Science Curriculum Overview 2023 – 24

Year 1

Science	Animals – hot and cold countries	Classification of Animals	Plants	Plants – Observations and experiments	Materials	Animals humans, senses
ACROSS THE YEAR- Pupils should be taught to: ▪ observe changes across the four seasons ▪ Observe and describe weather associated with the seasons and how day length varies.	▪ 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. ▪ Animals have senses to explore the world around them and to help them to survive. ▪ Recognise that animals need to be treated with care and sensitivity to keep them alive and healthy. ▪ Animals are alive; they **move**, **feed**, grow, use their **senses** and reproduce.	▪ Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, and including pets). ▪ Find out and describe how animals look different to one another. ▪ Group together animals according to their different features. ▪ Recognise similarities between animals: ▪ structure: head, body, way of moving, senses, body covering, tail.	▪ identify and name a variety of common ▪ plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen ▪ identify and describe the basic structure of ▪ a variety of common flowering plants, including roots, stem/trunk, leaves and flowers.	Main focus on experiment with plants and further asking questions focusing on scientific skills – See planning document for ideas ▪ identify and name a variety of common ▪ plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen ▪ identify and describe the basic structure of ▪ a variety of common flowering plants, including roots, stem/trunk, leaves and flowers.	▪ Pupils should be taught to: ▪ 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 ▪ find out how the shapes of solid objects ▪ made from some materials can be changed by squashing, bending, twisting and stretching.	▪ Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. ▪ Recognise that humans are animals. ▪ Compare and describe differences in their own features (eye, hair, skin colour, etc.) ▪ Recognise that humans have many similarities.

Year 2

Science	Animals – local environment	Animals – humans – healthy, growth	Living things - habitats	Plants- veg, growth	Materials – comparing properties	Materials – investigating suitability
	• 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 micro-habitats. • 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. • Different kinds of plants and animals live in different kinds of places. • There are different kinds of habitat near school which need to be cared for	**Animals – Animal Survival and Growth (Humans)** ▪ Notice that humans have offspring which grow into adults. ▪ Find out about and describe the basic needs of humans, for survival (water, food and air). **Health – How we Grow and Stay Healthy** ▪ Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. ▪ Medicines can be useful when we are ill. Medicines can be harmful if not used properly. **Children Might Work Scientifically** ▪ By observing, through video or first-hand observation and measurement, how humans grow. ▪ By recording their findings using charts. ▪ By asking questions about what things animals [humans] need for survival and what humans need to stay healthy. By suggesting ways to find answers to their questions	**Living Things and Their Habitats** ▪ 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 micro-habitats. ▪ 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. ▪ Different kinds of plants and animals live in different kinds of places. ▪ There are different kinds of habitat near school which need to be cared for ▪ Habitats provide the preferred conditions for the animals/plants that live there (compare local habitats and less familiar examples).	**Plants: Plant Growth** ▪ 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 *(and how changing these affects the plant)*. ▪ Plants are living and eventually die. **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 bulb. ▪ By **observing** similar plants at **different stages** of growth. ▪ By **setting up a comparative test** to show that plants need light and water to stay healthy. ▪ By **observing, through video or first-hand observation** and **measurement**, how humans grow. ▪ By **recording** their findings using charts. ▪ By **asking questions** about what humans need to stay healthy. ▪ By **suggesting ways to find answers to their questions**.	▪ Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, water, 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 (applying a force). ▪ Some materials can be found naturally; others have to be made.	Develop understanding of properties by experimenting and exploring materials for a back towel/ fixing a whole in a sand bucket/ a sun parasol. On Planning document
	• Habitats provide the preferred conditions for the animals/plants that live there (compare local habitats and less familiar examples).		▪ Observe living things in their habitats during different seasonal changes **Animals - Animal Survival and Growth** ▪ Notice that animals have offspring which grow into adults. ▪ Find out about and describe the basic needs of animals for survival (water, food and air).			

Year 3

Science	Light and shadows	Healthy lifestyles	Rocks	Forces and magnets	Animals incl humans – skeletons	Plants – parts, growth, water transportation, life cycle
Key Learning	• 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	▪ 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. ▪ An adequate and varied diet is beneficial to health (along with a good supply of air and clean water). ▪ Regular and varied exercise from a variety of different activities is beneficial to health (focus on energy in versus energy out. Include information on making informed choices).	• 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	• compare how things move on different surfaces • notice that some forces need contact between 2 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	• identify that humans and some other animals have skeletons and muscles for support, protection and movement	• 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

Year 4

Science	Electricity	Sound	Digestive System and teeth	Light and Shadows	Rocks	Living things and habitats, classification and diversity (minibeasts)
	• 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	• 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	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	• 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	• 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	• 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

