



Science Long Term Overview 2024-2025

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Theme: All About Me <ul style="list-style-type: none"> - Common body parts and facial features (Biology) - Family members and communities (Biology) - Feelings (Biology) - Taking care of our bodies (Biology) - Recycling and learning about different materials (Chemistry) - Harvest 	Theme: Colour Shape and Pattern <ul style="list-style-type: none"> - Colour exploration and colour mixing (Physics/Chemistry) - Natural patterns in the environment (Biology) - Exploring different materials relating to festivals, eg. rice/sand/clay (Diwali artwork) (Chemistry) 	Theme: Traditional Tales <ul style="list-style-type: none"> - Comparing materials (straw, wood and brick) linking to The Three Little Pigs (Chemistry) - Cooking Gingerbread Men, talking about change in ingredients when mixed and heat is applied (Chemistry) 	Theme: Farm Animals <ul style="list-style-type: none"> - Life cycles of certain animals, eg. frogs, chickens, sheep (Biology) - Introduction to different plants grown on a farm (Biology) - Introduction to farm machinery, discussing forces and motion (Physics) 	Theme: Minibeasts <ul style="list-style-type: none"> - Naming/identifying minibeasts (Biology) - Life processes of minibeasts: movement, reproduction, hibernation, nutrition and growth (Biology) - Butterfly life cycle through looking after caterpillars (Biology) 	Theme: People who Help Us <ul style="list-style-type: none"> - Dangers of fire (Chemistry) - Understanding why you might have to visit the doctor or the hospital (Biology) - Materials used in construction of houses (Chemistry)
	REFER TO SCIENCE IN EYFS DOCUMENTS (EYFS IN THE CURRICULUM)					
	From Term 2 Nursery visit Forest School every term – this encourages the children to notice seasonal changes, talk about their natural environment, life cycle of plants and creatures such as frogs and birds, changes in weather					
Reception	Theme: All About Me <ul style="list-style-type: none"> - Human growth (Biology) - Bones and functions of organs (Biology) - Feelings (including wider range of vocabulary) (Biology) - Basic hygiene (Biology) - Family members and communities (Biology) - Harvest 	Theme: Light and Dark <ul style="list-style-type: none"> - Different forms of light (Physics) - Day and night (Physics) - Shadows (Physics) - Fundamental knowledge of earth and space including planets (Physics/chemistry) - Fire and fire safety 	Theme: Traditional Tales <ul style="list-style-type: none"> - Materials: introduction to materials and where they come from, eg. wool, cotton, leather, wood, plastic (Chemistry) - Forces: Push and pull (Physics) - Introduction to magnetism (Physics) 	Theme: Plants and Growth <ul style="list-style-type: none"> - Introduction to features of plants and requirements of growth (Biology) - Introduction to photosynthesis (Biology) - Plants as food (Biology) - Healthy eating (Biology) - Growing beans and cress (Biology) - Discussion around spring as new life for animals such as sheep, ducks, rabbits (Biology) 	Theme: At the Zoo <ul style="list-style-type: none"> - Naming/identifying wild animals (Biology) - Naming/identifying creatures under the sea (Biology) - Life processes of wild animals: movement, reproduction, hibernation, nutrition and growth (Biology) - Extinction of dinosaurs (Biology) - Discussing global warming and impact 	Theme: Journeys and Transport <ul style="list-style-type: none"> - Learning about different parts of vehicles: wheels, axles etc (Physics) - Floating and Sinking (Physics) - Exploring forces and motion through learning about transport now and in the past (Physics)

					on polar regions (Physics) - Ice experiments (Physics)	
	REFER TO SCIENCE IN EYFS DOCUMENTS (EYFS IN THE CURRICULUM)					
	Reception visit Forest School every term – this encourages the children to notice seasonal changes, talk about their natural environment, life cycle of plants and creatures such as frogs and birds, changes in weather					
Year 1	Animals, including humans (Biology) Sensitive Bodies Familiarising themselves with the basic parts of the human body, children investigate their senses through stimulating experiences that highlight how we interact with the world around us. They develop an understanding of the importance of our senses and how science can support those who have lost sensory function. 1. To name parts of the human body. Working scientifically: To sort body parts into groups. 2. To name the body parts used for each sense. Working scientifically: To spot patterns in data. 3. To identify the body parts used for the sense of taste and touch. Working scientifically: To use	Forces, Earth & Space (Physics) Seasonal Changes Reflecting on their own experiences, children learn about the four seasons and the weather associated with each. Pupils explore how seasonal changes affect trees, daylight hours and our choices about outfits. They plan and carry out their own weather reports, considering the knowledge required for this job. 1. To identify how the weather changes across the four seasons. 2. To identify events and activities that take place in different seasons. 3. To know how trees change across the four seasons. 4. To recognise that daylight hours change across the four seasons. Working	Materials (Chemistry) Everyday Materials Identifying the difference between objects and materials, children explore their surroundings to find examples of each. They scientifically investigate the properties of materials and begin to sort and group materials by their properties. Pupils discover that some materials are a result of scientific experimentation and that some materials can be recycled to conserve resources. 