

Substantive	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Plants</p> <p>This involves becoming familiar with different types of plants, their structures and reproduction.</p>	<p>-know that plants grow from a seed.</p> <p>-know that plants need water, soil and sun to grow.</p> <p>-know the parts of a plant – roots, stem, leaves, flower</p>	<p>-know, identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p><i>Wild plants: dandelion, daisy, fox glove, bluebell, dock leaves, nettles</i></p> <p><i>Garden plants: rose, tulip, daffodil, sunflower, rosemary, mint</i></p> <p><i>Trees: elm, hazel, juniper, larch, maple, oak, pine, redwood, sycamore, teak, willow, yew, holly</i></p> <p><i>Mention that some flowers turn into fruit, or the plant's stem or root is the vegetable: tomato, cabbage, carrot, potato, cucumber, strawberry.</i></p> <p>-know, identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>-know, observe and describe how seed and bulbs grow into mature plants</p> <p><i>Pupils should be introduced to the requirements of plants for germination, growth and survival as well as to the processes of reproduction and growth in plants – this will be covered in more depth in year 5.</i></p> <p><i>Seeds and bulbs need water to grow but most do not need light: seeds and bulbs have a store of food inside them.</i></p> <p>-know and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>-know, identify and describe the functions of different parts of flowering plants: root-anchors, stem/trunk-carries nutrients, leaves- make food, flowers – petals attract, stamen - male, carpel-female.</p> <p>-know and 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. Note – pupils are 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> <p>-know and investigate the way in which water is transported within plants.</p> <p>-know and explore the part that flowers play in the life cycle of flowering plants, including fertilisation, pollination, seed formation and seed dispersal.</p>		<p>-know and describe the life process of reproduction in some plants.</p>	<p>-know and identify how plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>-know and give reasons for classifying plants based on specific characteristics.</p>
<p>Animals including humans</p> <p>This involves becoming familiar with different types of animals, the human body and processes they share.</p>	<p>-know that all humans have a body.</p> <p>-know that everyone has individual features.</p> <p>-know how to keep their bodies healthy, e.g. eating healthy food, exercising, screen-time, etc.</p> <p>-know that we have a skeleton.</p> <p>-know where to find their skeleton.</p> <p>-know what skin is.</p> <p>-know what a bone is.</p> <p>-know the names of some body parts</p> <p>-know that they have 5 senses.</p> <p>-know that plants grow from a seed.</p> <p>-know that plants need water, soil and sun to grow.</p> <p>-know the parts of a plant – roots, stem, leaves, flower</p> <p>-know that mini beasts are insects and arachnids</p> <p>-know how to identify a worm, spider, ant, snail and caterpillar.</p> <p>-know spiders have 8 legs.</p> <p>-know insects have 6 legs.</p> <p>-know a snail has a shell.</p> <p>-know a worm has no bones.</p> <p>-know the life cycle of a caterpillar.</p> <p>-know that hatching is the process of a chick exiting an egg.</p> <p>-know that an incubator provided heat for the chick to hatch.</p> <p>-know that being alive is when you have a heartbeat.</p> <p>-know that death is when a heart stops beating.</p> <p>-know a carnivore is a meat eater.</p> <p>-know that herbivores are plant eaters.</p> <p>-know that extinct means no longer living, and not found alive anywhere on the planet.</p>	<p>-know, identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Know how to take care of animals taken from the local environment and the need to return them safely.</p> <p><i>Knowledge needed:</i></p> <ul style="list-style-type: none"> • Fish have scales, fins and gills, lay eggs, and live in water their whole lives. • Amphibians start life in water. They have limbs, not fins, can move around on land, but need to stay near water where they lay their eggs. • Reptiles have limbs. They lay eggs on land and have scaly skin. • Birds have two wings and two legs. They lay eggs. Some, but not all birds can fly. • Mammals give birth to live young. They have hair or fur. They produce milk for their offspring. <p>-know, identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>-know, describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>-know, identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each of the five senses (sight, hearing, taste, smell and touch). Use games, actions, songs and rhymes.</p>	<p>-know that animals, including humans, have offspring which grow into adults.</p> <p><i>This is recognising growth and similarities not reproduction (e.g. egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep; baby, toddler, child, teenager, adult)</i></p> <p>-know and describe the basic needs of animals, including humans, for survival (water, food and oxygen).</p> <p>-know and describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>-know and identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>-know and 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.</p>	<p>-know and identify different types of teeth in humans and their simple functions.</p> <p>-know and describe the simple functions of the basic parts of the digestive system in humans.</p> <p>-know, construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>-know and describe the changes as human develop to old age (ink to PSHE).</p>	<p>-know, identify and name the main parts to the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>-know and describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>-know and recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p>

