

# Hiltingbury Junior School - Science Curriculum Map

## Long Term Map Overview 2022-2023 only

	Autumn Term		Spring Term		Summer Term	
<b>Year R</b>	ELG - To know about similarities and differences in relation to materials and objects.	ELG – Talk about the features of their own immediate environment and how they might vary from one another. (Compare Space/Earth)	ELG – Make observations of animals (humans) and explain why some things occur and talk about changes. (Specifically bodies) ELG – To know about similarities and differences in relation to living things.	ELG – Talk about the features of their own immediate environment and how they might vary from one another. (Compare land and under the sea) ELG – Make observations of animals (humans) and explain why some things occur and talk about changes.	ELG – Make observations of animals and plants and explain why some things occur and talk about changes. ELG – To know about similarities and differences in relation to places and living things. (Look at life cycles of butterfly, frog, chick and sunflower)	ELG - To talk about the features of their own immediate environment and how they might vary from one another. ELG - To make observations of animals, plants and explain why some things occur and talk about changes. (Observations of mini-beasts and plants)
<b>Year 1</b>	Animals inc humans Seasonal changes	Everyday materials Seasonal changes	Everyday materials Seasonal changes	Forces Seasonal Changes	Plants Seasonal Changes	Animals (Herbivore and Carnivore)
<b>Year 2</b>	Plants	Uses of everyday materials	Animals inc humans (offspring, basic needs of animals and humans)		Living things and their habitats (animals)	Living things and their habitats (plants)
<b>Year 3</b>	Magnets (6 lessons)	Rocks and Soils (4 lessons)	States of Matter (7 lessons)	Animals: Skeletons and Movement (6 lessons)	Plants and Food Production (6 lessons)	Light (6 lessons)
<b>Year 4</b>	States of Matter (7 lessons)	Mixtures and separating them (8 lessons)	Digestion (including Food Chains & Nutrition) (7 lessons)		Living Things (Classification, Life Cycles and Environmental Change) (6 lessons)	Electricity (6 lessons)
<b>Year 5</b>	Space and Gravity (8 lessons)	Forces that oppose motion (8 lessons)	Mixtures and separating them Making new substances (16 lessons)		Circulation (7 lessons)	Plant Reproduction (4 lessons)
<b>Year 6</b>	Light (7 lessons)	Electricity (8 lessons)	Circulation (7 lessons)	Fossils, geological time and classification (4 lessons)	Classification and Evolution (7 lessons)	
<b>Year 7</b>	Cells Particles Forces		Reproduction Energy Atoms, Elements and Compounds		Electricity Separating mixtures Ecology	

**\*\* N.B.** This long term map has been formulated in partnership with HIAS Science leads to support the school moving units to facilitate strong substantive knowledge progression. This transition is carefully mapped to ensure every cohort will have full coverage across their KS2 journey which is the reason for some overlap of units during this planned period of change.

# Links in Substantive knowledge

	Autumn Term			Spring Term		Summer Term	
Year 3	Magnets (6 lessons) <i>Yr1/2 links - Pushes and Pulls, Forces change how things move.</i>	Rocks and Soils (4 lessons)	States of Matter (7 lessons) <i>Yr1/2 links – Everyday materials and uses. Comparisons of differences</i>	Animals: Skeletons and Movement (6 lessons) <i>Yr1/2 links - describe what animals need and basic needs of humans.</i>		Plants and Food Production (6 lessons) <i>Yr1/2 links – where plants come from and introduction to germination. Develop understanding of the functions of the different parts of a plant</i>	Light (6 lessons) <i>Yr 1/2 links - seasonal changes</i>
Year 4	States of Matter (7 lessons) <i>Yr1/2 links – Everyday materials and uses. Comparisons of differences between materials.</i>		Mixtures and separating them (8 lessons) <i>Yr4 links - Must understand the properties of S, L and G to understand how to separate.</i>	Digestion (including Food Chains & Nutrition) (7 lessons) <i>Yr2 links – Introduction to the basic needs of humans and the importance of exercise and nutrition. Yr4 links - Apply knowledge of dissolving.</i>	Living Things (Classification, Life Cycles and Environmental Change) (6 lessons) <i>Yr1/2 links - Introduction to groups of animals.</i>	Electricity (6 lessons)	
Year 5	Space and Gravity (8 lessons) <i>Yr3 links – light from the sun links to temperature on planets.</i>		Forces that oppose motion (8 lessons) <i>Yr1/2 links - Forces change how things move. Yr3 links - Magnets affect how things move so are forces, but non-contact. Currently also explore friction.</i>	Mixtures and separating them Making new substances (16 lessons) <i>Yr4 links - Must understand the properties of S, L and G to understand how to separate. Links between dissolving and digestive system</i>	Circulation (7 lessons) <i>Yr4 links - knowledge of how nutrients get into the blood, Yr5 knowledge builds on this and describes how oxygen enters the blood and gets round the body</i>	Plant Reproduction (4 lessons) <i>Yr 2 links - plants make seeds that can grow into new plants. Yr 3 links - food production, functions of the parts of a plant</i>	
Year 6	Light (7 lessons) <i>Yr3 links - Application and mastery of Year 3 unit.</i>	Electricity (8 lessons) <i>Yr4 links - Application and mastery of Year 4 unit.</i>	Circulation (7 lessons) <i>Yr4 links - knowledge of how nutrients get into the blood, Yr6 knowledge builds on this and describes how oxygen enters the blood and gets round the body.</i>		Fossils, geological time and classification (4 lessons) <i>Yr3 links – Fossils and rocks.</i>	Classification and Evolution (7 lessons) <i>Yr4 links - Introduction to classification and classification keys. Variation and reproduction leads to adaptation and evolution.</i>	

