Tooting Primary School Science Curriculum

KS1

National Curriculum Statements

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.

Year 1

	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit of Learning	Human Body and Senses	Naming and Describing Materials	Animals Vertebrates	Properties and Uses of Materials	Identifying Plants and their Parts	Identifying Plants and their Parts
Strand	Biology	Chemistry	Biology	Chemistry	Biology	Biology
National Curriculum	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	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.	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).	Compare and group together a variety of everyday materials on the basis of their simple physical properties. Describe the simple physical properties of a variety of everyday materials.	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.	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.
Enquiry	Is everyone's body the same? How can we explore the world using our sense of touch? What can we hear? What smells do we like and dislike? What differences can our tongues taste?	What material is this? Is all paper the same? Is all fabric the same? How can we group objects made of different materials?	Who's, who in the animal world? What is so special about birds? What makes an amphibian an amphibian? What makes an amphibian an amphibian? Do fish have fingers? Are humans mammals? How can we sort animals?	Can the same object be made from different materials? What properties do materials have? Does it bend or stretch? Do all materials get wet?	What wild and garden plans can find around our school? What parts of a plant grow above the ground? What parts of a plant grows under the ground? Why are trees plants? What are the similarities and differences between plants that have flowers?	What wild and garden plans can find around our school? What parts of a plant grow above the ground? What parts of a plant grows under the ground? Why are trees plants? What are the similarities and differences between plants that have flowers?

Vocabulary	Texture, classify, diagram, group, identify, pattern, rank, brain, hearing, mammal, sense, sight, smell, taste, torso, touch	Compare, describe, different, record, similar, sort, suitable, use, observe, magnifier, test, absorb/absorbent, manufactured, material, natural, property, recycle, reuse, transparent	features, group, identify, amphibian, bird, carnivore, classify, diet, fish, herbivore, mammal, omnivore, reptile, vertebrate	Compare, describe, different, record, similar, sort, suitable, use, bar chart, test, bend, flexible, opaque, rigid, waterproof	Describe, compare, different, similar, texture, bark, roots, stem, trunk, deciduous, evergreen, flower, leaf, plant	Describe, compare, different, similar, texture, bark, roots, stem, trunk, deciduous, evergreen, flower, leaf, plant
Seasonal Changes Through the Year Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies. This is taught throughout the year to ensure children are accessing first hand experiences.						

Tooting Primary School Science Curriculum

Year 2						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit of Learning	Local Habitats	Choosing materials	Plants	Animals	Materials	Plants
Strand	Biology	Chemistry	Biology	Biology	Chemistry	Biology
National Curriculum	Explore and compare the difference 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	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	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	Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	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)
Enquiry	Are things I find alive, never been alive or were they once alive? What lives in my tree? What animals live in this woody habitat? What animals live in this grassy habitat? What do animals that live in the wood eat? What do animals that live in the pond eat?	Is this a good choice of material? Which ball bounces highest? Which materials are good for toddlers play dungarees? Who develops new matrials?	How do plants grow and change over time? How are seeds and bulbs different? What do seeds need to germinate? How tall will they grow? What have we learnt about how a seed germinates?	How do animals change as they grow? What do animals need to survive? How can we sort foods into groups? How do humans stay clean? How can humans stay active? How do humans stay healthy?	How can I change the shape of an object? What properties allow a material to be changed? Which material is fit for purpose? What can pushes and pulls do?	How can we care for our plants? Do mature plants need light? Does temperature affect the growth of mature plants? Do mature plants need water? What have we learnt about what mature plants need to grow healthy?