1. To identify everyday materials. Working scientifically: To sort objects into groups based on the materials they are made from. 2. To recognise the difference between objects and materials. 3. To describe the properties of materials. 4. To group materials based on their properties	Animals, including humans (Biology) Comparing Animals Studying both local and global animals, children recognise common features and use this information to make comparisons and begin to classify animals. Pupils collect data by surveying class pets, to then explore ways in which this information can be recorded. They develop their understanding of classification by comparing the dietary habits of different animals and use their knowledge and imaginations to take on the role of a zookeeper. 1. To identify and group animals. 2. To describe a variety of animals. 3. To compare the features of animals. 4. To identify animals that are carnivores, herbivores and	Plants (Biology) Introduction to Plants Identifying the key features of a plant, children describe important structures and make comparisons between different plants. Pupils use investigative skills to record the growth of a plant over time and begin to reflect on factors that will affect its development. They begin to explore how plants are used by humans and grow their own herb garden. 1. To identify plants in the school grounds. Working scientifically: To plan an investigation. 2. To identify parts of a flowering plant. Working scientifically: To draw and label a diagram.	Making Connections Investigating science through stories Using picture books and hands-on outdoor activities, children broaden their understanding of plants and animals. They gather and record data to find out if taller trees have larger trunks and recap the features of different animal groups. They identify animals by closely observing footprints and construct waterproof animal homes with natural materials. Pupils sort birds according to their diet and seek patterns in their physical characteristics. 1. To observe changes across the seasons. Working scientifically: To spot patterns in data. 2. To describe and compare the features of animals. Working scientifically: To carry

	<p>the senses to make observations.</p> <p>4. To identify the body parts used for the sense of smell and sight. Science in action: To recognise that scientists are always making new discoveries.</p> <p>5. To identify the body part used for the sense of hearing. Working scientifically: To investigate how sound changes as you move further away.</p> <p>6. To recognise how the senses are used in everyday life. Science in action: To recognise the importance of the senses in certain jobs.</p>	<p>scientifically: To record data in a pictogram.</p> <p>5. Working scientifically: To gather and record data about how seasons change over time.</p> <p>6. To plan and carry out a weather report.</p>	<p>(absorbency). Working scientifically: To make observations and record data.</p> <p>5. To group materials based on their properties (waterproofness). Working scientifically: To plan a test and suggest what might happen.</p> <p>6. To group materials based on their properties (toughness). Working scientifically: To answer questions based on results.</p>	<p>omnivores. To research using non-fiction texts.</p> <p>5. To recognise animals that make suitable pets. To gather and record data to help in answering questions.</p> <p>6. To describe and compare the structure of animals. To know about famous scientists throughout history.</p>	<p>3. To identify and name wild and garden plants. Working scientifically: To sort flowers into groups.</p> <p>4. To identify and name deciduous and evergreen trees. Working scientifically: To measure and compare leaves.</p> <p>5. To recognise that new plants come from seeds and bulbs. Working scientifically: To recognise that observations do not always match predictions.</p> <p>6. To recognise the importance of a scientist's role. Working scientifically: To use observations to find answers to questions.</p>	<p>out research to find specific information.</p> <p>3. To identify differences in animal features. Working scientifically: To use a ruler to measure.</p> <p>4. To describe the properties of everyday materials. Working scientifically: To plan how to carry out a test.</p> <p>5. To identify animals that are carnivores, herbivores and omnivores.</p>
Year 2	<p>Living things and their habitats (Biology)</p> <p>Habitats</p> <p>Considering the life processes that all living things have in common, pupils classify objects into alive, was once alive or has never been alive. Pupils explore global</p>	<p>Living things and their habitat (Biology)</p> <p>Microhabitats</p> <p>Developing their understanding of scientific enquiry, pupils learn that scientists use a range of skills to answer questions. They discover that</p>	<p>Materials (Chemistry)</p> <p>Use of everyday materials</p> <p>Reflecting on their knowledge of different materials, children begin to explain why materials are used in certain contexts. They develop enquiry skills to investigate</p>	<p>Animals, including humans (Biology)</p> <p>Life cycles and health</p> <p>Studying the life cycles of various animals, children learn what animals need to survive and how they change over time. Pupils collect data that allows them to observe changes</p>	<p>Plants (Biology)</p> <p>Plant growth</p> <p>Using their prior knowledge of important plant structures, children explain what factors are needed for successful growth and compare how those needs vary</p>	<p>Making connections</p> <p>Plant-based materials</p> <p>Identifying ways to reduce, reuse and recycle, children draw on their knowledge of properties to invent creative uses for old objects. They discover some natural materials derived from plants and</p>

