

Progression in Scientific Knowledge & Skills

Plants

	Expectations	Key words
EYFS	<ul style="list-style-type: none"> identify something as a plant name some common plants, identify leaf, root, stem and flower recognise that plants need water to grow name some places plants live identify the seeds in a fruit 	root, stem, tree, leaf, flower, water, seed, plant.
Y1	<ul style="list-style-type: none"> identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers to become familiar with common names of flowers and trees (deciduous and evergreen) to ask questions about plants growing in the local habitats <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> observing closely comparing and contrasting familiar plants identifying and grouping familiar plants, giving reasons drawing a simple diagram recording changes over time 	Leaf, flower, blossom, petal, fruit, berry, seed, trunk, branch, bark, stalk, bud.
Y2	<ul style="list-style-type: none"> observe and describe how seeds and bulbs grow into mature plants find out and describe how plants need water, light and a suitable temperature to grow and stay healthy to understand that plants are living but eventually die understand the requirements of plants for germination, growth and survival, as well as the process of reproduction and growth in plants <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb setting up a comparative test to show that plants need light and water to stay healthy 	Light, shade, sun, warm, cool, water, grow, healthy, germination.



Y3

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal
- understand the process of plants making their own food in the leaves using energy from the sun
- understand that flowers need to attract insects to aid pollination
- to know that fertilisation occurs in the ovary of the flower and that seeds are formed as a result of fertilisation
- understand that plants need nutrients to grow healthily (either naturally from the soil or from fertiliser added to soil)

Pupils might work scientifically by:

- comparing the effect of different factors on plant growth, for example the amount of light or the amount of fertiliser
- observing the different stages of plant cycles over a period of time
- looking for patterns in the structure of fruits that relate to how the seeds are dispersed
- observing how water is transported in plants, for example, by putting cut, white carnations into coloured water
- observing how water travels up the stem to the flowers

Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal – wind dispersal, animal dispersal, water dispersal.



Animals, including humans

	Expectations	Key words
EYFS	<ul style="list-style-type: none"> • identify something as an animal • name some places animals live • identify and locate parts of their body • identify and locate parts of animals' bodies • use their observations to describe humans and other animals • name a very limited range of food • can identify types of exercise • name baby, child, adult and the young of some other animals 	animal, head, legs, arms, knee, elbow, neck, face, feet, hands, bread, potatoes, apples, cereals, rice, meat, fish, milk, running, jumping, swimming, walking, chicken, hen, kitten, cat, puppy, dog, duckling, duck.
Y1	<ul style="list-style-type: none"> • identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense • recognise that humans are animals • compare and describe differences in their own features (eye, hair, skin colour, etc.) • find out and describe how animals look similar and different to one another • group together animals according to their different features • to know that animals have senses to explore the world around them and to help them to survive • recognise that animals need to be treated with care and sensitivity to keep them alive and healthy • understand that animals are alive; they move, feed, grow, use their senses and reproduce <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • comparing and contrasting humans (at first hand) and animals • describing how to identify and group animals, including what they eat • exploring and using their human senses 	Head, body, eyes, nose, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves.



<p>Y2</p>	<ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene to understand that medicines can be useful when we are ill but harmful when not used properly to be introduced to the basic process of reproduction and growth in animals, including humans (baby, toddler, child, teenager, adult) <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> observing how different animals grow (video, first hand or measurement) asking questions about what animals, including humans need for survival and suggest ways to find answers asking questions about what humans need to stay healthy and suggest ways to find answers 	<p>offspring, reproduction, growth, child, young/old stages (examples – chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta).</p>
<p>Y3</p>	<ul style="list-style-type: none"> identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat identify that humans and some other animals have skeletons and muscles for support, protection and movement to recognise that animals are alive; they move, feed, grow, use their senses and reproduce to know that an adequate and varied diet is beneficial to health regular and varied exercise from a variety of different activities is beneficial to health identify animals which have a skeleton, which supports their body, aids movement & protects vital organs (be able to name some of the vital organs) identify animals without internal skeletons/backbones and describe how they have adapted other ways to support themselves, move and protect their vital organs compare and contrast the skeletons of birds, mammals, fish, amphibians or reptiles to know that muscles, which are attached to the skeleton, help animals move parts of their body to explore how humans grow bigger as they reach maturity by making comparisons linked to body proportions and skeleton growth – e.g. do people with longer legs have longer arm spans? <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> comparing and contrasting diets of different animals grouping animals according to what they eat researching different food groups and how they keep us healthy designing meals based on learning identifying and grouping animals with and without skeletons observing and comparing movement of animals exploring what would happen if...? 	<p>nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints.</p>



