

Science Knowledge & Skills Progression



Statutory Framework for the Early Years Foundation Stage

Early Learning Goal – Communication and language: Speaking

Children recount experiences and imagine possibilities, often connecting ideas. They use a range of vocabulary in imaginative ways to add information, express ideas or to explain or justify actions or events.

Early Learning Goal – Physical development: Health and self-care

Children know about, and can make healthy choices in relation to, healthy eating and exercise.

Early Learning Goal – Mathematics: shape, space and measures

Children estimate, measure, weigh and compare and order objects and talk about properties, position and time.

Early Learning Goal – Understanding the world: The World

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 and 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.

The National Curriculum for Science

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Subject content at Key stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

‘Working scientifically’ is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

	Content taught
EYFS	Basic scientific concepts and investigations covered through topic based learning – Humans and living things, materials and their properties, floating and sinking and the environment.
Year 1	Materials, humans and animals, seasonal changes, plants, animals, light and sound
Year 2	Materials, humans and animals, living things and their habitats, plants, electricity, the environment.

Subject content at Lower Key stage 2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

‘Working scientifically’ is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge

Subject Content at Upper Key Stage 2

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.

‘Working and thinking scientifically’ is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Pupils should read, spell and pronounce scientific vocabulary correctly.

	Content
Year 3	Light, sound, rocks, evolution and inheritance, animals and humans, teeth and nutrition
Year 4	Forces and magnets, the earth and beyond, materials and their properties: solid, liquids, gases, green plants, electricity, habitats and classification.
Year 5	Space, living things, forces, materials, sound, Animals including Humans
Year 6	Light, electricity, living things, humans and animals: circulatory system, evolution and inheritance, sustainability.

Science Knowledge & Skills Progression

EYFS to Milestone 1



Prior Learning	Skill	Milestone 1: Year 1 and Year 2	Key Vocabulary
<ul style="list-style-type: none"> • Questions why things happen and give explanations. Asks who, what, when, how. • Builds up vocabulary that reflects the breadth of their experience. 	Working Scientifically	<ul style="list-style-type: none"> • Ask simple questions. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions. 	question answer observe observing equipment identify classify sort group record diagram chart map data compare contrast describe biology chemistry physics
<ul style="list-style-type: none"> • Comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world. • To develop an understanding of growth, decay and changes overtime. • To show care and concern for living things and the environment. • To talk about some of the things they have observed, such as plants, animals, natural and found objects. 	Understand plants	<ul style="list-style-type: none"> • Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. • Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 	common wild plants garden plants tree deciduous evergreen trunk branches leaf root plant leaf bud flowers blossom petals root stem fruit vegetables bulb seed

Prior Learning	Skill	Milestone 1: Year 1 and Year 2	Key Vocabulary
<ul style="list-style-type: none"> • Comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world. • To observe the effects of physical activity on their bodies. • To eat healthy range of foodstuffs and understand the need for a variety of food. • To show some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health. 	<p>Understand animals and humans</p>	<ul style="list-style-type: none"> • Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • 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 (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets). • Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Notice animals, including humans, have offspring which grow into adults. • Investigate and describe the basic needs of animals, including 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. 	<p>common animals fish amphibians reptiles birds mammals pets carnivores meat herbivores plants cow hamster guinea pig tortoise omnivores meat and plants badger human bear chickens</p> <p>hear neck arms elbows legs knees face ears eyes hair mouth teeth exercise hygiene nutrition reproduce survival water food air</p>
<ul style="list-style-type: none"> • Comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world and how environments might vary from one another. • To talk about some of the things they have observed, such as plants, animals, natural and found objects. 	<p>Investigate living things</p>	<ul style="list-style-type: none"> • Explore and compare the differences between things that are living, that are dead and that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other. • Identify and name a variety of plants and animals in their 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. 	<p>living dead never alive habitats micro-habitats food food chain sun-grass-cow-human alive healthy logs leaf litter stony path under bushes shelter seashore woodland ocean rainforest conditions hot/ warm/ cold dry/ damp/ wet bright/ shade/ dark</p>

