



**St. Bernadette's Primary School
Science Knowledge Progression**

National Curriculum statements in red are from other linked topics ~ linked learning

Nursery Plants

- 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 – (chick to hen).
- Begin to understand the need to respect and care for the natural environment and all living things.
- Grow plants and flowers.

Reception Plants

- Draw information from a simple map. (Reception – Living things and their habitats).
- Explore the natural world around them. (Reception – Living things and their habitats).
- Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats).
- Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats).
- Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes).
- Grow plants and vegetables.

Subject Area	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	<p><u>Common Names and Basic Structure</u> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p><u>Plant growth</u> Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Identify and name a variety of plants</p>	<p><u>Functions of Parts of a Plant</u> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they</p>	<p>Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats)</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living</p>	<p>Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)</p>	<p>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. (Y6 - Living things and their habitats)</p>

		and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)	<p>vary from plant to plant.</p> <p>Investigate the way in which water is transported within plants.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>things and their habitats)</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)</p>		<p>Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)</p>
Notes and Guidance (Non-statutory)	<p>Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat.</p> <p>Where possible, they should observe the growth of flowers and vegetables that they have planted.</p> <p>They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem).</p>	<p>Pupils should use the local environment throughout the year to observe how different plants grow.</p> <p>Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as the process of reproduction and growth in plants.</p> <p>Note: Seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them.</p>	<p>Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do.</p> <p>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.</p> <p>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.</p>			

Nursery Living Things and their Habitats

- 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.
- Explore the surrounding natural environment.
- Explore natural objects from the surrounding environment.

Reception Living Things and their Habitats

- 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.
- Explore the plants in the surrounding natural environment.
- Explore the animals in the surrounding natural environment.
- Explore plants and animals in a contrasting natural environment.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living Things and their Habitats	<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)</p> <p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 -</p>	<p><u>Environment - Living things and their habitats</u> Explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>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</p>	<p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)</p>	<p><u>Environment – Living things and their habitats)</u> Recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p><u>Environment - Observing Life Cycles</u> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Describe the life process of reproduction in some plants and animals.</p>	<p><u>Classification</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.</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p> <p>Recognise that living things produce offspring</p>

	<p>Animals including humans)</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans)</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans)</p> <p>Observe changes across the four seasons. (Y1 - Seasonal change)</p>	<p>depend on each other.</p> <p>Identify and name a variety of plants and animals in their habitats, including microhabitats.</p> <p>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.</p> <p>Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)</p>		<p>Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)</p>		<p>of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance)</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance)</p>
<p>Notes and Guidance (Non-statutory)</p>		<p>Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy.</p> <p>They should raise and answer questions that help them to become</p>		<p>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.</p> <p>They should identify how the habitat</p>	<p>Pupils should study and raise questions about their local environment throughout the year.</p> <p>They should observe life-cycle changes in a variety of living things, for example plants in the vegetable garden or flower border, and</p>	<p>Pupils should build on their learning about grouping living things in Year 4 by looking at the classification system in more detail.</p> <p>They should be introduced to the idea that broad groupings, such as micro-organisms,</p>

		<p>familiar with the life processes that are common to all living things.</p> <p>Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter).</p> <p>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.</p> <p>Pupils should compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.</p>		<p>changes throughout the year.</p> <p>Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants.</p> <p>Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.</p> <p>Note: Plants can be grouped into categories such as flowering plants (including grasses) and nonflowering plants, such as ferns and mosses.</p> <p>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.</p>	<p>animals in the local environment.</p> <p>They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.</p> <p>Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants and sexual reproduction in animals.</p>	<p>plants and animals can be subdivided.</p> <p>Through direct observations where possible, they should classify animals into commonly found invertebrates (e.g. insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals).</p> <p>They should discuss reasons why living things are placed in one group and not another.</p> <p>Pupils might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.</p>
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- **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.**
- **Begin to understand the need to respect and care for the natural environment and all living things.**
- Learn about the life cycles of animals – (chick to hen).
- Compare adult animals to their babies.
- Observe how baby animals change over time.
- Learn about the life cycles of humans.
- Learn about how to take care of themselves.
- Learn about their senses.