New unit for the year group in 2022-2023

An existing unit which won't be remaining in the year group

# Long Term Map – Key Knowledge and Skills Progression *(based on National Curriculum)*

*HIAS Learning Journeys detail Key Substantive Knowledge (ideas and vocabulary) linked to each unit.*

Year 2	Plants	Uses of everyday materials	Animals inc humans (offspring, basic needs of animals and humans)	Living things and their habitats (animals)	Living things and their habitats (plants)
Core Knowledge	<ul style="list-style-type: none"> <li>Observe and describe how seeds and bulbs grow into mature plants</li> <li>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul>	<ul style="list-style-type: none"> <li>identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul>	<ul style="list-style-type: none"> <li>Notice that animals, including humans, have offspring which grow into adults</li> <li>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul>	<ul style="list-style-type: none"> <li>Explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>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</li> <li>Identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>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</li> </ul>	<i>Objectives as to the left but focus on plants.</i>
Non-Statutory Guidance	<ul style="list-style-type: none"> <li><i>Pupils should use the local environment throughout the year to</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Identify and discuss the uses of different everyday materials so</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Pupils should be introduced to the basic needs of animals for</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Pupils should be introduced to the idea that all living things</i></li> </ul>	

	<p>observe how plants grow. Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as the processes of reproduction and growth in plants.</p> <ul style="list-style-type: none"> <li>• Note: seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them.</li> </ul>	<p>that they become familiar with how some materials are used for more than one thing or different materials are used for the same thing.</p> <ul style="list-style-type: none"> <li>• They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials.</li> <li>• Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam.</li> </ul>	<p>survival, as well as the importance of exercise and nutrition for humans.</p> <ul style="list-style-type: none"> <li>• They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs.</li> <li>• The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, adult.</li> </ul>	<p>have certain characteristics that are essential for keeping them alive and healthy.</p> <ul style="list-style-type: none"> <li>• They should raise and answer questions that help them to become familiar with the life processes that are common to all living things.</li> <li>• Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'microhabitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter).</li> <li>• They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals.</li> <li>• Pupils should compare animals in familiar habitats with animals found in less familiar</li> </ul>	
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					<i>habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.</i>	
Year 3	Magnets	Rocks & Soils	States of Matter	Animals: Skeletons & Movement	Plants and Food Production	Light
Core Knowledge	<ul style="list-style-type: none"><li>• Compare how things move on different surfaces</li><li>• Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</li><li>• Observe how magnets attract or repel each other and attract some materials and not others</li><li>• 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</li><li>• Describe magnets as having 2 poles</li><li>• Predict whether 2 magnets will attract or repel</li></ul>	<ul style="list-style-type: none"><li>• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li><li>• Describe in simple terms how fossils are formed when things that have lived are trapped within rock</li><li>• Recognise that soils are made from rocks and organic matter</li></ul>	<ul style="list-style-type: none"><li>• Compare and group materials together, according to whether they are solids, liquids or gases</li><li>• 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)</li><li>• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li></ul>	<ul style="list-style-type: none"><li>• Identify that humans and some other animals have skeletons and muscles for support, protection and movement</li></ul>	<ul style="list-style-type: none"><li>• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li><li>• 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</li><li>• Investigate the way in which water is transported within plants</li></ul>	<ul style="list-style-type: none"><li>• Recognise that they need light in order to see things and that dark is the absence of light</li><li>• Notice that light is reflected from surfaces</li><li>• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li><li>• Recognise that shadows are formed when the light from a light source is blocked by an opaque object</li><li>• Find patterns in the way that the size of shadows change</li></ul>

