



YEAR 3 SCIENCE KNOWLEDGE



Plants

- identify and describe the functions of different parts of flowering plants and trees roots, stem/trunk, 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 part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

Rocks

- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter. they also contain living/dead matter
- investigate what happens when rocks are rubbed together or what changes occur when they are in water.
- explore different soils and identify similarities and differences between them
- Explore how and why rocks might have changed over time

Animals including humans

- 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
- identify that humans and some other animals have skeletons and muscles for support, protection and movement
- know the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions
- identify and group animals with and without skeletons and observing and comparing their movement
- compare and contrast the diets of different animals
- research different food groups and how they keep us healthy



YEAR 3 SCIENCE KNOWLEDGE



Light

- Know that some objects, for example, the sun, light bulbs and candles are sources of light.
- 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 an opaque object
- Investigate how the size of the shadow depends on the position of the source, object and surface by finding patterns

Forces and magnets

- compare how things move on different surfaces
- notice that some forces need contact between 2 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 2 poles
- predict whether 2 magnets will attract or repel each other, depending on which poles are facing



YEAR 4 SCIENCE KNOWLEDGE



Sound

- identify how sounds are made, associating some of them with something vibrating
- recognise that vibrations from sounds travel through a medium to the ear
- know what pitch means
- 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

Animals including humans

- Identify and name the parts of the human digestive system
- Know the functions of the organs in the human digestive system
- Identify and know the different types of human teeth
- Know the functions of different human teeth them.
- Explain what damages teeth and how to look after t
- Compare the teeth of carnivores and herbivores and reasons for differences.

States of matter

- 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 or research the temperature at which this happens in degrees Celsius (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature



YEAR 4 SCIENCE KNOWLEDGE



Living things and habitats

- recognise that living things can be grouped (classified) in a variety of ways according to their features
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- know that living things are adapted to the environment that they live in
- recognise that environments can change (sometimes naturally) and that this can sometimes pose dangers to living things
- Use and construct food chains to identify producers, predators and prey

Electricity

- 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



YEAR 5 SCIENCE KNOWLEDGE



Earth and space

- 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
- understand that a moon is a celestial body that orbits a planet

Animals including humans

- create a timeline to indicate human stages of growth
- describe the changes as humans develop to old age
- research the gestation periods of other animals and comparing them with humans
- learn about the changes experienced in puberty

Forces

- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- Pulleys, levers and gears are all mechanisms, also known as simple machines
- recognise that mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect
- find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation



YEAR 5 SCIENCE KNOWLEDGE



Properties and changes of materials

Living things and habitats

- Know the life cycles of different living things e.g. mammal, amphibian, insect and bird
- Compare how different animals reproduce and grow (not humans)
- Know the process of reproduction in plants
- Research work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.

- 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
- know that 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 and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and 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 and the action of acid on bicarbonate of soda



YEAR 6 SCIENCE KNOWLEDGE



Electricity

- 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

Animals including humans

- identify and name the main parts of the human circulatory system
- Know the functions of the heart, blood vessels and blood
- recognise the impact of diet, exercise, drugs and lifestyle on health
- describe the ways in which nutrients and water are transported within animals, including humans
- Learn how to keep their bodies healthy and how their bodies might be damaged

Light

- recognise 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 eye
- 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
- know that because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.
- extend their experience of light by looking a range of phenomena (rainbows, colours on soap bubbles, objects looking bent in water or coloured filters)



YEAR 6 SCIENCE KNOWLEDGE



Living things and habitats

- 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
- know that animals can be grouped into invertebrates and vertebrates
- know the vertebrate groups (fish, amphibians, reptiles, birds and mammals)
- know the invertebrate groups (insects, arachnids, snails, crustaceans)
- know that plants can be divided broadly into two main groups: flowering plants; and non-flowering plants
- give reasons for classifying plants and animals based on specific characteristics
- use classification systems and keys to identify some animals and plants in the immediate environment
- find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification

Evolution and inheritance

- know how the Earth and living things have changed over time
- know how fossils can be used to find out about the past
- know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents)
- know how animals and plants are adapted to suit their environment
- link adaptation over time to evolution
- know about evolution and can explain what it is
- find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution