

Science Progression Grid



A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

The national curriculum for science aims to ensure that all pupils:

- ❖ Equip children to use themselves as starting points for learning about science, and to build on their enthusiasm and natural sense of wonder about the world.
- ❖ Develop, through practical work, the skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesising, and increased use of precise measurement skills and ICT.
- ❖ Encourage and enable pupils to offer their own suggestions, and to be creative in their approach to science, and to gain enjoyment from their scientific work.
- ❖ Enable children to develop their skills of co-operation through working with others, and to encourage where possible, ways for children to explore science in forms which are relevant and meaningful to them.
- ❖ Encourage children to collect relevant evidence and to question outcome and to persevere.
- ❖ Stress the need for personal and group safety by the correct usage and storage of resources.

		Year 3	Year 4	Year 5	Year 6
WORKING SCIENTIFICALLY		Ask questions and use scientific knowledge to answer them. Setting up simple fair tests. Make careful observations and take accurate measurements using a range of resource. Gathering and record findings using simple scientific language, drawings, labelled diagrams bar charts, and tables. Using results to draw conclusions and make predictions about future investigations. Using straight forward scientific evidence to answer questions.		Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Using test results to make predictions to set up further comparative and fair tests Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Identify scientific evidence that has been used to support or refute ideas or arguments.	
BIOLOGY	Plants	Identify and describe the functions of different parts of flowering plants and investigate the way in which water is transported within plants Explore the parts that flowers play in the life cycle of flowering plants.	Construct and interpret a variety of food chains, identifying predators, producers and prey	Describe the life process of reproduction in some plants and animals.	Give reasons for classifying plants and animals based on specific characteristics
	Living Things and their Habitats		Recognise that living things can be grouped in a variety of ways Explore and use classification keys Recognise that environments can change and that this can sometimes pose dangers to living things	Describe the life processes of reproduction in some plants and animals Describe the differences in life cycles and the life process of reproduction in some plants and animals	Describe how living things are classified into broad groups and give reasons for classifying plants and animals based on specific characteristics

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PHYSICS

Animals including humans	Identify that humans and other animals have skeletons and muscles for support, protection and movement Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food.	Describe the simple functions of the basic parts of the digestive system in humans Identify the different kinds of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying predators, producers and prey	Describe the changes as humans develop into old age Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Identify and name the main parts of the human's circulatory system. Describe the ways in which nutrients and water are transported within animals, including humans Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
Evolution and Inheritance		Explore and use classification keys to help group, identify and name a variety of living things Recognise that environments can change and that this can sometimes pose dangers to living things.		Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Identify how plants and animals are adapted / leads to evolution. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
Rocks	Describe in simple terms how fossils are formed when things that have lived are trapped within rock			
Seasonal Change	Explore the requirements of plants for life and growth and how they vary from plant to plant	Recognise that environments can change and that this can sometimes pose dangers to living things.	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	
Electricity		Conduct a simple series circuit, identifying and naming its basic parts. Identify whether or not a lamp will light in a simple series circuit. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights up.	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	Associate the brightness of a bulb or volume of a buzzer with number of voltage of cells used in the circuit. Compare and give reasons for variation in how components function. Use symbols when representing a simple circuit in a diagram.
Forces and Magnets	Compare how things move on different surfaces Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract or repel . Describe magnets as having two poles Predict whether two magnets will attract each other or repel each other depending on which poles are facing		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	
Earth and Space	Recognise that light from the sun can be dangerous and that there are ways to protect their eyes	Recognise that environments can change and that this can sometimes pose dangers to living things. Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	Describe the movement of the Earth, and other planets, relative to the Sun in the Solar System and the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies Use the idea that the Earth's rotation to explain day and night.	
Light	Recognise that they need light in order to see things. Notice that light is reflected from surfaces Recognise that shadows are formed when the light from a light source is blocked by a solid object Find patterns in the way that the size of shadows change			Recognise that light appears to travel in straight line and use this idea that to explain that objects are seen because light travels from light sources to our eyes or from the light sources to objects then brings it to our eyes and to explain why shadows have the same shape as the objects cast on them

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CHEMISTRY

Sound		<p>Identify how sounds are made.</p> <p>Recognise that vibrations from sounds travel through the inner ear</p> <p>Find patterns between the pitch of a sound and features of the object which has produced it</p> <p>Recognise that sounds get fainter as the distance from the sound source increases</p>		
Forces	<p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p>	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effect of air resistance, water resistance and friction.</p> <p>Recognise that some mechanisms allow a smaller force to have a greater effect</p>	<p>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</p>	
Materials	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Recognise that soils are made from rocks and organic matter.</p> <p>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</p>		<p>Compare and group together everyday materials.</p> <p>Give reasons for the particular uses of everyday material and know that some materials will dissolve into liquid to form a solution and describe how best to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes and explain that some changes result in the formation of new materials</p>	
States of Matter	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p>	<p>Compare and group materials according to whether they are solids, liquids or gases</p> <p>Observe that some materials change state when they are heated or cooled,</p> <p>Identify the part played by evaporation and condensation in the water cycle.</p>	<p>Explain that some changes result in the formation of new materials, ad that this kind of change is not usually reversible, including changes associated with burning and the action of acid o bicarbonate of soda.</p>	
Rocks	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p>			
Forces and Magnets	<p>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 or their appearance and simple physical properties</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p>	<p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>Compare and group together ever, day materials on the basis of their properties including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p>	
Electricity		<p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>Compare and group together ever, day materials on the basis of their properties including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p>	