	each other, depending on which poles are facing					
Non-Statutory Guidance	<ul style="list-style-type: none"> <li>Pupils should observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing).</li> <li>They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe).</li> </ul>	<ul style="list-style-type: none"> <li>Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment.</li> </ul>	<ul style="list-style-type: none"> <li>Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container).</li> <li>Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.</li> <li>Note: teachers should avoid using materials where heating is associated with chemical change, for example, through baking or burning.</li> </ul>	<ul style="list-style-type: none"> <li>Pupils should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.</li> </ul>	<ul style="list-style-type: none"> <li>Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do.</li> <li>They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.</li> <li>Note: pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.</li> </ul>	<ul style="list-style-type: none"> <li>Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves.</li> <li>They should think about why it is important to protect their eyes from bright lights.</li> <li>They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.</li> </ul>
Year 4	States of Matter	Mixtures and Separating them	Digestion (including Food Chains & Nutrition)	Living Things (Classification, Life Cycles and Environmental Change)	Electricity	

<b>Core Knowledge</b>	<ul style="list-style-type: none"> <li>• Compare and group materials together, according to whether they are solids, liquids or gases</li> <li>• 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)</li> <li>• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> <li>• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> <li>• Describe the simple functions of the basic parts of the digestive system in humans</li> <li>• Identify the different types of teeth in humans and their simple functions</li> <li>• Construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>	<ul style="list-style-type: none"> <li>• Recognise that living things can be grouped in a variety of ways</li> <li>• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>• Describe the life process of reproduction in some animals</li> <li>• Recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul>	<ul style="list-style-type: none"> <li>• Identify common appliances that run on electricity</li> <li>• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>• 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</li> <li>• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>• Recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul>
<b>Non-Statutory Guidance</b>	<ul style="list-style-type: none"> <li>• <i>Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials,</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Pupils should continue to learn about the importance of nutrition</i></li> <li>• <i>Pupils should be introduced to the main body parts associated</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat.</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches,</i></li> </ul>



	<p><i>pool not a pile; gases escape from an unsealed container).</i></p> <ul style="list-style-type: none"> <li>• Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.</li> <li>• Note: teachers should avoid using materials where heating is associated with chemical change, for example, through baking or burning.</li> </ul>	<p><i>including relating these to what they learnt about magnetism in year 3 and about electricity in year 4.</i></p>	<p><i>with the digestive system, for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine, and explore questions that help them to understand their special functions.</i></p>	<ul style="list-style-type: none"> <li>• They should identify how the habitat changes throughout the year.</li> <li>• Pupils should explore possible ways of grouping a wide selection of living things that include animals, flowering plants and non-flowering plants.</li> <li>• Pupils could begin to put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.</li> <li>• They should observe life-cycle changes in a variety of living things, for example animals in the local environment.</li> <li>• They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.</li> <li>• Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.</li> </ul>	<p><i>and use their circuits to create simple devices.</i></p> <ul style="list-style-type: none"> <li>• Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6.</li> </ul> <p><i>Note: pupils might use the terms current and voltage, but these should not be introduced or defined formally at this stage.</i></p>
Year 5	Space and Gravity (8 lessons)	Forces that oppose motion (8 lessons)	Mixtures and separating them Making new substances (16 lessons)	Circulation (7 lessons)	Plant Reproduction (4 lessons) <small>Not essential due to coverage for this cohort in Yr3</small>
Core Knowledge	<ul style="list-style-type: none"> <li>• Describe the movement of the Earth and other planets relative to the</li> </ul>	<ul style="list-style-type: none"> <li>• Explain that unsupported objects fall towards the Earth because of the force</li> </ul>	<ul style="list-style-type: none"> <li>• Compare and group together everyday materials on the basis of their properties,</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and name the main parts of the human circulatory system, and describe</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the life process of reproduction in some plants</li> </ul>