<p>Living things and their habitats</p> <p>This involves becoming familiar with a wide range of living things and understanding how they are suited to their habitat, including adaptation.</p>	<p>-know the names of common materials and objects from their own environment.</p>		<p>-know and 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.</p> <p>-know, identify and name a variety of plants and animals in their habitats, including micro-habitats.</p> <p><i>Habitat – a natural environment or home of a variety of plants and animals.</i></p> <p><i>Micro-habitat – a very habitat, or example woodlice under stones, logs or leaf litter.</i></p> <p>-know, explore and compare the differences between things that are living, dead and things that never have been alive.</p> <p>-know and 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>-know and recognise that living things can be grouped in a variety of ways</p> <p>-know, explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>-know and recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>-know and describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>-know and describe the life process of reproduction in some animals.</p> <p>-know and describe the life process of reproduction in some plants.</p>	<p>-know and 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>-know and give reasons for classifying plants and animal based on specific characteristics.</p>
<p>Evolution</p> <p>This involves understanding that organism come into existence, adapt, evolve and become extinct.</p>							<p>-know and identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>-know and recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>-know how to recognise that things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>
<p>Everyday materials</p> <p>This involves becoming familiar with a wide range of materials, their properties, uses and how they can be altered.</p>	<p>-know that some things can change, e.g. water into ice, chocolate can be melted, etc. ice melting experiment</p> <p>-know that extremely low temperatures will cause water to freeze and become ice.</p> <p>-know that ice can melt when temperatures rise.</p> <p>-know the names of common materials and objects from their own environment.</p> <p>-know a material is what objects are made of.</p> <p>-know that materials have different qualities.</p> <p>-know that different materials are better than others when constructing.</p> <p>-know what a mirror is.</p> <p>-know that a mirror has a reflective surface.</p>	<p>-know, identify and name a variety of everyday materials including; wood, plastic, glass, water, rock, brick, paper, fabric, elastic and foil. Include liquids and gases to avoid misconception that a material is a solid.</p> <p>-know and distinguish between an object and the material which it is made such as scissors, paper, glass and pencils.</p> <p>-know and describe some of the physical properties of everyday materials. Use their senses to describe them (bendy, rough etc.).</p> <p>-know, compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>-know that some materials are used for more than one thing e.g. metal can be used for coins, cards, cans and table legs; wood can be used for matches, floors and telegraph poles.</p> <p>-know that properties of material make them suitable or unsuitable for particular purposes and think of creative uses for everyday materials.</p> <p>-know and find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p>-know, 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>-give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, woods and plastic.</p> <p><i>This is then to continue throughout the topic as the comparative and fair tests will happen during filtering, evaporation, thermal insulation etc.</i></p> <p>-know, compare and group together everyday materials on the bases 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 recover a substance from a solution.</p> <p>-know how to separate mixtures, including through filtering, sieving and evaporating</p> <p>-know and demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>-know and explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>	
<p>Rocks</p> <p>This involves becoming familiar with the types of rocks, how they are</p>				<p>-know, compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>-know and describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p>			

formed, their uses and properties.				-know and recognise that soils are made from rocks and organic matter.			
