| **Science long term plan 2023-24**  |
| --- |
| **Year** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer**  |
| **Reception**  | **Animals, excluding****humans*** Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
* Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
 | **Living things and their habitats*** Explore the plants in the surrounding natural environment
* Explore the animals in the surrounding natural environment
* Explore plants and animals in a contrasting natural environment

**Seasonal changes*** Observe changes across the four seasons.
* Observe and describe weather associated with the seasons and how day length varies.
 | **Materials, including changing materials*** Explore a range of materials, including natural materials
* Make objects from different materials, including natural materials
* Observe, measure and record how materials change when heated and cooled
* 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.
 | **Forces**Explore how to change how things work • Explore how the wind can move objects • Explore how objects move in water**Sound**Listen to sounds outside and identify the source • Make sounds**Earth and space**-Learn about the Solar System and stars• Learn about space travel |
| **Reception****Working Scientifically** | **Asking scientific questions**  | Asks questions about aspects of their familiar world |
| **Planning an enquiry** | Generate a variety of ideas for testing (not always appropriate/ realistic) |
| **Observing closely + taking measurements** | -Measure by direct comparison-Non-standard units of measurement –it’s the length of an arm-Simple comparative vocabulary – bigger, smaller |
| -General sensory observations of animals and plants.-Simple descriptions of the world around them.-Look at objects and pictures and discus what they can see. |
| **Gathering and recording results** | -Simple recording – pictures/images. |
| **Presenting results** | -Talk about objects and events |
| **Interpreting results**  |
|  -Notice ‘which worked best’ – simple comparative statements. -Answer initial question simply.-Answer how and why questions about their experiences |

|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| --- | --- | --- | --- | --- | --- | --- |
| **Year 1** | **Animals including humans**Types of animalsIdentify, name, draw and label the basic parts of the human body and say which part of the body is associated with each senseDescribe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) | **Everyday materials**Comparing Describe the simple physical properties of a variety of everyday materialsCompare and group together a variety of everyday materials on the basis of their simple physical propertiesIdentifyingDistinguish 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 | **Animals including humans**Parts of animals Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammalsIdentify and name a variety of common animals that are carnivores, herbivores and omnivores | **Animals including humans**Types of animals Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) | **Plants**Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees | **Plants**Identify and describe the basic structure of a variety of common flowering plants, including trees |
| **Seasonal Change (covered at varying points throughout the year)** Observe changes across the 4 seasonsObserve and describe weather associated with the seasons and how day length varies |
| **Yr1** **Working Scientifically** | **Asking scientific questions**  | Ask simple questions when prompted. |
| **Planning an enquiry** | Suggest ways of answering a question |
| **Observing closely + taking measurements** | Make relevant observations |
| Conduct simple tests, with support |
| **Gathering and recording results** | With prompting, suggest how findings could be recorded |
| **Presenting results** | N/A |
| **Interpreting results (kS1)** | Talk about what happened and what I saw |

|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| --- | --- | --- | --- | --- | --- | --- |
| **Year 2** | **USES OF EVERYDAY MATERIALS**Uses of materials Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. | **USES OF EVERYDAY MATERIALS**Changing shapeFind out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | **ANIMALS INCLUDING HUMANS**Living thingsExplore and compare the differences between things that are living, dead, and things that have never been alive * Notice that animals, including humans, have offspring which grow into adults**.**
 | **PLANTS**Growing plants 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. | **LIVING THINGS AND THEIR HABITATS**Habitats 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 otherIdentify and name a variety of plants and animals in their habitats, including micro-habitats. | **ANIMALS INCLUDING HUMANS**Feeding and exercise 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 foodFind out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. |
| **Yr2** **Working Scientifically** | **Asking scientific questions**  | Ask simple questions  |
| **Planning an enquiry** | Recognise that questions can be answered in different ways |
| **Observing closely + taking measurements** | Observe closely, using simple equipment. |
| Perform simple tests. |
| **Gathering and recording results** | Gather and record data to help answer questions |
| Identify and classify |
| **Presenting results** | Communicate their findings in a range of ways and begin to use simple scientific language. |
| **Interpreting results (kS1)** | Use their observations and ideas to suggest answers to questions |

|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| --- | --- | --- | --- | --- | --- | --- |
| **Year 3** | **ROCKS AND SOILS**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 rockRecognise that soils are made from rocks. | **FORCES**Magnets and forces * Compare how things move on different surfaces
* Notice that some forces need contact between two 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 two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing. | **ANIMALS INCLUDING HUMANS**Movement and feeding* 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
 | **PLANTS**What plants need Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) How they vary from plant to plant. | **PLANTS**Parts of plants identify and describe the functions of different parts of flowering plants: roots, stem/ trunk, leaves and flowers.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. | **LIGHT** Light and shadow * Recognise that they need light in order to see things and that dark is the absence of light
* understand and 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 a solid object.
* Find patterns in the way that the size of shadows change
 |
| **Yr3** **Working Scientifically** | **Asking scientific questions**  | Ask relevant questions when prompted |
| **Planning an enquiry** | With prompting, set up simple and practical enquiries, comparative and fair tests.  |
| **Observing closely + taking measurements** | Make systematic observations, using simple equipment |
| Use standard units when taking measurements |
| **Gathering and recording results** | Record findings in various ways |
| With prompting, suggest how findings may be tabulated |
| **Presenting results** | With prompting use various ways of displaying evidence |
| **Drawing conclusions (ks2)** | Use results when talking about what happened  |
| Gather and record data about similarities, differences and changes |
| **Making predictions (KS2 only)** | Make predictions for new values |
| **Evaluating an enquiry (KS2 only)** | Suggest possible improvements |

