

# Science

Science in the National Curriculum concerns living things, materials and their properties and physical processes such as sound and light. Our science topics are planned to cover these three areas. This scientific knowledge is taught through investigative processes during which the children learn to plan investigations, obtain evidence and consider their results. Skills such as observing, questioning, predicting, measuring, recording, evaluating and communicating their findings (orally, graphically and in writing) are all developed as children move through the school.

## Foundation Stage and Key Stage 1

Science begins with asking questions and investigating the world around through first hand observation. The children will be involved in simple investigations, as a group and as individuals. This will enable them to discover the nature of materials and how the natural world functions. Basic recording skills will be developed. Children will be encouraged to appreciate the physical and natural world.

### Year 1 Science - Key Objectives

1	Use different approaches to answer scientific questions.
2	Carry out simple tests.
3	Organise objects or materials into groups.
4	Name the main parts of plants and trees.
5	Name the main parts of the body, including those related to the five senses.
6	Distinguish between an object and the material from which it is made.
7	Describe the simple physical properties of a variety of everyday materials.
8	Describe how the weather varies with the season.

### Year 2 Science – Key Objectives

1	Observing closely, using simple equipment.
2	Using their observations and ideas to suggest answers to questions.
3	Gathering and recording data to help in answering questions.
4	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.
5	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.
6	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
7	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).
8	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses.

### Lower Key Stage 2

From early questioning children will be supported in making predictions and in designing and carrying out investigative science work. They will study the aspects of fair testing and begin to control variables. Again they will explore a wide variety of natural and physical phenomena through every day experiences or in the context of wider topics. Further recording techniques will be explored and children will learn to form reasoned conclusions. Children will be developing their appreciation and understanding of the world around them.

### Year 3 Science – Key Objectives

1	Setting up simple practical enquiries, comparative and fair tests.
2	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.

3	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
4	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.
5	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
6	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.
7	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
8	Notice that light is reflected from surfaces.
9	Find patterns in the way that the sizes of shadows change.
10	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.

### Year 4 Science – Key Objectives

1	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
2	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
3	Using straightforward scientific evidence to answer questions or to support their findings.
4	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
5	Describe the simple functions of the basic parts of the digestive system in humans.
6	Construct and interpret a variety of food chains, identifying producers, predators and prey.
7	Compare and group materials together, according to whether they are solids, liquids or gases.
8	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
9	Recognise that vibrations from sounds travel through a medium to the ear.
10	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.

### Upper Key Stage 2

Children will be expected to make predictions and design and carry out investigative experiments to test their ideas and observations. They will be taught to identify and control variables to ensure tests are fair. Through the exploration of a wide variety of natural and physical processes they will experience many recording techniques. The use of ICT will be included in this process. Investigation may well be part of wider topics, including other subject areas. The children will learn the skills of co-operation. Emphasis is placed upon safety and care for their environment.

### Year 5 Science – Key Objectives

1	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
2	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs.
3	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.
4	Describe the life process of reproduction in some plants and animals.
5	Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
6	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.

7	Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.
8	Use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky.
9	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
10	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.

### **Year 6 Science – Key Objectives**

1	Using test results to make predictions to set up further comparative and fair tests.
2	Using simple models to describe scientific ideas.
3	Identifying scientific evidence that has been used to support or refute ideas or arguments.
4	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.
5	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
6	Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
7	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
8	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.
9	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
10	Use recognised symbols when representing a simple circuit in a diagram.