Science – Key Knowledge

	Key Knowledge linked to National Curriculum Statements					
Nursery	**Animals Including Humans**	**Plants**	**Seasonal Changes**	**Materials**	**Living Things and their Habitats**	**Forces**
	I can name and identify a range of farm animals. I can name and find my shoulders, neck, back, arms, foot and knees. I can name the different stages of a chick's life cycle I can care and show respect for animals.	I can plant a seed and care for growing seeds. I understand the key features of the life cycle of a bean plant (root, shoot, seedling, flowering). I can care for the natural environment.	I can talk about what I see in spring, autumn, spring and winter.	I can use all my senses in hands-on exploration of natural materials. I can explore collections of materials with similar and/or different properties. I can talk about the differences between materials and changes they notice.	I can care for the natural environment and for living things.	I can explore how things work. I can explore and talk about different forces I can feel.
	Key Vocabulary: animal, life cycle, farm, shoulders, neck. back, arm, foot, knee, chicken, hen	**Key Vocabulary:** seed, plant, root, shoot, seedling, flowering	**Key Vocabulary:** spring, summer, autumn, winter	**Key Vocabulary:** material	**Key Vocabulary:**	**Key Vocabulary:**

Reception	Animals Including Humans	Plants	Seasonal Changes	Materials	Living Things and their Habitats
	I can name and find my elbow, eyebrow, eyelash, chin, fingers and thumbs. I can name, draw and identify a range of African animals. I can name, draw and recognise a range of animals from the Polar regions. I can name the different stages of a butterfly's life cycle.	I can make observations of plants. I can explore the natural world around me. I can talk about the life cycle of a sunflower in detail (seed, shoot, bud, sunflower, sunflower wilts). I can talk about the plants I see outdoors. I can draw a plant.	I can talk about what I can see, hear and feel during each season. I can talk about the physical changes from season to season. I understand the effect of changing seasons on the natural world around them.	I can name and identify a range of materials found in the environment.	I can talk about similarities and differences between contrasting environments. I can recognise some environments that are different to where I live.
	Key Vocabulary: elbow, eyebrow, eyelash, chin, fingers, thumb, animal, life cycle, butterfly	**Key Vocabulary:** seed, plant, root, shoot, seedling, flowering	**Key Vocabulary:** spring, summer, autumn, winter, see, feel, hear, taste, smell	**Key Vocabulary:** material	**Key Vocabulary:**

Year 1	Animals Including Humans	Everyday Materials	Plants	Seasonal Changes
	I can identify, name and classify a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can describe and compare the observable features of animals from a range of groups. I can identify and name animals that are herbivore, carnivore or omnivore. I can name, draw and label the basic parts of the human body and where these are on the human body. I can name the five senses and the part of the body they are related to. I can ask simple questions about what I notice. I can use magnifying glasses and mirrors to observe closely. I can gather and record data to help in answering questions.	I can name different objects and the materials they are made from. I can name a variety of everyday materials are describe how they are different or similar to each other I can describe the physical properties of everyday materials. I can group and compare materials on the basis of their simple physical properties.	I can name a variety of wild plants, garden flowering plants and trees. I can explain what deciduous and evergreen trees are. I can name the parts of a flowering plant (leaves, petal, stem, flower, roots) and tree (blossom, branches, trunk, roots, fruit, leaves, bark). I can ask simple questions about what I notice. I can use a magnifying glass to observe closely. I can gather and record data to help answer questions. I can make a simple written explanation about what conclusions have been made. I can identify, sort and classify leaves.	I can name the four seasons. I can observe and describe what the weather is like in the four seasons. I can tell you that the amount of sunlight changes in the four seasons.
	Key Vocabulary: amphibians, birds, fish, mammals, reptiles, carnivore, herbivore, omnivore, sight, hearing, touch, taste, smell	**Key Vocabulary:** hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks, tears, rough, smooth, shiny, dull, physical properties, material, sort	**Key Vocabulary:** Leaf, flower, blossom, petal, fruit, root, seed, trunk, branch, stem, bark, wild	**Key Vocabulary:** Seasons, spring, summer, autumn, winter, sunlight, weather

