

# KS1-KS2 Science Objective Overview (2022-23)



## Overarching aims:

All pupils:

- develop **scientific knowledge** and **conceptual understanding** through the specific disciplines of biology, chemistry and physics. Pupils should be able to describe associated processes and key characteristics in common language and should also be familiar with, and use technical terminology accurately and precisely.
- develop understanding of the **nature, processes** and **methods of science** through different types of science enquires 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 the future.

## Spoken Language:

- The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and other, and teacher should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

## 'Working scientifically'

- It should not be taught as a separate strand.
- These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.
- Pupils should seek answers to questions through collecting, analysing and presenting data

## Key Stage One:

- 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.

## KS1-KS2 Science Objective Overview (2022-23)



- 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.

### **Lower key Stage Two:**

- asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.

### **Upper Key Stage Two:**

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

## KS1-KS2 Science Objective Overview (2022-23)



Term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
1.1	<u>Seasonal changes</u>	<u>Living things and their habitats</u>	<u>Rocks and soils</u>	<u>Sound</u>	<u>Living Things and Their habitats. - Rainforest focus</u>	<u>Habitat and Adaptation</u>
1.2		<u>Animals including humans</u>	<u>Animals, including humans Need for right amount of nutrition Skeletons and muscles</u>		<u>Properties and Changes of Materials</u> <u>Chilli and chocolate</u>	<u>Evolution</u>
2.1	<u>Materials and their properties</u>	<u>Animals including humans</u>	<u>Plants Function - including how water is transported</u> <u>Life cycle of plants</u>	<u>States of Matter</u>	<u>Earth and Space.</u>	<u>Health and Nutrition</u>
2.2		<u>Uses of everyday materials</u>		<u>Living Things and their Habitats</u>	<u>Forces</u>	<u>Circulatory System</u>
3.1	<u>Plants</u>	<u>Plants</u>	<u>Exploring magnets and forces.</u>	<u>Animals including Humans</u>	<u>Properties and Changes of Materials</u>	<u>Electricity</u>
3.2	<u>Animals including humans</u>		<u>Light</u>	<u>Electricity</u>	<u>Animals including Humans</u>	<u>Light</u>

# KS1-KS2 Science Objective Overview (2022-23)



Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working scientifically	<ul style="list-style-type: none"> <li>*asking simple questions and recognising that they can be answered in different ways</li> <li>*observing closely, using simple equipment</li> <li>*performing simple tests</li> <li>*identifying and classifying</li> <li>* using their observations and ideas to suggest answers to questions</li> <li>*gathering and recording data to help in answering questions.</li> </ul>	<ul style="list-style-type: none"> <li>*asking simple questions and recognising that they can be answered in different ways</li> <li>*observing closely, using simple equipment</li> <li>*performing simple tests</li> <li>*identifying and classifying</li> <li>*using their observations and ideas to suggest answers to questions</li> <li>*gathering and recording data to help in answering questions.</li> </ul>	<ul style="list-style-type: none"> <li>*asking relevant questions and using different types of scientific enquiries to answer them</li> <li>*setting up simple practical enquiries, comparative and fair tests</li> <li>* making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>* gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>* recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>* reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>* using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>*identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>* using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>	<ul style="list-style-type: none"> <li>*asking relevant questions and using different types of scientific enquiries to answer them</li> <li>* setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>* gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>* recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>* reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>* using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>*identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>*using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>	<ul style="list-style-type: none"> <li>* planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>* taking measurements, using a range of scientific equipment, with increasing accuracy and precision</li> <li>* recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</li> <li>* using test results to make predictions to set up further comparative and fair tests</li> <li>*reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations</li> <li>*identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>	<ul style="list-style-type: none"> <li>*planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>*taking measurements, using a range of scientific equipment, with increasing accuracy and precision</li> <li>*recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</li> <li>* using test results to make predictions to set up further comparative and fair tests</li> <li>*reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations</li> <li>*identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>

# KS1-KS2 Science Objective Overview (2022-23)



Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	<p>*identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>*identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p><i>Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted. They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem).</i></p>	<p>*observe and describe how seeds and bulbs grow into mature plants</p> <p>* find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p><i>Pupils should use the local environment throughout the year to observe how different plants grow. Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as the process of reproduction and growth in plants.</i></p> <p><b>Note:</b> <i>Seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them.</i></p>	<p>*identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>* 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</p> <p>* investigate the way in which water is transported within plants</p> <p>*explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p><i>Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.</i></p> <p><b>Note:</b> <i>Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.</i></p>			
Seasonal Changes	<p>*observe changes across the four seasons</p> <p>*observe and describe weather associated with the seasons and how day length varies.</p> <p><i>Pupils should observe and talk about changes in the weather and the seasons.</i></p> <p><b>Note:</b> <i>Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.</i></p>					

# KS1-KS2 Science Objective Overview (2022-23)



Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living things and their habitats		<p>*explore and compare the differences between things that are living, dead, and things 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</p> <p>*identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>*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> <p><i>Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They should raise and answer questions that help them to become familiar with the life processes that are common to all living things. Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a very small habitat, e.g. for woodlice under stones, logs) They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example plants serving as a source of food and shelter for animals. Pupils should compare animals in</i></p>		<p>*recognise that living things can be grouped in a variety of ways</p> <p>*explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>* recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p><i>Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants, Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.</i></p> <p><i><b>Note:</b> Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses. Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks or garden ponds, and the</i></p>	<p>*describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>* describe the life process of reproduction in some plants and animals.</p> <p><i>Pupils should study and raise questions about their local environment throughout the year. They should observe life-cycle changes in a variety of living things, for example plants in the vegetable garden or flower border, and animals in the local environment. They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall. Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants and sexual reproduction in animals.</i></p>	<p>*describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</p> <p>* give reasons for classifying plants and animals based on specific characteristics.</p> <p><i>Pupils should build on their learning about grouping living things in Year 4 by looking at the classification system in more detail. They should be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they should classify animals into commonly found invertebrates (e.g. insects , spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). They should discuss reasons why living things are placed in one group and not another. Pupils might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.</i></p>

