



Science at Burton Green

At our school, our all-encompassing Science curriculum aims to promote teaching and learning of biology, chemistry, physics and scientific enquiry skills, from Early Years to Year Six, reflecting the Trust's principles. We strive for science to be practically taught and loved by all children and staff at our school, building children's awareness of the world and the way things work. The curriculum is progressive and each year, every child is given the opportunity to build on their prior knowledge and have the skills they need to find success. Scientific enquiry skills are taught in every lesson to allow pupils to master each skill then showcase it independently.



Cycle A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	1: Make observations of plants and animals		2: Look closely at similarities and differences in objects		3: Talk about changes	
KS1	Seasonal changes (one lesson per half term)					
	Animals, including humans BIOLOGY	Living things and their habitats BIOLOGY	Everyday materials CHEMISTRY		Plants BIOLOGY	
LKS2	Light PHYSICS	Rocks CHEMISTRY	Forces and magnets PHYSICS	Plants BIOLOGY	Animals, including humans BIOLOGY	
UKS2	Electricity PHYSICS		Forces PHYSICS	Earth and Space PHYSICS	Animals, including humans BIOLOGY	Living things and their habitats BIOLOGY
Cycle B	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	1: Make observations of plants and animals		2: Look closely at similarities and differences in objects		3: Talk about changes	
KS1	Seasonal changes (one lesson per half term)					
	Animals, including humans BIOLOGY	Living things and their habitats BIOLOGY	Everyday materials CHEMISTRY		Plants BIOLOGY	
LKS2	States of matter CHEMISTRY		Animals, including humans BIOLOGY	Living things and their habitats BIOLOGY	Sound PHYSICS	Electricity PHYSICS
UKS2	Properties and changes to materials CHEMISTRY		Light PHYSICS	Evolution and Inheritance BIOLOGY	Living things and their habitats BIOLOGY	Animals, including humans BIOLOGY

Science– Knowledge Learning Progression

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Animals including humans	<p>I can identify different parts of my body.</p> <p>I have some understanding of healthy food and the need for variety in my diets.</p> <p>I can show care and concern for living things.</p> <p>I know the effects exercise has on my body.</p> <p>I have some understanding of growth and change.</p> <p>I can talk about things I have observed including animals.</p>	<p>I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>I can identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>I can describe and compare the structure of a variety of common animals</p> <p>I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p>I can notice that animals, including humans, have offspring which grow into adults.</p> <p>I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>I can 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.</p> <p>I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>I can describe the simple functions of the basic parts of the digestive system in humans.</p> <p>I can identify the different types of teeth in humans and their simple functions.</p> <p>I can construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>I can describe the changes as humans develop to old age.</p>	<p>I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>I can describe the ways in which nutrients and water are transported within animals, including humans.</p>
Vocabulary	<p>arm, ears, elbow, eyes, face, fingers, foot, hair, hand, head, hearing, human, knee, leg, mouth, neck, nose, sense, shoulder, sight, smell, sound, taste, teeth, thumb, toes, touch, animals, birds, fish, pets</p>	<p>arm, ears, elbow, eyes, face, fingers, foot, hair, hand, head, hearing, human body, knee, leg, mouth, neck, nose, sense, shoulder, sight, smell, sound, taste, teeth, texture, thumb, toes, touch, amphibians, animals, birds, carnivores, fish, habitat, herbivore, mammals, omnivore, pets, reptiles</p>	<p>adult, air, animals, baby, basic needs, child, exercise, food, growth, humans, hygiene, maturity, nutrition, offspring, reproduction, survival, teenager, toddler, water, egg/chick/chicken, spawn/tadpole/frog, egg/caterpillar/pupa/butterfly, lamb/sheep</p>	<p>amount, animals, body parts, carbohydrates, diet, eat, endoskeleton, exoskeleton, fats, fibre, food, food groups, functions, healthy, humans, invertebrates, joints, meals, minerals, movement, muscles, nutrition, protection, protein, skeletons, support, types, vertebrates, vitamins</p>	<p>canine, carnivore, consumers, damages, digestive system, food chain, functions, herbivore, humans, incisor, large intestine, molar, mouth, oesophagus, predators, premolar, prey, producers, small intestine, stomach, teeth, tongue</p>	<p>adolescent, adult, animals, baby, changes, develop, embryo, foetus, gestation, growth, hormones, humans, old age, puberty, teenager, timeline, toddler</p>	<p>animals, artery, blood, blood vessels, circulatory system, damaged, deoxygenated, diet, digestive system, drugs, exercise, functions, harm, health, heart, human, impact, internal organs, lifestyle, muscular system, nutrients, oxygenated, respiration, skeletal system, substances, transported, valve, veins, water</p>
Living things and their habitats	<p>I can make comments and questions about the place I live and the wider natural world.</p> <p>I can notice features of objects in my environment.</p> <p>I can talk about things I have observed such as plants and animals.</p>		<p>I can explore and compare the difference between things that are living, dead and things that have never been alive.</p> <p>I can identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic</p>		<p>I can recognise that living things can be grouped in a variety of ways.</p> <p>I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>I can recognise that environments can change and that this can</p>	<p>I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>I can describe the life process of reproduction in some plants and animals.</p>	<p>I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.</p> <p>I can give reasons for classifying plants and</p>