Year 2	Uses of Everyday Materials	Animals Including Humans	Plants	Living Things and their Habitats
	I can tell you which materials are better suited for a particular use. I can tell you how the shape of some solid objects can change. I can compare a variety of different objects and explain why some are better suited for different uses than others. I can investigate how different materials change shape. I can describe the different way materials change to suit their use.	I can match several animal offspring with their adult forms and can describe their main characteristics. I can compare the life cycles of at least two different animals. I can describe ways that humans grow and develop through each life cycle stage. I can tell you that the three basic needs of all animals to survive are water, food and air I can talk about the importance of a balanced diet. I can carry out simple practical tests, make careful observations and draw simple conclusions. I can explain why it is important for humans to exercise, be hygienic and eat the right amounts of different types of food.	I can explain the life cycle of a plant I can tell you that plants need water, light and a suitable temperature to grow and stay healthy I can tell you how seeds / bulbs grow and that plants are suited to the environment they live in I can perform a simple comparative and fair test to see how seeds grow best I can carry out a fair test and record observations to see how a seed / bulb grows and the changes it goes through I can gather and record data to help in answering questions I can write a simple explanation about what conclusions have been made	I can name things are alive, dead or have never been alive I can name a variety of plant and animals that live in different habitats, including a micro-habitat I can explain that animals and plants depend on other organisms in order to survive. I can explore and compare the differences between things that are living, dead, and things that have never been alive I can describe a simple food chain and identify and name different sources of food I can describe how different habitats provide the basic needs of different kinds of animals and plants
	Key Vocabulary: Material, shape, transparent, rigid, flexible, opaque, translucent, shiny, squash, bend, twist, stretch, waterproof	**Key Vocabulary:** life cycle, off spring, young, reproduction, balanced diet, exercise, germs, hygiene, nutrition, disease, survive	**Key Vocabulary:** Seeds, bulb, Germination, water, grow, light, shade, soil, sun, warm, cool, nutrients, temperature, healthy, Habitat	**Key Vocabulary:** Living, dead, habitat, environment, micro-habitat, dependency, survive, food chain, source

Key Stage 1 – Working Scientifically

I can ask simple questions and recognise that they can be answered in different ways.
I can observe closely, using simple equipment.
I can perform simple tests.

I can identify and classify.
I can use my observations and ideas to suggest answers to questions.
I can gather and record data to help in answering questions.

Year 3	Rocks	Animals Including Humans	Plants	Light	Forces and Magnets
	I can describe the simple physical properties of rocks (hard, crystalline, granular, powdery, fine-grained, sand grain, organic matter). I can explain what a fossil is and describe how they are formed. I can compare different kinds of rocks in terms of their appearance and physical properties. I can classify different types of rocks in different ways. I can present the classification of rocks in a table. I can describe what soils are made of.	I can identify what animals and humans need to stay healthy, showing an understanding of the food groups and the nutrients humans need for a healthy diet. I can explain why different animals require a different balance of nutrients. I can name, describe and explain the features and advantages and disadvantages of different types of skeletons. I can name the main parts of the human skeleton and know that they support and protect us. I can explain how muscles work and that they help us move.	I can name the different parts of a flower that are responsible for a plant's life cycle. I can identify the main parts of a flowering plant and describe the functions of each part (roots, stem/trunk, leaves and flowers) I can use scientific evidence to explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) I can carry out an investigation testing and exploring the different requirements plants need to survive. I can explain how water is transported within plants and carry out an investigation to show how temperature affects water transportation in plants. I can explain the part a flower plays in a plant's life cycle (pollination, seed formation and seed dispersal).	I can tell you that we need light in order to see things and that dark is the absence of light. I can tell you that light is reflected when it hits an opaque object. I know that sunlight can have a negative effect on our eyes and can explain ways that we can protect our eyes. I can explain how shadows are formed and that they change shape due to the position of the light source. I can plan (including asking a simple question) and perform an investigation to show how shadows are formed. I can gather, record and present data about how shadows change when the light source changes.	I can observe and compare how different things move on different surfaces. I can describe how some forces need contact but magnetic forces can act at a distance. I can identify some magnetic materials and compare and group everyday materials on the basis of whether they are attracted to a magnet. I can observe and describe how a magnet attracts or repels with reference to its two poles. I can predict whether two magnets will attract or repel from each other, linked to knowledge of the poles.
	Key Vocabulary: Rock, texture, density, permeability, durable, igneous, sedimentary, metamorphic, fossil, fossilisation, cementation, organic matter, soil	**Key Vocabulary:** Nutrition, nutrients, carbohydrates, proteins, vitamins, minerals, fibre, skeleton, bones, muscles Joints, protection, support, movement	**Key Vocabulary:** roots, stem, trunk, leaves, flower, air, light, nutrients, temperature, transportation, pollination,	**Key Vocabulary:** Light, dark, light source, transparent, translucent, opaque, shadow, reflect,	**Key Vocabulary:** push, pull, friction, contact force, non-contact force, magnetic, magnet, bar magnet, attract, repel, north pole, south pole

