



Science Key Learning Indicators
National Curriculum Areas

| | Biology | | | | Physics | | | | | | Chemistry | |
|-------------------|---|---|---|---------------------------|---|-------|-------|--------------------|-------------|-----------------|---|------------------|
| | Animals Including Humans | Plants | Living Things and their Habitats | Evolution and Inheritance | Seasonal Change | Light | Sound | Forces and Magnets | Electricity | Earth and Space | Materials | States of Matter |
| KLIs 1 | Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense | Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees | | | Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies | | | | | | 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 | |
| Vocabulary | <i>wild animals, pets, body, head, neck, arms, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, tongue, feet, tail, wing, claw, fin, scales, feathers, fur, beak, senses</i> | <i>leaf, leaves, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, vegetable</i> | | | <i>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</i> | | | | | | <i>object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabrics, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy/floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through</i> | |
| KLIs 2 | Know that animals, including humans, have offspring which grow into adults Describe the basic needs of animals for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene | 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 | Explore and compare the differences between things that are alive, once alive and never alive Describe how living things are suited to their habitats and how plants and animals in them depend on each other Identify and name a variety of plants and animals in their habitats/microhabitats Describe how animals obtain their food from plants and other animals; use the idea of a simple food chains | | | | | | | | Identify and compare the suitability of a variety of everyday material, including wood, plastic, metal, 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 | |
| Vocabulary | <i>Offspring, babies, young, grow, change, adults, older, younger, baby,, toddler, child, teenager, basic needs, water, food, air, breathing, survival, exercise, food types, fruit and vegetable, bread, rice, potato, pasta, milk and dairy foods, meat, fish, egg, beans, hygiene, clean, wash, healthy, medicine, drugs</i> | <i>fully grown, water, light, damp/wet/dry, dark/light, hot/warm/cool/cold, grow/growth, healthy, shoot, seedling, wither/limp, die, dry/crispy, soil, earth</i> | <i>Living, dead, never been alive, move, grow, feed, reproduce, name local habitats, name micro-habitats, damp/wet/dry, dark/light, hot/warm/cool/cold, suited/suitable, basic needs, food, food chain, shelter</i> | | | | | | | | <i>suitable/unsuitable, use/useful, object, material, property, hard, soft, stretchy, rigid, flexible, waterproof, absorbent, strong/weak, rough, smooth, reflective, non-reflective, transparent, opaque, translucent, shape, changed, push, pull, twist, squash, bend, stretch, pinch, poke, roll, squeeze</i> | |

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| <p>KLs 3</p> | <p>Identify that animals need the right types and amounts of nutrition; 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>Identify and describe the functions of different parts of a plant: root, stem/trunk, flowers, leaves</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients, space) and how they vary from plant to plant</p> <p>Investigate how water is transported in plants</p> <p>Explore the part flowers play in plant life cycles, including pollination, seed formation and seed dispersal</p> | | | | <p>Recognise we need light to see and dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Recognise that light from the sun can be dangerous and the need to protect their eyes</p> <p>Recognise that shadows are formed when light from a source is blocked; identify patterns in how the size of a shadow changes</p> | | <p>Compare how things move on different surfaces</p> <p>Notice that magnetic force can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and repel others</p> <p>Compare and group materials according to if they are magnetic</p> <p>Describe magnets as having two poles and use this to predict if they will attract or repel</p> | | | | |
| <p>Vocabulary</p> | <p><i>Nutrition, nutrients, food types, fruit and vegetable, carbohydrates, protein, vitamins and mineral, fat, fibre, water, balanced diet, skeleton, muscles, support, protection, movement, skull, ribs, spine/vertebra, joints, sockets, bones, tendons</i></p> | <p><i>Part, role, leaf, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, water, light, air, nutrients, soil, fertiliser, damp, wet, dry, dark, light, hot, warm, cool, cold, hotter, grow, growth, healthy, transported, life cycle, pollination, seed formation and dispersal</i></p> | | | | <p><i>Light, light source, names of light sources e.g. torch, dark/darkness, reflect, reflective, mirror, shadow, block, direct/direction, transparent, opaque, translucent</i></p> | | <p><i>Force, push, pull, contact force, non-contact, force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic, material, metal, iron, steel, non-magnetic material, poles, north pole, south pole</i></p> | | | | |
| <p>KLs 4</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 function</p> <p>Construct and interpret a range of food chains; identify producers, predators, prey</p> | | <p>Recognise that living things can be grouped in a variety of ways</p> <p>Explore and use classification keys to group, identify and name a variety of living things in the local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p> | | | <p>Identify how sounds are made</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 the features of the object that produced it</p> <p>Find patterns between the volume of a sound and the strength of the vibrations</p> <p>Recognise that sounds get fainter as the distance from the source increases</p> | <p>Identify common appliances that run on electricity</p> <p>Construct a simple series circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>Recognise that a component will only work if the circuit is complete</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>Identify common conductors and insulators</p> | <p>Compare and group materials according to whether they are solid, liquid or gas</p> <p>Observe that some materials change state when they are heated or cooled and measure the temperatures at which these changes happen</p> <p>Identify evaporation and condensation in the water cycle and link the rate of evaporation with temperature</p> | | | | |
| <p>Vocabulary</p> | <p><i>digestive system, nutrition, nutrients, mouth, teeth, canines, incisor, molar, pre-molar, saliva, tongue, rip, tear, chew, grind, cut, oesophagus (gullet), stomach, small intestine, large intestine, rectum, anus, carnivore, herbivore, omnivore, producer, consumer, predator, prey, food chain</i></p> | | <p><i>classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, human impact</i></p> | | | <p><i>Sound, sound source, noise, vibrate/vibration</i></p> <p><i>Travel, solid/liquid/gas, pitch, tune, high/low, volume, loud/quiet, fainter, muffle, strength of vibrations, insulation, instrument, percussion, strings, brass, woodwind, tuned instrument</i></p> | | <p><i>Electricity, appliances/device, mains, plug, electrical circuit, complete circuit, circuit, diagram, circuit symbol, components, cell, battery, positive/negative, connect/connection, loose connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, motor, fast(er)/slow(er), conductor, insulator, metal/non metal</i></p> | | | | <p><i>states of matter, solid, liquid, gas, air, oxygen, grain, granular, crystals, change state, ice, water, steam, water vapour, heated, cooled, temperature, degrees Celsius, melt, freeze, solidify, melting point, boil, boiling point, evaporate, evaporation, condense, condensation, water cycle, precipitation, transpiration</i></p> |