	I can show care and concern for living things and the environment.		needs of different kinds of animals and plants, and how they depend on each other. I can identify and name a variety of plants and animals in their habitats, including micro-habitats. I can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food.		sometimes pose danger to living things.		animals based on specific characteristics.
Vocabulary	alive, animals, care, dead, flower, food, healthy, home, living, plants, question		alive, animals, basic needs, characteristics, conditions, dead, depend on, environment, food, food chain, habitat, healthy, living, micro-habitat, plants, provide, shelter, sources, suited		amphibians, birds, change, classification key, danger, deforestation, development, environment, fish, flowering, habitat, human impact, invertebrates, litter, living things, mammals, nature reserve, negative, non-flowering, population, positive, reptiles, vertebrate	amphibians, animals, asexual, birds, bulb, changes, cuttings, differences, dispersal, fertilisation, gestation, habitats, insects, life cycle, life process, mammals, parent plant, plants, pollination, reproduction, root, seed, sexual, similarities, stem, tuber	amphibians, animals, bacteria, birds, characteristics, classification system, classified, differences, fish, groups, habitats, insects, invertebrates, key, living things, mammals, micro-organisms, organisms, plants, reptiles, similarities, snails, spiders, subdivided, variation, vertebrates, worms
Material S	I can ask questions about the place I live. I can talk about why things happen and how things work. I can discuss the things they have observed such as natural and found objects. I can manipulate materials to achieve a planned effect.	<u>Everyday materials</u> I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials, including wood, metal, plastic, glass, water and rock. I can describe the simple physical properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple properties.	<u>Uses of everyday materials</u> I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I can find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	<u>Rocks</u> I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. I can describe in simple terms how fossils are formed when things that have lived are trapped within rock. I can recognise that soils are made from rocks and organic matter.	<u>States of Matter</u> I can compare and group materials together, according to whether they are solids, liquids or gases. I can 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). I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	<u>Properties and changes of materials</u> I can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity, and response to magnets. I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.	

						<p>I can give reasons for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>I can demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>I can explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible</p>	
Vocabulary	bendy, brick, hard, rough, shiny, smooth, soft, sticky, wood	absorbent, bendy, dull, glass, hard, material, metal, object, opaque, plastic, properties, rock, rough, shiny, smooth, soft, stiff, stretchy, transparent, water, waterproof, wood	bending, brick, cardboard, changed, glass, materials, metal, paper, plastic, properties, purpose, rock, shapes, squashing, stretching, suitability, suitable, twisting, unsuitable, uses, wood	appearance, buildings, crystals, formed, fossils, grains, gravestones, organic matter, physical properties, rocks, sedimentary rock, soils, trapped	change state, condensation, condense, cooled, degrees Celsius, escape, evaporation, everyday materials, gases, heated, liquids, melt, pool, shape, solids, substance, temperature, water cycle	acid, burning, chemical changes, chemists, dissolve, electrical conductivity, evaporate, filter, formation, gas, hardness, irreversible, liquid, magnets, melt, metal, mixtures, new materials, plastic, properties, reactions, reversible changes, rusting, separate, sieve, solid, solubility, thermal conductivity, transparency, wood	
Plants	<p>I can make observations of plants.</p> <p>I can name some plants, trees and flowers and begin to describe them.</p> <p>I can show some care for the world around me.</p>	<p>I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>I can identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>I can observe and describe how seeds and bulbs grow into mature plants.</p> <p>I can find out and describe how plants need water, light and warmth to grow and stay healthy.</p>	<p>I can identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers.</p> <p>I can explore the requirements of plants for life and growth and how they vary from plant to plant.</p> <p>I can investigate the way in which water is transported within plants.</p> <p>I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>			

