|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Working Scientifically | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| asking relevant questions and using different types of scientific enquiries to answer them | planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary |
| setting up simple practical enquiries, comparative and fair tests |
| making systematic and careful observations | taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when 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 data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs |
| 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  | 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 |
| using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions | using test results to make predictions to set up further comparative and fair tests |
| identifying differences, similarities or changes related to simple scientific ideas and processes  | identifying scientific evidence that has been used to support or refute ideas or arguments. |
| using straightforward scientific evidence to answer questions or to support their findings |
| Biology | Animals Inc 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. | • describe the simple functions  of the basic parts of the  digestive system in humans;• identify the different types of teeth in humans and their  simple functions;• construct and interpret a  variety of food chains,  identifying producers,  predators and prey. | describe the changes as humans develop to old age (through PSHE lessons) | • identify and name the main  parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood;• recognise the impact of diet, exercise, drugs and lifestyle on the way their  bodies function;• describe the ways in which  nutrients and water are  transported within animals,  including humans. |
|  Plants | • identify and describe the  functions of different parts of flowering plants: 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. |  |  |  |
|  Living Things & Habitats |  | • recognise that living things  can be grouped in a variety  of ways;• explore and use classification  keys to help group, identify  and name a variety of living  things in their local and  wider environment;• recognise that environments  can change and that this can  sometimes pose dangers to  living things. | • 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. | • 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;• give reasons for classifying  plants and animals based on  specific characteristics.• describe the life process of  reproduction in some animals (through PSHE lessons) |
| Evolution and Inheritance |  |  |  | • recognise that living things  have changed over time and  that fossils provide  information about living  things that inhabited the Earth millions of years ago;• recognise that living things  produce offspring of the same kind, but normally offspring vary and are not identical to their parents;• identify how animals and  plants are adapted to suit  their environment in different ways and that adaptation may lead to evolution. |
| Chemistry |  Materials and their properties | • 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. | • 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. | • 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. |  |
| Physics | 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. |  | • 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;• recognise that some  mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. |  |
| 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;• find patterns in the way that the size of shadows change. |  |  | • 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;• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. |
| 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;• 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. |  |  |
| 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. |  |
| 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. |  | • 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. |