<p>habitats, naming plants and animals that can be found there. They learn how a range of different living things depend on each other for food or shelter. Pupils explore this further by creating food chains to show the sequence that living things eat each other for energy to grow and stay healthy.</p> <ol style="list-style-type: none"> 1. To identify some of the characteristics of living things. 2. To recognise the difference between things that are alive, were once alive or have never been alive. Working scientifically: To classify objects into groups. 3. To identify plants and animals in different habitats. 4. To identify how a habitat provides animals and plants with what they need to survive. Working scientifically: To carry out research to find answers to questions. 5. To recognise how animals and plants depend on each other. 6. To recall how animals get their food from 	<p>microhabitats provide what minibeasts need to survive and carry out a survey to find out where different minibeasts live in the school grounds. They practise asking scientific questions and follow a method to investigate which conditions woodlice prefer. Pupils explore the job role of a botanist by identifying flowering plants.</p> <ol style="list-style-type: none"> 1. Working scientifically: To classify a variety of minibeasts. 2. Working scientifically: To recognise how scientists answer questions. 3. To recognise that living things live in habitats to which they are suited. Working scientifically: To gather and record data to answer a question. 4. Working scientifically: To ask questions and plan how to carry out an experiment. 5. Working scientifically: To carry 	<p>the properties of materials and explore the science of inventing new ones.</p> <ol style="list-style-type: none"> 1. To recognise that objects are made from materials that suit their uses. To recognise that objects can be grouped. 2. Knowledge To recognise that objects are made from materials that suit their uses. 3. Knowledge To recognise that the shape of some solid objects can be changed. Working scientifically: To record data in a table. 4. Knowledge To compare the suitability of materials for particular uses. Working scientifically: To gather data and use it to answer a question. 5. To recognise that the strength of some materials can be changed. To record data in a block graph. 6. Knowledge To compare the suitability of materials for particular uses. Science in action: To recognise that some materials are harmful to the environment. 	<p>in their peers, while also developing their ability to take measurements and record data. They consider the role of expert scientific knowledge in careers that inform people to make healthy choices.</p> <ol style="list-style-type: none"> 1. To identify different stages of the human life cycle. 2. To know which offspring come from which parent animal. 3. To observe and measure growth in humans. To use simple measuring equipment. 4. To identify and list the basic needs for survival for humans and animals. To use secondary sources to research. 5. To recognise the importance of exercise and personal hygiene. To make observations over time. 6. To identify how to have a balanced diet. To interpret collected results. 	<p>across different plants. They grow plants from seeds and bulbs to ascertain the needs for initial development and compare this to the survival needs of plants in later growth phases. Pupils take their own measurements and reflect on historical examples to understand how conclusions can be drawn.</p> <ol style="list-style-type: none"> 1. To recognise that seeds need certain conditions for growth. Working scientifically: To plan comparative tests. 2. To recognise that seeds and bulbs contain what they need to grow into a plant. Working scientifically: To measure with a ruler. 3. To describe what seeds need to germinate. Working scientifically: To record data in a table. 4. To describe the effect of light on plant growth. Working scientifically: To observe using a magnifying glass. 	<p>look at the processes involved in making paper. Using their observational skills, they conduct simple tests to choose the most suitable material for homemade plant pots, venturing outdoors to find natural materials to decorate them.</p> <ol style="list-style-type: none"> 1. To describe how materials can be reused. Science in action: To understand how the 3Rs contribute to sustainable products. 2. To identify human-made and natural materials. Working scientifically: To group based on characteristics. 3. To identify suitable materials based on their properties. Working scientifically: To perform a test and gather data. 4. To identify a material to help plant growth. Working scientifically: To use observations to answer a simple question. 5. To choose materials to create a suitable plant pot. Working
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	plants and other animals.	<p>out an experiment and record data in a table.</p> <p>6. To identify a variety of flowering plants. Science in action: To understand the role of a botanist.</p>			<p>5. To identify stages of a plant's life cycle. Working scientifically: To draw and label diagrams.</p> <p>6. To recognise what plants need for healthy growth. Science in action: To recognise that humans have a responsibility to care for plants.</p>	scientifically: To identify and classify living things.
