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Y1 Plants	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees.
Key Vocab	leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area, names of garden and wild flowering plants in the local area
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> 1. Plants are living things. Some grow wild and some are planted by humans. 2. Parts of all plant include: roots, stem, leaves Flowering plants also have petals. (across a variety of species). 3. Some common wild and garden plants include: daisy, primrose, buttercup, dandelion, bluebells, daffodils, wild garlic, sunflowers. 4. Parts of a tree include: roots, trunk, branches, leaves, flowers (across a variety of species). 5. Deciduous trees lose their leaves for part of the year (e.g. oak, sycamore, ash, willow, beech) 6. Evergreen trees keep their leaves all year (e.g. Yew, Pine, Spruce). 	<ol style="list-style-type: none"> 1. Outdoor walk to observe parts of trees and plants in local area. 2. Match/draw/label key parts of plants. 3. Children identify different plants in local area. Could use a plant recognition app or field guide to support this. 4. Match/draw/label key parts of trees. Compare these to plants – what is same/different. 5. Identify common deciduous trees. 6. Identify common evergreen trees. Classify evergreen and deciduous trees.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> • Name the key parts of plants and trees • Name common wild and garden plants and trees • Describe differences between deciduous and evergreen trees

Year 1 Animals including humans	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals 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 (fish, amphibians, reptiles, birds and mammals, 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.
Vocab	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> The key parts of the human body are head, neck, face, ears, eyes, hair, mouth, teeth, arms, elbows, hands, legs, knees and feet. Eyes are for sight, ears are for hearing, skin is for touch, nose is for smell, tongue is for taste. Different animals (fish, amphibians, reptiles, birds and mammals) have different structures. <i>There is no need to define animal groups at this stage, only identify the structure and features of a variety of common animals.</i> Fish include: Shark, Cod, Goldfish, Eel. Amphibians include: Frog, Toad, Newt, Axolotl, Salamander. Reptiles include: Snakes, Lizards, Crocodiles, Turtles. Birds include: Pidgeon, Duck, Emu, Penguin Mammals include: Human, Cat, Elephant, Whale, Dolphin A carnivore is an animal that eats other animals, a herbivore is an animal that eats plants, an omnivore is an animal that eats both other animals and plants. Carnivores include: Tiger, Crocodile, Orca, Bald Eagle. 	<ol style="list-style-type: none"> Pupils draw around another pupil on big paper and label basic body parts. Children are provided with an activity to understand their senses through food (smell, touch, taste, sight, sound). Look at different pictures of animals and group them according to their features. Highlight breadth of group by discussing less common animals from each groups e.g. water based mammals. Children dissect 'fake poo' to discuss whether the animal is a herbivore, omnivore or carnivore based on the material (fur, seeds, grass, feathers).



<p>Herbivores include: Horse, Rabbit, Snail, Grasshopper, Parrotfish. Omnivores include: Bear, Fox, Chicken, Crow, Turtle.</p>	<p>5. Group animals together according to whether they are carnivores, herbivores or omnivores. <i>There is no need to teach grouping at this stage.</i></p>
<p>Assessment priorities (focusses on key knowledge)</p>	<ul style="list-style-type: none">• Name and label the basic parts of the human body, including the five senses and the body parts associated with them• Name some common animals and explain that animals can have different features.• Identify a range of carnivores, herbivores or omnivores and describe their diet.

Y1 Everyday Materials	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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.
Vocab	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
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> 1. Common materials used to make objects include wood, plastic, metal, rock and fabric. 2. The material is the substance an object is made from and an object can be made from more than one material. 3. Common properties of materials include shiny, dull, stretchy, rough, smooth etc. Different materials have different properties. Some materials e.g. plastic can be in different forms with very different properties. 4. Some objects can be made from different materials e.g. plastic, metal or wooden spoons. 5. Materials or objects can be grouped by similar physical properties. 	<ol style="list-style-type: none"> 1. Go on a walk to identify different materials around the school or local area. 2. Look at a range of objects and identify the material(s) used to make the object. 3. Feely bags – children describe the properties of an object. Odd one out activity. Look at examples of plastics and identify different properties e.g. some are flexible, some of transparent. Test the properties of objects e.g. absorbency of cloths or waterproofness of materials. 4. Classify in different ways one type of object made from a range of materials e.g. a collection of spoons made of different materials. 5. Classify materials based on their properties. Classify objects made of one material in different ways e.g. a group of object made of metal.
Assessment priorities	<ul style="list-style-type: none"> • Names of common materials. • Identify properties of materials • Group objects based on the properties of the materials they are made from.



(focusses on key knowledge)	
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Year 1 Seasonal changes	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> observe changes across the 4 seasons observe and describe weather associated with the seasons and how day length varies
Vocab	weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
Possible learning activities	
<i>This unit could be completed as a discrete unit or could be completed across the year as the seasons change.</i>	
<ol style="list-style-type: none"> The UK has four seasons: spring, summer autumn & winter. The seasons are associated with typical weather e.g. warmth in summer and cold in winter. The sun only shines on half the Earth at any time. Daytime occurs when a location faces the sun, nighttime occurs when a location faces away from the sun. Half the Earth is always day, half is always night. The length of daytime changes depending on the season: In summer the days are longer, in winter they are shorter. 	<ol style="list-style-type: none"> Pupils record the weather throughout the year and observe patterns. Pupils identify the season from descriptions of weather, plants etc. Use a globe and torch to show night and day. Rotate the globe to show sunrise and sunset. Record the length of day over the course of a year (sunrise/sunset data from met office).
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> Seasons and associated weather and day length. How day/night is cause by sunlight.

