Curriculum overview for parents and carers

Science

Summary of key Science learning for EYFS to Year 6.

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Science curriculum overview for parents and carers (EYFS: Reception)

Autumn	**Living things and their habitats** **Animal adventures** Exploring habitats where animals big and small live—from spiders to sloths and farms to forests—pupils use their observations to sort animals based on their similarities and differences. They observe and compare the homes and behaviours of various animals, understanding how different environments meet their needs. Through outdoor activities, songs and creative tasks, pupils develop a deeper connection to the natural world.	
Spring	**Materials** **I am a scientist** Exploring processes and changes in the natural world, children build important foundations for working scientifically. Through hands-on activities, they compare and test materials, discovering similarities and differences between them. Pupils begin to guess what might happen and learn that observations help to answer questions. They discover that materials have different textures, can change shape and respond to pushes and pulls.	
Summer	**Plants** **Our beautiful planet** Exploring the outdoor environment, pupils describe what they see and feel as they observe a range of plants. They examine different plant parts and draw their observations. By planting their own seeds, pupils discover that water and light are essential for growth. They also learn the importance of caring for the planet and consider practical ways they can help protect it.	
Across the year	**Forces, Earth and space** **Changing seasons** Observing how the natural world transforms through the year, children discover how these changes affect plants, animals and daily life. In autumn, they create a class weather chart and collect the treasures that the season brings. They learn how some animals prepare for winter. In spring, they explore new life and the life cycle of a butterfly through dance. During summer, they experiment with sand and water to find the perfect mixture for building sandcastles.	

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	Year 1		
Autumn 1	**Forces, Earth and space** **Seasonal changes** Reflecting on their own experiences, children learn about the four seasons and the weather associated with each. They 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.	Autumn 2	**Materials** **Everyday materials** Identifying the difference between objects and materials, children explore their surroundings to find examples of each. They work scientifically by planning tests, making observations and recording data and then use results to answer questions and sort and group materials based on their properties.
Spring 1	**Animals, including humans** **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 work scientifically, using their senses to make observations, spot patterns and use data to answer questions. They develop an understanding of how science can support those who have lost sensory function and consider how firefighters use their senses at work.	Spring 2	**Animals, including humans** **Comparing animals** Studying both local and global animals, children recognise common characteristics and physical features. They use this information to make comparisons and classify animals. Pupils consider the most effective way to collect data about class pets and record their findings in a block chart. They develop their understanding of classification by comparing the dietary habits of different animals and role play as Jane Goodall carrying out research into chimpanzees in the wild.
Summer 1	**Plants** **Introduction to plants** Venturing outside, children identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. They use magnifying glasses to observe and name plant parts and draw and label diagrams of flowers. Children closely observe leaves and sort them into groups based on their appearance. They use non-standard units to measure leaf length and record their observations in a table. Pupils investigate if beans need water for growth and identify edible plant parts.	Summer 2	**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.

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	Year 2		
Autumn 1	**Living things and their habitats** **Habitats** Considering the life processes that all living things have in common, pupils classify objects into alive, was once alive or has never been alive. They explore global habitats, naming plants and animals that can be found there and learn how a range of different living things depend on each other for food or shelter. They then explore this further by creating food chains to show the sequence that living things eat each other for energy to grow and stay healthy.	Autumn 2	**Microhabitats** Developing their understanding of scientific enquiry, children learn that scientists use a range of skills to answer questions. They discover that 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.
Spring 1	**Materials** **Uses of everyday materials** Building on their knowledge of everyday materials and their properties, pupils learn that materials are suited to specific purposes and explore how actions such as stretching and bending affect the shape of solid objects. They compare the suitability of materials; gather and record data in tables and block graphs and use their results to answer questions. They also learn about the harmful effects of plastic and explore eco-friendly alternatives.	Spring 2	**Animals, including humans** **Life cycles and health** 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 in their peers, while also developing their ability to take measurements and record data. They consider how scientific knowledge helps people to make healthy choices.
Summer 1	**Plants** **Plant growth** Carrying out comparative tests, pupils identify the conditions required for seed germination and compare these to the survival needs of plants in later growth phases. Pupils use rulers to measure stem growth and record data in a table. They use their results to conclude that plants need water, light and a suitable temperature to grow and stay healthy. Children identify the stages in a plant's life cycle and discover how humans impact plants in the environment.	Summer 2	**Making connections** **Plant-based materials** 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 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.

