xxx Knowledge and Skills Progression

EYFS	Communication and Language	Personal, Social and Emotional Development	Understanding the World
In Foundation, the children will start to gain the science knowledge that they will build on throughout their primary years (Year 1 to Year 6), such as developing their skills of observation, prediction, critical thinking, and discussion.	Learn new vocabulary Ask questions to find out more and check what has been said to them Articulate their thoughts and ideas in well-formed sentences Describe some events in detail Use talk to work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts.	Know and talk about different factors that support their overall health and wellbeing: Regular physical activity Toothbrushing Sensible amounts of screen time Having a good sleep routine	Explore the natural worl around them Describe what they see, hear and feel while they are outside Recognise some environments that are different to the one in which they live Understand the effect of changing seasons on the natural world around them.

Subject content Key stage 1

Year	**National Curriculum**	**Topic**	**Sticky Knowledge**	**Skills**	**Vocabulary**

1		Plants (Biology)	• Know and name a variety of common wild and garden plants. • Know the parts of a plant and name them: petals, stem, leaves and root of a plant. • Know the parts of a tree and name them: the roots, trunk, branches and leaves of a tree.	• Identify and describe the basic structure of a variety of common flowering plants, including trees. • Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat. • Where possible, they should observe the growth of flowers and vegetables they have planted. • They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals fruit, roots, bulbs, seed, trunk, branches, stem). • Pupils might work scientifically by observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees.	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area: i.e. oak, ash, horse chestnut, silver birch, beech … Names of garden and wild flowering plants in the local area: i.e. snow drop, bluebell, wood anemone, daisy, dandelion.

				• Pupils might keep records of how plants have changed over time, for example leaves falling off trees and buds opening; compare and contrast what they have found out about different plants.	

1		Animals Including Humans (Biology)	• Know how to classify a range of animals by amphibian, reptile, mammal, fish and bird • Know how to and classify animals by what they eat (carnivore, omnivore, herbivore). • • Know the names, describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • Know the names, draw and label the parts of the human body, that can be seen, and know which part of the body is associated with each sense.	• 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 is associated with each sense. • Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. • They should understand how to take care of animals taken from their local environment and the need to return them safely after study. • Pupils should become familiar with the common names of some fish, amphibians, reptiles and birds and some mammals including those kept as pets. • Pupils should have plenty of opportunities to learn	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 N.B. The children need to be able to name and identify a range of animals in each group e.g. name specific birds and fish. They do not need to use the terms mammal, reptiles etc. or know the key characteristics of each, although they will probably be able to identify birds and fish, based on their characteristics. The children also do not need to use the words carnivore, herbivore and omnivore. If they do, ensure that they understand that carnivores eat other animals not just meat Parts of the body including those linked to PSHE teaching. Senses, touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue. NB. Although we often use our fingers and hands to feel objects the children should understand that we can feel with many parts of our body

				• the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes. • Pupils might work scientifically by using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat and using their senses to compare different textures, smells and sounds.	

1		Everyday Materials (Chemistry)	Know the name of material an object is made from. Know the properties of everyday materials.	• 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 based on their simple physical properties. • Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not waterproof; see through/not see through. • Pupils should explore and experiment with a wide variety of materials, including: brick, paper, fabrics, elastic, foil etc.	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.

				• Pupils might work scientifically by performing simple tests to explore questions, for example: 'What is the best material for… an umbrella, lining a dog basket, for curtains, for a bookshelf, for three pigs' house?'	
1		Seasonal Changes – Autumn – Winter and Spring – Summer (Physics)	Know the seasons. Know about the type of weather for each season. Know that the length of day/night changes throughout the year.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how the day length varies. • Pupils should observe and talk about changes in the weather and the seasons. • Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses. • Pupils might work scientifically by making tables and charts about the weather; and making displays of what happened 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

1		Year 1 Additional Science Unit - Space	Know the names of the eight planets in our solar system. Know that the Sun is a star. Know the names and shapes of some constellations.	• Pupils should be able to name all eight planets. • They should understand that the sun is a star. • Pupils should become familiar with some names of common constellations. • Pupils might work scientifically by investigating why stars shine using bubble wrap and torches.	Space, solar system, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Sun, constellations, stars

xxx Knowledge and Skills Progression

Year	National Curriculum	Topic	Sticky Knowledge	Skills	Vocabulary

2		Living Things and Their Habitats (Biology)	Know the differences between things that are living, dead and things that have never been alive. Know that most living things live in habitats to which they are suited. Know how a specific habitat provides basic needs of different kinds of animals. Know some different sources of food for animals. Know and explain a simple food chain.	• Revise prior knowledge of plants and animals from Y1. • 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. • 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. • Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. • They should raise and answer questions that help them to become familiar with the life processes that are common to all living things.	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.

				• Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter). • They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat, for example, plants serving as a source of food and shelter for animals. • Pupils should compare animals in familiar habitats with animas found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest. • Pupils might work scientifically by sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings. • They should describe how they decided where to	

				• place things, exploring questions, for example, 'Is a flame alive? Is a deciduous tree dead in winter?' and talking about ways of answering their questions. • They could construct a simple food chain that includes humans (e.g., grass, cow, human). • They could describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.	

2		Plants (Biology)	• Know and explain how seeds and bulbs grow into plants. • Know what plants need in order to grow and stay healthy (water, light and a suitable temperature).	• Revise prior knowledge of plants from Y1. • 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. • Pupils should use the local environment throughout the year to observe how different plants grow. • Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants. Note: Seeds and bulbs need water to grow but most do not need light. Seeds and bulbs have a store of food inside them. • Pupils might work scientifically by: observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or a bulb, or observing similar plants at different stages of growth, setting up a comparative	As for year 1 plus - light, shade, sun, warm, cool, water, grow, bulb, seed, healthy

				test to show that plants need light and water to stay healthy.	

2		Animals, Including Humans (Biology)	• Know the basic stages on a life cycle for animals, including humans. • Know why exercise, a balanced diet and good hygiene are important for humans.	• Revise prior knowledge of animals from Y1. • 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. • Pupils should be introduced to the basic needs of animals for survival as well as the importance of exercise and nutrition for humans. • They should also be introduced to the processes of reproduction and growth in animals. • The focus at this stage should be o questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs. • The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn,	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)

				tadpole, frog; lamb, sheep. Growing into adults can include reference to: baby, toddler, child, teenager, adult. • Pupils might work scientifically by observing through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need to stay healthy; and suggesting ways to find answers to their questions.	

2		Uses of everyday materials (Chemistry)	• Know how materials can be changed by squashing, twisting, bending and stretching. • Know why a material might or might not be used for a specific job.	• Revise prior knowledge of materials from Y1. • 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, twisting bending and stretching. • Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors and telegraph poles) or different materials are used for the same thing (spoons can be metal, plastic, wood, metal but not normally glass). • They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should	Names of materials – increased range from year 1 Properties of materials - as for year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/puling, twist/twisting, squash/squashing. Bend/bending, stretch/stretching.

				be encouraged to think about unusual and creative uses for everyday materials. • Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam, • Pupils might work scientifically by: 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.	
2		Additional unit Light (Physics)			

xxx Knowledge and Skills Progression

Subject content Key stage 2					
Year	**National Curriculum**	**Topic**	**Sticky Knowledge**	**Skills**	**Vocabulary**

3		Plants (Biology)	Know the function of different parts of flowering plants and trees. Know how water is transported in plants. Know the plant life cycle, especially the importance of flowers.	• Revise prior knowledge of plants from KS1. • Identify and describe the functions of different parts of a flowering plant: roots, stem/trunk, leaves and flowers. • Explore the requirements of plant from life and growth (air, light, water, nutrients from the soil and room to grow) and how they vary from plant to plant. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. • Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal – wind dispersal, animal dispersal, water dispersal.

				might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.	

3		Animals Including Humans (Biology)	Know about the importance of a nutritious, balanced diet. Know how water, nutrients and oxygen are transported within animals and humans. Know about the skeletal and muscular system of humans.	• Revise prior knowledge of animals from KS1. • Identify that all animals and humans need the right types and amounts of nutrients 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. • Pupils could work scientifically by Investigating pattern seeking questions such as: Can people with longer legs run faster? Can people with bigger hands catch a ball better? By identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints.

				them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.	

3		Rocks (Chemistry)	Know how to compare and classify rocks based on their physical appearance giving reasons. Know how soil is made and how fossils are formed. Know about and explain the difference between sedimentary, metamorphic and igneous rock.	• Revise prior knowledge of the properties of materials from KS1. • 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 in rock. • Recognise that soils are made from rock and other organic matter. • Pupils could work scientifically by: Observing how soil can be separated through sedimentation. Devising a test to investigate the hardness of a range of rocks. Devising a test to investigate how much water different rocks absorb. By observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to	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, igneous, metamorphic and sedimentary.

				whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.	