Year 2 – Living things and their habitats	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • explore and compare the differences between things that are living, dead, and things that have never been alive • 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 • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea a simple food chain, and identify and name different sources of food.
Vocab	<p>living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2 - Plants) offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, cat/kitten, caterpillar/butterfly) (Y2 - Animals, including humans)</p>
CPD	<p>Primary Resources Science Reach Out CPD</p>
Suggested learning sequence – key knowledge	
Possible learning activities	

<ol style="list-style-type: none"> 1. (This is a recap of year 1 knowledge) Trees can be deciduous or evergreen. There are lots of different plants but they all have similar characteristics (roots, leaves etc). Animals with similar characteristics are grouped together (fish, amphibians, reptiles, birds and mammals). Animals can be carnivores, herbivores or omnivores. 2. Things can be: Living (moves, grows, requires food & reproduces e.g. plants & animals) Dead (was once living but is no longer e.g. wood, leaves & bones) Never being alive (materials like glass, metal & plastic or water & air) 3. Animals get their food from eating plants and/or other animals. This can be represented by a simple food chain. 4. Animals get their food from within their habitat. A habitat is an area where plant and animals live and need each other to survive. Plants and animals are suited to the habitat they live in. 5. A micro-habitat is a very small part of a habitat e.g. a patch of soil, a crack in a rock pool or under a log. 	<ol style="list-style-type: none"> 1. Decide if a tree is deciduous or evergreen from its foliage at different times of the year. Match the names of common plants to their pictures. Name common animals from each grouping. Identify whether animals are carnivores, herbivores or omnivores. 2. Identify object from a picture. Go on a walk to identify living/non-living/dead. 3. Produce simple food chains: grass-rabbit-fox, seaweed-fish-Sea Lion. 4. Look at contrasting habitats e.g. polar, desert and coastal. Why are plants and animals suited to the habitat? 5. Investigate a microhabitat e.g. under a log, under a stone or a patch of grass and identify the plants and animals that live there.
<p>Assessment priorities (focusses on key knowledge)</p>	<ul style="list-style-type: none"> • Habitats and the suitability of plants and animals to survive in the habitat. • Simple food chains.

Y2 Plants	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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.
Vocab	light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling names of plants in local habitats and micro-habitats (Y2 - Living things and their habitats)
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> Recall from year 1: Basic structure of a plant/tree (Y1 knowledge). Like animals, plants are living things and reproduce. Plants may grow from either seeds or bulbs. Seeds germinate and grow into seedlings which then continue to grow into mature plants. Plants change over time. Plants need water, light, air and suitable temperatures to survive. If they do not receive the right amount of each they will die. Different plants require different amounts of resources to grow and stay healthy. Plants are suited to the habitat they live in, e.g. a cactus needs little water and a periwinkle can survive in shade. 	<ol style="list-style-type: none"> Draw/label parts of plant. Plant a variety of seeds and bulbs – keep a diary (photo?). Make predictions about which seed will germinate first/grow into the largest plant. Make observations of the process of germination using magnifying glasses. Match photos of seeds/seedlings/mature plants Research what different plants need to survive and grow. Plant seedlings in different conditions (normal/no, more or less water/no, more or less light/no more or less warmth). Research plants from different environments and how their needs are different.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> How plants grow and change over time. Plants need air, water, light and suitable temperatures. Different plants need different amounts of resources and grow in habitats which provide them.



Year 2 Animals including humans	
National Curriculum statutory requirements	<p>Pupils should be taught to:</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.
Vocab	<p>offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy) living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival (Y2 - Living things and their habitats)</p>
CPD	<p>Primary Resources Science Reach Out CPD</p>
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> Animals reproduce and have offspring that grow into adults over time. Different animals are born and grow in different ways. All animals need water, food and air to survive. A human requires exercise to build and maintain strong bones, muscles and maintain flexibility. A human requires a healthy balanced diet to provide the right nutrients to grow and maintain health. A human needs to maintain hygiene e.g. washing hands, to avoid catching and spreading disease. 	<ol style="list-style-type: none"> Share the story 'Monkey Puzzle'. Pupils play 'pairs' to match the animals with its offspring. Pupils draw around another pupil and write the basic survival needs inside the outline. Pupils write the 'unnecessary' things for humans on the outside. Pupils carry out a simple comparative test of heart rate before and after exercise. Discuss how the body physically feels after exercise. Teacher models packing a healthy packed lunch box. Pupils pack a healthy, balanced lunch box. This activity can include washing hands. Pupils produce a poster encouraging others to wash hands after going to the toilet.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> Identify some animals and their offspring. Explain that all animals need water, food and air to survive. Explain that to be healthy, a human requires exercise, a balanced diet and good hygiene.

Y2 Uses of everyday Materials	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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.
Vocab	opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> Recall year 1 everyday materials: Common materials used to make objects include wood, plastic, metal, rock and fabric. Common properties of materials include shiny, dull, stretchy, rough, smooth etc. The material used to make an object should be suitable for that object. Some materials are more suitable than others, e.g. wood is a better choice than brick for furniture. Some objects can be made from different materials e.g. plastic, metal or wooden spoons. The choice depends on the use e.g. plastic is disposable but metal lasts longer. Some materials should be flexible e.g. rubber band but others should be rigid or strong e.g. spoon. To change the shape of an object a force needs to be applied. This is usually a push, pull, twist or bend. Some objects need a bigger force to make them change shape. 	<ol style="list-style-type: none"> Look at a range of objects and identify the material(s) used to make the object. Feely bags – children describe the properties of an object. Odd one out activity. Think about a range of objects and decide the best material for that object. Decide on poor materials for an object and why. Look at a range of house building materials (mud, brick, wood, ice) and think of advantages and disadvantages of each. Use Playdoh to experience squashing, bending, twisting and stretching. Investigate the size of force required to squash a sponge.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> Name some common materials and describe their properties Select appropriate material for an application Describe the effect a force could have on an object's shape