<p>Y4</p>	<ul style="list-style-type: none"> 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 describe how teeth and gums have to be cared for in order to keep them healthy <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> comparing the teeth of carnivores and herbivores and suggest reasons for differences researching what damages teeth and how to look after them looking at different representations of teeth and the digestive system e.g. own, models, x-rays and compare them drawing, labelling and discussing teeth and the digestive system 	<p>Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain.</p>
<p>Y5</p>	<ul style="list-style-type: none"> describe the changes as humans develop to old age to understand that animals are alive; they move feed, grow, use their senses and excrete to be able to draw a timeline to indicate stages in growth and human development <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> researching gestation periods in other animals and compare them with humans investigating and recording the length and mass of a baby as it grows 	<p>Gestation period, pregnancy, live birth, egg.</p>
<p>Y6</p>	<ul style="list-style-type: none"> identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function describe the ways in which nutrients and water are transported within animals, including humans to understand that the heart is a major organ and is made of muscle and know the role it plays in the circulatory system to understand that the heart pumps blood through the lungs in order to obtain a supply of oxygen. to understand that the blood carries oxygen/essential materials to different parts of the body to understand that during exercise muscles need more oxygen so the heart beats faster and our breathing and pulse rates increase to know that animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete to know that an adequate, varied and balanced diet is needed to help us grow and repair our bodies (proteins), provide us with energy (fats and carbohydrates) and maintain good health (vitamins and minerals) to understand that tobacco, alcohol and other 'drugs' can be harmful to know that all medicines are drugs, but not all drugs are medicines <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> researching and exploring the work of scientists, such as Marie Curie researching the relationship between diet, exercise, drugs, lifestyle and health observing and measure changes to breathing, heart beat and or pulse after exercise 	<p>Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle.</p>



Living things and their habitats

	Expectations	Key words
EYFS	See 'Animals including humans'	
Y2	<ul style="list-style-type: none"> to explore and compare the differences between things that are living, dead, and things that have never been alive to 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. to identify and name a variety of plants and animals in their habitats, including micro-habitats to 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. to know that different kinds of plants and animals live in different kinds of places to know that there are different kinds of habitat near school which need to be cared for to understand that habitats provide the preferred conditions for the animals/plants that live there (compare local habitats and less familiar examples) <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> sorting and classifying things as to whether they are living, dead or were never alive recording their findings using charts describing how they decided where to place things exploring questions such as: 'Is a flame alive? Is a deciduous tree dead in winter?' talking about ways of answering their questions constructing a simple food chain that includes humans (e.g. grass, cow, human) describing the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) finding out how the conditions affect the number and type(s) of plants and animals that live there 	living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, names of local habitats e.g. pond, woodland etc., names of micro-habitats e.g. under logs, in bushes etc.
Y4	<ul style="list-style-type: none"> to recognise that living things can be grouped in a variety of ways to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment to recognise that environments can change and that this can sometimes pose dangers to living things to use and make identification keys for plants and animals understand how habitats change throughout the year explore the positive and negative impact of humans on the environment e.g. populations, deforestation, conservation projects <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> using and making simple guides or keys [sorting, grouping, comparing, classifying] to explore and identify local plants and animals making a guide [sorting, grouping, comparing, classifying] to local living things raising and answering questions based on their observations of animals what they have found out about other animals that they have researched 	classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate.



<p>Y5</p>	<ul style="list-style-type: none"> • to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • to describe the life process of reproduction in some plants and animals • find out about the work of David Attenborough or Jane Goodall • observe life cycle change in living things • find out about sexual and asexual reproduction in living things <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times) • asking pertinent questions • suggesting reasons for similarities & differences • they might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs • observe changes in an animal over time (for example, by hatching and rearing chicks) • comparing how different animals reproduce and grow 	<p>life cycle, reproduce, sexual, fertilises, egg, live young, metamorphosis, plantlets, runners, bulbs, cuttings.</p>
<p>Y6</p>	<ul style="list-style-type: none"> • to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • to give reasons for classifying plants and animals based on specific characteristics • to know living things can be grouped into micro-organisms, plants and animals • to know vertebrates can be grouped as fish, amphibians, reptiles, birds and mammals • to know invertebrates can be grouped as snails and slugs, worms, spiders and insects • to know plants can be grouped as flowering plants (incl. trees and grasses) and non-flowering plants (such as ferns and mosses) <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • using classification systems and keys • identifying some animals and plants in the immediate environment • researching unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system • finding out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification 	<p>vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering.</p>