Vocabulary	care, flower, growing, pet, petal, plant, tree, water	blossom, branch, bud, bulb, deciduous, evergreen, flower, flowering, fruit, garden, leaf, leaves, petals, roots, seed, stem, trunk, vegetables, wild	bulbs, environment, germination, grow, healthy, light, mature plants, reproduction, seeds, store of food, survival, temperature, water	air, anchor, fertiliser, flowering plants, flowers, functions, growth, leaves, life, life cycle, light, nutrients, nutrition, plants, pollination, reproduction, requirements, room to grow			
Light, Sound and Space	I have some understanding of change. I can observe and explain why certain things may occur (e.g leaves falling off trees, weather changes). I can look closely at similarities, differences, patterns and change. I can make comments and questions about the place they live or the wider natural world.	<u>Seasonal Changes</u> I can observe changes across the four seasons. I can observe and describe weather associated with the seasons and how day length varies.		<u>Light</u> I can recognise that they need light in order to see things and that dark is the absence of light. I can notice that light is reflected from surfaces. I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes. I can recognise that shadows are formed when the light from a light source is blocked by an opaque object. I can find patterns in the way that the size of shadows change.	<u>Sound</u> I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that produced it. I can recognise that sounds get fainter as the distance from the sound source increases.	<u>Earth and Space</u> I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. I can describe the movement of the Moon relative to the Earth. I can describe the Sun, Earth and Moon as approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	<u>Light</u> I can recognise that light appears to travel in straight lines. I can 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. I can 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. I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Vocabulary	autumn, changes, day, rain, seasons, snow, spring, summer, sun, sunny, temperature, weather, wind, winter	autumn, changes, day length, overcast, rain, seasons, snow, spring, summer, Sun, sunny, temperature, weather, wind, winter		absence, beam, blocked, danger, dark, distance, glare, light, light source, mirror, opaque, patterns, protect, ray, reflect, shadows, Sun, surfaces, transparent	distance, ear, fainter, features, high, instruments, insulation, loud, low, pitch, quiet, sound, sound source, strength, travel, vibrating, volume	astronomical clock, axis, celestial body, day, Earth, geocentric, heliocentric, Jupiter, Mars, Mercury, Moon, movement, Neptune, night, orbit, phases, planets, rotation, Saturn, shadow clock, solar system, spherical, star, Sun, sundial, Uranus, Venus	beam, cast, coloured filters, emitted, eye, glare, light, light source, periscope, rainbows, reflect, reflection, shadows, straight lines, Sun, travel, visible
Forces and Electricity	I have an awareness of starting and stopping the movement of objects with pushes and pulls. I know that some objects float and some sink. I know that objects need electricity to work.			<u>Magnets and Forces</u> I can compare how things move on different surfaces. I can notice that some forces need contact between two objects, but magnetic forces can act at a distance.	<u>Electricity</u> I can identify common appliances that run on electricity. I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.	<u>Forces</u> I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water	<u>Electricity</u> I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. I can compare and give reasons for variations in how components