Reception Animals inc Humans

- **Talk about members of their immediate family and community.**
- **Name and describe people who are familiar to them.**
- **Recognise some environments that are different to the one in which they live.**
- Name and describe animals that live in different habitats.
- Describe different habitats.
- Learn about the life cycles of animals – butterfly and frog.
- Describe people who are familiar to them.
- Learn about how to take care of themselves.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals inc Humans	<u>Humans</u> Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. <u>Other animals</u> Identify and name a variety of common animals including fish, amphibians,	<u>Animal survival and growth</u> Notice that animals, have offspring which grow into adults. Find out about and describe the basic needs of animals, for survival (water, food and air). <u>Health – How we grow and stay healthy</u>	<u>Animals - Skeletons and Movement</u> 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	<u>Animals -Teeth, Eating and Digestion</u> 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.	<u>Animals - Human Life Cycles</u> Describe the changes as humans develop to old age. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats)	<u>Exercise, Health & The Circulatory System</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

	<p>reptiles, birds and mammals.</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, and including pets).</p>	<p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>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. (Y2 - Living things and their habitats)</p>	<p>skeletons and muscles for support, protection and movement.</p>	<p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)</p>	<p>their bodies function.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>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. (Y6 - Living things and their habitats)</p> <p>Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)</p>
<p>Notes and Guidance (Non-statutory)</p>	<p><u>Humans</u> Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows,</p>	<p><u>Animals</u> Pupils should be introduced to the basic needs of animals for survival.</p>	<p><u>Animals</u> Pupils should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of</p>	<p><u>Animals</u> Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth,</p>	<p><u>Animals</u> Pupils should draw a timeline to indicate stages in the growth and development of humans.</p>	<p><u>Animals/Health</u> Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and</p>

	<p>legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.</p> <p><u>Other animals</u> Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat.</p> <p>They should understand how to take care of animals taken from their local environment and the need to return them safely after study.</p> <p>Pupils should become familiar with the common names of fish, amphibians, reptiles, birds and mammals, including those that are kept as pets.</p>	<p>They should also be introduced to the process of reproduction and growth in animals.</p> <p>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.</p> <p>The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep.</p> <p><u>Health</u> Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans.</p> <p>They should also be introduced to the process of reproduction and growth in animals [humans].</p> <p>The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to</p>	<p>the body have special functions.</p> <p><u>Health</u> Pupils should continue to learn about the importance of nutrition</p>	<p>oesophagus, stomach and small and large intestine and explore questions that help them understand their special functions.</p>	<p>They should learn about the changes experienced in puberty.</p>	<p>digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function.</p> <p>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.</p>
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		<p>understand how reproduction occurs.</p> <p>Growing into adults can include reference to baby, toddler, child, teenager, adult.</p>				
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Nursery Evolution and Inheritance

- Begin to understand the need to respect and care for the natural environment and all living things. (Nursery – Living things and their habitats).

Reception Evolution and Inheritance

- Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats).

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Evolution and Inheritance</p> <p>(Linked to Plants, Animals including Humans and Materials and their properties)</p>		<p>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. (Y2 - Living things and their habitats)</p> <p>Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)</p>	<p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)</p>	<p>Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)</p>	<p>Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)</p>	<p><u>Evolution And Inheritance</u></p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Identify how animals and plants</p>

						<p>are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
<p>Notes and Guidance (Non-statutory)</p>			<p>Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment.</p>			<p>Building on what they have learnt 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.</p> <p>They should be introduced to the idea that characteristics are 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> <p>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.</p>

Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.

Note: At this stage, pupils are not expected to understand how genes and chromosomes work.

Nursery Seasonal Changes

- Understand the key features of the life cycle of a plant and an animal. (Nursery – Plants & Animals, excluding humans)
- Play and explore outside in all seasons and in different weather.
- Talk about what they see, using a wide range of vocabulary.
- Use all their senses in hands on exploration.
- Explore seasonal changes, begin to talk about the weather, what clothes they will wear and changes in their environment.

Reception Seasonal Changes

- **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.**
- Play and explore outside in all seasons and in different weather.
- Observe living things throughout the year.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Seasonal Changes	<p>Observe changes across the four seasons.</p> <p>Observe and describe weather associated with the seasons and how day length varies</p>		<p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)</p>		<p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 - Earth and space)</p>	