|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| --- | --- | --- | --- | --- | --- | --- |
| **Year 4** | **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 | **LIVING THINGS**Grouping living things 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. | **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. | **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 | **LIVING THINGS**Dangers to living things Describe the simple functions of the basic parts of the digestive system in humansIdentify the different types of teeth in humans and their simple functions | **ANIMALS INCLUDING HUMANS**Human nutrition 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 |
| **Yr4****Working Scientifically** | **Asking scientific questions**  | Ask relevant questions |
| **Planning an enquiry** | Plan different types of scientific enquiries to answer questions.  |
| Set up simple and practical enquiries, comparative and fair tests.  |
| **Observing closely + taking measurements** | Make systematic and careful observations using a range of equipment, including thermometers and data loggers.  |
| Take accurate measurements using standard units, where appropriate. |
| **Gathering and recording results** | Record findings using simple scientific language, drawings, tables and labelled diagrams |
| **Presenting results** | Present data in a variety of ways using e.g Venn diagrams, bar charts, simple scatter graphs and keys answer questions. |
| Report on findings from enquiries using displays or presentations. |
| **Drawing conclusions (ks2)** | Use straightforward scientific evidence to answer questions or to support their findings. |
| Use results to draw simple conclusions |
| **Making predictions (KS2 only)** | Use results to make predictions for new values  |
| Raise further questions. |
| **Evaluating an enquiry (KS2 only)** | Use results to suggest improvements  |

|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| --- | --- | --- | --- | --- | --- | --- |
| **Year 5** | **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.Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. | **MATERIALS AND CHANGES OF STATE**Separating mixturesKnow 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.Types of change 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. | **MATERIALS AND CHANGES OF STATE**Materials 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 give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. | **ANIMALS INCLUDING HUMANS****LIVING THINGS AND THEIR HABITATS**Life cycles 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.Describe the changes as humans develop to old age. | **LIGHT**Light and sight (Year 6 UNIT) 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 eyeexplain 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. | **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 |

| **Yr5****Working Scientifically** | **Asking scientific questions**  | *Independently ask scientific questions.*  |
| --- | --- | --- |
| **Planning an enquiry** | With prompting, plan different types of scientific enquiries to answer questions |
| With prompting, recognise and control variables where necessary |
| **Observing closely + taking measurements** | Select, with prompting, and use appropriate equipment to take readings. |
| Take precise measurements using standard units. |
| Take and process repeat readings. |
| **Gathering and recording results** | Record data and results. |
| Record data using labelled diagrams, keys, tables and charts. |
| **Presenting results** | Present data and results of increasing complexity using scientific diagrams and labels, tables, bar charts, line graphs and classification keys |
| **Drawing conclusions (ks2)** | With prompting, identify findings from enquiries, including conclusions and causal relationships |
| Begin to use basic scientific evidence to support or refute the ideas or arguments for my conclusion. |
| **Making predictions (KS2 only)** | Suggest further comparative or fair tests identifying what you would expect to see |
| **Evaluating an enquiry (KS2 only)** | With prompting, identify that not all results may be trustworthy  |
| Identify necessary improvements and be able to say why |

|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| --- | --- | --- | --- | --- | --- | --- |
| **Year 6** | **LIVING THINGS**Classifying living things 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. | **ELECTRICITY**Changing Circuits 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**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. | **ANIMALS INCLUDING HUMANS**Evolution and Inheritance Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. | **ANIMALS INCLUDING HUMANS**Our bodies Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. | **ANIMALS INCLUDING HUMANS**Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies functiondescribe the ways in which nutrients and water are transported within animals, including humans. |
| **Yr6****Working Scientifically** | **Asking scientific questions**  | *Ask scientific questions potentially stimulated by a scientific experience or following an enquiry.* |
| **Planning an enquiry** | Plan different types of scientific enquiries to answer questions |
| Recognise and control variables where necessary. |
| **Observing closely + taking measurements** | Take measurements using a range of scientific equipment.  |
| Take measurements with increasing accuracy and precision |
| Take repeat readings identifying when appropriate. |
| **Gathering and recording results** | Record data and results of increasing complexity using scientific diagrams and labels |
| Record data and results of increasing complexity using classification keys |
| **Presenting results** | Present data and results of increasing complexity selecting the most appropriate method and using a range of media |
| **Drawing conclusions (ks2)** | Using data and observations, draw valid conclusions (i.e. consistent with the evidence) including causal relationships.  |
| Identify scientific evidence to support or refute the ideas or arguments for my conclusion. |
| **Making predictions (KS2 only)** | Use test results to make predictions and set up further comparative and fair tests. |
| **Evaluating an enquiry (KS2 only)** | Provide explanations of, and degree of, trust in results.  |
| Identify which results need to be carried out again and how to carry it out more accurately |