	I know that a switch will turn something on or off.			<p>I can observe how magnets attract or repel each other and attract some materials and not others.</p> <p>I can 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.</p> <p>I can describe magnets as having two poles.</p> <p>I can predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>I can 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.</p> <p>I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>I can recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>resistance and friction, which act between moving surfaces.</p> <p>I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p>I can use recognised symbols when representing a simple circuit in a diagram.</p>
Vocabulary	electric, float, pull, push, sink,			<p>attract, compass, contact, distance, forces, magnetic, materials, move, objects, poles, properties, pull, push, repel, strength, surface, uses</p>	<p>appliances, battery, brighter, bulb, buzzer, cell, components, conductor, current, device, electricity, insulator, lamp, loop, metals, motor, parts, series circuit, switch, wire</p>	<p>air resistance, Earth, fall, faster, force, friction, gear, gravity, greater, level, machines, mechanism, movement, object, opposing, parachute, pulley, slow down, smaller, stop, surface, theory of gravitation, unsupported, water resistance</p>	<p>brightness, bulb, buzzer, cells, circuits, components, diagram, function, insulator, lamp, loudness, motor, series circuit, switches, symbols, variations, voltage, volume</p>
Evolution and inheritance							<p>I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>

Vocabulary								adapted, adaption, breed, changed, characteristics, competitions, environment, evolution, fossils, identical, inhabited, inherited, living things, mutation, offspring, parents, produce, reproduction, suit, survive, survival of the fittest, variation, vary
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Working Scientifically – Knowledge Progression

Key Areas	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Questioning	Know that a question is a phrase/sentence which asks for information.	Know that we can ask a simple question to gain information.	Know that we can ask questions that can be answered in different ways.	Know that they can ask questions and begin to answer them using different types of scientific enquiries.	Know that they can ask relevant questions and use different types of scientific enquiries to answer them.	Know that they plan their own scientific enquiry based on the questions they have asked.	Know that precision is achieved through refinement of both questioning and of control of the variables in a scientific enquiry.
Observing and Measuring	Know that looking carefully at something provides more information about it.	Know that there are different ways to observe things closely. Know that there are a variety of simple pieces of equipment to support observation.	Know that an appropriate choice of simple equipment will make observations more effective in the gathering of information.	Know that careful observations can form part of scientific enquiry Know that data can be collected from observations and measurements	Know that the quality of systematic observations in scientific enquiry is affected by how accurately equipment is used to gather data.	Know that specialised equipment can be used to observe and measure more accurately. Know that repeating an observation or measurement may provide more accurate information.	Know that the level of accuracy and precision will determine the success of scientific enquiry.
Testing	Know that the outcome of investigation can be changed by altering parts of the investigation	Know that the information needed to answer a question, sometimes needs to be checked to make sure it is correct.	Know that simple tests can be completed to compare outcomes of variables.	Know that a test must be fair and this is controlled by changing one variable to measure the effect.	Know that the reliability of a test is dependent on how fair the conditions of the test are.	Know that an investigation may create a gateway into further investigation.	Know that the outcomes from fair tests supports factual understanding of a scientific enquiry

		Know that a test is a way to check something.			Know what a control is.	Know and understand the terms dependent and independent variables.	which may differ from opinion.
Identifying (& Classifying)	Know that it is possible to recognise something by its features.	Know that by comparing common features, it is possible to group and sort objects, materials or living things.	Know that sorting and grouping by features and characteristics can be refined to give more accurate and detailed identification (for example, tree/oak tree/deciduous)	Know that information collected during a simple scientific enquiry can be used to inform identification and classification.	Know that accurate identification and classification can be used to answer questions in a simple scientific enquiry.	Know that identification and classification can involve the organisation of a substantial amount of information and there are agreed methods for doing this. (e.g. key, graphs)	Know that the success of more complex scientific enquiries requires appropriate selection of the most effective method of classifying information.
Hypothesising	Know that ideas can be put forward for thinking and talking about.	Know that ideas can be used to predict possible outcomes to a scientific enquiry	Know that a hypothesis is a starting point for further investigation.	Know that a simple hypothesis can be tested.	Know that there is more than one way to test their hypothesis.	Know that prior knowledge can be used to form a hypothesis	Know that an efficient scientific enquiry should be based on an informed hypothesis.
Interpreting and Recording Data	Know that information can be collected / shared with others.	Know that there are different ways to collect and record information.	Know that recorded data can be used to help find answers to questions.	Know that recorded data can be used to draw conclusions.	Know that inaccurately recorded data can mislead and lead to incorrect conclusions.	Know that filtering data is an important step when drawing conclusions so that only the most relevant information is used.	Know that accurate data is essential to support or disprove scientific ideas/predictions