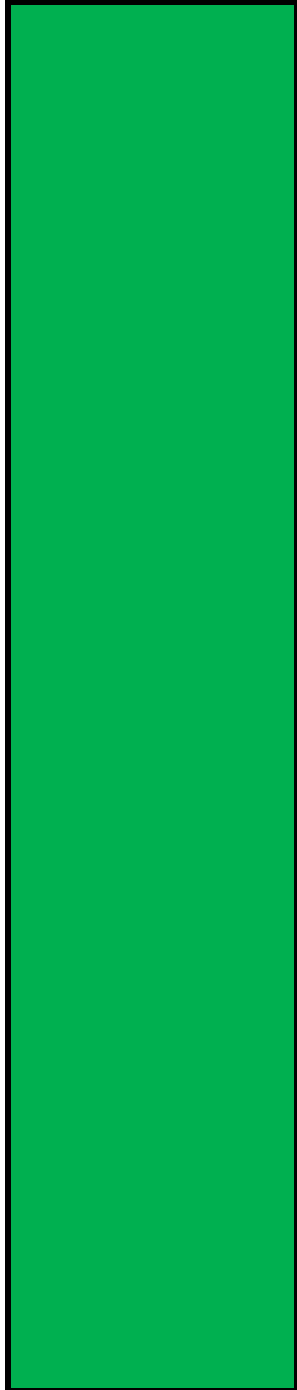
Nursery Materials and their Properties

- **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.**
- Explore a range of materials.
- Shape and join materials.
- Combine and mix ingredients.
- Change materials by heating and cooling, including cooking.

Reception Materials and their Properties

- **Explore the natural world around them.**
- **Describe what they see, hear and feel whilst outside.**
- Explore a range of materials, including natural materials.
- Make objects from different materials, including natural materials Observe, measure and record how materials change when heated and cooled.
- Compare how materials change over time and in different conditions.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials and their Properties	<p>Everyday Materials Distinguish between an object and the material from which it is made.</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p>Describe the simple physical properties of a variety of everyday materials.</p>	<p><u>Uses of Materials</u> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p style="color: red;">Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks)</p> <p style="color: red;">Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)</p> <p style="color: red;">Compare and group together a variety of everyday materials on the basis of</p>	<p><u>States of Matter</u> Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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).</p>	<p>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.</p> <p>Know that some materials will dissolve in liquid to form a solution and describe how to</p>	

	<p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>		<p>whether they are attracted to a magnet, and identify some magnetic materials. (Y3 - Forces and magnets)</p>	<p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)</p>	<p>recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>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</p>	

					bicarbonate of soda.	
<p>Notes and Guidance (Non-statutory)</p>	<p>Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque and transparent.</p> <p>Pupils should explore and experiment with a wide variety of materials, not only those listed in the programme of study, but including for example: brick, paper, fabrics, elastic, foil.</p>	<p>Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass).</p> <p>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.</p> <p>Pupils might find out about people who have developed useful new materials; for example, John Dunlop, Charles Macintosh or John McAdam.</p>	<p>Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment.</p>	<p><u>States of Matter</u> 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).</p> <p>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.</p> <p>Note: Teachers should avoid using materials where heating is associated with chemical change, e.g. through baking or burning</p> <p><u>Testing Material Properties</u> Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials and relating these to what they learnt about magnetism in Year 3 and about electricity in Year 4.</p>	<p><u>Reversible Changes</u> Pupils should explore reversible changes including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.</p> <p><u>Irreversible Changes</u> Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example vinegar with bicarbonate of soda.</p> <p>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 invented wrinkle-free cotton.</p> <p>Note: Safety guidelines should be followed when burning materials.</p>	

				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 conductors will produce a brighter bulb in a circuit than others and that some materials will feel hotter than others when a heat source is placed against them.		
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Nursery Rocks

- Use all their senses in hands-on exploration of natural materials. (Nursery – Living things and their habitats).
- Explore collections of materials with similar and/or different properties. (Nursery – Living things and their habitats).
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Reception Rocks

- Explore the natural world around them. (Reception – Living things and their habitats).
- Describe what they see, hear, and feel whilst outside. (Reception – Living things and their habitats).

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Rocks	<p>Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)</p>	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)</p>	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p>			<p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance)</p>

	<p>Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)</p>		Recognise that soils are made from rocks and organic matter.			
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Nursery Light

- **Explore how things work.**
- **Talk about the differences in materials and changes they notice.**
- Explore light sources.
- Shine light through different materials.