Year 3	<p>Animals, including humans (Biology) Movement and nutrition</p> <p>Studying the human skeleton, children identify key bones and compare them to other animals explaining the role within the body. Pupils explore how changes in muscles result in movement and the implications these discoveries have in the scientific development of prosthetic limbs. They study how energy is used by the body, what constitutes a balanced diet in humans and how research contributes to nutritionist expertise.</p> <p>1. To explain the role of a skeleton. Working scientifically: To group</p>	<p>Forces, Earth & Space (Physics) Forces and magnets</p> <p>Investigating the movement of vehicles on different surfaces, children learn about the impact of friction and compare uses and drawbacks. They broaden their experience in writing scientific conclusions and recording data as they investigate contact and non-contact forces. Pupils explore the properties of different magnets and use this to understand their uses.</p> <p>1. To describe the effects of contact forces. Working scientifically: To label a diagram using</p>	<p>Materials (Chemistry) Rocks and soil</p> <p>Studying rocks and their properties, children learn that rock properties support classification and tell us about how rocks were formed. Pupils look at the work of palaeontologists to learn about how fossils form and use models to explain the rock cycle. They plan an investigation to test rocks for particular uses and form conclusions about which soil type is most suitable for UK farmers.</p> <p>1. To group rocks using their appearance. Working scientifically: To observe the appearance of rocks</p>	<p>Energy (Physics) Light and shadows</p> <p>Identifying examples of luminous objects, children learn about how light travels around us and how that enables us to see. Children investigate reflection and shadow formation, creating their own shadow puppets and exploring how shadows can be used to entertain in the arts. They look at examples of pivotal scientific discoveries and the scientific methods that led to those successes.</p> <p>1. To explain the role of light sources. Working scientifically: To plan</p>	<p>Plants (Biology) Plant reproduction</p> <p>Building on their prior knowledge of plant structures, children describe the functions of named parts and use evidence to explain their significance in plant development. Pupils investigate further factors that may affect the growth of plants and compete with their peers to disperse seeds in a variety of ways. They explore how seeds vary and define the type of plant they are studying, as well as looking at how seed shapes have inspired modern technologies.</p>	<p>Making connections Does hand span affect grip strength?</p> <p>Experimenting, analysing data and drawing conclusions allows children to explore the relationship between hand span and grip strength. They test different gloves to improve grip strength and applying their newfound knowledge to design friction gloves, fostering scientific inquiry and problem-solving skills.</p> <p>1. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p> <p>2. To identify the growth and survival</p>

	<p>animals based on their physical properties.</p> <p>2. To recognise the main bones in the body. Working scientifically: To measure and sort data.</p> <p>3. To explain how muscles are used for movement. Science in action: To explore scientific advances.</p> <p>4. To explain how food is an essential energy source for animals. Working scientifically: To gather and compare data to answer questions.</p> <p>5. To identify the main nutrient groups and their simple functions. Working scientifically: To record information using secondary sources.</p> <p>6. To explain what makes a balanced diet. Science in action: To explore how knowledge has progressed over time and different jobs use this information.</p>	<p>arrows and scientific vocabulary.</p> <p>2. To recognise the effects and uses of forces. Working scientifically: To write a scientific conclusion identifying cause and effect.</p> <p>3. To interpret how and why things move differently on different surfaces. Working scientifically: To plan an investigation using variables.</p> <p>4. To describe the effects of magnets. Working scientifically: To write a method.</p> <p>5. To compare the properties of different types of magnets. Working scientifically: To display data using a bar chart.</p> <p>6. To explain the uses of magnets. Working scientifically: To research the uses of magnets.</p>	<p>closely, using a magnifying glass.</p> <p>2. To group rocks using their physical properties. Working scientifically: To make predictions, suggest improvements and explain observations over time.</p> <p>3. To describe the process of fossil formation. Working scientifically: To present research on fossil formation.</p> <p>4. To identify fossils and group rocks accordingly. Working scientifically: To use the fossil record to answer questions about the past.</p> <p>5. To compare soils and how they were formed. Working scientifically: To record the drainage rate for different soils in a bar chart.</p> <p>6. To describe a soil sample using sedimentation. Working scientifically: To draw and label a diagram.</p>	<p>and draw a results table.</p> <p>2. To compare light reflecting on different surfaces.</p> <p>3. To recognise which materials cast a shadow. Working scientifically: To ask testable questions and plan how to answer them.</p> <p>4. To summarise how shadows change throughout the day. Working scientifically: To evaluate a method.</p> <p>5. To investigate how the distance of the light source affects the size of its shadow. Working scientifically: To find patterns in data and form conclusions.</p> <p>6. To tell a story using shadow puppets. Science in action: To recall how different people work with light and shadows.</p>	<p>1. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p> <p>2. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p> <p>3. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p> <p>4. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p> <p>5. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p> <p>6. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p>	<p>needs of plants. Working scientifically: To pose relevant questions.</p> <p>3. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p> <p>4. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p> <p>5. To identify the growth and survival needs of plants. Working scientifically: To pose relevant questions.</p>