Materials

	Expectations	Key words
EYFS	<ul style="list-style-type: none"> • make observations of common objects • make very simplistic observations of materials • arrange materials into groups • identify when changes occur e.g. when food is cooked 	shiny, smooth, bendy, stretchy, soft
Y1	<ul style="list-style-type: none"> • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties • learn 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 • raise their own questions about every day materials and properties <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • performing simple tests to explore questions e.g. 'What is the best material for...?' 	object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through.
Y2	<ul style="list-style-type: none"> • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching • understand that some materials can be found naturally; others have to be made - what can we find in our local environment? • understand that materials can be used for more than one thing • understand why certain properties of materials make them suitable for specific purposes <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); • observing closely, • identifying and classifying the uses of different materials, and recording their observations. • thinking about unusual and creative uses for everyday materials 	Names of materials – increased range from year 1. Opaque, transparent and translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.



<p>Y4</p>	<ul style="list-style-type: none"> • compare and group materials together, according to whether they are solids, liquids or gases • observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • to understand that solids, liquids and gases can be identified by their observable properties • to understand and observe how freezing, melting and boiling changes can be reversed • to know that solids have a fixed size and shape (the size and shape can be changed but it remains the same after the action) • to know and observe that liquids can pour and take the shape of the container in which they are put • to know that liquids form a pool not a pile • to know and observe that solids in the form of powders can pour as if they were liquids but make a pile not a pool • understand that gases fill the container in which they are put but escape from an unsealed container • understand that liquids and gases can flow <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • grouping and classifying a variety of different materials • exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party) • researching the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid • observing and recording evaporation over a period of time, such as a puddle in the playground or washing on a line • investigating the effect of temperature on washing drying or snowmen melting • use data logging equipment to detect/measure and compare temperatures. 	<p>Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle.</p>
<p>Y5</p>	<ul style="list-style-type: none"> • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda • compare a variety of materials and measure their effectiveness for a particular purpose 	<p>Thermal/electrical insulator/conductor, change of state, mixture, dissolve, transparency, solution, soluble, insoluble, filter, sieve reversible/non-reversible change, burning, rusting, new material.</p>



- understand that heat always moves from hot to cold
- understand that some materials (insulators) are better at slowing down the movement of heat than others
- to understand and observe that some material changes can be reversed and some cannot
- distinguish between melting and dissolving
- understand how evaporation helps us separate soluble materials from water
- to explore how changes to materials can happen at different rates (factors affecting dissolving, factors affecting evaporation – amount of liquid, temperature, wind speed)
- know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution

Pupils might work scientifically by:

- carry out tests to answer questions such as 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting?'
- compare materials in order to make a switch in a circuit
- observing and comparing the changes that take place, for example, when burning different materials or baking bread or cakes
- researching and discussing how chemical changes have an impact on our lives, for example cooking
- discuss/research the creative use of new materials such as polymers, super-sticky and super-thin materials



Light and sound

	Expectations	Key words
EYFS	<ul style="list-style-type: none"> know that it is dangerous to look at the sun relate their sense of sight to their eyes relate their sense of hearing to their ears 	eyes, sun, ears, sound, noise, dangerous
Y3	<ul style="list-style-type: none"> recognise that they need light in order to see things and that dark is the absence of light notice that light is reflected from surfaces recognise that light from the sun can be dangerous and that there are ways to protect their eyes recognise that shadows are formed when the light from a light source is blocked by a solid object find patterns in the way that the size of shadows change explore what happens when light is reflects off a mirror or other reflective surface <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> observing how shadows are formed and how the size and shape of shadows can change looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. 	light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous.
Y4	<ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases to explore how sounds can be made in a variety of ways (pluck, bang, shake, blow) using a variety of things (instruments, everyday materials, body) understand that vibrations may not always be visible to the naked eye to know that sounds are heard when they enter our ears (although the structure of the ear is not important key learning at this age phase) to know that sounds can travel through solids, liquids and air/gas by making the materials vibrate to know that sound travel can be reduced by changing the material that the vibrations travel through to know that sound travel can be blocked <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of 	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation.



