SCIENCE SKILLS & PROGRESSION

EYFS

Understanding the world (The World)	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.
Physical Development (Health and Self-Care)	Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe.

VOCABULARY

EYFS: **Animals including humans:** herbivore, face, carnivore, hair, omnivore, leg, human, knee, animal, arm, fish, elbow, birds, back, head, toes, ear, hands, eye, fingers, mouth, nose
Plants: tree, petals, trunk, fruit, branch, roots, leaves, bulb, flowers, seed, stem
Materials: material, metal, wood, rock, plastic, hard, glass, soft, paper, fabric, material, smooth, shiny, rough
Seasonal Changes: Summer, day, Spring, dark, Autumn, light, Winter, night, Season, Moon, Sun
Forces, Earth & Space: Earth, Moon, Planet, space, Sun, star
Sound, light & electricity: loud, quiet, volume, sound

Key Stage 1: -

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways;
- observing closely, using simple equipment;
- performing simple tests;
- identifying and classifying;
- using their observations and ideas to suggest answers to questions;
- gathering and recording data to help in answering questions.

SCIENCE SKILLS & PROGRESSION
Working Scientifically Skills

YEAR 1	YEAR 2
Suggest what might happen and perform simple tests	Explore and observe in order to collect data and describe and compare findings
Explore using senses and record findings in simple ways	With help, suggest some ideas and questions and predict what might happen
Collect evidence to try to answer a question	Use first-hand observation, own experience and simple information sources to make comparisons and answer questions
Make simple comparisons through observation	Observe closely using simple equipment
Identify and classify based on simple criteria	Recognise ways in which evidence can be collected
	Use simple scientific language
	Perform simple tests
	Record findings in various formats using standard units, drawings, diagrams, photographs, simple prepared formats such as tables and charts, tally charts, and displays
	Say whether what happened was what was expected and draw simple conclusions to help answer questions

YEAR 1/YEAR 2 EVERYDAY MATERIALS	
Everyday Materials – Autumn Term 1	**Uses of everyday materials – Autumn Term 1**
Distinguish between an object and the material from which it is made	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching
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	
SEASONAL CHANGES	
Seasonal change (Autumn/Winter) – Autumn Term 2	
Observe changes across the 2 seasons (Autumn/Winter)	
Observe and describe weather associated with the seasons and how day length varies	
ANIMALS INCLUDING HUMANS	
Animals – Bears and mammals – Spring Term 1	**Animals – Bears and mammals – Spring Term 1**
Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	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)
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)	Notice that animals have offspring which grow into adults
Animals – humans, senses and body parts – Spring Term 2	**Animals – humans, senses and body parts – Spring Term 2**
Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Notice that 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
PLANTS & SEASONAL CHANGES	
Plants, Seasonal change (Spring/Summer) – Summer Term 1	**Plants, Seasonal change (Spring/Summer)**
Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	Observe and describe how seeds and bulbs grow into mature plant

Identify and describe the basic structure of a variety of common flowering plants, including trees	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy
Observe changes across the 2 seasons	Observe changes across the 4 seasons
Observe and describe weather associated with the seasons and how day length varies	
LIVING THINGS AND THEIR HABITATS	
Habitats – beach, rock pools and food chains – Summer Term 2	**Habitats – beach, rock pools and food chains – Summer Term 2**
	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 of a simple food chain, and identify and name different sources of food

VOCABULARY

Year 1 – as EYFS plus: **Working Scientifically:** question, answer, observe, observing, equipment, identify, sort, group, compare, differences, similarities, describe, measurements, test, results, secondary sources record – diagram, chart

Animals including humans: amphibians, fish, reptiles, mammals, birds (+ 1 example of each) herbivore, omnivore, carnivore head, nose, ear, neck, shoulder, arm, elbow, wrist, hand, back, chest, hip, leg, knee, ankle, foot wing, beak, tail, fin sight, smell, touch, taste, hearing

Plants: deciduous, evergreen, tree, leaf, flower (blossom), petals, fruit, bulb, seed, roots, stem, trunk, branches

Everyday materials: wood, plastic, glass, paper, metal, rock Everyday materials and their uses brick, fabric, elastic, foil Rocks soils, organic matter, fossil, crystal States of matter solid, liquid, gas, evaporation, condensation, particle, Properties and changes to materials Evolution & Inheritance adaptation, evolution, characteristic, hard, soft, rough, smooth, shiny, dull, bendy, stiff

Seasonal change: season, spring, summer, autumn, winter, month, year, day, night, sun, moon, light, dark