<p>States of matter</p> <p>This involves becoming familiar with how objects are 'states' and the difference in particle structure.</p>					<p>-know, compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>-know and observe some materials that change state when they are heated or cooled, and measure or research the temperature at which this happens in degree Celsius (°C)</p> <p>-know and identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>		
<p>Light</p> <p>This involves understand light, shadows and how reflection affect sight.</p>	<p>-know that a mirror has a reflective surface.</p> <p>-know that a shadow is made from the absence of light.</p>			<p>-know and recognise that they need light in order to see things and that dark is the absence of light.</p> <p>-know that light is reflected from surfaces</p> <p>-know that light from the sun can be dangerous and that they are ways to protect their eyes.</p> <p>-know that shadows are formed when light from a light source is blocked by an opaque object</p> <p>-know and find patterns in the way that the size of shadows changes.</p>			<p>-know and recognise that light appears to travel in straight lines.</p> <p>-know and 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.</p> <p>-know and 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.</p> <p>-know and 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>Forces and magnets</p> <p>This involves understanding what causes motion.</p>	<p>-know what a magnet is.</p> <p>-know that magnets can attract some metals.</p> <p>-know that some materials are not magnetic.</p>			<p>-know that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>-know and compare how things move on different surfaces.</p> <p>-know, compare and group together a variety of everyday materials on the bases of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>-know and observe how magnets attract or repel each other and attract some materials and not others.</p> <p>-know and describe magnets as having two poles.</p> <p>-know and predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>		<p>-know and identify the effects of air resistance, water resistance and friction, that act between moving surfaces. <i>Air resistance, water resistance and friction are contact forces that act between moving surfaces. The object may be moving through the air or water or the air and water may be moving over a stationary object.</i></p> <p>-know and explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. <i>A force causes an object to start moving, stop moving, speed up, slow down or change direction. Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.</i></p> <p>-know how to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. <i>A mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover. Pulleys, levers and gears are all mechanisms, also known as simple machines.</i></p>	
<p>Earth and Space, Seasonal Change</p> <p>This involves understanding</p>	<p>-know that there are four seasons.</p> <p>-know the names of the 4 seasons and the order they are found. ((Autumn, Winter, Spring and Summer)</p> <p>-know the common features of Autumn, Winter, Spring and Summer.</p>	<p>-know and observe changes across the four seasons.</p> <p><i>Tasks in italics are not restricted to the science lesson and occur across the year to support real experiences and retention.</i></p>				<p>-know and 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>-know and describe the movement of the moon relative to the Earth</p> <p>-know and describe the Sun, Earth and Moon as approximately spherical bodies.</p>	

<p>what causes seasonal changes, day and night</p>	<p>-know the how to identify between snowing, sunny, raining, foggy, stormy, cloudy and windy.</p> <p>-know that the weather in the Polar regions is significantly different to that in the UK.</p> <p>-know that Africa as a continent has much warmer weather than the UK.</p> <p>-know that in summer we have hotter days, wear less clothing and apply sun cream</p>	<p>-know, observe and describe weather associated with the seasons and how day length varies.</p>				<p>-know and describe the movement of the Earth, and other planets, relative to the sun in the solar system.</p>	
<p>Sound This involves understanding how sound is produced, how it travels and how it is heard.</p>					<p>-know and identify how sounds are made, associating some of them with something vibrating.</p> <p>-know and recognise that vibrations from sounds travel through a medium to the ear.</p> <p>-know and recognise that sounds get fainter as the distance from the sound source increases.</p> <p>-know how to find pattern between the volume of a sound and the strength of the vibrations that produced it.</p> <p>- know how to find pattern between the pitch of a sound and features of the object that produced it.</p>		
<p>Electricity This involves understanding how electricity is made, how it travels and its role within a circuit and electrical appliances.</p>					<p>-know how to identify common appliances that run on electricity (mains and battery).</p> <p>-know how to construct a simple series electrical circuit, identifying and naming its basic parts (components) including cells, wires, bulbs, switches and buzzers. Using these circuits to create simple devices. Draw circuit and components as pictorial representations not necessarily using circuit symbols – y6.</p> <p>-know how to and 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/cell.</p> <p>-know how to 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>-know how to recognise some common conductors and insulators, and associate some metals with being good conductors – silver, copper, gold, copper, aluminium, steel and brass.</p>		<p>-know and use recognised symbols when representing a simple circuit in a diagram</p> <p>-know and 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>-know, 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.</p>