Science Key Learning Indicators

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|--------------------------|--|--|--|--|--|--|--|--|--|---|--|--|
| <p>KLIs 5</p> | <p>Describe the changes as humans develop from babies to old age</p> | | <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the process of reproduction</p> <p>in some plants and animals</p> | | | | | <p>Explain that unsupported objects fall to earth because of the force of gravity acting between the Earth and the object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that levers, pulleys and gears allow a smaller force to have a greater effect</p> | | <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 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>Compare and group properties on the basis of their properties (hardness, solubility, transparency, magnetism and conductivity – electrical and thermal)</p> <p>Know that some materials will dissolve and describe how to recover them from a solution</p> <p>Use knowledge of solids, liquids and gases to separate mixtures of materials</p> <p>Give reasons for particular uses of materials</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible</p> <p>Explain that some changes are irreversible and result in the formation of new materials</p> | |
| <p>Vocabulary</p> | <p><i>Life cycle, gestation, puberty, babyhood, childhood, adolescence, adulthood</i></p> | | <p><i>life cycle, reproduction, sexual, asexual, germination, pollination, seed formation, seed dispersal, pollen, stamen, stigma, plantlets, e.g. spider plant, runners e.g. strawberry, plant, mammal, amphibian, insect, bird, fish, reptile, eggs, live young</i></p> | | | | | <p><i>Fall, Earth, gravity, air resistance, water, resistance, friction, moving surfaces, mechanisms, levers, pulleys, gears, force, transfers</i></p> | | <p><i>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</i></p> | <p><i>Hard, soft, stretchy, rigid, flexible, waterproof, absorbent, strong/weak, rough, smooth, reflective, non-reflective, transparent, opaque, translucent, solubility, electrical, conductivity, thermal conductivity, melting, states of matter, solid, liquid, gas, change state, dissolve, solution, soluble, insoluble, condensing, reversible changes, new material, not usually reversible, burning, gas given off, rusting, solute, solvent, particle, mix/mixture, filtering, sieving, evaporating, residue</i></p> | |
| <p>KLIs 6</p> | <p>Identify and name the main parts of the circulatory system and describe their functions</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on body function</p> <p>Describe how nutrients and water are transported within animals including humans</p> | | <p>Describe how living things are classified into groups according to observable characteristics based on similarities and differences, including micro-organisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p> | <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 offspring vary from and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment and that this may lead to evolution</p> | | | <p>Recognise that light travels in straight lines and that we see things when objects 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 our eyes</p> <p>Use the idea that light travels in straight lines to explain the shapes of shadows</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</p> <p>Use recognised symbols in simple circuit diagrams</p> | | | |
| <p>Vocabulary</p> | <p><i>circulatory system, heart, blood, blood vessels, arteries, veins, capillaries, chambers, pumps, oxygen, carbon dioxide, oxygenated, deoxygenated, lungs, nutrients, water, diet, exercise, drugs, lifestyle</i></p> | | <p><i>Organism, micro-organisms, fungus, mushrooms, classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, arachnid, mollusc, insect, crustacean</i></p> | <p><i>Evolution, suited/suitable, environment, suited, adapted/adaptation, offspring, characteristics, vary/variation, inherit/inheritance, fossils, offspring, mutations</i></p> | | | <p><i>Light, light source, names of light sources e.g. torch, dark/darkness, reflect, reflective, mirror, shadow, block, absorb, direct/direction, transparent, opaque, translucent</i></p> | | <p><i>Electricity, appliances, device, electrical circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive, negative, terminal, connection, loose connection, short circuit, wire, crocodile clip, bulb, bright, dim, switch, buzzer, volume, motor, fast(er), slow(er), conductor, insulator, metal, non-metal, voltage, current, resistance</i></p> | | | |

