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| Year Group | Scientific Enquiry/Disciplinary knowledge | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| EYFS | **Nursery*** Comments and asks questions about aspects of their familiar world such as the place where we live or the natural world.
* Can talk about some of the things they have observed such as plants, animals, natural and found objects.
* Talks about why things happen and how things work.
* Developing in understanding of growth, decay and changes over time.
* Shows care and concern for living things and the environment.
* Mothers and babies

**Reception*** Looks closely at similarities, differences, patterns and change.
* Animal lifecycles, insects and woodland habitats
* **Early Learning Goal: Understanding the World** Children know about similarities and differences in relation to places objects materials and living things. They talk about features of their own immediate environment and how environments might vary from one another. They make observations of animals an plants and explain why some things occur and talk about changes.
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| 1 | - Can they ask simple questions and recognise that they can be answered in different ways?- Can they observe carefully, using simple equipment?- Can they use their observations and ideas to suggest answers to their questions?- Can they gather and record data to help in answering questions?SEASONAL CHANGES | Body parts (ours) Senses **What makes me me?** - Can they identify, name, draw and label the basic parts of the human body and say which part of the human body is associated with each sense? | No specific science-recapRecycling in PHSE topics | Materials and Changing States**Does it matter what I am made of?**- Can they distinguish between an object and the materials from which it is made?- Can they identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock?- Can they describe the simple physical properties of a variety of everyday | Labelling parts of a plantWhat do plants needSeasonal**How does your garden grow?**- Can they identify and name a variety of common, wild and green plants?- Can they identify and name a variety of deciduous and evergreen trees?- Can they identify and describe the basic structure of a variety of common flowering plants, including trees? | Animal typesAnimal body partsHerbivores, Carnivores, Omnivores**Who eats who?**Can they identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals;?- Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores? | Continuation of su1 |
| 2 | - Can they ask simple questions and recognise that they can be answered in different way?- Can they observe carefully, using simple equipment?- Can they identify and classify different aspects of plants and animals?- Can they perform simple tests?- Can they use their observations and ideas to suggest answers to their questions?- Can they gather and record data to help in answering questions?-  | Identify different materials. Explain why we use certain materials for certain objects and solution. **Waterproof experiment-children make their own boat looking at suitability for purpose as it has to hold weight.****Science homework sent**-Can they find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching? | Animals, including humans and Living things and their habitatsWhich animals live poles apart?- Can they 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 of each other?- Can they describe the importance for humans of exercise, eating the right amount of different types of food, and hygiene?* find out about and describe the basic needs of animals,
* including humans, for survival (water, food and air);
 | Animals, including humans and Living things and their habitats**Whose hiding in the Forbidden Forest?**- Can they explore and compare differences between things that are living, dead and things that have never been alive?- Can they identify and name a variety of plants and animals in their habitats, including micro-habitats?- Can they 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 food?Do they notice that animals, including humans, have offspring, which grow into adults?**Homework activity-to make their own habitat** | PlantsHow does your garden grow?- Can they observe and describe how seeds and bulbs grow into mature plants?- Can they find out and describe how plants need water, light and suitable temperature to grow and stay healthy?Extend plants and animals inc humansWhere is it winter all year round?- Can they find out about and describe the basic needs of animals, including humans for survival (water, food and air)? | Plants-extendHow does your garden grow?- Can they observe and describe how seeds and bulbs grow into mature plants?- Can they find out and describe how plants need water, light and suitable temperature to grow and stay healthy? | Extend everyday materials- Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, rock, brick, paper and cardboard for particular uses?**Why do we pack our sunglasses when we go on holiday?**Pupils might work scientifically by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs) - Recycling/ recycling homework project. **Rcycling project in school****Recylcing collage to look at oceans and the mpact-links to the beach** |
| 3 | - Can they ask relevant questions and use different types of scientific enquiries to answer them?- Can they use straightforward scientific evidence to answer questions or to support their findings?- Can they make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers?- Can they set up simple practical enquiries, comparative and fair tests?- Can they identify differences, similarities or changes related to simple scientific ideas and processes?- Can they use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions?- Can they record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables?- Can they gather, record, classify and present data in a variety of ways to help answer questions?- Can they report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions?**In Autumn 1 when covering plants we observe the colours of flowers and which attract insects recording using tallies and a graph****In Spring 1 we create a table looking at the distance a car travels when investigating friction. This includes fait testing and measuring.