Science Curriculum Overview

NB See Values header page.

We will all participate in British Science Week every year – Spring Term - 2

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year R						
Skills	• Comment and ask questions about aspects of their familiar world such as the natural world. • Talk about some things they have observed such as plants, animals, natural and found objects. • Talk about why things happen and how things work. • Look closely at similarities, differences, patterns and change in relation to objects, materials and living things. • Talk about features of their own immediate environment and how environments might vary from one another. • Make observations of animals and plants and explain why some things occur, and talk about changes. • Experiments to create different textures. • Shows care and concern for living things and the environment. NB: **The exceeding child:** Children know that the environment and living things are influenced by human activity. They can describe some actions which people in their own community do that help to maintain the area they live in. They know the properties of some materials and can suggest some of the purposes they are used for. They are familiar with basic scientific concepts such as floating, sinking, experimentation.					
Knowledge	**Familiar Stories** **Explore signs of autumn when it is very obvious.** (Keep the pumpkin seeds to plant in the spring.)	**Julia Donaldson** **Beginning to name a variety of everyday materials including wood, plastic and metal.** **Explore floating and sinking.** Visit to the Park	**Superheroes** **Explore signs of winter when it is very obvious.** **Know some of the things that make them unique and can talk about some of the things the similarities and differences in relation to friends or family.** **Draw around their friends with chalk etc – label the body parts below.**	**Eggs** **Explore signs of spring when it is very obvious.** **Plant pumpkin seeds.** **Explore and find out about the dinosaurs. Learn about the different groups (carnivores and herbivores.)** **Explore simple life cycles.** Visit to the Park	**Food** Visit to local garden – Hollyrood **Explore signs of summer.** **Plant sunflowers – keep the heads to go up to Year 1 so that the children can plant the seeds. Introduce the parts of the plan that the children can see.** **Explore floating and sinking.**	**The Farm** **To find out and remember some facts about a ladybird.** Visit to Longdown Dairy Farm. **To learn the names of some pets and farm animals. To understand that they young sometimes have a different name. To begin to understand that the animals provide us with food and resources. Explore needs of some farm animals (food, shelter, water etc.)**

On-going care and observations of our school guinea pigs.

Key Vocabulary	**Season, autumn, tree, leaves, acorns and conkers.**	**Wood, metal, plastic, water, float and sink.**	**Body, head, face, arm, leg and foot.** **Season, winter, no leaves, cold and snow.**	**Eggs, hatch, grow, dinosaur, meat and plants.** **Spring, buds, blossom nests and daffodil.**	**Plant, stem, leaf, petal, seeds and beans.** **Summer, grow, hot, fruit and vegetables.**	**Animal, pig, cow, sheep, horse, guinea-pig.**
Wider Vocabulary	**Rain, conkers, acorns, pine cones, orange, yellow, brown, red, pumpkin, decay, talk, ask.**	**Materials, water, glass fabric, rock, texture, hard, soft, rough and smooth. Talk, ask, describe.**	**Eyes, hair, mouth, nose, ear, hand, fingers, stomach, chest, toes. Talk, ask, describe, compare, branches and evergreen.**	**Life cycle, growth, carnivore, herbivore, omnivore, extinct, talk, ask, describe, compare, questions, season, tree, leaves, flower and new life.**	**Season, talk, ask, describe, compare, questions, observe, patterns, change, difference, environment.**	**Ladybird, insect, wings, six legs, antennae, animal, piglet, calf, goat, foal, puppy, dog, kitten, cat, food, shelter, water, eggs, milk, cheese, wool, talk, ask, describe, compare, questions and observe.**
Year 1						
Skills	During Year 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills. Year 1 they will be introduced to the skills and begin to practise them. 1. Ask simple questions and recognise that they can be answered in different ways. 2. Observe closely using simple equipment. 3. Perform simple tests. 4. Identify and classify. 5. Use their observations and ideas to suggest answers to questions. 6. Gather and record data to help in answering questions.					
Knowledge	**Robots** <u>Everyday Materials</u> **Distinguish between an object and the material from which it is made.** **Identify and name a variety of everyday materials including wood, plastic, glass, fabric, metal, water and rock.** **Describe the simple physical properties of everyday materials.** **Compare and group together a variety of**	**Amazing Me** <u>Human Body</u> **Identify, name, draw and label the basic parts of the human body. Say which part of the body is associated with each sense.** Body parts and senses. Senses investigations.	**Let's Explore** <u>Animals</u> **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,**	**Toys** <u>Everyday Materials</u> **Describe the simple physical properties of everyday materials.** Waterproof/not water proof or absorbent Strong/weak <u>Materials investigations:</u> What is the best material for making an umbrella to keep a toy dry?	**The Great Fire of London** <u>Everyday Materials</u> **Describe the simple physical properties of everyday materials.** Opaque/transparent Stretchy/stiff Bendy/not bendy <u>Materials – investigations.</u> Which material is best for making windows?	**Forests** <u>Plants</u> **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.** Growing beans and sunflowers. <u>Visit to Hilliers</u> Exploring different plants. Bean Game