			seed formation, seed dispersal, life cycle	mirror, UV light, retina	
Year 4	**States of Matter**	**Animals Including Humans**	**Electricity**	**Sound**	**Living Things and Their Habitats**
	I can identify, compare and classify materials that are a solid, liquid or gas. I can explain the properties of each state and the arrangement of the particles. I can plan and investigation that shows materials changing state. I can make systematic and careful observations when a material changes state. I can use a thermometer to take and accurate measure of temperature (°C). I can present the different stages of the water cycle. I can use scientific evidence to explain how temperature effects the rate of evaporation in the water cycle. I can identify the part evaporation and condensation plays in the water cycle.	I can describe the functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and discuss their simple function. I can construct and interpret a variety of food chains and identify the producer, predator and prey.	I can identify and classify appliances that run on electricity or not and record my findings using labelled diagrams. I can identify whether a circuit is complete to make a lamp light and how a switch can affect this. I can construct a simple series electric circuit using cells, wires, bulbs, switches and buzzers. I can recognise that a switch opens and closes a circuit. I can identify and classify appliances (that run on electricity or not) and record my findings using labelled diagrams.	I can explain that some sounds are made by something vibrating. I can explain how vibrations travel through a medium towards your ear and how your ear registers sound. I can explain patterns about how the pitch of sound can change in different objects. I can test and explain patterns on how the strength of a vibration correlates to the volume of a sound. I can investigate how sound changes when the distance of the sound source is changed and discuss my findings.	I can organise organisms in a variety of ways depending o similar characteristics. I can create and use a branching classification system to identify and name a variety of living things in my local environment. I can create and use a branching classification system to identify and name a variety of living things in the wider environment. I can tell you some of the dangers that a changing environment can have on living things.
	Key Vocabulary:	**Key Vocabulary:** digestive system, digest, stomach, small intestine, large intestine, rectum,	**Key Vocabulary:** Circuit, conductor, series circuit, complete circuit,	**Key Vocabulary:** sound, sound source, vibration, ear, pitch	**Key Vocabulary:** classify, classification, habitat, environment, living things, organism

	Solid, liquid, gas, heating, cooling, melting, freezing thermometer, evaporation, condensation, precipitation, water cycle, Celsius	herbivore, carnivore, omnivore, producer, predator, prey	incomplete circuit, insulator, variable, cell, bulb, battery, switch, component, wires	(high, low), volume, vibration energy, loud, quiet, particles, sound wave, ear drum	

Lower Key Stage 2 – Working Scientifically

I can ask relevant questions and use different types of scientific enquiries to answer them.
I can set up simple practical enquiries, comparative and fair tests.
I can make systematic and careful observations ad, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
I can gather, record, classify and present data in a variety of ways to help in answering questions.
I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
I can identify differences, similarities or changes related to simple scientific ideas and processes.
I can use straightforward scientific evidence to answer questions or to support their findings.

Year 5	Properties of Change	Animals Including Humans	Forces	Earth and Space	Living Things and Their Habitats
	I can compare and classify everyday materials on the basis of their properties, (hardness, solubility, transparency, conductivity and response to a magnet. I can tell you that some materials will dissolve in liquid to form a solution and can describe how to recover a substance from a solution. I can use my knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can tell you reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	I can describe the changes as humans develop to old age (prenatal, infancy, adolescence, early adulthood, middle adulthood, late adulthood).	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 resistance and friction, that act between moving surfaces I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	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	I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird I can describe the life process of reproduction in some plants and animals.

	I can show you that dissolving, mixing and changes of state are reversible changes. I can 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).			explain day and night and the apparent movement of the sun across the sky.	
	Key Vocabulary: Hardness, solubility, solution, conductivity, magnetism, dissolve, soluble, insoluble, mixture, filtration, evaporate, reversible change, irreversible change, variable	**Key Vocabulary:** Puberty, sexual reproduction, Menstruation, sperm, egg Foetus, gestation, life expectancy, adolescence, hormones	**Key Vocabulary:** force, gravity, contact force, non-contact force, friction, air resistance, water resistance, opposing force, viscous, mechanism, lever, pulley	**Key Vocabulary:** Earth, moon, sun, spherical, gravity, solar system, orbit, planets, heliocentric, geocentric, day, night	**Key Vocabulary:** life cycle, reproduce, sexual, fertilises, asexual, pollination, fertilisation, metamorphosis, embryo, adolescent, offspring, mammal, amphibian, insect, bird
Year 6	**Light**	**Animals Including Humans**	**Electricity**	**Living Things and Their Habitats**	**Evolution and Inheritance**
	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	I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function I can describe the ways in which nutrients and water are transported within animals, including humans.	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 function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches I can use recognised symbols when representing a simple circuit in a diagram.	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. I can give reasons for classifying plants and animals based on specific characteristics.	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 I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

	shadows have the same shape as the objects that cast them.				
	Key Vocabulary: Light source, reflect, opaque, translucent, transparent, reflection angle, incidence angle, retina, lens, refract, shadow	**Key Vocabulary:** circulatory system, heart, pulse, blood, blood vessels, lungs, muscles, oxygen, carbon dioxide, diet, drugs, absorption	**Key Vocabulary:** circuit, component, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage	**Key Vocabulary:** taxonomy, classify/classification, fauna, flora, vertebrate, invertebrate, microorganism, virus, bacteria, fungus, mould, variable	**Key Vocabulary:** offspring, sexual reproduction, variation, characteristics, adapted, adaptation, environment, inherited, species, fossils, evolution, gene

Upper Key Stage 2 – Working Scientifically

I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
I can use test results to make predictions to set up further comparative and fair tests.
I can report and present 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.
I can identify scientific evidence that has been used to support or refute ideas or arguments.