	<p>sun in the solar system</p> <ul style="list-style-type: none"> <li>• Describe the movement of the moon relative to the Earth</li> <li>• Describe the sun, Earth and moon as approximately spherical bodies</li> <li>• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul>	<p>of gravity acting between the Earth and the falling object</p> <ul style="list-style-type: none"> <li>• Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>• Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect <i>(covered in DT unit later in the year)</i></li> </ul>	<p>including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <ul style="list-style-type: none"> <li>• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>• Demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>• Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes</li> </ul>	<p>the functions of the heart, blood vessels and blood</p> <ul style="list-style-type: none"> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>	
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			associated with burning and the action of acid on bicarbonate of soda		
<b>Non-Statutory Guidance</b>	<ul style="list-style-type: none"> <li>• Pupils should be introduced to a model of the sun and Earth that enables them to explain day and night.</li> <li>• 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).</li> <li>• 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).</li> <li>• 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 model by considering the work of scientists such as Ptolemy,</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils should explore falling objects and raise questions about the effects of air resistance.</li> <li>• They should explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.</li> <li>• 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 bicycle wheel.</li> <li>• <i>Pupils should explore the effects of levers, pulleys and simple machines on movement. (covered in DT unit later in the year)</i></li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• They should explore reversible changes, including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.</li> <li>• Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda.</li> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.</li> </ul>	<ul style="list-style-type: none"> <li>• They should observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border</li> <li>• Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.</li> </ul>

	<i>Alhazen and Copernicus.</i>		<i>invented wrinkle-free cotton.</i>		
<b>Year 6</b>	<b>Light</b> (7 lessons)	<b>Electricity</b> (8 lessons)	<b>Circulation</b> (7 lessons)	<b>Fossils, geological time and classification</b> (4 lessons)	<b>Classification and Evolution</b> (7 lessons)
<b>Core Knowledge</b>	<ul style="list-style-type: none"> <li>• Recognise that light appears to travel in straight lines</li> <li>• 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</li> <li>• 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</li> <li>• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul>	<ul style="list-style-type: none"> <li>• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>• 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</li> <li>• Use recognised symbols when representing a simple circuit in a diagram</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> <li>• Give reasons for classifying plants and animals based on specific characteristics</li> </ul>	<ul style="list-style-type: none"> <li>• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>
<b>Non-Statutory Guidance</b>	<ul style="list-style-type: none"> <li>• <i>Pupils should build on the work on light in year 3, exploring the way that light behaves, including light sources, reflection and shadows.</i></li> <li>• <i>They should talk about what happens and make predictions.</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Building on their work in year 4, pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>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</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Pupils should build on their learning about grouping living things in year 4 by looking at the classification system in more detail.</i></li> <li>• <i>They should be introduced to the idea that broad groupings, such as micro-organisms, plants and</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Building on what they learned about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time.</i></li> <li>• <i>They should be introduced to the idea that characteristics are</i></li> </ul>

		<ul style="list-style-type: none"> <li>• They should learn how to represent a simple circuit in a diagram using recognised symbols.</li> <li>• Note: Pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary precautions for working safely with electricity.</li> </ul>	<p>system enables the body to function.</p> <ul style="list-style-type: none"> <li>• Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.</li> </ul>	<p>animals can be subdivided.</p> <ul style="list-style-type: none"> <li>• Through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals).</li> <li>• They should discuss reasons why living things are placed in one group and not another.</li> </ul>	<p>passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, Labradors are crossed with poodles.</p> <ul style="list-style-type: none"> <li>• They should also appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox.</li> <li>• Note: at this stage, pupils are not expected to understand how genes and chromosomes work.</li> </ul>
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## Progression in Disciplinary Knowledge (working scientifically)

*Hiltingbury Junior School Disciplinary Knowledge Trackers share detailed progression for where this specific knowledge is taught, practised and applied across the year.*

During KS2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

Year 3 & 4	Year 5 & 6
<ul style="list-style-type: none"><li>• Asking relevant questions and using different types of scientific enquiries to answer them</li><li>• Setting up simple practical enquiries, comparative and fair tests</li><li>• Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li><li>• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li><li>• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li><li>• Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li><li>• Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li><li>• Identifying differences, similarities or changes related to simple scientific ideas and processes</li><li>• Using straightforward scientific evidence to answer questions or to support their findings.</li></ul>	<ul style="list-style-type: none"><li>• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li><li>• Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li><li>• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li><li>• Using test results to make predictions to set up further comparative and fair tests</li><li>• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li><li>• Identifying scientific evidence that has been used to support or refute ideas or arguments</li></ul>