Reception Light

- **Describe what they see, hear and feel whilst outside.**
- Explore shadows.
- Explore Rainbows.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Light	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 -		<p><u>Light, reflections and shadows</u></p> <p>Recognise that they need light in order to see things and that dark is the absence of light.</p>		Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency,	<p><u>How light travels</u></p> <p>Recognise that light appears to travel in straight lines.</p> <p>Use the idea that light travels in straight lines to explain that objects</p>

	<p>Animals, including humans)</p> <p>Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)</p> <p>Observe changes across the four seasons. (Y1 Seasonal Changes)</p> <p>Observe and describe weather associated with the seasons and how day length varies (Y1 Seasonal Changes)</p>		<p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Find patterns in the way that the size of shadows change.</p>		<p>conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials)</p>	<p>are seen because they give out or reflect light into the eye.</p> <p>Explain that we see things because the light that travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>
<p>Notes and Guidance (Non-statutory)</p>	<p>Pupils should observe and talk about changes in the weather and the seasons.</p> <p>Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.</p>		<p>Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them answer questions about how light behaves.</p> <p>They should think about why it is important to protect their eyes from bright lights.</p> <p>They should look for, and measure shadows and find out how they are formed and what</p>			<p>Pupils should build on the work in year 3, exploring the way that light behaves, including light sources, reflection and shadows.</p> <p>They should talk about what happens and make predictions.</p>

might cause shadows to change.

Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.

Nursery Forces

- Explore how things work.
- Explore and talk about different forces they can feel.
- Talk about the differences between materials and changes they notice.
- Explore how objects/material are affected by forces.

Reception Forces

- Explore the natural world around them.
- Describe what they see, hear and feel whilst outside.
- Explore how to change how things work.
- Explore how to move objects.
- Explore how objects move in water.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces		Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)	<p><u>Non-contact forces</u> Compare how some things move on different surfaces.</p> <p>Notice that some forces need contact between two objects but magnetic forces can act at a distance.</p> <p>Observe how magnets attract or repel each other and attract some</p>		<p><u>Effects on Movement</u> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between</p>	

			<p>materials and not others.</p> <p>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.</p> <p>Describe magnets as having two poles.</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>		<p>moving surfaces.</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	
<p>Notes and Guidance (Non-statutory)</p>			<p>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).</p> <p>They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button, horseshoe).</p>		<p>Pupils should explore falling objects and raise questions about the effects of air resistance.</p> <p>They should explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.</p> <p>They should experience forces that make things begin to move, get faster or slow down.</p>	

					<p>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.</p> <p>Pupils should explore the effects of levers, pulleys and simple machines on movement.</p> <p>Pupils might find out how scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p>	
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Nursery Sound

- **Explore how things work.**
- Listen to sounds.
- Make sounds.

Reception Sound

- **Describe what they see, hear and feel whilst outside.**
- Listen to sounds outside and identify the source.
- Make sounds.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Sound	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 -			<p><u>Vibrations</u> Identify how sounds are made, associating some of them with something vibrating.</p>		

	Animals, including humans)			<p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p>		
Notes and Guidance (Non-statutory)				Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.		<p>Building on their work in Year 4, pupils should construct simple series circuits, to help them answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.</p> <p>They should learn how to represent a</p>

						<p>simple circuit in a diagram using recognised symbols.</p> <p>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.</p>
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Nursery Electricity

- **Explore how things work.**
- Identify electrical devices.
- Use battery powered devices.

Reception Electricity

- **Continue to explore how things work.**

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electricity				<p>Identify common appliances that run on electricity.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p>		<p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the</p>

				<p>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.</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>		<p>on/off position of switches.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>
<p>Notes and Guidance (Non-statutory)</p>				<p>Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices.</p> <p>Pupils should draw the circuit as a pictorial representation, not</p>		<p>Building on their work in Year 4, pupils should construct simple series circuits, to help them answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.</p> <p>They should learn how to represent a simple circuit in a diagram using recognised symbols.</p>

				<p>necessarily using conventional circuit symbols at this stage; these will be introduced in Year 6.</p> <p>Note: Pupils might use the terms current and voltage, but these should not be introduced or defined formally at this stage.</p> <p>Pupils should be taught about precautions for working safely with electricity.</p>		<p>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.</p>
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Nursery Earth and Space

- Talk about what they see, using a wide range of vocabulary – night, day, Sun, Moon and stars.

Reception Earth and Space

- Explore the natural world around them – learn about the Earth, Sun, Moon and stars.
- Describe what they see, hear and feel whilst outside.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Earth and Space	<p>Observe changes across the four seasons. (Y1 - Seasonal changes)</p> <p>Observe and describe weather associated with the seasons and how day length varies. (Y1 - Seasonal changes)</p>				<p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as</p>	

					<p>approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	
<p>Notes and Guidance (Non-statutory)</p>					<p>Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night.</p> <p>Pupils should learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).</p> <p>They should understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).</p> <p>Note: Pupils should be warned that it is not safe to look</p>	

					<p>directly at the Sun, even when wearing dark glasses.</p> <p>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, Alhazen and Copernicus</p>	
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