On-going care and observations of our school guinea pigs.

	everyday materials on the basis of their simple properties. Distinguishing between object, material and property. Hard/soft, shiny/dull, rough/smooth Seasons and weather – Autumn – link to tree outside our window. Park walk and visit to explore signs of autumn. **Include names of different plants and trees.** Season table/weather chart – am activity.		**including pets) both** linked to a trip to Marwell Zoo. Seasons and weather – Winter – link to tree outside our window. Park walk and visit to explore signs of winter. **Include names of different plants and trees.** Season table/weather chart – am activity.	What is the best material for making a bridge? What is the best material for making an umbrella? What is the best material for cleaning up water? Seasons and weather – Spring– link to tree outside our window. Park walk and visit to explore signs of spring. **Include names of different plants and trees.** Season table/weather chart – am activity.	Which material is best for holding up the fire fighters trousers? Which material is best for wrapping up cheese?	Pollination Game Naming trees. Seasons and weather – Summer– link to tree outside our window. Park walk and visit to explore signs of summer. **Include names of different plants and trees.** Season table/weather chart – am activity.
Key Vocabulary	**Materials, object, glass, fabric, rock, property, hard/soft, shiny/dull and rough/smooth.** **Day length, shorter, weather, oak tree, horse chestnut tree, sycamore tree, winged seeds (helicopters.)**	**Neck, elbows, knees, hips, wrist, ankle.** **Senses, sight, hearing, touch, skin, smell and taste.**	**Fish (cod and bass) Bird (pigeon and robin.) Mammal (squirrel and guinea pig) Amphibian (newt and toad.) Reptile (grass snake and adder.) Carnivore, herbivore and omnivore.** **Dark, frost, deciduous, evergreen, pine, holly and snowdrop.**	**Waterproof/not water proof or absorbent, strong/weak.** **Longer, showers, warm, primrose, blossom and bluebells.**	**Opaque/transparent, stretchy/stiff, bendy/not bendy,**	**Trunk, branches, daisy, beans, sunflower and dandelion.**
Wider Vocabulary	**Fabric, paper, card, leather, wool, observe, compare, sort, group, similarity, difference, record, venn diagram, chart, day, night, Diwali,**	**Receptors, nerves and brain, test, question, data and tally chart.**	**Christmas, hibernate, migrate, ice, sleet, crocus, pine cone.**	**Sun, light, Easter, daffodil, buds and blossom.**	**Record, equipment**	**Ivy, clover and buttercup, Eid, grass, protect and eyes.**

On-going care and observations of our school guinea pigs.

	rain, clouds, dew, leaves, hibernate, migrate, hedgehog, squirrel , harvest, fog, deciduous and evergreen.					
Year 2						
Skills	During Year 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills. In Year 2 they will practise and master these skills: 1. Ask simple questions and recognise that they can be answered in different ways. 2. Observe closely using simple equipment. 3. Perform simple tests. 4. Identify and classify. 5. Use their observations and ideas to suggest answers to questions. 6. Gather and record data to help in answering questions.					
Knowledge	**Turrets and Tiaras**	**Weather**	**Beautiful Beaulieu!**	**Titanic**	**Amazing Africa** **Health Week -**	
	<u>Uses of Everyday Materials</u> **Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.** **Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.** **We have added the rest in italics for next year to deepen scientific learning in Year 2.** ***Pupils should become familiar with how some materials are used for more than one thing e.g metal can be used for coins, cans, cars and table legs or how different materials are used for the same thing e.g. spoons. They should think about the properties of materials that make them suitable/unsuitable for particular purposes and should be encouraged to think about unusual or creative use for everyday materials.*** ***Pupils could find out about people who have developed useful new materials such as John Dunlop (re-invented pneumatic tyres) Charles***	<u>Animals – humans focus:</u> **Find out about and describe the basic needs of 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.** **Notice that humans have offspring that grow into adults.**	<u>Animals – making links to humans</u> **Notice that animals have offspring that grow into adults.** **Find out about and describe the basic needs of animals for survival (water, food and air.)** <u>Living Eggs – observation of eggs to chicks</u>	<u>Living Things and Their Habitats</u> <u>Support this topic with an afternoon visit to the Hawthorns Centre</u>. **Explore and compare differences between things that are living, dead and things that have never been alive.** **Identify that most 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**	<u>Plants</u> **Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.** **Observe and describe how seeds and bulbs grow into mature plants.** **Planting cress, sweet peas and summer flowering bulb.**	