3		Light (Physics)	Know that dark is the absence of light. Know that light is needed in order to see and is reflected from a surface. Know and demonstrate how a shadow is formed and explain how a shadow changes shape. Know about the dangers of direct sunlight and describe how to keep protected.	• Pupils should recognise that they need light in order to see things and that dark is the absence of light. • 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 • Children could work scientifically by finding patterns in the way that the size of shadows changes. 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

3		Forces and Magnets (Physics)	Know about and describe how objects move on from different surfaces. Know how a simple pulley works and is used to make lifting an object simpler. Know how some forces require contact and some do not, giving examples. Know about and explain how objects attract and repel in relation to objects and other magnets. Know how to predict whether magnets will attract or repel and give a reason.	• Revise prior knowledge of the properties of materials from KS1. • 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 groups 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. • Pupils might work scientifically by: comparing how different things move and grouping them; raising	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

				questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers 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.	

Year	National Curriculum	Topic	Sticky Knowledge	Skills	Vocabulary
4		Living Things and Their Habitats (Biology)	Know how to use classification keys to group, identify and name living things. Know how changes to an environment could endanger living things.	• Revise prior knowledge of plants and animals from KS1. • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to hep group, identify and name a variety of living things in their local and wider environments. • Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate.

4		Animals Including Humans (Biology)	Know, identify and name the parts of the digestive system in humans. Know the function of the organs in the human digestive system. Know the different types of teeth that humans have and their functions. Know how to use and construct food chains to identify producers, predators and prey.	• Revise prior knowledge of nutrition and the skeletal and muscular systems from Y3. • Describe 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. • Pupils might work scientifically by: comparing the teeth of carnivores and herbivores and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.	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.

4		States of Matter (Chemistry)	Know how to group materials on the basis of their states of matter (liquid, solid, gas). Know about and explore how some materials can change state and know the temperatures of when this happens. Know the part played by evaporation and condensation in the water cycle.	• Revise prior knowledge of types of material from KS1. • 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. • Pupils might work scientifically by: 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). They could research the temperature at which materials change state,	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle.

					for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line and investigate the effect of temperature on washing drying or snowmen melting.	

4		Y4 Sound (Physics)	Know how sound is made associating some of them with vibrating. Know how sound travels from a source to our ears. Know the correlation between pitch and the object producing the sound. Know the correlation between the strength of sound and the vibrations that produced it. Know what happens to a sound as it travels away from its source.	• Identify how sounds are made, associating 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 feature 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. • Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation.

				instruments by using what they have found out about pitch and volume.	

		Electricity (Physics)	Know and name appliances that require electricity to function and construct a series circuit. Know the names of the components in a series circuit (including cells, wires, bulbs, switches and buzzers). Know how to predict and test whether a lamp will light within a circuit and know the function of a switch in a circuit. Know the difference between a conductor and insulator, giving examples of each.	• 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. • Pupils might work scientifically by: 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	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. N.B. Children in year 4 do not ned to use standard symbols as this is taught in year 6

				cannot be used to connect across a gap in a circuit.	

Year	National Curriculum	Topic	Sticky Knowledge	Skills	Vocabulary

5		Living Things and Their Habitats (Biology)	Know the life cycle of different living things e.g, mammal, amphibian, insect, bird. Know the difference between life cycles. Know the process of reproduction in plants.	• Revise prior knowledge of plants and animals from KS1. • 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 environments. • Recognise that environments can change, and this can sometimes pose dangers to living things. • Pupils might work scientifically by: 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 and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings.

				the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow. .	

5		**Animals, including humans (Biology)**	Know the stages of growth in humans. This needs to be taught alongside PSHE Useful guidance can be obtained at: http://www.ase.org.uk/news/aseviews/teaching-about-puberty/ http://www.ase.org.uk/documents/2016-joint-statement-on-reproduction/	• Revise prior knowledge of the human body from Y3 .and Y4. • Describe the life cycle of a human being. • Describe the change as a human develops from a baby, into adolescence and into old age. • Explain why the body changes as humans grow older. • Consider how this might change in the future. • Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.	Puberty: the vocabulary to describe sexual characteristics

5		Properties and Changes to Materials (Chemistry)	Know, compare and group materials based on their properties (e.g., hardness, solubility, transparency, conductivity, electrical and thermal) and response to magnets. Know how a material dissolves to form a solution; explaining the process of dissolving. Know how to recover a substance from a solution. Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating). Know and demonstrate that some changes are reversible, and some are not. Know how some changes result in the formation of a new material and that it is usually irreversible.	• Revise prior knowledge of the states of matter from Y4. • 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 a 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 fair tests, for the particular use of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes.	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve reversible/non-reversible change, burning, rusting, new material.