Prior Learning	Skill	Milestone 1: Year 1 and Year 2	Key Vocabulary
<ul style="list-style-type: none"> To look closely at similarities, differences, patterns and change. 	Understand evolution and inheritance	<ul style="list-style-type: none"> <i>Identify how humans resemble their parents in many features.</i> 	offspring grow egg-chick-chicken egg-caterpillar-pupa-butterfly spawn-tadpole-frog lamb-sheep baby-toddler-child-teenager-adult
<ul style="list-style-type: none"> Be interested in and describe the texture of things. Use various construction materials Manipulates materials to achieve a planned effect. Safely use and explore a variety of materials...experimenting with texture, form and function. Use everyday language to talk about size, weight, capacity, position, direction, time and money to compare quantities and objects and to solve problems. 	Investigate materials	<ul style="list-style-type: none"> Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses. 	material wood plastic glass metal water rock properties hard soft stretch stiff shiny dull rough smooth bendy waterproof absorbent brick paper fabrics elastic foil brick rock paper cardboard squash bend twist John Dunlop- rubber Charles Macintosh waterproof fabric
<ul style="list-style-type: none"> Develop ideas of sequences, cause and effect. Making links and noticing patterns in their experience. 	Understand movements, forces and magnets	<ul style="list-style-type: none"> <i>Notice and describe how things move, using simple comparisons such as faster and slower.</i> <i>Compare how different things move.</i> 	force push pull faster slower heavier lighter movement more less direction
<ul style="list-style-type: none"> Comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world. 	Understand light and seeing	<ul style="list-style-type: none"> <i>Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes.</i> 	Light, dark, lighter, darker, light source (various), light ray, shadow, day length

Prior Learning	Skill	Milestone 1: Year 1 and Year 2	Key Vocabulary
<ul style="list-style-type: none"> Using the senses to explore the world around them. 	Investigate sound and hearing	<ul style="list-style-type: none"> <i>Observe and name a variety of sources of sound, noticing that we hear with our ears.</i> 	Ear loud quiet volume source
<ul style="list-style-type: none"> They explore the characteristics of everyday objects. 	Understand electrical circuits	<ul style="list-style-type: none"> <i>Identify common appliances that run on electricity.</i> <i>Construct a simple series electrical circuit.</i> 	Circuit, appliance, main supply, battery, wire, bulb, buzzer, component, connector, closed, (series), electricity, flow/transfer
<ul style="list-style-type: none"> Comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world. 	Understand the Earth's movement in space	<ul style="list-style-type: none"> <i>Observe the apparent movement of the Sun during the day.</i> Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. 	season spring summer autumn winter weather hot warm cool cold sun cloud wind rain snow hail sleet frost fog mist ice rainbow thunder lightning storm light dark day night dawn dusk

Science Knowledge & Skills Progression

Milestone 2



Prior Learning	Skill	Milestone 2: Year 3 and Year 4	Key Vocabulary
<ul style="list-style-type: none"> • Ask simple questions. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions. 	<p>Working Scientifically</p>	<ul style="list-style-type: none"> • Ask relevant questions. • Set up simple, practical enquiries and comparative and fair tests. • Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers. • Gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, 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 and suggest improvements, new questions and predictions for setting up further tests. • Identify differences, similarities or changes related to simple, scientific ideas and processes. • Use straightforward, scientific evidence to answer questions or to support their findings. 	<p>research- relevant questions scientific enquiry comparative and fair test systematic careful observation accurate measurements equipment – thermometer, data logger data- gather, record, classify, present record- drawings, labelled diagrams, keys, bar charts, tables oral and written explanations conclusion predictions differences, similarities, change evidence improve secondary sources guides, keys construct interpret</p>

Prior Learning	Skill	Milestone 2: Year 3 and Year 4	Key Vocabulary
<ul style="list-style-type: none"> • Identify and name common and garden plants. • Describe the basic structure of common plants and trees. • Observe and describe how seeds and bulbs grow into plants. • Find out and describe what is needed for plants to grow. 	<p>Understand plants</p>	<ul style="list-style-type: none"> • Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers. • 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 role of flowers in the life cycle of flowering plants, including pollination, seed formation & dispersal. 	<p>structure – flowering plants, roots, stem/ trunk, leaves, function nutrition, support, reproduction, makes own food requirements for life and growth – air, light, water, nutrients from soil, room to grow, fertiliser life cycle - pollination, seed formation, seed dispersal</p>
<ul style="list-style-type: none"> • Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • Identify carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals. • Identify name, draw and label basic parts of the human body and say which part of the body is associated with each sense. • Notice animals, including humans, have offspring which grow into adults. • Investigate and describe the basic needs of animals, including humans, for survival. • Describe the importance for humans of exercise, eating a balanced diet and hygiene. 	<p>Understand animals and humans</p>	<ul style="list-style-type: none"> • Identify that animals, including humans, need the right types and amounts of nutrition that they cannot make their own food and they get nutrition from what they eat. • Construct and interpret a variety of food chains, identifying producers, predators and prey. • Identify that humans and some animals have skeletons and muscles for support, protection and movement. • 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. 	<p>nutrition vitamins minerals fat protein carbohydrates fibre water skeletons skull brain ribs heart, lungs joint muscles movement, pull, contract relax diet digestive system mouth tongue saliva teeth incisors, canines molars oesophagus transport stomach acid enzymes small & large intestine carnivore herbivore omnivore food chain Sun producers prey predators</p>