****In Spring 2 we observe different rocks and we compare permeability and durability of rocks****In summer we do****Dissolving investigation – predict and draw conclusions****Dissolving jelly – fait test and observation****Floating and sinking – make own boat and who’s can hold the most marbles****Magnets games**  | Plants**What makes plants grow and flourish? (Driver)**- Can they identify and describe the functions of different parts of flowering plants (roots, stem/trunk, leaves and flowers)?**We create a poster to highlight the functions of each part.**- Can they explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant?**We grow cress seeds in different environments and with different conditions.**- Can they investigate the way in which water is transported within plants?**We are going to complete an experiment that shows how much water the flowers drink as in planit.**- Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal?**Set up a crime scene dissecting different plant parts- tulips / lilies****Practical process of bee pollination****Pollination poster for display****Seed dispersal into life cycle****We do a family project – garden in a box to support this learning.** | Animals inc humans**What makes animals (including humans) move and grow?**- Can they identify animals, including humans, need the right types of nutrition, and they cannot make their own food; they get nutrition from what they eat?**Craft activity making a paper plate of healthy food**- Can they identify that humans and some other animals have skeletons and muscles for support, protection and movement?**Practical session showing different muscles as we move****Skeleton art straw pictures** | Forces and Magnets **Can you feel the force?**- Can they compare how things move on different surfaces?- Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance?- Can they observe how magnets attract or repel each other and attract some materials and not others?- Can they 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?- Can they describe magnets as having two poles?- Can they predict whether two magnets will attract or repel each other, depending on which poles are facing?**Push and Pull posters for display** | Rocks and Soils **How do rocks rock?**- Can they compare and group together different rocks on the basis of their appearance and simple physical properties?**Draw rocks****Handle rocks to investigate and observe**- Can they describe in simple terms how fossils are formed when things that have lived are trapped in rock?- Can they recognise that soils are made from rocks and organic matter?**We create a sedimentary rock out of sweets****We make a clay fossil****Wormery homework** | Working scientifically**How can we test our scientific questions?** - Can they ask relevant questions and use different types of scientific enquiries to answer them?- Can they use straightforward scientific evidence to answer questions or to support their findings?- Can they make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers?- Can they set up simple practical enquiries, comparative and fair tests?- Can they identify differences, similarities or changes related to simple scientific ideas and processes?- Can they use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions?- Can they record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables?- Can they gather, record, classify and present data in a variety of ways to help answer questions?- Can they report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions? | Light**Why does my shadow change?**- Can they recognise that they need light in order to see things and that dark is the absence of light?- Can they notice that light is reflected from surfaces?- Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes?**Sun safety work linked to PSHE and shelters**- Can they recognise that shadows are formed when the light from a light source is blocked by a solid object?**Outdoor work**- Can they find patterns in the way that the size of shadows change?**Mirrors** |
| 4 | - Can they ask relevant questions and use different types of scientific enquiries to answer them?- Can they use straightforward scientific evidence to answer questions or to support their findings?- Can they make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers?- Can they set up simple practical enquiries, comparative and fair tests?- Can they identify differences, similarities or changes related to simple scientific ideas and processes?- Can they use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions?- Can they record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables?- Can they gather, record, classify and present data in a variety of ways to help answer questions?- Can they report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions? | Animals including Humans **What happens to the food we eat?**- Can they construct and interpret a variety of food chains, identifying producers, predators and prey?- Can they describe the simple functions of the basic parts of the digestive system in humans?- Can they identify the different types of teeth in humans and their simple functions?**Expt with egg shells-how do different liquids affect the shells-relate to teeth.****-observations over time** | Sound **How do we hear?**- Can they identify how sounds are made, associating some of them with something vibrating?- Can they recognise that vibrations from sounds travel through a medium to the ear?- Can they find patterns between the pitch of a sound and features of the object that produced it?- Can they find patterns between the volume of a sound and the strength of the vibrations that produced it?- Can they recognise that sounds get fainter as the distance from the sound source increases?**Practical activities****-rice on tambourines under speakers****-investigate making different sounds with drums/stringed instruments/recorders****-make a string telephone** | Working Scientifically.**How can we test our scientific questions?**- Can they ask relevant questions and use different types of scientific enquiries to answer them?- Can they use straightforward scientific evidence to answer questions or to support their findings?