Year 2 – as Year 1 plus: **Working Scientifically**: question, answer, observe, observing, equipment, identify, sort, group, compare, differences, similarities, describe, measurements, test, results, secondary sources record – diagram, chart

Animals including humans: survival, water, air, food reproduce, adult, baby, offspring, kitten, calf, puppy food chain, prey, predator, camouflage, protection exercise, hygiene, balanced diet

Plants: growth, germinate, light, temperature reproduce, lifecycle

Everyday materials: and their uses brick, fabric, elastic, foil property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch push, pull, roll, slide, bounce

Living things & their habitats: living, dead, habitat, microhabitat, woodland, meadow, hedgerow, pond

Key Stage 2:

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them;
- setting up simple practical enquiries, comparative and fair tests;
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers;
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions;
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;
- identifying differences, similarities or changes related to simple scientific ideas and processes; using straightforward scientific evidence to answer questions or to support their findings.

SCIENCE SKILLS & PROGRESSION

Working Scientifically Skills

YEAR 3	YEAR 4
Ask relevant questions	Set up and carry out simple practical enquiries, comparative and fair tests
With help, set up and carry out simple practical enquiries, comparative and fair tests	Put forward ideas about testing and make predictions
Suggest what might happen in comparative and fair tests	Make close observations and comparisons
Make careful observations and comparisons	Observe patterns and suggest explanations
Recognise what constitutes a fair test	Collect data
Identify simple patterns, changes, similarities and differences	Recognise and explain why a test is fair or unfair
Make measurements using standard units	Identify simple trends to answer questions
Discuss and describe findings	Make accurate measurements using standard units and begin to think about why measurements should be repeated
Communicate findings using simple scientific language in written explanations, drawings, labelled diagrams, keys, bar charts or tables	Use scientific evidence to answer questions
Use results to draw simple conclusions	Use a range of equipment, including data loggers and thermometers
	Gather and record findings through drawings, photographs, labelled diagrams, keys, models, presentations, tables, graphs and displays, using scientific language
	Report on what the evidence shows through written explanations of results and conclusions and reports
	Use results to draw simple conclusions, suggest improvements and raise further questions

YEAR 3/YEAR 4 ELECTRICITY	
Electricity – Autumn Term 1	**Electricity – Autumn Term 1**
	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
ANIMALS INCLUDING HUMANS	
Animals including humans – food chains linked to estuaries and rivers Water Cycle - Autumn Term 2	**Animals including humans – food chains linked to estuaries and rivers Water Cycle - Autumn Term 2**
	Recognise that environments can change and that this can sometimes pose dangers to living things
	Construct and interpret a variety of food chains, identifying producers, predators and prey)
	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
ANIMALS INCLUDING HUMANS	
Animals including humans – digestion, teeth, food chains linked to Stone Age animals, nutrition – Spring Term 1	**Animals including humans – digestion, teeth, food chains linked to Stone Age animals, nutrition – Spring Term 1**
Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Construct and interpret a variety of food chains, identifying producers, predators and prey
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	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
LIVING THINGS AND THEIR HABITATS	
Living things and their habitats – Spring Term 2	**Living things and their habitats – Spring Term 2**
	Recognise that environments can change and that this can sometimes pose dangers to living things
	Construct and interpret a variety of food chains, identifying producers, predators and prey
	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
PLANTS	
Plants – life cycles, seed dispersal, labelling – Summer Term 1	**Plants – life cycles, seed dispersal, labelling – Summer Term 1**
Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers	
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	
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	
SOUND	
Sound – Summer Term 2	**Sound – Summer Term 2**
	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

VOCABULARY

Year 3 – as Key Stage One plus: **Working Scientifically**: oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources, guides, keys, construct, interpret research – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, keys, bar charts, tables

Animals including humans: skeleton, skull, bones, muscles, movement, support, protection, nutrition

Plants: air, water, transportation, nutrients, soil, reproduction, seed formation, seed dispersal, pollination

Rocks: soils, organic matter, fossil, crystals and stone, granite, marble, pumice absorbent, crumble sedimentary, layer, sediment igneous, magma, lava, gas bubbles (tiny holes/spaces) metamorphic, change, squeeze, pressure

Light: light source, mirror, reflect, reflective, reflection shadow, blocked transparent, translucent, opaque

Forces & magnets: force, contact, surface, magnetic, attract, repel, poles

Year 4 – as Year 3 plus: **Working Scientifically**: oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources, guides, keys, construct, interpret research – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, keys, bar charts, tables