Y3 Plants	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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.
Vocab	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> 1. Recall from year 2: Plants require air, light, water and suitable temperatures to grow and live. Parts of all plants include: roots, stem, leaves. Flowering plants also have petals. 2. Roots absorb water and provide stability. Plants also require nutrients from the soil. 3. Stem / trunk provides strength and transport water. 4. Leaves absorb light to create food. Plants need sufficient room to grow without excess competition for resources e.g. light. 5. Flowers attract insects for pollination. 	<ol style="list-style-type: none"> 1. Grow plants but deprive of resource. Plant dissection and identification. 2. Look at pictures of plant roots and discuss shape. Could grow plant in thin glass container and observe root growth. 3. Celery/ white flowering plants in coloured water to observe water transportation. 4. Make observations of a variety of leaves, how do the features of the leaves help them to do their job? 5. Children create a pollination storyboard. 6. Dissect flowers to explore seed formation.

<p>6. Seeds form within a flower following pollination (eg dandelion, strawberries)</p> <p>7. Seeds of flowering plants can be dispersed by wind, animals, explosion and water.</p>	<p>7. Classify seeds by dispersal methods.</p>
<p>Assessment priorities (focusses on key knowledge)</p>	<ul style="list-style-type: none"> • The functions of roots, stem, leaves and flowers. • Pollination and seed formation. • Seed dispersal.

Year 3 Animals including humans	
National Curriculum statutory requirements	<p>Pupils should be taught to:</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.
Vocab	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> All animals need water, food and air to survive. A human requires a healthy balanced diet to provide the right nutrients to grow and maintain health (year 2 Animals incl. humans). Animals cannot produce their own food (unlike plants) and get nutrition from their food. A food chain shows the transfer of nutrition from plants to animals e.g. grass-rabbit-fox. There are five main food groups (carbohydrates, proteins, dairy, fats, fruit and vegetables). A healthy animal requires the right amount of each food group. Some animals have skeletons which provide support, protection and movement. The main bones are the skull, jaw, spine, humerus, ulna, radius, pelvis, femur, tibia and fibia. Most animals have muscles which provide support and movement by moving the bones of the skeleton. 	<ol style="list-style-type: none"> Design breakfast, lunch and dinner for a healthy diet. Draw simple food chains given some examples of organisms. Pupils look at different food labels and identify nutritional food groups. Revisit the breakfast, lunch and dinner from 1. and check if it has a balance of nutritional groups. 'Simon says' activity, using skeleton parts e.g. touch your skull. Pupils given an empty glove and discuss the structure of it without 'bones'. Children then use straws to show that 'bones' form support. Pupils try to feel their muscles moving as the bend their joints. Highlight that muscles are pulling joints, not pushing them.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> Explain that animals get nutrition from food but plants can make their own. A healthy animal requires the right amount and types of nutrition. Skeletons and muscles provide support, protection and movement.

Year 3 - Rocks	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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.
Vocab	rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> Recall previous knowledge: Physical properties include soft, hard, shiny, dull, transparent, waterproof, absorbent, bendy, stiff, rough, smooth (year 1 materials) Materials are used for specific purposes based on their properties e.g. waterproof plastic used for umbrellas (year 2 materials) Rock is naturally occurring material which has a range of uses e.g. building, ceramics, making glass, pumice. There are many different types of rock. A rock is a solid mineral material formed as part of the earth's surface millions of years ago (as well as other planets). Rocks can be grouped together based on their appearance and simple physical features (some rocks are durable/not durable, permeable/impermeable, shiny/smooth/glassy). Rocks are categorised as: Sedimentary: formed from layers of oceanic sediment. Igneous: formed when molten rock solidifies and crystallises. Metamorphic: formed when sedimentary or igneous rock is changed (normally by temperature or pressure). Fossils were formed millions of years ago from the preserved remains of a dead organism (plants and animals). 	<ol style="list-style-type: none"> Match materials to their properties and then to suitable applications e.g. plastic-waterproof-umbrella Go for a walk and find examples of rocks used for different purposes e.g. building, statues, glass, ceramics Look at structure of earth and identify magma. Discuss cooler layer on top has solidified to become rock. Group rocks together based on their simple physical features. Look at examples of the main rock types with magnifying glasses and note observations. Devise a test to investigate the hardness of a range of rocks. Devise a test to investigate how much water different rocks absorb Observe how rocks change over time e.g. gravestones or old building. Story map the fossilisation process. Research using secondary sources how fossils are formed. Research the work of Mary Anning.

<p>7. Fossils are not skeletons, but a replica of the skeleton as the skeleton has dissolved/decayed and been replaced by minerals.</p>	<p>7. Observe soils closely. Using a magnifying glass, look at soils and discuss what it is made up of.</p>
<p>8. Rocks, combined with organic matter, make up soil.</p> <p>Assessment priorities (focusses on key knowledge)</p>	<ul style="list-style-type: none"> • Name and describe three main types of rock. • Classify rocks in a range of different ways, using appropriate vocabulary. • Fossil formation. • Identify plant/animal matter and rocks in samples of soil