- Can they make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers?- Can they set up simple practical enquiries, comparative and fair tests?- Can they identify differences, similarities or changes related to simple scientific ideas and processes?- Can they use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions?- Can they record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables?- Can they gather, record, classify and present data in a variety of ways to help answer questions?- Can they report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions?**Practical activities****-make a paper clip float****-absorbency of paper** | Electricity**How can we make electricity travel?**- Can they identify common appliances that run on electricity?- Can they construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers?- Can they 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?- Can they recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit?- Can they recognise some common conductors and insulators, and associate metals with being good conductors?**Practical activities****-make series and parallel circuits****-circuits using more/less bulbs and batteries****-make a pressure pad alarm using knowledge and skills** | States of matter**What state is it and why does it matter?**- Can they compare and group materials together, according to whether they are solids, liquids or gases?- Can they 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)?- Can they identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature?**Practical activities****-observation over time of evaporation** | Living things and their habitats.**Why do some animals become extinct?**- Can they recognise that living things can be grouped in a variety of ways?- Can they explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment?- Do they recognise that environments can change and that this can sometimes pose dangers to living things? 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| 5 | - Can they plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary?- Can they identify scientific evidence that has been used to support or refute ideas or arguments?- Can they take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate?- Can they use test results to make predictions to set up further comparative and fair tests?- Can they record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs?- Can they report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written form such as displays and other presentations? | Materials and their properties.**Why can’t you un-cook an egg?**- Can they 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?- Do they know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution?- Can they use their knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating? | Materials and their properties.**Why can’t you un-cook an egg?**- Can they give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic?- Can they demonstrate that dissolving, mixing and changes of state are reversible changes?- Can they 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? | Forces and magnetism**Do you need gravity to play football?**- Can they explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object?- Can they identify the effects of air resistance, water resistance and friction, that act between moving surfaces?- Can they recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect? | Earth and Space**Could we ever live on another planet?**- Can they describe the movement of the Earth, and other planets, relative to the Sun in the solar system?- Can they describe the movement of the Moon relative to the Earth?- Can they describe the Sun, Earth and Moon as approximately spherical bodies?- Can they use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky? | Living things and their habitats**Where do butterflies come from?**- Can they describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird?- Can they describe the life process of reproduction in some plants and animals? | Animals including humans **What’s happening to my body?** - Can they describe the changes as humans develop to old age? |
| 6 | - Can they plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary?- Can they identify scientific evidence that has been used to support or refute ideas or arguments?- Can they take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate?- Can they use test results to make predictions to set up further comparative and fair tests?- Can they record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs?- Can they report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written form such as displays and other presentations? | Animals including humans**What does my heart do for me?**- Can they describe the ways in which nutrients and water are transported within animals, including humans?- Can they identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood?- Do they recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function? | Living Things and Their Habitat**Animal, vegetable or mineral?**- Can they 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?- Can they give reasons for classifying plants and animals based on specific characteristics? | Evolution and inheritance**Do we adapt to survive?**- Do they recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago?- Do they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents?- Can they identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution? | Electricity**Is electricity the future?**- Can they associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit?- Can they 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?- Can they use recognised symbols when representing a simple circuit in a diagram? | Light**Why does my shadow disappear?**- Can they recognise that light appears to travel in straight lines?- Can they use the idea that light travels in straight lines to explain that objects areseen because they give out or reflect light into the eye?- Can they 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?- Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them? | SRE/Evolution and Inheritance**How can I show respect for myself and others?**- Do they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents? |