Vocabulary	Compare, feed, move, record, order, alive, breath, consumer, dead, decay, decomposer, depend, food chain, habitat, never been alive, once alive, producer, shelter, survive	Compare, design, discover, fit for purpose, invent, record, suitable, use, comparative test, enquiry, fair, measure, bouncy/bounciness, durable, elastic/elasticity, bar chart, rank, test, absorb/absorbent, material, opaque, property, rigid, transparent, waterproof	Compare, describe, record, accurate, comparative test, effect, enquiry, explain/explanation, fair, observing over time, bulb, conditions, germinate/germination, mature, seedling	Record, birth, healthy, hygiene/hygienic, invertebrate, life cycle	Action, discover/discovery, fit for purpose, invent/inventor, pull, push, suitable, use, elastic/elasticity, squashy/squash, stiff, stretchy/stretch, twist	Compare, describe, record, comparative test, enquiry, explain/explanation, measure/measurement, pattern seeking, predict/prediction, results, temperature, thermometer, bulb, conditions, germinate/germination, healthy, light, mature, seedling, soil

Tooting Primary School Science Curriculum

Lower KS2

National Curriculum Statements

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.

Year 3

	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit of Learning	Rocks, soils and fossils	Forces and magnets	Animals including humans	Lights and shadow	Plants	Plants
Strand	Chemistry	Physics	Biology	Physics	Biology	Biology
National Curriculum	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	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	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 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) 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

Tooting Primary School Science Curriculum

Enquiry	How are the rocks different and what rock is this? What are rocks used for? How are soils different? Which soils hold water? What is this fossil? Who was Mary Anning and how did she become a palaeontologist?	What makes it move? How long does a top spin on different surfaces? How well can an object slide on different surfaces? How do magnets affect each other? Which materials are magnetic? How strong are the magnets?	What nutrients do we get from our food? What nutrients are in school midday meals? What is a human skeleton? How do muscles help humans to move? How are vertebrate and invertebrate bodies supported? How are human skeletons different to other skeletons?	What do we need to see? Which object is the most reflective? How are shadows made? Is my shadow like me? How can we change the size of a shadow?	What do leaves do? What do roots and stems do? What are the functions of a flowering plant? What happens if plants do not have enough space? How are plants different?	What is inside a flower? What is animal pollination? What is wind pollution? What are fruits? How are seeds dispersed?
Vocabulary	Appearance, compare, drain, flood, layer, similar, structure, texture, evidence, identifying, classifying, microscope, crystal/crystalline, erosion, fossil, hardness, organic, palaeontologist, remains, rock, sediment, weathering	Contact, pendulum, pull/pulling, push/pushing, rough, slide, smooth, surface, texture, stopwatch, value, attract, contact force, force, like poles, magnet, magnetic, non-contact force, north/south pole, repel	Balanced, contract, diagram, internal, key, protect, support, system, data, evidence, investigate, sequence, calcium, carbohydrate, cartilage, energy, exoskeleton, fat, fibre, fluid, heart, invertebrate, joint, mineral, nutrient, organ, protein, ribs, skull, spinal cord, spine, sugar, tendon, vitamin, x ray	Absence, artificial, block, similar, surface, conclude/conclusion, comparative test, data, data logger, explain/explanation, identifying and classifying, measure/measurement, observe/observation, pattern, predict/prediction, bright, dark/darkness, data logger, dim, light, light source, lux, opaque, reflect, reflective, sensor, shadow, sun, sunlight, translucent, transparent, ultraviolet	Compare, compete, feature, function, space, transport, investigate, research, adapted, anchor, capture, nutrient	Compete, formation, invent, savoury, scar, similar, structure, burr, carpel, dispersal, nectar, ovary, ovule, pollen, pollination, pollinator, ripe, scent, sepal, stamen, fruit, insect, petal