	<p>different thicknesses</p> <ul style="list-style-type: none"> • they might make ear muffs from a variety of different materials to investigate which provides the best insulation against sound • they could make and play their own instruments by using what they have found out about pitch and volume • use data logging equipment to detect/measure and compare sounds • observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit 	
Y6	<ul style="list-style-type: none"> • recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • deciding [observe/explore] where to place rear-view mirrors on cars. • designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. • investigating the relationship between light sources, objects and shadows by using shadow puppets. • extending their experience [explore and observe] of light by looking at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur). 	<p>Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous, straight lines, light rays.</p>



Forces

	Expectations	Key words
EYFS	<ul style="list-style-type: none"> observe and describe movements they and objects make 	Push, pull, twist, squash, stretch
Y3	<ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing explore the everyday uses of different magnets <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> comparing how different things move and grouping them raising questions and carrying out tests to find out how far things move on different surfaces gathering and recording data to find answers to their questions exploring the strengths of different magnets and finding a fair way to compare them sorting materials into those that are magnetic and those that are not looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets 	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole.
Y5	<ul style="list-style-type: none"> explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving surfaces recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect to explore the different types of forces (push, pull, friction, air resistance, water resistance, magnetic forces, gravity) understand that gravity can act without direct contact between the Earth and an object know that friction, air resistance and water resistance are forces which slow down moving objects and that they can all be useful or unwanted understand and observe the effects of friction, air resistance and water resistance can be reduced or increased for a 	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears.



preferred effect

- understand that more than one force can act on an object simultaneously (either reinforcing or opposing each other)

Pupils might work scientifically by:

- exploring falling paper cones or cup-cake cases
- designing and making a variety of parachutes
- carrying out fair tests to determine which designs are the most effective
- exploring resistance in water by making and testing boats of different shapes
- designing and making artefacts that use simple levers, pulleys, gears and/or springs and explore their effects.



Electricity

	Expectations	Key words
EYFS	<ul style="list-style-type: none"> know electricity can be dangerous explore a range of battery powered devices 	Battery, electricity, switch
Y4	<ul style="list-style-type: none"> identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors to know that electricity can be dangerous to understand that electricity sources can be mains or battery understand that batteries 'push' electricity round a circuit and can make bulbs, buzzers and motors work identify faults in a circuit by methodically testing connections and then fix <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit 	Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol.
Y6	<ul style="list-style-type: none"> associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram learn how to represent a simple circuit in a diagram using recognised symbol use circuit diagrams to construct a variety of more complex circuits predicting whether they will 'work' <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> systematically identifying the effect of changing one component at a time in a circuit designing and making a set of traffic lights, a burglar alarm or some other useful circuit 	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage.



Seasonal Changes

	Expectations	Key words
EYFS	<ul style="list-style-type: none"> talk about some of the things they have observed such as plants, animals, natural and found objects. 	Grow, water, light, food, change
Y1	<ul style="list-style-type: none"> observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies to know what the four seasons are to discuss how the seasonal changes have an impact on living things to discuss and describe the weather across different seasons to understand that it is dangerous to look directly at the sun <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Making tables and charts about the weather Making displays of what happens in the world around them, including day length, as the seasons change 	Weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length.



Rocks

	Expectations	Key words
Y3	<ul style="list-style-type: none"> • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter • to understand and observe how rocks and soils can feel and look different • to understand that rocks and soils can be different in different places/environments <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • observing rocks, including those used in buildings and gravestones • exploring how and why they might have changed over time using a hand lens or microscope to help them • identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. • exploring how fossils are formed • researching and discussing the different kinds of living things whose fossils are found in sedimentary rock • exploring different soils • identifying similarities and differences between them 	<p>Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil.</p>



Earth and Space

	Expectations	Key words
Y5	<ul style="list-style-type: none"> • describe the movement of the Earth, and other planets, relative to the Sun in the solar system • describe the movement of the Moon relative to the Earth • describe the Sun, Earth and Moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky • to name all the planets in our solar system • understand that the Earth spins once around its own axis in 24 hours, giving day and night • understand that the Earth orbits the Sun in one year • understand that we can see Moon because the Sun's light reflects off it • understand that the Moon orbits the Earth in approximately 28 days and changes to the appearance of the moon are evidence of this • understand that the Sun appears to move across the sky from East to West and this causes shadows to change during the day. • understand and observe how changes to shadow length over a day or changes to sunrise and sunset times over a year are evidence supporting the movement of the Earth <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • comparing the time of day at different places on the Earth through internet links and direct communication • creating simple models of the solar system • constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day • finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks 	<p>Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune) spherical, solar system, rotates, star, orbit, planets.</p>



Evolution and Inheritance

	Expectations	Key words
Y6	<ul style="list-style-type: none"> recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. understand how 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 poodle find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> observing and raising questions about local animals and how they are adapted to the environment comparing how some living things adapt to survive in extreme conditions, e.g. cactuses, penguins and camels analysing the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers 	<p>Offspring, reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils.</p>