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	Year 3		
Autumn 1	**Animals, including humans** **Movement and nutrition** 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.	Autumn 2	**Forces, Earth and space** **Forces and magnets** 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 methods 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.
Spring 1	**Materials** **Rocks and soil** Studying rocks and their properties, children learn how to classify rocks and identify how they were formed. They look at the work of paleontologists to learn about fossil formation and use models to explore how fossils tell us about the past. Pupils investigate the physical properties of rocks and link these to their particular uses and explore soil formation, separate soil using a sedimentation jar and test soil drainage.	Spring 2	**Energy** **Light and shadows** Identifying examples of light sources, children learn that light is needed to see and how its absence causes darkness. Children investigate reflection and shadow formation, including how different factors affect shadows. They explore how shadows can be used to entertain in the arts and create shadow puppets to recount how different people work or experiment with light.
Summer 1	**Plants** **Plant reproduction** 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. They investigate factors that may affect plant growth and how water is transported. They explore how seeds vary and create models to show seed dispersal methods.	Summer 2	**Making connections** **Does hand span affect grip strength?** Experimenting, analysing data and drawing conclusions allows children to explore the relationship between hand span and grip strength. They test how different gloves improve grip strength and apply their newfound knowledge to design friction gloves, fostering scientific inquiry and problem-solving skills.

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	Year 4		
Autumn 1	**Animals, including humans** **Digestion and food** Using models, children describe the function of key organs in the digestive system. They 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.	Autumn 2	**Energy** **Electricity and circuits** Exploring appliances that use electricity, children learn how to work with electricity safely and build circuits. They investigate electrical conductors and insulators and explore the relationship between the number of bulbs and bulb brightness. Real scenarios and historical discoveries inform children about scientific progression and home safety.
Spring 1	**Materials** **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.	Spring 2	**Energy** **Sound and vibrations** Exploring different ways of producing sounds, children learn about the relationship between vibrations and what they hear. They study dolphins and whales 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.
Summer 1	**Living things and their habitats** **Classification and changing habitats** Identifying different ways to group living things, children make classification keys to explore which grouping methods are most effective. Pupils study how habitats change over time and understand that humans can have both positive and negative effects on their surroundings. They play the role of conservationists and design conservation pamphlets.	Summer 2	**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. By revisiting the digestive system, the children explore how the flow of different liquids should be considered when producing different medicines.

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Year 5

	Materials	
Autumn 1	**Mixtures and separation** 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.	**Autumn 2** **Properties and changes** Broadening their experience of the 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.
Spring 1	**Forces, Earth and space** **Earth and space** Exploring some of the key celestial bodies in our Solar System, children learn their names and compare their movements. Pupils discover the relationship between the Earth's rotation and daylight, making models to represent their knowledge. They make their own sundials and consider how and why humans' ideas about the universe have changed over time.	**Spring 2** **Living things and their habitats** **Life cycles and reproduction** Studying animal life cycles, children learn about the significance of reproduction for a species' survival. Pupils compare asexual and sexual reproduction in plants and grow cuttings to measure and plot root growth over time. Children compare the life cycles of mammals, birds, amphibians and insects identifying key differences. They analyse secondary data to investigate how the amphibian life cycle is affected by predators and climate change.
Summer 1	**Forces, Earth and space** **Imbalanced forces** Building on their knowledge of 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.	**Summer 2** **Animals, including humans** **Human timeline** 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 compare how gestation periods vary across different mammals, including humans. **Making connections** **Does the size of an asteroid affect the size of its impact crater?** 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. Children apply their understanding of gravity, air resistance and the Earth and space to make predictions and plan and carry out an enquiry.

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	Year 6		
Autumn 1	**Living things and their habitats** **Classifying big and small** 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.	Autumn 2	**Energy** **Light and reflection** Proving that light travels in a straight line, children use this information to explain observations of reflection and shadows. They explore how our eyes allow us to see and how mirrors can be used in a variety of ways. Pupils investigate factors affecting the size of shadows and the laws of reflection. Children apply what they have learned about light by exploring real-life uses of mirrors.
Spring 1	**Living things and their habitats** **Evolution and inheritance** Studying patterns in humans and other species, children learn about characteristics that are inherited from parents and those that are environmental. Through the eyes of Darwin and Wallace, they learn how observations lead to theories and explore natural selection. By modelling the variation and natural selection of Darwin's finches, they begin to explain how species evolve over time and the role of fossil evidence that supports this theory.	Spring 2	**Energy** **Circuits, batteries and switches** Using their prior knowledge of electrical circuits, children learn to draw conventional circuit diagrams and use models to explain current, resistance and voltage. They compare different batteries and consider the effect on bulb brightness. Pupils apply their knowledge of switches and electrical circuits to design and produce their own practical devices.
Summer 1	**Animals, including humans** **Circulation and health** 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 explore how lifestyle choices affect our health and use secondary sources to help them play the role of healthcare professionals advising patients. Pupils devise their own investigation to look at the relationship between exercise and heart rate, applying their knowledge of variables and then analysing secondary data to understand fitness better.	Summer 2	**Making connections** **Are some sunglasses safer than others?** Exploring sun safety and its impact on health, 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.

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