Prior Learning	Skill	Milestone 2: Year 3 and Year 4	Key Vocabulary
<ul style="list-style-type: none"> • Compare differences between things that are living, dead and never alive. • Identify most living things live in habitats which they are suited. • Describe how habitats provide for basic needs of animals and plants depending on each other. • Identify and name a variety of plants and animals in their habitats. 	Investigate living things	<ul style="list-style-type: none"> • Recognise living things can be grouped in variety of ways. • Explore and use classification keys. • Recognise that environments can change and that this can sometimes pose dangers to specific habitats. 	environment flowering non-flowering plants animals vertebrate danger invertebrates- snails, slugs, worms, spiders, insects fish, amphibians, reptiles, birds, mammals plants population development litter, deforestation
<ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses. 	Investigate materials	<p>Rocks and Soils</p> <ul style="list-style-type: none"> • Compare and group together different kinds of rocks on the basis of their simple, physical properties. • Relate the simple physical properties of some rocks to their formation (igneous or sedimentary). • Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock. • Recognise that soils are made from rocks and organic matter. <p>States of Matter</p> <ul style="list-style-type: none"> • 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 the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics. • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	rock stone pebble boulder soil fossil grains crystals hard/ soft texture absorb water marble chalk granite sandstone slate sandy soil clay soil chalky soil peat solid liquid gas air oxygen powder grain/ granular crystals ice/ water/ steam water vapour heated/ heating cooled/ cooling temperature degrees Celsius melt freeze solidify melting point molten boil

Prior Learning	Skill	Milestone 2: Year 3 and Year 4	Key Vocabulary
<ul style="list-style-type: none"> • Notice and describe how things move, using simple comparisons such as faster and slower. • Compare how different things move. 	Understand movements, forces and magnets	<ul style="list-style-type: none"> • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	force push pull open surface magnet magnetic attract repel magnetic poles north south metal iron steel
<ul style="list-style-type: none"> • Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes. 	Understand light and seeing	<ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Find patterns in the way that the size of shadows change. 	light see dark reflect reflective surface natural star Sun Moon artificial torch candle lamp translucent transparent
<ul style="list-style-type: none"> • Observe and name a variety of sources of sound, noticing that we hear with our ears. 	Investigate sound and hearing	<ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. 	sound source noise vibrate travel solid liquid gas pitch tune high low volume loud quiet fainter muffle vibrations insulation instrument percussion brass strings woodwind

Prior Learning	Skill	Milestone 2: Year 3 and Year 4	Key Vocabulary
<ul style="list-style-type: none"> • Identify common appliances that run on electricity. • Construct a simple series electrical circuit. 	Understand electrical circuits	<ul style="list-style-type: none"> • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors. 	appliances electricity electrical circuit cell wire bulb buzzer danger electrical safety sign insulators wood rubber plastic glass conductors metal water switch open closed components plug motor mains
<ul style="list-style-type: none"> • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. 	Understand the Earth's movement in space	<ul style="list-style-type: none"> • Describe the movement of the Earth relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. 	Earth, Sun, Solar system, planet, sky, horizon, clouds, moon, night, day, hours.

Science Knowledge & Skills Progression

Milestone 3



Prior Learning	Skill	Milestone 3: Year 5 and Year 6	Key Vocabulary
<ul style="list-style-type: none"> • Ask relevant questions. • Set up simple, practical enquiries and comparative and fair tests. • Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers. • Gather, record, classify and present data in a variety of ways to help answer questions. • Record findings using simple scientific language, drawings, labelled diagrams, 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 and suggest improvements, new questions and predictions for setting up further tests. • Identify differences, similarities or changes related to simple, scientific ideas and processes. • Use straightforward, scientific evidence to answer questions or to support their findings. 	<p>Working Scientifically</p>	<ul style="list-style-type: none"> • Plan enquiries, including recognising and controlling variables where necessary. • Use appropriate techniques, apparatus, and materials during field and laboratory work. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. • Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions. • Present findings in written form, displays and other presentations. • Use test results to make predictions to set up further comparative and fair tests. • Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments. 	<p>plan variables measurements accuracy precision repeat repeats record data scientific diagrams labels classification keys tables scatter graphs bar graph line graph predictions further comparative and fair tests report and present conclusions casual relationships explanations degree of trust oral and written display presentation evidence support refute ideas arguments identify, classify and describe patterns systematic quantitative measurements</p>

