around 61 days, cats - around 64 days, elephants - as long as 22 months)ow the names and functions of the main parts of the human circulatory system (heart, blood vessels and blood)</p> <p>Know the impact of diet, exercise, drugs, and lifestyle on the healthy functions of the human body</p> <p>Know ways that nutrients and water are transported within the human body</p>
Key vocabulary: cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings	Key vocabulary: puberty, the vocabulary to describe sexual characteristics in line with the school's RSE policy
<p><u>Common misconceptions</u></p> <ul style="list-style-type: none"> <li>• all plants start out as seeds</li> <li>• all plants have flowers</li> <li>• plants that grow from bulbs do not have seed</li> <li>• only birds lay eggs.</li> </ul>	<p><u>Common misconceptions</u></p> <ul style="list-style-type: none"> <li>• a baby grows in a mother's tummy</li> <li>• a baby is "made"</li> </ul>
<p><u>Previous knowledge</u>            EYFS: there many types of animals and they live in different places</p>	<p><u>Previous knowledge</u></p>

<p>Year 2: Know the terms 'living', 'dead' and 'never been alive' / Know the meaning of the terms 'habitat' and 'microhabitat' / Know how habitats vary and how specific animals and plants are suited to specific ones / Know and example of a simple food chain (e.g., grass - cow - human)</p> <p>Year 4: Know reasons for grouping animals (e.g., vertebrates, invertebrates) / Know how to use a classification key to group, identify and name plants (flowering including grasses and non-flowering such as ferns and mosses) and animals / Know dangers posed to animals based on environmental change (population, development, litter, deforestation) and the positive effects of nature reserves, garden ponds or ecologically planned parks</p>	<p>EYFS: Animals (including humans) grow and change and as things grow and change, they have specific needs. / There are many different animals and they live in different places. / Names and information about different animals.</p> <p>Year 1: Identify and name a range of common animals and know their key characteristics: fish, amphibians, reptiles, birds, mammals (incl. pets) / Know the diets of carnivores, herbivores and omnivores / Know the key parts of the human body (head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) and the sense associated to them (taste, hearing, sight, smell, touch)</p> <p>Year 2: Know that animals produce offspring that grow into adults / Know that animals need food, water and air to survive / Know the importance of diet, exercise and hygiene for humans</p> <p>Year 3: Know that animals and humans get nutrition from the food they eat (they cannot make their own food) / Know the importance of a balanced diet for health and survival / Know the five main food groups: vitamins and minerals (fruits and vegetables), carbohydrates (potatoes, bread, pasta), proteins (meat, fish, eggs, beans), dairy (cheese, milk) and fats (oils and spreads) / Know that skeletons and muscles within different animals aid support, movement and protection. <i>Skull: protects the brain Ribcage: protects lungs and heart Backbone: protects the spinal cord</i></p> <p>Year 4: Know the functions of body parts linked to the digestive system: mouth, tongue, teeth, oesophagus, stomach, small and large intestine, anus / Know different types of teeth in humans and their functions: incisors (cut), canines (tear/rip), premolars and molars (grind/chew) / Know how to construct food chain diagrams that identify producers, predators and prey</p>
<p><u>Previous key vocabulary</u>  EYFS: names of different types of animals, some names of places where animals live. <i>See EYFS Science Educational Programme document for more information.</i></p> <p>Year 2: living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied</p>	<p><u>Previous key vocabulary</u>  EYFS: names of pets, farm animals, zoo animals, minibeasts, names of animal young, names of animals and groups of animals from different habitats around the world. <i>See EYFS Science Educational Programme document for more information.</i></p> <p>Year 1: 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 human body including those within</p>

<p>Year 4: classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate, vertebrate, invertebrate, flowering, non-flowering</p>	<p>the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue, carnivore, herbivore, omnivore</p> <p>Year 2: offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, Food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)</p> <p>Year 3: nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine,</p> <p>Year 4: digestive system, digestion, mouth, tongue, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, producer, predator, prey</p>
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