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| EYFS | | | | | | | | | | | | | | | | | | | | | |
| **Animals, including humans.**  **All about Me My body and senses**  What I need to grow.  Talk about their bodies/characteristics and identify similarities/differences. Identify 5 senses and how we use these to explore the world. Notice about how they have changed from being younger/a baby. Talk about what humans need to grow (healthy eating, sleep, hygiene, exercise)  British wildlife animals  British garden birds  Name British wildlife (that could be found in school grounds) hedgehog, squirrel, fox, badger, owl, rabbit. Name British garden birds (that could be found in school grounds) blue-tit, robin, blackbird, thrush, sparrow. Identify different body parts associated with different animals (wing, talons, bushy tail). | | | **Living things & their habitats**  **Minibeasts**  What lives in our school grounds Identify minibeasts in school grounds (worm. woodlouse, beetle, ladybird, butterfly, slug, snail). | | | | **Plants**  **Growing plants**  Plants in our school grounds/locality  Planting seed/bulbs  Identify plants and trees in our school grounds (cherry, rowan, sycamore, silver birch, oak, willow) (acorn, sycamore seed (autumn) daffodil, crocus (spring) daisy, dandelion, (summer) Talk about what plants need to grow.  Plant seeds/bulbs | | | | **Materials**  **Materials all around us**  Bright at Night Floating/sinking Melting/freezing.  Find out about which materials are reflective/show up in the dark.  Talk about textures of objects and fabrics.  Know the names of some materials (fabric, wood, glass, metal) Find out about magnets and which objects (materials) are magnetic Find out which objects (materials) float and sink Describe what happens when ice melts/freezes and chocolate melts/solidifies. | | | | | | **Seasonal Changes**  **Seasons and Weather**  Observe and experience first-hand the weather in all 4 seasons.  Observe and explore the natural world using. | | | | |
| Substantive Knowledge Year 1 and 2 Cycle 1 | | | | | | | | | | | | | | | | | | | | | |
| Biology | | | | | | | | | | | | Chemistry | | | | | | | Physics | | |
| **Animals including Humans**  **Working Scientifically:**  **Research using secondary sources**  **Research animals that live in a particular habitat**  **Grouping and Classifying**  **Group/ classify animals according to what they eat** | | **Body Parts and Our Senses**  **Working Scientifically**  **Pattern seeking**  **Height and weight changes as we get older** | | | | | | **Plants around us**  **Working Scientifically**  **Observations over time**  **Changes to plants/ trees as they grow or in different seasons**  **Grouping and Classifying**  **Identify local trees and plants**  **Identify parts of a plant** | | | | **Everyday Materials**  **Working Scientifically**  **Comparative and Fair tests**  **Compare the suitability of everyday materials for a specific job, e.g., building a bridge**  **Grouping and Classifying**  **Identify different materials based on their properties** | | | | | | **Seasonal Changes**  **Working Scientifically:**  **Observation over time**  **Changes in temperature throughout the year**  **Changes in rainfall throughout the year**  **Pattern seeking**  **Length of daylight throughout the year**  **Leaf colour and fall and different stages** | | | |
| Know and name a variety of animals including fish, amphibians, reptiles, birds and mammals.  Classify and know animals by what they eat (carnivore, herbivore and omnivore).  Know how to sort animals into categories (including fish, amphibians, reptiles, birds and mammals).  Know how to sort living and non-living things. | | Know the name of parts of the human body that can be seen.  Know which sense is associated with which part of the body. | | | | | | Know and name a variety of common wild and garden plants.  Know and name the petals, stem, leaves and root of a plant.  Know the names of the birds in our school grounds. | | | | Know the name of the materials an object is made from.  Know about the properties of everyday materials.  Know the difference between wood, plastic, glass, metal, water and rock.  Compare and group materials. | | | | | | Observe and know about the changes in the seasons.  Name the seasons and know about the type of weather in each season. | | | |
| Substantive knowledge Year 1 and 2 Cycle 2 | | | | | | | | | | | | | | | | | | | | | |
| Biology | | | | | | | | | | | | | | | Chemistry | | | | | | |
| **Why is it important to keep our bodies healthy?**  **Investigation**  **Set up an investigation to find out who is the fittest in class**  **Grouping and Classifying**  **Identify the off-spring of different animals** | | | | | **What do Plants need to grow healthily?**  **Working Scientifically:**  **Fair testing**  **Investigate which conditions plants need to grow**  **Observation over time**  **Change in plant growth over time**  **Grouping and Classifying**  **Identify parts of a plant** | | | | **Why Do animals choose the habitats they have?**  **Working Scientifically:**  **Researching**  **Research animals and how they adapt to their environment**  **Grouping and Classifying**  **Group animals based on their natural habitats** | | | | | | **How do we make the most of the materials around us?**  **Working Scientifically**  **Research**  **Research different food groups and design a balanced menu**  **Grouping and Classifying**  **Identify the off-spring of different animals** | | | | | | |