Tooting Primary School Science Curriculum

Year 4						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit of Learning	States of matter	Electricity	Living things and their habitats (Module 6)	Living things and their habitat (Module 3)	Sound	Digestion and food chains
Strand	Chemistry	Physics	Biology	Biology	Physics	Biology
National Curriculum	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.	Identify common appliances that run on electricity. Recognise some common conductors and insulators, and associate metals with being good conductors. 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 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. To put vertebrate and invertebrate animals into groups.	Recognise that environments can change and that this can sometimes pose dangers to living things.	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. Compare the teeth of carnivores and herbivores and suggest reasons for differences Find out what damages teeth and how to look after them. Construct and interpret a variety of food chains, identifying producers, predators and prey.
Enquiry	Is this material a liquid or a solid? How is temperature measured? What difference does temperature make to how quickly the ice block melts? What are melting and freezing? Are spaces really empty? What is evaporation and how does it help to get things dry? Where did the water come from? Where did the rain come from?	What makes an appliance work? How can you light the bulb? What does a switch do? Why doesn't the circuit work? Which materials conduct electricity?	How are living things classified? How are vertebrates classified? How are invertebrates classified? Can you use a branching key? What is this living thing?	What is the impact of litter in our school? How do materials change over time? How do microplastics get into the food chain? How can we prevent microplastics from getting into our seas and oceans? How can we clean up birds affected by oil spills?	How are sounds made? How do sounds reach our ears? How can we change the volume of a sound? How does the volume of a sound change as we move away from the source? How can we change the pitch of a sound? What affects the pitch of a plucked note?	Where does all the food we eat go? What teeth do humans have? What do teeth do in the digestive system? What happens to food after we put it in our mouths? What do animals eat? What do animal teeth tell us?

Vocabulary	Cool, empty, flow, heat, horizontal, space, vertical, control variable, degree Celsius, fair test, interval, model, scale, variable, volume, air, boil, boiling point, bubble, carbon dioxide, change of state, cloud, compress, condense/condensation, evaporate/evaporation, expand, freeze, freezing point, gas, granule/granular, heat sensitive, helium, ice, liquid, melt, melting point, oxygen, powder, rain, snow, solid, solidify, steam, viscous, water vapour	Appliance, complete, device, flow, function, manual, plug, socket, wire, Carroll diagram, refute, support, Venn diagram, battery, bulb, buzzer, cell, circuit, closed circuit, connection points, electrical appliance, electrical component, electrical conductor, electrical insulator, electricity, mains, motor, open circuit, switch	Characteristic, feature, internal, observable, segment. Branching key, annelid, arachnid, cold blooded, crustacean, flowering plant, mollusc, myriapod, non-flowering plant, organism, warm blooded	Compare, litter, evaluate, variable, biodegradable, compost, decompose, environment, filter, fungi, micro-organism, organism, pollution	Communicate, compare, pluck, taut, travel, evaluate, fair test, refute, support, variable, air, decibel, gas, liquid, pitch, solid, sound, sound source, vibrate/vibration, volume	Contract, flow, function, grind, key (legend), model, anus, canine, chemicals, constipation, decompose, diarrhoea, digestion, extinct, food web, incisor, jaw, large intestine, mechanical, milk teeth, molar, oesophagus, predator, prey, rectum, saliva, small intestine, stomach, vomit

Tooting Primary School Science Curriculum

Upper KS2

National Curriculum Statements

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 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.

Year 5

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit of Learning	Forces and mechanisms	Properties and uses of materials	Earth and space	Plant and animal life cycles	Separating mixtures and changing materials	Human growth
Strand	Physics	Chemistry	Physics	Biology	Chemistry	Biology
National Curriculum	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.	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.	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.	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.	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, 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.	Describe the changes as humans develop to old age.