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Year 4	Animals, including humans (Biology) Digestion and food Using models, children describe the function of key organs in the digestive system. Pupils identify the types of human teeth to create their own model and investigate factors that impact our dental health. They compare human teeth to other animals' and consider this in the light of prior knowledge about predators, prey and food chains. Children take on the role of a naturalist investigating animal faeces for clues about diet, digestion and dentition. 1. To describe the function of the human digestive system. Working scientifically: To evaluate a model. 2. To recognise the different types of human teeth and their roles in eating. Science in action: To describe real observation methods and evidence collected. 3. To explain how to care for our teeth.	Energy (Physics) Electricity and circuits Exploring appliances in their setting that use electricity, children learn how to work with electricity safely and build circuits. Pupils investigate electrical conductors and insulators and explore the relationship between the number of cells and bulb brightness. Real scenarios and historical discoveries inform children about scientific progression and home safety. 1. To recognise how electrical appliances are powered. Working scientifically: To record and classify qualitative data. 2. To construct an electrical circuit. Working scientifically: To draw a scientific diagram. 3. To explain the use of switches in a circuit. 4. To explain the use of materials as electrical conductors or insulators. Working scientifically: To write a method. 5. To investigate what affects bulb	Materials (Chemistry) States of matter Investigating the properties of solids, liquids and gases, children learn about the different states of matter. They explore changes of state using relatable examples and use this to explain changes to water through the water cycle. Pupils investigate the relationship between temperature and rate of evaporation while broadening their experience of working scientifically. 1. To identify solids using their properties. Working scientifically: To ask relevant questions about the properties of solids. 2. To identify liquids and gases using their properties. Working scientifically: To use results to draw simple conclusions about the properties of liquids. 3. To describe melting and freezing. Working scientifically: To use thermometers to take accurate measurements before and after melting. 4. To describe condensing and evaporating.	Energy (Physics) Sound and vibrations Exploring different ways of producing sounds, children learn about the relationship between vibrations and what they hear. They use examples of echolocation to develop their understanding of how sound travels between objects and investigate the role of insulation to protect our ears. Pupils explore how pitch and volume can be altered and make their own musical instruments to demonstrate these principles. 1. To describe how sounds are made. Working scientifically: To observe closely how different instruments create a sound. 2. To describe how sounds are heard through different mediums. Working scientifically: To research how whales and dolphins communicate underwater. 3. To describe the relationship between vibration strength	Living things and their habitat (Biology) Classification and changing habitats Identifying different ways living things can be grouped, children make classification keys to explore which grouping methods are most effective. Pupils study ways that habitats may change over time and understand that humans can have both positive and negative effects on their surroundings. They play the role of naturalists and review the impact of conservation programmes. 1. To group animals in various ways. Working scientifically: To record data in different ways. 2. To group plants in various ways. Working scientifically: To apply and create classification keys. 3. Working scientifically: To make careful observations; To make and use classification keys.	Making connections How does the flow of liquids compare? Revising the states of matter, children consider methods for measuring how liquids flow differently from each other. They plan and execute an enquiry, considering different ways of representing data to support a conclusion. Revisiting the digestive system, the children explore how the flow of different liquids should be considered when producing different medicines. 1. To revise the units States of matter and Classification and changing habitats. Working scientifically: To plan a comparative test. 2. To revise the unit Electricity and circuits. Working scientifically: To gather and record data. 3. To revise the units States of matter and Sound and vibrations. Working scientifically: To conclude and