Year 3 Light	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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 an opaque object • find patterns in the way that the size of shadows change.
Vocab	
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> 1. Some objects are sources of light e.g. the sun and others reflect light e.g. the moon. 2. You need a source of light to see. Without light it is completely dark. 3. Light is reflected off all surfaces. Some surfaces are more reflective than others. 4. We see objects when light from a source reflects off the object into our eyes. 5. Materials can be grouped into transparent/translucent/opaque. Opaque materials block light. 6. Shadows are formed when light is blocked by an opaque object. 7. The size of shadow depends on the distance between the light and the object. Closer objects block more light and have larger shadows. 8. Sun light is dangerous, it can burn the skin and damage the eyes. Clothing, sunscreen and sunglasses are ways to block the sun. 	Possible learning activities <ol style="list-style-type: none"> 1. Identify and sort light/non-light sources 3. Experiment with light sources e.g. shining torches on a selection of materials and observe reflections. 4. Draw light ray diagrams to show light traveling from an object to our eyes. 5. Sort and identify transparent, translucent and opaque materials by investigating how much light passes through them. 6. Explore the creation of shadows using a light source and opaque materials. 7. Make shadow puppets to investigate how the size and shape of shadows change. 8. Create a sun protection poster identifying ways of protecting ourselves from the sun.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> • Light is produced by light sources and reflects of surfaces. • We see the light reflected off surfaces. • Objects can be transparent, translucent or opaque. • Opaque objects block light and form shadows, whose size depends on the distance between the object and the source.

Year 3 Forces and Magnets	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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 2 poles ● predict whether 2 magnets will attract or repel each other, depending on which poles are facing.
Vocab	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
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> 1. A force is a push or a pull which affects the motion of an object. It can also change an objects shape by squashing, twisting etc. 2. Friction is a force between touching objects that opposes the movement of an object. Different surfaces exert different friction. 3. Forces can be contact (e.g. friction) or non-contact (e.g. magnetic). For example, magnets produce an invisible force (attract/repel) which can act at a distance (non-contact) 4. Magnets have two poles, North and South. Opposite poles attract. Like poles repel. 5. Magnetic materials (Iron, Nickel, Cobalt) are attracted to magnets (either pole). Materials can be grouped according to whether they are magnetic or not. 	<ol style="list-style-type: none"> 1. Explore a range of everyday push and pull forces, identifying the force involved. Observe how forces change the shape of playdoh. 2. Investigate the effect of different surfaces on the motion of an object e.g. toy car on slope of different surfaces or force required to move an object on different surfaces (could use Newton meters). 3. Observe that forces can be contact and non-contact through using magnets e.g. moving a paperclip with a magnet. 4. Predict whether two magnets will attract or repel each other, depending on which poles are facing. 5. Group a range of objects, based on their magnetic/non-magnetic properties.



Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none">● How different forces affect the motion of an object (speed up or slow down).● Different surfaces can affect the motion of an object due to friction.● Forces can be contact (push/pull) or non-contact (magnetic).● Magnets have 2 poles which attract or repel.● Some materials are magnetic, which means they are attracted to magnets.
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Year 4 – Living things and their habitats	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise that living things can be grouped in a variety of ways explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment recognise that environments can change and that this can sometimes pose dangers to living things.
Vocab	classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate herbivore, carnivore, omnivore, producer, predator, prey (Y4 - Animals, including humans)
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> Recap previous knowledge: Trees can be deciduous or evergreen. Animals with similar characteristics are grouped together (fish, amphibians, reptiles, birds and mammals). Animals can be classified as vertebrates (fish, amphibians, reptiles, birds, and mammals) or invertebrates (snails and slugs, worms, spiders, and insects). Plants can be classified as flowering and non-flowering. A classification key is used to classify a group of organisms by splitting them down into smaller and smaller groups based on characteristics. Recap previous knowledge: A habitat is an area where plant and animals live and need each other to survive. Plants and animals are suited to the habitat they live in. Animals get their food from within their habitat. A food chain can represent what animals eat in a habitat. If the environment of a habitat changes it can affect the plants and animals that live there, often badly. Example, climate change, deforestation, mining or farming. If one organism in a food chain is affected, it can affect other organisms. 	Possible learning activities <ol style="list-style-type: none"> Group animals by key characteristics e.g. fish have fins and gills, birds have beaks, mammals have hair. Identify whether local trees are deciduous or evergreen. Sort animals in vertebrates and invertebrates. Sort plants into flowering and non-flowering. Give pupils a classification key with animals cut out. Pupils put the animals into the correct place according to the questions. Pupils create their own classification key for a habitat. Consider what makes plants and animals suitable for their habitat e.g. cactus, arctic fox. Give a local context: trees being ripped up and being replaced by play equipment. How are habitats affected? Come up with solutions such as: bug hotels, planting more trees elsewhere. Interpret food chains to identify what will happen to animals above or below in the food chain if environmental change reduce the numbers of an animal.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> Classify animals into groups including vertebrates and invertebrates Correctly read a classification key Effect of natural and human impact on environments and habitats.

Year 4 Animals including humans	
National Curriculum statutory requirements	<p>Pupils should be taught to:</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 construct and interpret a variety of food chains, identifying producers, predators and prey.
Vocab	digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> Animals cannot produce their own food (unlike plants) and get nutrition from their food. A food chain shows the transfer of nutrition from plants to animals e.g. grass-rabbit-fox or Seaweed-Crab-Squid-Shark. Food chains are made up of producers, prey and predators. Producers – plants that produce their own food from sunlight Predators – animals that feed on other animals Prey – animals that are eaten by other animals Humans absorb nutrition through the digestive system. The basic parts of the human digestive system are: teeth, mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus. Humans have four different types of teeth. The different types of teeth in humans are: incisors (cutting); canines (tearing); premolars/molars (crushing/grinding). Mouth – food is broken down by the teeth and mixed with saliva and swallowed. Oesophagus – the food is sent to the stomach. Stomach – food is churned with stomach acid and is pushed into the small intestine. Small intestine – food is broken down and nutrients absorbed. Large intestine – water is absorbed and food is pushed along to the rectum. Rectum – storage chamber for food that can't be absorbed. Anus – waste food/faeces is excreted. 	Possible learning activities
	<ol style="list-style-type: none"> Pupils record their food from last 24 hours (or an example) and identify which food groups are included. Create food chains to identify producers, prey and predators. A range of ecosystems should be included e.g. land and marine. Increase the number of organisms in the chain to challenge. Research the function of the parts of the digestive system. Pupils feel their different teeth with their tongues or look at them with a mirror and describe the shape. Make models of different teeth and explain their shape. Describe the journey of a cheese sandwich through the digestive system. Label a blank diagram with the digestive organs and their functions. Create a model of the digestive system using household items.



Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none">• Name the four different types of human teeth and their functions.• Name the basic parts of the human digestive system and describe the function of each part.• Construct and interpret food chains, identifying predators, prey and producers.
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Y4 States of matter	
National Curriculum statutory requirements	<p>Pupils should be taught to:</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.
Vocab	solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> Materials can be either solid, liquid or gas at room temperature. The state of matter depends on the surrounding temperature. Solids keep their shape, always take up the same space (volume) and can be cut into smaller pieces, which keep their shape e.g. salt. The particles in a solid are very close together and are held together very strongly. Liquids flow and take the shape of the container they are in. Liquids change shape as they flow but take up the same volume. The particles in a liquid are very close together but and loosely held together. Gases spread out to fill the container they are in. They can be compressed. The particles in a gas are all separated and move around their container separately. Materials change state when they are heated or cooled. A solid changes to a liquid at its melting point. 0°C for water. Solid -> liquid is melting Liquid -> solid is freezing A liquid changes to a gas at its boiling point. 100°C. Liquid -> gas is boiling. At lower temperatures, evaporation can happen, higher temperatures result in greater evaporation. Gas -> liquid is condensing Water is constantly recycled through different stages by the water cycle. Evaporation from the surface → Condensing to clouds → Rain or snow → Water returns to the surface. 	<ol style="list-style-type: none"> Use water as an example of different states e.g. liquid at room temperature but solid in the freezer and gas when heated to steam. Draw particle diagram for a solid. Pupils act out being a solid by standing very close together and linking arms. Draw particle diagram for a liquid. Pupils act out being a liquid by standing very close but able to move around each other. Look at liquid with different viscosities e.g. slime Draw particle diagram for a gas. Pupils act out being a gas by standing very close but able to move around each other. Use a blocked syringe filled with air to compress gas. Investigate the melting and boiling points for different substances. Investigate how evaporation rates vary with temperature. Draw diagrams of the water cycle and make links to our weather. Use a plastic bag and water to observe the water cycle.



Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none">• Recognise particle diagrams for solids, liquids and gases.• Describe behaviour of solids, liquids and gases.• Describe correct state changes due to given temperature changes
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Year 4 Sound	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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.
Vocab	sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> 1. Year 4 Materials (particles in solids, liquids and gases) 2. Sound is produced when an object vibrates. The vibrations travel to the ear drum which then vibrates. This is then interpreted as sound. 3. Vibrations travel through a medium (the material the sound is travelling through). This includes solids, liquids and gases. 4. The pitch of a sound is a measure of how fast the object is vibrating (<i>frequency</i>). High pitched noises have a high frequency. Low pitched noises have a low frequency. 5. The volume of a sound is a measure of the size of the vibration (<i>amplitude</i>). Sounds gets fainter as the distance from the source increases because the energy becomes more spread out. The speed of sound remains constant through the same medium. 	<ol style="list-style-type: none"> 1. Pupils draw particle diagrams of solids, liquids and gases. 2. Pupils experiment with objects which vibrate and produce sound (elastic bands, plastic rulers, tuning forks, guitars, drums). It should be clear that the object is vibrating when making a noise. 3. Sting and cup telephones (the sound travels through the solid string). Video clip of whales communicating over long distances through water. 4. Pupils create instruments which create different pitches using different features (straw length, water depth in bottles, tension on elastic bands, ruler lengths). Mobile phone camera (slo-mo feature) used to see and compare vibrations. 5. Practical activity where pupils investigate the height a ball needs to be dropped from to be heard at different distances. Use decibel meter app to measure how volume changes with distance from source.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> • Sound is caused by vibrations • Sounds travels through a medium as the particles of the medium vibrate • The pitch of a sound is due to the speed of vibrations (frequency) • The volume of a sound is due to the size of vibration.



Year 4 Electricity	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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.
Vocab	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
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> 1. Electrical appliances convert electrical energy to other forms of energy. 2. A simple series circuit must include a cell, wires and an additional component. Bulbs, switches or a buzzers are example of components. 3. A circuit only works if there is a complete loop because the electricity must travel round the circuit and through the components. 4. A component will not work in a circuit when a switch is open because the open switch prevents the electricity from travelling round the circuit and so no electricity travels through the component. 5. Conductors, such as metals, and insulators can affect the function of components in a circuit by allowing/disrupting the flow of electricity. 	<ol style="list-style-type: none"> 1. Identify electrical appliances and observe the effect of these being connected/disconnected to a power source. 2. Construct a simple circuit, including a cell, wires and an additional component (bulb, buzzer, switch). 3. Create a simple series circuit and observe the effects on the function of a bulb when the circuit loop is broken. 4. Construct a simple series circuit, including a switch(es), and observe the effects on the function of a bulb when the switch is open/closed. Make switches out of a range of materials to show switch is conductor. 5. Create a simple series circuit including crocodile clips and test materials for conduction. Classify materials as conductors/insulators.
Assessment priorities	<ul style="list-style-type: none"> ● Name basic circuit components (battery, switch, wires, bulbs and buzzers) ● Drawing and interpreting circuit diagrams