Animals including humans: mouth, tongue, teeth, oseophagus, stomach, small intestine, large intestine, nutrients, absorb, canine, incisor, molar producer, consumer, apex predator

Living things & their habitats: vertebrates, invertebrates (+ 1 example of each) environment, habitat, classification key
States of matter: solid, liquid, gas, evaporation, condensation, particle, temperature, freezing, heating
Sound: vibration, wave, volume, pitch, tone, insulation
Electricity: appliance, battery power, main power, circuit, series, cell, battery, wire, bulb, switch, break in circuit conductor, insulator

Key Stage 2:

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary;
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate;
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs;
- using test results to make predictions to set up further comparative and fair tests;
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations; identifying scientific evidence that has been used to support or refute ideas or arguments.

SCIENCE SKILLS & PROGRESSION
WORKING SCIENTIFICALLY

YEAR 5	YEAR 6
Plan different types of scientific investigations	Select and plan the most appropriate type of scientific enquiry to answer specific questions
Make predictions based on scientific knowledge	Make predictions based on scientific knowledge and understanding
Carry out a range of scientific investigations	Carry out a range of scientific investigations
Begin to recognise and control variables where appropriate during investigations	Recognise and control variables where appropriate during investigations
Identify trends and patterns and offer explanations for these	Identify scientific evidence that has been used to support or refute ideas
Carry out a fair test explaining why it is fair	Take measurements using a range of scientific equipment with accuracy and precision
Take measurements using a range of scientific equipment with increasing accuracy and precision	Decide when observations and measurements need to be checked, by repeating, to give more reliable data
Understand why observations and measurements need to be repeated	Select information from a range of sources
Select information from provided sources	Record data and results of increasing complexity, using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models, making appropriate use of ICT
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs	Reporting findings from investigations, including written explanations of results, explanation involving causal relationships, and conclusions
Produce written explanations of results, causal explanations and conclusions	Present reports of findings in written form, displays and presentations
Use results to make predictions for further tests	Use test results to make predictions and set up further comparative and fair tests

YEAR 5/YEAR 6 ELECTRICITY	
Electricity – Autumn Term 1	**Electricity – Autumn Term 1**
	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
EVOLUTION AND INHERITANCE	
Evolution and inheritance – Autumn Term 2	**Evolution and inheritance – Autumn Term 2**
	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
LIGHT	
Light – Spring Term 1 and Spring Term 2	**Light – Spring Term 1 and Spring Term 2**
	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.
ANIMALS INCLUDING HUMANS	
Animals including Humans – Summer Term 1 and Summer Term 2	**Animals including Humans – Summer Term 1 and Summer Term 2**
Describe the changes as humans develop to old age	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Describe the ways in which nutrients and water are transported within animals, including humans.
	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.

VOCABULARY

Year 5 – as Year 4 plus: **Working Scientifically**: plan, variables, measurements, accuracy, precision, repeat readings, predictions, further comparative and fair test, identify, classify and describe, patterns, systematic, quantitative measurements report data – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs report and present – conclusions, casual relationships, explanations, degree of trust, oral and written display and presentation evidence – support, refute, ideas or arguments biology, physics, chemistry

Animals including humans: womb, foetus, embryo, gestation, baby, toddler, teenager, elderly growth, development, puberty

Living things & their habitats: life process, reproduction, offspring,

Properties and changes to materials: hardness, transparency, conductivity (electrical, thermal) solubility, solution dissolve, filter, evaporate, sieve, reversible, irreversible

Earth & Space: Earth, sun, moon, solar system, axis of rotation, day, night, phases of the moon, star, constellation

Forces: air resistance, water resistance, friction, gravity lever, gear, pulley, Newtons

Year 6 – as Year 5 plus: **Working Scientifically**: plan, variables, measurements, accuracy, precision, repeat readings, predictions, further comparative and fair test, identify, classify and describe, patterns, systematic, quantitative measurements report data – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs report and present – conclusions, casual relationships, explanations, degree of trust, oral and written display and presentation evidence – support, refute, ideas or arguments biology, physics, chemistry

Animals including humans: function, circulatory system, heart, valve, blood vessel, vein, artery transport, oxygenated, deoxygenated lifestyle, drug

Living things & their habitats: characteristic, classification, organism, micro-organism

Evolution & Inheritance: adaptation, evolution, characteristic, reproduction, genetics, survival

Light: refraction, reflection, spectrum, rainbow

Electricity: circuit - series, parallel voltage, volts, amps