On-going care and observations of our school guinea pigs.

	Macintosh (invented waterproof garment – the mackintosh!() or John McAdam (invented "macadamisation" – an effective way of constructing roads.			**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** Study the plants and animals in the different habitats, observe how living things depend on each other and compare the habitats.	
Key Vocabulary	**Suitability, squash, bend, twist, stretch, John Dunlop, Charles Macintosh and John McAdam.**	**Humans, survival, water, food, air, exercise, hygiene, food groups, off spring and adults.**	**Changes, develop, needs, young, parents, incubator, observation, development, independence, breathe.**	**Food chain, source, living, non-living micro-habitat, provide, suited, producer.**	**Health, light, bulb, mature, wilt and sprout.**
Wider Vocabulary	**Card, leather, wool, re-invented, pneumatic tyres, , invented, waterproof garment, mackintosh, "macadamisation" and constructing.**	**Growth, develop, changes, chart, table, sequence, growth, needs, warm, nutrition, adult, young, mammals, live young, milk, birth, parents, observation, description, germs, bacteria, washing, soap, cleanliness, fitness, benefits, sleep, health, wellbeing, food, protein, sugar, fat, activity, fuel, energy, carbohydrate, weight, activity, vitamins, minerals, fruit and vegetables, baby, toddler, teenager,**	**Chart, table, sequence, warm, nutrition, adult, young, young, mammals, live young, milk, birth, parents, observation, description, growth.**	**Woodland, meadow, marsh, water, land, field, meadow, stream, pond, forest, dunes, sandy, rocky, damp, open, windy, sheltered, exposed, dry, wet, dark, shady, sunny, pine needles, blackbird, wood pigeon, tide (high/low) rock pool, trapped, dipping, specimen, magnifying glass, Specimen tray, water flea, examine, water boatman,**	**Germinate, excrete, taproot, store, edible, annual , biennial, perennial, propagator and evaluation.**

On-going care and observations of our school guinea pigs.

		development, independence, breathe.		**stickleback, caddis fly, leech, larvae, iris, duckweed, curly weed, water lily, food. Insects, identify, spider, ant, fly, beetle, mini-beast, snail, slug, bee, woodlouse, millipede, centipede, butterfly, damp, dry, cold, wet, warm.**	
Year 3	**Key and wider vocabulary to be decided.**				
Skills	During Year 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills. Year 3 they will be introduced to the skills and begin to practise them. • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gather, record and classify data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Use results to draw simple conclusions, making predictions for new values, suggest improvements and raise further questions. • Identify differences, similarities or changes related to simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or to support their findings.				
Knowledge	**Animal Homes** **Set up and then on-going throughout the year.**	**Animals and Skeletons**	**Rocks** **Linked with Geography in Summer 2 –** a trip might be good!	**Plants**	**Light**	**Forces and Magnets**
	This topic provides an opportunity to develop scientific skills and to provide homes and other methods to attract animals in our school grounds.	**Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they**	**Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.**	**Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.**	**Recognise that they need light in order to see things and that dark is the absence of light.**	**Compare how things move on different surfaces.** **Notice that some forces need contact between two objects, but magnetic**

On-going care and observations of our school guinea pigs.