(focusses on key knowledge)	<ul style="list-style-type: none">● Assess circuit diagrams and identify faults.● Identify common conductors and insulators. Explain why conductors are used in circuits.
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Year 5 – Living things and their habitats	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals
Vocab	life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> Recap previous knowledge: Animals (mammals, amphibians, insects and birds) can be grouped as invertebrates/vertebrates Plants can be grouped as flowering/non-flowering Animals are adapted to suit their habitat, which provides their needs. A life cycle shows the different stages of life for living things. Stages include fertilisation-birth-growth-reproduction. Teach life cycles for examples of mammal, amphibian, insect and bird and identify the similarities (e.g. eggs) and differences (e.g. metamorphosis). All animals start as an egg. Only fertilised eggs will produce offspring. Fertilised eggs contain genetic material from the male (sperm) and female (egg). The male sperm fertilises the female egg. Recap previous knowledge: Pollination is the process of pollen being transferred from one plant to another for reproduction. Pollination leads to plants producing seeds. Seeds can be dispersed by wind, water, being eaten or sticking to animals. Some plants start as a seed. Only fertilised seeds will produce offspring. Fertilised seeds contain genetic material from the male (pollen) and female (ovule). The male pollen fertilises the female ovule. Plants can also reproduce asexually. Asexual reproduction in plants does not require pollination. Examples include daffodils producing bulbs, strawberry plants producing runners or potatoes producing tubers. 	<ol style="list-style-type: none"> CHN are given a post-it note on their back with an animal. CHN ask ‘yes or no’ questions to others to identify their animal. Once all CHN know their animal, group them into mammals, amphibians, insects and birds – define what these are. Model a life cycle based on an animal such as a butterfly or frog (possibly covered in EYFS). Tell each table which animal they will be creating a life cycle on – amphibian, mammal, insect or bird. Use life cycles from last lesson to identify where the egg is in the cycle. Look at various offspring and identify differences and similarities between parents and offspring due to the mixing of genetic material. Summarise seed dispersal methods. Look at different seeds and identify how they might be dispersed. Teacher plants mint or basil in the first week of teaching and brings this to the final lesson. Show them how it started and how it looks now. Show various time-lapses of other asexual plants (tubers, bulbs, etc). Show pictures of strawberry runners and discuss how this helps the plant reproduce and spread.



Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none">• Life cycles for different animals and the differences between them.• Animal reproduction• Plants reproduction (sexual and asexual).
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National Curriculum statutory requirements	Pupils should be taught to: <ul style="list-style-type: none"> describe the changes as humans develop to old age 	
Suggested learning sequence – key knowledge		Possible learning activities
<i>Links to Summer Term PSHE</i> 1. The stages of human growth are: foetus, baby, childhood, adolescence, adulthood, old age.		1. Produce a human growth timeline. Research the definitions of the stages of human growth.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> Name the stages of human growth in order. 	

Y5 Properties and changes of materials	
National Curriculum statutory requirements	<p>Pupils should be taught to:</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.
Vocab	thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> Materials can be grouped together based on similar properties. A material is chosen for a particular use because of its properties. Some substances are soluble in water. If they dissolve, they form a solution. The original solute can be recovered by evaporating the solvent (water). Solids and liquids can be separated by sieving or filtering. In reversible changes the original substance can be recovered easily. Dissolving, mixing and state changes are reversible. In irreversible changes, the original substances cannot be recovered easily. Burning and cooking are examples of irreversible reactions. 	<ol style="list-style-type: none"> Group a range of materials based on conductivity in a circuit, whether or not they are magnetic and their solubility. Design an item by selecting materials based on the properties of materials Discuss why nail varnish/Sharpie pen does not dissolve in water but will dissolve in acetone – water is not the only solvent. Investigate how much salt can dissolve in an amount of water. Investigate whether or not different substance dissolve in water. Separate sand and water by filtration. Experiment to show that dissolving, mixing and state changes are reversible.

Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none">• Describe a solution as a solute dissolved in a solvent.• Describe separation techniques.• Explain the difference between reversible and irreversible changes.
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Year 5 Earth and Space (this should be taught after Year 5 – Forces)	
National Curriculum statutory requirements	Pupils should be taught to: <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
Vocab	Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit
CPD	
Suggested learning sequence – key knowledge	Possible learning activities
<p>1. Year 5 Forces: All objects have gravity forces between them. The effect due to the Earth is measurable because the Earth has a huge mass. Unsupported objects fall to Earth because of gravity, which is an invisible pull force acting between Earth and the falling object.</p> <p>2. Our solar system consists of the sun, planets and moons. These are spherical bodies made of rock (inner planets) or gas (sun and outer planets). There are also asteroids (rocks) and dwarf planets (e.g. Pluto).</p> <p>3. The sun is a medium sized star at the centre of our solar system. Because of its size, it exerts a large force due to gravity on planets. The force of gravity causes the planets, incl Earth, to orbit the sun.</p> <p>4. The planets of our solar system are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus & Neptune.</p> <p>5. Many planets have moon. The Earth has one moon which orbits the Earth due to gravity.</p> <p>6. The Earth rotates once every 24 hours. As it rotates it faces the sun for some of the time (day) and away from the sun (night). As the Earth rotates, it <i>appears</i> that the sun is moving across the sky.</p>	<p>1. Pupils research the strength of gravity other planets and how this affect the speed they fall.</p> <p>2. Draw labelled diagrams of the solar system.</p> <p>3. Model the solar system to scale on playing field. Time how long it takes pupils to walk around the sun from different distance and link to length of year on other planets.</p> <p>4. Create a Mnemonic to remember the planets in order (e.g. My Very Easy Method Just Sped Up Naming).</p> <p>5. Research the Earth’s moon. Find out about moons orbiting other planets.</p> <p>6. Use a globe and torch to show night and day. Rotate the globe to show how sun <i>appears</i> to move.</p>

Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none">• Structure of the solar system (sun, planets and moons).• Motion of planets and moons as they orbit.• Day and night due to rotation of the Earth.
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Year 5 Forces	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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.
Vocab	force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<p>1. Year 3 Forces: A force is an interaction between two objects, which affects the speed, shape or direction of an object. Interactions can be through two objects in contact (push/pull) or non-contact (gravity/magnets). Frictional forces oppose the motion between two objects in contact.</p> <p>2. All objects have gravity forces between them. The effect due to the Earth is measurable because the Earth has a huge mass. Unsupported objects fall to Earth because of gravity, which is an invisible pull force acting between Earth and the falling object.</p> <p>3. Moving objects can experience friction (surface-surface) or air/water resistance. This force opposes the motion of the object, meaning it will slow down (if it is moving) or require a greater force to make it start moving (if it is stationary).</p> <p>4. Mechanisms, such as levers, pulleys and gears, allow smaller forces to have a greater effect. These devices allow a smaller force to have a greater effect by applying the force over a greater distance.</p>	<p>1. Explore a range of everyday contact and non-contact forces (push/pull, gravity and friction).</p> <p>2. Observe and measure the amount of gravity acting on an object by using a Newton Meter. Research how gravity varies on other planets and what effect this has on falling objects.</p> <p>3. Investigate the effects of manipulating surface area for air/water resistance and the effects of surface type on friction. Design parachutes to safely drop an object.</p> <p>4. Create a lolly stick catapult (lever mechanism), observing the effects of increasing the distance between the load and the fulcrum (pivot point).</p>
Assessment priorities	<ul style="list-style-type: none"> ● How a force between two objects affects the speed, shape or direction of an object. ● Unsupported objects fall to earth because of gravity acting between the Earth and the falling object.

(focusses on key knowledge)	<ul style="list-style-type: none"> • Effects of friction/water resistance/air resistance on the motion of an object. • Mechanisms, such as levers, pulleys and gears, allow smaller forces to have a greater effect.
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Year 6 – Living things and their habitats	
National Curriculum statutory requirements	Pupils should be taught to: <ul style="list-style-type: none"> • 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. • give reasons for classifying plants and animals based on specific characteristics.
Vocab	vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers
CPD	
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> 1. Recall previous learning: Animals (mammals, amphibians, insects and birds) can be grouped as invertebrates/vertebrates. These groups also have common characteristics, e.g. birds have feathers. Plants can be grouped as flowering/non-flowering. Plants can be grouped by common characteristics e.g. leaf shape. 2. Carl Linnaeus developed a classification system, known as taxonomy. 3. Animals fit into broad groups of observable characteristics for example beaks, wings, number of legs, feathers, hair. 4. Use and create a classification key to classify animals. 5. Plants fit into broad groups of observable characteristics for example leaf shape, flowers, roots, stems. 6. Use and create a classification key to classify plants. 7. Micro-organisms such as bacteria, yeast, toadstools, and mushrooms do not fit into the two main groups of plants and animals. 	<ol style="list-style-type: none"> 1. Group animals by broad categories (vertebrates/invertebrates). Identify possible groupings for animals and discuss rationale for choice. Group plants by broad categories (flowering/non-flowering). Identify possible groupings for plants and discuss rationale for choice. 2. Research Carl Linnaeus. 3. Use and create a classification key to classify animals into groups, justify their choices. 5. Use and create a classification key to classify plants into groups, justify their choices. 7. Discuss useful and harmful micro-organisms. Class could start growing mould at the beginning of the week and observe the mould.

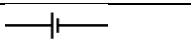
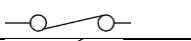
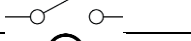
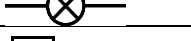

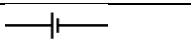
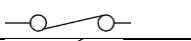
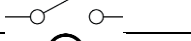
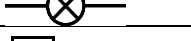

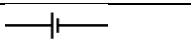
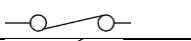
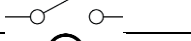
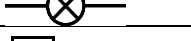

Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none">• Groups animals by common characteristics.• Groups plants by common characteristics.• Interpret classification keys for plants.• Interpret classification keys for animals.
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Year 6 Animals including humans	
National Curriculum statutory requirements	<p>Pupils should be taught to:</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.
Vocab	heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<ol style="list-style-type: none"> Year 3/4 Animals incl humans (nutrition, skeletons, muscles and digestive system). The circulatory system carries oxygen and nutrients around the body to where they are needed and removes waste (e.g. Carbon Dioxide). The circulatory system consists of the heart, blood vessels and blood. The heart pumps blood through the lungs and around the body. Blood vessels (arteries, veins and capillaries) transport blood around the body. Blood consists of red blood cells, white blood cells, platelets & plasma. Exercise is part of a healthy lifestyle. A lack of exercise can lead to poor health. Exercise increases the rate of circulation in order to provide more oxygen and nutrients to the body and remove more waste. Nutrients and water are transported by the circulatory system from the digestive system to where they are needed. A healthy diet contains the right proportion of food types. An unhealthy diet can lead to poor health. 	<ol style="list-style-type: none"> Label a blank human body with key bones, muscles and digestive organs. Label names and functions of organs on blank human body diagram. Describe function of constituent parts of blood. Produce model of blood (only after knowledge is secure) Investigate effect of exercise on heart rate and breathing rate. Plan a healthy balanced meal. Design a healthy living leaflet.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> Explain the role of the circulatory system. State the names and functions of the main parts of the circulatory system. Explain the importance of exercise and nutrition in keeping healthy.
	<ul style="list-style-type: none">