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	<p>Working scientifically: To plan an enquiry by considering which variables should be changed, measured and controlled. Science in action: To determine why scientists need to work collaboratively and evaluate experiments.</p> <p>4. To recognise that differences in teeth relate to an animal's diet. Working scientifically: To classify animals based on their diet.</p> <p>5. To recognise producers, predators and prey in food chains. Working scientifically: To analyse trends in line graphs and form conclusions using scientific knowledge.</p> <p>6. To recognise that animal poo can give us clues about digestion, teeth and diet. Working scientifically: To construct a results table for recording observations.</p>	<p>brightness. Working scientifically: To pose questions and plan ways to test them.</p> <p>6. To explain how to be safe around electricity. Science in action: To explore how scientific advances inform safety advice.</p>	<p>Working scientifically: To make predictions for new values about evaporation rates.</p> <p>5. To describe the different stages of the water cycle. Working scientifically: To record the stages of the water cycle using a labelled diagram.</p> <p>6. To describe how temperature affects evaporation rates and the water cycle. Working scientifically: To research climate change and the water cycle.</p>	<p>and volume. Working scientifically: To present results using a bar chart.</p> <p>4. To describe the relationship between volume and distance. Working scientifically: To suggest which variables to measure and for how long.</p> <p>5. To describe pitch and how to change it. Working scientifically: To design simple results tables.</p> <p>6. To explain how insulating materials can be used to muffle sound. Working scientifically: To identify when results or observations do not match predictions.</p>	<p>4. To recognise and describe different habitats and their inhabitants. Working scientifically: To gather, record, classify and present data.</p> <p>5. To recognise the impact humans can have on habitats. Working scientifically: To research using an information sheet.</p> <p>6. Knowledge: To recognise the impact of natural disasters on habitats.</p>	<p>evaluate the investigation.</p> <p>4. To revise the unit Digestion and food. Working scientifically: To observe carefully and apply these observations to problem solve.</p> <p>5. To revise the unit States of matter. Working scientifically: To report on my findings.</p>
Year 5	<p>Living things and their habitats (Biology)</p> <p>Life cycles and reproduction</p>	<p>Materials (Chemistry)</p> <p>Mixtures and separation</p>	<p>Materials (Chemistry)</p> <p>Properties and changes</p> <p>Broadening their experience of the</p>	<p>Forces, Earth and Space (Physics)</p> <p>Earth and space</p>	<p>Forces, Earth and Space (Physics)</p> <p>Unbalanced forces</p>	<p>Animals, including humans (Biology)</p> <p>(3xlessons)</p> <p>Human timeline</p>

	<p>Studying different animals' life cycles, children learn about the significance of reproduction for a species' survival. Pupils calculate the probability of male and female turtles hatching and grow plants to compare asexual and sexual reproduction. Pupils compare fertilisation across different animals and explore the needs of a foetus. Children narrate their own documentary in the style of an inspirational naturalist.</p> <ol style="list-style-type: none"> 1. To describe the life cycle of a plant, including the reproductive stage. Working scientifically: To observe and compare equivalent parts in different flowers. 2. To describe the life cycle of a mammal. Working scientifically: To research the life 	<p>Pupils explore different types of mixtures and the different methods that can be used to separate them. They dissolve a range of substances, identify different solutions and investigate how temperature affects the time taken to dissolve. They design and create a water filter, sieve soil and evaporate solutions.</p> <ol style="list-style-type: none"> 1. To describe mixtures. Working scientifically: To research using a range of secondary resources. 2. To explain the process of sieving. Working scientifically: To draw and annotate a diagram to explain a concept. 3. To explain the process of filtering. Working scientifically: To identify testable 	<p>properties of materials, children investigate hardness, transparency and conductivity and consider how these properties influence the uses of materials. They explore reversible changes, including dissolving and changes of state. Children compare these to irreversible changes, including rusting, burning and mixing vinegar and bicarbonate of soda.</p> <ol style="list-style-type: none"> 1. To determine the hardness of materials and link this to their uses. Working scientifically: To evaluate the hardness test to determine the degree of trust in the results. 2. To determine the transparency of different materials and link this to their uses. Working scientifically: To plan and draw a table of results. 	<p>Exploring some of the key celestial bodies in our solar system, children learn the names and compare their movements. Pupils discover the relationship between the Earth's rotation and day and night, making models to represent their knowledge. They make their own sundials and consider how and why our ideas about the universe have changed so much over history.</p> <ol style="list-style-type: none"> 1. To compare the contributions of Ptolemy, Alhazen and Copernicus to models of the Solar system. Working scientifically: To pose testable questions about the solar system. 2. To describe the movement and shapes of the celestial bodies in our Solar System. 	<p>Building on their knowledge of contact forces, children explore gravity, air resistance and water resistance in more depth and consider the effect of these forces being imbalanced. They demonstrate key principles in the classroom and plan investigations to further their understanding of the effects of these forces. Pupils test their ideas using models and compete to build the most effective pulley system.</p> <ol style="list-style-type: none"> 1. To describe gravity and its effects. Working scientifically: To analyse data to write a conclusion. 2. To describe air resistance and its effects. Working scientifically: To plan a fair test to 	<p>Studying human development and changes, children identify key stages and consider what data may help determine if a child is growing normally. They describe how puberty affects girls and boys and produce graphs to record how gestation periods vary across different animals.</p> <ol style="list-style-type: none"> 1. To describe how humans change from babies through to old age. Working scientifically: To use a line graph to identify patterns in height and predict values. 2. To identify changes in males and females as a result of puberty. 3. To explore the gestation periods of humans and other animals. Working scientifically: To plot data on a scatter graph.
