

EYFS and KS1

Subject Area	EYFS	Year 1	Year 2
Biology	ELG: To know about similarities in relation to places, objects, materials and living things. ELG: Make observations of animals and plants and explain why some things occur. ELG: To know the importance of good health of physical exercise and a healthy diet, and talk about ways to keep healthy and safe.	Plants - I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. - I can identify and describe the basic structure of a variety of common flowering plants, including trees. - I can name plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches and stem). Working scientifically opportunities: To closely observe and compare and contrast familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Animals including humans - I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) - 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. Working scientifically opportunities: To use their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them. To group animals according to what they eat; and using their senses to compare different textures, sounds and smells.	Plants - I can observe and describe how seeds and bulbs grow into mature plants. - I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Working scientifically opportunities: To observe and record, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth. To set up a comparative test to show that plants need light and water to stay healthy. Animals Including Humans - I can notice that animals, including humans, have offspring which grow into adults - I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air) - I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Working scientifically opportunities: To observe, through video or first-hand observation and measurement, how different animals, including humans, grow. To ask questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.

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		Seasonal changes • I can observe changes across the four seasons • I can observe and describe weather associated with the seasons and how day length varies. Working scientifically opportunities: To make tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change.	Living things and their habitats • I can explore and compare the differences between things that are living, dead, and things that have never been alive • I can 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 • 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 different sources of food. Working scientifically opportunity: To sort and classify things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions for example: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. To construct a simple food chain that includes humans (e.g. grass, cow, human).
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Chemistry		Everyday Materials • 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, plastic, glass, metal, 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 physical properties. • I can name and describe properties of materials such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. Working scientifically opportunities: To perform simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains?	Everyday Materials • 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 the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. • I can identify that different materials have multiple uses e.g. metal can be used for coins and cars • I can identify some objects are made from different materials e.g. a fork can be made from plastic and metal. • I can identify what makes a material suitable or unsuitable for a particular purpose. Working scientifically opportunities: To compare the uses of everyday materials in and around the school with materials found in other places observing closely, identifying and classifying the uses of different materials, and recording their observations.
Physics			
Working scientifically	ELG: To talk about changes they observe.	1. I can ask simple questions and recognise they can be answered in different ways. 2. I can perform simple tests and predict what might happen 3. I can observe closely, using simple equipment 4. I can identify and classify based on a set criteria. 5. I can use my observations and ideas to suggest answers to questions 6. I can gather and record data to help in answering questions.	

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KS2

Subject Area	Year 3	Year 4	Year 5	Year 6
Biology	Plants • I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • I can 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. • I can investigate the way in which water is transported within plants. • I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Working scientifically opportunities: To compare the effect of different factors on plant growth. To discover how seeds are formed by observing the different stages of plant life cycles over a period of time. To observe water transportation with food dye in carnations. Animals Including Humans • 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 • I can identify that humans and animals have skeletons and muscles for	Living things and their habitats • I can recognise that living things can be grouped in a variety of ways. • I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • I can recognise that environments can change and that this can sometimes pose dangers to living things. Working scientifically opportunities: To use and make simple guides or keys to explore and identify local plants and animals. To make a guide to local living things. Animals Including Humans • I can describe the simple functions of the basic parts of the digestive system in humans • I can identify the different types of teeth in humans and their simple functions • I can construct and interpret a variety of food chains, identifying producers, predators and prey. Working scientifically opportunities: To compare the teeth of carnivores and herbivores, and suggesting reasons for differences. To find out what damages teeth and how to look after them.	Living things and their habitats • 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. Working scientifically opportunities: To observe and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world. Animals Including Humans • I can describe the changes as humans develop to old age. Working scientifically opportunities: To researching the gestation periods of other animals and comparing them with humans.	Living things and their habitats • I can 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 • I can give reasons for classifying plants and animals based on specific characteristics. Working scientifically opportunities: To use classification systems and keys to identify some animals and plants in the immediate environment. Animals Including Humans • 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. Working scientifically opportunities: To explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.

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	support, protection and movement. Working scientifically opportunities: To identify and grouping animals with and without skeletons and observing and comparing their movement; to explore ideas about what would happen if humans did not have skeletons.			Evolution and inheritance • 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. Working scientifically opportunities: To observe and raise observing and raising questions about local animals and how they are adapted to their environment. To compare how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels.
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Chemistry	Rocks • 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. Working scientifically opportunities: To observe rocks and explore how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks.	States of matter • 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. Working scientifically opportunities: To group and classify a variety of different material. To exploring the effect of temperature on substances such as chocolate, butter, cream	Properties and change of materials • I can 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 • I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • I use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • I give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • I demonstrate that dissolving, mixing and changes of state are reversible changes. • I 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. Working scientifically opportunities: To carry out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?	
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Physics	Light • 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. Working scientifically opportunities: To look for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. Forces and Magnets • 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. • I can observe how magnets attract or repel each other and attract some materials and not others. • 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. • I can describe magnets as having two poles. • I can predict whether two magnets will attract or repel each other, depending on which poles are facing.	Sound • 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. Working scientifically opportunities: To find patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. Electricity • 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 • 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 • 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	Earth and space • 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. Working scientifically opportunities: To compare the time of day at different places on the Earth. To create simple models of the solar system. To construct sundials. To find out why some people think that structures such as Stonehenge might have been used as astronomical clocks. Forces • 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.	Light • 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. Working scientifically opportunities: To design and make a periscope and using the idea that light appears to travel in straight lines to explain how it works. Electricity • 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.
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	Working scientifically opportunities: To raise questions and carry out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions.	I can recognise some common conductors and insulators, and associate metals with being good conductors. Working scientifically opportunities: To observe patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.	Working scientifically opportunities: To explore falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. To explore resistance in water by making and testing boats of different shapes. To design and make products that use levers, pulleys, gears and/or springs and explore their effects.	Working scientifically opportunities: To systematically identify the effect of changing one component at a time in a circuit. To designing and making a set of traffic lights or burglar alarm.
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Science Progression of Knowledge and Skills

Working scientifically	1. I can ask relevant questions and using different types of scientific enquiries to answer them 2. I can set up simple practical enquiries, comparative and fair tests 3. I can make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. 4. I can gather, record, classify and presenting data in a variety of ways to help in answering questions. 5. I can record my findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables. 6. I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 7. I can use results to draw conclusions, make predictions for new values, suggest improvements and raise further questions. 8. I can identify differences, similarities or changes related to simple scientific ideas and processes 9. I can use straightforward scientific evidence to answer questions or to support my findings.	1. I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. 2. I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. 3. I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 4. I can use test results to make predictions to set up further comparative and fair tests. 5. I can report 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 6. I can identify scientific evidence that has been used to support or refute ideas or arguments.
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Working scientifically opportunities are not set into the curriculum but are ideas for teachers to see how to apply the knowledge into children working scientifically and applying these skills. These activities may be adjusted according to the class topic to make links with other subject areas.

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