| Know the basic stages in a life cycle for animals, (including humans)  Know why exercise and a balanced diet are important for humans  Know why having good hygiene is important for humans | | | | | Classify things by living, dead or never lived  Know how a specific habitat provides for the basic needs of things living there (plants and animals)  Match living things to their habitat  Name some different sources of food for animals  Know about and explain a simple food chain | | | | Identify things that are living, dead and never lived.  Know how a specific habitat provides for the basic needs of things living there (plants and animals).  Identify and name plants and animals in a range of habitats.  Match living things to their habitat  Know how animals find their food.  Name some different sources of food for animals.  Know and explain a simple food chain. | | | | | | Know why some materials are more suitable than others for specific uses.  Know why glass, wood, plastic, brick or paper would be used for certain jobs.  Know that some materials can be squashed, twisted or bent according to need.  Know why certain materials are suitable for many different uses.  Know about the lives of important people who have developed useful new materials. | | | | | | |
| Substantive Knowledge Year 3 and 4 Cycle 1 | | | | | | | | | | | | | | | | | | | | | |
| Biology | | | | | | | | | | Chemistry | | | | Physics | | | | | | | |
| **Keeping Plants Healthy**  **Working Scientifically:**  **Observation over time**  **Observe how water travels up the stem**  **Research Research different types of seed dispersal** | **Why do humans have skeletons and muscles?**  **Working Scientifically:**  **Experimenting and Investigating**  **Find out how muscles work using balloons**  **Carry out an investigation about exercise**  **Research**  **Find out about names of joints**  **Find names of parts of skeleton** | | | | | **What happens to the food we eat?**  **Working Scientifically**  **Research**  **Research the different body parts involved in digestion**  **Grouping and classifying**  **Classify plants/ animals into either producer, consumer or predator**  **Investigation**  **Recreating a digestive system in class** | | | | **Rocks and soil**  **Working Scientifically:**  **Research**  **Research how fossils and different types of rocks are formed**  **Grouping and Classifying**  **Identify different rocks and the group they belong to** | | | | **Light and Dark**  **Working Scientifically:**  **Fair testing**  **Compare materials based on reflectiveness**  **Observation over time**  **Shadow length throughout the day**  **Grouping and Classifying**  **Group materials based on their opacity and transparency**  **Pattern Seeking**  **Object size compared to shadow** | | | | | | | **Sound**  **Working Scientifically:**  **Fair testing**  **The effect of distance from the source on volume**  **Pattern seeking**  **Compare how length and width of tubes affect pitch** |
| Know the function of different parts of flowing plants and trees  Know the function of flowers in a flowering plant  Know what helps a plant grow  Know how water is transported in a plant  Know what pollination is  Know about seed dispersal | Know about the importance of a nutritious, balanced diet.  Know how nutrients, water and oxygen are transported within animals and humans.  Know about the skeletal and muscular system of a human.  Know the names of some the common joints in our bodies. | | | | | 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 teeth in humans  Know the functions of different human teeth  Use food chains to identify producers, predators and prey  Construct food chains to identify producers, predators and prey | | | | Compare and group rocks based on their appearance and physical properties, giving a reason.  Know how fossils are formed.  Know how soil is made.  Know about and explain the difference between sedimentary, metamorphic and igneous rock. | | | | Know what dark is (the absence of light)  Know that light is needed in order to see.  Know that light is reflected from a surface.  Know and demonstrate how a shadow is formed.  Explore shadow size and explain the changes.  Know the danger of direct sunlight and describe how to keep protected. | | | | | | | Know how sound is made  Know how sound travels from a source to our ears  Know how sounds are made, associating some of them with vibrating  Know the correlation between pitch and the features of the object producing a sound  Know the correlation between the volume of a sound and the strength of the vibrations that produced it  Know what happens to a sound as it travels away from its source |
| Substantive Knowledge Year 3 and 4 Cycle 2 | | | | | | | | | | | | | | | | | | | | | |
| Biology | | | | | | | | Chemistry | | | | | | | | Physics | | | | | |
| **How are living things grouped?**  **Working Scientifically:**  **Research**  **Research the effect of climate change on animals around the world**  **Grouping Classify plants/ animals into either producer, consumer or predato** | | **Solids, Liquids and Gases – The water cycle/Heating and Cooling.**  **Working Scientifically:**  **Observation over time**  **Measure temperature changes in water over time Research**  **Research the water cycle and how it works**  **Grouping**  **Identify solids, liquids or gases** | | | | | | **What do we mean by a force?**  **Working Scientifically:**  **Fair testing**  **Compare materials based on the amount of friction they generate**  **Grouping and Classifying Group magnetic and non-magnetic material** | | | | **How do magnets work?**  **Working Scientifically:**  **Grouping and Classifying Group magnetic and non-magnetic material** | | | | | | **What is electricity and why is it important in our lives?**  **Working Scientifically:**  **Fair testing**  **Determine which materials are electrical conductors or insulators**  **Predict and test whether a lamp will light within a circuit**  **Grouping and classifying Classify/ group materials into electrical conductors or insulators** | | | |