Y6 Evolution & Inheritance	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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
Vocab	offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, evolve, evolution
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	Possible learning activities
<p>1. Recap:</p> <ul style="list-style-type: none"> Year 5 life cycles Year 2 habitats – animals are suited to the habitat they live in. Year 3 rocks – Sedimentary rocks are produced by layers of marine sediment. <p>2. Animals are adapted to survive in their habitat e.g. camouflaged insects or thick furred arctic fox. Animals which can survive in a habitat are more likely to produce offspring.</p> <p>3. When living things reproduce they pass on characteristics to their offspring. This is known as inheritance. Offspring usually have different characteristics to their parents. This is known as variation.</p> <p>4. Some variation leads to an advantage in survival and reproduction in an animals habitat (an adaptation). These animals are more likely to produce offspring leading to a long-term change in a species. This is known as evolution.</p> <p>5. Evidence for evolution include fossils. The fossil record can show how organisms have evolved over long time periods. Fossils form from the remains of organisms which died a long time ago.</p>	<p>1. Produce storyboard of sedimentary rock formation (not to include fossils) Identify stages of life cycles for common animals.</p> <p>2. Show pupils pictures of animals and identify how they are adapted to suit their habitat.</p> <p>3. Pupils identify characteristics they share with their parents/sibling (or you could use an example family). Pupils identify differences in characteristics between family members.</p> <p>4. Use the example of giraffes evolving longer necks over time as an advantageous adaptation for feeding. Peppered moth colouring changing over through the industrial revolution.</p> <p>5. Storyboard of fossil formation. Examine fossils with magnifying glasses. Could look at work of Mary Anning.</p>
Assessment priorities	<ul style="list-style-type: none"> Identify inherited and non-inherited characteristics. How variation can lead to an advantageous adaptation and evolution.

(focusses on key knowledge)	<ul style="list-style-type: none">• Stages of fossil formation.• How the fossil record is evidence for evolution.
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Year 6 Light	
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise that 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.
Vocab	straight lines, light rays
CPD	Primary Resources Science Reach Out CPD
Suggested learning sequence – key knowledge	
<ol style="list-style-type: none"> Recap of year 3 light unit: Some objects are sources of light e.g. the sun and others reflect light e.g. the moon. We see objects when light from a source reflects off the object into our eyes. Materials can be grouped into transparent/translucent/opaque. Shadows are formed when light is blocked by an opaque object. Light travels in straight lines. Light travels out from the light source in all directions (like a dandelion seed head). To see an object, light must travel from the light source, reflect off an object and travel to the eye. Light ray diagrams show light travelling between a source, an object and the eye. Opaque and translucent objects block light and cause shadows. The shape of the shadow is the same as the shape of the object. 	Possible learning activities <ol style="list-style-type: none"> Label diagrams, applying key vocabulary: absorb; reflect; opaque. Recapping on prior knowledge from previous light unit. Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe or use a laser pointer and talc to show light travelling. Draw light ray diagrams to show light travelling from a source, reflecting off an object to the eye. Investigate how much light passes through different materials. Make shadow puppets to investigate the shape of shadows.
Assessment priorities (focusses on key knowledge)	<ul style="list-style-type: none"> Light travels in straight lines. Light ray diagrams show the path light takes between a source, object and the eye. We see objects when light from a light source reflects off the object and travels to the eye. Shadows have the same shape as the objects that cast them.

Year 6 Electricity													
National Curriculum statutory requirements	<p>Pupils should be taught to:</p> <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. 												
Vocab	circuit diagram, circuit symbol, voltage												
CPD	Primary Resources Science Reach Out CPD												
Suggested learning sequence – key knowledge													
<ol style="list-style-type: none"> 1. A simple series circuit must include a cell, wires and an additional component linked in a single loop. (Year 4 content) 2. The electrical symbols for common components are: <table border="1" data-bbox="324 710 985 933"> <tbody> <tr> <td>Cell</td> <td></td> </tr> <tr> <td>Switch (closed)</td> <td></td> </tr> <tr> <td>Switch (open)</td> <td></td> </tr> <tr> <td>Bulb</td> <td></td> </tr> <tr> <td>Buzzer</td> <td></td> </tr> </tbody> </table> 3. When a switch is open, other components will not function because the open switch prevents the electricity from passing round the circuit. 4. Components in a circuit can be affected by the number and voltage of cells. More cells result in higher voltage. This will make a lamp brighter. 5. When more components are added to a circuit without more cells, the components do not work as well e.g. lamps are dimmer. 	Cell		Switch (closed)		Switch (open)		Bulb		Buzzer		<th colspan="2">Possible learning activities</th>	Possible learning activities	
Cell													
Switch (closed)													
Switch (open)													
Bulb													
Buzzer													
<ol style="list-style-type: none"> 1. Construct simple circuits including cells, wires, bulbs, switches and buzzers. 2. Make flash cards to help learn the names and symbols for components. Convert pictures of circuits to circuit diagrams with symbols. 3. Construct a circuit, including switch(es), and observe the effect of different combinations of open and closed switches on the component. 4. Add cells to a circuit and observe the effect of a lamp (take care not to damage bulbs with excessive voltage!) 5. Add increasing numbers of lamps to a circuit and observe the effect on the lamps. 													
Assessment priorities	<ul style="list-style-type: none"> • Drawing circuit diagram using correct symbols. • Explain why a switch needs to be closed for a circuit to work. • Describe what happen to components in a circuit when more components are added or when more cells are added. 												

(focusses on key knowledge)	
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