				• 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. • Pupils might work scientifically by: carrying out tests to answer questions, for example, Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains? They might compare materials in order to make a switch in a circuit. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and	

				discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.	

		Earth and Space (Physics)	Know about and explain the movement of the moon relative to the Earth. Know and demonstrate how day and night are created. Know that the Sun, Earth and Moon are spherical. Know what gravity is and its impact on our lives.	• Revise prior knowledge of the Earth's spherical shape and its magnetic field from Y3. • Describe the movements of the Earth and other planets, relative to the Sun in the Solar System. • Describe the movement of the Moon in relation to Earth. • Describe the Sun, Earth and Moon as roughly 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. • Pupils might work scientifically by: carrying out tests to answer questions, for example: Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains? They might compare materials in order to make a switch in a circuit. They could	Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune) spherical, solar system, rotates, star, orbit, planets, gravity, spherical.

				observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.	

		Forces (Physics)	Know the effect of air and water resistance. Know the effect of friction. Know how levers, pulleys and gears allow a smaller force to have a greater effect.	• Revise prior knowledge of forces from Y3. • Explain that unsupported objects fall towards 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. • Pupils might work scientifically by: exploring falling paper cones or cup-cake cases and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears

				products that use levers, pulleys, gears and/or springs and explore their effects.	

Year	National Curriculum	Topic	Sticky Knowledge	Skills	Vocabulary

6		Animals Including Humans (Biology)	Know the names of and identify the main parts of the human circulatory system. Know the function of the heart, blood vessels and blood. Know the impact of diet, exercise, drugs and lifestyle on health. Know the ways in which nutrients and water are transported in animals, including humans.	• Revise prior knowledge of the human body from Y3, Y4 and Y5. • 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 and drugs and lifestyle on the way their bodies function. • Describe the ways in which nutrients and water are transported within animals, including humans. • Children could work scientifically by: Carrying out a range of pulse rate investigations. • Fair test – effect of different activities on my pulse rate. • Pattern seeking – exploring which groups of people may have higher or lower resting pulse rates. • Observation over time - how long does it take my pulse rate to return to my resting pulse rate (recovery rate).	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle.

				• Pattern seeking – exploring recovery rate for different groups of people.	
6		Electricity (Physics)	Know correct symbols for representing electricity and how to draw circuits. Know how the number and voltage of cells on a circuit links to the brightness of a lamp or the loudness of a buzzer.	• Revise prior knowledge of electricity from Y4. • Associate the brightness of a lamp or the volume of a buzzer with the number of cells used in a circuit. • Compare and give reasons for variations in how components function, including the brightness of a bulb, the loudness of buzzers and the on/off position of switches. • Use recognised symbols when representing a simple circuit in a diagram. • Pupils might work scientifically by: 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 NB Children do not need to understand what voltage is but will use volts and voltage to describe different batteries. The words cells and batteries are now used interchangeably.

6		Light (Physics)	Know how light travels. Know and demonstrate how we see objects. Know why shadows have the same shadow as the objects that create them. Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass.	• Revise prior knowledge of light from Y3. • 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. • Pupils might work scientifically by: deciding 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. They might investigate the relationship between light sources, objects	As for year 3 plus straight lines, light rays

					and shadows by using shadow puppets. They could extend their experience of light by looking 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).	

		Living Things and Their Habitats (Biology)	Know how to classify living things into broad groups according to observable characteristics and based on similarities and differences. Know how living things have been classified. Know reasons for classifying animals and plants in a specific way.	• Revise prior knowledge of living things from Y3, Y4 and Y5. • 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. • Pupils might work scientifically by: using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering

		Evolution and Inheritance (Biology)	Know how Earth and living things have changed over time. Know how fossils can be used to find out about the past. Know about reproduction and offspring (knowing that offspring vary and are not identical to their parents). Know how animals and plants are adapted to suit their environment and link adaption over time to evolution.	• Revise prior knowledge of fossilisation from Y3. • 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. • Pupils might work scientifically by: observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils.

				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.	