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	<p>cycles of different mammals.</p> <p>3. To describe the life cycle of a bird and compare it with that of a mammal. Working scientifically: To pose questions to compare the life cycles of different birds.</p> <p>4. To describe the life cycle of an amphibian. Working scientifically: To suggest how temperature may affect egg hatching.</p> <p>5. To describe the life cycle of an insect and compare it with that of an amphibian. Working scientifically: To use data to describe a relationship and make predictions.</p> <p>6. To describe asexual reproduction in plants. Working scientifically: To represent root growth over time on a line graph.</p>	<p>questions and how to answer them.</p> <p>4. To describe solutions and how they can be identified. Working scientifically: To make observations about solutions.</p> <p>5. To identify which factors affect the time taken to dissolve. Working scientifically: To plan a fair test with consideration of variables and measurements.</p> <p>6. To describe the process of evaporation.</p>	<p>3. To determine the conductivity of different materials and link this to their uses. Working scientifically: To write a detailed, organised method which is easy to follow.</p> <p>4. To demonstrate reversible changes. Working scientifically: To write a prediction using prior knowledge of the states of matter.</p> <p>5. To demonstrate irreversible changes. Working scientifically: To analyse observations about rusting and use them to support a conclusion.</p> <p>6. To demonstrate irreversible changes. Working scientifically: To measure the circumference of a balloon accurately.</p>	<p>Working scientifically: To develop a model to represent the Solar System.</p> <p>3. To describe the movement of the Moon relative to the Earth. Working scientifically: To design and draw a table.</p> <p>4. To explain the causes of day and night and the seasons. Working scientifically: To draw a diagram to explain day and night.</p> <p>5. To devise a sundial to tell the time. Working scientifically: To calibrate and use a sundial to measure time.</p> <p>6. Science in action: To describe some uses of satellites and the problems posed by space junk. Working scientifically: To use temperature data to make predictions about climate change.</p>	<p>investigate air resistance.</p> <p>3. To describe water resistance and its effects. Working scientifically: To design a results table.</p> <p>4. To describe friction and its effects. Working scientifically: To evaluate a method.</p> <p>5. To describe the effects of levers, pulleys and simple machines on movement. Working scientifically: To draw and label a diagram.</p> <p>6. To describe the relationship between lever length and effort. Working scientifically: To draw an accurate line graph.</p>	<p>Making connections Does the size of an asteroid affect the size of its impact crater? (3 lessons)</p> <p>Experimenting, analysing data and drawing conclusions to explore the relationship between the size of model asteroids and the size of the impact crater they create. They apply their understanding of gravity, air resistance and the Earth and space to make predictions and plan and carry out an enquiry.</p> <p>1. To revise the units Earth and space and Life cycles and reproduction. Working scientifically: To plan a comparative test.</p> <p>2. To revise the units Unbalanced forces and Mixtures and separation. Working scientifically: To gather and record data.</p> <p>3. To revise the units Separating mixtures and Unbalanced forces. Working scientifically: To conclude and evaluate the investigation.</p>
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Year 6	<p>Living things and their habitats (Biology) Classifying big and small</p> <p>Children broaden their knowledge of how vertebrates, invertebrates, plants and micro-organisms are grouped using shared characteristics. They discover how Carl Linnaeus developed the Linnaean and binomial systems for classifying and naming living things. Pupils use and produce classification keys to sort and identify organisms.</p> <ol style="list-style-type: none"> To explain how organisms are classified using the Linnaean system. To classify the cold-blooded vertebrate groups using their common characteristics. To classify the warm-blooded vertebrate groups using their common characteristics. To classify invertebrates. To describe how the plant kingdom is organised (based on shared characteristics). 	<p>Energy (Physics) Light and reflection</p> <p>Using their prior knowledge of light, children study unusual luminous objects and investigate the properties of light transfer. They explore how our eyes allow us to see and how mirrors can be used in a variety of ways. Pupils investigate the laws of reflection and build their own periscope testing its effectiveness by completing a series of challenges.</p> <ol style="list-style-type: none"> To describe the pathway of light. Working scientifically: To use evidence to form conclusions. To describe how we see. Working scientifically: To draw scientific diagrams. To explain how shadows change. Working scientifically: To pose questions. To investigate what affects the angle of the reflected ray. Working scientifically: To record results as a line graph. 	