Tooting Primary School Science Curriculum

Enquiry	What is friction between different surfaces? Why do some objects fall faster than others? How does the size of the canopy affect the time it takes a parachute to fall? How does the shape of an object affect its movement in water? How does the number of pulleys affect the force needed to lift a load? How does the length of the lever affect the force needed to lift a load? How do gears work?	How can we compare and group materials? Which materials did the builders use when constructing our school and why? Which liquid is the thickest? Who invents things? Can the same container keep cold things cold and hot things hot? Which materials are absorbent, permeable or waterproof?	What's in space? How do the planets move? How does the position of the sun in the sky change? What causes day and night? How does the moon move? What patterns can we find in data about the planets?	How do flowering plants produce seeds? Do all plants have the same number of reproductive parts? How can we grow more plants without using seeds? How do birds change over their lifetime? Do all mammals have the same gestation period? How do amphibians change throughout their lifecycle? Do all insects go through the same life cycle?	How can we separate mixtures? What happens when we mix liquids and solids? What makes a difference to how fast sugar or salt dissolves? How can we clean up contaminated water? What makes a change non-reversible? How much gas can be produced by a non-reversible change?	How do new born babies change into teenagers? How do girls become women? How do boys become men? What is the human lifecycle?
Vocabulary	Anticlockwise, clockwise, system, accuracy, dependent variable, independent variable, line graph, air resistance, force meter, friction, fulcrum, gears, gravity, impact, lever, load, magnetism, mechanism, NEWTON (n), oppose, pivot, pulley, water resistance	Construction, design, disassemble, dispose, flow, invent/invention, leak, pour, structure, criterion, dependent variable, independent variable, survey, brittle, ductile, fragile, impermeable, permeable, malleable/malleability, thermal conductor, thermal insulator, viscosity/viscous, wear and tear	Dawn, diameter, dusk, horizon, midday, spherical, sunrise, sunset, axis, moon, orbit, planet, rotate, solar system, star, year,	Dissect, anther, asexual, breeding, embryo, filament, female, fertilisation, gestation, larva, male, mate, metamorphosis, ovary, ovule, propagation, pupa, reproduction, seed dispersal, stamen, style, thorax	Combine, flow chart, grade, inflate, particle, proportion, puncture, recommendation, room temperature, sieve, contamination, dissolve, filter, insoluble, non-reversible, react/reaction, reversible, saturated, separate, sieve, soluble, solution	Ageing, milestone, stage, system, abdomen, Adam's apple, breasts, childhood, genitals, gestation, infancy, menstruation/having a period, new born, pregnancy, puberty, pubic hair, reproduction, sweat, uterus, vagina

Tooting Primary School Science Curriculum

Year 6						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit of Learning	Living things and their habitats	Evolution and inheritance	Light	Animals, including humans	Electricity	Animals, including humans
Strand	Biology	Biology	Physics	Biology	Physics	Biology
National Curriculum	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.	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.	Recognise that light appears to travel in straight lines. 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 that objects are seen because they give out or reflect light into the eye. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Describe the ways in which nutrients and water are transported within animals, including humans.	Use recognised symbols when representing a simple circuit in a diagram. 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.	Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
Enquiry	How can we sort the mess? What plants are there other than flowering plants? How can we classify animals? What else is living besides plants and animals? How can we identify living things? What lives here? Where do these organisms fit in my key?	How are living things different? How is an organism adapted to live in its habitat? How do an animal's adaptations help it to survive? What can fossils tell us? How did evolution happen? How did Wallace and Darwin come up with the idea of natural selection?	How does light travel? What can we change about a shadow? What might affect the size of a shadow? What affects the size of a shadow? How is light reflected? How do we see objects?	What is blood made of? What is the circulatory system and what does it do? What is a heart and what does it do? What are blood vessels and valves and what do they do? What did William Harvey find out about the circulatory system?	How do we light the lamp? How can we change a circuit? How can we change the brightness of a lamp? How can we change how other components work? How can we predict which circuit will have the brighter lamp?	How do we make healthy food choices? What can happen if you don't want a balanced diet? How does physical activity affect heart rate? How does smoking and vaping affect your health?
Vocabulary	Common, observation, arthropod, cone, conifer, Echinodermata, fern, flatworm, Monera, moss, mould, needle, Protista, spore, taxonomy	Anomaly, camouflage, evolution, extinction, inherited, migrate, natural selection, offspring, variation	Block, travel, light ray, reflection	Circulate, contract, flow, pump, system, transport, aorta, arteries, atrium, blood, blood vessels, capillaries, cell, deoxygenated blood, plasma, platelets, pulmonary artery, pulse, red blood cells, valve, veins, ventricle, white blood cells	Fan, flow, propeller, standard symbol, voltage, volts	Balanced, deficiency, recovery, arteries, heart rate, pulse, salt, veins