| Group living things in different ways  Use classification keys to group, identify and name living things  Create classification keys to group, identify and name living things (for others to use)  Know how changes to an environment could endanger living things | | Know how the same materials can change in state  Know the temperate water boils and freezes  Know which materials, other than water, change state  Know the difference between solids, liquids and gas  Know the terms condensation and evaporation and know what they mean | | | | | | Know about and describe how objects move on different surfaces.  Know how a simple pulley works and used to lift an object.  Know how some forces require contact and some do not, giving examples. | | | | Know about and explain how magnets attract and repel.  Predict whether magnets will attract or repel and give a reason. | | | | | | Identify and name appliances that require electricity to function.  Construct a series circuit.  Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers).  Know the function of a switch.  Know the difference between a conductor and an insulator; giving examples of each. | | | |
| Substantive Knowledge Year 5 and 6 Cycle 1 | | | | | | | | | | | | | | | | | | | | | |
| Biology | | | | | | | | | Physics | | | | | | | | | | | | |
| **How does the heart work and why is it so important?**  **Working Scientifically:**  **Fair testing**  **Impact of exercise on the heart rate**  **Research**  **Research how drugs affect the body**  **Pattern seeking Compare resting heart rate of different people** | | | | **What do we know about the sun, Earth moon and planets?**  **Working Scientifically:**  **Research**  **Research the planets in our solar system, including length of orbit Pattern seeking Dimensions associated with the Sun, Earth and Moon** | | | | | **How does electricity work and how does its power vary?**  **Working Scientifically:**  **Fair testing**  **Effect of increasing voltage on the brightness of a bulb Pattern seeking Compare brightness of bulb in series and parallel circuit** | | | | **How do our eyes help us see?**  **Working Scientifically:**  **Grouping and Classifying Group materials based on transparency**  **Pattern seeking**  **Compare distance from light source and shadow.**  **Experimenting and investigating**  **Experiment to find out that light travels in straight line.** | | | | | | | **What is a force and how does it impact on the way things move?**  **Working Scientifically:**  **Fair testing**  **Shape of an object and the time it takes to travel through water Pattern seeking**  **Surface material on a ramp and note the distance/ speed it travels** | |
| 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 | | | | Know about and explain the movement of the Earth and other planets relative to the Sun  Know about and explain the movement of the Moon relative to the Earth  Know and demonstrate how night and day are created  Describe the Sun, Earth and Moon (using the term spherical) | | | | | Compare and give reasons for why components work and do not work in a circuit  Draw circuit diagrams using correct symbols  Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer | | | | Know how light travels  Know and demonstrate how we see objects  Know why shadows have the same shape as the object that casts them  Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc. | | | | | | | Know what gravity is and its impact on our lives  Identify and know the effect of air resistance  Identify and know the effect of water resistance  Identify and know the effect of friction  Explain how levers, pulleys and gears allow a smaller force to have a greater effect | |
| Substantive Knowledge Year 5 and 6 Cycle 2 | | | | | | | | | | | | | | | | | | | | | |
| Biology | | | | | | | | | | | | | | | | | | Chemistry | | | |
| **Classification and grouping of all living things including micro-organisms**  **Working Scientifically:**  **Observation over time**  **Conditions needed for bread to go mouldy**  **Research**  **Research the different types of micro-organisms Pattern seeking**  **Compare resting heart rate of different people** | | **Evolution and Inheritance**  **Working Scientifically:**  **Research**  **Research Charles Darwin and his work**  **Pattern seeking**  **Compare skulls/ body parts of animals as they have evolved**. | | | | | | **What do we know about the life cycles of humans and various animals?**  **Working Scientifically:**  **Research**  **Research changes in humans at different stages in our lives Research the life cycle of different animal groups.**  **Grouping**  **Classify/ group and animal based on its group and species.**  **Pattern seeking Compare height with physical task e.g., distance a ball is thrown** | | | | **Puberty and Human Reproduction**  **Working Scientifically:**  **Research**  **Research changes in humans at different stages in our lives.** | | | | | | **What materials can or cannot be changed back to their original form.**  **Working Scientifically:**  **Fair testing**  **Factors that affect the speed a solute dissolves in water, e.g., temperature**  **Observation over time**  **Observe over time the separation of a solute and solvent via evaporation**  **Grouping**  **Classify/ group materials as either soluble or insoluble** | | | |
| Classify living things into broad groups according to observable characteristics and based on similarities & differences  Know how living things have been classified  Give reasons for classifying plants and animals in a specific way | | 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 | | | | | | Know the life cycle of different living creatures, e.g. mammal, amphibian, insect, bird  Know the differences between different life cycles  Know the process of reproduction in plants  Know the process of reproduction in animals  Create a timeline to indicate stages of growth in humans | | | | Know the changes the body makes during puberty Eg, body hair and menstruation.  Know how to keep healthy and clean during puberty.  Know and explain how human reproduction occurs and how an embryo grows and develops. | | | | | | Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets  Know and explain how a material dissolves to form a solution  Know and show how to recover a substance from a solution  Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating)  Know and demonstrate that some changes are reversible and some are not  Know how some changes result in the formation of a new material and that this is usually irreversible | | | |