<p>Living things and their habitats (Biology) Evolution and inheritance</p> <p>Studying patterns through families, children learn about features that are inherited from parents and those that are environmental. Through the eyes of Darwin and Wallace, pupils understand how observations lead to theories and explore the survival of the fittest. They model the variation and natural selection of Darwin's finches and use this information to begin to explain how species evolve over time and how human input may affect the process.</p> <ol style="list-style-type: none"> To explain why there are differences within a species. Working scientifically: To group factors. To recognise the inheritance of characteristics in plants and animals. To explain why adaptation is necessary. To model how natural selection affects population size. Working scientifically: To evaluate the degree 	<p>Energy (Physics) Circuits, batteries and switches</p> <p>Using their prior knowledge of electrical circuits, children learn to draw conventional circuit diagrams and use models to explain current and voltage. They make their own batteries, relate this to their knowledge of voltage and explore how battery research has impacted other scientific progress. Pupils investigate the use of switches and fuses and apply their electrical knowledge to design and produce their own electrical device.</p> <ol style="list-style-type: none"> To use recognised symbols for electrical components. To predict and present results for electrical circuits. Working scientifically: To use standardised symbols when drawing diagrams. To recognise a link between the number of components and resistance. Working scientifically: To explain results using scientific knowledge. 	<p>Animals, including humans (Biology) Circulation and exercise</p> <p>Studying the human circulatory system, children learn about the role of the heart, blood and blood vessels and use models to demonstrate their function. They play the role of healthcare professionals to diagnose patients and play games to explore how lifestyle choices affect our health. Pupils devise their own investigation to look at the relationship between exercise and heart and breathing rates, applying their knowledge of variables.</p> <ol style="list-style-type: none"> To revise the units Separating mixtures and Unbalanced forces. Working scientifically: To conclude and evaluate the investigation. To summarise the key structures and purpose of the circulatory system. To identify the key roles of blood. Working 	<p>Making connections Are some sunglasses safer than others?</p> <p>Exploring sun safety, children investigate the efficacy of different sunglasses. They devise enquiries to test light and UV transmission of the lenses to form a conclusion about which sunglasses are best, applying their knowledge of electrical circuits to provide a light source in the experiment. The children summarise their findings through presentations and advertisements.</p> <ol style="list-style-type: none"> To revise the units Circulation and health and Light and reflection. Working scientifically: To plan a comparative test. To revise the units Light and reflection and Circuits, batteries and switches. Working scientifically: To gather and record data. To revise the units Light and reflection and Circulation and health. Working scientifically: To conclude and
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	<p>Working scientifically: To produce a working classification key.</p> <p>6. To describe and classify microorganisms.</p>	<p>5. To explain how a periscope works.</p> <p>6. To explain how mirrors are helpful. Science in action: To explore different jobs or inventions that depend on reflection.</p>	<p>of trust and pose new questions for further enquiry.</p> <p>5. To describe the theory of evolution. Working scientifically: To consider evidence used to inform theories.</p> <p>6. To recognise evidence that can be used for evolution. Working scientifically: To consider the degree of trust in the evidence used.</p>	<p>4. To identify ways to change voltage within an electrical circuit. Working scientifically: To design a results table.</p> <p>5. To investigate how voltage affects bulb brightness. Working scientifically: To plan an enquiry.</p> <p>6. To apply knowledge of circuits and components to a practical solution. Science in action: To recognise that scientific knowledge can solve a problem.</p>	<p>scientifically: To evaluate a model.</p> <p>4. To explore the relationship between animal size and heart rate. Working scientifically: To interpret patterns in data.</p> <p>5. To investigate the relationship between exercise and heart rate. Working scientifically: To write a method.</p> <p>6. To describe the relationship between heart rate and fitness. Working scientifically: To draw a line graph.</p>	<p>evaluate the investigation.</p> <p>4. To revise the units Classifying big and small, Evolution and inheritance, Light and reflection and Circulation and health. Working scientifically: To use further data to inform a conclusion.</p> <p>5. To revise the units Classifying big and small, Evolution and inheritance, Light and reflection and Circulation and health. Working scientifically: To use further data to inform a conclusion.</p>
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