| Working Scientifically | Asking questions, predicting, planning and doing | Observing, measuring and recording | Interpreting, explaining and communicating |
|------------------------|---|--|--|
| 1 | <ul style="list-style-type: none"> Ask questions Participate in discussions about how to find answers With help, suggest what might happen | <ul style="list-style-type: none"> Use all five senses to make observations Follow instructions about how to use simple equipment Take non-standard measurements | <ul style="list-style-type: none"> With support, recognise cause and effect in simple situations Describe to others what they did and what they observed |
| 2 | <ul style="list-style-type: none"> Ask relevant questions Offer suggestions about how to find answers Perform simple tests Work safely with other people | <ul style="list-style-type: none"> Make close observations Follow instructions about how to use equipment Take non-standard measurements With guidance, record observations (e.g. complete given table) | <ul style="list-style-type: none"> Talk about what they have done or observed Use what they have found to suggest answers to the question Make simple comparisons Communicate findings in a simple way With help, decide how to sort and group |
| 3 | <ul style="list-style-type: none"> Ask relevant questions Recognise that questions can be answered using different types of scientific enquires Make simple predictions Notice if they are working safely Recognise whether or not a test is fair | <ul style="list-style-type: none"> Make careful observations Use a range of equipment provided Take measurements using standard units Record observations in simple tables Present observations using simple pictograms, Venn diagrams, bar charts or labelled diagrams | <ul style="list-style-type: none"> Explain what happened and whether this was expected Draw conclusions by linking observations to their question and scientific knowledge Suggest how to sort and group objects or materials |
| 4 | <ul style="list-style-type: none"> Ask relevant questions Suggest ideas or make predictions that can be tested Suggest different types of enquiry to answer questions Set up a test is fair | <ul style="list-style-type: none"> Make systematic and careful observations observations Use a range of equipment provided Take accurate measurements using standard units Record observations in tables Present data using graphs or labelled diagrams | <ul style="list-style-type: none"> Explain what happened and whether this was expected Draw conclusions by linking observations to their question and scientific knowledge Identify similarities and differences between findings Make choices on how to sort and group |
| 5 | <ul style="list-style-type: none"> Make predictions based on scientific knowledge Plan different types of scientific enquiry to answer questions Explain whether or not a test is fair Identify risks and decide how to work safely Suggest what evidence should be collected Begin to select measuring instruments independently | <ul style="list-style-type: none"> Make careful observations and take accurate measurements Make decisions on how to present findings | <ul style="list-style-type: none"> Use graphs and tables to interpret patterns in data Link the outcome of the investigation to the original question Use scientific knowledge to explain what happened and why Use evidence collected to disprove or support their original predictions |
| 6 | <ul style="list-style-type: none"> Make predictions based on scientific knowledge Plan different types of scientific enquiry to answer questions Explain whether or not a test is fair by controlling variables Decide independently what evidence should be collected Select measuring instruments independently | <ul style="list-style-type: none"> Use precision when taking accurate measurements, taking repeat readings where necessary Present results in tables, diagrams or graphs appropriate to the findings | <ul style="list-style-type: none"> Use graphs and tables to interpret patterns in data Link the outcome of the investigation to the original question Use scientific knowledge to explain relationships in the data Identify problems with their work; begin to suggest improvements Use results to make predictions for and set up further tests |