Prior Learning	Skill	Milestone 3: Year 5 and Year 6	Key Vocabulary
<ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants. Explore the requirements of plants for life. Investigate the way in which water is transported within plants. 	Understand plants	<ul style="list-style-type: none"> Relate knowledge of plants to studies of evolution and inheritance. Relate knowledge of plants to studies of all living things. 	
<ul style="list-style-type: none"> Identify that animals/humans, need the right types/amounts of nutrition that & they get nutrition from what they eat. Construct and interpret a variety of food chains, identifying producers, predators, prey. Identify that humans and some animals have skeletons and muscles for support, protection and movement. 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. 	To investigate animals and humans	<ul style="list-style-type: none"> Describe changes as humans develop to old age. Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions. Describe the ways in which nutrients and water are transported within animals, including humans. 	circulatory system heart blood blood vessels pumps oxygen carbon dioxide lungs nutrients water diet exercise drugs lifestyle
<ul style="list-style-type: none"> Recognise living things can be grouped in variety of ways. Explore and use classification keys. Recognise that environments can change and that this can sometimes pose dangers to specific habitats. 	To investigate living things	<ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. Describe how living things are classified into broad groups according to common observable characteristics. Give reasons for classifying plants and animals based on specific characteristics. 	life process of reproductionplants animals vegetable garden flower border reproduction plants- sexual, asexual animals- sexual life cycles- mammal, amphibian, insect, bird lifecycles around the worldrainforest, oceans, desert prehistoric similarities differences germination pollination stamen stigma

Prior Learning	Skill	Milestone 3: Year 5 and Year 6	Key Vocabulary
<ul style="list-style-type: none"> N/A 	To investigate evolution and inheritance	<ul style="list-style-type: none"> Recognise that living things have changed over time and fossils provide information about living things that inhabited 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. 	evolution suited/ suitable adapted/ adaptation offspring characteristics vary/ variation inherit/ inheritance fossils
Rocks and Soils <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their simple, physical properties. Relate the simple physical properties of some rocks to their formation (igneous or sedimentary). Recognise that soils are made from rocks and organic matter. States of Matter <ul style="list-style-type: none"> 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 the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	To investigate materials	<ul style="list-style-type: none"> Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets. Understand how 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 & evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials incl. metals, wood, 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, oxidation and the action of acid on bicarbonate of soda. 	properties hardness solubility transparency conductive response to magnets dissolve liquid solution solute separate separating solids, liquids, gases filtering sieving evaporating reversible changes mixing evaporation filtering sieving melting irreversible conductivity insulation chemical opaque translucent rusting residue condensing solid liquid gas air oxygen powder grain/ granular crystals ice/ water/ steam water vapour heated/ heating cooled/ cooling temperature degrees Celsius melt freeze solidify melting point molten boil

Prior Learning	Skill	Milestone 3: Year 5 and Year 6	Key Vocabulary
<ul style="list-style-type: none"> • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<p>To understand movement, forces and magnets</p>	<p>Magnets</p> <ul style="list-style-type: none"> • Describe magnets as having two poles. • Predict whether two magnets will attract/repel each other, depending on which poles are facing. <p>Forces</p> <ul style="list-style-type: none"> • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces. • <i>Describe, in terms of drag forces, why moving objects that are not driven tend to slow down.</i> • <i>Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.</i> • Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect. 	<p>fall gravity force air resistance water resistance friction moving surfaces mechanisms levers pulleys gears magnetic force magnet attract</p>
<ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Find patterns in the way that the size of shadows change. 	<p>To understand lights and seeing</p>	<ul style="list-style-type: none"> • 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 eyes. • Use the idea light travels in straight lines to explain why shadows have the same shape as objects that cast them & to predict size of shadows when position of light source changes. • 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. 	<p>light travels straight reflect reflection light source object shadows mirrors periscope rainbow filters</p>

Prior Learning	Skill	Milestone 3: Year 5 and Year 6	Key Vocabulary
<ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. 	To investigate sound and hearing	<ul style="list-style-type: none"> • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases. 	sound sound source noise vibrate travel solid liquid gas pitch tune high low volume loud quiet fainter muffle vibrations insulation instrument percussion strings brass woodwind tuned instrument
<ul style="list-style-type: none"> • Identify appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches, buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors. 	To understand electrical circuits	<ul style="list-style-type: none"> • 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. • Use recognised symbols when representing a simple circuit in a diagram. 	appliances electrical circuit complete circuit circuit diagram circuit symbol components cell battery positive/negative terminal connection loose connection short circuit wire crocodile clip bulb brightness switch buzzer volume motor conductor insulator voltage current resistance danger series circuit
<ul style="list-style-type: none"> • <i>Describe the movement of the Earth relative to the Sun in the solar system.</i> • <i>Describe the movement of the Moon relative to the Earth.</i> 	To understand the Earth's movement in space	<ul style="list-style-type: none"> • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 	Earth planets Sun solar system Moon celestial body sphere/ spherical rotate/ rotation spin night and day Mercury Venus Mars Jupiter Saturn Uranus Neptune Pluto 'dwarf' planet orbit revolve geocentric model heliocentric model shadow clocks sundials astronomical clocks