		get nutrition from what they eat. **Identify that humans and some other animals have skeletons and muscles for support, protection and movement.**	**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.**	**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.**	**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.**	**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 two poles.** **Predict whether two magnets will attract or repel each other, depending on which poles are facing.**
Vocabulary		**Diet, omnivore, carnivore, herbivore, invertebrate, mammal, plant, animal, bird, food, fish, reptile, food group, carbohydrate, ingredient, basic, protein, fat, variable, value, vitamin, mineral, simple, healthy, unhealthy, complex, diet, meals, balanced diet, dairy, sweet, fatty, growth , repair, fuel, owl pellet, pelvis, skull, ribs, vertebra, leg bones, spine, teeth, vertebrate, soft, movement, backbone, skeleton, soft, hard, shell, joint, movement, external, internal, muscles,**	**Criteria, appearance, texture, weight, rough, smoot, sharp, hard, lumpy, cracked, flaky coarse, flat, round, layered, glassy, sparkling, polished, jagged, shiny, crystalline, sandy, fine, grainy (granular) clay, crystal, particle, sieve, permeable, impermeable, predict, fizz, vinegar, rock, stone, pebble, texture, volume, weight, chalk, limestone, basalt, mudstone, sandstone, slate, granite, pumice, formation, underground, heat, volcano, crust, molten, lava, crust, erupt, solidify, mud, sand, shells, sediment, bones, igneous, sedimentary, metamorphic, soil, particles, organic matter, sand, layer,**	**Seed, seedling, conditions, observations, thermometer, water, compost, variable, recording, ruler, soil, light, prediction, results table, filter, data logger, light, sensor, measurement, structure, function, fruit, stem, leaf (leaves) shoot, root, flower, growing tip, bud, seed, petal, plant, thorn, nutrient, bark, wilt, spines, tap root, fibrous root, competition, dispersal, gravity, wind dispersal, animal dispersal, scatter, seed pod, fruit, nut, berry , seed head, life cycle, germination,**	**Light, dark, night, day, light source, Sun, Moon, torch, candle , lamp, glow, reflect, shine, sparkle, reflected light, mirror, reflected light, danger, surface, shiny, dull, reflective strip, bright, fluorescent, high visibility, back to front, mirror, reflection, image, twilight, dim, Sun, daylight, senses, reflect, eye, eyelid, eye lashes, pupil, iris, eye brow, sunglasses, blink, transparent, block, shadow, opaque, translucent, travel, bright, sensor, data logger, data,**	**Force, Newton, twist, force meter, direction, compress, pull, speed, stretch, push, distance, shape, friction, rub, drag, smooth, surface, direction, rough, mass, results, table, prediction, fair test, conclusion, evaluation, magnet, repel, like, unlike, magnetic, pole, North Pole, South Pole, compass, North, East, South, West, attract, rotate, non-magnetic, metal, non-metal, relationship, attraction, repulsion, magnetism, steel, iron, plan, variable and strength.**

On-going care and observations of our school guinea pigs.

		muscles, jaw, collar bone, shoulder blades, breast bone, arm bones, knee cap, foot bones, hand bones, heart, brain, rigid, protect, tendons, lungs, attached, shrink, stretch, contract, expand, involuntary muscle, cardiac muscle, voluntary muscle, biceps and triceps.	**gritty, mud, sticky, fossil, animal, plant, mould, natural mould, prehistoric, water, bones, dinosaur, deduce, minerals, teeth, skull, legs, limbs, claws, teeth, limbs, skeleton, wings, model, diet, herbivore, carnivore, hunter, graze, all fours, upright, clumsy and run.**	**growth, flowering, pollen, mature, pollination, seed formation, pale, thin, spindly, chart, conclusion and evaluation.**	**straight line, distance, object and variable.**	

Year 4						
Skills	During Year 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills. Year 3 they will be introduced to the skills and begin to practise them. • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gather, record and classify data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Use results to draw simple conclusions, making predictions for new values, suggest improvements and raise further questions. • Identify differences, similarities or changes related to simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or to support their findings.					
Knowledge	**Classification – animals and their habitats** **Skills:** 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. **Knowledge:**	**Digestive System** **Skills:** 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. **Knowledge:** describe the simple functions of the basic parts	**Electricity** **Skills:** Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. **Knowledge:** Identify common appliances that run on electricity. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is	**Sound** **Skills:** 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 **Knowledge:** identify how sounds are made, associating some of them with something vibrating	**States of Matter** **Skills:** 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) **Knowledge:**	**Respecting our environment** **Skills:** Present their ideas and evidence in appropriate ways Use simple scientific vocabulary to describe their ideas and observations Draw simple conclusions about what they see **Skills:** Identify where humans have had an impact on an environment Identify ways that humans can damage an environment

On-going care and observations of our school guinea pigs.