# KS1-KS2 Science Objective Overview (2022-23)



		<i>familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean.</i>		<i>negative effects of population and development, litter or deforestation.</i>	
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Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including humans	<p>*identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>*identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>*describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>*identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p> <p><i>Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.</i></p>	<p>*notice that animals, including humans, have offspring which grow into adults</p> <p>* find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>*describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p><i>Pupils should be introduced to the basic needs of animals for survival. They should also be introduced to the process of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs. The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb.</i></p>	<p>*identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p> <p>* identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p><i>Pupils should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.</i></p>	<p>*describe the simple functions of the basic parts of the digestive system in humans</p> <p>* identify the different types of teeth in humans and their simple functions</p> <p>*construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p><i>Pupils should be introduced to the main body parts associated with the digestive system, for example mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them understand their special functions.</i></p>	<p>* describe the changes as humans develop to old age</p> <p><i>Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty.</i></p>	<p>*identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>* recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>* describe the ways in which nutrients and water are transported within animals, including humans.</p> <p><i>Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function.</i></p>

# KS1-KS2 Science Objective Overview (2022-23)



Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evolution and inheritance						<p>*recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>* recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>* identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p><i>Building on what they have learnt about fossils in the topic on rocks in Year 3, pupils should find out more about how living things on earth have change over time</i></p> <p><i>They should be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, Labradors are crossed with poodles. They should also appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox. Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.</i></p>

# KS1-KS2 Science Objective Overview (2022-23)



*Note: At this stage, pupils are not expected to understand how genes and chromosomes work.*

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Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials and their properties	<p>*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. <i>Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque and transparent. Pupils should explore and experiment with a wide variety of materials, not only those listed in the programme of study, but including for example: brick, paper, fabrics, elastic, foil.</i></p>	<p>*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. <i>Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass). They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials. Pupils might find out about people who have developed useful new materials;</i></p>				

# KS1-KS2 Science Objective Overview (2022-23)



		<i>for example, John Dunlop, Charles Macintosh or John McAdam.</i>				
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Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Properties and changes of materials					<p>everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <ul style="list-style-type: none"> <li>* know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>* use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>* give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>* demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>* 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.</li> </ul> <p><i>Pupils should explore reversible changes including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.</i></p> <p><i>Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range</i></p>	



# KS1-KS2 Science Objective Overview (2022-23)



				<p><i>Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container).</i></p> <p><i>Pupils should observe water as a solid, a liquid and a gas</i></p>		
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Area of Study		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Light				<p>*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</p> <p>* 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</p> <p>* find patterns in the way that the size of shadows change</p> <p><i>Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure shadows and find out how they are formed and what might cause shadows to change.</i></p>			<p>*recognise that light appears to travel in straight lines</p> <p>* 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</p> <p>* 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> <p>* use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p><i>Pupils should build on the work in year 3, exploring the way that light behaves, including light sources, reflection and shadows.</i></p> <p><i>They should talk about what happens and make predictions.</i></p>

# KS1-KS2 Science Objective Overview (2022-23)



				<p><b>Note:</b> Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.</p>			
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# KS1-KS2 Science Objective Overview (2022-23)



Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Sound				<p>*identify how sounds are made, associating some of them with something vibrating</p> <p>* recognise that vibrations from sounds travel through a medium to the ear</p> <p>* find patterns between the pitch of a sound and features of the object that produced it</p> <p>*find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>* recognise that sounds get fainter as the distance from the sound source increases</p> <p><i>Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.</i></p>		

# KS1-KS2 Science Objective Overview (2022-23)



Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces and Magnets			<p>*compare how things move on different surfaces</p> <p>* notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>* observe how magnets attract or repel each other and attract some materials and not others</p> <p>* compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>* describe magnets as having two poles</p> <p>* predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p><i>Pupils should observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button, horseshoe).</i></p>		<p>*explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>* identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>* recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p> <p><i>Pupils should explore falling objects and raise questions about the effects of air resistance. They should explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall. They should experience forces that make things begin to move, get faster or slow down. Pupils should explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel. Pupils should explore the effects of levers, pulleys and simple machines on movement. Pupils might find out how scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</i></p>	

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Area of Study		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electricity					<p>*identify common appliances that run on electricity</p> <p>* construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>* identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</p> <p>* recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>* recognise some common conductors and insulators and associate metals with being good conductors.</p> <p>Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in Year 6.</p> <p><b>Note:</b> Pupils might use the terms current and voltage, but these should not be introduced or defined</p>		<p>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>* 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</p> <p>* use recognised symbols when representing a simple circuit in a diagram.</p> <p>Building on their work in Year 4, pupils should construct simple series circuits, to help them answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors. They should learn how to represent a simple circuit in a diagram using recognised symbols.</p> <p><b>Note:</b> Pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary precautions for working safely with electricity.</p>

# KS1-KS2 Science Objective Overview (2022-23)



Area of Study	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Earth and Space					<p>*describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>* describe the movement of the Moon relative to the Earth</p> <p>* describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>* use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p><i>Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night. Pupils should learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).</i></p> <p><b>Note:</b> Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses. Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.</p> <p>formally at this stage. Pupils should be taught about precautions for working safely with electricity.</p>	