Year 5

Science	Properties & changes in Materials	Materials - Reversible Changes	Space	Forces	Animals and Plants – Life Cycles	Living Things – Human Life Cycle
	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility,	• 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. • Demonstrate that	• 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 Sun/Earth/Moon as	• 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	• 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.	• Describe the changes as humans develop to old age. • Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete.
	transparency, conductivity (electrical and thermal), and response to magnets. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Compare a variety of materials and measure their effectiveness (e.g. hardness, strength, flexibility, solubility, transparency, thermal conductivity, electrical conductivity). Temperature and Thermal Insulation • Heat always moves from hot to cold. • Some materials (insulators) are better at	dissolving, mixing and changes of state are reversible changes. • Changes can occur when different materials are mixed. • Some material changes can be reversed and some cannot. • Recognise that dissolving is a reversible change. • Distinguish between melting and dissolving. • Mixtures of solids (of different particle size) can be separated by sieving. • Mixtures of solids and liquids can be separated by filtering if the solid is insoluble (un-dissolved). • Evaporation helps us separate soluble materials from water. • Changes to materials can happen at different rates (factors affecting dissolving, • factors affecting evaporation – amount of liquid, temperature, wind speed). • B Freezing, melting and boiling changes can be reversed (revision from YR4).	approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night. • The Earth spins once around its own axis in 24 hours, giving day and night. • The Earth orbits the Sun in one year. • We can see the Moon because the Sun's light reflects off it. • The Moon orbits the Earth in approximately 28 days and changes to the appearance of the moon are evidence of this. • The Sun appears to move across the sky from East to West and this causes shadows to change during the day. • Changes to shadow length over a day or changes to sunrise and sunset times over a year are evidence supporting the movement of the Earth.	moving surfaces. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. • There are different types of forces (push, pull, friction, air resistance, water resistance, magnetic forces, gravity). • Gravity can act without direct contact between the Earth and an object. • Friction, air resistance and water resistance are forces which slow down moving objects. • Friction, air resistance and water resistance can be useful or unwanted. • The effects of friction, air resistance and water resistance can be reduced or increased for a preferred effect. • More than one force can act on an object simultaneously (either reinforcing or opposing each other).		
	slowing down the movement of heat than others. • Objects/liquids will warm up or cool down until they reach the temperature of their surroundings.					

Year 6

Science	Adaption Evolution and Inheritance	Properties & changes in Materials	Properties of Materials – Reversible and Irreversible Changes	Light – How light travels	Living Things – Human Life Cycle	Electricity
•	• 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. • ***Notes and Guidance (Non-statutory)*** • *Building on what they have learnt*	• 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. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	Reversible: • 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. • Demonstrate that dissolving,	• 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 the light that 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.	•Describe the changes as humans develop to old age. •Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete.	• • 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.
	about fossils in the topic on rocks in Year Three, pupils should find out more about how living things on earth have changed over time. They should be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, labradors are crossed with poodles. They should also appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example by exploring how giraffes' necks got longer, or the development of insulating fur on the	• Compare a variety of materials and measure their effectiveness (e.g. hardness, strength, flexibility, solubility, transparency, thermal conductivity, electrical conductivity). Temperature and Thermal Insulation • Heat always moves from hot to cold. • Some materials (insulators) are better at slowing down the movement of heat than others. • Objects/liquids will warm up or cool down until they reach the temperature of	mixing and changes of state are reversible changes. • Changes can occur when different materials are mixed. • Some material changes can be reversed and some cannot. • Recognise that dissolving is a reversible change. • Distinguish between melting and dissolving. • Mixtures of solids (of different particle size) can be separated by sieving. • Mixtures of solids and	• ***Notes and Guidance (Non-statutory)*** • *Pupils should build on the work in Year Three, exploring the way that light behaves, including light sources, reflection and shadows. They should talk about what happens and make predictions.* • **Pupils Might Work Scientifically** • By deciding [observe/explore] where to place rearview mirrors on cars. • By designing and making a periscope and using the idea that light appears to travel in straight lines to		• Circuit diagrams can be used to construct a variety of more complex circuits predicting whether they will 'work'. • Notes and Guidance (non-statutory): Building on their work in Year 4, pupils should construct simple series circuits, to help them answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors. • They should learn how to represent a simple circuit in

	arctic fox. Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution. • ***Note:*** *At this stage, pupils are not expected to understand how genes and chromosomes work.* • **Pupils Might Work Scientifically** • By observing and raising questions about local animals and how they are adapted to the environment. • By comparing how some living things are adapted to survive in extreme conditions, for example cactuses, penguins and camels. • By analysing the advantages and	their surroundings.	liquids can be separated by filtering if the solid is insoluble (un-dissolved). • Evaporation helps us separate soluble materials from water. • Changes to materials can happen at different rates (factors affecting dissolving, • factors affecting evaporation – amount of liquid, temperature, wind speed). • ß Freezing, melting and boiling changes can be reversed (revision from YR4).	explain how it works. • By investigating the relationship between light sources, objects and shadows by using shadow puppets. • By extending their experience [explore and observe] of light by looking at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).		a diagram using recognised symbols. Note: Pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary precautions for working safely with electricity. • Pupils might work scientifically by: • Systematically identifying the effect of changing one [thing] component at a time in a circuit. • Designing and making a set of traffic lights, a burglar alarm or some other useful circuit.
	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.		Irreversible: • 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. • Notes and Guidance (non-statutory): Pupils should explore changes that are difficult to reverse, for example, burning,			

			rusting and other reactions, for example vinegar with bicarbonate of soda. • They should find out about how chemists create new materials, for example Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton. Note: Safety guidelines should be followed when burning materials. • Pupils might work			
			scientifically by: • Observing and comparing the changes that take place, for example, when burning different materials or baking bread or cakes. • Researching and discussing how chemical changes have an impact on our lives, for example cooking. Discuss [research] the creative use of new materials such as polymers, super-sticky and super-thin materials.			