	Recognise that living things can be grouped in a variety of ways. Recognise that environments can change and that this can sometimes pose dangers to living things.	of the digestive system in humans identify the different types of teeth in humans and their simple functions	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.	recognise that vibrations from sounds travel through a medium to the ear recognise that sounds get fainter as the distance from the sound source increases.	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Identify ways in which humans can protect and improve environments
Vocabulary Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.	backbone amphibian gills lungs cold-blooded class mammal bird feathers fur reptile scales eggs suckle fish limbs fins warm-blooded	tooth teeth carnivore herbivore omnivore incisor canine pre-molar molar gum saliva tongue taste sweet salt sour bitter taste buds	mains electricity battery electricity appliance electric shock electrocution wire plug socket adapter current power power station electricity substation RCD/circuit breaker pylon	sound hear detect hearing sense ear noise loud soft quiet vibration sound wave travel air volume	state solid liquid gas shape volume fixed spread compressed squashed change of state melt freeze evaporate condense pour	environment urban impact human structure damage positive negative no effect pollution litter enhance no effect pollution litter enhance

Year 5						
Skills	• The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. • At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. • They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. • Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.					
Knowledge	**Decay and recycling** **Skills** Plan a scientific enquiry to find decay times of common materials, recognising and controlling variables	**Life cycles** **Skills** **Knowledge** describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	**Earth and Space** **Skills** **Knowledge** Describe the movement of the Earth, and other planets, relative to the Sun in the solar system	**Mixtures and reactions** **Skills** 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 **Knowledge**	**Human development** **Skills** **Knowledge** Describe the physical changes that take place in the human	**Forces** **Skills** **Knowledge** explain unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object

On-going care and observations of our school guinea pigs.

	Record findings and estimate degree of trust in results From investigation, estimate the time needed for some common materials from litter to decay **Knowledge** Describe the process of decay and its usefulness Identify materials that will decay Know that some materials can be recycled into useful new materials	describe the life process of reproduction in some plants and animals	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.	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 give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic 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.	body during puberty	identify the effects of air resistance, water resistance and friction, that act that between moving surfaces recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
Vocabulary Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.	decay rot compost nutrients decomposers bacteria funghi waste scavengers fertiliser break down litter recycle reuse	evidence observation measurement life cycle stage offspring metamorphosis (etc.) growth germination (etc.) structure habitat	Earth Sun Planets orbit sphere horizon Moon astronomer astronomy heavenly body distance	property material glass ceramic rubber wood steel aluminium metal non-metal cotton wool characteristic hardness magnetic attraction opacity thermal conductivity electrical conductivity flexibility	life cycle baby toddler child teenager adult man woman adolescence maturity grow develop birth pregnancy old age die	force gravity speed acceleration fall attract variation planet Moon Newtons force meter kilograms weightless

Year 6	
Skills	• The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. • At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. • They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information.

On-going care and observations of our school guinea pigs.

	• Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.					
Knowledge	**Field Studies** **Skills** Use and evaluate some sampling techniques for environmental field work **Knowledge** Compare populations of living things during the course of the year Provide reasons for the changes in population during the year	**Heart and Lungs** **Skills** **Knowledge** Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood 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.	**Classification** **Skills** **Knowledge** 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.	**Electricity** **Skills** Use recognised symbols when representing a simple circuit in a diagram**.** **Knowledge** 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	**Light** **Skills** **Knowledge** understand that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.	**Evolution and inheritance** **Skills** **Knowledge** 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.
Vocabulary Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.	population species class habitat conditions variation sample comparison self-seeding vertebrates invertebrates plants climate temperature light level season	blood circulate heart blood type red cells white cells plasma microscope platelets nutrients oxygen transfusion carbon dioxide clotting infection haemoglobin	classification kingdom phylum order plants flowering plants conifers ferns mosses algae animals vertebrates invertebrates mammals birds fish reptiles amphibians arthropods insects arachnids myriapods	plug mains electricity battery switch bulb motor crocodile clips wire complete circuit conductor insulator buzzer fan bright dim	light ray beam light source data logger light sensor Lux Opaque transparent translucent object shadow reflection mirror eye	biography variation inherited natural selection survival naturalist voyage specimens adaptation evolution hypothesis

On-going care and observations of our school guinea pigs.

			crustaceans sponges annelids flatworms cnidarians nematodes echinoderms molluscs characteristic species			

On-going care and observations of our school guinea pigs.