



## Science Endpoints

### Biology

**Plants:** To identify and describe the functions of different parts of flowering plants. To explore the requirements of plants for life and growth and how they vary from plant to plant. To investigate the way in which water is transported within plants. To explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

**Animals including Humans:** To describe the changes as humans develop to old age. To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. To recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions. To describe the ways in which nutrients and water are transported within animals, including humans.

**Living things and habitats:** To 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. To describe how living things are classified into broad groups according to common observable characteristics. To give reasons for classifying plants and animals based on specific characteristics.

**Evolution and inheritance:** To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. To identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

### Chemistry

**Materials and states of matter:** To 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. To understand how some materials will dissolve into liquid to form a solution and describe how to recover a substance from a solution. To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. To give reasons based on evidence from comparative and fair tests for the particular uses of everyday materials, including metals, wood and plastic. To demonstrate that dissolving, mixing and changes of state are reversible changes. To 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.

**Rocks and fossils:** To compare and group together different kinds of rocks on the basis of their simple, physical properties. To relate the simple physical properties of some rocks to their formation (igneous or sedimentary). To describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rocks. To recognise that soils are made from rocks and organic matter.

## Physics

**Forces and Magnets:** To describe magnets as having two poles and predict whether two magnets will attract or repel each other, depending on which poles are facing. To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. To identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces. To understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.

**Light:** To understand that light appears to travel in straight lines. To 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. To use the idea that light travels in straight lines to explain why shadows have the same shape as the object that cast them, and to predict the size of shadows when the position of the light source changes. To 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.

**Sound:** To find patterns between the pitch of a sound and features of the object that produced it. To find patterns between the volume of a sound and the strength of the vibrations that produced it. To recognise that sounds get fainter as the distance from the sound source increases.

**Electricity:** To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. To 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. To use recognised symbols when representing a simple circuit in a diagram.

**Earth and Space:** To describe the movement of the Earth, and other planets, relative to the Sun in the solar system. To describe the movement of the Moon relative to the Earth. To describe the Sun, Earth and Moon as approximately spherical bodies. To use the idea of the Earth's rotation to explain day and night, the apparent movement of the sun across the sky and how seasons change across the year.

## Working Scientifically

To plan enquiries, including recognising and controlling variables where necessary. To use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. To take measurements, using a range of scientific equipment, with increasing accuracy and precision. To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs and models. To report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions. To present findings in written form, displays and other presentations. To use test results to make predictions to set up further comparative and fair tests. To use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.